

wardell-armstrong.com

ENERGY AND CLIMATE CHANGE  
ENVIRONMENT AND SUSTAINABILITY  
INFRASTRUCTURE AND UTILITIES  
LAND AND PROPERTY  
MINING AND MINERAL PROCESSING  
MINERAL ESTATES  
WASTE RESOURCE MANAGEMENT



**CARDIFF COUNCIL**

**NEW PENN, CARDIFF**

**ARBORICULTURAL CONSTRAINTS & OPPORTUNITIES REPORT**

**APRIL 2022**

**DATE ISSUED:** 13/04/2022  
**JOB NUMBER:** CA12409  
**REPORT NUMBER:** 002  
**VERSION:** V1.0  
**STATUS:** FINAL

**CARDIFF COUNCIL**

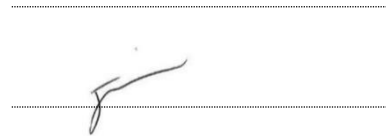
**NEW PENN, CARDIFF**

**ARBORICULTURAL CONSTRAINTS & OPPORTUNITIES REPORT**

**APRIL 2022**

**PREPARED BY:**

Jenna Young Arboriculturist



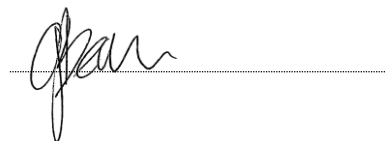
**REVIEWED BY:**

Moray Simpson Associate Director -  
Arboriculture



**APPROVED BY:**

Chris Bean Technical Director



*This report has been prepared by Wardell Armstrong LLP with all reasonable skill, care and diligence, within the terms of the Contract with the Client. The report is confidential to the Client and Wardell Armstrong LLP accepts no responsibility of whatever nature to third parties to whom this report may be made known.*

*No part of this document may be reproduced without the prior written approval of Wardell Armstrong LLP.*



## CONTENTS

1	INTRODUCTION .....	1
1.1	Brief .....	1
1.2	Site Context .....	1
1.3	Development Proposal .....	1
1.4	Trees & the Planning Process .....	1
1.5	Statutory Legal Protection .....	7
1.6	Protected Species .....	9
2	THE SURVEY .....	10
2.1	Desk Survey – Legal Constraints .....	10
2.2	Field Survey .....	11
3	SURVEY RESULTS AND EVALUATION .....	14
3.1	Tree Population .....	14
4	SUMMARY AND RECOMMENDATIONS .....	17
5	REFERENCES .....	18

## APPENDICES

Appendix 1	Tree Survey Schedule
Appendix 2	Survey Methodology
Appendix 3	Tree Categorisation Method
Appendix 4	General Tree Constraints
Appendix 5	Report Limitations
Appendix 6	Tree Protection Fencing
Appendix 7	Tree Protection Signage
Appendix 8	Glossary of Terms Used in Arboriculture

<b>DRAWINGS</b>	<b>TITLE</b>	<b>SCALE</b>
CA12409-001 Rev. A	Tree Locations and Constraints Plan	A3@1:500

## **1 INTRODUCTION**

### **1.1 Brief**

1.1.1 Wardell Armstrong LLP (WA) was commissioned by Cardiff Council to undertake a BS 5937 arboricultural constraints and opportunities survey at the closed New Penn Public House, Brynfedw, Llanedeyrn, Cardiff site which is located at approximate OS grid Reference ST 19882 80527.

1.1.2 The purpose of this report is to provide an objective assessment of the constraints and opportunities posed by trees and hedgerows that are located on land on and immediately adjacent to the site. The identified tree constraints can be used by architects, masterplanners and highway engineers to assist in masterplanning / layout design of the proposed development ensuring that it is sustainable in the long term by ensuring that important trees are retained and incorporated into the proposed development design, where possible. This approach accords with best practice as set out in British Standard (BS) 5837:2012, which is a planning policy requirement of most Local Planning Authorities (LPAs) in the UK.

1.1.3 The arboricultural survey included a desktop review and a Site visit. The survey followed the methodology as set out in BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations (The British Standards Institution, 2012).

1.1.4 The position of trees and hedgerows is based on the Topographical Survey Plan prepared by UtiliMap Land & Utility Surveyors Ref. ACAD-NEW-PENN-PUB-LLANEDERYN-CARDIFF and dated 08/10/2021.

### **1.2 Site Context**

1.2.1 The site comprises of an extensive two storey building, hardstanding, amenity grassland and a number of trees, including woodland on the periphery of the site. The site is within a residential area.

### **1.3 Development Proposal**

1.3.1 The proposed development is for a residential housing scheme.

### **1.4 Trees & the Planning Process**

1.4.1 Under s197 of the Town & Country Planning Act 1990, LPAs have a legal duty to consider the protection of trees and the planting of new trees on development Sites when granting planning permission. LPAs must also consider the potential effects,

whether detrimental or positive, that proposed developments will have on retained trees, and the effect that these trees will have on the users of the development.

1.4.2 The Site is located within the administrative boundaries of the Local Planning Authority, Cardiff Council (CC). CC's adopted Local Plan, the *Cardiff Local Development Plan* includes the following relevant policies:

**KP15: CLIMATE CHANGE**

*'To mitigate against the effects of climate change and adapt to its impacts, development proposals should take into account the following factors:*

- i. Reducing carbon emissions;*
- ii. Protecting and increasing carbon sinks;*
- iii. Adapting to the implications of climate change at both a strategic and detailed design level;*
- iv. Promoting energy efficiency and increasing the supply renewable energy; and*
- v. Avoiding areas susceptible to flood risk in the first instance in accordance with the sequential approach set out in national guidance; and*
- vi. Preventing development that increases flood risk.*

*4.168 Carbon sinks act as a means of off-setting carbon emissions by natural means. Trees and soils act as substantial reservoirs of carbon, sequestering atmospheric carbon, and contributing substantially to soils, which accrete carbon faster under tree cover than other forms of vegetation. This stored carbon will usually be emitted as a greenhouse gas if trees are removed or damaged, or soils removed, covered or disturbed (by compaction or contamination) during the construction process.*

*4.169 As far as practicable, trees should be retained and protected, and land kept as functioning vegetated soil open to the fall of organic matter, with new trees and shrubs provided by developers wherever possible. Where trees and shrubs cannot be surrounded by open soil, hard surfaces should not be used unless there is an overriding need, and areas that are not needed for pedestrian or vehicle use should be retained for soft landscape. Cardiff's open spaces, trees and soils play a crucial role in mitigating the effects of climate change at the local level. Open vegetated soils absorb rainfall and runoff'.*

### **KP16: GREEN INFRASTRUCTURE**

*‘Cardiff’s distinctive natural heritage provides a network of green infrastructure which will be protected, enhanced and managed to ensure the integrity and connectivity of this multi-functional green resource is maintained. Protection and conservation of natural heritage network needs to be reconciled with the benefits of development. Proposed development should therefore demonstrate how green infrastructure has been considered and integrated into the proposals. If development results in overall loss of green infrastructure, appropriate compensation will be required. Natural heritage assets are key to Cardiff’s character, value, distinctiveness and sense of place. They include the City’s:*

*iv. Biodiversity interests including designated sites and the connectivity of priority habitats and species (EN5, EN6 and EN7);*

*v. Trees (including street trees), woodlands and hedgerows (EN8);*

*vii. Parks, playing fields, green play areas and open spaces (C4 and C5); and*

*viii. Growing spaces including allotments, community orchards and larger gardens’.*

### **EN8: TREES, WOODLANDS AND HEDGEROWS**

*‘Development will not be permitted that would cause unacceptable harm to trees, woodlands and hedgerows of significant public amenity, natural or cultural heritage value, or that contribute significantly to mitigating the effects of climate change.*

*5.132 Trees, woodlands and hedgerows offer multiple benefits, including visual amenity, defining a sense of place, providing places for relaxation and recreation, habitats for wildlife, improved health and wellbeing and mitigating the effects of climate change. To maintain these benefits, the protection and enhancement of a sustainable urban forest is critical. A sustainable urban forest adapted to meet the challenges of climate change and exotic pest and disease outbreaks will contain a diverse age range and species mix of trees, though large, long-lived trees will be favoured for protection and planting due to the increased benefits they offer in mitigating the effects of climate change.*

