

**Arboricultural Implications Assessment and  
Arboricultural Method Statement**

In accordance with  
BS: 5837:2012

At  
**Fairwater Western Campus  
'Main Works Area'**

Fairwater Road, Fairwater, Cardiff, CF5 3JR

On the instructions of  
**ISG Limited**

Dated  
**May 2023**  
Revision 3 March 2024

Reported by Mr. S J Ambler. Cert.Arb.(RFS), Tech.Arbor.A, Dip.Arb. (RFS). F.ARBORA.  
Of

Steve Ambler and Sons Tree Specialists Ltd.

Mobile- 07961 322 908 Email- [steve@steveambler-trees.com](mailto:steve@steveambler-trees.com) Web- [www.steveambler-trees.com](http://www.steveambler-trees.com)

Signed Steve Ambler	
Date	March 2024

## CONTENTS

INTRODUCTION, SCOPE AND BACKGROUND.....	3
PLANNING CONDITIONS .....	4
LIST OF DRAWINGS SUPPLIED .....	4
SITE DESCRIPTION.....	4
ARBORICULTURAL IMPLICATIONS ASSESSMENT .....	4
TREE PRESERVATION ORDER AND CONSERVATION AREA PROTECTION .....	5
TREES - THE ABOVE AND BELOW GROUND CONSTRAINTS.....	6
TREES LOST DUE TO POOR TREE CONDITION ISSUES.....	8
THE PROPOSED DEVELOPMENT FOOTPRINT AND TREE LOSSES .....	8
TREE PRUNING .....	9
WHETHER DESIGN CAN BE MODIFIED TO ACCOMMODATE TREE RETENTION.....	9
TREE PROTECTIVE TREE PROTECTIVE BARRIER FENCING.....	10
DEMOLITION OF EXISTING STRUCTURES AND HARD SURFACES.....	12
INSTALLATION OF TEMPORARY GROUND PROTECTION .....	13
INFRASTRUCTURE REQUIREMENTS AND SERVICE SUPPLIES.....	15
INSTALLATION OF NEW HARD SURFACING - MATERIALS, DESIGN CONSTRAINTS AND IMPLICATIONS FOR LEVELS.....	16
SPECIALIST FOUNDATIONS - INSTALLATION TECHNIQUES .....	16
CHANGES IN GROUND LEVELS .....	16
BOUNDARY TREATMENTS .....	17
PREPARATORY WORKS FOR NEW LANDSCAPING.....	19
WHETHER TREE LOSSES FROM THE DEVELOPMENT PROPOSAL CAN BE MITIGATED .....	21
THE EFFECTS THAT DEVELOPMENT PROPOSALS MAY HAVE ON THE AMENITY VALUE OF THE TREES .....	23
GENERAL MATTERS.....	23
AUDITABLE SYSTEM OF ARBORICULTURAL SITE MONITORING, INCLUDING A SCHEDULE OF SPECIFIC SITE EVENTS REQUIRING INPUT OR SUPERVISION.....	24
SPECIFIC ARBORICULTURAL EVENTS .....	24
SCHEDULE OF WATCHING BRIEF VISITS .....	24
COMMUNICATIONS LIST.....	25
RECOMMENDATIONS .....	26
LEGAL CONSTRAINTS.....	27
LIMITATIONS OF THIS REPORT .....	28
GLOSSARY OF TERMS .....	28
REFERENCES.....	29
REPORT LIMITATIONS.....	29
LEGAL CONSTRAINTS.....	30
APPENDICES.....	31
FLOW DIAGRAM – PLANNING FOR TREES IN DEVELOPMENT.....	32
TREE PROTECTION PLAN (ALSO SHOWING TREES FOR REMOVAL).....	33

## INTRODUCTION, SCOPE AND BACKGROUND

The former Fairwater Western Campus is to be redeveloped and replaced with a new modern-day building. The works schedule will occur in several phases. This Report covers the Main Works element.

This is a combined Arboricultural Implications Assessment (AIA) and Arboricultural Method Statement (AMS) of the current proposals on the Main Works element, which follows on to an earlier

1. Tree Survey, Tree Categorisation, and Tree Constraints Plan in which the trees were scored and assessed for their suitability for retention within the proposed development. It also follows an earlier
2. Arboricultural Implications Assessment and Arboricultural Method Statement Cantonian (Fairwater) High School Fairwater Road.
3. Arboricultural Implications Assessment and Arboricultural Method Statement Temporary Hall at Cantonian (Fairwater) High School Fairwater Road.
4. Arboricultural Implications Assessment and Method Statement - Enabling Works Phase.

The trees lost to development are clearly marked on the Landscape Planting Plan FC- ASL- 000- ZZ- DR- L- 09004 Rev P05, in addition T41 advised for removal in the original tree survey, due to damaging the security fencing through secondary stem thickening is also to be removed.

The AIA review is a desktop study of a development proposal, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees.

The AMS considers the physical and structural requirements of retained trees to maintain their good health and stability and prevent any damage during construction activities. It identifies any perceived conflict between the trees and development and proposes a tree friendly working method to reduce damage and injury.

The boundary surrounding the proposed development site and identified by plan attached hereto, in which the trees are contained and form the contents of this Report, is hereafter referred to as 'the site' .

The provision and acceptance of this Report are subject to the general terms and conditions of Steve Ambler & Sons Tree Specialists Ltd.

This assessment is undertaken by Stephen Ambler, the Company founder, a professional arboriculturalist and a Fellow of the Arboricultural Association having over 40 years' experience in the arboricultural industry, serving 19 of those years in local government as a principal arboricultural and woodlands officer. His Consultancy Practice was established in 1999 and later expanded in 2006 with the launch of a specialist 'Tree Contracting Unit' under the revised name - Steve Ambler & Sons Tree Specialists Ltd. Stephen holds the relevant qualifications: -

- a) Fellow Member of the Arboricultural Association.
- b) Professional Diploma in Arboriculture (Royal Forestry Society)
- c) Professional Technician in Arboriculture (Arboricultural Association)
- d) Certificate in Arboriculture (Royal Forestry Society)
- e) Lantra Award, "Bats and Arboriculture – A Guide for Practitioners" developed by The Bat Conservation Trust.

## PLANNING CONDITIONS

Not provided for the purposes of writing this assessment.

## LIST OF DRAWINGS SUPPLIED

This assessment is carried out using information provided on drawings –

- FC-ARP-ZZZ-ZZ-DR-C-20502 (10)
- FC-ARP-ZZZ-ZZ-DR-C-20503 (8)
- FC-ARP-ZZZ-ZZ-DR-C-20504 (7)
- FC-ARP-ZZZ-ZZ-DR-C-20505 (9)
- FC-ARP-ZZZ-ZZ-DR-C-20602 (6)
- FC-ARP-ZZZ-ZZ-DR-C-20603 (3)
- FC-ARP-ZZZ-ZZ-DR-C-20604 (3)
- FC-ARP-ZZZ-ZZ-DR-C-20605 (1)
- FC-ARP-ZZZ-ZZ-DR-N-01001 (1)
- FC-ASL-000-ZZ-DR-L-09010 (14)
- FC-ASL-000-ZZ-DR-L-09011 (13)
- FC-ASL-000-ZZ-DR-L-09012 (12)
- FC-ASL-000-ZZ-DR-L-09013 (11)
- FC-ASL-000-ZZ-DR-L-09004 (3)

## SITE DESCRIPTION

The site is in the Fairwater district of Cardiff City, in South Wales. This site is comprised of a built-up area of school buildings in the largely paved northern section with playing fields to the south.

Ordnance Survey Grid Reference: ST144775

Post Code: CF5 3JR

Most of the trees on site can be found along the western boundary which contains a row of large Leyland cypress (*x Cupressocyparis leylandii*) to the north-east between the school buildings and the boundary fence that separates the premises from Doyle Avenue.

There are many trees in the adjacent railway property, some of which are close to the boundary, but none of which infringe significantly into the site in terms of crown spread or rooting area.

## ARBORICULTURAL IMPLICATIONS ASSESSMENT

The following matters are considered under this Arboricultural Implications Assessment -

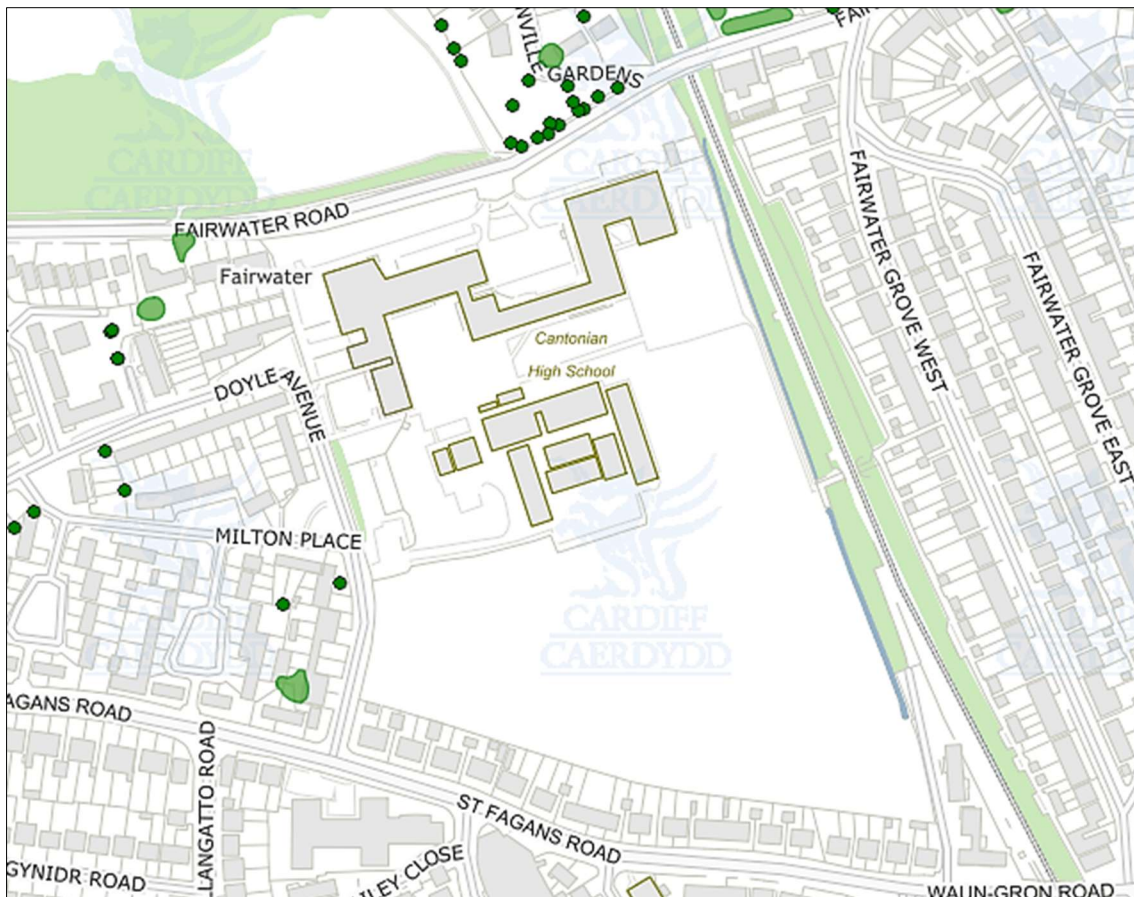
- A) Site Designation - Tree Preservation Order and Conservation Area protection.
- B) The above and below ground constraints.
- C) The construction of the proposed development.
- D) Whether design can be modified to accommodate tree retention.
- E) Infrastructure requirements, easements for above or below ground services; highway safety and visibility splays and other infrastructure provisions such as lighting, CCTV and signage.
- F) The end use of the space.
- G) Whether tree losses from the development proposal can be mitigated.

