



Tree Survey and Arboricultural Constraints

UNIVERSITY OF STIRLING GOLF PAVILION

For

UNIVERSITY OF STIRLING

21 February 2024



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1. GENERAL INTRODUCTION

- 1.1. Alan Motion Tree Consulting Ltd has been instructed to carry out a tree survey for the University of Stirling, in relation to proposed development of a new swing studio on land at the University of Stirling Golf Pavilion. This report relates to 6 trees within the survey boundary shown on the plans appended to this document. The report describes the extent and condition of tree cover within and immediately adjacent to the site and highlights the above and below ground constraints presented by existing tree cover.
- 1.2. The survey has been carried out in accordance with BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations." Small trees of less than 10cm stem diameter, and areas of undergrowth are described in general terms but are not recorded in detail, except where their condition or presence merits particular attention. Within larger groups and woodlands, trees are described collectively except where dominant specimens merit individual recording.

2. STANDARD CONDITIONS RELATING TO TREE SURVEYS

- 2.1. Tree surveys are undertaken from ground level using established visual assessment methodology. This is primarily a survey to assess the general health, condition, value and life expectancy of existing trees as part of the planning and design process. The report should not be read as a detailed tree safety or risk assessment.
- 2.2. Where obvious defects are noted and further investigation is required, either by climbing or the use of specialised decay detection equipment, this will be identified in the report.
- 2.3. The findings and recommendations contained within this report are valid for a period of twelve months. Trees are living organisms subject to change. It is strongly recommended that they are inspected at regular intervals for reasons of safety.
- 2.4. Whilst every effort has been made to detect defects within the trees inspected, no guarantee can be given as to the absolute safety or otherwise of any individual tree. Extreme climatic conditions can cause damage to apparently healthy trees.

- 2.5. The findings and recommendations contained within this report are based on the current site conditions. The construction of roads, buildings, service wayleaves, removal of shelter, and alterations to established soil moisture conditions can all have a detrimental effect on the health and stability of retained trees. Accordingly, a re-inspection of retained trees is recommended on completion of any development operations.
- 2.6. This report has been prepared for the sole use of University Of Stirling and their appointed agents. Any third party referring to this report or relying on information contained within it does so entirely at their own risk.

3. GENERAL DESCRIPTION

- 3.1. The site is located within Airthrey Campus at the existing golf pavilion towards the east of the campus.
- 3.2. The site comprises an existing pavilion, driving range, and golf practice area. It lies to the south of Hermitage Road. A line of semi-mature lime trees extends along the northern edge of the site, and a mature lime tree grows within the road verge just beyond the site boundary.

4. STATUTORY PROTECTION

- 4.1. The trees within the site are not subject to any statutory protection.

5. TREE SURVEY AND ANALYSIS

- 5.1. A visual assessment has been carried out from the ground level of 6 trees within and immediately adjacent to the site. The location of the trees is plotted on the attached Tree Survey Plan, and their condition and any recommended remedial works are recorded in detail in Table 2 of this document. This records relevant details in accordance with the recommendations contained in BS 5837:2012, and includes:

- Tree number (Tree tag number where used, or plan reference number)
 - Tree species (common name)
 - Stem diameter at breast height (1.5m above ground level)
 - Canopy spread in metres (N, S, E, W)
 - Tree height (estimate in metres)
 - Crown height (clearance to lowest branches in metres)
 - Tree Condition Category
 - General condition (good, fair, poor, dead)
 - Age (Young, Early-mature, middle-aged, mature, over-mature, veteran)
 - Whether single or multi-stemmed
 - Estimated Remaining Contribution in years
 - Comments and observations on the overall health and condition of the tree, highlighting any problems or defects
 - Recommended remedial works, where necessary
 - Impacts of any development proposals
- 5.2. Where appropriate, recommendations have been made on necessary remedial action such as tree surgery or felling. This is specified where there is likely to be significant risk to safety or tree health, or to abate a nuisance. The recommendations are general in nature and do not constitute a detailed work specification.
- 5.3. The trees have been tagged with round 4-digit tags.
- 5.4. Trees have been categorised in accordance with the guidelines contained in BS 5837 as follows:
- 6 Category A
- 0 Category B,
- 0 Category C
- 0 Category U.
- 5.1. For details of the tree categorisation, refer to Table 1.

