



Westfield Substation Extension

Arboriculture Report

Version 4 Issued 20/04/26

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WOODLAND IMPACT ASSESSMENT

1.1 Study Areas

The Study Areas location is areas located at centre:

Site	OS Grid Ref at centre	Area (ha)
Westfield	NT 1904 9760	16.7

A desktop survey was conducted using aerial imagery and spatial datasets, including the Ancient Woodland Inventory (AWI), Native Woodland Survey of Scotland (NWSS) and the National Forest Inventory (NFI). Walkover surveys of the sites were conducted on Tuesday 25th June and Monday 5th August 2024. Following the completion of the walkover survey, the site boundary has been revised. The southern boundary has been brought further north, and the eastern boundary has been extended to incorporate the existing substation. The additional area was not included in the arboricultural survey, as it comprises operational industrial land with no trees or notable vegetation, and is therefore not considered to present any arboricultural constraints.

1.2 National Planning Framework

National Planning Framework 4 (NPF 4) (Scotland) is the national spatial strategy for Scotland. It sets out spatial principles, regional priorities, national developments and national planning policy.

Policy 6 Forestry, Woodland and Trees:

Policy Intent:

- To protect and expand forests, woodland and trees.

Policy Outcomes:

- Existing woodlands and trees are protected, and cover is expanded.
- Woodland and trees on development sites are sustainably managed.

Policy 6

- Development proposals that enhance, expand and improve woodland and tree cover will be supported.
- Development proposals will not be supported where they will result in:
 - Any loss of ancient woodlands, ancient and veteran trees, or adverse impact on their ecological condition;
 - Adverse impacts on native woodlands, hedgerows and individual trees of high biodiversity value, or identified for protection in the Forestry and Woodland Strategy;
 - Fragmenting or severing woodland habitats, unless appropriate mitigation measures

are identified and implemented in line with the mitigation hierarchy; (...)

c) Development proposals involving woodland removal will only be supported where they will achieve significant and clearly defined additional public benefits in accordance with relevant Scottish Government policy on woodland removal. Where woodland is removed, compensatory planting will most likely be expected to be delivered.

d) Development proposals on sites which include an area of existing woodland or land identified in the Forestry and Woodland Strategy as being suitable for woodland creation will only be supported where the enhancement and improvement of woodlands and the planting of new trees on the site (in accordance with the Forestry and Woodland Strategy) are integrated into the design.

1.3 Site Description

The survey area extends to 16.7 ha and is centred on OS Grid Reference NT 19056 97644 (See Figure 1.1). The land is currently in agricultural use as pasture for livestock with an existing electricity substation to the east.

There are no extensive areas of woodland within the study area. An area of wet woodland which sits outside of the site boundary and to the south of the existing substation extends to 0.66ha. The trees recorded during the survey are remnants of old hedgerows or more recent roadside planting and woodland and hedgerows that were potentially planted for screening the existing substation (See Table 1.1).

There are no recorded Ancient Woodland as classified within the Ancient Woodland Inventory¹ or Native Woodlands² as recognised by the Native Woodland Survey of Scotland³ within or adjacent to the study area.

1.4 Baseline Condition

Trees between *Placemark 1 and 11* and at *Placemark 46* (See Table 1.1) are remnants of old hedgerows composed of Hawthorn (*Crataegus monogyna*), Ash (*Fraxinus excelsior*) and Wych Elm (*Ulmus glabra*) with much of the Ash in severe decline due to *Chalara*. Details of individual trees surveyed are found in Table 1.2.

A mature hedge runs from *Placemark 26 to Placemark 33*. The hedge is in good condition with a species mix including Wych elm (*Ulmus glabra*), Hawthorn, Holly (*Ilex aquifolium*) and Sycamore. Trees are closely planted and the hedge provides some screening looking east towards the existing substation.

A large group of mixed broadleaves at *Placemark 32* contains Black Poplar, Sycamore, Alder. These trees are in good condition.