- H) A realistic assessment of the probable impact of the proposed development on the trees and vice versa with due allowances for their future growth and maintenance requirements.
- I) The relationship of windows to trees which may obstruct light considered.
- J) The fact that large trees can sometimes cause apprehension to occupiers of nearby buildings especially during windy weather.
- K) Leaves, fruits and pests associated with some species may cause problems. Falling leaves in autumn blocking gullies and gutters. Fruit can cause slippery patches on hard surfaces such as footpaths and driveways. The accumulation of honeydew from the pest aphid may cause slippery patches on paving and be damaging to some manufactured surfaces and vehicles.
- L) The effects that development proposals may have on the amenity value of the trees both on and near the site.

### TREE PRESERVATION ORDER AND CONSERVATION AREA PROTECTION

In checking Cardiff City Councils web site, it appears no Tree Preservation Order (TPO) or Conservation Area designation affects this site. The TPO Map Extract obtained is reproduced below.

#### TPO Map Extract



### TREES - THE ABOVE AND BELOW GROUND CONSTRAINTS

The below ground constraints of any retained tree are equal to its required Root Protection Area (RPA) and this distance for each tree or group is provided within the full Tables in both the Tree Constraints Plan and Report <sup>1</sup>. Within this Report, the table is reproduced in part only, as reproduced below in Figure 1. The distance is a radial measurement provided in the column highlighted yellow. This radial distance must be measured from the centre of the tree's stem.

Those trees with a U Category shown in red, are unsuitable for retention due to existing tree condition issues.

Figure 1 - Tables

Tree Number	Species	Height (m)	Stem Diam (mm)	Branch Spread				1st Significant Branch	Canopy Clearance (m)	Life Stage	Remaining Contribution	Retention Category	RPA Area	RPA Radius
				N	E	S	W							
T001	Small-leaved Lime ( <i>Tilia cordata</i> )	6.0	120	2.5	2.5	2.5	2.5	0.5(S)	0.5	Semi Mature	20+ Years	C2	41	3.6
T002	Small-leaved Lime ( <i>Tilia cordata</i> )	6.0	200	2.5	3.0	3.0	2.5	0.5(S)	0.5	Semi Mature	20+ Years	C2	72	4.8
T003	Small-leaved Lime ( <i>Tilia cordata</i> )	6.0	150	2.5	1.5	2.5	3.0	0.5(S)	0.5	Semi Mature	20+ Years	B2	10	1.8
T004	Wild Cherry ( <i>Prunus avium</i> )	7.0	100	1.5	1.0	1.0	0.5	1(S)	1.5	Young	30+ Years	C1	5	1.2
T005	Small-leaved Lime ( <i>Tilia cordata</i> )	6.0	100	2.0	2.0	2.0	2.0	0.5(S)	0.5	Semi Mature	20+ Years	C1	5	1.2
T006	Small-leaved Lime ( <i>Tilia cordata</i> )	6.0	100	2.0	2.0	2.0	2.0	0.5(S)	0.5	Semi Mature	20+ Years	C1	5	1.2
T007	Small-leaved Lime ( <i>Tilia cordata</i> )	6.0	150	2.0	2.0	2.0	2.5	0.5(S)	0.5	Semi Mature	20+ Years	C1	10	1.8
T008	Small-leaved Lime ( <i>Tilia cordata</i> )	5.0	250	1.0	2.0	2.0	2.0	0.5(E)	0.5	Young	30+	C1	28	3.0
T034	Common Birch ( <i>Betula alba</i> )	4.0	80	1.0	1.0	1.0	1.0	1.5(S)	1.5	Young	10+	C1,2	3	1.0
T035	Goat Willow ( <i>Salix caprea</i> )	11.0	30	4.0	5.0	5.0	6.0	2(N)	2.0	Mature	10+ Years	U	0	0.0
T036	Oak ( <i>Quercus sp.</i> )	5.0	160	2.5	0.5	2.5	3.0	1.5(W)	1.5	Semi Mature	30+ Years	C	11	1.9
T037	Palm ( <i>Phoenix canariensis</i> )	5.0	200	0.5	0.5	0.5	0.5	4(N)	4.0	Semi Mature	<10 years	U	0	0.0
T038	Crab Apple 'Malus floribunda' ( <i>Malus sylvestris</i> )	8.0	340	4.5	4.0	3.0	3.5	2.5(N)	2.5	Mature	20+ Years	B	53	4.1
T041	Sycamore ( <i>Acer pseudoplatanus</i> )	7.0	150	2.0	3.0	3.0	3.0	0.5(S)	0.5	Semi Mature	20+ Years	C1	113	6.0
T045	Goat Willow ( <i>Salix caprea</i> )	7.0	200	3.0	3.0	3.0	3.0	2(N)	2.0	Mature	<10 years	U	0.00	0.0

Tree Number	Species	Height (m)	Stem Diam (mm)	Branch Spread				1st Significant Branch	Canopy Clearance (m)	Life Stage	Remaining Contribution	Retention Category	RPA Area	RPA Radius
				N	E	S	W							
T046	Field Maple ( <i>Acer campestre</i> )	8.0	335	3.0	3.0	3.0	3.0	1(E)	1.5	Semi Mature	30+ Years	C2	61	4.0
T047	Goat Willow ( <i>Salix caprea</i> )	7.0	150	2.0	2.0	2.0	2.0	2(W)	2.0	Semi Mature	20+ Years	C2	10	1.8
T048	Goat Willow ( <i>Salix caprea</i> )	7.0	150	2.0	2.0	2.0	2.0	2(W)	2.0	Semi Mature	20+ Years	C2	10	1.8
T049	Goat Willow ( <i>Salix caprea</i> )	7.0	360	3.0	3.0	3.0	3.0	1(W)	1.0	Semi Mature	20+ Years	C2	58	4.3
T050	Wild Cherry ( <i>Prunus avium</i> )	7.0	200	2.0	3.0	3.0	4.0	0.5(W)	0.5	Early Mature	10+	C1	18	2.4
T111	Amelanchier ( <i>Amelanchier sp.</i> )	4.0	220	2.5	2.5	2.5	2.5	2(W)	2.0	Early Mature	20+ Years	C1	21	2.6
T127	Leyland Cypress ( <i>Cupressocyparis leylandii X</i> )	12.0	800	4.0	1.0	2.5	4.0	4(N)	1.5	Mature	10+ Years	C	290	9.6
T128	Leyland Cypress ( <i>Cupressocyparis leylandii X</i> )	13.0	380	2.0	2.0	2.0	0.0	2.5(E)	0.0	Mature	10+ Years	C	66	4.6
T129	Leyland Cypress ( <i>Cupressocyparis leylandii X</i> )	13.0	300	2.0	2.0	2.0	1.0	2.5(E)	0.0	Mature	10+ Years	C	41	3.6
T130	Leyland Cypress ( <i>Cupressocyparis leylandii X</i> )	13.0	450	1.0	1.0	2.0	4.0	5(W)	5.0	Mature	10+ Years	C	92	5.4
T131	Leyland Cypress ( <i>Cupressocyparis leylandii X</i> )	13.0	450	1.0	3.0	2.0	4.0	5(W)	5.0	Mature	10+ Years	C	92	5.4
T132	Leyland Cypress ( <i>Cupressocyparis leylandii X</i> )	15.0	800	4.0	1.0	4.0	4.0	4(N)	1.5	Mature	10+ Years	C	290	9.6
T133	Leyland Cypress ( <i>Cupressocyparis leylandii X</i> )	13.0	380	2.0	2.0	2.0	2.0	2.5(E)	0.0	Mature	10+ Years	C	66	4.6
T134	Leyland Cypress ( <i>Cupressocyparis leylandii X</i> )	7.0	480	1.0	6.0	1.0	1.0	2(N)	0.5	Mature	<10 years	U	0	0.0
T135	Leyland Cypress ( <i>Cupressocyparis leylandii X</i> )	10.0	450	2.0	5.0	1.0	1.0	2.5(E)	0.0	Mature	10+ Years	C	92	5.4
T136	Plum ( <i>Prunus domestica</i> )	7.0	3.5	4.5	4.5	4.5	4.5	2(W)	0.5	Mature	20+	B	55	4.2

Tree Number	Species	Height (m)	Stem Diam (mm)	Branch Spread				1st Significant Branch	Canopy Clearance (m)	Life Stage	Remaining Contribution	Retention Category	RPA Area	RPA Radius
				N	E	S	W							
T142	Leyland Cypress ( <i>Cupressocyparis leylandii</i> X)	10.0	320	0.0	2.0	3.5	3.0	3.5(SW)	2.5	Mature	10+	C2	45	3.8
T143	Leyland Cypress ( <i>Cupressocyparis leylandii</i> X)	14.0	450	1.0	4.0	2.5	3.0	3(E)	3.0	Mature	10+ Years	C	92	5.4
T144	Leyland Cypress ( <i>Cupressocyparis leylandii</i> X)	9.0	300	3.5	5.0	1.0	2.5	3(NE)	3.0	Mature	20+ Years	C	41	3.6
T145	Common Ash ( <i>Fraxinus excelsior</i> )	15.0	850	5.5	10.0	7.5	5.0	4(S)	4.0	Mature	10-20 years.	C	327	10.2
T146	Leyland Cypress ( <i>Cupressocyparis leylandii</i> X)	10.0	400	1.0	4.0	3.5	3.5	3(W)	2.0	Mature	10+ Years	C1,2	72	4.8

NOTE - In the attached Tree Protection Plan (Appendices), the RPAs are shown as solid orange lines whilst the canopy spreads of the trees are shown as solid green, blue or grey lines (subject to their category rating).

#### TREES LOST DUE TO POOR TREE CONDITION ISSUES

The trees for retention and those lost to this proposal are shown on the Drawing - Tree Protection Plan (Showing Trees for Removal) Drawing Number 20-046 ver 3 (Ambler).

The trees listed here are recommended within the former Tree Survey Report <sup>1</sup> as U – Category. These trees are not lost to development but regarded as unsuitable for retention in any forthcoming development and therefore recommended for removal. As such, they are not considered further within this Report. They are listed as –

Category U Class Trees (Unsuitable for retention)

- T035, T045, T134.

#### THE PROPOSED DEVELOPMENT FOOTPRINT AND TREE LOSSES

Trees lost to the development under the Main Works Phase are listed below.

Category C Trees

- T001, T002, T003, T004, T005, T006, T007, T008, T034, T035, T036, T037, T038, T041, T045, T046, T047, T048, T049, T050, T111, T126, T127, T128, T129, T130, T131, T132, T133, T134, T135, T142, T143, T144, T145, and T146.

Category B Trees

- T038, T136



## TREE PRUNING

**NOTE** - At the time of writing, it is unclear if tree pruning is required, and this will require further investigation with the Site Engineer and Project Arborist following setting out of the site, prior to the onset of any other site works.

Under normal circumstances, the 'approved'<sup>1</sup> tree surgery and/or felling works should be completed prior to the erection of the Tree Protective Barrier Fencing although must come within the Watching Brief element.

All trees approved for felling (shown on the 'approved' Tree Felling Plan) should be clearly marked by the Project Arborist beforehand.

