

VIRMATI ENERGY LTD
T/A FIELD ENERGY

**FIELD KNOCKNAGAE
BATTERY STORAGE PROJECT**

**TREE MANAGEMENT
REPORT**

JUNE 2024

**FIELD KNOCKNAGAEEL BATTERY ENERGY STORAGE SYSTEM
TREE MANAGEMENT REPORT
JUNE 2024**

<u>Contents</u>	<u>Page</u>
1. INTRODUCTION	3
2. SITE DESCRIPTION	4
2.1 Location	4
2.2 Description	4
2.3 Site Constraints	4
3. SURVEY METHODOLOGY	4
4. SURVEY RESULTS	5
5. ARBORICULTURAL IMPACT ASSESSMENT	6
6. PRELIMINARY ARBORICULTURAL METHOD STATEMENT	7
6.1 Mitigation & Compensation	7
6.1.1 Construction of Protective Fencing	7
6.1.2 Construction Exclusion Zones (CEZs)	8
6.1.3 Compensation for unavoidable tree loss	9
6.2 Special Construction Techniques	10
6.2.1 Installation of Underground Utilities	10
6.2.2 Ground Protection During Works Within CEZs	10
6.2.3 New Surfacing Within Root Protection Areas	10
6.2.4 Backfilling (if applicable)	10
7. ARBORICULTURAL SUPERVISION	10

Appendices

Appendix I	Schedule of Trees
Appendix II	Tree Constraints Plan
Appendix III	Tree Protection Plan

FIELD KNOCKNAGAEI BATTERY ENERGY STORAGE SYSTEM TREE MANAGEMENT REPORT JUNE 2024

I. INTRODUCTION

The Proposed Development principally comprises the construction and operation of a battery energy storage system (BESS) with a capacity of up to 200 megawatts (MW). The Proposed Development would charge and discharge from the electricity transmission network via the adjacent, existing Knocknagael substation.

The Proposed Development that forms the application for planning consent includes two battery compounds that accommodate battery storage units arranged into rows, medium-voltage (MV) skids and associated ancillary equipment, a substation compound which accommodates high-voltage grid transformers, switchgear and a control building, as well as site-wide supporting infrastructure including underground cabling, access tracks, fencing, attenuation basins and landscaping measures (herein referred to as the Proposed Development). Whilst the exact specifications are subject to detailed design, the principal components described form the basis of the planning application to allow environmental assessments and mitigation to be appropriately scoped.

The Proposed Development would comprise a total development footprint of approximately 6 hectares (ha) across the 42.83 ha site.

It is located approximately 4km south of Inverness close by the settlement of Essich.

This survey has been undertaken by Dr Ben Lennon of Bowlts Chartered Surveyors on behalf of Field Knocknagael Ltd. Field is a leading renewable energy developer, owner and operator of grid-scale battery energy storage systems across the UK and Europe. Field's aim is to develop, manage and operate battery projects that reduce climate change emissions, support stable grid operation and bring down electricity prices for consumers.

Bowlts Chartered Surveyors have been instructed to inspect the significant trees that could be affected by the Proposed Development and to prepare the following information to support the planning application:-

- a schedule of the relevant trees to include basic data and a condition assessment;
- an appraisal of the impact of the proposal on trees;
- a preliminary arboricultural method statement setting out standard protective measures and management for trees to be retained.

This/

This report provides an analysis of the impact of the development proposal on trees and local amenity with additional guidance on appropriate management and protective measures. Its primary purpose is for the planning authority to review the tree information and consider its relative merits against the planning proposal.

The survey and resulting report have been produced in accordance with the best practice guidelines set out in BS 5837 (2012) *Trees In Relation To Construction Sites: Recommendations*.

2. **SITE DESCRIPTION**

2.1 **Location**

The survey site is located to the south of the town of Inverness.

Centroid Grid ref: NH 652 390.

