Tree Survey and Impact Assessment

for land at

Swansea BESS,
adjacent to Swansea Greener Grid Park,
Swansea

Client
Statkraft

February 2025

2403-KC-XX-YTREE-TreeSurvey-and-ImpactAssessment-Rev0
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CAVEATS

This report has been prepared for planning purposes only. It is not intended for the detailed design of foundations that requires a much finer level of detail to ensure a cost-effective scheme of foundations.

This report considers the health and safety of the trees in their context at the time of survey. Trees are natural organisms subject to change and a range of weather conditions. This report can only be relied on for a period of twelve months or immediately prior to detailed designing of site layout (if phased) to ensure hazards posed by trees can be identified and resolved.

We rely on Council and Government websites for factual information in respect of sites. Experience reveals these are not always reliable. Further checks should be made in advance of undertaking any work to trees.

Keen Consultants accept no responsibility or liability for any use that is made of this document other than by the client for the purpose for which it was commissioned and prepared.

Document history

Revision	Issue Status	Details	Approved/Date
Rev0	Final	Initial combined Tree Survey and Impact Assessment	JK / 11 February 2025

Contents

Appendices

Tables

1.0 Introduction

1.1 This report sets out the information about trees to inform the planning process about the quality of trees on site. Following the tree survey the information is extended to consider the impact to them from the proposed development and how construction may proceed whilst ensuring trees are successfully retained.

1.2 In this report we consider the proposals for development of the site. We consider those proposals in relation to the survey of trees we conducted as part of the site analysis.

1.3 The area subject to this survey consists of a collection of pasture fields located at Swansea BESS, adjacent to Swansea Greener Grid Park, Swansea.

1.4 The land undulates in level and the field parcels are divided by raised banks containing remnants of hedgerow. Upon the banks are a collection of larger trees being predominantly pedunculate oak.

1.5 Some of these larger trees contribute to the local landscape. None of them are of exceptional age or contain features of exceptional value to biodiversity.

1.6 At the time of the tree survey we checked the online portals, including City and County of Swansea Council for statutory protection of trees applicable to the site. Online portals are not always reliable so before works are undertaken to trees a direct enquiry with the Council should be made.

- TREE PRESERVATION ORDERS - details were not available online, or the online portal could not be searched, to clearly identify if trees upon the site were protected by Tree Preservation Order.
- CONSERVATION AREAS - details were available online and confirmed that the site IS NOT within a Conservation Area.
- Natural Resources Wales do not record any ancient woodland within the application site but ancient woodland is recorded outside the northern boundary. It is sufficiently remote from the application site to be unaffected by the proposals.
- The online portal of the Woodland Trust, Ancient Tree Inventory, revealed that there are NO veteran trees recorded on site.

1.7 Nationally adopted guidance has been followed in the preparation of this report. *BS5837:2012: Trees in relation to design, demolition and construction – Recommendations* sets out a structure approach to considering trees during the development process. Guidance is given on the surveying of trees, the protected space that should be allocated to trees, what elements may give rise to harm to trees and what techniques can be deployed to minimise harm.

1.8 Sustainable development requires the coordination between disciplines throughout the project, accordingly the package of arboricultural information supports the design process and follows through to construction ensuring effective tree protection. We recognise the need to integrate with other disciplines to achieve a balanced approach to development proposals.

1.9 We set out how our key elements interact with others at Appendix1 of this report. The appendix provides comprehensive information about the stages of providing tree information within the planning process.

1.10 Further explanatory notes about tree survey information are given in Appendix2.

2.0 Tree survey

2.1 The objective of this tree survey is to assess the significant trees and woody vegetation on the site to obtain dimensions, assess their quality and evaluate their condition to provide sufficient information to enable decisions to be made on planning aspects of the site and its potential development.

2.2 The tree survey:

2.2.1 was conducted on the 21 January 2025 by Jago Keen, MSc, Dip.Arb., MArborA, MICFor from ground level, in accordance with the guidance in British Standard *BS5837:2012 Trees in relation to design, demolition and construction – Recommendations*;

2.2.2 is intended for planning purposes only;

2.2.3 is not intended for the detailed design of foundations (further information upon vegetation can be provided upon request);

2.2.4 is not a detailed health and safety condition survey of trees;

2.2.5 recommends only preliminary works. Tree works required to achieve the scheme of development will be considered as part of the Impact Assessment and detailed on the Tree Protection Plan;

2.2.6 places reliance on the topographical survey.