Any access facilitation pruning necessary to prevent injurious contact between demolition plant and the tree(s) should be identified and scheduled by an Arborist and presented to the LPA for approval<sup>2</sup>.

In some cases, working space may be provided by temporarily tying back tree branches. Pruning or tying should be undertaken in accordance with a specification prepared by an arboriculturist.

### Method Statement for Tree Trimming

Site meeting between Site Engineer and Project Arborist (PA) to assess if pruning is required. If so, PA to draw up a tree pruning schedule. This will be presented to the LPA prior to commencement.

All approved tree works should only be undertaken by a competent arboricultural contractor who shall be made known to the LPA in writing 5 days prior to commencement for their approval.

Approved tree works shall be supervised by the Project Arborist through the Watching Brief element, (see Item 5)

Contractors should be made aware of planning conditions relating to trees within and adjacent to the site and of any Tree Preservation Order or other site designation which may be relevant, through providing 'toolbox talks.

Tree felling should be undertaken with caution to prevent damage to retained trees and particularly their underground parts. Crush injuries will occur to roots of retained trees if felled within their RPA. In such instances, crash-matts should be used.

No vehicles are permitted within the RPA of any retained tree, without the use of load spreading material.

Contractors should be made aware of planning conditions relating to trees within and adjacent to the site and of any Tree Preservation Order or other site designation which may be relevant, through providing 'toolbox talks.

Trees approved for felling are highlighted in red on the attached Tree Felling and Retention Plan

**NOTE** - Legal issues relating to tree felling should also be observed – refer to Section Legal Constraints

## WHETHER DESIGN CAN BE MODIFIED TO ACCOMMODATE TREE RETENTION

With reference to the proposed levels, design can be modified to prevent the loss of several trees as listed above.

Generally, the design element demands the removal of trees as listed above. The majority of trees listed for removal are of C Category as scored earlier in the tree survey<sup>1</sup> although two category B trees are lost to the current layout. Category C trees are considered of low value and ones which are replaceable through mitigation planting.

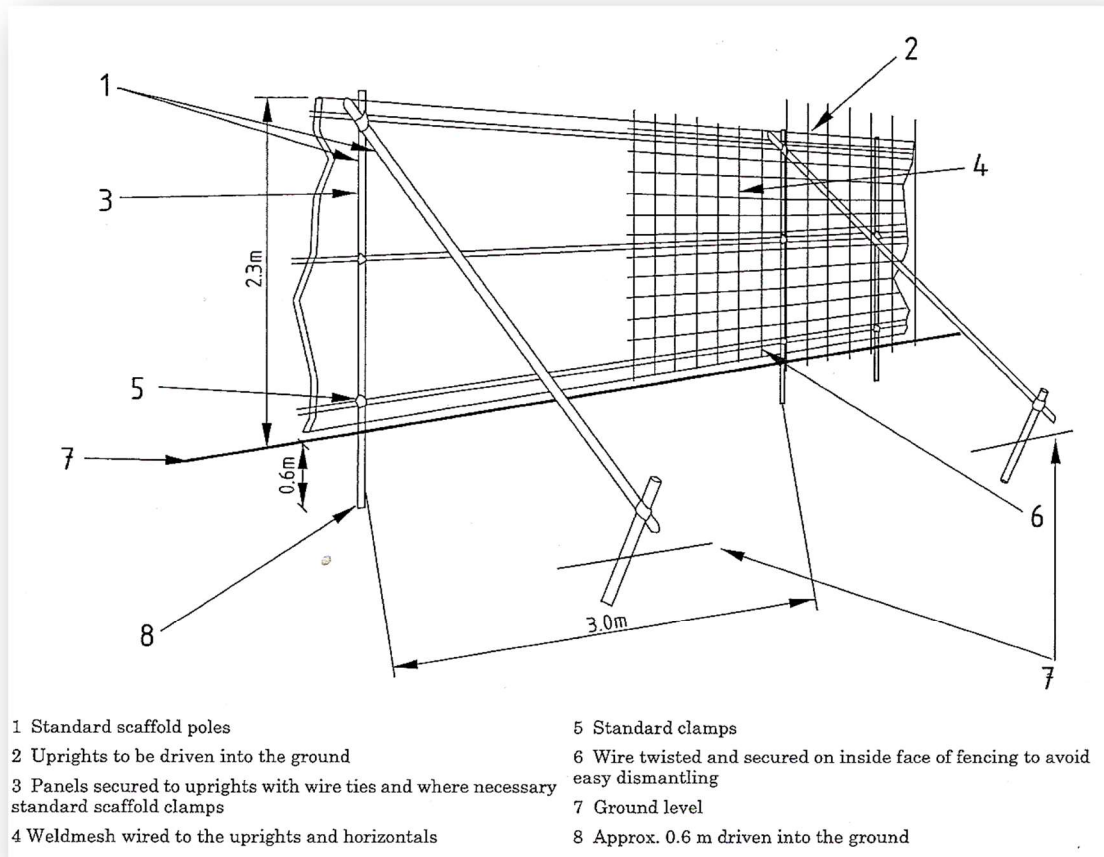
<sup>1</sup> Approved by the Local Planning Authority

### TREE PROTECTIVE TREE PROTECTIVE BARRIER FENCING

Before any materials or machinery are brought onto site, demolition, stripping of soil or development of any kind commences, all trees to be retained must be protected using robust physical barriers (as shown below) and where necessary, ground protection plates positioned.

The correct location for the Tree Protection Barriers is shown in the Tree Protection Plan in the Appendices.

#### Tree Protective Barrier Fencing



### Method Statement - Tree Protective Barrier Fencing.

1. The developer must ensure all Tree Protective Barrier Fencing is installed prior to any occupation of the site and prior to plant, machinery, equipment, site offices or materials etc are located.
2. Engage a Project Arborist (PA) for the duration of works to monitor and advise as necessary under a Watching Brief Scheme.
3. Where required, pre-development approved tree work may be undertaken prior to the installation of tree protection measures which must be under the guidance of the PA and with the agreement of the Local Planning Authority. However, no vehicles will be permitted within any unprotected RPA of retained trees and works must be carried out with due consideration and without causing injury to any retained tree. Trees permitted for felling will only be those approved on the Tree Felling Plan and identified on site clearly by the PA.
4. All approved tree felling, and surgery works, must be undertaken under the supervision of the PA.
5. The PA must mark out the RPA for each tree or group on site using road pins or flu marker paint.
6. Once the Protective Tree Protective Barrier Fencing is in place, it must be approved and signed off by the PA prior to any demolition, movement of plant and equipment or any site occupancy.
7. The PA will assess if any trimming or tying back of branches is required to prevent contact injury from plant. The PA will seek approval from the LPA of any Works Schedule created, identifying all necessary works.
8. Barriers should be monitored and maintained throughout the construction phase to ensure they remain rigid, complete, and fit for purpose.
9. Any works occurring within any RPA **must** be covered by an 'Approved' <sup>2</sup> Arboricultural Method Statement and may only proceed under the supervision of the Project Arborist.
10. This protective barrier may only be repositioned or moved where covered by an Approved Method Statement and under the supervision of the PA.
11. It should be confirmed by the PA that the barriers and any necessary ground protection are installed correctly prior to the commencement of any other operation and the LPA informed who may wish to attend site and view it first-hand. A method statement is provided for installing Ground Protection which must be followed.
12. The default tree protection fencing specification should consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated in Figure 2 (Appendix B). The vertical tubes should be spaced at a maximum interval of 3 metres 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.
13. Prior to any construction activity, and where due to site constraints construction activity cannot be fully or permanently excluded from all or part of a tree's RPA, appropriate ground, tree stem, and low crown protection must be installed (see 6.2.3), under the guidance of the Project Arborist.

### NOTES

1. It might be feasible on some sites to use temporary site office buildings as components of the tree protection barriers, provided these can be installed and removed without damaging the retained trees or their rooting environment.
2. All-weather notices should be attached to the barrier with words such as: "CONSTRUCTION EXCLUSION ZONE - NO ACCESS".

<sup>2</sup> Approved by the Local Planning Authority



### DEMOLITION OF EXISTING STRUCTURES AND HARD SURFACES

Demolition of buildings roads and footpaths are scheduled. This has implications on the existing trees to be retained and therefore the following Method Statement must be followed.

#### Method Statement - Demolition

1. Engage a Project Arborist (PA) for the duration of works to monitor and advise as necessary under a Watching Brief Scheme.
2. PA must be present and supervise all works that occur within any RPA.
3. Permitted tree felling should be undertaken if desired to assist in providing additional room for the demolition process. Trees permitted for felling will only be those approved on the Tree Felling Plan.
4. Tree surgery works where approved may be undertaken under the supervision of the PA.
5. The erection of protective Tree Protective Barrier Fencing must be in place and approved by the PA prior to any construction activities including the movement of plant and equipment and commencement of any demolition works.
6. Once the Tree Protective Barrier Fencing is erected, the PA must inspect and signed off as adequate as 'fit for purpose' prior to any site movement or possession by contractors is made.
7. The PA will assess if any trimming or tying back of branches is required to prevent contact injury from plant and seek approval from the LPA of a works schedule identifying specifically all necessary works.
8. All plant and demolition equipment **must** operate outside of the RPA' s. If this is not possible, Tree Protective Barrier Fencing may only be offset to expose some of the RPA providing it is covered by an approved<sup>3</sup> Arboricultural Method Statement and
  - suitable ground protection is installed.
  - stems are protected where necessary.
  - low branches are tied back or pruned back if part of an approved schedule of works, prior to commencement of operations, all to the satisfaction of the PA/LPA.
9. Where trees stand immediately adjacent to any structure to be removed and subject to a risk assessment by the contractor, the demolition should be undertaken inwards within the footprint of the existing building (often referred to as "top down and pull back") to prevent damage to the tree. Tree Protective Barrier Fencing must be in place prior to commencement.
10. The advice of an Arboriculturist should be sought where underground structures are present (none known at this time) within the RPA are, or will become, redundant. In general, it is preferable to leave such structures in situ, as their removal could damage adjacent tree roots.

11. When removing existing hard surfaces above RPA's – all plant and equipment should operate whilst positioned on the existing hard surface. Plant and equipment should not encounter any unprotected ground surface and where the existing hard surface being removed is not strong enough or of sufficient width to offer support, then load spreading ground plates shall be necessary.
12. Great care should be taken not to damage the trunk or branch framework and additional protection may be necessary e.g., trunk protection and tying back branches.
13. Demolition and removal of hard surfaces must be undertaken in a way that does not cause soil compaction within an RPA or an area highlighted for planting or physically encounter and injure above ground parts of any retained tree.
14. Hand-held tools or appropriate machinery should be used (under arboricultural supervision) to remove the existing hard surface, working backwards over the area, so that any plant or machinery is not moving over exposed ground.
15. Where any tree stands adjacent to a structure scheduled for demolition, levels of dust are likely to build up on the trees. This can have a damaging effect on the health of a tree where it becomes particularly heavy during the summer months when trees are in full leaf and actively growing. Where this occurs, it should be monitored and removed through hosing down when deemed necessary by the PA.

