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FAITHFUL & GOULD (GUINNESS PARTNERSHIP)

PALGRAVE AVENUE

ARBORICULTURAL CONSTRAINTS & OPPORTUNITIES REPORT

JANUARY 2023

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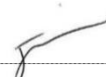
JANUARY 2023

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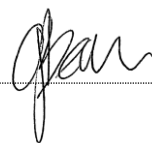
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CONTENTS

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	6
1.6	Protected Species	8
2	THE SURVEY	9
2.1	Desk Survey – Legal Constraints	9
2.2	Field Survey	9
3	SURVEY RESULTS AND EVALUATION	13
3.1	Tree Population	13
4	SUMMARY AND RECOMMENDATIONS	14
5	REFERENCES	15

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

DRAWINGS	TITLE	SCALE
GM12649-001	Tree Locations and Constraints Plan	1:500@A2

1 INTRODUCTION

1.1 Brief

- 1.1.1 Wardell Armstrong LLP (WA) was commissioned by Faithful & Gould (Guinness Partnership) to undertake a BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations (BS5837:2012) arboricultural constraints and opportunities survey at Palgrave Avenue, Manchester (hereafter referred to as ‘the Site’) located at approximate Ordnance Survey (OS) grid ref. SD858003
- 1.1.2 The purpose of this report is to provide an objective assessment of the constraints and opportunities posed by trees 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, so 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 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 is based on the Topographical Survey Plan prepared by Survey & Engineering Projects Ref. S21560-T dated April 2021. The surveyed trees location and constraints are shown on the proposed site layout plan.

1.2 Site Context

- 1.2.1 The Site is located in the Monsall area of Manchester to the east of the A6010, with Palgrave Avenue to the east and residential properties to the north and south. The site comprises of an area of public open space with residential properties and roads surrounding.

1.3 Development Proposal

- 1.3.1 Full planning is sought for residential development.

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 Manchester City Council (MCC). MCC's Local Plan which was adopted in 2012 includes the following relevant text:

Manchester's Local Development Framework – Core Strategy Development Plan Document (Adopted July 2012)

Policy EN 6 – Target Framework for CO2 reductions from low or zero carbon energy supplies

'The energy statement will be required to be submitted at the outset of any proposed development (outline application or before). Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO2 mitigation, subject to the energy statement incorporating evidence such as modelling to demonstrate compliance'.

Policy EN 8 – Adaptation to Climate Change

'All new development will be expected to be adaptable to climate change in terms of the design, layout, siting and function of both buildings and associated external spaces. In achieving developments which are adaptable to climate change developers should have regard to the following, although this is not an exhaustive list:

- *Reduction in urban heat island effect through the use of Green Infrastructure such as green roofs, green walls, increased tree cover and waterways.*

Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO2 mitigation under Policy EN6, subject to sufficient evidence to quantify their contribution to compliance'.

Policy EN 9 – Green Infrastructure

'New development will be expected to maintain existing green infrastructure in terms of its quantity, quality and multiple function. Where the opportunity arises and in accordance with current Green Infrastructure Strategies the Council will encourage developers to enhance the quality and quantity of green infrastructure, improve the performance of its functions and create and improve linkages to and between areas of green infrastructure. Where the benefits of a proposed development are considered to outweigh the loss of an existing element of green infrastructure, the developer will be

required to demonstrate how this loss will be mitigated in terms of quantity, quality, function and future management.

Key features of Manchester's green infrastructure will include:

- The continued development of a network of green spaces, water bodies, canals, paths and cycleways, with priority given to those parts of the City where there is an identified existing lack of open space. The Council will seek to protect existing street trees and promote new planting, particularly where this can enhance green links in the urban area;*
- The provision of new, and improvements to the quality and accessibility of existing green infrastructure assets, to mitigate for any loss of green infrastructure as a result of development such as the Metrolink extension programme.*
- The encouragement of green roofs, green walls, tree planting and other forms of green infrastructure to allow for the adaption to climate change in heavily urbanised areas.*

New green infrastructure provision should be an exemplar of best practice and innovation in terms of both its design and management'.