*5.133 In order to determine unacceptable harm to trees, woodland and hedgerows within or bounding a site, applicants must assess them in accordance with the current British Standard 5837. The assessment must inform design, and in considering hedgerows, regard will be given to their landscape, historical and ecological value, as well as their function as boundaries. Further guidance and advice will be contained in SPG relating to Trees and development.*

*5.134 The value of trees, woodlands and hedgerows in sequestering carbon and mitigating the effects of climate change will be ascertained partly by the British Standard 5837 assessment, and partly by how effectively they are integrated into a sustainable urban forest as defined in paragraph 5.132.*

*5.135 To prevent damage to trees, woodlands and hedgerows during development, schemes of protection will normally be required, in accordance with the current British Standard 5837.*

*5.136 Trees are the largest and longest living organisms in Cardiff. When considering developments that may affect them, regard will be given to potential short and long-term impacts. Where trees are lost, new planting will be sought that is provided with sufficient usable soil volume, aeration and irrigation to ensure healthy long-term growth. Although younger trees are more easily replaced, the Council will seek to ensure that sufficient young trees survive to maturity, having regard to the number of developments that may occur during their natural lifespan. Proposals that create spaces for larger tree species to grow to maturity will be favoured over proposals for scattered smaller trees.*

*5.137 Ancient woodlands are irreplaceable habitats of high biodiversity value which will be protected from development that would result in significant damage. Veteran trees and ancient hedgerows cannot be recreated and developments will be expected to retain them. Where appropriate, Tree Preservation Orders will be served to protect important amenity trees from removal or harm. The amenity value of trees will be assessed in accordance with government guidance and nationally recognised systems of amenity evaluation’.*

1.4.3 National Planning Policy in Wales is detailed in the Planning Policy Wales (PPW). The last revised version of the PPW, Edition 11 (February 2021) includes the following guidance on trees and hedgerows, with Section 6.4.26 giving specific weight to the retention and protection of ancient woodland, veteran and ancient trees:

***Section 6.2.1:** Green infrastructure is the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect places. Component elements of green infrastructure can function at different scales. At the landscape scale green infrastructure can comprise entire ecosystems such as wetlands, waterways and mountain ranges. At a local scale, it might comprise parks, fields, public rights of way, allotments, cemeteries and gardens. At smaller scales, individual urban interventions such as street trees, hedgerows, roadside verges, and green roofs/walls can all contribute to green infrastructure networks.*

***Section 6.4.24:** Trees, woodlands, copses and hedgerows are of great importance for biodiversity. They are important connecting habitats for resilient ecological networks and make a valuable wider contribution to landscape character, sense of place, air quality, recreation and local climate moderation. They also play a vital role in tackling the climate emergency by locking up carbon, and can provide shade and shelter, a sustainable energy source and building materials. The particular role, siting and design requirements of urban trees in providing health and well-being benefits to communities, now and in the future should be promoted as part of plan making and decision taking.*

***Section 6.4.25:** Planning authorities should protect trees, hedgerows, groups of trees and areas of woodland where they have ecological value, contribute to the character or amenity of a particular locality, or perform a beneficial and identified green infrastructure function. Planning authorities should consider the importance of native woodland and valued trees, and should have regard, where appropriate, to local authority tree strategies or SPG. Permanent removal of woodland should only be permitted where it would achieve significant and clearly defined public benefits. Where woodland or trees are removed as part of a proposed scheme, developers will be expected to provide compensatory planting.*

***Policy 6.4.26** Ancient woodland and semi-natural woodlands and individual ancient, veteran and heritage trees are irreplaceable natural resources, and have significant landscape, biodiversity and cultural value. Such trees and woodlands should be afforded protection from development which would result in their loss or deterioration unless there are significant and clearly defined public benefits; this protection should*



*prevent potentially damaging operations and their unnecessary loss. In the case of a site recorded on the Ancient Woodland Inventory, authorities should consider the advice of NRW. Planning authorities should also have regard to the Ancient Tree Inventory.*

**Policy 6.4.27** *The protection and planting of trees and hedgerows should be delivered, where appropriate, through locally-specific strategies and policies, through imposing conditions when granting planning permission, and/or by making Tree Preservation Orders (TPOs). They should also be incorporated into Green Infrastructure Assessments and plans’.*

- 1.4.4 Table B.1 (See Figure 1) taken from British Standard 5837:2012 gives guidance on the level of information required by LPAs in order to make an informed decision on the impact of development on trees. Where trees are present on proposed development Sites, highlighting arboricultural constraints at an early stage in the design process is crucial to ensuring the successful retention and subsequent integration of good quality trees into the design layout.
- 1.4.5 When the tree constraints have been considered and a detailed site layout designed, specific site layout impacts on the trees proposed to be retained (and on those adjacent to the site) are considered via an Arboricultural Impact Assessment (AIA) and Tree Protection Plan (TPP). When the development design is finalised, taking into account the arboricultural impacts, it is usual for the LPA to condition the protection of the trees on site during the construction phase. This can be achieved via the production of an Arboricultural Method Statement (AMS) and TPP. These will detail how trees will be protected and include a methodology for any works within tree RPAs in order to ensure that tree protection conditions can be discharged. These steps accord with the recommendations in BS 5837:2012 as detailed in Table B.1 as shown in Figure 1.
- 1.4.6 This Arboricultural Constraints & Opportunities Report and accompanying Tree Location & Constraints Plan fulfils the requirement to present the existing arboricultural constraints for the Site.

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

Figure 1: BS 5837:2012 Table B.1.

## 1.5 Statutory Legal Protection

1.5.1 The two main sources of protection afforded to trees are i) Conservation Area (CA) control and ii) Tree Preservation Orders (TPO).

1.5.2 Trees within Conservation Areas are protected under the Town & Country Planning Act 1990 (as amended), which affords blanket<sup>1</sup> protection to trees with a stem diameter of 75 mm and above when measured at 1.5 m from ground level.

1.5.3 Trees may also be protected in Wales by the TPO under the Town and Country Planning (Trees) Regulations 1999.

1.5.4 It is a criminal offence to carry out any unauthorised works to trees that are either protected by a TPO or located within a CA, including:

- Cutting down, uprooting or wilfully destroying a tree, or wilfully damaging, topping or lopping a tree in such a manner as to be likely to destroy it;
- Any works that contravene the provisions of a TPO; and/or
- Any works in contravention to the regulations.

<sup>1</sup> Protection is similar to that afforded to trees protected by TPO.

- 1.5.5 Penalties for non-compliance of a TPO and/or CA can be unlimited, if tried in a County Court, and up to £20,000 if tried in a Magistrates Court. Note, if the Local Planning Authority decides to also prosecute under the Proceeds of Crime Act 2002 in addition to prosecuting under the Town and Country Planning Act 1990, the fine can be unlimited in a Magistrates court.
- 1.5.6 It should be noted that the felling of trees prior to receiving full planning permission may also require a felling licence under the Forestry Act 1967. This requires that any persons wishing to fell 5 m<sup>3</sup> of trees within any of the following three-month periods (January to March, April to June, July to September and October to December) applies for a felling licence from Natural Resources Wales. There are a number of exemptions to this requirement, with some of the more relevant exemptions including:
- Pruning trees;
  - Felling fruit trees or trees growing in a garden, orchard, churchyard or designated public open space;
  - Felling trees that, when measured at a height of 1.3 m from the ground, have a diameter of 8 cm or less;
  - Felling trees immediately required for the purpose of carrying out development authorised by full planning permission;
  - Felling necessary for the prevention of danger or the prevention or abatement of a nuisance<sup>2</sup> (e.g. threat/danger to a third party); and
  - Felling necessary to prevent the spread of a quarantine pest or disease.
- 1.5.7 Other legislation that affords a lesser or indirect level of protection to trees includes the following:
- The Wildlife & Countryside Act 1981 (as amended);
  - Conservation of Habitats and Species (amendment) Regulations 2017; and
  - Hedgerow Regulations (1997).
- 1.5.8 All of the above provide for the identification and safeguarding of flora and fauna that may be found in association with trees and woodlands.

---

<sup>2</sup> NB - This only applies when a real and/or immediate danger is present.