Postcode: IV2 6AL

What3Words: ///trick.furniture.frown

2.2 **Description**

The Proposed Development comprises a grid-connected battery energy storage system with a capacity of up to 200 MW. The Proposed Development will import and export energy to and from the transmission network via the nearby Knocknagael substation. The Proposed Development includes two battery compounds that accommodate battery storage units arranged into rows, medium-voltage (MV) skids and associated ancillary equipment, a substation compound which accommodates high-voltage grid transformers, switchgear and a control building, as well as site-wide supporting infrastructure including underground cabling, access tracks, fencing, attenuation basins and landscaping measures.

The Proposed Development would comprise a total development footprint of approximately 6 hectares (ha) across the 42.83 ha site.

2.3 **Site Constraints**

The development area is not constrained by any statutory designations. On a record search, there is shown to be no statutory designations. There are several features of potential heritage interest that are shown on the Canmore dataset. These do not appear to fall within the areas shown as part of the development corridor.

3. **SURVEY METHODOLOGY**

The site survey was undertaken on 30th November 2023 using information supplied by the client.

In/

In order to assess the impact of the proposed development, information was collected against the criteria below.

Once the trees were positioned, the tree data required in the BS5837:2012 process was collected for each tree:-

Tree no	As per plan
Species	Common name/ Botanical Name
Height	Metres
Diameter at 1.5m from	cm
Crown spread (north)	Metres
Crown spread (east)	Metres
Crown spread (south)	Metres
Crown spread (west)	Metres
Age class	Young/Semi mature/Mature/Over mature/Veteran
Physical condition	Grading of physical condition assessment of roots through to foliage
Structural condition	Grading of structure, identifying potential weaknesses
Preliminary	Arboricultural recommendations
Category	A = High, B = Medium, C = Low, U = Unsuitable
Criteria	1 = Arboricultural value, 2 = Landscape value, 3 = Cultural/conservation value
Comments	Additional relevant information

Once the tree survey was completed in the field, the data was verified and downloaded into ArcMap. Analysis was undertaken to identify which trees were affected by the proposed development.

4. **SURVEY RESULTS**

The site was surveyed in relation to the proposed development. Trees were divided into categories depending on their level of cultural and ecological importance with A regarded as the most important and C as the least important (U as unsuitable). Definitions may be found in Appendix II.

Detailed tree and woodland survey data can be found in Appendix I.

A report was submitted for Pre-application planning and was used to inform the detailed plan. The current report is a refinement of the previous report with recommendations for mitigation and compensation.

5./

5. ARBORICULTURAL IMPACT ASSESSMENT

In total 27 individual trees were identified, surveyed and evaluated. In addition, eleven groups of trees and woodlands were surveyed. These include all of the woodlands inside the Option Area and several lying on the boundary which had the capacity to impact on, or be impacted by, the development (W9 and W11). W9 and W11 have been included in Table I for the sake of completeness. A young plantation (W3) was also surveyed. This fell below the criteria for consideration under the guidelines (being under 10cm average dbh).

This area may have been planted within recent years as a planning requirement.

Impacts are summarised in the table below with details provided in Appendix I.

In summary the proposals for construction corridors, export cables, access tracks and temporary compounds could be accommodated based on the drawings provided with a limited impact on the tree and woodland environment. It is considered that the limited impact can be adequately compensated for through on-site measures.

Table I - Summary of Trees That May be Affected by the Development

	Category A	Category B	Category C	Category U
Trees to be removed	2	0	0	0
Trees to be retained	17	6	2	0
Woodlands/ groups unaffected	3	6	0	0
Woodlands/ groups affected	0	1	0	1

In most cases, construction zones are directed away from the trees and woodlands and where operational activities are likely to impact, protective measures can be established. Two instances stand out from this general pattern.

Two trees have been identified for removal. These are 409 and 438. Both trees are high quality veteran trees, one being birch and the other hawthorn. While both being relatively small, they nonetheless form a part of the wider character of the area. These sit on the site identified for the western BESS compound. While all measures have been taken to avoid impact on the wooded environment, this option is deemed to have the least impact overall. On the same site there will be the loss of a corner of a small plantation of Sitka spruce including some young native broadleaves totalling 0.06 ha. This is less detrimental the wooded environment.

Appropriate/

Appropriate measures and Root Protection Areas can be established for the remaining trees and impacts on the wider treescape will be negligible.

