



ARBORICULTURAL IMPACT ASSESSMENT AND METHOD STATEMENT

for proposed development at

**AAMZON FULFILLMENT CENTRE, FFORDD AMAZON,
SKEWEN, SWANSEA SA1 8QX**

Client: Amazon

Reference: P2023/0384

Date of Issue: 23-06-23

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1 INTRODUCTION

1.1 INSTRUCTIONS

- 1.1.1. TR33 Environments have been instructed by Amazon to provide this report in support of a planning application for the development of land at Amazon Fulfillment Centre, Ffordd Amazon, Skewen, Swansea SA1 8QX (hereafter referred to as 'the Site').
- 1.1.2. The purpose of this report is to provide the information necessary for Swansea Council to meet the duty placed upon them by s.197 of the Town and Country Planning Act 1990. This duty requires that local planning authorities '*ensure, whenever it is appropriate, that in granting planning permission for any development adequate provision is made, by the imposition of conditions, for the preservation or planting of trees*'.
- 1.1.3. This report assesses the potential effects of development on trees and puts forward proposals for mitigation where appropriate. In order to avoid additional, or otherwise unforeseen adverse arboricultural impacts, it is essential that the mitigatory measures described within this report are implemented in full during site clearance and construction.

1.2 SCOPE OF REPORT

- 1.2.1. The scope of this report has been determined with reference to British Standard BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations*¹(BS 5837). It includes reference to the following:
- A tree survey schedule;
 - An Arboricultural Impact Assessment;
 - An Arboricultural Method Statement;
 - A Tree Constraints Plan.
- 1.2.2. Root protection areas (RPAs) have been identified and represent the minimum area around a tree (m²) deemed to contain sufficient roots and rooting volume to maintain a tree's viability. The RPA, initially plotted as a circle, has been adjusted to account for constraints to root growth such as retaining walls, carriageways and building foundations.
- 1.2.3. The BS 5837 gives recommendations and guidance on the relationship between trees and the design, demolition and construction process. It sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures. These recommendations and guidance have been applied throughout this report and form the basis of the

¹ British Standards Institute. 2012. *BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations*. London: BSI.

Arboricultural Impact Assessment (AIA), Arboricultural Method Statement (AMS) and Tree Constraints Plan (TCP).

1.3 VALIDITY PERIOD

1.3.1. Trees are dynamic organisms which are influenced by a variety of environmental variables and whose health and condition can rapidly change. Because of this any recommendations made within this report are valid for a period of 24 months from the date of survey or when any site conditions change or pruning or other works unspecified in this report are carried out to, or affecting, the subject trees, whichever is sooner.

1.4 SITE DESCRIPTION

1.4.1. The Site is centred at Ordnance Survey Grid Reference SS 71037 93526. It comprises of a car park with associated access, a pedestrian access point and a large warehouse facility.

1.5 OVERVIEW OF THE PROPOSED SCHEME

1.5.1. The Proposed Scheme comprises "INSERT DESCRIPTION"

1.5.2. Aspects of the Proposed Scheme which are of arboricultural relevance include modifications to the entrance to the building.

2 TREE SURVEY

2.1 BASELINE DATA COLLECTION

2.1.1. The tree survey was undertaken in 9-06-23. The survey was conducted by Neil Davies (Arboricultural Consultant) with CAD layers used as base mapping.

2.1.2. The results of the tree survey are presented in **Appendix B: Tree Survey Schedule** and **Appendix C: Tree Constraints Plan**.

2.1.3. The tree survey has been undertaken with reference to BS 5837. The tree survey was undertaken without reference to any site layout proposals; tree quality assessments account for health, condition and an estimated remaining contribution based on current site conditions.

2.1.4. Further details on the methodology used to obtain tree survey data are provided in **Appendix B: Tree Survey Methodology**.

2.2 SUMMARY OF TREE SURVEY RESULTS

2.2.1. Key findings from the tree survey are:

- Four young Oaks were recorded
- Due to their age and size, all trees recorded could be easily replaced within a relatively short period through planting of Heavy or extra heavy standard trees elsewhere within the same site.
- As a result three of the our trees are considered to be retention category C. The fourth tree is in and advanced state of decline and as such has been awarded retention category U.

2.3 PHOTOGRAPHS

Photograph 1: Trees one to four, right to left



Photograph 2: Trees three and four, right and left.



2.4 STATUTORY PROTECTION

- 2.4.1. The statutory status of the surveyed arboricultural features has not been checked. Considering the size and condition of the trees in question, it is unlikely that they would be the subject of a tree preservation order (TPO). However, this should be confirmed with the council prior to any works being undertaken.