Policy EN 15 – Biodiversity and Geological Conservation

'The Council will seek to maintain or enhance sites of biodiversity and geological value throughout the City. Particular consideration will be given to:

- the Council's objective to protect and conserve the City's existing trees and woodlands and the aim for a net increase in trees across the City.*

Developers will be expected to identify and implement reasonable opportunities to enhance, restore or create new biodiversity, either on-site or adjacent to the site, contributing to linkages between valuable or potentially valuable habitat areas where appropriate, with reference to:

- the Manchester Biodiversity Strategy, which provides further details of priority habitats within Manchester and opportunities for biodiversity enhancement including corridors such as the Mersey, Medlock and Irk river valleys, the canals and **disused** railway lines and areas of managed greenspace particularly in parks; the Green Infrastructure Framework for Greater Manchester, which encompasses an ecological framework that seeks to guide and inform habitat creation and repair, including identifying large 'biodiversity opportunity areas' including the Moston Brook Corridor and Nutsford Vale;*

- *the Open Space, Sport & Recreation Study, which identifies areas where there is a deficit of natural and semi-natural greenspace, opportunities for green corridors and other linkages;*
- *Manchester's Climate Change Action Plan;*
- *the Strategic Flood Risk Assessment (SFRA) for Manchester;*
- *the Habitats Regulations Assessment (HRA) for Manchester, which gives detailed consideration to Special Areas of Conservation (SACs), including the Rochdale Canal*
- *SAC just outside the district boundary;*
- *the River Basin Management Plan for the North West;*
- *the Manchester Tree Strategy.*

Any adverse impacts on biodiversity will need to be justified against the wider benefits of the proposal, assessed against other LDF policies. Where adverse impacts are unavoidable, developers will be required to provide appropriate mitigation and/or compensation'.

- 1.4.3 National Planning Policy in England is detailed in the National Planning Policy Framework (NPPF). The last revised version of the NPPF (July 2021) includes the following three paragraphs on trees and development, with paragraph 131 giving weight to the retention and planting of trees on development site and paragraph 180 giving specific protection to Ancient Woodland, Veteran and Ancient trees:

'NPPF Para. 131: *Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users'.*

'NPPF Para. 174: *Planning policies and decisions should contribute to and enhance the natural and local environment by:*

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland’.

‘NPPF Para 180: When determining planning applications, local planning authorities should apply the following principles:

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists’

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

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 blanket¹ 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 by a TPO under the Town & Country Planning Act 1990 (as amended) and The Town and Country Planning (Tree Preservation) (England) Regulations 2012.
- 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.

¹ 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 or 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.
- 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 m³ 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 the Forestry Commission. 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 nuisance² (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.

² 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 law³. The UK government and devolved administrations will '*amend current legislation to correct references to EU legislation [...] and ensure we meet international agreement obligations*'.

³ 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-brexite-deal/upholding-environmental-standards-if-theres-no-brexite-deal>

2 THE SURVEY

2.1 Desk Survey – Legal Constraints

- 2.1.1 WA contacted Manchester City Council by email 30th November 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 Manchester City Council confirmed by email on 1st December 2022 that no TPOs or CAs are present on/immediately adjacent to the site 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.
- 2.1.3 WA also conducted a search using the Woodland Trust's Ancient Tree Inventory⁴ and DEFRA's Magic Map Application⁵ on 20th December 2022 to ascertain whether any recorded veteran and/ or ancient trees and also ancient woodland, traditional orchard and/ or woodpasture and parkland priority habitats are located within the Site or outside the Site boundary but within influencing distance of the Site.
- 2.1.4 The Ancient Tree Inventory does not currently contain any records of veteran and ancient trees within the Site or outside the Site boundary but 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.
- 2.1.5 DEFRA's Magic Map listed no ancient woodland, traditional orchard and woodpasture and parkland priority habitats within and adjacent to the Site.

2.2 Field Survey

- 2.2.1 The arboricultural survey was undertaken by Jenna Young on 25th November 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 overcast but did not hinder the survey.
- 2.2.3 Each individual surveyed tree (T) was given a sequential reference number.

⁴ <https://ati.woodlandtrust.org.uk/>

⁵ <https://magic.defra.gov.uk/magicmap.aspx>

- 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 a group is 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 5837:2012 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'⁶ 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

⁶ <https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences>

RPA's, 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. No. GM12649-001 Rev. A.