2.3 Details of each tree are recorded in the Schedule of Trees at Appendix3.

2.4 Site soil investigations have not been conducted. The (online) 'Geology of Britain Viewer' that contains British Geological Survey materials © NERC [2018] reveals the following soil information:

2.4.1 Bedrock geology: Grovesend Formation - Mudstone, siltstone and sandstone.

2.4.2 Superficial deposits: Hummocky (moundy) Glacial Deposits, Devensian - Sand and gravel.

2.5 Survey information is used to prepare the constraints posed by trees on development. These constraints are shown on the Tree Constraints Plan. The Plan shows root protection areas prescribed by the guidance within BS5837 paragraph 4.6.2 and adjusted where appropriate as recommended in subsequent paragraph 4.6.3. The root protection area (RPA) is the minimum extent of rooting required to sustain the tree.

2.6 Trees change over time hence the contents of this survey can only be relied upon for a period of up to two years. The survey should be refreshed after two years or immediately prior to the design of detailed site layouts where they are phased.

3.0 Application of survey information

3.1 Trees place constraints on sites but they also provide opportunities in order to achieve optimum use of the site and location of built structures. This is set out below:

Avoid

The starting point of site layout design should be to avoid the RPA. Ideally, structures should be outside the root protection area to provide working space for construction however protection measures can be taken if such clearance, in isolated cases, is not achievable.

Mitigate

Where intrusion within the RPA is unavoidable then its impact on the tree can be mitigated by specialist measures:

a) Foundations that avoid trenching e.g. screw piles, suspended floor slabs or casting at ground level for lightweight structures such as bin and cycle stores.

b) Limited use may be made for parking, drives or hard surfaces within the root protection areas, subject to advice from a qualified arboriculturist. Cellular confinement systems that enable hard surfaces to be built above existing soil levels are acceptable methods.

c) Service runs that cannot be routed outside the root protection area(s) can be installed by, for example, thrust boring, directional drilling, air excavation or hand digging. These operations often require supervision by the project arboriculturist.

Compensate

Replacement planting can ensure the continuity of tree cover where tree removal is unavoidable. Offsite provision may be considered in some circumstances but this will require negotiation with the local planning authority.

4.0 Assessment of impact upon trees

4.1 This assessment will consider the impact upon trees of implementing the proposals shown on the drawings listed below:

Table 1 - List of drawings referred to in the impact assessment

Originator	Drg No	Title
Statkraft	Revision No. 04	Proposed Site Layout dated 13/01/2025
TGP Landscape Architects	2242/Figure 4	Landscape Mitigation Plan
Keen Consultants	2403-KC-XX-YTREE-TCP01Rev0	Tree Constraints Plan
Keen Consultants	2403-KC-XX-YTREE-TPP01Rev0	Tree Protection Plan

4.2 Site proposals considered in this application include:

4.2.1 Battery Energy Storage System

4.2.2 Access, parking and other hard surfaces

4.2.3 Utilities, services and SuDS schemes

4.2.4 New and replacement tree planting

4.3 The proposals are considered with reference to the following guidance documents referred to in this report:

Table 2 - List of documents used to inform the impact assessment

Originator	Title/Reference
British Standards Institute	*BS5837:2012 Trees in relation to design, demolition and construction – Recommendations*
Trees and Design Action Group	*Trees in the townscape: A guide for decision makers*
Welsh Government	*Planning Policy Wales*
Swansea Council	*Trees, Hedgerows and Woodland: Supplementary Planning Guidance* dated October 2021
Swansea Council	*Swansea Local Development Plan 2010-2025*

4.4 National planning policy (section 6.2 refers) and local planning policy (Policy ER11 of the Local Development Plan) makes clear the important contribution made by trees, as part of green infrastructure, to the character and quality of the landscape. Trees help to mitigate and adapt to climate change. The application proposals are respectful of the benefits trees provide and have been developed to ensure the retention of as many trees as possible alongside the delivery of 'clean' energy. New trees are incorporated with the scheme to ensure continuity of green infrastructure.

4.5 In summary, the proposals seek to retain the majority of trees, retains all hedgerows and makes provision for new tree planting. None of the trees proposed to be removed are of exceptional quality.

Impact of application scheme

4.6 The majority of trees within, and directly adjoining, the application site are retained unaffected by the proposals.

4.7 The scheme does require the loss of five (tree numbers 25, 26, 27, 29 and 32) trees. Four of these trees (numbers 25, 26, 27 and 29) are oak trees. These trees are all early mature specimens and contain some features of limited resource to biodiversity. They appear to be along the line of a former hedgerow that has not been present for many years. None of these trees are of exceptional age, biodiversity or cultural value. None of them are of sufficient age or contain a sufficiently diverse array of biodiversity resources to warrant them being considered as veteran. They have no particular heritage value and they are far too young to be considered 'ancient'. They are of a size and species that is commonplace. The loss of such trees is normally acceptable where the benefits, including replacement tree planting, of the scheme outweigh the harm.