While the loss of the two small veteran trees is undesirable, compensatory works in the form of tree establishment will deliver equivalent benefits over time.

6. **PRELIMINARY ARBORICULTURAL METHOD STATEMENT**

This section sets out management and protection details that must be implemented to secure successful tree retention.

Other than trees 409, 438 and a small part of W10, retained trees are not likely to be affected by the development.

It is possible that some of the hedgerow hawthorns may need to be cut back to facilitate lorry access. If this is the case, they may be cut back by 1-1.5m to facilitate access. If this is carried out, the cuts should be carried out cleanly with a sharp tool, not with a flail.

6.1 **Mitigation & Compensation**

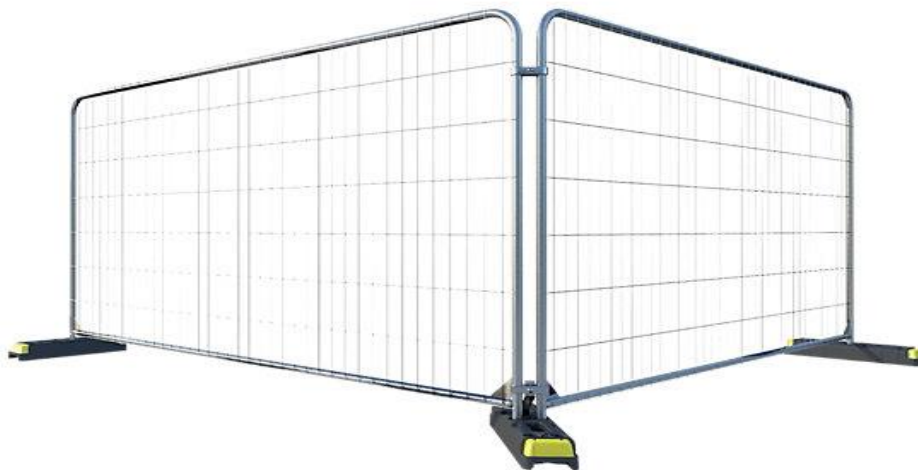
Other than the exceptions mentioned above, no mitigation is required beyond compensation and protective fencing.

6.1.1 **Construction of Protective Fencing**

The default specification should consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated. The vertical tubes should be spaced at a maximum interval of 3m and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed. Care should be exercised when locating the vertical poles to avoid underground services and, in the case of the bracing poles, also to avoid contact with structural roots. If the presence of underground services precludes the use of driven poles, an alternative specification should be prepared in conjunction with the project arboriculturist, that provides an equal level of protection. Such alternatives could include the attachment of the panels to a free-standing scaffold support framework.

Where the site circumstances and associated risk of damaging incursion into the RPA do not necessitate the default level of protection, an alternative specification should be prepared by the project arboriculturist and, where relevant, agreed with the local planning authority. For example, 2m tall, welded mesh panels on rubber or concrete feet might provide an adequate level of protection from cars, vans, pedestrians and manually operated plant. In such cases, the fence panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The distance between the fence couplers should be at least 1m and should be uniform throughout the fence. The panels/

panels should be supported on the inner side by stabiliser struts, which should normally be attached to a base plate secured with ground pins (Figure 3a). Where the fencing is to be erected on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabiliser struts should be mounted on a block tray.



6.1.2 Construction Exclusion Zones (CEZs)

Most of the trees on site are not likely to be affected by construction traffic or activities. The bulk of construction activity will be in the south of the site. With the exception of the trees being removed, creation of Construction Exclusion Zones around Root Protection Areas have been identified. These shall be delineated by the protective fencing as above over the area shown on Appendix III - Tree Protection Plan.

No works access should be allowed into the CEZs during the development phase. No storage of any building materials or any other materials should be allowed within the CEZs. Once the exclusion zones have been protected by barriers and/or ground protection, construction work can commence. All weather notices should be erected on the barrier with words such as: “Construction Exclusion Zone — Keep Out”.