### INSTALLATION OF TEMPORARY GROUND PROTECTION

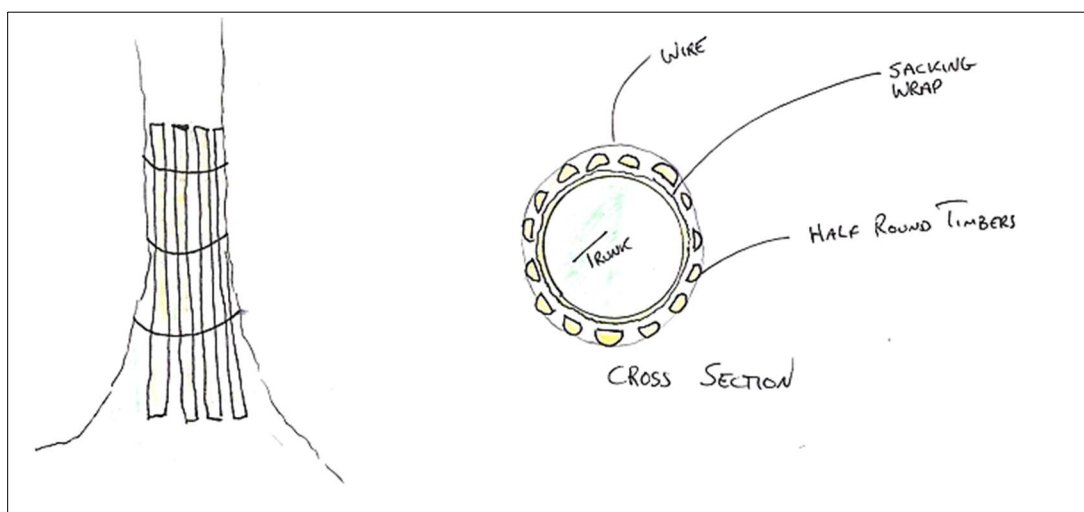
The requirement for temporary ground protection is highly likely where space is restricted for construction works and there is danger in trafficking onto RPAs including where trees occur on adjacent ground and influence the site.

Where construction works or temporary access is justified within the RPA, this should be facilitated by a set-back in the alignment of the Tree Protective Barrier Fencing with temporary ground protection installed to act as a load spreader and avoid soil compaction and compressive root injury. The ground protection materials must be adequate to support the plant and equipment used. It and must be suitable for the weights intended.

**NOTE** – the choice of ground protection materials used must be approved by the PA and placement, working form and removal of the ground protection must be supervised by the PA.

Tree stem protection may also be deemed necessary which will be assessed by the PA and instructed accordingly. If it is necessary, it must be installed to the following standard.

### Stem Protection Detail



## Recommendation

In all cases, the objective of using ground protection is to avoid compaction of the soil and injuries to the roots occurring which can arise from even a single passage of a heavy vehicle especially in wet conditions. Ground protection must be positioned before any materials or machinery is brought onto site.

Where construction works or temporary access is justified within the RPA, this may be facilitated by a set-back in the alignment of the Tree Protective Barrier Fencing. Such a setback in the alignment of fencing must only occur immediately prior to the works commencing and which must be installed at the first opportunity immediately following completion of the works under the guidance of an AMS and the PA.

Temporary ground protection must be installed over the exposed RPA is to act as a load spreader to avoid soil compaction and compressive root injury and must be suitable for the weights intended. A product such as Trackmats or a similar product should be used which must be agreed with the Project Arborist. 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-ton gross weight, an alternative system (e.g., proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with an engineer and arboriculturalist, to accommodate the likely loading to which it will be subjected.

## Method Statement - Ground and Stem Protection

1. A site meeting should be arranged between the Site Manager and the PA to discuss the requirement.
2. Following any approved tree felling and or surgery works, the Tree Protective Barrier Fencing should be installed in accordance with the Tree Protection Plan (Appendix A) and set back in accordance with that mentioned above with the approval from the PA.
3. The load spreader must be adequate for the loads intended and agreed with the PA in writing prior to installation.
4. Laying the ground protection material over the exposed RPA should be carried out immediately prior to the works preferably during dry weather and supervised by the PA.
5. Laying the ground protection layers should be done in a reverse working fashion to avoid compaction so any vehicle involved in the process will always be situated on top of the ground protection.
6. Take care not to damage any part of the tree stem or branches. Tie back branches or prune in accordance with an approved <sup>3</sup> tree surgery schedule.
7. Install stem protection where necessary PA to assess and advise.
8. Removal of the ground protection and stem protection at the end of the construction phase should also be done in a reverse working fashion.
9. Stem protection should be removed carefully avoiding damage to the bark.

## INFRASTRUCTURE REQUIREMENTS AND SERVICE SUPPLIES

### Services General

Tree roots can be damaged where services are installed within the RPA of any retained tree. Also, disruption to underground services may occur if they are placed within the root-plate zone as tree roots can cause damage to them. The RPA therefore should be taken as a minimum constraint to the development with regards the installation of underground services and greater distances should be allowed where possible.

Mechanical trenching for the installation of underground apparatus and drainage severs any tree roots present which may adversely affect the health and stability of the affected tree/s. It can also change the local soil hydrology. Particular care should be taken in the routeing and methods of installation of all underground apparatus. Wherever possible, apparatus should be routed outside RPAs.

Where apparatus is to pass, detailed plans showing the proposed routeing should be drawn up in conjunction with the PA. In such cases, trenchless insertion methods should be used, with entry and retrieval pits being sited outside the RPA, if roots can be retained and protected. Hand excavation might be acceptable for shallow service runs.

The trees crown is also a constraint to the development and should be considered when seeking to install services or when operating plant and equipment. Sometimes the crown of a tree exceeds the RPA. Both matters will be considered in detail within the Arboricultural Method Statement.

### Drainage General.

New development can influence the existing drainage pattern and ground water levels of a site, due to level changes, increased areas of hard surface and new drainage installations. The root systems of mature trees do not generally adapt as well as younger specimens to alterations to groundwater. Expert advice on both drainage and trees should be taken where groundwater conditions are liable to change.

### NOTE

1. It is both good practice and, in many cases, a regulatory requirement to maintain existing groundwater conditions within, and reduce run-off from, a development site. This can be achieved, for example, using permeable hard surfaces and techniques associated with sustainable urban drainage systems (SUDS). Such techniques can be designed and implemented to benefit both existing and new trees. (SUDS water might need to be treated/filtered and/or tree rooting areas protected from direct contamination in risk areas.)

### Foul Drains

- The proposed foul drain does not affect the RPAs of any retained tree (Drawing number – FC-ARP-ZZZ-ZZ-DR-C-20504 (7) and FC-ARP-ZZZ-ZZ-DR-C-20505 (9))

### Surface Water Drainage

Where necessary, the surface water drainage through design change has been modified to reduce the impact on trees.

- No impact on retained trees.

## Single and CCTV

- None required in Main Works

## Vision Splays

- No trees are to be removed to achieve vision splays under the current scheme.

## Drainage Ditches

- None indicated as part of this proposal.

## Electricity

- No retained trees appear to be affected by this proposal although the connection to the incoming mains appears close to retained trees. PA to assess.

## Mains Water

- Not affected by this current proposal

**NOTE** - The National Joint Utilities Guidance 4 (NJUG), which is a guide for utility companies when installing services, is **not** relevant under Planning Conditions and the more stringent protection measures under Section 7.7. of BS5837 Trees in relation to design, demolition, and construction – Recommendations (2012), apply. Utility companies must be instructed accordingly and follow the above-mentioned British Standard.

## INSTALLATION OF NEW HARD SURFACING - MATERIALS, DESIGN CONSTRAINTS AND IMPLICATIONS FOR LEVELS

- No issues with the present design

## SPECIALIST FOUNDATIONS - INSTALLATION TECHNIQUES

- No special engineering is required for foundations within any RPA

## CHANGES IN GROUND LEVELS

On the Proposed Cut and Fill Drawing number FC-ARP-ZZZ-ZZ-DR-C-20602 (6) and FC-ARP-ZZZ-ZZ-DR-C-20603 (3) and Earthworks Drawings FC-ARP-ZZZ-ZZ-DR-C-20604 (3) and FC-ARP-ZZZ-ZZ-DR-C-20605 (1) reductions or ground level raises are shown occurring in relation to retained trees. The key shows cut and fill of between -0.58 – +1.02. As all structural roots occur within 300-mm of the uppermost soil surface, this proposal will therefore severely affect the trees, making them liable to wind-throw and certainly cause physiological issues and tree loss.



## Key to Cut and Fill

Legend	
— 14.80m —	Proposed Formation Level Contour
F 1.02m	Proposed Depth of Cut
C 0.58m	Proposed Depth of Fill

## Recommendation

Remove the need for level change within the RPAs of retained trees. If this is not possible, the affected trees will be lost to the development.

## BOUNDARY TREATMENTS

### Fencing

A proposed 2.4-metre-high weldmesh fence is proposed for the site boundary as shown on shown as a brown solid. Refer to drawing below. (Drawing FC- ASL- 000- ZZ- DR- L- 09011 Rev 13).

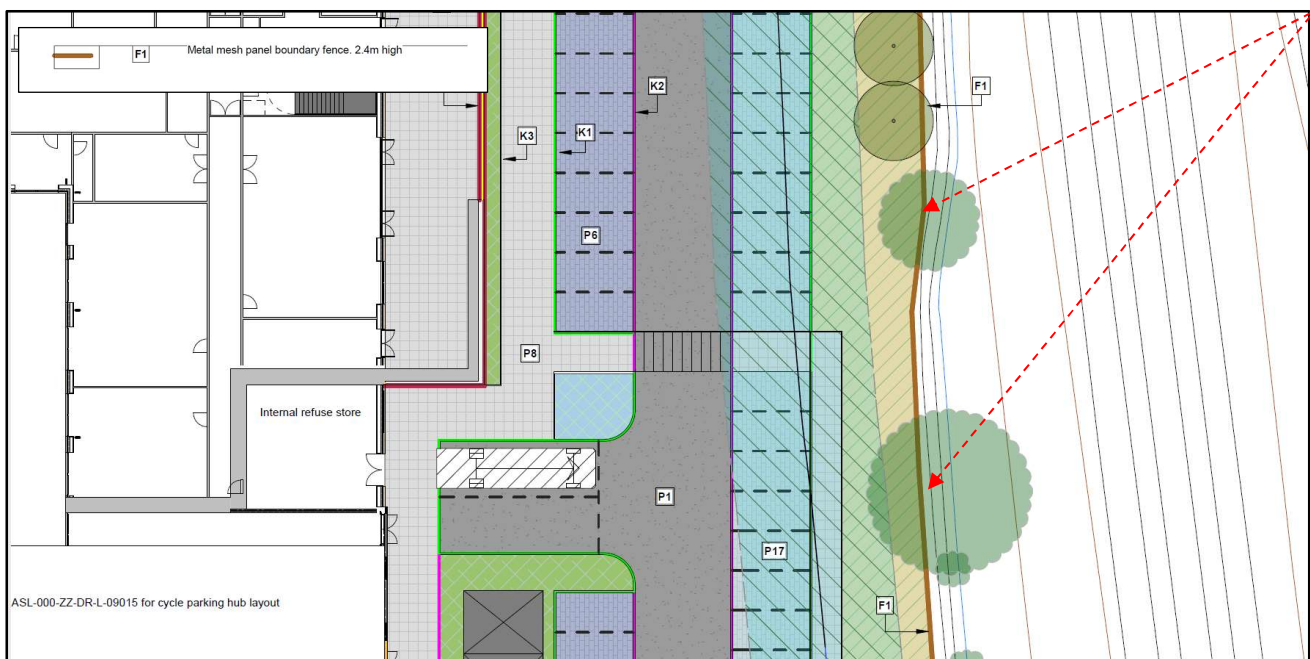
The erection of this boundary fencing within RPA has the potential to damage tree roots, their stability, and long-term survivability as excavations are required to insert post with concrete infill. Damage may be caused in several ways although the most common is during excavations for the support posts, which can sever structural roots, the larger, non woody roots that occur within several metres of the tree. To sever these can cause immediate stability and physiological issues and certainly provide entry points for decay organisms which later may become an issue affecting their stability. Refer to Method Statement- Boundary Fencing.