4.8 Tree 32 is a small silver birch of little merit.

4.9 The access road, north of the battery arrays, passes within the root protection area of trees 20 to 24, a collection of birch, goat willow and oak that stand within the hedge line at the northern edge of the application site. In such circumstances it is normal to specify a no-dig form of construction for the road. As the name suggests, this avoids excavation and therefore loss of rooting from nearby trees. However, the no-dig system has limitations and is not suitable for the loads imparted by the vehicles that will use the proposed road. Consequently, it is necessary to deploy conventional construction for the road that will result in some root loss. The root loss will not be sufficient to destabilise the tree but may (subject to actual, rather than notional, distribution of roots) lead to a check of, or reduction in, vitality. Such a loss of vitality is not without its benefits as it can lead to the increase in resources for biodiversity – dead or decaying sections of tree are of value hence veteran and ancient trees carry such importance. I therefore consider, even though it may reduce the vitality of adjoining trees, the road can be constructed and whilst it will result in change that change can bring about many benefits.

4.10 The southern access road passes just north of tree 35, a small oak. It will also require excavation within the root protection area. Again, rather than remove the tree it is intended to retain it and allow it to adjust to the new surrounds.

4.11 The proposals are sufficiently remote from the hedges that they result in no impact to them.

Impact of drainage and services

4.12 The proposed drainage and services, other than a SuDs basin toward the east of the application site, are not shown on the proposed layout however there is ample scope to locate them outside of root protection areas and require no specialist measures for their installation.

4.13 The SuDs basin is located south of the BESS compound. It is sufficiently remote from the retained trees that it avoids any harm to them.

4.14 If services do need to be installed within root protection areas then specialist techniques for their installation will be needed. Such specialist techniques include moling, thrust-boring, broken trench or excavation by AirSpade.

5.0 New and replacement tree planting

5.1 The development proposals bring forward opportunity to plant a selection of trees alongside the development. These measures are shown on the Landscape Mitigation Plan. A broad tree belt is proposed to be planted along the southern boundary of the application site. This secures replacement tree planting in excess of that required by national and local planning policy, delivering an important component to the local green infrastructure network by linking three hedgerows that, in turn, are connected to the wider landscape.

5.2 The proposed planting, as indicated on the Landscape Mitigation Plan delivers:

- A little over 0.7 hectares of woodland planting
- Nearly 1.8 hectares of wildflower meadow
- Just over 0.5 kilometres of new hedge planting

5.3 Retaining existing trees and introducing new trees ensures a resource of trees in places where people will enjoy multiple benefits provided by the tree stock. In so doing the tree stock will be able to withstand climate change, protecting and enhancing the resources of soil, air, water, landscape, amenity value, culture and biodiversity, and increasing the contribution that trees make to the quality of life. In that respect the proposals are in line with the very latest guidance, in terms of integrating trees with built form, contained in *Trees in the townscape: A guide for decision makers* produced by the Trees and Design Action Group and the requirements of national and local planning policy. The proposed planting exceeds the local SPG guidance for replacement planting.

5.4 Those multiple benefits of this new tree planting, as part of the site's green infrastructure, include contribution to local landscape, enhancement of sustainable drainage systems, and enhancement of biodiversity.

6.0 Protection of trees during construction

6.1 To ensure the retained trees are safeguarded a tree protection plan has been prepared to show the location of protective measures. These measures need to be implemented in advance of construction and maintained until such time as soft landscape proposals require their removal.

7.0 Summary of impact assessment

7.1 The proposed development results in the loss of very few trees, none of which are of exceptional value.

7.2 Some impact of root protection areas occurs to secure access roads. The impact has the potential to check the vitality of the nearby trees (again they are not of exceptional quality) but this also has the potential to deliver a diverse array of resources for biodiversity.

7.3 Services and utility installation can be sited remote from trees but if they do need to be located within root protection areas specialist measures can be deployed for their installation to minimise harm to retained trees.

7.4 Extensive new and replacement tree planting is provided as part of these development proposals. This net gain of tree cover within the site provides a material contribution to local green infrastructure.

7.5 The application proposals recognise the important contribution trees make to the character and quality of built environments, and the role they play to help mitigate and adapt to climate change. The proposals seek to retain existing trees, where possible, and integrate new trees in accordance with the requirement of local and national planning policy.

Appendix 1

Introduction to key elements of tree information

Sustainable development requires the coordination between disciplines throughout the project, accordingly the package of arboricultural information supports the design process and follows through to construction ensuring effective tree protection.