In/

In addition, the following should be addressed or avoided:-

- Care should be taken when planning site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to them and might make their safe retention impossible. Consequently, any transit or traverse of plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from trees is maintained at all times. In some circumstances it may be impossible to maintain adequate clearance thus necessitating access facilitation pruning. This is to be agreed prior to any work being carried out.
- Material which will contaminate the soil, e.g. concrete mixings, diesel oil and vehicle washings, should not be discharged within 10m of the tree stem.
- Fires should not be lit in a position where their flames can extend to within 5m of foliage, branches of trunk. This will depend on the size of the fire and the wind direction.
- Notice boards, telephone cables or other services should not be attached to any part of the trees.
- It is essential that allowance should be made for the slope of the ground so that damaging materials such as concrete washings, mortar or diesel oil cannot run towards trees.

6.1.3 Compensation for Unavoidable Tree Loss

A small number of trees have needed to be removed to accommodate such a large scheme. These are detailed above and in Appendix I. Following discussions with the Local Authority Tree Officer (Mr Grant Stuart) on 20th June 2024, it was agreed that a separate Tree Compensation Plan was not required on this occasion providing that it was clear that Landscaping and Biodiversity Mitigation Plans were in excess of the requirement and that the loss of trees and woodland could be comfortably accommodated within this.

A full site landscaping plan and biodiversity enhancement plan are proposed to be implemented across the site to reduce visual impacts and to contribute to the delivery of a net positive ecological impact on the site to ensure that biodiversity is left in a measurably better state than its pre-development baseline.

Landscape bunds are proposed to be introduced along the site's north-western and eastern boundaries, including planted vegetation comprising gorse scrub, birch trees and shrub planting along the bund's outer edge.

It is understood that this significantly exceeds the requirement and given that minor loss of trees and woodland, this loss is compensated for within the landscaping proposals.

6.2/

6.2 Special Construction Techniques

No special construction techniques are proposed for this operation.

6.2.1 Installation of Underground Utilities

None of these affect the surveyed trees other than those mentioned above.

6.2.2 Ground Protection During Works Within CEZs

Not applicable.

6.2.3 New Surfacing within Root Protection Areas

No new surfacing is proposed during this operation.

6.2.4 Backfilling (if applicable)

Not applicable.

7. ARBORICULTURAL SUPERVISION

During the construction phase it is recommended that an appropriately qualified arboricultural consultant should be appointed to oversee and record works on site to ensure compliance with the Tree Protection Plan. This would likely constitute an initial visit once the site has been laid out and protective fencing in place and at least once more during the construction phase.

Any deviation from the agreed prescribed method statement or the occurrence of any unforeseen damage to the trees must be immediately reported to the site's Arboricultural Consultant. All works around the affected area on site must be halted immediately. The Arboricultural Consultant will make a site visit to assess the extent of the damage or deviation from the prescribed method statement and any resulting works required.