The roadside scrub/hedge between *Placemarks 37 & 42* is in good condition and is significant for its diverse species mix.

Outside of the site boundary, at *Placemark 14 to 25* an area of densely planted wet woodland of approximately 0.66ha is composed of White willow (*Salix alba*), Alder (*Alnus glutinosa*) and Black Poplar (*Populus x euramericana*). It is largely impenetrable due to dense branching. A number of large willow and poplar have blown over due to their height and the wet ground conditions. Standing trees are healthy, with multiple stems and large canopies. They are a significant in terms of their height and prominence in the surrounding landscape.

¹ [AWI](#)

² [NWSS](#)

1.5 Mitigation

The Proposed Development has potential to negatively impact the existing trees.

The remnant hedge trees at *Placemark 1 to 11* are within the proposed development area. These are of overall low quality due to the prevalence of Ash Dieback disease-*Chalara* in the mature Ash. Compensatory planting would be appropriate mitigation with an alternative species selected to replace those Ash trees which are removed.

Hedge trees and scrub covering an area of approximately 0.68ha (*Placemark 26 to 31 and Placemark 33*) are within the proposed development boundary and growing within the buffer of the existing OHL. These are mostly low-growing species which could continue to be managed to maintain a safe height below those overhead powerlines crossing the site. Hedges of this type are a common feature of field boundaries in the context of the surrounding landscape.

A large group of mixed broadleaves at *Placemark 32* contains Black Poplar, Sycamore, Alder is within the development boundary.

A total of 730 linear meters of scrub/hedge within the site boundary could be removed. As there are no designations within any of these areas, compensatory hedge planting is a feasible means of mitigation.

In order to avoid loss or damage to standing trees within the vicinity of the Proposed Development, recommendations set out by the British Standards Institute (BSI) with regards to the Root Protection Area (RPA) will be followed. In summary, the RPA for single stem trees was calculated as an area equivalent to a circle with a radius 12 times the stem diameter (cm); the RPA for multi-stemmed trees was calculated in groups based on the number of stems present. The Root Protection Area is shown in Figure 2 and details on individual trees is given in Table 2.2. Table 2 also includes details of trees within the wet woodland located to the south of the existing substation and adjacent to the site boundary, identified as G7 on Figure 1.1. Although these trees are located outside the site boundary, their Root Protection Areas extend into it. The tree protection boundary for these trees has been incorporated into the design and will be implemented on site as illustrated in Figure 1.1, ensuring that appropriate protection measures are in place throughout the development.

1.6 Recommendations

Recommendations set out in the BSI RPA as per *Figure 2* will be followed in order to minimise impact to existing trees.

Where low-growing tree species are growing at the boundary of the proposed development consideration should be given to whether these can be retained and managed to maintain safe heights.

If removal of trees is unavoidable, opportunities for compensatory planting within the footprint of the development will be considered – this might be combined with planting for landscape screening in the Land Management Plan.

Table 1.1. Species within Westfield survey area

Placemark	Description
Placemark 1 to 11	Mature hedge trees. Ash (<i>Fraxinus excelsior</i>), Wych elm (<i>Ulmus glabra</i>), Hawthorn (<i>Crataegus monogyna</i>), Grey willow (<i>Salix</i> Ash in decline.
Placemark 14 to 16	Densely planted wet woodland containing White willow (<i>Salix alba</i>), Black Poplar (<i>Populus x euramericana</i>)
Placemark 24	Tall mature White willow and Black poplar
Placemark 26 to 33	Mature hedgerow, species include Wych elm, Hawthorn, Sycamore (<i>Acer pseudoplatanus</i>), Holly (<i>Illex aquifolium</i>)
Placemark 37 to 42	Roadside scrub and hedgerow planting on banking. Grey willow, Hawthorn, Goat willow (<i>Salix caprea</i>), Dog rose (<i>Rosa canina</i>) and Elder (<i>Sambuca nigra</i>) with gorse and broom interspersed
Placemark 44	Scrubby hedge of Goat willow, Grey willow and Hawthorn
Placemark 46	Grey willow and Hawthorn, remnant hedge trees