3 SURVEY RESULTS AND EVALUATION

3.1 Tree Population

- 3.1.1 Fourteen individual trees located on and immediately adjacent to the Site have been assessed and surveyed.
- 3.1.2 The survey revealed two category 'B' quality, eleven category 'C' quality and one category 'U' quality individual trees on and immediately adjacent to the Site. No category 'A' quality individual trees were identified.
- 3.1.3 A detailed description of all trees surveyed and recommended works can be found in the Tree Survey Schedule in Appendix 1. Table 1 below summarises the BS 5837 quality grading of the trees found on Site, with these figures represented in graph format in Figure 2.

Table 1: Individual Trees Quality Assessment Summary				
Tree Quality	A	B	C	U
Individual Trees Identification	None	T3, T14	T1, T4, T5, T6, T7, T8, T9, T10, T11, T12, T13	T2
Total	0	2	11	1

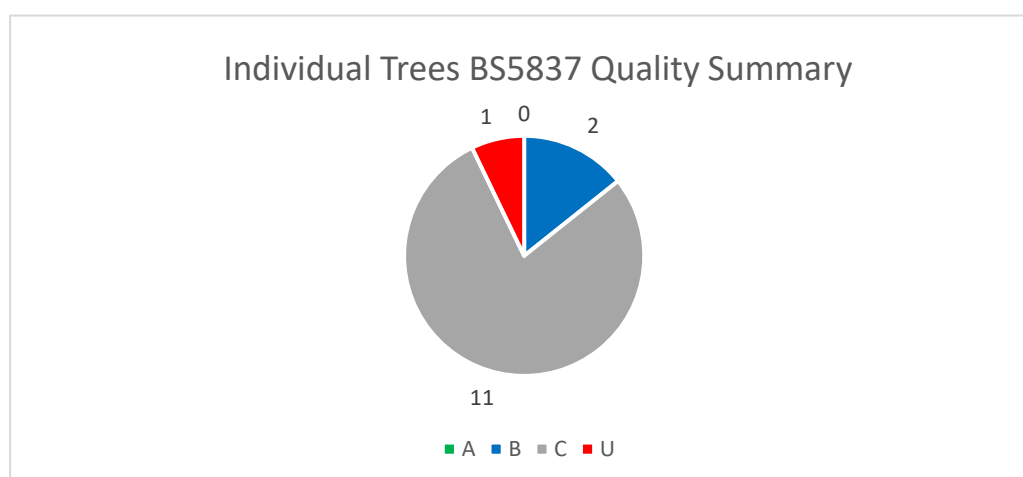


Figure 2: Individual Trees Quality Summary

- 3.1.4 An assessment of the age class of the individual tree population on Site, reveals that the population is entirely made up of early mature trees.

4 SUMMARY AND RECOMMENDATIONS

- 4.1.1 The initial BS 5837:2012 tree survey was undertaken by a WA Arboriculturist on 25th November 2022, the results of which have informed this report and associated Tree Location & Constraints Plan Ref. GM12649-001 Rev. A.
- 4.1.2 There are no TPO or Conservation Area constraints on the Site.
- 4.1.3 There are no veteran trees or Ancient Woodlands on or adjacent to the Site.
- 4.1.4 The next stage in the process is to utilise this arboricultural constraints 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

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Appendix 1

Tree Survey Schedule

Location: Palgrave Avenue (Job. No. GM12649)

Estimated Stem Diameters & Other Measurements highlighted in this colour

Surveyor: Jenna Young

Weather: Overcast

Survey Date: 25/11/2022



Item type: T (tree), G (group), H (hedge), W (woodland)	Tree/ Group Ref. No.	Common 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		BS 5837 Root Protection Area (m²)	BS 5837 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	13.4	2.5 E	3.7	6	7.8	6.5	460					1	EM	F	F	20+	C	1	Asymmetric crown, gap on north west side due to branch snap out, stub (50 mm x 400 mm) remains 4 m above ground. Dead branch (50 mm diameter) north west side 2 m above ground. Partially occluded vertical wound (400 mm x 30 mm)north side of stem 20mm above ground. Sapwood exposed. Old pruning wound south west side of stem 2 m above ground with cerioporus squamosus bracket protruding.	None required	U	96	5.5