Plan prepared by Dr B Lennon FIC For., MRICS, M.A.
20th June 2024

BL/NH 4100b
25th June 2024

SCHEDULE OF TREES

TREE SURVEY RESULTS

SITE: Knocknagael
 CLIENT: Field Energy
 DATE OF VISIT: 29/11/2023

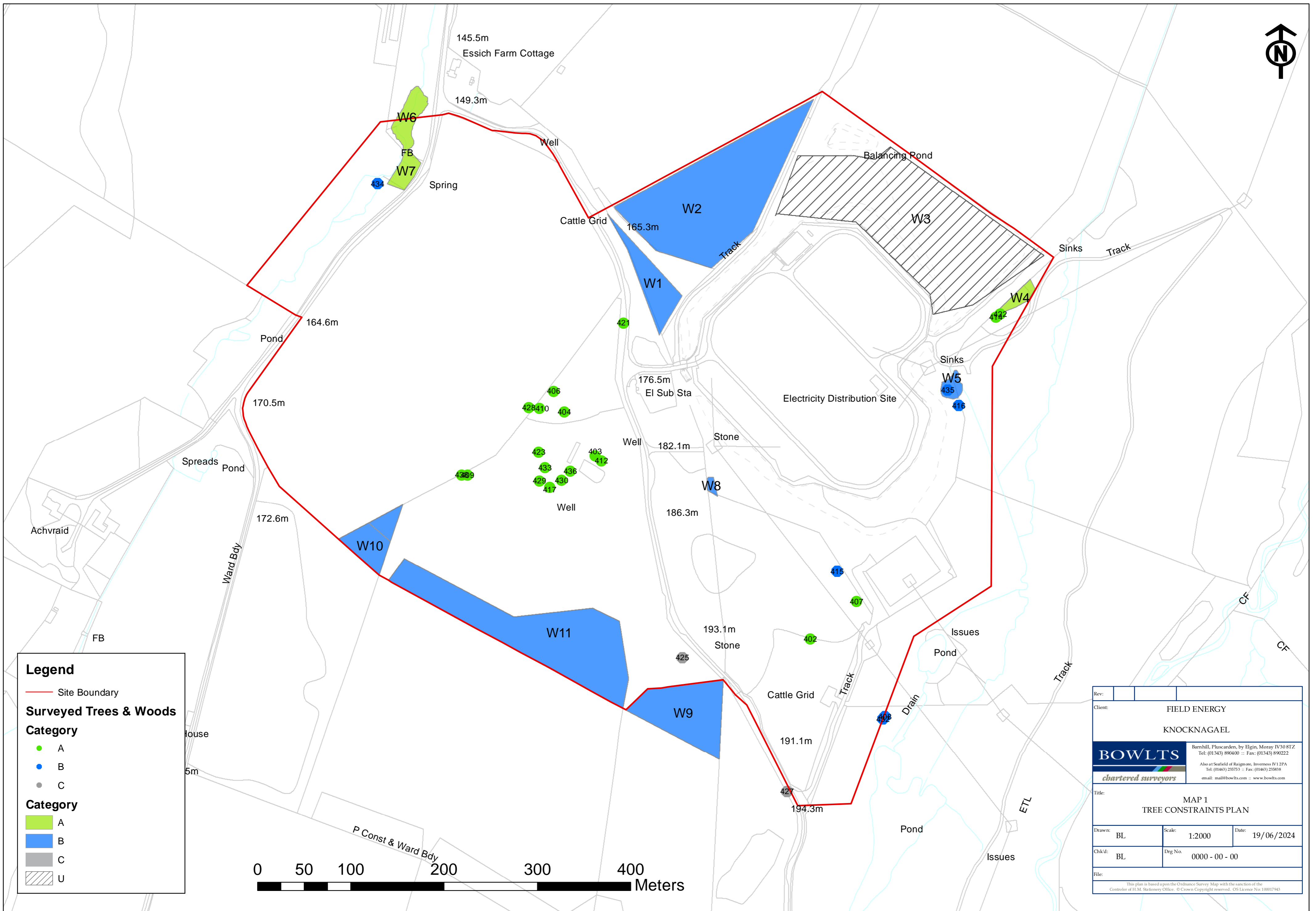
No.	Name	Botanical Name	Dia (cm)	TREE HEIGHT (m)	COMMENT	Crown spread				Categor y	AGE	STEM No.2	DIA STEM No.3	CONDITION	RECOMMENDATION	RPZ Dia (m)
						N	S	E	W							
402	Silver birch	Larix europea	57	8	Old larch	3	3	3	3	A	M			Good	Retain	6.8
408	Douglas fir	Pseudotsuga menziesii	30	12	Exposed DF	3	3	1	3	B	M			Good	Retain	3.6
403	Common lime	Tilia x europea	98	16	Veteran	6	6	6	6	A	M			Good	Retain	11.8
404	Silver birch	Betula pendula	37	7	Veteran	2	2	2	2	A	M			Good	Retain	4.4
406	Wild cherry	Prunus avium	83	8	Veteran	5	5	5	5	A	M			Good	Retain	10.0
407	European larch	Larix europea	73	6	Vet birch	3	3	3	2	A	M			Good	Retain	8.8
409	Silver birch	Betula pendula	51	6	Veteran	4	3	3	4	A	M			Good	Remove	
410	Ash	Fraxinus excelsior	78	13	Veteran	7	7	7	7	A	M			Good	Retain	9.4
412	Ash	Fraxinus excelsior	78	14	Veteran	6	6	6	6	A	M			Good	Retain	9.4
414	Silver birch	Betula pendula	32	6	Old larch	2	2	2	2	A	M			Dieback but solid.	Retain	3.8
422	Silver birch	Betula pendula	28	4	Old group	2	2	2	2	A	M			Good	Retain	3.4
415	Rowan	Sorbus aucuparia	19	4	Veteran	2	1	1	1	B	M			Some decline	Retain	2.3
416	Silver birch	Betula pendula	31	7	Old birch	3	3	3	3	B	M			Good	Retain	3.7
417	Sycamore	Acer pseudoplatanus	102	16	Veteran	8	8	8	8	A	M			Good	Retain	12.2
421	Hawthorn	Crataegus monogyna	42	3	Vet Hawthorn	2	2	2	2	A	M			Good	Retain	5.0
423	Silver birch	Betula pendula	57	6	Veteran	4	4	4	4	A	M			Good	Retain	6.8
425	Silver birch	Betula pendula	14	3	In gorse mantle	1	1	1	1	C	Y			Good	Retain	1.7
427	Rowan	Sorbus aucuparia	12	3	2X Stems	1	1	1	1	C	Y	13		Good	Retain	2.0
428	Hawthorn	Crataegus monogyna	44	3	Veteran	2	2	2	2	A	M			Good	Retain	5.3
429	Sycamore	Acer pseudoplatanus	61	14	Veteran	7	7	7	7	A	M			Good	Retain	7.3
430	Elm	Ulmus glabra	98	14	Veteran	6	6	6	6	A	M			Good	Retain	11.8
432	European larch	Larix europea	27	11	Exposed Larch	4	3	2	3	B	M			Good	Retain	3.2
433	Sycamore	Acer pseudoplatanus	85	15	Veteran	6	6	6	6	A	M			Good	Retain	10.2
434	ash	Fraxinus excelsior	29	3	Semi-mature	3	2	2	3	B	SM			Good	Retain	3.5
435	Silver birch	Betula pendula	18	6	Old birch	2	2	2	2	B	M			Good	Retain	2.2
436	Oak	Quercus robur	116	14	Veteran	7	7	7	7	A	M			Good	Retain	13.9
438	Hawthorn	Crataegus monogyna	22	3	Veteran	2	2	2	2	A	M			Good	Remove	