Fig. 1a Placemark 2 - Westfield



Fig. 1c Placemark 15 - Westfield



Fig. 1d Placemark 16 - Westfield



Fig. 1e Placemark 31 - Westfield



Fig. 1f Placemark 35 - Westfield



Fig. 1g Placemark 38 - Westfield



Fig. 1h Placemark 42 - Westfield

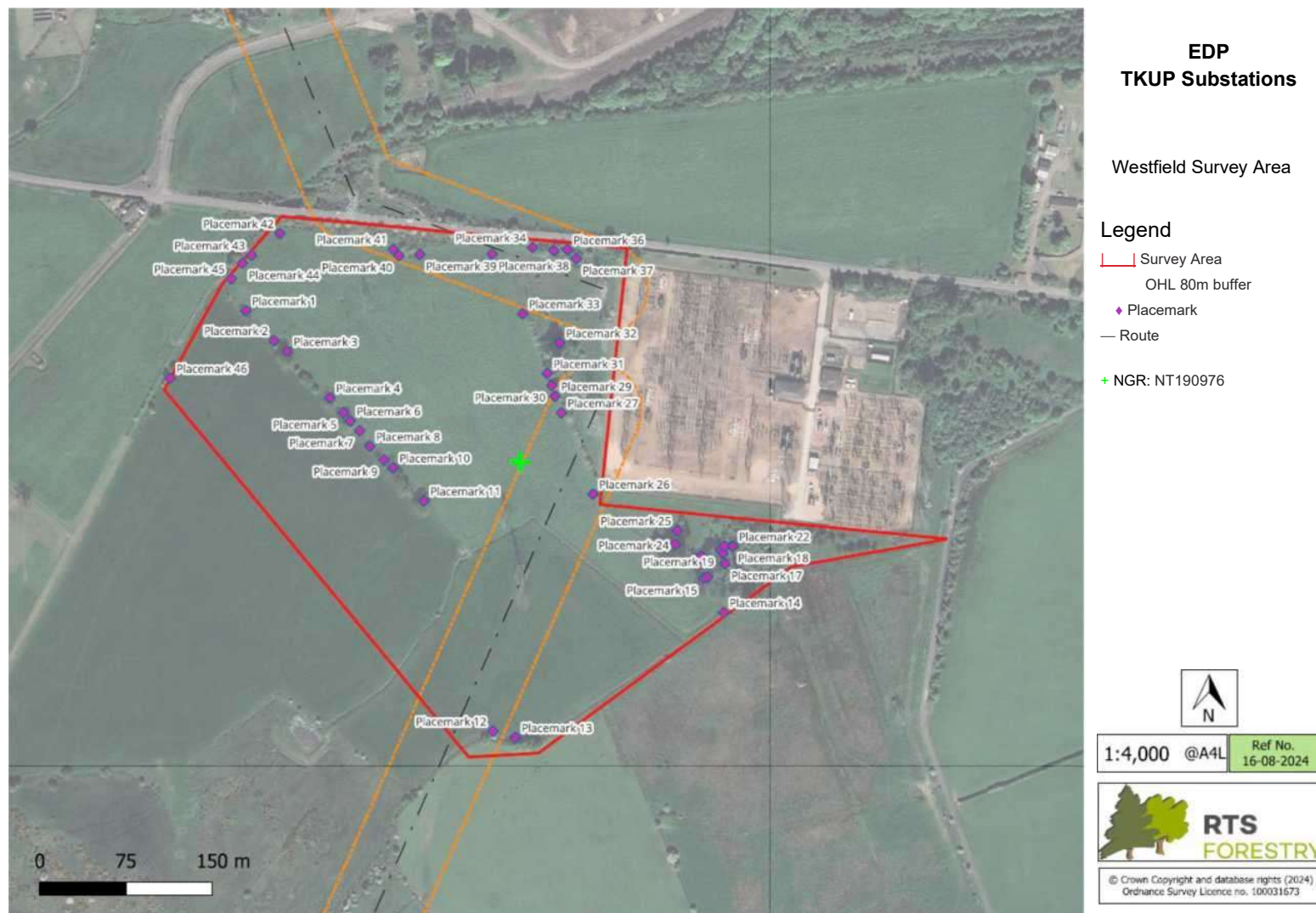
Table 1.2: Tree Survey Data - Westfield								
Site	ID	Species	Scientific Name	DBH (cm)	Height (m)	RPA (m)	Observations	Condition
Westfield	1	Hawthorn	<i>Crataegus monogyna</i>	8	2	1.0	Healthy	Good
Westfield	2	Grey sallow	<i>Salix cinerea</i>	14	5	1.7	Healthy	Good
Westfield	3	Grey sallow	<i>Salix cinerea</i>	16	6	1.9	Healthy	Good
Westfield	4	Wych elm	<i>Ulmus glabra</i>	10	3	1.2	Healthy	Good
Westfield	5	Wych elm	<i>Ulmus glabra</i>	11	3	1.3	Healthy	Good
Westfield	6	Wych elm	<i>Ulmus glabra</i>	11	3	1.3	Healthy	Good
Westfield	7	Wych elm	<i>Ulmus glabra</i>	14	3	2.1	Multi-stem, healthy	Good
Westfield	8	Common ash	<i>Fraxinus excelsior</i>	D	D	D	Dead	Dead
Westfield	9	Hawthorn	<i>Crataegus monogyna</i>	12	3.5	2.4	Multi-stem, healthy	Good
Westfield	10	Common ash	<i>Fraxinus excelsior</i>	42	7	5.0	Dying, sparse crown, epicormic growth	Poor