### Method Statement - Boundary Fencing

- 1) Where possible, excavations should not occur within the Mechanical Effective Root-plate Radius (MERR). The MERR is a radial measurement established during work undertaken by <sup>Claus</sup> Mattheck<sup>3</sup> and refers to the critical distances required to maintain the structural roots and stability of a tree. Structural roots differ from the finer feeding roots protected by the somewhat larger RPA. The MERR of any tree directly correlates to its trunk diameter when measured just above the root buttress flare.
- 2) Excavations for post holes should not occur within the MERR or exceed 200-mm in diameter, be cut cleanly with a posthole borer and must be carefully positioned. They should not be spaced any closer than 1 metre apart when working within the RPA
- 3) If working in the MERR is unavoidable, it may only proceed using hand tools and under the supervision of the PA and the agreement of the LPA and where the positioning of the fencepost is adjusted to avoid any large roots. These are often visible just along the surface close to the trunk and they should not be damaged during expletory works.
- 4) A posthole auger will be necessary to drive the postholes and care should be taken when using any mechanical driven rig within the RPA.
- 5) The auger operation should limit the diameter of the holes to 200-mm or below, with a minimum distance between the edge of each pile of 1000-mm where possible.
- 6) Auguring must avoid the Mechanically Effective Root-plate Radius (MERR) of any retained tree and these distances must be provided by the Arborist whilst on site.
- 7) The Tree Protective Barrier Fencing should be altered to accommodate the works immediately prior to the operation and reinstated immediately upon completion of the operation where it applies.

<sup>3</sup> Mattheck. C. & Breloer. H. The Body Language of Trees. A Handbook for Failure Analysis

- 8) Where using a rig, the auger operation should be carried out whilst on top of 'load spreaders' sufficient to support the weight of the plant to protect the RPA from compaction and the underlying roots from compressive injury, this protection should include tracking inwards and outwards from the RPA.
- 9) Consider the height of the Rig with regard to prevent damage to overhanging branches.
- 10) The augured excavated material shall be collected carefully and removed from the RPA.
- 11) Take precautions to prevent soil contamination, which may involve using a non-permeable sheet below the rig during its operation to prevent leaking fuel and hydraulic oil onto the soil.
- 12) Spill kits should be carried and in the event of any contamination, it shall be collected immediately and disposed of in a proper manner and the Arboriculturalist and Site Manager informed.
- 13) Apply concrete to 'non-permeable sleeved' augured holes to prevent leachates entering the soil and great care shall be taken not to spill and contaminate the soil.
- 14) The Project Arborist shall be informed of the dates of these operation.

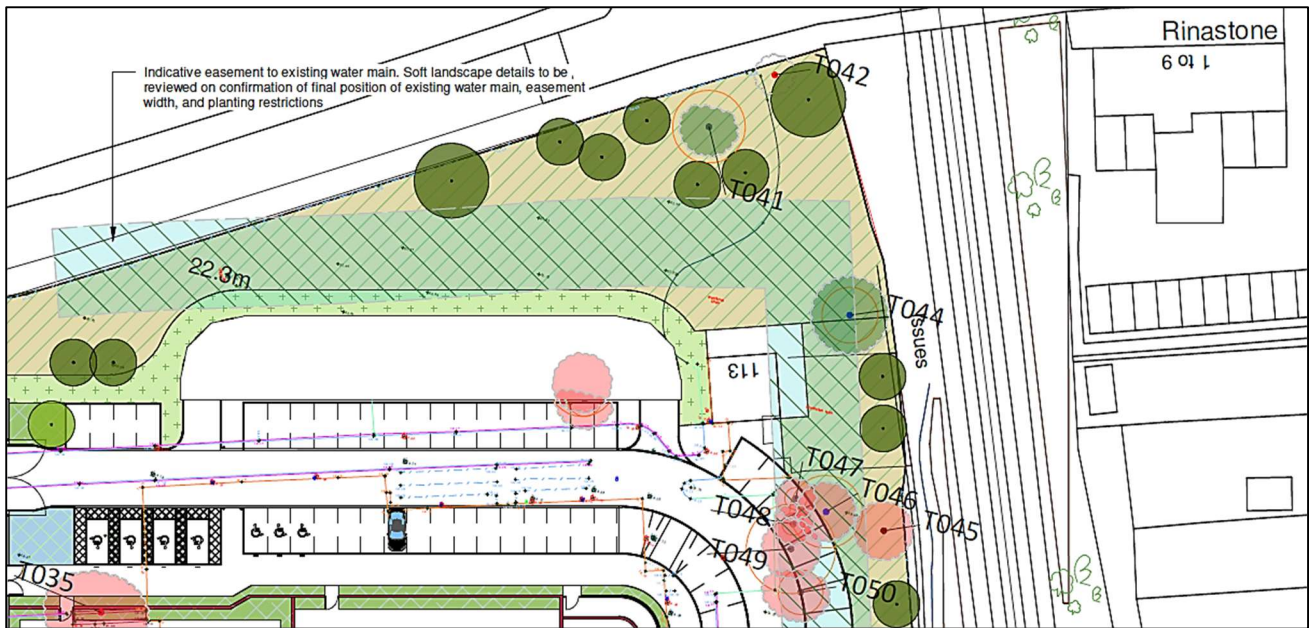


### EASEMENT FOR WATER MAIN

In the plan excerpt below, the mid green coloured strip with darker green cross lines represents an area where the water mains easement soft landscape details need to be confirmed in relation to tree T044. (Drawing FC- ASL- 000- ZZ- DR- L- 09004).

Planting into the RPAs of retained trees is damaging to their roots and therefore the area must be avoided.

Also, in the plan excerpt below, indicated with a beige colour, wild meadow seeding is proposed within the RPA of retained tree T041. Soil preparation required for seeding is also damaging to tree roots as it requires cultivation, which should be avoided.



### PREPARATORY WORKS FOR NEW LANDSCAPING

**NOTE** - The RPAs of retained trees should be excluded from landscaping activities.

Soil cultivation or top soiling over and above the root-plate of tree's is detrimental to their health even as little as 75-mm or above and where turf is added. Planting into the RPA is also damaging to roots.

#### Recommendations.

- Avoid planting or any landscape treatment within the RPA of retained trees within the site and those trees on neighbouring land.
- Amend landscape plan to remove planting from the RPA of trees.

Often following completion of construction works, soil management and grass seeding, or turfing is carried out and this can also be damaging to trees and therefore some general advice relating to landscaping near retained trees is provide...

Where turfing or grass seeding is proposed, the following method must be followed-

#### Method Statement - Turfing or Grass Seeding

1. Levels should not be altered.
2. Any existing ground vegetation should be killed using an appropriate herbicide.
3. Dead vegetation may be raked or skimmed off using hand tools.
4. A thin layer (not exceeding 20-mm) of sandy compost may be applied.
5. Seed or turf may be laid directly onto this.
6. Care must be taken to avoid compaction so ideally done during dryish conditions avoiding working on wet and saturated soils.
7. The use of fertilisers must be avoided.
8. Ground must be protected where wheelbarrows or mechanical barrows or small plant is used, working off load spreaders that are suitable to support and distribute the load.
9. Any works within the RPA must be supervised by the Project Arborist.

### Newly Planted Trees

The general treatment of areas around newly planted trees should allow for the adequate infiltration of water and free gas exchange, a reduction in water evaporation using mulches and the retention of an open soil structure to encourage root growth. Care should be taken to ensure that grass or weed growth does not compete with young root growth by intercepting available water supply. Care should also be taken to avoid the risk of damage to the stems of young trees from future strimming or mowing operations. An area with a radius of at least 500-mm from the stem of newly planted trees should therefore be kept free from competing vegetation by chemical weed control or by the more environmentally friendly option of mulching.

### Soil Compaction and Remediation Measures

Soil that has been compacted will not provide suitable conditions for the survival and growth of vegetation, whether existing or new, and is a common cause of post-construction tree loss on development sites. Compacted soil will adversely affect drainage, gas exchange, nutrient uptake, and organic content, and will seriously impede or restrict root growth. The risk of soil compaction is greatest in soils with significant clay content and in wet conditions. It can result from temporary or short-term loadings, such as the passage of a single vehicle, or from longer-term construction activities, including materials storage.

Soil compaction should be avoided in RPAs and areas where new planting or seeding is proposed which contain suitable ground conditions (fertile soil). Where soil compaction has occurred in RPAs or proposed planting areas, arboricultural advice should be taken before carrying out any remedial works. Remedial works may include sub-soil aeration using compressed air, and the addition of other materials, preferably of a bulky, organic nature (but excluding peat), to improve structure.

### Use of Mulch

Open soil and shrub planting areas around newly planted trees should be mulched to inhibit weed growth, reduce groundwater evaporation, resist, and mitigate soil compaction and reduce maintenance requirements, whilst allowing gas exchange and water penetration to roots. The mulch material should be weed-free, easy to apply, containable within the area of application and readily available. The choice of material will be informed by local availability of materials, site characteristics and aesthetic requirements. The mulch should be periodically replenished as it decomposes so that it does not become depleted, and ideally when the soil is warm and moist.

The materials that may be used for mulching include coarsely divided plant matter, such as well-composted wood chip, pulverized bark, leaf mould or green waste conforming to PAS 100, and these may be combined with well-rotted animal manure. If the sole intention is to conserve moisture, a layer of gravel or well-secured sheets of material such as permeable geotextile fabric may be used and may be covered for cosmetic purposes. Any such sheets should be maintained to avoid damage to the tree (e.g., by clogging, weed growth, restriction of air movement or constriction of the stem).

The mulched area should extend over as much of the root system as can be allowed by other site-usage requirements. The depth of organic mulch should not be so much as to inhibit aeration of the root system (normally no more than 100 mm). The area around the tree should be well-watered prior to the application of mulching material and the mulch should be periodically replenished as it decomposes, so that it does not become depleted.

Mulches should be kept away from direct contact with the bark of the stem, or of major roots since this might encourage infection by pathogens by maintaining wet conditions.

## WHETHER TREE LOSSES FROM THE DEVELOPMENT PROPOSAL CAN BE MITIGATED

Tree losses occurring as a direct result of this scheme are detailed. Mitigation is offered through the Landscape Proposal where considerable replacement tree planting is offered.

## IMPACT ASSESSMENT OF DEVELOPMENT ON TREES.

A realistic assessment of the probable impact of the proposed development on the trees and vice versa with due allowances for their future growth and maintenance requirements.

The trees are located around the site periphery so future growth is not seen as an issue.

Any potential damage to the proposed building as a consequence of the trees would consider (a) indirect damage through subsidence or heave (a matter related to geology), (b) Direct damage, physical damage caused by incremental growth, (c) The disruption to underground services, (d) Displacement, lifting or distortion, (e) The impact on branches on the super structure or (f) Structural failure of a tree.