T	2	Hawthorn	5.3	1 S	3.8	3	2.4	2.8	180					1	EM	G	P	<10	U	1	Partially occluded wound (1000 mm x 200 mm) with sapwood exposed, south of stem 200mm above ground. Pruning stubs from crown raising works between 1 - 2m above ground. First scaffold branch (100 mm diameter) on south of stem is snapped 300 mm from base, still partially attached and leaning in neighbouring ash tree.	Remove dead snapped branch within 1 month	U	15	2.2
T	3	Hawthorn	8.1	1.8 N	5	4.5	3.6	2.5	250					1	EM	G	G	40+	B	1,2	Small branch stub (50 mm x 200 mm) north of stem 1.5 m above ground. Old pruning wound where small branches have been removed to raise crown up to 2 m above ground.	None required	U	28	3.0
T	4	Hawthorn	4	2 S	2	4.5	4.3	1.8	180					1	EM	G	F	40+	C	1	Tree has heavy eastward lean. Small side shoots around lower stem between 70 mm and 1500 mm above ground. Old pruning wounds between 2- 2.5 m above ground eastern side from crown raising works.	None required	U	15	2.2

T	5	Ash	15	2.3 S	1.9	4	6.7	5.5	330					1	EM	G	G	20+	C	1,2	Crown suppressed on north side by neighbouring trees. Dead branches (< 70 mm diameter) north side of crown. Partially occluded wound (50 mm x 100 mm) 20 mm above ground on southern side of stem. Tree offers amenity value as part of a group.	Remove dead branches from crown within 6 months	U	49	4.0
T	6	Ash	15.3	3.5 S	5.5	5.9	6.2	3.7	470					1	EM	G	G	20+	C	1,2	Slight crown suppression to north caused by neighbouring trees. Small dead branches (< 30 mm diameter) in north of crown. Stem bifurcates at 2m with tight union, area of reaction growth south side of union at 1.5m above ground. Partially occluded wound (100 mm x 50 mm) with sapwood exposed, east of stem 500 mm above ground. Tree offers amenity value as part of group.	None required	U	100	5.6
T	7	Hawthorn	5.9	0	2.2	2.8	2.6	2.8	90	110	180			3	EM	F	G	20+	C	1	Multistemmed tree. Old pruning wounds from crown raising works between 1 - 2.5 m above ground.	None required	U	24	2.8
T	8	Ash	14.7	2.9 W	6.8	4.2	2.9	6.1	420					1	EM	G	G	40+	C	1,2	Slight crown suppression from neighbouring trees to north and south. Branch stubs (<50 mm diameter) from crown raising works between 2.5 - 3 m above ground western side of crown. Stem bifurcates at 2 m. Tree offers amenity value as part of a group.	None required	U	80	5.0

T	9	Red Alder	14.9	2 S	1.6	3.1	4.9	3.1	270					1	EM	G	F	40+	C	1,2	Asymmetric crown caused by suppression from neighbouring tree to north. Branch stubs (< 50 mm diameter) between 2.5 - 3 m. Tree offers amenity value as part of a group.	None required	U	33	3.2
T	10	Ash	14.2	3 SE	5.2	5.7	6.1	6.6	440					1	EM	G	F	20+	C	1,2	Branch stubs (<60 mm diameter) from pruning works between 3 - 4 mm above ground east and west of stem. Tree offers amenity value as part of a group.	None required	U	88	5.3
T	11	Ash	13.4	3 W	3.8	3.6	3.2	6	310					1	EM	G	G	20+	C	1,2	Asymmetric crown caused by suppression from neighbouring trees to east. Tree offers amenity value as part of a group.	None required	U	43	3.7
T	12	Alder	10.1	1.7 E	2.4	2.7	2.3	2.2	200					1	EM	G	G	40+	C	1,2	Partially occluded wound (250 mm x 150 mm) on north of stem 300 mm above ground. Epicormic basal growth. Tree offers amenity value as part of a group.	None required.	U	18	2.4
T	13	Silver Birch	11.4	2.7 W	1.7	1.4	2.4	3.9	200					1	EM	F	F	20+	C	1,2	Tree suppressed by neighbouring trees from north and south, small dead branches in lower crown southern side.	None required	U	18	2.4

T	14	Silver Birch	15.3	3 N	6.1	3.4	2.6	2.9	360					1	EM	G	G	40+	B	1,2	Two small branch stubs (<50 mm diameter) north and south of stem 3 m above ground. Tree offers amenity value to area.	None required	U	59	4.3
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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
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i>			See Table 2
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