Westfield	11	Common ash	<i>Fraxinus excelsior</i>	38	7	4.6	Dying, sparse crown, epicormic growth	Poor
Westfield	14	Wych elm	<i>Ulmus glabra</i>	13	3	2.2	Multi-stem	Good
Westfield	15	Hawthorn	<i>Crataegus monogyna</i>	12	3.5	1.4	Healthy	Good
Westfield	16	Common ash	<i>Fraxinus excelsior</i>	56	14	6.7	Dieback in evidence	Poor
Westfield	17	Common ash	<i>Fraxinus excelsior</i>	15	4	1.8	Dieback in evidence	Poor
Westfield	18	Hawthorn	<i>Crataegus monogyna</i>	13	4	1.6	Healthy	Good
Westfield	19	Wych elm	<i>Ulmus glabra</i>	14	4.5	2.2	Double stem, healthy	Good
Westfield	20	Wych elm	<i>Ulmus glabra</i>	20	5.5	3.6	Multi-stem, healthy	Good
Westfield	21	Wych elm	<i>Ulmus glabra</i>	22	5	3.7	Multi-stem, healthy	Good
Westfield	22	Hawthorn	<i>Crataegus monogyna</i>	16	3.5	1.9	Healthy	Good
Westfield	23	Common ash	<i>Fraxinus excelsior</i>	14	6	2.2	Double stem, one stem is dead	Poor
Westfield	24	Wych elm	<i>Ulmus glabra</i>	18	5	2.2	Multi-stem, healthy	Good
Westfield	25	Hawthorn	<i>Crataegus monogyna</i>	11	2.5	1.3	Healthy	Good
Westfield	26	Common ash	<i>Fraxinus excelsior</i>	82	12	9.8	Sparse crown, dieback in evidence	Poor
Westfield	27	Common ash	<i>Fraxinus excelsior</i>	53	8	6.4	Dying, sparse crown, dieback	Poor