## 1.6 Protected Species

- 1.6.1 Although this is not an assessment of the impacts of development upon ecology, it should be noted that trees can contain features (i.e. cavities, cracks, splits and loose bark) that may support such fauna species as bats and birds.
- 1.6.2 Bats and their roosts are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended), the Conservation of Habitats & Species Regulations 2017 (as amended) and are also listed under Section 41 of the Natural Environment & Rural Communities (NERC) Act 2006.
- 1.6.3 Trees provide potential nesting habitat for birds and all UK birds and their active nests are protected under the Wildlife & Countryside Act 1981 (as amended). Bird species that are listed on Schedule 1 of The Act are also protected against disturbance of their active nest(s).
- 1.6.4 The UK government has advised that following the exit of the UK from the EU, the EU Withdrawal Act 2018 will ensure that all existing EU environmental law will continue to operate in UK law<sup>3</sup>. The UK government and devolved administrations will “amend current legislation to correct references to EU legislation [...] and ensure we meet international agreement obligations”.

---

<sup>3</sup> DEFRA (2018) Upholding Environmental Standards if there’s no Brexit Deal [online]. Accessed 12.04.2019. Available at: <https://www.gov.uk/government/publications/upholding-environmental-standards-if-theres-no-brexit-deal/upholding-environmental-standards-if-theres-no-brexit-deal>

## 2 THE SURVEY

### 2.1 Desk Survey – Legal Constraints

- 2.1.1 WA contacted CC by email on 8<sup>th</sup> April 2022 to ascertain whether any trees within and/or immediately adjacent to the site are protected by TPO and/or CA status.
- 2.1.2 CC replied by email on 8<sup>th</sup> April 2022 confirming that there are no trees on Site and immediately adjacent to the site protected by TPO and that the site is not within a CA at this time. However, it should be noted that this situation can change as LPA's can serve TPOs at any time. Therefore, it is advisable to check the protected status of these trees again prior to undertaking any planned works.
- 2.1.1 WA also conducted a search using the Woodland Trust's Ancient Tree Inventory<sup>4</sup> and Lle Geo Portal Map Application<sup>5</sup> on 11<sup>th</sup> April 2022 to ascertain whether any recorded veteran or ancient trees or ancient woodlands are located within influencing distance of the Site.
- 2.1.2 The Ancient Tree Inventory does not currently contain any records of veteran or ancient trees within the site or within influencing distance of the site. However, the Ancient Tree Inventory is a record of trees found by professionals and enthusiasts and submitted to the Woodland Trust for inclusion on the database and therefore is not a complete record and cannot be used to rule out the presence of veteran trees outside site boundaries.
- 2.1.3 The Lle Geo Portal Map Application listed no ancient woodlands within the Site, however, there is a designated 'restored ancient woodland' located immediately to the south of the site. This is identified as 'W1' in this report and on the Tree Location and Constraints Plan Ref. CA12409-001 Rev. A. It appears that there is no national guidance or policy in Wales on buffer zones for ancient woodland, as there is in England. However, the Cardiff Green Infrastructure SPG 'Trees and Development Technical Guidance Note'<sup>6</sup> states that *'Where development adjoins woodland, an ecotone should be allowed to develop, or planted, to provide a gradual transition between forest trees such as oak, ash and beech, woodland edge trees such as birch, hawthorn, rowan and willow, woodland edge shrubs such as blackthorn, dogwood, elder, hazel and wayfaring tree, herbaceous vegetation and gardens. An appropriate*

---

<sup>4</sup> <https://ati.woodlandtrust.org.uk/>

<sup>5</sup> <http://lle.gov.wales/catalogue/item/AncientWoodlandInventory2021/?lang=en>

<sup>6</sup> <https://www.cardiff.gov.uk/ENG/resident/Planning/Planning-Policy/Supplementary-Planning-Guidance/Documents/Consultation/Trees%20and%20Development%20TGN%20English%20June%202017.pdf>

*default width for a woodland ecotone is 15m, measured from the centre of the trunk of the largest forest tree species growing closest to the edge of the existing woodland. This figure represents a typical mature height for a woodland edge tree species and the capping figure for RPAs calculated in accordance with BS 5837:2012. Greater widths may be necessary for ecologically or structurally vulnerable woodlands. Reductions in the default width are only likely to be acceptable where assessment of the woodland demonstrates satisfactorily that the development and woodland will co-exist harmoniously’.*

## 2.2 Field Survey

- 2.2.1 The arboricultural survey was undertaken by Jenna Young (WA Arboriculturist) on 24<sup>th</sup> March 2022 using the methodology set out in BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations (see Appendices 2 and 3).
- 2.2.2 Weather conditions during the survey were dry and sunny.
- 2.2.3 Each individual surveyed tree (T), tree group (G), woodland (W) and hedgerow (H) was given a sequential reference number.
- 2.2.4 The surveyed trees and hedgerows were then identified by their common and/or Latin name. Where a number of surveyed trees formed a cohesive feature, such as groups, woodland compartments or whole woodlands, they were recorded, assessed and plotted as groups (G) or as woodland (W). Whilst not every tree within groups are surveyed, a representative sample of the largest edge trees were measured in order to be able to plot the group or woodlands crown spreads and RPAs. Where detailed plans show development proposed within a group or woodland, all trees within influencing distance of the development proposals are recorded, plotted and assessed.
- 2.2.5 A series of measurements were taken where appropriate, including:
- Stem diameters measured at 1.5 m above ground level with a standard diameter measuring tape to enable RPAs to be calculated;
  - Tree height, crown height and height of first significant branch in the crown above ground level measured using a TruPulse 360R laser to inform on ground clearance, crown/stem ratio and shading; and
  - Crown (branch) spreads measured with a TruPulse 360R at the four cardinal points (i.e. north, east, south and west) to enable an accurate representation of the crowns to be plotted on the TPP.

2.2.6 A description of the life stage of each surveyed tree is identified as follows:

- Young – Newly planted trees and self-seeded trees;
- Semi-mature – Large nursery stock that can be newly planted or self-seeded trees still in the early stages of establishment;
- Early mature – Trees in the first third of their life cycle which is characterised by their quickness of growth and subsequently significant increase in size;
- Mature – Trees in the second third of their life cycle, characterised by reaching their ultimate size and slowing of annual incremental growth;
- Late mature – Trees in the final third of their life cycle, often characterised by showing signs of decline; and
- Veteran – Trees that show ancient tree characteristics irrespective of their age, such as crown retrenchment and decaying wood habitat.

2.2.7 An assessment of each tree's physiological and structural condition is identified as G (good), F (fair), P (poor) or D (dead).

2.2.8 An estimated remaining contribution in years within the context of the current site usage was identified as <10, 10+, 20+ or 40+.

2.2.9 The trees were then classified in accordance with the BS5837:2012 tree quality assessment categories 'A', 'B', 'C' and 'U' (see category criteria and grading within Appendix 3). 'A' and 'B' category trees are considered as 'high' and 'moderate' quality, respectively, and are considered as a constraint to development. As such, these trees should be retained and afforded appropriate protection during development. 'C' category trees are considered to be of 'lower' quality due to their condition or 'lower' amenity value and are, therefore not usually considered a constraint to development. 'U' category trees are those in such a 'poor' condition that they cannot usually be retained within the current site context for longer than ten years. It should be noted that in some cases, category 'U' trees may have valuable habitat/ecological value despite being in poor condition. In such cases, where it is safe to do so, these trees may be recommended for retention and/or pruning works. Where relevant, we will bring such trees to your attention. Where trees are located outside of the red and blue line site boundaries, irrespective of their BS 5837 categorisation, these should be considered as a constraint during the Site layout design process and protected during construction, as such trees are not within the control of the site owner.

- 2.2.10 Root Protection Areas (RPAs) are calculated for individual trees utilising the methodology set out in BS 5837:2012, which is calculated by multiplying the stem diameter (measured at 1.5 m from ground level) by twelve for single-stemmed trees and a variant on this for multi-stemmed trees. For surveys in England (and outside England where it is a Local Planning Policy requirement), individual veteran trees are given a standard BS 5837 RPA and also a secondary veteran tree RPA, to accord with government's standing advice 'Ancient woodland, ancient trees and veteran trees: protecting them from development'<sup>7</sup> and local planning policy, which is based on a calculation of fifteen times the stem diameter or five metres beyond the crown spread, whichever is greater.
- 2.2.11 For tree groups, woodlands and hedgerows, the calculated RPAs are based on a set distance from the canopy edge of the tree groups, woodlands and hedgerows. This calculation is based on the largest stem diameter of the trees on the edge of the tree groups and woodlands and the crown spread measurement for these edge trees. A variant of the tree group and woodland RPA calculation is used to calculate hedgerow RPAs, with the calculation based on the largest stem diameter of the hedgerow woody plants and the hedgerow width.
- 2.2.12 Further details for each tree, and the groups of trees surveyed are set out in the Tree Survey Schedule (see Appendix 1) and on the Tree Location & Constraints Plan Ref. CA12409-001 Rev. A.