Keen Consultants break the process down to coordinate with the key elements within both the RIBA Plan of Work (2020) and '*British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations*', this is set out in the table and explained below.

Figure 1 - Keen Consultants co-ordinated approach with cross references to key guidance.

Keen Consultants Tree Information	RIBA Stage	BS5837
Tree Survey	Stage 1: Preparation and Briefing	Feasibility
Impact Assessment	Stage 3: Spatial Coordination	Proposals
Method Statement	Stage 4: Technical design	Technical Design
Site Monitoring	Stage 5: Manufacturing and Construction	Demolition and construction

This cross referenced approach ensures trees are a material consideration and those to be retained will be safeguarded.

Tree Survey and Tree Constraints Plan

To inform the design and layout of the proposed development a tree survey has been undertaken to identify the size and quality of trees both within the site and immediately offsite. We have then used this information to prepare the Tree Constraints Plan drawing that shows the location of each tree, its size and the area around each tree that needs to be considered during the design process. Once prepared this information has been provided to the design team so that they know what constraints the trees pose.

Impact Assessment and Tree Protection Plan

During the design process the design team has consulted with the arboriculturist to ascertain if constraints may be breached, consider options emerging from the design and what spaces for new trees are needed.

Once the design was finalised an impact assessment has been prepared to accompany the planning application. The impact assessment demonstrates the proposals meet national and local planning policy and guidance. It demonstrates the benefits of the retained trees and incorporates new tree planting.

Another essential element of any application is the Tree Protection Plan.

Method Statement

This statement sets out in words how each element of work is undertaken in relation to the trees. It dictates when activities occur and the method that will be used to achieve them. It will also set out a scheme of monitoring and supervision.

Site Monitoring

Following the receipt of planning consent, it is a requirement that the installation of the protective barriers and ground protection are supervised, together with operations such as excavations or surfacing close to trees.

This varies according to the intensity of development near trees, the process is set out to ensure what is planned for in the Tree Protection Plan and method statement is delivered.

Appendix 2

Tree Survey Explanatory Notes

The survey of trees has been carried out in accordance with the criteria set out in Chapter 4 of *British Standard 5837:2012 Trees in relation to design, demolition and construction-Recommendations* (BS5837). The survey has been undertaken by the qualified and experienced arboriculturist detailed at Table 1 of this report and they recorded information relating to all those trees within the site and those immediately adjacent to the site which may be of influence to layout design.

The results are recorded in the Schedule of Trees at Appendix 3.

Schedule of trees

Appendix 3 presents details of the individual trees, groups and hedgerows including heights, diameters at breast height, crown spread (given as a radial measurement of cardinal points from the stem), age class, comments as to the overall condition at the time of inspection, BS5837 category of quality and suitability for retention, and the root protection area information.

General observations particularly of structural and physiological condition for example the presence of any decay and physical defect and preliminary management recommendations have also been recorded where appropriate.

Details of the individual trees, groups and hedgerows

All trees were assessed for their quality and benefits within the context of proposed development in a transparent, understandable and systematic way.

Individuals

The default position is to record each tree as an individual for its unique contribution to the landscape

Groups and woodlands

Trees have been assessed as groups where it has been determined appropriate by the surveyor. The term group has been applied where trees form cohesive arboricultural features either aerodynamically, visually or culturally.

Hedges and shrub masses

We consider a hedgerow to typically comprise a line of trees or shrubs that currently is subject to, or has undergone, a pruning regime to contain its dimensions.

For the tree survey hedgerows and substantial internal or boundary hedges (including evergreen screens) have either been recorded in the Tree Schedule, including lateral spread, height and stem diameter(s), or indicated on the Tree Constraints Plan.

A tree survey in accordance with BS5837 does not assess hedgerows against *The Hedgerow Regulations 1997* or specifically from an ecological perspective, as such would be outside the scope of the British Standard assessment.

Shrub masses are collectives of woody plants, rather than trees, and are recorded where they are a significant feature of the site. They have either been recorded in the Tree Schedule or indicated on the Tree Constraints Plan.

Individual trees within groups, woodlands and hedges

An assessment of individual trees within the groups has been made where there has been a clear need to differentiate between them for example, in order to highlight significant variation between attributes including physiological or structural condition or where a potential conflict may arise.

BS5837 Categorisation

Trees have been divided into one of four categories based on Table 1 of BS5837, 'Cascade chart for tree quality assessment'. For a tree to qualify under any given category it should fall within the scope of that category's definition (see below).