- 5.2. The purpose of the tree categorisation method is to identify the quality and value of the existing tree stock, allowing informed decisions to be made concerning which trees could be removed or retained in the event of development occurring. The presence of trees and their quality is only one factor in the design and planning process, and the retention of good quality, healthy trees may be inappropriate in the context of wider planning and development considerations.
- 5.3. Young trees of <15cm stem diameter, and trees in Categories C and U with limited safe life or poor health and/or structure, are not normally considered to be a significant constraint on development.

6. CONSTRAINTS POSED BY EXISTING TREES

- 6.1. In order to minimise the risk of long-term damage to trees from construction operations, particular care is required to protect them from physical damage. Significant damage can be caused to tree root systems by ground level changes; soil compaction; contamination from oils and cement; and changes in soil moisture content. For these reasons, BS 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*' sets out a recommended Root Protection Area (RPA) in m² based on the stem diameter of the tree. The RPA represents the anticipated below-ground constraints presented by trees within the proposed development area.
- 6.2. Tree roots rarely follow expected patterns. Adjustments to the RPA may be recommended where restrictions to normal rooting patterns suggest that root growth will be minimal (*e.g.* adjacent to walls, sealed surfaces, watercourses, or existing utility trenches). In addition, soil type, tree species, age, vigour, canopy volume and micro-climate will all impact on root growth and the ability of individual trees to tolerate changes in rooting environment. For all of the foregoing reasons, the RPA should be taken as a guide, and should not be treated as an absolute factor.
- 6.3. Above-ground constraints presented by trees include ultimate height and canopy spread, which will affect both physical presence and daylight availability to any proposed

structures. Species characteristics, such as evergreen or dense foliage, potential for branch drop, fruit fall, *etc*, will all have an influence on the potential for development of the site. Easements for underground and above-ground apparatus; road safety and visibility; or the proposed end use of space adjacent to retained trees also needs to be fully considered.

- 6.4. Where it is determined that trees should be retained because of their quality and amenity importance, the impact of proposed designs must be assessed against the requirements of the tree, taking into account the RPA and all other relevant factors. Whilst the RPA should generally be protected where possible, any proposed incursion into the RPA should comply with the recommendations of BS5837, Sections 6 and 7. Site-specific method statements may be required to accompany such proposals.

7. ARBORICULTURAL IMPACT ASSESSMENT

- 7.1. The proposed site development involves the construction of a new 10m x 8m building to house a swing studio. The new building is proposed within an existing grass area immediately to the west of the existing pavilion.
- 7.2. The row of semi-mature lime trees is located north of the proposed building at a distance of 4.5m. Tree canopies extend 3-4m towards the proposed building.
- 7.3. The proposed building is located beyond the recommended RPA of the adjacent trees, although working space would encroach slightly. The installation of appropriate temporary ground protection measures would minimise the risk of ground compaction and any detriment to the trees, which are young and of high vigour.
- 7.4. Some crown-lifting of tree number 1607 would be required to permit construction access.

8. TREE PROTECTION PLAN

- 8.1. The Tree Protection Plan indicates the location of all proposed structures and hard surfacing, and the location of the required Construction Exclusion Zone (CEZ) around trees proposed for retention.
- 8.2. Trees recommended for retention, must be protected by barriers and/or ground protection prior to commencement of any development works, including demolition. Barriers should consist of Heras Fencing with panels joined together using a minimum of two anti-tamper couplings and braced on the inside of the CEZ with stabiliser struts in accordance with Figure 3(a) of BS5837:2012.
- 8.3. There should be no movement of machinery, stockpiling of materials, or changes in existing ground levels within the Construction Exclusion Zone throughout the duration of the construction works.
- 8.4. Construction access will require the installation of ground protection measures, in accordance with Section 6.2.3.3 of BS5837:2012. Where construction working space or temporary construction access is required and justified within the RPA, temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site. This should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil. For pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane is recommended.