---

<sup>7</sup> <https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences>



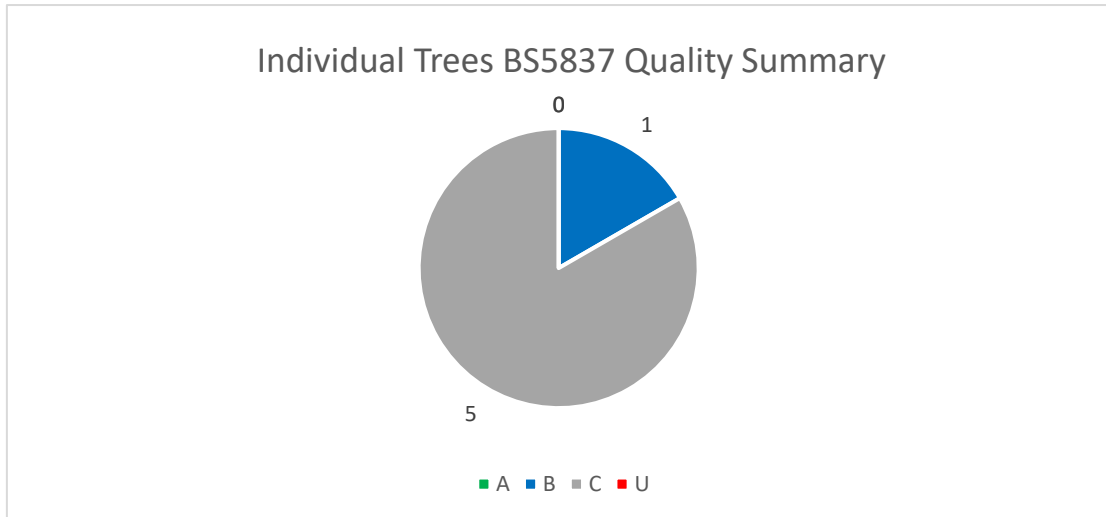
### 3 SURVEY RESULTS AND EVALUATION

#### 3.1 Tree Population

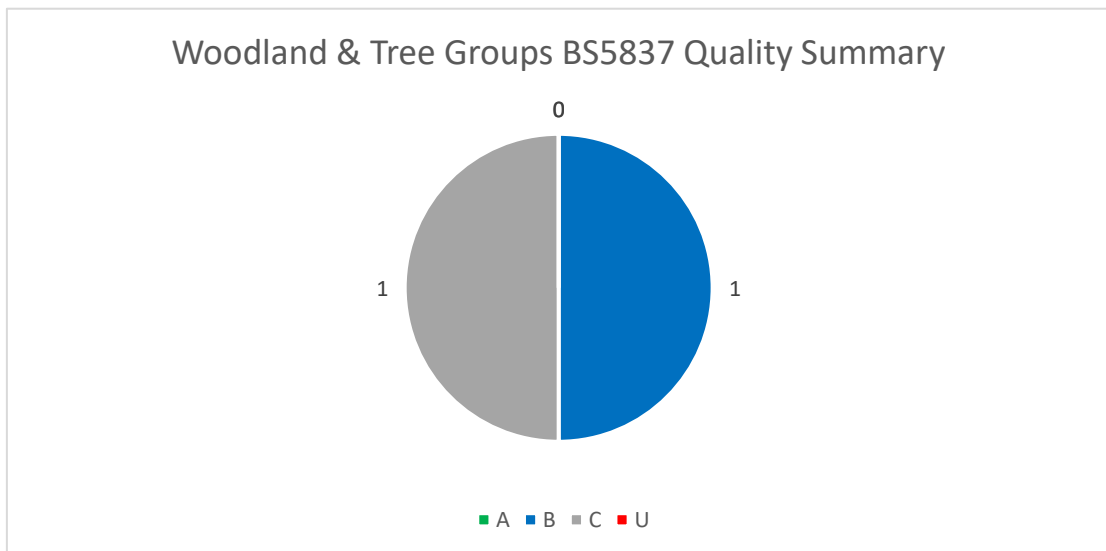
- 3.1.1 Six individual trees, one tree group, one woodland and one hedge located on and immediately adjacent to the site were assessed and surveyed.
- 3.1.2 The survey revealed that there is one category 'B' quality and five category 'C' individual trees located on and immediately adjacent to the site.
- 3.1.3 In terms of the surveyed tree groups and woodlands, the woodland (W1) was classified as category 'B' quality and the tree group (G1) was classified category 'C' quality.
- 3.1.4 A detailed description of all trees, tree groups, woodlands and hedges and recommended works can be found in the Tree Survey Schedule in Appendix 1. Tables 1 and 2 below summarises the BS 5837 quality grading of the trees found on site, with these figures represented in graph format in Figures 2 and 3.

Table 1: Individual Trees Quality Assessment Summary				
Tree Quality	A	B	C	U
Individual Trees Identification	None	T5	T1, T2, T3, T4, T6	None
<b>Total</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>0</b>

Table 2: Tree Groups & Woodlands Quality Assessment Summary				
Tree Quality	A	B	C	U
Tree Groups & Woodland Identification	None	W1	G1	None
<b>Total</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>

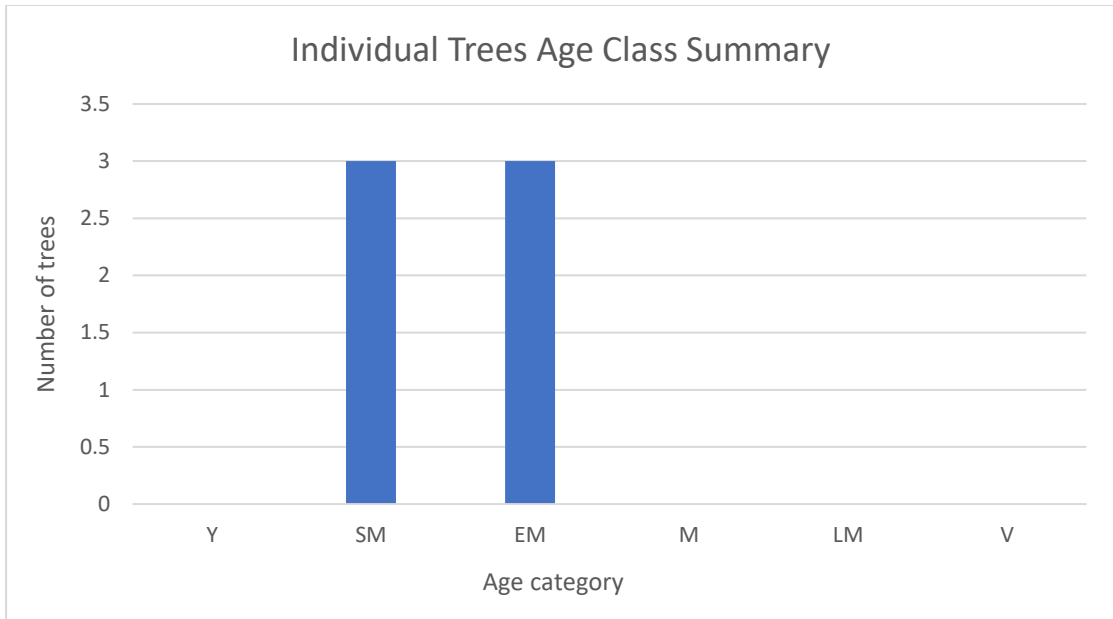


**Figure 2: Individual Trees Quality Summary**



**Figure 3: Tree Groups & Woodland Quality Summary**

3.1.5 An assessment of the age class of the individual tree population on Site, reveals that the population is made up of mix of 50% semi-mature and 50% early mature trees. A summary of the age class assessment for individual trees is shown in the graph below in Figure 4.