Category U trees are those which would be lost in the short term for reasons connected with their physiology or structural condition. They are, for this reason not considered in the planning process on arboricultural grounds. Categories A, B & C are applied to trees that should be of material considerations in the development process. Each category also having one of three further sub-categories (i, ii, iii) which are intended to reflect arboricultural, landscape and cultural or conservation values accordingly.

Please note that the estimated remaining life expectancy figures are taken for BS5837 and relate to their categorisation. The life expectancy figures are therefore arbitrary and may vary in reality.

Category (U)

Trees that have a serious irremediable structural defect such that their early loss is expected due to collapse and includes trees that will become unviable after removal of other category U trees.

Trees that are dead or are showing signs of significant, immediate or irreversible overall decline.

Trees that are infected with pathogens of significance to the health and/ or safety of other nearby trees or are very low quality trees suppressing adjacent trees of better quality.

Certain category U trees can have existing or potential conservation value which may make it desirable to preserve.

Category (A)

Shown green on Tree Constraints Plan: Trees that are considered for retention and are of high quality with an estimated remaining life expectancy of at least 40 years and with potential to make a lasting contribution. Such trees may comprise:

Sub categories

1) trees that are particularly good examples of their species, especially if rare or unusual, or are essential components of groups such as formal or semi-formal arboricultural features for example the dominant and/or principal trees within an avenue.

2) trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features.

3) trees, groups or woodlands of significant conservation, historical, commemorative or other value for example veteran or wood pasture.

Category (B)

Shown blue on Tree Constraints Plan: Trees that are considered for retention and are of moderate quality with an estimated remaining life expectancy of at least 20 years and with potential to make a significant contribution. Such trees may comprise:

Sub categories

1) trees that might be included in category A but are downgraded because of impaired condition for example the presence of significant though remediable defects, including unsympathetic past management and storm damage.
2) 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.
3) trees with material conservation or other cultural value.

Category (C)

Shown grey on Tree Constraints Plan: Trees that are considered for retention and are of low quality with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150mm. Such trees may comprise:

Sub categories

1) unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.
2) trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value or trees offering low or only temporary/transient screening benefits.
3) trees with no material conservation or other cultural value.

Devising BS5837 root protection areas

Default situation

The root protection area is a function of the stem diameter, it is multiplied by 12 to give a radius. For multi-stemmed trees the stems are combined to provide an effective diameter figure which is then multiplied.

Initially the root protection area should be plotted as a circle, and in many situation it remains a circle.

Influenced situation

Adjustments to the root protection area are made where pre-existing site conditions that would influence root distribution are present. Typically this will be buildings and retaining walls, lighter structures such as hard surfacing, sheds and garages generally do not have the same influence.

Ponds, rivers and watercourses will also influence root distribution as waterlogged soils are not conducive to root growth. Rainwater attenuation and ditches are likely to have a lesser impact if they are dry for significant periods.

Appendix 3

Schedule of Trees

for land at

Swansea BESS,
adjacent to Swansea Greener Grid Park,
Swansea

Key to Tree Schedule

Column Heading	Explanation
Tree No.	Unique number corresponding with number on plan
Species	English names
Ht (m)	Height in metres
Branch Spread	Crown radius in metres to cardinal points of the compass
Stem diameters (cm)	All measurements conform to Annex C of BS 5837:2012 Single stem - Stem diameter in centimetres measured at 1.5m above ground level. Multi-stemmed tree with 2 to 5 stems – Diameter of each stem Multi-stemmed tree with more than 5 stems – Average stem diameter and number of stems
Height of crown clearance	Height in metres between the ground and underside of canopy
Height of first major branch and direction of growth	Height from ground level to base of first major branch and the approximate direction of growth
Abbreviations as suffix to a dimension	*Suffix 'e' denotes an estimated dimension.* *Suffix 'av' denotes an average dimension*
Age class	Age Class definitions: Y = Young S = Semi-mature E = Early mature M = Mature O = Over mature
Category grading (see Appendix A2 for detailed explanation) and Estimated remaining contribution (yrs)	Summary of BS 5837: 2012 categorisation: 1. Trees that do not warrant consideration for retention: U = those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management. 2. Trees to be considered for retention: A1, 2 or 3 = trees of high quality and value (substantial contribution >40 yrs) B1, 2 or 3 = trees of moderate quality and value (significant Contribution >20 yrs) C1, 2 or 3 = trees of low quality and value (but adequate, ie >10 yrs or young trees – until new planting can be established)
Estimated remaining contribution	Useful estimated remaining contribution of the tree or tree group
Condition	Brief description including physiological and structural defects
Preliminary management recommendations	Describes current arboricultural requirement for the tree in its current context and should be undertaken as soon as reasonably practicable.
Root protection radius	Radius of minimum root protection area in metres calculated from section 4.6 and Annex D of BS5837:2012
Root protection area	Total area of minimum root protection area extrapolated from root protection radius