- a) **Indirect Damage.** The likelihood of damage occurring to the structure as a result of ground movement occurring through soil swelling and shrinking is dependent on local geological conditions and the presence of shrinkable clay soils beneath the foundations. This report has not considered the soil type in any detail or undertaken a laboratory soil analysis as part of this brief. The potential for direct damage should be taken into consideration throughout the design and construction process. For guidance on avoiding indirect damage by trees to structures, the Design Engineers will be aware of the NHBC Chapter 4.2.
- b) **Direct Damage.** This can sometimes occur through the annual incremental growth of the trunk or root buttresses through a process called 'secondary thickening'. The greatest risk of direct damage occurs when trees are close to building structures and occur with the expanding growth of the main trunk and roots although any likelihood of such damage diminishes rapidly with distance. Table A.1 of BS:5837 is produced below and provides advice on minimum distances to avoid damage.
- c) **Displacement, lifting or distortion.** This can occur where lightweight structures are within influencing distance of trees and annual incremental growth of roots and buttresses can disturb paving, walls, porches, and garages. Advice in Table A1 should be followed (see below) when planting new trees or controlling seedling growth.

**BRITISH STANDARD** **BS 5837:2012**

Allowance needs to be made for the swaying of stem and branches during storm conditions. Branches which are liable to strike the structure need to be removed or pruned back to a suitable branching point as appropriate (see BS 3998:2010).

**Table A.1 Minimum distance between young trees or new planting and structure to avoid direct damage to a structure from future tree growth**

Type of structure	Minimum distance between young trees or new planting and structure, in metres (m)		
	Stem dia. <300 mm <sup>A)</sup>	Stem dia. 300 mm to 600 mm <sup>A)</sup>	Stem dia. >600 mm <sup>A)</sup>
Buildings and heavily loaded structures	—	0.5	1.2
Lightly loaded structures such as garages, porches etc.	—	0.7	1.5
Services			
< 1 m deep	0.5	1.5	3.0
> 1 m deep	—	1.0	2.0
Masonry boundary walls	—	1.0	2.0
In-situ concrete paths and drives	0.5	1.0	2.5
Paths and drives with flexible surfaces or paving slabs	0.7	1.5	3.0

<sup>A)</sup> Diameter of stem at 1.5 m above ground level at maturity

**A.1.3 Allowance for future growth**

Where the installation of paths or light structures such as walls is unavoidable near to trees, the design and construction specification needs to take account of future growth.

If it is necessary to build a wall or similar structure over a root greater than 50 mm diameter, provision for future diameter growth needs to be made by surrounding the root with uncompacted sharp sand, void-formers, or other flexible fill materials, and by laying an adequately reinforced lintel or raft over the surface.

- d) **The impact of branches on the super structure.** Where development occurs close to trees and branches interfere or have the ability to interfere at a later date due to their growth, can cause the LPA problems with repeated requests for trees to be trimmed. Here, the development appears to be mainly of sufficient distance away from any retained trees. Furthermore, woodland management operations will be required regularly and during these operations, problematic trees may be selected for removal to address any minor issues.
- e) **Wind Dynamics.** As far as wind dynamics are concerned, the following matters are noted. Air deflected over or around such solid structures will be locally accelerated to create turbulence. The proposed development is within influencing distance of the trees as buildings or solid structures can influence leeward wind patterns for a distance in excess of 30 times their height<sup>4</sup>, although the effects of the more damaging wind turbulence in respect of trees is much shorter than this with the more dramatic influence being at least twice the height of the structure. It is usually a problem where retained trees have thin stems without adequate stem taper, and which have usually resulted where they have developed at close spacing' s and under mass shelter and particularly where a number of those trees have been removed.
- f) **Large trees can sometimes cause apprehension to occupiers of nearby buildings especially during windy weather.** Whilst this is true in some instances, structural failure amongst trees is most common where a specimen is diseased or structurally defective or a stand is undermanaged. Well managed trees offer little risk to residences where under routine arboricultural inspections and providing any remedial works recommended during such an inspection are carried out by a competent tree surgeon.

<sup>4</sup> Patch.D. Trees, Shelter and Energy Conservation. Arboricultural Research and Information Note 145/ARB/98

g) **Leaves and fruits of some species may cause problems.**

The landscape design should look to use species that are free from aphids and large fruits in relation to car parks, roads and footpaths as the accumulation of honeydew may be damaging to vehicles and create slippery surfaces.

h) **The relationship of windows to trees which may obstruct light need to be considered.** This is not seen as an issue here as the development is not residential.

### **THE EFFECTS THAT DEVELOPMENT PROPOSALS MAY HAVE ON THE AMENITY VALUE OF THE TREES**

Relates to both trees on and near the site.

Tree loss of C Category trees is fairly substantial to support this current proposal. However, some design change could reduce that slightly. Tree loss is mainly of C Category trees, and these are considered of low value.

### **GENERAL MATTERS**

To prevent damage to the trees, including their roots, within the fenced area (RPA) there must be no...

- φ Alteration of ground levels, including soil stripping.
- φ Installation of drainage or services using conventional open trenching methods which would not be in accordance with BS:5837. (Any works should be in accordance with the National Joint Utilities NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees Volume 4)
- φ Excavation of any kind.
- φ Storage of any materials or equipment, even on a temporary basis.
- φ Storage of oil, bitumen, cement or other harmful materials, mixed or discharged within 12-m of the trunk of any retained tree and making further allowances for any slope of the ground so prevent running contamination. Phytotoxic materials would include any mineral oil, fuels, cement mortar washings concrete washings, mortar.
- φ Fires must not be lit beneath or within 12-m of any tree canopies.
- φ Site operations such as deliveries, site machines, crane jibs etc should be organised to avoid damaging the trunk or crown of trees. Where this conflict is unavoidable then facilitation pruning should be carried out in advance, rather than after damage has occurred. This may also be required to allow demolition operations.
- φ Mechanical cultivation of the soil as part of landscaping operations.

Planning of site operations should take sufficient account of wide loads, tall loads and plant with booms, jibs and counterweights (including drilling rigs), in order that they can operate without encountering the RPA, trunks stems or branches of any retained trees. Such contact can result in serious damage to the trees and might make their safe retention impossible. Consequently, any movement of plant or machinery in proximity to trees should be conducted under the supervision of a banksman, to ensure that adequate clearance from trees is always maintained. Access facilitation pruning should be undertaken where necessary to maintain this clearance if in accordance with good arboricultural practice (refer to notes below).

### **NOTES**

1. In most instances, Local Planning Authority consent for pruning will be required.
2. Fires on sites should be avoided.
3. Any materials whose accidental spillage would cause damage to a tree should be stored and handled well away from the outer edge of its RPA.

## **AUDITABLE SYSTEM OF ARBORICULTURAL SITE MONITORING, INCLUDING A SCHEDULE OF SPECIFIC SITE EVENTS REQUIRING INPUT OR SUPERVISION.**

Successfully retaining trees on any development site depends on several controls being in place. A determination and willingness by all parties is required but primarily the Site Manager will have overall responsibility to ensure that control measures are observed. Communication early in the procedure between the client, site manager, Arborist and Local Authority Tree Officer or other appointed staff, which is fundamental in maintaining a level of care.

The engagement of a Project Arborist is probably the single most essential component towards ensuring success. This should involve regular 'drop-in' visits by an appointed Arborist who will be responsible for monitoring tree protection measures and offer advice when needed.

A line of communications must be in place between Project Arboriculturalist, Site Manager, and Local Planning Authority Tree Officer as a minimum requirement. Details are provided below. Should any queries arise in relation to the protection of trees on this development site then please contact the Arborist on call, during normal office hours.

Such visits must be recorded to form an auditable trail and regular Reports submitted to the Local Planning Authority. The number of visits will be dependent on the type and density of the development and the matters requiring arboricultural input. The number of visits required may also be stated or altered by the LPA at any time during the permitted development.

### **SPECIFIC ARBORICULTURAL EVENTS**

- Tree felling
- Erection of Tree Protective Barrier Fencing
- Demolition of buildings or hard surfaces near or within RPAs
- Laying of Ground Protection
- Stem protection
- Working within any RPA
- Connection to incoming mains electricity
- Boundary treatments
- Landscape works
- Any other event that is not identified within this Report, but the PA deems necessary for the protection of retained trees in accordance with the planning conditions

### **SCHEDULE OF WATCHING BRIEF VISITS**

- The Project Arborist should attend site on a weekly basis for the first 2 months and thereafter reduced to once monthly or as otherwise directed by the LPA.
- Watching Brief Reports must be submitted to the LPA at the end of each month.
- The Report will include details of the visit, list any concerns, recommend remedial action to protect trees where necessary and will include photographs.
- The suitability of the root protection fencing will be assessed.
- The PA must supervise all approved works that occur within any RPA.
- The PA must supervise all those items listed as Site Specific, Arboricultural Events mentioned in Item 15 and receive advanced warning of the works so the PA may schedule a site visit.
- Any other event that is not identified within this Report, but the PA deems necessary for the protection of retained trees in accordance with the planning conditions must be adhered to.



## COMMUNICATIONS LIST

**Mr. Vaughan Lewis** (Lead Arboricultural Consultant)

Steve Ambler & Sons Tree Specialists Ltd

Email - [vaughan@steveamblytrees.com](mailto:vaughan@steveamblytrees.com)

Mobile - 07961322908

**Mr. Scott Ambler** (Project Arborist)

Steve Ambler & Sons Tree Specialists Ltd

Mobile – 0777 2998 9374

Email – [Scott@steveamblytrees.com](mailto:Scott@steveamblytrees.com)

**Mrs. Shona Carle** (Woodlands Officer)

Newport City Council

Environment & Economy Department

Civic Centre

Newport

NP20 4UR

Email - [shona.carle@newport.gov.uk](mailto:shona.carle@newport.gov.uk)

Telephone - 01633 232191

**Site Managers for ISG.**

Martin Cocks - [Martin.Cocks@isgltd.com](mailto:Martin.Cocks@isgltd.com)

Tom Hyett - [Tom.Hyett@isgltd.com](mailto:Tom.Hyett@isgltd.com)

## RECOMMENDATIONS

- Appoint a Project Arborist for the duration of the development to monitor and advise on tree protection and liaise with the Local Planning Authority.
- Any works within the RPA of any retained tree must be approved by the PA and LPA and follow an Arb Method Statement. Any tree works within any RPA not identified here must be brought to the attention of the PA at the earliest possible convenience.
- Design Recommendation – remove the need for cut or fill within the RPAs of retained trees. If this is not possible, affected trees should be shown as lost to the development. Neighbouring landowner to be informed where it involves the potential loss of their trees.
- Laying of any cables or other subterrain infrastructure within any RPA will require trenchless technology systems. Project Arborist to assess and advise once site mark out is complete.
- The connection to the incoming mains appears close to retained trees. PA to assess and advise once marked out on site.
- Avoid planting or any landscape treatment within the RPA of retained trees within the site and those trees on neighbouring land.
- Design Recommendation – Amend landscape plan to remove planting from within the RPA of trees.
- Use tree friendly engineering techniques in respect of the following – Boundary Fencing
- Arborist to be present and supervise the following works as identified –
  - Tree felling
  - Erection of Tree Protective Barrier Fencing
  - Laying of Ground Protection
  - Working with any RPA
  - Connection to incoming mains electricity supply
  - Boundary treatment work the erection of fencing
  - Landscape works
  - Removal of Tree Protective Barrier Fencing
- Re-inspect retained trees at the end of the construction phase. Enter retained and planted trees into an annual routine tree inspection programme.