Woodland area/ groups

No.	Name	Botanical Name	Dia (cm) Av. Dbh	TREE HEIGHT (m)	COMMENT	Crown spread				Categor y	AGE	STEM No.2	DIA STEM No.3	CONDITION	RECOMMENDATION	RPZ radius (m)
						N	S	E	W							
W1	Scub/ Mixed broadleaves		12		Young scrub. Edges could be cut back from roadside					B	SM			Young	Retain	1.44
W2	MB/ WOOD PASTURE		12		Open. No impact on the roadline.					B	SM			Open woodland .	Retain	1.44
W3	YOUNG PLANTATION		7		Under the threshold for measurement but may be subject to other planning mitigation.					U	Y			Young	Cable route 5m x 190m =0.095Ha	0.84
W4	Silver birch	Betula pendula	22		Old group x 7of birch					A	M			Good	Retain	2.64
W5	Silver birch	Betula pendula	24		Old group x 7of birch					B	M			Good	Retain	2.88
W6	Mixed broadleaves		70		Mature Ash,Syc, Cherry. Burnside					A	OM			Some	Retain	8.4
W7	Mixed broadleaves		65		Mature Ash,Syc, Cherry. Burnside					A	M			Good	Retain	7.8
W8	Mixed broadleaves/ willow		12		Self sown group					B	M			Good	Retain	1.44
W9	Sitka spruce	Top Ht 14. Largest dbh used	26	14	30 Year old plantation. Beyond Options area/ other ownership					B	M			Unthinned plantation	Retain	3.12
W10	Sitka spruce	Top Ht 14. Largest dbh used	26	14	30 Year old plantation.					B	SM			Unthinned plantation	Remove 0.06 Ha	3.12
W11	Sitka spruce	Top Ht 14. Largest dbh used	26	14	30 Year old plantation. Beyond Options area/ other ownership					B	SM			Unthinned plantation	Retain	3.12