Site	ID	Species	Scientific name	Dbh (cm)	Height (m)	RPA (m)	Observations	Condition
Westfield	28	Common ash	<i>Fraxinus excelsior</i>	58	11	7.0	Dying, sparse crown, dieback	Poor
Westfield	29	Wych elm	<i>Ulmus glabra</i>	12	6	2.3	Mult-stem, healthy	Good
Westfield	30	Common ash	<i>Fraxinus excelsior</i>	40	8	4.8	Dying, sparse crown, dieback	Poor
Westfield	31	Hawthorn	<i>Crataegus monogyna</i>	12	2.5	1.4	Healthy	Good
Westfield	32	Wych elm	<i>Ulmus glabra</i>	12	3.5	1.4	Healthy	Good
Westfield	33	Common ash	<i>Fraxinus excelsior</i>	55	10	6.6	Sparse crown, dieback	Poor
Westfield	34	Common ash	<i>Fraxinus excelsior</i>	57	12	6.8	Sparse crown, dieback	Poor
Westfield	35	Common ash	<i>Fraxinus excelsior</i>	52	10	6.2	Sparse crown, dieback	Poor
Westfield	36	Common ash	<i>Fraxinus excelsior</i>	68	14	8.2	Decent crown, resisting dieback	Good
Westfield	37	Common ash	<i>Fraxinus excelsior</i>	47	12	5.6	Decent crown, resisting dieback	Good
Westfield	38	Common ash	<i>Fraxinus excelsior</i>	37	6	4.4	Dying, sparse crown, dieback	Poor
Westfield	39	Common ash	<i>Fraxinus excelsior</i>	31	4	3.7	Dying, sparse crown, dieback	Poor
Westfield	40	Common ash	<i>Fraxinus excelsior</i>	64	15	7.7	Sparse crown, dieback	Poor
Westfield	41	Common ash	<i>Fraxinus excelsior</i>	81	12	9.7	Sparse crown, dieback	Poor
Westfield	42	Rowan	<i>Sorbus aucuparia</i>	11	7	2.3	Healthy, veteran tree, multi-stem	Good
Westfield	43	Hawthorn	<i>Crataegus monogyna</i>	13	4		Healthy tree, multi-stem	Good
Westfield	44	Wych elm	<i>Ulmus glabra</i>	10	8	2.6	Multi-stem, growing from old stump, healthy	Good
Westfield	45	Wych elm	<i>Ulmus glabra</i>	11	7	2.7	Multi-stem, healthy	Good
Westfield	46	Wych elm	<i>Ulmus glabra</i>	9	7	2.4	Multi-stem, healthy	Good
Westfield	47	Wych elm	<i>Ulmus glabra</i>	12	7	2.7	Multi-stem, healthy	Good
Westfield	48	Wych elm	<i>Ulmus glabra</i>	10	8	2.4	Multi-stem, healthy	Good
Westfield	49	Wych elm	<i>Ulmus glabra</i>	10	6	2.3	Multi-stem, healthy	Good
Westfield	50	Wych elm	<i>Ulmus glabra</i>	9	7	1.9	Multi-stem, healthy	Good
Westfield	51	Elder	<i>Sambuca nigra</i>	22	4.5	2.6	Multi-stem, healthy, pronounced lean	Good
Westfield	52	White willow	<i>Salix alba</i>		6	0.0	Thicket of willow, dense, impenetrable	Good
Westfield	53	Hybrid black poplar	<i>Populus x euramericana</i>	90	22	10.8	Straight stem, healthy	Good
Westfield	54	Hybrid black poplar	<i>Populus x euramericana</i>	85	24	10.2	Straight stem, healthy	Good
Westfield	55	Hybrid black poplar	<i>Populus x euramericana</i>	92	23	11.0	Straight stem, healthy	Good