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

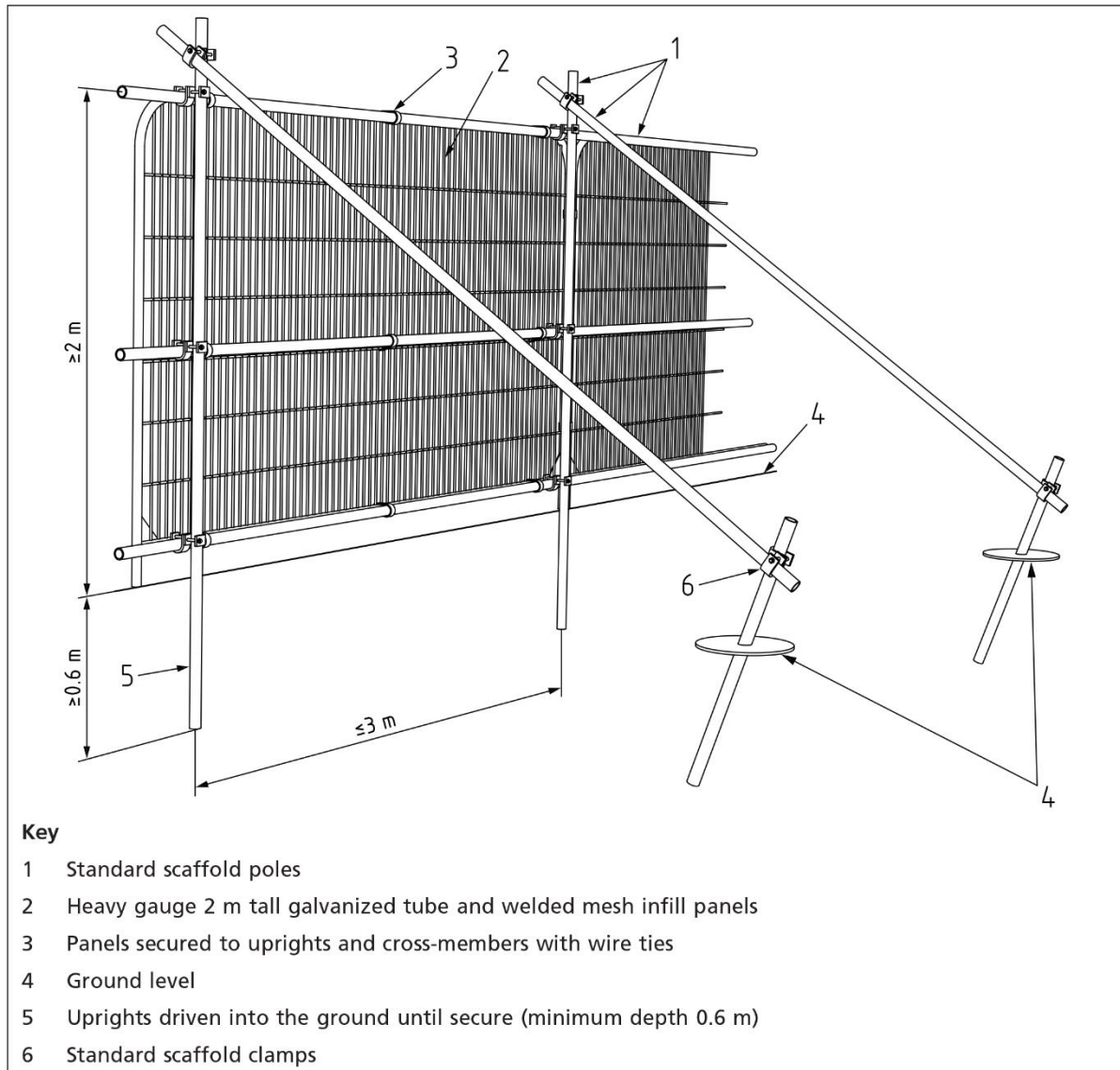
- Trees are influenced by a variety of environmental variables, which can affect the health of trees causing biomechanical and physiological changes. All comments made on tree health reflects their physical condition at the time of the survey. Due to the changeable nature of trees and other site/environmental 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 (25th November 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 25th November 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