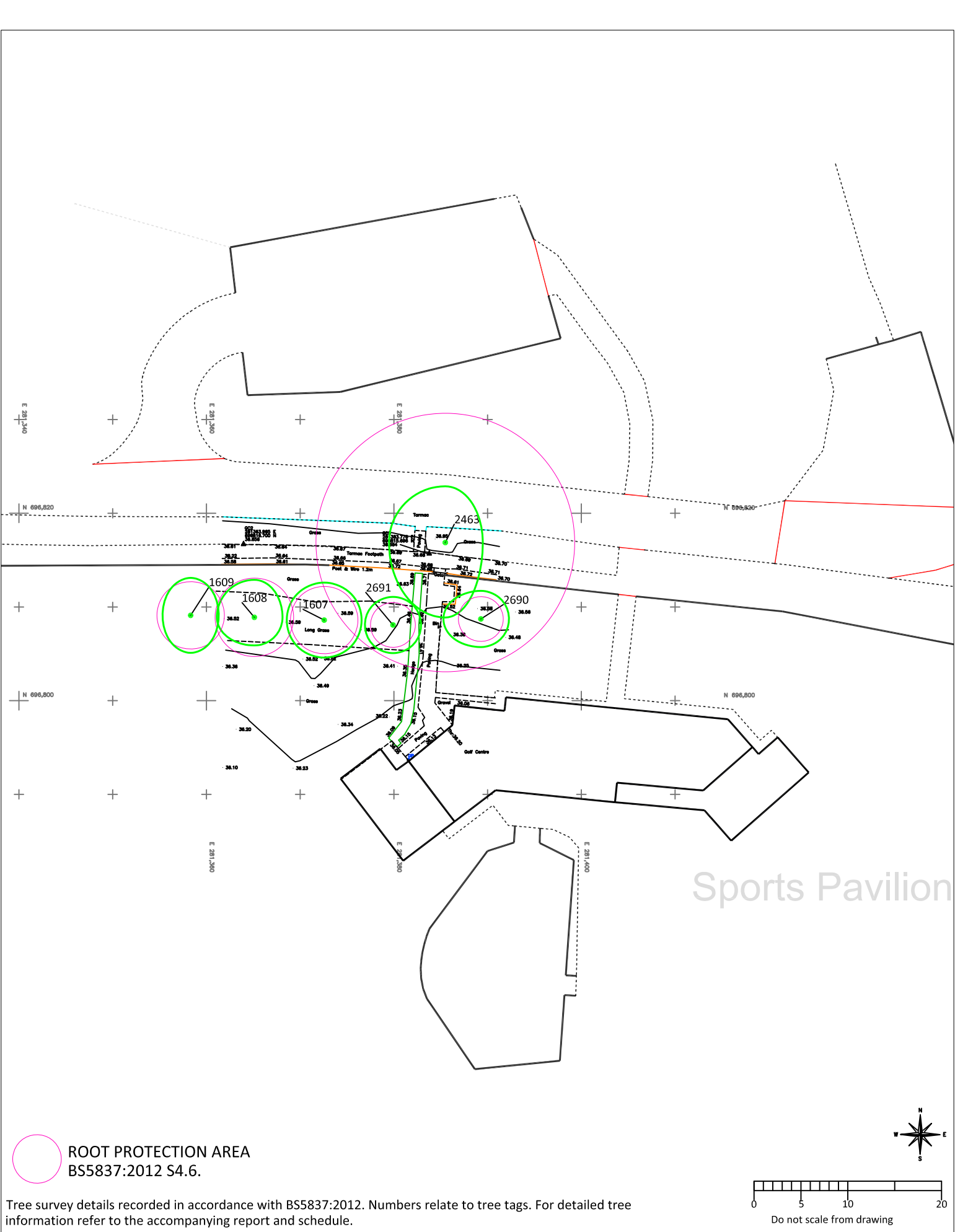
TABLE 1 BS 5837:2012 TREE CATEGORISATION				
Category and definition	Criteria			Identification on plan
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<ul style="list-style-type: none">  Trees 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 U Category trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)  Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline  Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality NOTE : <i>Category U trees can have existing or potential conservation value which it might be desirable to preserve.</i>			Red
TREES TO BE CONSIDERED FOR RETENTION				
Category and definition	Criteria – Subcategories			Identification on plan
	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values, including conservation	
Category A Trees of high quality with an estimated remaining life expectancy of 40 years	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of 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 features and/or landscape features.	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	Green
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 beyond 40 years; or trees lacking the special quality necessary to merit the Category A designation	Trees present in numbers, usually 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	Blue
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 150mm	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 a greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	Grey

TABLE 2 TREE SURVEY SCHEDULE

Tag No	Species	DBH	N	S	E	W	Ht	C.Ht	BS Cat	Condition	Age	Stems	ERC	Comments	Recommendations
2463	Common lime	1.15	6	8	4	6	28	6	A1	Good	M	1	>40	Minor cavity/decay in stem at 3m, developing from old pruning wound, not significant.	
2690	Large-leafed lime	0.20	3	3	3	4	9	2	A1	Good	S-M	1	>40	Young, vigorous.	
2691	Large-leafed lime	0.20	3	3	3	3	10	0	A1	Good	S-M	1	>40	Young, vigorous.	Temporary ground protection during construction.
1607	Large-leafed lime	0.30	4	4	4	4	11	0	A1	Good	S-M	1	>40	Young, vigorous.	Crown-lift to give 2.0m height clearance for construction access. Temporary ground protection during construction.
1608	Large-leafed lime	0.35	4	3	3	4	11	1	A1	Good	S-M	1	>40	Young, vigorous.	Temporary ground protection during construction.
1609	Large-leafed lime	0.30	4	4	3	3	11	1	A1	Good	S-M	1	>40	Young, vigorous.	