**Figure 4: Individual trees age class assessment summary**

## **4 SUMMARY AND RECOMMENDATIONS**

- 4.1.1 The initial BS 5837:2012 tree survey was undertaken by a WA Arboriculturist on 24<sup>th</sup> March 2022, with the results of this informing this report and associated Tree Location & Constraints Plan Ref. CA12409-001 Rev. A.
- 4.1.2 There are no trees on site or immediately adjacent to the site protected by TPO and the site is not within or immediately adjacent to a Conservation Area.
- 4.1.3 There are no ancient or veteran trees on the site or within influencing distance of the site. Immediately to the south of the site is a listed 'restored ancient woodland' and the LPAs ecotone requirements for this should be noted.
- 4.1.4 The next stage in the process is to utilise the arboricultural constraints and opportunities information to inform detailed site layout planning for the site.
- 4.1.5 If the proposed development is approved by the LPA, retained trees will need to be protected when the proposed development is constructed, with tree protection fencing as per the recommendations set out in BS 5837:2012. An example of the type of tree protection fencing recommended by the Standard is provided within Appendix 6 and an example of the type of signage required is provided within Appendix 7.
- 4.1.6 Where there are impacts within retained tree and hedgerow RPAs, mitigation measures will be required. An AMS can provide full mitigation details and specifications, which if required can be conditioned by the LPA.

## 5 REFERENCES

British Standard, BS 3998:2010 Tree work. Recommendations. (The British Standards Institution, 2010).

British Standard, BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. (The British Standards Institution, 2012).

NJUG Volume 4 - Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees (Issue 2:16th November 2007).

Quantified Tree Risk Assessment User Manual, (QTRA User\_Manual\_V5.1.4\_2015\_01). (Incorporating extracts).

Ministry of Housing, Communities and Local Government (2014) Tree Preservation Orders and Trees in Conservation Areas.

<https://www.gov.uk/guidance/tree-preservation-orders-and-trees-in-conservation-areas>

Forestry Commission (2007) Tree Felling – Getting Permission.

Claus Mattheck (2007) Updated field guide for Visual Tree Assessment.

Forestry Commission & Natural England (Updated 4<sup>th</sup> January 2018) Ancient Woodland and Veteran Trees: Protecting them from Development – Guidance.

<https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences#veteran-trees>

**Appendix 1**  
**Tree Survey Schedule**

Location: New Penn, Cardiff (Job. No. CA12409)

Surveyor: Jenna Young  
Weather: Dry and sunny



Estimated Stem Diameters & Other Measurements highlighted in this colour

Survey Date: 24th March 2022

Item type: T (tree), G (group), H (hedge), W (woodland)	Tree/ Group Ref. No.	Botanical Name	Height(m)	Crown Clearance (m) & compass direction	Crown Spread (m)				Stem Diameter @ 1.5m (mm)				Number of stems	Age Class: Y (Young), SM (Semi-Mature), EM (Early-Mature), M (Mature), LM (Late-mature), V (Veteran)	Condition		Estimated Remaining Contribution: (<10, 10+, 20+, 40+)	BS5837 Categorisation Grading		Comments	Preliminary management recommendations/ further works	Bat potential: L (Likely) U (Unlikely)	BS 5837 Root Protection Area (m²)	BS 5837 Root Protection Radius (m)	Veteran Tree Root Protection Radius (m)
					North	East	South	West							Physiological Condition: G (Good), F (Fair), P (Poor), D (Dead)	Structural Condition: G (Good), F (Fair), P (Poor)		Sub Category							
T	1	Ash	8	1.5 E	2	4	3	1.5	120	150			2	SM	F	F	10+	C	1	Likely self seeded tree. Small tree with a low amenity value.	None required.	U	17	2.3	N/A
T	2	Grey Alder	7	2 S	2	3	2.5	2	100				1	SM	G	G	40+	C	1	Likely self seeded tree. Small tree with a low amenity value.	None required.	U	4.5	1.2	N/A
T	3	Ash	11.5	3 S	5	5.5	3.5	5	340				1	EM	F	F	20+	C	2	Large partially occluded wound (500 x 150mm) on eastern side of stem base, with sapwood exposed. However, solid sounding. Exposed roots around base. Girdling root on west side.	None required.	U	52	4.1	N/A
T	4	Sycamore	11	2 N	3.5	3.5	1.5	1.5	230				1	SM	F	F	40+	C	2	Previous wounding at 0.5 m from ground level on eastern side of stem, now occluded. Girdling roots visible on western side.	None required.	U	24	2.8	N/A
T	5	Norway Maple	9		4	5	4.5	4.5	360				1	EM	G	G	40+	B	2	Girdling roots visible around stem base. Exposed roots with previous machine damage visible on western side of tree. Crown encroaching into road.	Prune to achieve 5.2 m clearance over adjacent road within 6 months.	U	59	4.3	N/A

T	6	Ash	15.5	4 W	4.5	5	5	4.5	435					1	EM	F	G	10+	C	2	Epicormic shoots throughout crown. Exposed roots with machine damage on southern side of stem. Dieback throughout crown, which could be possibly attributed to ash dieback disease.	Re-inspect for ash dieback disease in the summer 2022.	U	86	5.2	N/A
G	1	Cherry, Norway maple	15	2	Plotted with topographical mapping and GPS				390					1	EM	F	F	40+	C	2	Roadside group of trees, with branch stubs from previous pruning. Moderate deadwood in crowns. Old festooned lighting cables hanging from crowns. Surface girdling roots on maples. Crowns encroaching into road	Prune to achieve 5.2 m clearance over adjacent road within 6 months.	U	To canopy edge		N/A
H	1	Berberis	2.5	0	Plotted with topographical mapping and GPS				75					1	EM	G	G	20+			Unmanaged hedge.	None required.	U	To canopy edge		N/A
W	1	Ash, sycamore	22.5	0	Plotted with topographical mapping and GPS				740					1	M	G	G	40+	B	2,3	Small woodland area, ivy on many stems.	Prune to achieve 2.5m clearance over footpath and 2m clearance from edge of the adjacent building within 6 months. If the building is removed, pruning back of the trees from the building may not be required.	U	0.9 m from canopy edge		N/A



## **Appendix 2**

### **Survey Methodology**

## **Appendix 2: Survey Methodology**

The following features of each tree, group of trees or woodland have been recorded in the Arboricultural Data Sheets:

- Species includes common names.
- Height measured in metres from the stem base. Where the ground has a significant slope, the higher ground is selected.
- Crown height is measured in metres and is an indication of the average height at which the main crown begins.
- Stem diameter is measured in millimetres at 1.5m above the adjacent ground level (upslope on sloping ground).
- Crown spread is measured in metres and taken at the four cardinal points to derive an accurate representation of the crown.
- Age class of the tree is described as young, semi-mature, early mature, late-mature, mature or veteran.
- Physiological condition is classed as good, fair, poor, or dead. This is an indication of the health of the tree and takes into account vitality, presence of disease and dieback.
- Structural condition is classed as good, fair or poor. This is an indication of the structural integrity of the tree and takes into account significant wounds, decay and quality of branch junctions.
- Life expectancy is classed as: less than 10 years (<10), at least 10 years (10+), at least twenty years (20+) or at least 40 years (40+). This is an indication of the number of years before the removal of the tree is likely to be required.
- Comments include a brief description of the tree with comments on the form, vitality, health and any significant defects that may be present.

### **Appendix 3**

### **Tree Categorisation Method**

## Appendix 3: Tree Categorisation Method

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan
<b>Trees unsuitable for retention</b> (see Note)		
<b>Category U</b> 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	<ul style="list-style-type: none"> <li>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)</li> <li>Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</li> <li>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</li> </ul> <p><i>NOTE</i> Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</p>	See Table 2
	<b>1 Mainly arboricultural qualities</b>	<b>2 Mainly landscape qualities</b>
		<b>3 Mainly cultural values, including conservation</b>
<b>Trees to be considered for retention</b>		
<b>Category A</b> <b>Trees of high quality</b> 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
<b>Category B</b> <b>Trees of moderate quality</b> 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
<b>Category C</b> <b>Trees of low quality</b> 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 with material conservation or other cultural value
		Trees with no material conservation or other cultural value
		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

A single tree, group or woodland can come under one or more sub-headings. This does not confer on it a higher value than a tree with a single value, for the purposes of this report.