Site	ID	Species.	Scientific name	Dbh (cm)	Height (m)	RPA (m)	Observations	Condition
Westfield	56	Hybrid black poplar	<i>Populus x euramericana</i>	80	22	9.6	Straight stem, healthy	Good
Westfield	57	Hybrid black poplar	<i>Populus x euramericana</i>	88	21	10.6	Straight stem, healthy	Good
Westfield	58	Hybrid black poplar	<i>Populus x euramericana</i>	78	24	9.4	Straight stem, healthy	Good
Westfield	59	Hybrid black poplar	<i>Populus x euramericana</i>	92	23	11.0	Straight stem, healthy	Good
Westfield	60	Hybrid black poplar	<i>Populus x euramericana</i>	105	23	12.6	Straight stem, healthy	Good
Westfield	61	Hybrid black poplar	<i>Populus x euramericana</i>	91	22	10.9	Straight stem, healthy	Good
Westfield	62	Hybrid black poplar	<i>Populus x euramericana</i>	89	24	10.7	Straight stem, healthy	Good
Westfield	63	Hybrid black poplar	<i>Populus x euramericana</i>	86	21	10.3	Straight stem, healthy	Good
Westfield	64	White willow	<i>Salix alba</i>	83	14	10.0	Large specimen, substantial crown	Good
Westfield	65	Common alder	<i>Alnus glutinosa</i>	72	9	10.6	Large specimen, veteran tree, multi-stem, healthy	Good
Westfield	66	Common alder	<i>Alnus glutinosa</i>	41	9	6.5	Healthy tree, multi-stem	Good
Westfield	67	Common alder	<i>Alnus glutinosa</i>	35	6	9.7	Healthy tree, multi-stem	Good
Westfield	68	Common alder	<i>Alnus glutinosa</i>	42	5	6.4	Healthy tree, multi-stem	Good
Westfield	69	Common alder	<i>Alnus glutinosa</i>	44	8	6.6	Healthy tree, multi-stem	Good
Westfield	70	Common alder	<i>Alnus glutinosa</i>	35	6	5.7	Healthy tree	Good
Westfield	71	White willow	<i>Salix alba</i>	19	6	3.5	Multi-stem, healthy	Good
Westfield	72	Hawthorn	<i>Crataegus monogyna</i>	14	3.5	1.7	Healthy tree	Good
Westfield	73	Hybrid black poplar	<i>Populus x euramericana</i>	48	22	5.8	Healthy tree	Good
Westfield	74	Hybrid black poplar	<i>Populus x euramericana</i>	56	23	6.7	Healthy tree	Good
Westfield	75	White willow	<i>Salix alba</i>	92	18	11.0	Healthy tree	Good
Westfield	76	White willow	<i>Salix alba</i>	95	21	11.4	Healthy tree	Good
Westfield	77	White willow	<i>Salix alba</i>	105	18	12.6	Healthy tree	Good
Westfield	78	Hybrid black poplar	<i>Populus x euramericana</i>	63	22	7.6	Healthy tree	Good
Westfield	79	Hybrid black poplar	<i>Populus x euramericana</i>	65	20	7.8	Healthy tree	Good
Westfield	80	White willow	<i>Salix alba</i>	88	19	10.6	Healthy tree	Good
Westfield	81	White willow	<i>Salix alba</i>	91	19	10.9	Healthy tree	Good
Westfield	82	Hawthorn	<i>Crataegus monogyna</i>	12	3	1.4	Healthy tree	Good
Westfield	83	Hawthorn	<i>Crataegus monogyna</i>	15	3	1.8	Healthy tree	Good