Schedule of trees at proposed Swansea BESS, adjacent to Swansea Greener Grid Park, Swansea

Tree No.	Species	Ht (m)	Branch Spread (m)				Stem diameters (cm)								Height of crown clearance (m)	Height of first branch (m) and direction (compass point)	Age class	Category grading	Estimated remaining contribution (yrs)	Condition Physiological / Structural	Tree Works to BS3998	Root protection radius (m)	Root protection area sq.m
			N	E	S	W	Single Stem	2-5 stems					More than 5 stems										
								Stem 1	Stem 2	Stem 3	Stem 4	Stem 5	Mean dia	No. stems									
1	Hawthorn hedge	7av	3av				20av								0	-	E	B2	>20	Established section of hedgerow between fields. Predominantly hawthorn with some hazel and holly.		2.40	18
2	Group of mixed broadleaves	7av	3av				25av								0	-	Y	B2	>20	Linear collection of trees between fields. Species include hawthorn, sycamore and holly.		3.00	28
3	Pedunculate oak	17	8	9	8	8	74								3	3E	E	B2	>20	Larger component of hedge line.		8.88	248
4	Pedunculate oak	15	7	8	8	9	70								2	2N	S	B1	>20	Stands close to fence line. Some broken branches within crown.		8.40	222
5	Pedunculate oak	13	6	7	6	6	49								3	3S	S	B1	>20	Established tree growing close to fence line.		5.88	109
6	Pedunculate oak	14	3	8	8	6	53								4	4S	S	B2	>20	One of a close growing pair of trees on raised mound. Some hollowing at base. Crown compromised due to neighbouring tree.		6.36	127
7	Pedunculate oak	15	7	8	7	8	76								2	2N	S	B2	>20	One of a pair of close growing trees on raised bank. Some decay at base. Crown development compromised due to neighbouring tree.		9.12	261
8	Pedunculate oak	15	4	9	9	6		51	57						2	2S	S	B2	>20	Established tree growing on raised bank. Some damage to buttress roots. Twin stemmed from circa 1m above ground level.		9.18	265
9	Pedunculate oak	16	9	7	9	8	79								3	3N	S	B2	>20	Stands along fence line at edge of site. Some lower branches have been removed.		9.48	282
10	Pedunculate oak	14	5	7	4	1	46								2	2E	S	B2	>20	Stands along fence line at edge of site. Development compromised by adjoining larger tree.		5.52	96
11	Pedunculate oak	9	3	3	4	3	25e								2	2N	Y	C1	>10	Small tree growing along fence line. Main stem smothered in ivy.		3.00	28
12	Pedunculate oak	11	5	4	6	6	44								2	2S	Y	B2	>20	Established tree growing along fence line.		5.28	88

Schedule of trees at proposed Swansea BESS, adjacent to Swansea Greener Grid Park, Swansea

Tree No.	Species	Ht (m)	Branch Spread (m)				Stem diameters (cm)								Height of crown clearance (m)	Height of first branch (m) and direction (compass point)	Age class	Category grading	Estimated remaining contribution (yrs)	Condition Physiological / Structural	Tree Works to BS3998	Root protection radius (m)	Root protection area sq.m
			N	E	S	W	Single Stem	2-5 stems					More than 5 stems										
								Stem 1	Stem 2	Stem 3	Stem 4	Stem 5	Mean dia	No. stems									
13	Pedunculate oak	5	2	2	2	3	26								2	2S	Y	C1	>10	Small tree growing alone fence line. Under power lines so will be controlled in dimensions.		3.12	31
14	Group of mixed broadleaves	8av	3av				20av								0	-	Y	C2	>10	Group of small trees along fence line. Species include holly, goat willow, pedunculate oak, silver birch and rowan.		2.40	18
15	Silver birch	15	8	7	8	5		47	45						1.2	1.2E	S	B2	>20	Contributing to hedge line between fields. Partial smothering of ivy on main stem.		7.81	192
16	Pedunculate oak	15	9	8	8	7	56								2	2SW	S	B2	>20	Stands in field just south of fence line.		6.72	142
17	Goat willow	10	7	6	6	5							20	7	2	2N	S	C2	>10	Multi stemmed form and growing toward base of ditch. One stem has partially failed.		6.35	127
18	Group of mixed broadleaves	9av	4av				15av								0	-	S	B2	>20	Linear collection of trees growing along ditch line. Species include goat willow, silver birch, crab apple.		1.80	10
19	Pedunculate oak	12	8	7	8	9	60e								2	2W	S	B2	>20	Larger component of hedge line. Main stem smothered in ivy.		7.20	163
20	Pedunculate oak	14	8	7	8	7	60e								2	2E	S	B2	>20	Growing along ditch line. Main stem and much of crown smothered in ivy.	Crown lift to 3m above proposed access.	7.20	163
21	Silver birch	15	5	3	6	5	40e								2	2S	S	B2	>20	Established tree growing along hedge line.	Crown lift to 3m above proposed access.	4.80	72
22	Goat willow	10	8	6	6	4							12	10	0	-	Y	C2	>10	Established tree growing along ditch line. Some stems have collapsed. Coppicing would promote low level regeneration.		4.55	65
23	Pedunculate oak	16	9	9	9	7	70e								2	2S	E	B2	>20	Established tree growing along ditch line. Main stem and crown covered in ivy. Growing in close competition with neighbouring tree.	Crown lift to 3m above proposed access.	8.40	222
24	Pedunculate oak	16	7	2	9	7	49								2	2W	E	B2	>20	Growing in close competition with neighbouring tree.	Crown lift to 3m above proposed access.	5.88	109
25	Pedunculate oak	17	7	8	6	7		73	65						3	3E	E	B2	>20	Established tree growing on raised bank. Some hollowing at base.	Remove.	11.73	432