## **Appendix 4**

### **General Tree Constraints**

#### Appendix 4: General Tree Constraints

- Trees impose a constraint to development in a variety of ways. These principally include their rooting areas, referred to as Root Protection Areas (RPAs), their current and future crown spread, and their species characteristics (e.g. branch and fruit drop, production of 'honey dew', density of foliage etc). Where located on shrinkable clay soils, trees can also contribute to subsidence damage to buildings.
- Consideration should be given during the design stage to any incompatibilities between the design and tree retention. These include (but are not limited to) the effects on the amenity value provided by existing trees, working space required during construction, infrastructure/utility requirements, highway visibility requirements and foundation design to prevent the effects of subsidence.
- The RPA is calculated using the tree's diameter at 1.5m and represents the minimum area which should be left undisturbed around each retained tree to enable its survival following development.
- Tree root morphology is influenced by many factors including, but not limited to; past land use, the presence of roads, structures and underground services, drainage and soils. Any of these factors may result in non-uniform root growth and therefore result in an RPA represented as a polygon RPA that reflects suitable protection of the root system.
- The majority of tree roots are generally found within the top 600mm of soil, depending on soil types and profiles. Any disturbance or sudden changes to the rooting environment can result in damage being caused to roots and alterations to the roots physiological ability to absorb water, nutrients and undertake gaseous exchange.
- Where alterations have been made within the trees' rooting environment, the damage can often be observed within the crown of the trees, reduced vitality and increased deadwood production. Trees are likely to decline progressively, or in some circumstances may become a hazard where stability and structural integrity has been compromised by Site operations.
- The RPA must be protected by the installation of tree protection fencing prior to the commencement of development work on Site. The fencing provides a physical barrier that is secured, to prohibit activities considered detrimental to the retention of healthy trees (e.g. excavations, soil stripping, discharge of substances harmful to trees, storage of materials, fires). In addition to this, it may be necessary to install specialist temporary

ground protection which enables access within the RPA, without causing long-term detriment to the health of the tree/s.

- No traditional construction works should take place within the RPA of retained trees. However, in some circumstances and where there is an overriding requirement for construction and the retention of trees, it may be appropriate to employ techniques and use materials that allow trees to be retained, whilst enabling the construction. For hard surfacing, such as drives, roads and footways, utilising no-dig construction techniques and using three-dimensional geogrids and permeable wearing course materials may be appropriate. For built structures within RPAs, the use of pile and above ground level beam foundations and/or cantilevered engineering solutions can enable structures to be constructed within RPAs. The project arboriculturist should be consulted on the appropriateness of building within retained tree RPAs, as this is not appropriate for all trees and soil types.
- Where aerial parts of the tree crowns extend beyond the edge of the RPA, consideration should be given to protection of these parts, allowing for protection during development processes including working space. It may be appropriate to consider pruning of aerial parts to allow construction clearances and future nuisance abatement, this however must be considered by the project arboriculturist and the LPA. Where development proposals identify a need for working within the RPA/crown spread of retained trees and it can be demonstrated that retained trees remain viable, then it is important that the project arboriculturist is contacted to advise and prepare an AMS and identify appropriate stages of supervision.

## **Appendix 5**

### **Report Limitations**



## Appendix 5: Report Limitations

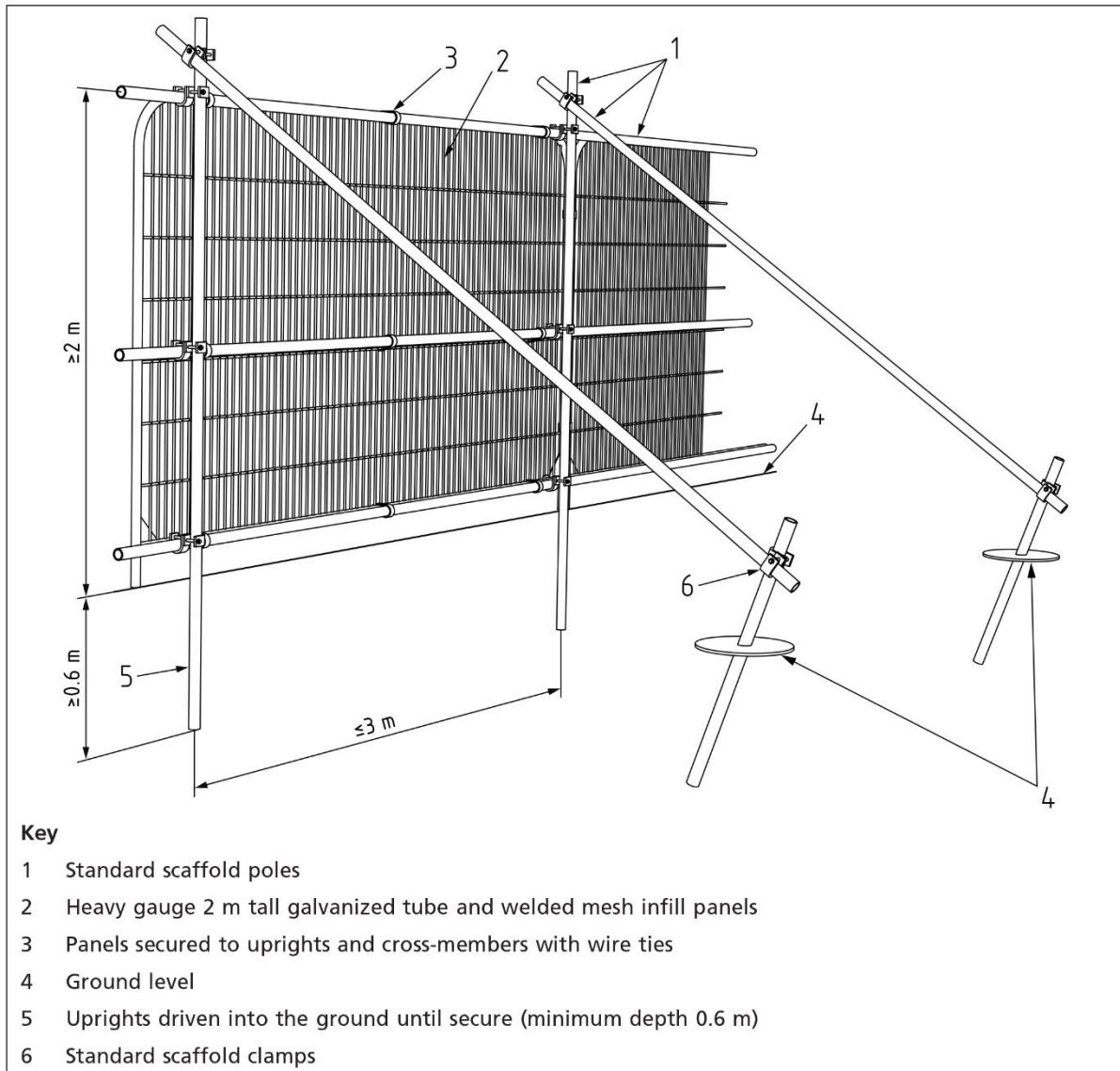
- Trees are influenced by a variety of environmental variables, which can affect the health of trees causing biomechanical and physiological changes. All comments made on tree health reflects their physical condition at the time of the survey. Due to the changeable nature of trees and other site/environmental conditions, which may influence trees, the preliminary management recommendations/ further works for the surveyed trees undertaken, which can be found in Appendix 1 of this report, are only valid for a period of 12 months from the date of the Site survey (24<sup>th</sup> March 2022). These recommendations relate specifically to the general maintenance of tree health and safety and do not affect the implications of this Arboricultural Impact Assessment and therefore, the results of the survey remain valid beyond 24<sup>th</sup> March 2023.
- This Constraints and Opportunities report and the associated TCLP is based on a topographical survey plan supplied by the client. Where tree stem locations are not shown on the topographical survey, these are plotted using GPS plotting and/ or the utilisation of site features to manually plot the tree stem locations and canopy spreads for tree groups. Aerial photography is also utilised to plot tree group canopy spreads, where utilisation of GPS is not feasible. These methods provide a good representation of the surveyed trees; however, please note that the GPS used is not sub-metre accurate. WA cannot be held responsible for inaccurate tree locations, where trees are not shown on the topographical survey plan supplied to us by the client.
- Although comments and recommendations on the safety of particular trees may have been made, this survey is not a Tree Risk Management Survey and thus should not be treated as such. All trees were surveyed from ground level only and in a solely visual nature. However, where trees have been identified as presenting an imminent safety risk due to structural defects, this has been brought to the attention of the client and treated as a separate matter. Should trees require further detailed assessment (decay detection, aerial inspections) and do not present an imminent safety risk, the information will be detailed within the survey schedules.
- Any management recommendations have been made in accordance with BS3998: 2010 Tree Works – Recommendations; and/or industry best practice. Works have been recommended in accordance with any statutory obligations on the landowners or occupiers.