Abscission. The shedding of a leaf or other short-lived part of a woody plant.
Abiotic. Pertaining to non-living agent's e.g. environmental factors.
Absorptive Roots. 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.
Access Facilitation Pruning. One off pruning operation to provide access for development operation. Pruning that will not be detrimental to trees health or amenity.
Arboricultural Method Statement (AMS). A methodology for the implementation of development where encroachment within the RPA has the potential to cause damage or loss of retained trees.
Arboriculturist. Someone who through relevant training and experience has gained knowledge in the expertise of trees.
Adaptive Growth. 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.
Adaptive Roots. The adaptation of existing roots; or a production of new roots in response to damage or decay.
Adventitious Buds, Roots, Shoots. Which grow in other than primary apical control.
Anchorage. The process in which a tree uses its roots system to support itself within the soil structure.
Ancient: A tree that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species.
Arisings. Parts of the tree that has been removed for disposal, branches, leaves, roots etc.
Canker. Area of dead cambium killed by overlying pathogenic tissues.
Cavity. A hole in the woody structure of the tree; often caused through decay.
Cleaning Out. The removal of dead, diseased crossing branches, damaged branches and alien structures.
Competent Person. Person with training and experience in accordance with the proposed matter being addressed, having an understanding of a particular matter being approached.
Condition. An indication of the physiological vitality of a tree, but not the stability of a tree.
Construction. A Site based operation that has the potential to affect retained trees.
Construction Exclusion Zone. An area based on the RPA from which construction activity is prohibited.
Coppicing. Removal of all aerial parts of the tree leaving a stump for regeneration of new shoot.
Crown/Canopy. The parts of the tree that supports the leaves.
Crown Lifting. The removal of limbs and small branches to a specified height above ground level.
Crown Thinning. The removal of a proportion of secondary branch growth throughout the crown to produce an even density well balanced crown structure.
Crown Reduction/Reshaping. Removal in the height to a specified description to maintain a flowing crown structure.
Deadwood. 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.
Defect. 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).
Dieback. Death of woody parts of the tree starting at distal ends of the tree.
Disease. Damage occurring to living organisms as a result of pathogenic micro-organisms.
Distal. Furthest distance away from the main body of the tree.
Dysfunction. In woody tissues, the loss of physiological function, especially water conduction, in sapwood.
Epicormic Growth. Growth from dormant or adventitious buds, not developing from the first shoot.
Girdling Roots. A circling root which constricts the stem or roots, with the potential to cause death and the restriction of flow within the phloem.
Heartwood. Dysfunctional xylem which no longer has conductive properties, but which has become an integral structural part of the tree.
Heave. 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).
Included Bark/Acute Forks. Face to face contact of bark usually at fork unions, or branch unions.
Lopping/Topping. A term used to describe the removal of large sized branches
Monolith. Removing some or most of the tree's crown and sometimes the upper stem, in order to retain as much of the tree as standing deadwood habitat for ecological reasons.
Pathogen. A micro-organism that causes disease within another organism.
Phytotoxic. Toxic to plants.
Pollarding. The removal of the tree canopy to produce knuckles where new growth develops and is removed cyclically usually performed on young trees.
Pruning. Selective removal of parts of the tree to achieve a desired outcome.
Root Protection Area (RPA). 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.
Service. Any above and below ground structure or apparatus for utility provision.
Size of part. Relating to risk assessments, identifying the size of the hazard, or parts of a tree which may cause harm if failure occurs.
Stem(s). The main structure from the ground up supporting the crown.
Stress. In plants, the physiological depletion as a result of environmental influences.
Structure. A manufactured object, such as building, roads, path, wall or excavated structures.
Structural Roots. The primary larger diameter roots which hold and support the aerial parts of the tree.
Subsidence. The shrinkage of soil through the absorption of water via vegetation and the sinking effects on surrounding architectural structures.
Targets. 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.