3 ARBORICULTURAL IMPACT ASSESSMENT

- 3.1.1. The scope of this Arboricultural Impact Assessment (AIA) has been established with reference to BS 5837 Clause 5.4 '*Arboricultural Impact Assessment*'. The scope of assessment is defined as including an evaluation of the direct and indirect arboricultural effects of the Proposed Scheme.
- 3.1.2. This AIA includes specific reference to the effects of any tree loss and other potentially damaging activities which would foreseeably occur in the vicinity of retained trees. Further reference is made concerning recommendations for mitigation, including those matters which require inclusion within an Arboricultural Method Statement (AMS).
- 3.1.3. The spatial relationship between surveyed trees and the Proposed Scheme is presented within **Appendix C: Tree Protection Plan**.

TREE REMOVALS

- 3.1.4. The requirement to remove trees has been identified as including any tree which cannot be sustainably retained throughout the demolition and construction process. For the purposes of this assessment this includes trees two and three. Both trees are young and easily replaced through mitigation planting elsewhere on site.

TREE PRUNING

- 3.1.5. Tree pruning may be required in order to provide access during the development. Excessive pruning can be detrimental to the health and appearance of a tree and should either be avoided or, if this is not possible, then the tree may need to be removed.
- 3.1.6. It is unlikely that trees one and four will require pruning to allow development to proceed. However, if previously unforeseen pruning is required, then all work shall be specified in accordance with British Standard BS 3998:2010 *Tree work - recommendations*². Pruning shall only be undertaken in accordance with a revised and approved version of the AMS. This will ensure that pruning is undertaken to an appropriate standard and does not adversely impact the health or appearance of any retained tree.

² British Standards Institute. 2012. BS 5837: 2012 *Tree work – Recommendations*. London: BSI.

CONSTRUCTION IMPACTS

- 3.1.7. Construction impacts are defined as anything which has the capacity to adversely affect the health, growth, life expectancy or safety of any retained tree. Construction impacts may arise as result of damage to a tree's rooting environment, roots, stem or branches.
- 3.1.8. Trees two and three are likely to be lost to the development. Trees one and four are afforded root protection via the existing hard surfacing that surrounds them. As such, beyond and minor pruning that may be required, construction impacts are considered to be negligible.

SERVICES AND UTILITIES

- 3.1.9. The installation of underground services can damage trees if this requires mechanical trenching within the RPA. Damage is most likely to occur due to severance of roots but may also arise from localised changes to soil hydrology.
- 3.1.10. There are no known proposals for the installation, or removal, of any underground services within, or adjacent to, the RPA of any retained tree.

FUTURE PRESSURE

- 3.1.11. Future pressure arises when the spatial relationship between trees and structures causes occupiers to require a trees removal. Future pressure, which excludes the need to undertake routine maintenance activities such as pruning or the removal of leaves or fallen fruit, usually arises due to poor site layout or inadequate allowances for future tree growth.

CONCLUSIONS

- 3.1.12. In the event that Swansea Council requires further information on the tree protection measures which will be applied during construction, then this can reasonably be secured through the use of a suitably worded condition attached to a grant of full planning consent.

4 DRAFT ARBORICULTURAL METHOD STATEMENT

- 4.1.1. This Draft Arboricultural Method Statement (AMS) describes the tree protection measures that may be applied during site clearance and construction. The final details of a suitable AMS can be agreed and discharged at condition stage.
- 4.1.2. This draft AMS has been compiled with reference to BS 5837. In instances where deviations from the recommended approach are required, or where some relevant information remains unknown, then adequate tree protection shall be achieved through a combination of supervision by the Project Arboriculturist and adherence to the relevant working methodology.
- 4.1.3. This draft AMS is a 'living document.' This means that it shall be reviewed, and where necessary updated, in response to changes to the design and/or construction methodology. It is envisaged that this AMS will be reviewed at the following stages of design and construction:
- Detailed design;
 - Contractor engagement;

- Pre-commencement;
- Prior to any instance where the overarching site clearance or construction methodology is amended.