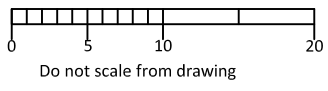
KEY TO TREE SURVEY SCHEDULE

No	Number as shown on survey plan (refers to tree tags where used)								
Species	Common name								
DBH	Stem Diameter at Breast Height, measured at 1.5m above ground level. Diameter measured in 0.05m bands and rounded up to next 0.05m.								
Canopy	Canopy radius in metres to the compass points North, South, East, West (survey drawing shows actual canopy radius at 4 cardinal points).								
Ht	Approximate tree height in metres								
C Ht	Crown height, indicating clearance from ground level to lowest branches, estimated in metres								
BS Cat	British Standard 5837:2012 tree categorisation (See Table 1)								
Condition	General overall description of physiological/structural condition: <table> <tr> <td>Good:</td> <td>Healthy tree with no major defects Trees with significant safe life expectancy Trees of good shape and form for the species</td> </tr> <tr> <td>Fair:</td> <td>Healthy trees with minor defects Trees with moderate safe life expectancy Trees of average shape and form for the species</td> </tr> <tr> <td>Poor:</td> <td>Trees with significant defects Trees with a limited safe life expectancy Trees of low vigour, stressed, in decline Trees of poor shape and form, suppressed, structurally weak</td> </tr> <tr> <td>Dying/Dead:</td> <td>Dead, dying, unsafe or dangerous Trees with little or no safe life expectancy</td> </tr> </table>	Good:	Healthy tree with no major defects Trees with significant safe life expectancy Trees of good shape and form for the species	Fair:	Healthy trees with minor defects Trees with moderate safe life expectancy Trees of average shape and form for the species	Poor:	Trees with significant defects Trees with a limited safe life expectancy Trees of low vigour, stressed, in decline Trees of poor shape and form, suppressed, structurally weak	Dying/Dead:	Dead, dying, unsafe or dangerous Trees with little or no safe life expectancy
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Dying/Dead:	Dead, dying, unsafe or dangerous Trees with little or no safe life expectancy								
Age	Age class (Young, Semi-mature, Early-mature, Middle-Aged, Mature, Over-Mature, Veteran)								
Stems	Number of stems arising from below 1.5m, used to determine the appropriate Root Protection Area.								
ERC	Estimated Remaining Contribution in years, based on species, age, physiological condition and environmental factors.								
Comments	Specific comments on any observed defects within the root zone or affecting visible buttress root system; on the main stem up to and including the point of the first main fork; and affecting main scaffold branch system or secondary branch structure. Will be left blank where no defects are noted and growth characteristics are normal								
Recommendations/Impacts	Description of any recommended remedial tree work operations required to ensure safety or for cultural reasons. Or the impact of current designs or development proposals on the tree and required works to accommodate the proposals. General description of works, not a detailed tree work specification. Any recommended works should be carried out in accordance with BS3998:2010 <i>Tree work – Recommendations</i> .								



ROOT PROTECTION AREA
BS5837:2012 S4.6.





Tree survey details recorded in accordance with BS5837:2012. Numbers relate to tree tags. For detailed tree information refer to the accompanying report and schedule.