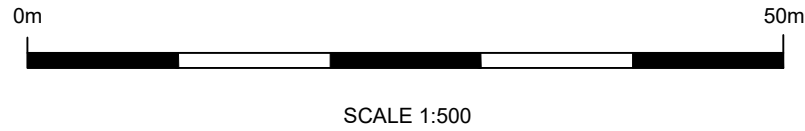
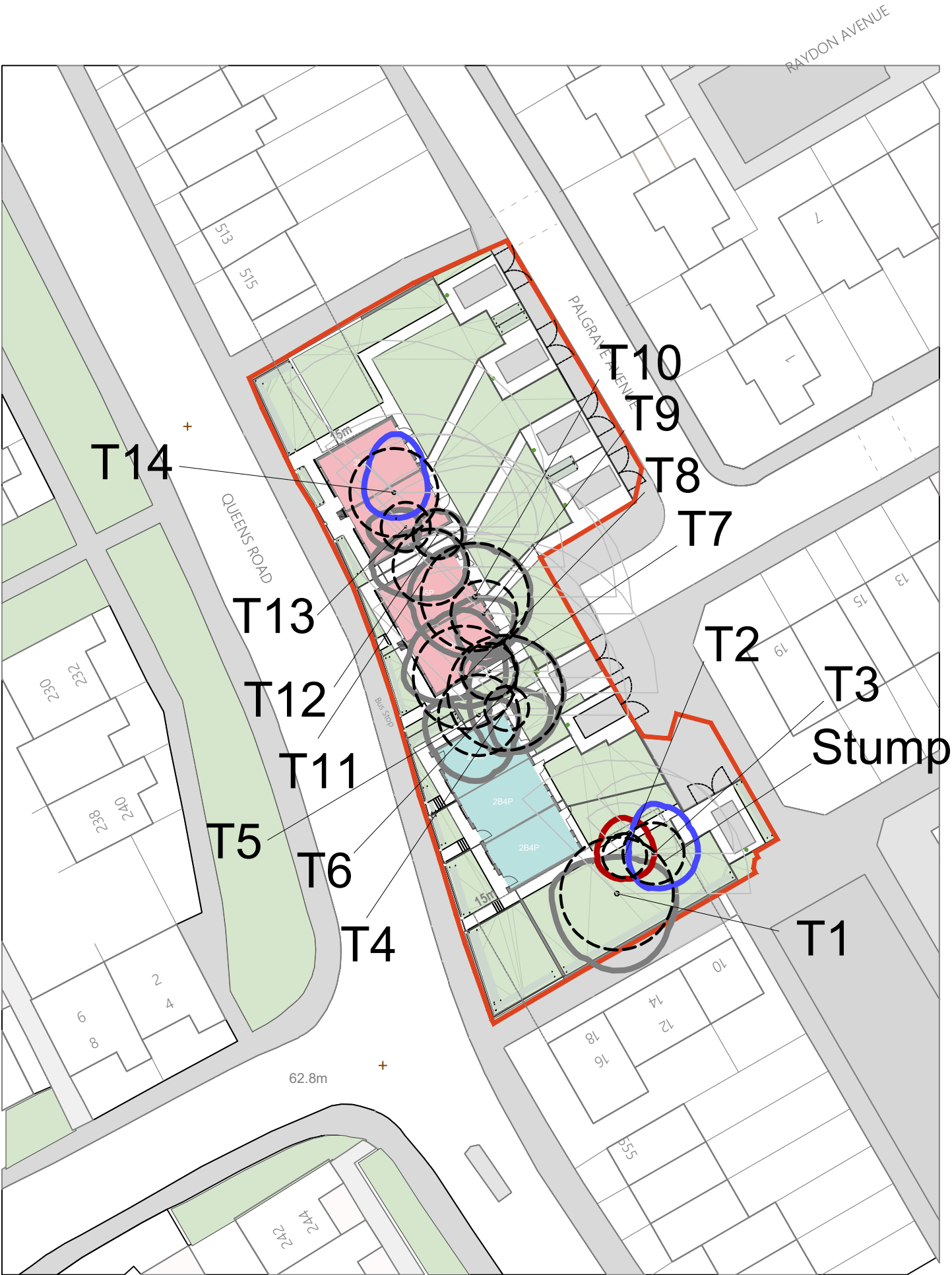
Windthrow. The blowing over a tree at its roots.

DRAWINGS



- KEY**
- RED LINE BOUNDARY
 - CATEGORY A CROWN SPREAD
 - CATEGORY B CROWN SPREAD
 - CATEGORY C CROWN SPREAD
 - CATEGORY U CROWN SPREAD
 - ROOT PROTECTION AREA
 - T1/G1 TREE/TREE GROUP NUMBER
 - POTENTIAL DIRECT OBSTRUCTION OF SUNLIGHT

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.



A	FIRST ISSUE	10/01/23	MAB	JY	CB
REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
CLIENT					
FAITHFUL & GOULD (GUINNESS PARTNERSHIP)					
PROJECT					
PALGRAVE AVENUE					
DRAWING TITLE					
TREE LOCATION AND CONSTRAINTS PLAN					
DRG No.	GM12649-001	REV	P0	SUIT. CODE	
DRG SIZE	A2	SCALE	1:500	DATE	28-11-22
DRAWN BY	DR	CHECKED BY	JY	APPROVED BY	CB

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