4.1.4. This draft AMS must be read in conjunction with **Appendix C: Tree Constraints Plan**.

PHASING OF TREE PROTECTION MEASURES

4.1.5. It is essential that tree protection measures are phased correctly during construction. Tree protection measures shall be phased in the following manner:

1. Undertake tree removals
2. Install tree protection fencing where required
3. Site clearance and construction
4. Remove tree protection once all construction activities have ceased
5. Soft landscaping (if required)

ARBORICULTURAL MONITORING AND SUPERVISION

4.1.6. Arboricultural monitoring and supervision may be implemented in accordance with the following details.

Nominated Persons

4.1.7. The client/contractor may appoint a Project Arboriculturist. This person shall be suitably qualified and experienced in the field of trees in relation to construction, and shall be available to:

- Attend an initial pre-commencement meeting and supervisory visits as required;
- Undertake site monitoring;
- Advise on all ad-hoc arboricultural matters which may arise.

4.1.8. The client/contractor may further nominate a person to be responsible for all arboricultural matters onsite. This person must:

- Be present on site whenever work which has the potential to cause damage to retained trees is being undertaken;
- Be aware of their arboricultural responsibilities;
- Have the authority to stop any work that is causing, or has the potential to cause harm to any retained tree;
- Be responsible for ensuring that all site operatives are aware of their responsibilities toward retained trees and the consequences of any failure to observe those responsibilities;
- Make immediate contact with the Project Arboriculturist and/or Swansea Council in the event of any tree related problems occurring, whether actual or potential.

4.1.9. Once works commence the project arboriculturist will undertake a programme of monitoring. This may include phone and email contact with the site manager, regular site visits and the direct supervision of work which has the capacity to cause damage to retained trees. The frequency of any monitoring

will be determined by the intensity and proximity of works to trees and will be flexible enough to accommodate changes in the scheduling of tasks as they occur.

- 4.1.10. The project arboriculturist will maintain a record of the arboricultural monitoring. This will provide a record of compliance with any agreed tree protection measures and will assist in the efficient discharge of planning conditions where required. The Project Arboriculturist shall provide Swansea Council with a written record of any monitoring within five working days of it having taken place.