- 
- This survey did not include an ecological survey of vegetation or habitat areas. Any ecological issues incidentally observed during the survey are reported on in the tree schedule.
  - For the purpose of this report no samples were obtained from Site for analysis or any other reason.
  - The survey did not include soil sampling to determine whether the soil is shrinkable. Such analysis should be carried out by a specialist to ensure building foundations are adequate in accordance with current National House Building Council Guidelines (NHBC).

## **Appendix 6**

### **Tree Protection Fencing**

## Appendix 6: Tree Protection Fencing



## **Appendix 7**

### **Tree Protection Signage**

## Appendix 7: Tree Protection Signage



**Appendix 8**  
**Glossary of Common Terms Used in Arboriculture**

## Appendix 8: Glossary of Common Terms Used in Arboriculture

<b>Abscission.</b> The shedding of a leaf or other short-lived part of a woody plant.
<b>Abiotic.</b> Pertaining to non-living agent's e.g. environmental factors.
<b>Absorptive Roots.</b> Non-woody short-lived roots, generally having a diameter less than one millimetre, the primary function of which is the uptake of water and nutrients.
<b>Access Facilitation Pruning.</b> One off pruning operation to provide access for development operation. Pruning that will not be detrimental to trees health or amenity.
<b>Arboricultural Method Statement (AMS).</b> A methodology for the implementation of development where encroachment within the RPA has the potential to cause damage or loss of retained trees.
<b>Arboriculturist.</b> Someone who through relevant training and experience has gained knowledge in the expertise of trees.
<b>Adaptive Growth.</b> The process by where wood formation rates increasing in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium.
<b>Adaptive Roots.</b> The adaptation of existing roots; or a production of new roots in response to damage or decay.
<b>Adventitious Buds, Roots, Shoots.</b> Which grow in other than primary apical control.
<b>Anchorage.</b> The process in which a tree uses its roots system to support itself within the soil structure.
<b>Ancient:</b> A tree that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species.
<b>Arisings.</b> Parts of the tree that has been removed for disposal, branches, leaves, roots etc.
<b>Canker.</b> Area of dead cambium killed by overlying pathogenic tissues.
<b>Cavity.</b> A hole in the woody structure of the tree; often caused through decay.
<b>Cleaning Out.</b> The removal of dead, diseased crossing branches, damaged branches and alien structures.
<b>Competent Person.</b> Person with training and experience in accordance with the proposed matter being addressed, having an understanding of a particular matter being approached.
<b>Condition.</b> An indication of the physiological vitality of a tree, but not the stability of a tree.
<b>Construction.</b> A Site based operation that has the potential to affect retained trees.
<b>Construction Exclusion Zone.</b> An area based on the RPA from which construction activity is prohibited.
<b>Coppicing.</b> Removal of all aerial parts of the tree leaving a stump for regeneration of new shoot.
<b>Crown/Canopy.</b> The parts of the tree that supports the leaves.
<b>Crown Lifting.</b> The removal of limbs and small branches to a specified height above ground level.
<b>Crown Thinning.</b> The removal of a proportion of secondary branch growth throughout the crown to produce an even density well balanced crown structure.
<b>Crown Reduction/Reshaping.</b> Removal in the height to a specified description to maintain a flowing crown structure.
<b>Deadwood.</b> Non-functional branches which no longer support natural growing conditions of the tree but may be beneficial for the support of habitats and species, possibly including rare saproxylic invertebrates. Thus, may also be referred to as 'Decaying Wood Habitat' or 'Dysfunctional wood'. Size ranges for deadwood referred to in this report and/or Appendix 1: - Small (<75 mm diameter), Medium (76 – 150 mm), Large (151-



300) mm and Very large >301 mm. For some species such as oak etc, the risk of deadwood falling from the tree can be lesser than for other species, due to the variety of wood strengths of different tree species.
<b>Defect.</b> Any area of the tree that no longer has an optimal mechanical uniformity of stress. Defects may or may not affect the long-term retention of the tree(s), depending upon severity, the likelihood of the defect(s) failing and the location of the tree(s) (Target).
<b>Dieback.</b> Death of woody parts of the tree starting at distal ends of the tree.
<b>Disease.</b> Damage occurring to living organisms as a result of pathenogenic micro-organisms.
<b>Distal.</b> Furthest distance away from the main body of the tree.
<b>Dysfunction.</b> In woody tissues, the loss of physiological function, especially water conduction, in sapwood.
<b>Epicormic Growth.</b> Growth from dormant or adventitious buds, not developing from the first shoot.
<b>Girdling Roots.</b> A circling root which constricts the stem or roots, with the potential to cause death and the restriction of flow within the phloem.
<b>Heartwood.</b> Dysfunctional xylem which no longer has conductive properties, but which has become an integral structural part of the tree.
<b>Heave.</b> The swelling of shrinkable clay soils, often when vegetation has been removed allowing soil rehydration to develop, with the potential for listing structures (e.g. walls).
<b>Included Bark/Acute Forks.</b> Face to face contact of bark usually at fork unions, or branch unions.
<b>Lopping/Topping.</b> A term used to describe the removal of large sized branches
<b>Monolith.</b> Removing some or most of the trees crown and sometimes the upper stem, in order to retain as much of the tree as standing deadwood habitat for ecological reasons.
<b>Pathogen.</b> A micro-organism that causes disease within another organism.
<b>Phytotoxic.</b> Toxic to plants.
<b>Pollarding.</b> The removal of the tree canopy to produce knuckles where new growth develops and is removed cyclically usually performed on young trees.
<b>Pruning.</b> Selective removal of parts of the tree to achieve a desired outcome.
<b>Root Protection Area(RPA).</b> An area around a tree identified by multiplying the stem diameter at 1.5 m from ground level by 12 to produce a radial area or rooting volume around a tree to be protected Ref. BS 5837: 2012.
<b>Service.</b> Any above and below ground structure or apparatus for utility provision.
<b>Size of part.</b> Relating to risk assessments, identifying the size of the hazard, or parts of a tree which may cause harm if failure occurs.
<b>Stem(s).</b> The main structure from the ground up supporting the crown.
<b>Stress.</b> In plants, the physiological depletion as a result of environmental influences.
<b>Structure.</b> A manufactured object, such as building, roads, path, wall or excavated structures.
<b>Structural Roots.</b> The primary larger diameter roots which hold and support the aerial parts of the tree.
<b>Subsidence.</b> The shrinkage of soil through the absorption of water via vegetation and the sinking effects on surrounding architectural structures.
<b>Targets.</b> In risk assessment, persons or property at risk of harm as a result of a hazard (falling tree, branch, etc.).