Site	ID	Species.	Scientific name	Dbh (cm)	Height (m)	RPA (m)	Observations	Condition
Westfield	84	Hawthorn	<i>Crataegus monogyna</i>	13	4	1.6	Healthy tree	Good
Westfield	85	Hawthorn	<i>Crataegus monogyna</i>	14	3.5	1.7	Healthy tree	Good
Westfield	86	Common alder	<i>Alnus glutinosa</i>	14	5	1.7	Healthy tree	Good
Westfield	87	Rowan	<i>Sorbus aucuparia</i>	10	4	2.6	Multi-stem. Healthy	Good
Westfield	88	Rowan	<i>Sorbus aucuparia</i>	11	4	1.3	Double stem	Poor
Westfield	89	Hawthorn hedge	<i>Crataegus monogyna</i>	15	3.5	1.8	Mature hawthorn hedge	Good
Westfield	90	Common ash	<i>Fraxinus excelsior</i>	21	7	2.5	Hedge tree, signs of dieback	Fair
Westfield	91	Hawthorn hedge	<i>Crataegus monogyna</i>	12	3.5	1.4	Mature hawthorn hedge	Good
Westfield	92	Holly	<i>Ilex aquifolium</i>	19	6	2.3	Mature, healthy	Good
Westfield	93	Wych elm	<i>Ulmus glabra</i>	16	8	1.9	Healthy	Good
Westfield	94	Wych elm	<i>Ulmus glabra</i>	14	8	1.7	Healthy, large canopy	Good
Westfield	95	Wych elm	<i>Ulmus glabra</i>	12	6	1.4	Healthy	Good
Westfield	96	Sycamore	<i>Acer pseudoplatanus</i>	20	8	2.4	Healthy	Good
Westfield	97	Hawthorn	<i>Crataegus monogyna</i>	13	3.5	2.3	Multi-stem, healthy	Good
Westfield	98	Hawthorn	<i>Crataegus monogyna</i>	14	3.5	2.4	Multi-stem, healthy	Good
Westfield	99	Hawthorn	<i>Crataegus monogyna</i>	12	3	2.3	Multi-stem, healthy	Good
Westfield	100	Sycamore	<i>Acer pseudoplatanus</i>	15	8	2.5	Double stem, healthy	Good
Westfield	101	Sycamore	<i>Acer pseudoplatanus</i>	13	8	2.4	Double stem, healthy	Good
Westfield	102	Hybrid black poplar	<i>Populus x euramericana</i>	49	16	5.9	Straight stem, sparse canopy	Fair
Westfield	103	Sycamore	<i>Acer pseudoplatanus</i>	38	10	4.6	Healthy	Good
Westfield	104	Sycamore	<i>Acer pseudoplatanus</i>	41	11	4.9	Healthy	Good
Westfield	105	Common alder	<i>Alnus glutinosa</i>	24	7	2.9	Healthy	Good
Westfield	106	Common alder	<i>Alnus glutinosa</i>	26	7	3.1	Healthy	Good
Westfield	107	Sycamore	<i>Acer pseudoplatanus</i>	32	10	3.8	Healthy	Good
Westfield	108	Common alder	<i>Alnus glutinosa</i>	30	8	3.6	Healthy	Good
Westfield	109	Sycamore	<i>Acer pseudoplatanus</i>	34	11	4.1	Healthy	Good
Westfield	110	Hybrid black poplar	<i>Populus x euramericana</i>	71	18	8.5	Healthy	Good
Westfield	111	Elder	<i>Sambuca nigra</i>	15	5	1.8	Healthy	Good

Figure 2.1



2. ARBORICULTURAL ASSESSMENT

2.1 Overview

This report summarises the direct and indirect impacts that the proposed development may have on the site's tree stock.

The impact assessment has been prepared with reference to BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations' and to the following plans, with ongoing discussions with EDP regarding the extent of tree removal required for development and associated access routes.

- i. *Figure 3.1 Proposed Site Plan (edp8754_d018)*
- ii. *Figure 3.2 Landscape Strategy (edp8757_d009)*

This assessment identifies where it will be necessary to remove trees to facilitate the development and where it will be possible to retain and protect trees. The extent of tree removal has been minimised through ongoing discussion with project consultants and SPEN throughout the development of the project.

2.2 Tree Removal

The proposals will require the complete removal of six tree groups (G2, G3, G4, G5, G6 and G8) totalling an area of approximately 4686m² and two hedgerows (H1 and H2) totalling approximately 338m in length. Within hedgerow H2, there are eighteen mature field boundary trees that require removal.

Of the five tree groups to be removed, one (G8) was assessed as being of high retention value, BS5837 category A and five (G2, G3, G4, G5 and G6) were assessed as being of moderate retention value, BS5837 category B.