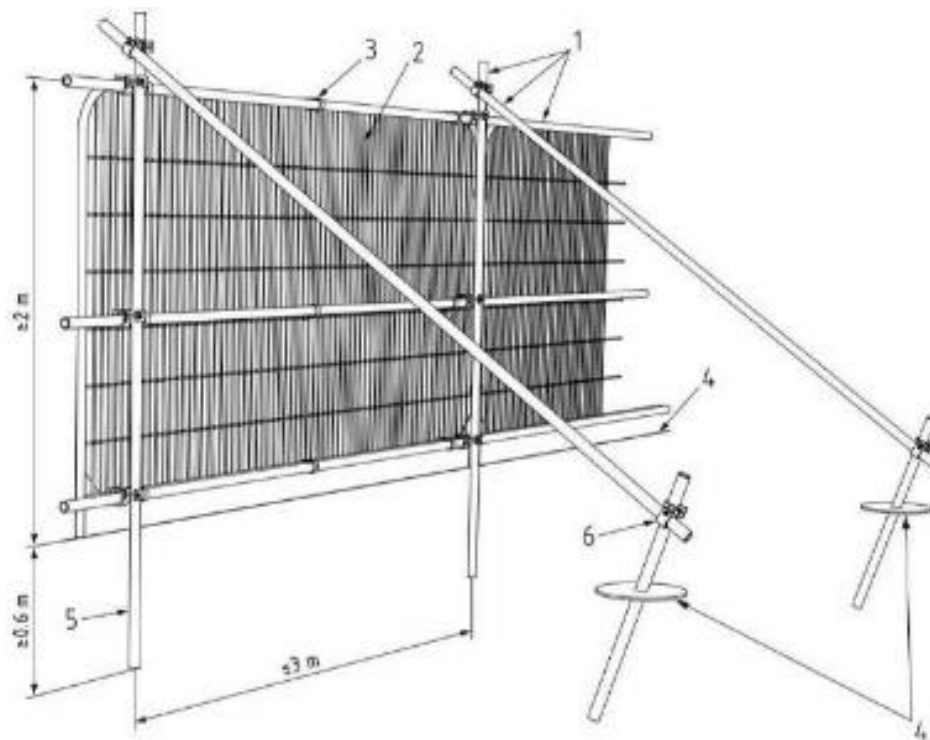
CONSTRUCTION EXCLUSION ZONE

- 4.1.11. The construction exclusion zone (CEZ) is based on the RPAs of all retained trees and those external to the Site. It is the area within which all construction activities are prohibited throughout the construction period. The default method of excluding access to the CEZ is through the installation of **tree protection fencing**. However, if access within the CEZ cannot be avoided then this may be facilitated through the installation of suitable **ground protection**.
- 4.1.12. The location and extent of the CEZ is shown in **Appendix C: Tree Constraints Plan**, Also shown is the location of all tree protection fencing and, where appropriate, areas of ground protection.
- 4.1.13. The CEZ is an arboriculturally sensitive area within which the following activities are prohibited unless approved and supervised by the Project Arboriculturist and authorised by Swansea Council:
- The lowering or raising of soil levels;
 - Any form of excavation (whether mechanical or using hand tools);
 - The storage of plant or materials;
 - The storage, handling, or disposal of any chemical (including cement washings);
 - Vehicular access;
 - Fires or other means of waste disposal.

TREE PROTECTION FENCING

- 4.1.14. Tree protection fencing may be erected in order to create a vertical barrier which prevents damage occurring to retained trees. It shall be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained tree(s). Tree protection fencing shall be adequately maintained to ensure that it remains rigid and complete.
- 4.1.15. Once erected, tree protection fencing should not be altered or removed without the explicit approval from the Project Arboriculturist and authorisation from Swansea Council.
- 4.1.16. A recommended specification for the tree protection fencing is provided in **Figure 1**.

Figure 1: Recommended specification for tree protection fencing



Key to Figure 1

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

APPENDIX A: TREE SURVEY METHODOLOGY

METHODOLOGY

The tree survey was undertaken in accordance with the following methodology:

- Arboricultural features have been recorded as tree groups or wooded areas where this has been deemed appropriate. Tree groups have been recorded on the basis that they form distinct arboricultural features either aerodynamically, visually or because they contain trees of similar cultural and biodiversity value. Wooded areas are recorded where larger expanses of trees exist and included features which may otherwise be referred to as corpses, spinneys or shelterbelts.
- The trees have been inspected using the Visual Tree Assessment methodology as developed by Mattheck and Breoler³.
- The tree survey was carried out from ground level only.
- No tissue samples were taken nor was any internal investigation of the subject trees undertaken.
- Tree heights and crown spreads have been estimated to the nearest 1m.
- Notes have been recorded where they relate to the quality of the arboricultural feature. Management recommendations have been provided where work is necessary for the abatement of a hazard which presents an unacceptable or intolerable level of risk to persons or property.
- Stem diameters have been measured in accordance with Annex C of BS 5837. Diameters of single stem trees on level ground have been measured at 1.5m above ground level. The combined stem diameters for multi-stemmed trees have been calculated in accordance with BS 5837 paragraph 4.6.1.
- By default, Root Protection Areas (RPAs) are calculated as an area equivalent to a circle with a radius 12 times the stem diameter and are capped at a distance of 15 metres.

QUALITY ASSESSMENT

The quality of arboricultural features has been determined in accordance with BS 5837 Table 1, a summary of which is provided in **Table 1**. The purpose of the quality assessment is to enable informed decisions to be made regarding site layout, land use and design. The quality assigned to each survey item is recorded within **Appendix B: Arboricultural Survey Schedule**.

³ Mattheck, C., Breloer, H., 2006. *The body language of trees*. Norwich: The Stationary Office

Table 1: BS 5837:2012 Table 1 – Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)		
Trees unsuitable for retention			
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		
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g., the dominant and/or principal trees within an avenue)	Trees, groups, or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 40 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C Trees of low quality with an estimated remaining life expectancy of at least 40 years	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

LIMITATIONS

Arboricultural survey data is typically valid for a period of two years unless otherwise stated. Significant environmental events (such as extreme weather conditions) or changes to the Site may render it invalid within a shorter timescale.

The survey has only been undertaken from land within the client's ownership, from public land or from areas where formal access has been arranged.

The position of arboricultural features not recorded on a topographical survey has been estimated using aerial imagery.

Whilst arboricultural surveys are not seasonally limited it is the case that certain pests and diseases may be more or less evident at different times of the year. This is especially true of certain wood decaying fungi such as the Giant Polypore (*Meripilus giganteus*) where fruiting bodies are short-lived and the early stages of root decay may not result in other identifiable symptoms. Walkover survey data is therefore based upon observations made at the time of the site visit and may be subject to change should further or more detailed inspections be undertaken.

Health and Safety

This report in no way constitutes a health and safety survey. Where concerns for tree health and safety exist the necessary and appropriate tree inspections should be carried out.