Schedule of trees at proposed Swansea BESS, adjacent to Swansea Greener Grid Park, Swansea

Tree No.	Species	Ht (m)	Branch Spread (m)				Stem diameters (cm)								Height of crown clearance (m)	Height of first branch (m) and direction (compass point)	Age class	Category grading	Estimated remaining contribution (yrs)	Condition Physiological / Structural	Tree Works to BS3998	Root protection radius (m)	Root protection area sq.m
			N	E	S	W	Single Stem	2-5 stems					More than 5 stems										
								Stem 1	Stem 2	Stem 3	Stem 4	Stem 5	Mean dia	No. stems									
26	Pedunculate oak	14	7	8	8	7	60								2	2E	E	B2	>20	Established tree growing on mound within field.	Remove.	7.20	163
27	Pedunculate oak	17	9	8	8	7	59								3	3W	E	B2	>20	Established tree growing on mound within field.	Remove.	7.08	157
28	Pedunculate oak	13	10	9	9	8	75e								2	2S	E	B2	>20	Established tree growing in field to north of application site.	Crown lift to 3m above proposed access.	9.00	255
29	Pedunculate oak	17	11	10	10	7	74								2	2E	E	B2	>20	Established tree growing on raised bank adjoining ditch. Broad spreading form.	Remove.	8.88	248
30	Pedunculate oak	16	9	9	9	8		61	31						4	4S	E	B1	>20	Twin stemmed tree growing on bank adjoining ditch.		8.21	212
31	Silver birch	9	2	2	2	2	19								1.2	1.2N	Y	C1	>10	Small tree growing on bank adjoining ditch.		2.28	16
32	Silver birch	8	2	2	2	3		17	13						1	1S	Y	C1	>10	Small tree growing on bank adjoining ditch.	Remove.	2.57	21
33	Group of silver birch	12av	5av				35av								0	-	Y	C2	>10	Cluster of small trees along fence line.		4.20	55
34	Mixed broadleaf woodland	15av	7av				60av								0	-	S	B2	>20	Established block of woodland outside northern boundary of site. Predominantly pedunculate oak. Understorey of holly and hazel.		7.20	163
35	Pedunculate oak	10	3	5	3	4	36								2	2N	Y	B2	>20	Established tree growing on raised bank.	Crown lift to 3m above proposed access.	4.32	59
36	Group of mixed broadleaves	7av	3av				15av								0	-	Y	C2	>10	Collection of small trees on raised bank. Species include hawthorn, holly and sycamore. Located close to overhead wires that might need to be cut back to control height.		1.80	10
37	Mixed broadleaf hedgerow	6av	2av				15av								0	-	S	C2	>10	Remnants of former hedgerow growing on bank. Predominantly hawthorn, pedunculate oak and holly with some blackthorn.		1.80	10
38	Pedunculate oak	13	5	5	3	7	39								4	4W	S	B2	>20	Forms part of hedgerow. Smothered in ivy.		4.68	69

Schedule of trees at proposed Swansea BESS, adjacent to Swansea Greener Grid Park, Swansea