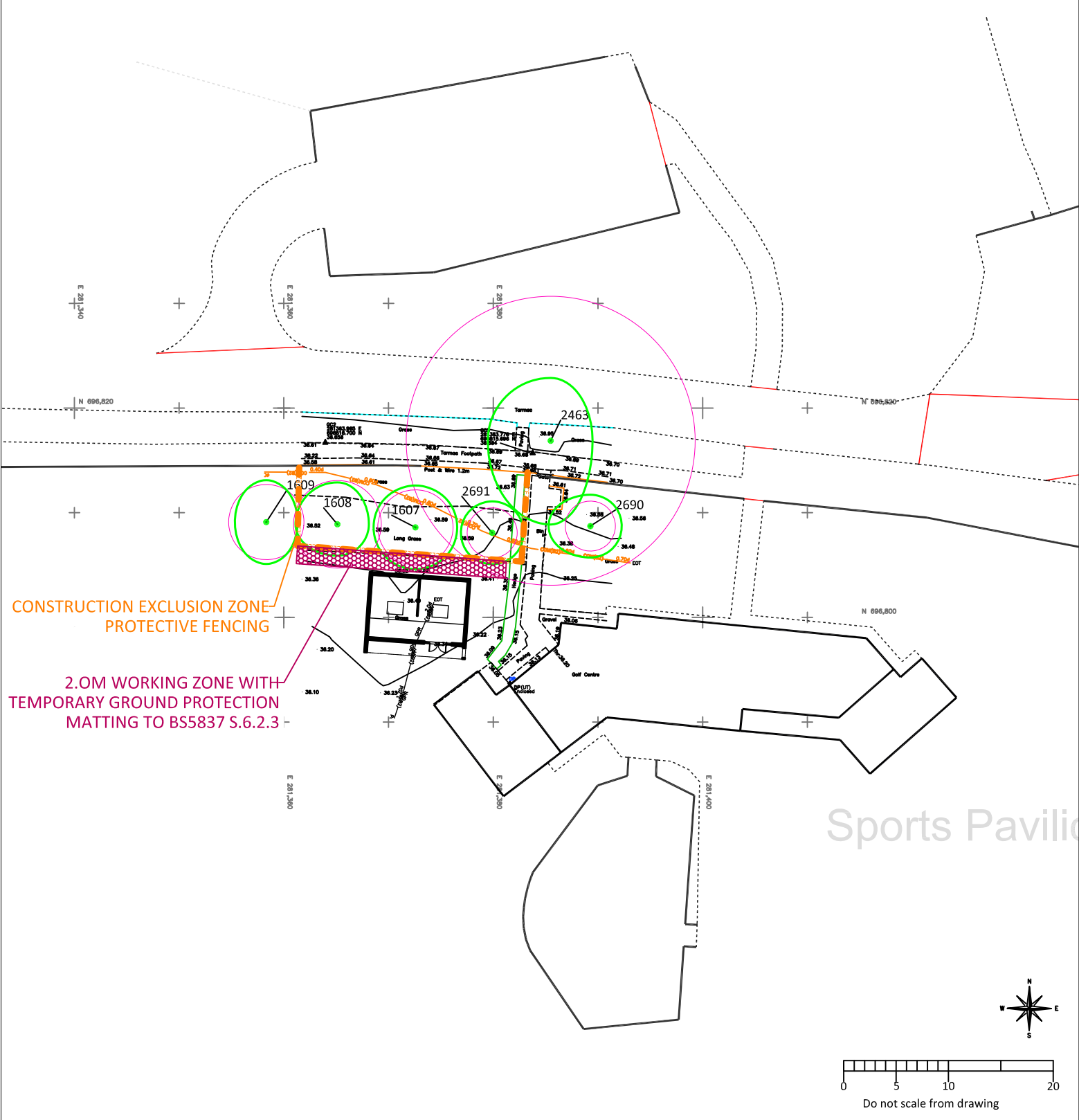


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CLIENT: University of Stirling		
PROJECT: Swing Studio		
DRAWING TITLE: Tree Survey as existing		
DRAWING No: TS-01		
DATE: 21-2-24	SCALE: 1:500 at A4	REV:

-  TREES CATEGORY A
-  TREES CATEGORY B
-  TREES CATEGORY C
-  TREES CATEGORY U



NOTE: All trees designated for retention to be protected by the erection of fencing in accordance with Section 6.2 and Figure 3 of BS5837:2012 (Construction Exclusion Zone). Within Root Protection Area delineated by hatching there shall be no construction operations without the installation of ground protection measures in accordance with Section 6.2.3 of BS5837:2012. Protective fencing and ground protection measures must be installed prior to all construction operations, including demolition works. There shall be no alterations in ground levels, excavations, storage of materials, or access by machinery within the Construction Exclusion Zone through the duration of the works.

Tree survey details recorded in accordance with BS5837:2012. Numbers relate to tree tags. For detailed tree information refer to the accompanying report and schedule.

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CLIENT: University of Stirling		
PROJECT: Swing Studio		
DRAWING TITLE: Tree Protection Plan		
DRAWING No: TP-01		
DATE: 21-2-24	SCALE: 1:500 at A4	REV:

3895 TREES RETAINED
3895 TREES REMOVED

NOTE: Central colour relates to BS category standard colours

CONSTRUCTION EXCLUSION ZONE PROTECTIVE FENCE

ROOT PROTECTION AREA: GROUND PROTECTION/NO-DIG REQUIRED