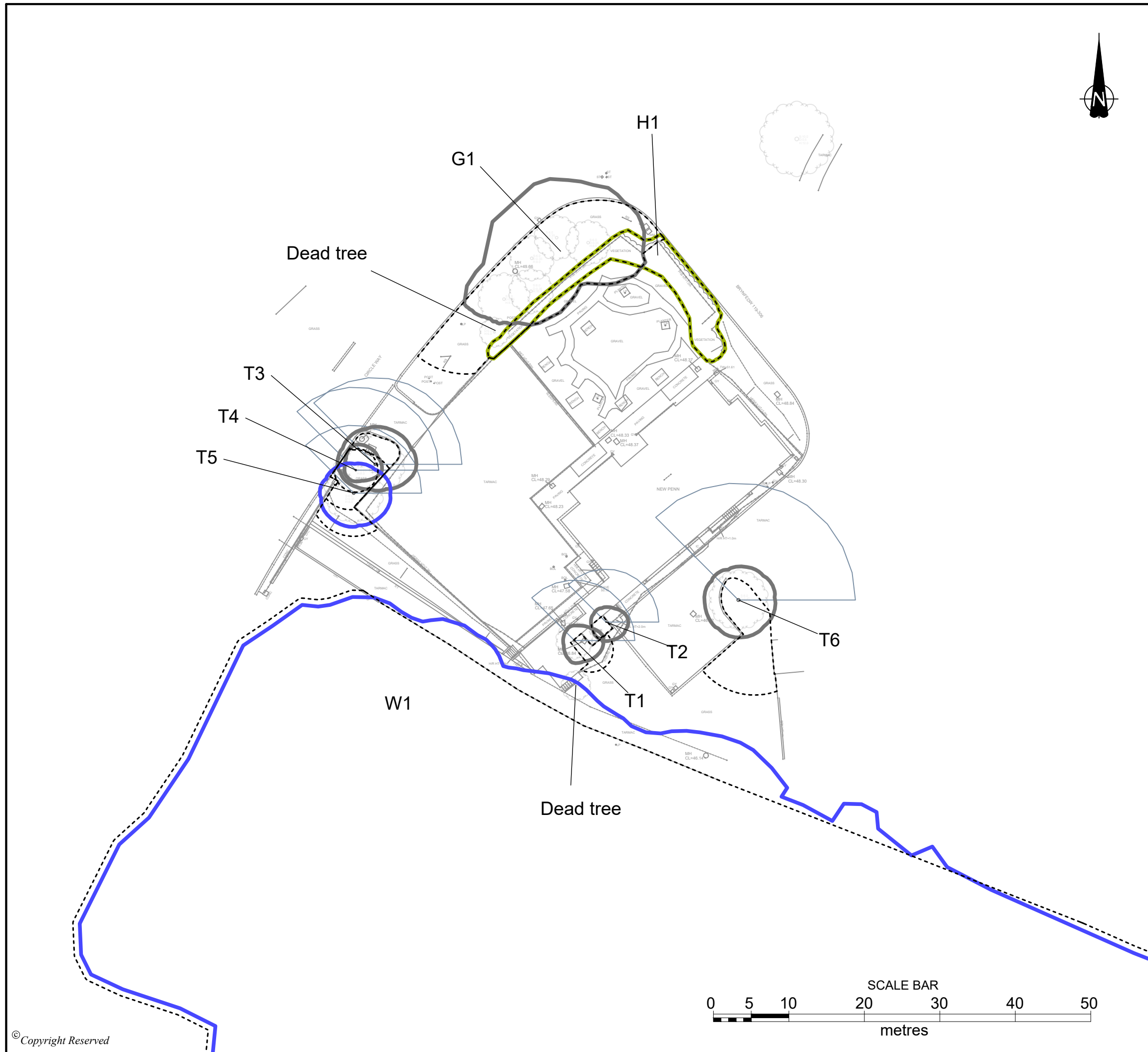
**Transitioning Veteran Trees:** Trees with some veteran features, but not sufficient veteran features to be considered full veteran trees. They contribute to the veteran tree resource and, through the ageing process are expected to become true veterans in time, before which they offer bridge and continuity habitat for important saproxylic invertebrates and fungi.

**Tree Protection Plan (TPP).** A scaled drawing informed by descriptive text where necessary, based upon finalised Site proposals, showing trees for retention and illustrating the tree and landscape protection measures.

**Veteran Tree.** Tree that, by recognized criteria, shows features of biological, cultural or aesthetic characteristics of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

**Windthrow.** The blowing over a tree at its roots.

## DRAWINGS

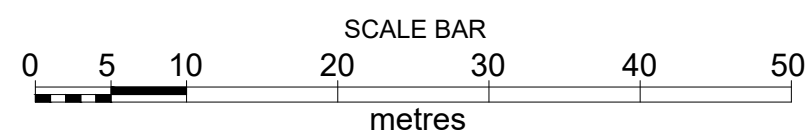


- KEY**
- HEDGE
- TREES**  
 Quality categories based on BS5837:2012 Trees in relation to design, demolition and construction - Recommendations  
 RPA - Root Protection Area  
 Where RPA is not visible it extends to the same distance as the canopy.  
*The original of this drawing was produced in colour - a monochrome copy should not be relied upon.*
- CATEGORY A CROWN SPREAD
  - CATEGORY B CROWN SPREAD
  - CATEGORY C CROWN SPREAD
  - CATEGORY U CROWN SPREAD
  - ROOT PROTECTION AREA
  - VETERAN TREE BUFFER ZONE
- T1/G1/  
W1/H1 TREE/TREE GROUP/  
WOODLAND/HEDGE NUMBER
- POTENTIAL DIRECT OBSTRUCTION OF SUNLIGHT

**NOTES:**

REFERENCED DRAWING(S):  
 UTILIMAP LAND & UTILITY SURVEYORS,  
 NEW PEN PUB, LLANEDERYN, CARDIFF, TOPOGRAPHICAL  
 SURVEY  
 ACAD-NEW-PENN-PUB-LLANEDERYN-CARDIFF REV R1

A	First Issue	12/04/22	BH	MS	MS
REVISION	DETAILS	DATE	DRN	CHK'D	APP'D
CLIENT					
CARDIFF COUNCIL					
PROJECT					
NEW PENN, CARDIFF					
DRAWING TITLE					
TREE LOCATION AND CONSTRAINTS PLAN					
DRG No. CA12409-001			REV A		
DRG SIZE A3		SCALE 1:500		DATE 31/03/2022	
DRAWN BY MAB		CHECKED BY MS		APPROVED BY MS	



■ STOKE ON TRENT | TEL 01782 276700  
 WWW.WARDELL-ARMSTRONG.COM

BIRMINGHAM     GLASGOW  
 BOLTON             LEEDS  
 CARDIFF             LONDON  
 CARLISLE           MANCHESTER  
 EDINBURGH        NEWCASTLE UPON TYNE

**STOKE-ON-TRENT**

Sir Henry Doulton House  
Forge Lane  
Etruria  
Stoke-on-Trent  
ST1 5BD  
Tel: +44 (0)1782 276 700

**BIRMINGHAM**

Two Devon Way  
Longbridge Technology Park  
Longbridge  
Birmingham  
B31 2TS  
Tel: +44 (0)121 580 0909

**BOLTON**

41-50 Futura Park  
Aspinall Way  
Middlebrook  
Bolton  
BL6 6SU  
Tel: +44 (0)1204 227 227

**BRISTOL**

Deskledge  
2 Redcliffe Way  
Bristol  
BS1 6NL  
Tel: +44 (0)117 203 4477

**BURY ST EDMUNDS**

Armstrong House  
Lamdin Road  
Bury St Edmunds  
Suffolk  
IP32 6NU  
Tel: +44 (0)1284 765 210

**CARDIFF**

Tudor House  
16 Cathedral Road  
Cardiff  
CF11 9LJ  
Tel: +44 (0)292 072 9191

**CARLISLE**

Marconi Road  
Burgh Road Industrial Estate  
Carlisle  
Cumbria  
CA2 7NA  
Tel: +44 (0)1228 550 575

**EDINBURGH**

Great Michael House  
14 Links Place  
Edinburgh  
EH6 7EZ  
Tel: +44 (0)131 555 3311

**GLASGOW**

24 St Vincent Place  
Glasgow  
G1 2EU  
Tel: +44 (0)141 428 4499

**LEEDS**

36 Park Row  
Leeds  
LS1 5JL  
Tel: +44 (0)113 831 5533

**LONDON**

Third Floor  
46 Chancery Lane  
London  
WC2A 1JE  
Tel: +44 (0)207 242 3243

**NEWCASTLE UPON TYNE**

City Quadrant  
11 Waterloo Square  
Newcastle upon Tyne  
NE1 4DP  
Tel: +44 (0)191 232 0943

**TRURO**

Baldhu House  
Wheal Jane Earth Science Park  
Baldhu  
Truro  
TR3 6EH  
Tel: +44 (0)187 256 0738

**International office:**

**ALMATY**

29/6 Satpaev Avenue  
Hyatt Regency Hotel  
Office Tower  
Almaty  
Kazakhstan  
050040  
Tel: +7(727) 334 1310