Arboricultural survey data is of a preliminary nature and has been collected based on a walkover survey. Only defects visible from the ground have been noted and each individual feature may not have been inspected closely due to access difficulties, the presence of dense ivy or vegetation or safety constraints. Safety related features have recorded on the basis that the arboricultural features will be subject to a normal programme of tree hazard assessment and only those features which materially affect the quality of the feature or pose a real and immediate safety concern have been recorded.

Wildlife and Conservation

Trees have the capacity to provide habitat for species such as bats, birds, and mammals some of which may be protected under UK or European Legislation. It is a statutory offence to injure, kill or disturb any protected species or to damage or destroy their breeding site or resting place. It is also an offence to disturb any nesting bird.

Wildlife and conservation matters are beyond the scope of this report although incidental comments may be made where these are of direct relevant to the arboricultural survey or subsequent assessments. It is advised that specialist ecological advice is sought prior to any tree removal or maintenance activities; this recommendations contained within this report should be reviewed in light of any ecological constraints which may be identified.

APPENDIX B: TREE SURVEY SCHEDULE

Details of the surveyed trees are presented in **Table 2**; a key to the table is provided in

Table 3.

Table 2: Tree survey schedule

Reference Nos	Type	Species	Height	DBH	Crown Spread	LCH	LBH	Life Stage	PC	SC	ERC	Category	Sub-Category	Notes	RPA Radius
1	T	Oak	5	120	2	2	3	Young	Fair	Fair	10+	C	1	Young tree, easily replaced,	1.4
2	T	Oak	5	125	2	2	3	Young	Fair	Fair	10+	C	1	Young tree, easily replaced	1.5
3	T	Oak	5	105	2	2	3	Young	Poor	Poor	<10	U	1	Extensive dieback in upper canopy	1.3
4	T	Oak	5	114	2	2	3	Young	Fair	Fair	10+	C	1	Young tree, easily replaced	1.4

Table 3: Key and relevant descriptors

Key:	Description:
Reference Nos	Individual reference number
Type:	T - tree; G - tree group; W - wooded area; H - hedge
Species:	Botanical name (common name)
Height:	Overall height (m) – maximum and minimum heights are recorded for tree groups, wooded areas and hedges
DBH:	Stem diameter (mm) - calculated in accordance with BS 5837 paragraph 4.6.1. Maximum and minimum diameters are provided for tree groups, wooded areas, and hedges ¹
Crown Spread:	Spread of crown(m) - based upon the maximum lateral dimension
LCH:	Lowest crown height (m) ²
LBH:	Height of lowest significant branch (m) ²
Life Stage:	Young; Semi-Mature; Early Mature; Mature ³
PC:	Physiological condition - Good, Fair, Poor, Dead
SC:	Structural condition - Good, Fair, Poor
Estimated Remaining Contribution:	Estimated life expectancy - <10 years, 10+ years, 20+ years, 40+ years ⁴
Category:	BS 5837 Category - A (high-quality) B (moderate-quality) C (low-quality) U (very-low quality/unsuitable for retention) ⁵
Sub-Category:	BS 5837 Sub-Category - the primary area of value - 1) Arboricultural 2) Visual 3) Cultural/Conservation
Notes:	General observations, particularly where relevant to the assigned BS 5837 category

Key:	Description:
RPA Radius:	Root Protection Area Radius (m). The radius of the circular Root Protection Area associated with the tree as measured from the centre of the stem. For tree groups, wooded areas and hedges the RPA radius is calculated using the maximum stem diameter.

Table 2 - notes:

¹ Measured at 1.5m above ground level

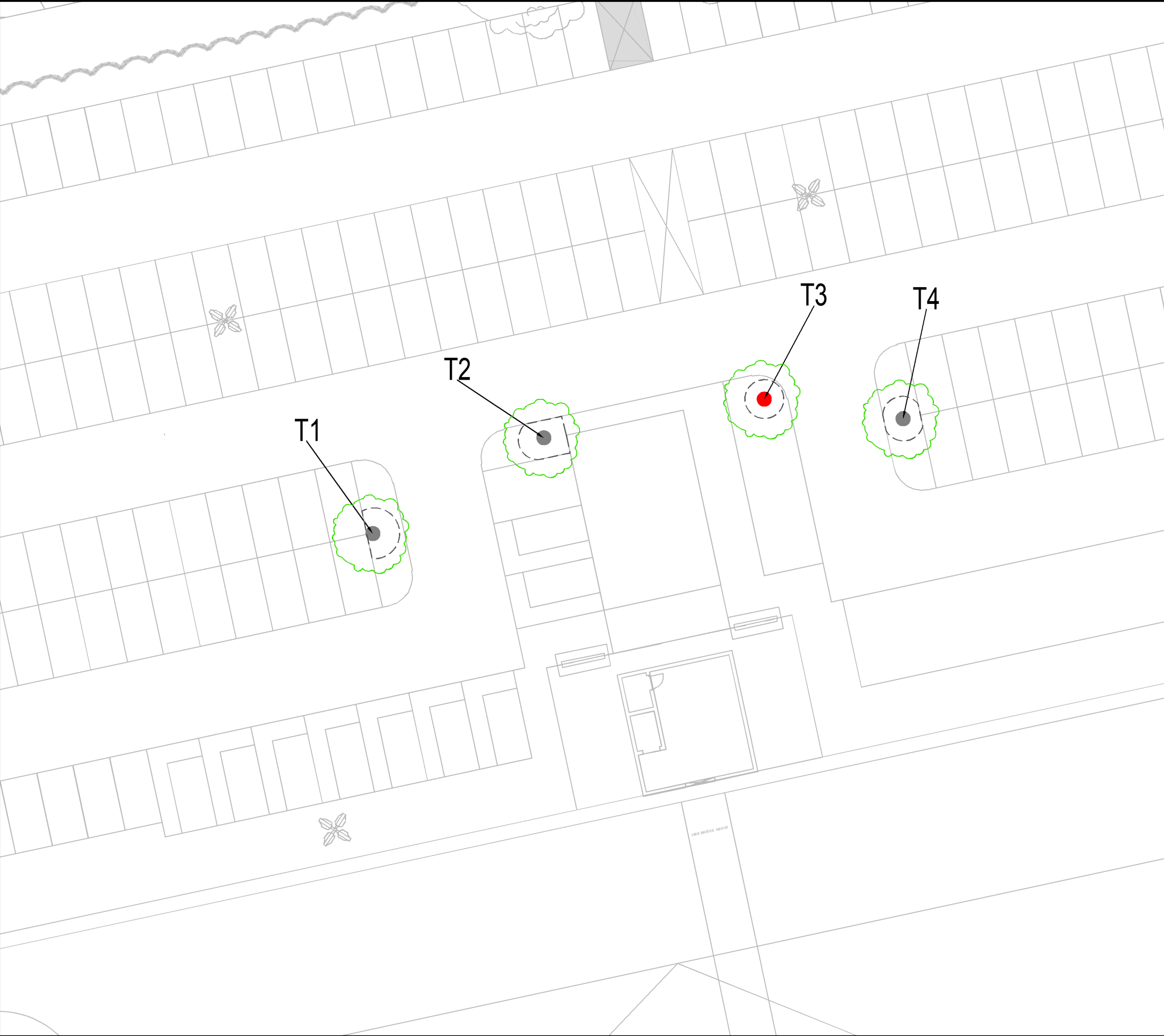
² Where an arboricultural feature abuts the edge of the site then only the portion of the crown within, or overhanging the site has been assessed

³ **Young:** recently planted and yet to fully establish; **Semi-Mature:** established but yet to attain mature stature (<25% life expectancy); **Early Mature:** Almost full height although crown still developing (<50% life expectancy); **Mature:** Full height and crown spread (>50% life expectancy)

⁴ Assumes that there will be no physical changes to the site or surrounding environs

⁵ Refer to **Table 1** for detailed descriptions

APPENDIX C: TREE CONSTRAINTS PLAN



KEY:

- T TREE
- QUALITY / BS 5837 CATEGORY GRADING
 - LOW-QUALITY / BS 5837 CATEGORY C
 - VERY-LOW QUALITY / BS 5837 CATEGORY U
- ARBORICULTURAL CONSTRAINTS
 - ROOT PROTECTION AREA
 - TREE CANOPY

P01	June 23	JM	FIRST ISSUE	ND	ND
REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: FOR INFORMATION



TR33
ENVIRONMENTS

TR33 Environments
Panthriwgoch Farm, Coal Pit Lane, Michaelston Y Fedw, Cardiff CF3 6XW

CLIENT: AMAZON

PROJECT: PROPOSED ENTRANCE BUILDING AND GOODS LIFT

TITLE: TREE CONSTRAINTS PLAN

SCALE @ A3: 1:125	CHECKED: ND	APPROVED: ND
PROJECT No: P2023/0384	DESIGNED: JM	DRAWN: JM
	DATE: 22/06/2023	

DRAWING No: P2023/0384-TCP-001	REV: P01
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