DIA:	Tree diameter in Cm at 1.5m from ground level
TOP HEIGHT:	Height estimated using a Suunto clinometer and rounded to the nearest metre
CROWN SPREAD	Measured (to bark at 1.5m) to the four compass points indicated
CATEGORY:	Retention category see below: A - Trees of high quality and value in such condition as to be able to make a substantial contribution for a minimum of 40 years B - Trees where retention is desirable - moderate category C - Trees of low quality and value currently in adequate condition to remain until new planting could be established and expected to remain for a minimum of 10 years U - Trees in such 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
	1 - Mainly arboricultural qualities 2 - Mainly landscape qualities 3 - Mainly cultural values, including conservation
ASSESSMENT	Tree removal or retention decision following condition survey. Tree removal in red indicates tree to be removed due to both silvicultural qualities and proposed development
AGE:	Age class of each tree: OM- Over mature M- Mature, MA- Middle aged, SM - Semi mature, Y - Young
STEM NO:	Number of stems
RPZ Dia (m)	Root Protection Zone expresses as concentric circle in diameter (in metres). Based on x12 of stem diameter.

TREE CONSTRAINTS PLAN



Legend

— Site Boundary

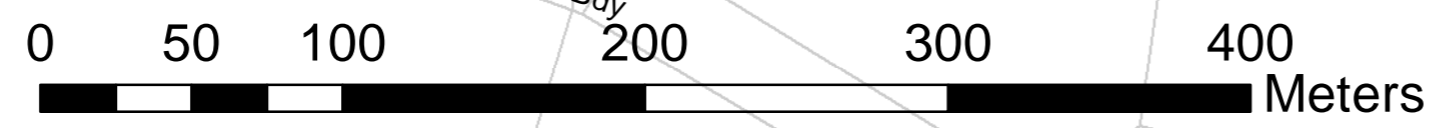
Surveyed Trees & Woods


Category

- A
- B
- C

Category

- A
- B
- C
- ▨ U



Rev:		
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Title:	MAP 1 TREE CONSTRAINTS PLAN	
Drawn:	BL	Scale: 1:2000
Chkd:	BL	Date: 19/06/2024
	Drg No.	0000 - 00 - 00
File:	<small>This plan is based upon the Ordnance Survey Map with the sanction of the Controller of H.M. Stationery Office. © Crown Copyright reserved. OS Licence No 100017943</small>	

TREE PROTECTION PLAN



Trees 409 & 438
Remove

W10
Removal of 0.06 Ha

Legend

- Development Boundary
- - - Protective Fencing
- Tree Construction Exclusion Zone (CEZ)
- Ecological CEZ

Trees

Retain/ Remove

- Retain
- Remove

Woodlands

Retain/Remove

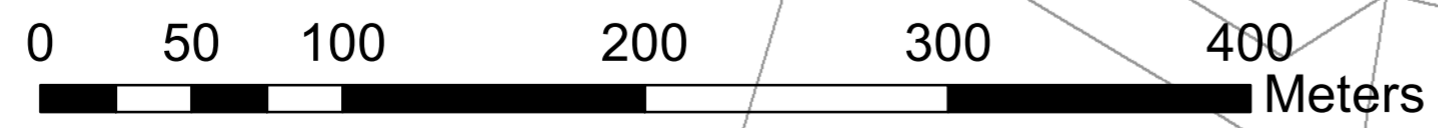
- Remove
- Retain

Site Layout

- Other construction features

Layer

- Access Road
- Cable Route
- Attenuation Basin



Rev:		
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	Barnhill, Pluscadden, by Elgin, Moray IV30 8TZ Tel: (01343) 890400 :: Fax: (01343) 890222 Also at Seafield of Raigmor, Inverness IV1 2PA Tel: (01463) 235733 :: Fax: (01463) 235838 email: mail@bowlts.com :: www.bowlts.com	
Title:	MAP 2 TREE PROTECTION PLAN	
Drawn:	Scale: 1:2500	Date: 27/06/2024
Chkd:	Drg No: 0000 - 00 - 00	
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