## LEGAL CONSTRAINTS

### Tree Preservation Orders and Conservation Area Status in Wales

In Wales, the law on TPOs is in Part V111 of the Town and Country Planning Act 1990 Town and Country Planning (Trees) Regulations 1999. When any tree/s are protected by a TPO or are situated within a Conservation Area, it is an offence (1) cut down (2) uproot (3) top (4) lop (5) wilfully damage or (6) wilfully destruct a tree without the express written permission from the Local Planning Authority (LPA), there are exceptions. A LPA may grant permission, if considered reasonable following the submission of an application for consent to undertake the works, or where in accordance with an Approved Planning Application or under the exemptions within the Town and Country Planning Act 1990 of dead, dying, or dangerous. It is advisable to consult the LPA and an Arborist prior to conducting any tree works under these exemptions.

### Felling Licence

A Felling Licence may be required in certain felling operations, and these are administered by the Forestry Commission where more than five cubic metres of wood are felled in one calendar quarter and when selling more than two cubic metres. There are exceptions, and these are in the Forestry Act 1967 and Regulations made under this Act. Contravention of the felling licence controls can incur substantial penalties. Tree felling forming part of a Local Authority Planning Approval is exempt.

Tree work operations have the potential to impact on protected species, most notably birds and bats. **The Wildlife and Countryside Act 1981** is the primary legislation which protect birds in the UK and it is an offence, with certain exceptions, to intentionally kill, injure or take any wild bird, or intentionally take, damage or destroy the nest of any wild bird while it is in use or being built or take or destroy an egg of any wild bird. Certain species of bird are afforded additional protection, whereby it is an offence to intentionally or recklessly disturb any wild bird included on Schedule 1 of the Act, while it is nest building or at a nest containing eggs or young or disturb the dependent young of such a bird.

It is not an offence to fell trees during the bird nesting period (which is generally considered to be between mid-February and September inclusive) providing it is done so without breaching the legislation detailed above.

Caution must be aired if tree works are programmed during the nesting season as there is the potential for delay if nesting birds are found to be on site. Should nesting birds be present then all but essential works must be postponed. If in undertaking essential works a nest or nests are found to be present, then further advice must be sought from the statutory nature conservation authority, which in Wales is Natural Resources Wales and in England is Natural England, or from an appropriately qualified ecologist. The penalty for disturbing or destroying one bird or nest can be an unlimited fine and up to six months in prison, or both.

### Bats...Summary of Current Relevant Legislation

Bats are also generally associated with trees and can be impacted by tree work operations. There are some 17 species of bat which are known to breed in the British Isles, all are insectivorous and depend to some extent on habitat in which trees are a significant element. Bats are a protected species and are in decline both globally and nationally. Therefore, they are to be fully considered before any tree work commences and particularly if the trees are mature. All species of bats are afforded **full** protection under the **Conservation of Habitats and Species Regulations 2017 (as amended)** and **partial** protection under the **Wildlife and Countryside Act 1981 (as amended)**. It is an offence (with limited exceptions) to deliberately take, injure, or kill a bat, intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats, deliberately damage or destroy a place used by bats for breeding or resting (roosts) (even if bats are not occupying the roost at the time) or intentionally or recklessly obstruct access to a bat roost.

Therefore, bats are to be fully considered before any tree work commences and particularly if trees contain veteran features (which can occur in young trees as well as older trees). This can include all work on trees whether it is surgery, felling, the covering, or filling of cavities or the installation of rod braces and flexible cable braces. If a bat roost is known to be in any tree that is to be removed or worked on, or if any work is to take place adjacent to a known bat roost that may result in disturbance to that bat/s, then a license must be obtained from Natural Resources Wales or Natural England before work can take place.

Where there is the risk of a bat roosts being present, it is incumbent upon the owner or manager to commission a specialist bat survey to identify bat roosts before instructing tree surgery to commence. Failure to do so and in the event of breaching the legislation detailed above is an offence.

Maximum penalties for committing offences relating to bats or their roosts can amount to imprisonment for a term not exceeding six months or to fines of up to Level 5 on the standard scale under the Criminal Justice Act 1982/ 1991 (i.e., £5000 in April 2001) per roost or bat disturbed or killed, or to both.

NOTE - This is a simplified summary of the legal position relating to bats and birds and is intended for guidance purposes only. If further assistance is required, the primary legislation should be referred to. It may also be necessary to see legal advice or the advice of an appropriately qualified ecologist.

In the event of disturbing a roost site or injuring any bats is an offence. Maximum penalties for committing offences relating to bats or their roosts can amount to imprisonment for a term not exceeding six months or to fines of up to Level 5 on the standard scale under the Criminal Justice Act 1982/ 1991 (i.e., £5000 in April 2001) per roost or bat disturbed or killed, or to both.

### Statute and Common Law – for Tree Inspections.

A landowner or land manager should be aware that both statute and common law dictates regular inspections of trees on land in their control are necessary where such trees could cause injury or damage in the event they should fall or shed any parts. A person suitably qualified in arboriculture should undertake such routine inspections and any remedial tree works recommended should be carried out within the time constraints specified, to prevent injury or damage occurring. A landowner should retain records of all inspections and any remedial tree works that have resulted from such inspections. Arboricultural Association, the Malthouse, Stroud Green, Standish, Stonehouse, Gloucestershire, GL10 3DL. Telephone 01242 522152. [www.trees.org.uk](http://www.trees.org.uk) are able to provide advice on suitably qualified persons or indeed suitable qualifications a person should hold to undertake qualified inspections.

## LIMITATIONS OF THIS REPORT

It must be stressed that this report is a desktop, pre-development assessment and not a risk assessment or a detailed report on the health and condition of the trees. Tree/s should be subject to regular 'tree condition inspections' and a full tree condition inspection and appropriate management appraisal is strongly recommended and particularly on completion of any development.

The effect this new development may have on localised wind turbulence has not been assessed during this inspection. As trees grow, they respond and mechanically adapt to their surroundings and exposure limits. With the erection of dwellings in close proximity to existing trees, new turbulence is created. The author accepts no liabilities to any failure subsequent upon such new imposed, artificial conditions.

Unless stated in writing, the inspection shall not include any underground parts of the tree. It does not consider **indirect** damage resulting from the extraction of moisture from shrinkable clay soils by tree roots causing **subsidence** or by **heave** occurring through soil rewetting following removal of trees on this site. Such problems are almost entirely restricted to areas of shrinkable clay soils and as I have **not** considered a soil analysis as part of my present brief, this aspect is **not** addressed at this time.

Unless otherwise stated in writing and in the absence of altered circumstances, a report on the health and safety of a tree or trees cannot be relied on after a period of 12 months. Following such a period, a further inspection is required.

Further and more general report limitations are set out in the authors Terms and Conditions and copies are available upon request

## GLOSSARY OF TERMS

**Adventitious; Latent** or dormant bud on stem or root often invisible until stimulated into growth which occurs from an unusual place i.e. not a twig, leaf or bud.

**Anchorage;** in trees, the holding of the root system within the soil, involving the flow of forces from the stem through the branches of the root system to the cohesive root/soil interface.

**Arboricultural Implication Assessment (AIA)** study, undertaken by an arboriculturalist, to identify, evaluate and possibly mitigate the extent of direct and indirect impact on existing trees that may arise as a result of the implementation of the site layout.

**Arboricultural Method Statement;** methodology for the implementation of any aspects of development that has the potential to result in loss of or damage to a tree.

**Arboriculturalist;** person who has, through relevant education, training and experience, gained recognised qualifications and expertise in the management of trees generally and in relation to construction.

**Arboriculture;** the culture and management of trees as groups and individuals, primarily for amenity and other non-forestry purposes.

**Architecture;** in a tree, a term describing the pattern of branching of the crown or root system.

**Assessment;** in relation to tree hazards, the process of estimating the risk which a tree or group of trees poses to persons or property (THIS INVOLVES A VISUAL INSPECTION FOR DEFECTS AND CONTRIBUTORY SITE FACTORS, AND SOMETIMES ALSO A DETAILED INVESTIGATION OF SUSPECTED DEFECTS)

**Assym;** This abbreviation means...asymmetric...and refers to the tree having an asymmetric or unbalanced crown. This is usually preceded by a measurement in metres which provides the extent of crown asymmetry and is measured from the centre of the trunk. It may also have a correlation to the lever arm

**Bole;** (trunk) the main stem of a tree below its first major branch

**Branch;** a limb extending from the main stem or parent branch of a tree

**Buttress zone;** the region at the base of a tree where the major lateral roots join the stem, with buttress-like formations on the upper sides of the junctions

**Canopy;** the topmost layer of twigs and foliage in a woodland, tree or group of trees

**Construction Exclusion Zone;** area based on the RPA (meters as a radial measurement and sometimes a m<sup>2</sup>), identified by an Arboriculturalist, to be protected during development, including demolition and construction work, by use of barriers and/or ground protection fit for the purpose to ensure the successful long-term retention of a tree.

**Crown;** in arboriculture the main foliage-bearing portion of a tree containing the leaves and branches

**Defect;** in relation to tree hazards, any feature of a tree that detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment.

**Diameter (DBH)** The diameter for each tree is in millimetres based on the diameter or circumference of the trunk measured at a height of approximately 1.5 metres above ground level, unless otherwise stated. All measurements are approximate

**Dysfunction;** in woody tissues, the loss of physiological function, especially water conduction.

**Energy;** the capacity to do work (THROUGH PHOTOSYNTHESIS, GREEN PLANTS ABSORB ENERGY FROM SUNLIGHT AND STORE IT IN THE FORM OF CHEMICAL COMPOUNDS WHICH ARE USED IN ENERGY-DEPENDANT PROCESSES SUCH AS GROWTH)

**Failure;** in connection with tree hazards, a partial or total fracture within woody tissues or loss of cohesion between roots and soil. (IN TOTAL FAILURE THE AFFECTED PART SNAPS OR TEARS AWAY COMPLETELY. IN PARTIAL FAILURE, THERE IS A CRACK OR DEFORMATION WHICH RESULTS IN AN ALTERED DISTRIBUTION OF MECHANICAL STRESS)

**Group;** the term 'group' is intended to identify trees that form cohesive arboricultural features either aerodynamically (e.g., trees that provide companion shelter), visually (e.g., avenues or screens) or culturally including for biodiversity (e.g., parkland or wood pasture).

**Heave;** in relation to a shrinkable clay soil, expansion due to re-wetting, sometimes after the felling or root severance of a tree which was previously extracting moisture from the deeper layers; also, in relation to root growth, the lifting of pavements and other structures by radial expansion; also, in relation to tree stability, the lifting of one side of a wind-rocked root plate.

**Leader;** in a tree, a topmost shoot that has apical dominance.

**Preventive action;** in a tree hazard management, action that helps to prevent injury to persons or damage to property.

**Pruning:** the removal or cutting back of twigs, branches or roots; in some contexts, applying only to twigs or small branches only, but more often used to describe all kinds of work involving cutting.

**Pruning:** the removal or cutting back of twigs, branches or roots; in some contexts, applying only to twigs or small branches only, but more often used to describe all kinds of work involving cutting.

**Retained Tree:** a tree that has been considered suitable by an Arborist for retention and which during the design stage is selected for retention and incorporated within the development.

**Risk:** the likelihood of the potential harm from a particular hazard becoming actual harm.

**Root Protection Area (RPA):** layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form in m<sup>2</sup>. This is a protection area established around the base of each tree to prevent physical, chemical or compaction damage occurring. Protection to the RPA is achieved through the erection of fencing or other suitable barrier.