Tree No.	Species	Ht (m)	Branch Spread (m)				Stem diameters (cm)								Height of crown clearance (m)	Height of first branch (m) and direction (compass point)	Age class	Category grading	Estimated remaining contribution (yrs)	Condition Physiological / Structural	Tree Works to BS3998	Root protection radius (m)	Root protection area sq.m
							Single Stem	2-5 stems					More than 5 stems										
			N	E	S	W		Stem 1	Stem 2	Stem 3	Stem 4	Stem 5	Mean dia	No. stems									
39	Pedunculate oak	17	7	9	8	9	53								4	4S	S	B2	>20	Larger component of hedge line.		6.36	127
40	Pedunculate oak	14	7	8	7	7	67								5	5N	E	B2	>20	Established tree growing in hedge line. Some hollowing between buttresses.		8.04	203
41	Pedunculate oak	15	8	9	9	9	59								5	5S	S	B2	>20	Standing on bank between fields.		7.08	157
42	Holly	10	3	3	3	3							12	6	1	1S	S	B2	>20	Standing on bank between fields.		3.53	39
43	Pedunculate oak	13	6	7	8	7	49								2	2S	S	B2	>20	Standing on bank between fields.		5.88	109
44	Pedunculate oak	12	7	7	6	6	47								2	2E	S	B2	>20	Standing on bank between fields.		5.64	100
45	Sycamore	16	6	7	7	7	67								3	3E	S	B2	>20	Stands on bank between fields. Broad spreading form.		8.04	203
46	Hawthorn hedge	5	2	3	3	3							10	6	0	-	S	C2	>10	Small tree growing on bank.		2.94	27
47	Pedunculate oak	5	3	4	2	3	24								1	1N	Y	C1	>10	Small tree growing on bank.		2.88	26
48	Group of holly	10av	3av				35av								0	-	S	C2	>10	Linear collection of stems growing on bank. Most stems lacking vitality. Includes occasional hawthorn.		4.20	55
49	Pedunculate oak	16	9	8	7	8	59e								5	5W	S	B2	>20	Larger tree growing on bank between fields. Main stem and much of crown smothered in ivy.		7.08	157
50	Pedunculate oak	15	7	7	8	7	69								2	2N	S	B2	>20	Established tree growing on bank between fields.		8.28	215
51	Pedunculate oak	17	9	8	8	8	79								4	4N	E	B2	>20	Larger tree growing on bank between fields. Broad spreading form.		9.48	282
52	Pedunculate oak	16	7	5	8	7	67								5	5N	S	B2	>20	Established tree growing on bank between fields.		8.04	203
53	Group of holly	9av	3av				35av								0	-	S	B2	>20	Collection of trees growing on bank. Some lacking vitality.		4.20	55

Schedule of trees at proposed Swansea BESS, adjacent to Swansea Greener Grid Park, Swansea

Tree No.	Species	Ht (m)	Branch Spread (m)				Stem diameters (cm)								Height of crown clearance (m)	Height of first branch (m) and direction (compass point)	Age class	Category grading	Estimated remaining contribution (yrs)	Condition Physiological / Structural	Tree Works to BS3998	Root protection radius (m)	Root protection area sq.m
							Single Stem	2-5 stems					More than 5 stems										
			N	E	S	W		Stem 1	Stem 2	Stem 3	Stem 4	Stem 5	Mean dia	No. stems									
54	Pair of ash	15av	7av				55av								2	2N	S	C2	>10	Pair of close growing trees growing on bank. Some decay at base. Appear to have been previously managed as hedgerow and then allowed to out grow. Showing early signs of Ash Dieback.		6.60	137
55	Pedunculate oak	17	8	9	8	8	71								4	4W	E	B2	>20	Established tree growing on bank between fields.		8.52	228
56	Pedunculate oak	17	8	6	8	8	57								5	5W	E	B2	>20	Established tree growing on bank between fields.		6.84	147
57	Pedunculate oak	13	4	3	4	4	39								2	2N	Y	B2	>20	One of a line of trees along fence line between fields.		4.68	69
58	Ash	14	3	6	5	6	34								5	5W	S	C2	>10	Forms part of a line of trees along fence line. Showing advanced Ash Dieback. Unsuited to long term retention.		4.08	52
59	Pedunculate oak	17	7	8	5	7	69								2	2S	S	B2	>20	Forms part of a line of trees along fence line between fields.		8.28	215
60	Pedunculate oak	12	3	3	1	4	37								2	2N	S	B2	>20	Forms part of a line of trees along fence line between fields.		4.44	62
61	Pedunculate oak	13	6	6	5	6	47								2	2E	S	B2	>20	Forms part of a line of trees along fence line between fields.		5.64	100