**Soil heave:** *see heave*

**Special Precaution Area;** this is an area, usually within the root protection area, where construction or other activity may be permitted but only under the direction of a 'Arboricultural Method Statement' and the supervision of an Arborist.

**Species** The species is the given name of the tree which is usually provided in both the common and scientific names.

**Subsidence:** in relation to branches of trees, a term that can be used to describe a progressive downward bending due to increasing weight.

**Subsidence:** in relation to soil or structures resting in or on soil, a sinking due to shrinkage when clay soils dry out, sometimes due to extraction of moisture by tree roots.

**Targets:** in a tree hazard assessment (and with somewhat incorrect terminology), persons or property or other things of value, which might be harmed by mechanical failure of the tree or by objects falling from it.

**Tree Constraint Plan (TCP);** plan prepared by an Arboriculturalist for the purpose of layout design showing the RPA and representing the effect that the mature height and spread of retained trees will have on layouts through shade dominance, etc.

**Tree Preservation Order:** in Great Britain, an order made by a local authority, whereby the authority's consent is generally required for the cutting down, topping or lopping of specified trees.

**Tree Protection Plan:** scale drawing prepared by an arboriculturalist showing the final layout proposals, tree retention and tree and landscape protection measures detailed within the arboricultural method statement (AMS), which can be shown graphically.

**Tree:** a woody plant, which typically has a single main stem and, in maturity, attains a height of at least four metres and a stem diameter at breast height of at least 75-mm.

**Trunk:** the single main stem of a tree.

**Vigour:** in tree assessment, an overall measure of the rate of shoot production, shoot extension or diameter growth (cf. vitality)

**Visual Tree Assessment (VTA):** in addition to the literal meaning, a system expounded by Mattheck & Breloer (1995) to aid the diagnosis of potential defects through visual signs and the application of mechanical criteria.

**Wind exposure:** the degree to which a tree or other object is exposed to wind, with regard both to duration and velocity.

**Wind pressure:** the force exerted by wind on a tree or other object.

**Wind snap:** the breaking of a tree stem by wind.

**Windthrow:** the blowing over of a tree at its roots.

## REFERENCES

British Standards Institute Publication 'Trees in Relation to Design, Demolition and Construction – Recommendations' 2012

British Standard Recommendations for Tree Work BS 3998; 2010

S. Ambler - Tree Survey, Tree Categorisation, and Tree Constraints Plan at Fairwater Western Campus May 2022 (22-046)

## REPORT LIMITATIONS

It must be stressed that this arboricultural impact assessment is not a risk assessment or a detailed report on the health and condition of the trees. It has been produced as a desktop review.

Every attempt has been made to provide a realistic and accurate assessment of the impact of the development on the trees. No liability can be accepted for any tree related issue or tree and building interactions in the absence of information or where information is unclear or misleading.

This Report is based on the tree circumstances and condition at the time of the original tree survey. It must be recognised that the circumstances may be altered radically over the course of time and any development process and that such changes cannot be accurately predicted. The report does not provide any specific long-term tree management recommendations.

The effect this new development may have on localised wind turbulence has not been assessed during this inspection. As trees grow, they respond and mechanically adapt to their surroundings and exposure limits. With the erection of dwellings in close proximity to existing trees, new turbulence is created. The author accepts no liabilities to any failure subsequent upon such new imposed, artificial conditions.

This Report does not consider **indirect** damage resulting from the extraction of moisture from shrinkable clay soils by tree roots causing **subsidence** or by **heave** occurring through soil rewetting following removal of trees on this site. Such problems are almost entirely restricted to areas of shrinkable clay soils and as I have **not** considered a soil analysis as part of my present brief, this aspect is **not** addressed at this time.

## LEGAL CONSTRAINTS

The legal constraints of any site should be considered in early planning and well before any work commences on site. Such legal constraints should be fully considered from the outset to avoid time delays. The legal constraints referred to here are general constraints relating to arboriculture only and not any other legal matter that may arise.

### Tree Preservation Orders and Conservation Area Status

The law on TPOs is in **Part V111 of the Town and Country Planning Act 1990 Town and Country Planning (Trees) Regulations 1999**. When any tree/s are protected by a TPO or are situated within a Conservation Area, it is an offence (1) cut down (2) uproot (3) top (4) lop (5) wilfully damage or (6) wilfully destruct a tree without the express written permission from the Local Planning Authority (LPA), there are exceptions. A LPA may grant permission if considered reasonable following the submission of an application for consent to undertake the works or where in accordance with an Approved Planning Application or under the exemptions within the Town and Country Planning Act 1990 of dead, dying, or dangerous. It is advisable to consult the LPA and an Arborist prior to conducting any tree works under these exemptions.

### Statute and Common Law.

A landowner or land manger should be aware that both statute and common law dictates regular inspections of trees on land in their control are necessary where such trees could cause injury or damage in the event they should fall or shed any parts. A person suitably qualified in arboriculture should undertake such routine inspections and any remedial tree works recommended should be carried out within the time constraints specified, to prevent injury or damage occurring. A landowner should retain records of all inspections and any remedial tree works that have resulted from such inspections. The **Arboricultural Association** at Ampfield House, Ampfield, near Romsey, Hampshire. Telephone 01794 368717 are able to provide advice on suitably qualified persons or indeed suitable qualifications a person should hold to undertake qualified inspections.

## GLOSSARY OF TERMS

**Anchorage;** in trees, the holding of the root system within the soil, involving the flow of forces from the stem through the branches of the root system to the cohesive root/soil interface.

**Assessment:** in relation to tree hazards, the process of estimating the risk which a tree or group of trees poses to persons or property (THIS INVOLVES A VISUAL INSPECTION FOR DEFECTS AND CONTRIBUTORY SITE FACTORS, AND SOMETIMES ALSO A DETAILED INVESTIGATION OF SUSPECTED DEFECTS)

**Assym;** This abbreviation means...asymmetric...and refers to the tree having an asymmetric or unbalanced crown. This is usually preceded by a measurement in metres which provides the extent of crown asymmetry and is measured from the centre of the trunk. It may also have a correlation to the lever arm

**Arboriculturist:** person who has, through relevant education, training, and experience, gained recognised qualifications and expertise in the management of trees generally and in relation to construction.

**Architecture:** in a tree, a term describing the pattern of branching of the crown or root system.

**Arboricultural Implication Assessment (AIA) study,** undertaken by an Arboriculturist, to identify, evaluate and possibly mitigate the extent of direct and indirect impact on existing trees that may arise because of the implementation of the site layout.

**Arboricultural Method Statement:** methodology for the implementation of any aspects of development that has the potential to result in loss of or damage to a tree.

**Assessment:** in relation to tree hazards, the process of estimating the risk which a tree or group of trees poses to persons or property (THIS INVOLVES A VISUAL INSPECTION FOR DEFECTS AND CONTRIBUTORY SITE FACTORS, AND SOMETIMES ALSO A DETAILED INVESTIGATION OF SUSPECTED DEFECTS)

**Bole (trunk):** the main stem of a tree below its first major branch

**Branch:** a limb extending from the main stem or parent branch of a tree

**Canopy:** the topmost layer of twigs and foliage in a woodland, tree, or group of trees

**Construction Exclusion Zone:** area based on the RPA (meters as a radial measurement and sometimes a m<sup>2</sup>), identified by an Arboriculturist, to be protected during development, including demolition and construction work, by use of barriers and/or ground protection fit for the purpose to ensure the successful long-term retention of a tree.

**Crown:** in arboriculture the main foliage-bearing portion of a tree containing the leaves and branches

**Heave:** in relation to a shrinkable clay soil, expansion due to re-wetting, sometimes after the felling or root severance of a tree which was previously extracting moisture from the deeper layers; also, in relation to root growth, the lifting of pavements and other structures by radial expansion; also, in relation to tree stability, the lifting of one side of a wind-rocked root plate.

**Pruning:** the removal or cutting back of twigs, branches, or roots; in some contexts, applying only to twigs or small branches only, but more often used to describe all kinds of work involving cutting.

**Retained Tree:** a tree that has been considered suitable by an Arborist for retention and which during the design stage is selected for retention and incorporated within the development.

**Risk:** the likelihood of the potential harm from a particular hazard becoming actual harm.

**Root Protection Area (RPA);** layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form in m<sup>2</sup>

**Soil heave:** *see heave*

**Subsidence:** in relation to soil or structures resting in or on soil, a sinking due to shrinkage when clay soils dry out, sometimes due to extraction of moisture by tree roots.

**Subsidence:** in relation to branches of trees, a term that can be used to describe a progressive downward bending due to increasing weight.

**Tree:** a woody plant, which typically has a single main stem and, in maturity, attains a height of at least four metres and a stem diameter at breast height of at least 75-mm.

**Tree Constraint Plan (TCP):** plan prepared by an Arboriculturist for the purpose of layout design showing the RPA and representing the effect that the mature height and spread of retained trees will have on layouts through shade dominance, etc.

**Tree Preservation Order:** in Great Britain, an order made by a local authority, whereby the authority's consent is generally required for the cutting down, topping, or lopping of specified trees.

**Tree Protection Plan:** scale drawing prepared by an Arboriculturist showing the final layout proposals, tree retention and tree and landscape protection measures detailed within the arboricultural method statement (AMS), which can be shown graphically.

**Trunk:** the single main stem of a tree.

**Visual Tree Assessment (VTA):** in addition to the literal meaning, a system expounded by Mattheck & Breloer (1995) to aid the diagnosis of potential defects through visual signs and the application of mechanical criteria.

## APPENDICES

**FLOW DIAGRAM – PLANNING FOR TREES IN DEVELOPMENT.**

**BS 5837:2012**

**BRITISH STANDARD**

**Annex B  
(informative)**

**Trees and the planning system**

Under the UK planning system, local authorities have a statutory duty to consider the protection and planting of trees when granting planning permission for proposed development. The potential effect of development on trees, whether statutorily protected (e.g. by a tree preservation order or by their inclusion within a conservation area) or not, is a material consideration that is taken into account in dealing with planning applications. Where trees are statutorily protected, it is important to contact the local planning authority and follow the appropriate procedures before undertaking any works that might affect the protected trees.

The nature and level of detail of information required to enable a local planning authority to properly consider the implications and effects of development proposals varies between stages and in relation to what is proposed. Table B.1 provides advice to both developers and local authorities on an appropriate amount of information. The term “minimum detail” is intended to reflect information that local authorities are expected to seek, whilst the term “additional information” identifies further details that might reasonably be sought, especially where any construction is proposed within the RPA.

**Table B.1 Delivery of tree-related information into the planning system**

Stage of process	Minimum detail	Additional information
Pre-application	Tree survey	Tree retention/removal plan (draft)
Planning application	Tree survey (in the absence of pre-application discussions) Tree retention/removal plan (finalized) Retained trees and RPAs shown on proposed layout Strategic hard and soft landscape design, including species and location of new tree planting Arboricultural impact assessment	Existing and proposed finished levels Tree protection plan Arboricultural method statement – heads of terms Details for all special engineering within the RPA and other relevant construction details
Reserved matters/ planning conditions	Alignment of utility apparatus (including drainage), where outside the RPA or where installed using a trenchless method Dimensioned tree protection plan Arboricultural method statement – detailed Schedule of works to retained trees, e.g. access facilitation pruning Detailed hard and soft landscape design	Arboricultural site monitoring schedule Tree and landscape management plan Post-construction remedial works Landscape maintenance schedule





**TREE PROTECTION PLAN (ALSO SHOWING TREES FOR REMOVAL)**