A small number of trees in G4 and G5 have already been removed by SPEN in the course of project development.

Tree removal within groups will see the removal of 1062m² of high value, category A and 3624m² of moderate value, category B.

One hedgerow (H1) was assessed as being of high retention value, BS5837 category A, and one (H2) was assessed as being of moderate retention value, BS5837 category B.

The hedgerow removal proposed includes 168m of hedgerow of high value and 170m of hedgerow of moderate value.

Of the eighteen mature field boundary trees to be removed: two (T9, T11) were assessed as being of high retention value, BS5837 category A; two (T36, T37) were assessed as being of moderate retention value, BS5837 category B; eleven (T10, T11, T13, T16, T23, T26, T33, T34, T35, T40, T41) were assessed as being of low retention value, BS5837 category C and three (T27, T28, T30) were assessed as being unsuitable for retention, BS5837 category U.

All vegetation proposed for removal is shown on the Tree Protection Plan (TPP) (**Appendix 1**) and detailed within the Tree Works Schedule contained in **Appendix 2**.

2.3 Tree Pruning

Some minor pruning works to facilitate access may be required to tree group G1 and to tree group G7 (located outside of the Site Boundary), in order to minimise potential damage to branches from vehicle traffic passing along the existing and proposed access routes.

Where the design of SUDS infrastructure encroaches on the RPA for tree group G7 it is recommended that crown reduction and/or height reduction of trees is carried to any tree where roots are impacted by excavation works.

These works are considered to be minor and have a negligible effect on the amenity contribution or condition of the trees.

2.4 Tree Protection Measures

2.4.1 Overview

The following measures set out the necessary steps that will be taken to ensure the retained trees are protected throughout the construction phase. Responsibility for their installation lies with the site supervisor who should ensure all current environmental and Health & safety legislation and best practice guidelines are followed.

2.4.2 Construction Exclusion Zone (CEZ)

The CEZ is defined around retained trees by the tree protection barriers shown as an orange/black dashed line the TPP (**Appendix 1**). The CEZ should be positioned to protect both the crown and the root protection area (RPA) of the retained trees.

2.4.3 Barriers

Tree Protection Barriers should be fit for the purpose of excluding construction activities and to provide adequate protection for trees, woodlands and hedgerows. They can be constructed from 2m high Heras fencing panels or similar, fence panels. Each panel will be secured to its neighbour with a minimum of 3 anti-tamper couplers. The panels will be further supported by stabilizer struts pinned into the ground. An example of this type of barrier is provided in (**Appendix 3**).

The recommended location of tree protection barriers is shown by an orange/black dashed line on the TPP. Inside the CEZ the following prohibitions apply:

- No excavations
- No storage of machinery
- No storage of building materials, fuel or spoil
- No fires
- No vehicular access
- No installation of services, unless approved by the local authority

2.5 Replacement Planting

2.5.1 Overview

SP Energy Networks' statutory mitigation duty requires that it reinstates vegetation, trees and hedgerows which are unavoidable removed during construction operations.

The reinstatement of vegetation would take place within the red line boundary where

possible, although it is recognised that SPEN may not have ownership of all of the land on which the project development is taking place and reinstatement will have to be agreed with relevant landowners.

Mitigation measures fall into two categories: embedded mitigation and specific mitigation.

2.5.2 *Embedded mitigation*

Embedded mitigation includes standard construction practices identified in the Construction Environmental Management Plan for avoiding and minimizing environmental effects. This includes tree protection and replacement of trees and hedgerows removed to facilitate construction.

2.5.3 *Specific mitigation*

Specific mitigation measures are designed to address any significant adverse effects which remain after primary measures have been incorporated into the development scheme. This includes planting in locations where significant landscape and visual impacts have been identified.

2.5.4 *Detailed Management Plans*

Where hedgerows and trees are removed to facilitate development, or damaged during operations, Fife Council will require the submission of proposals for appropriate mitigation planting, to include a plan, planting schedule and long-term habitat management plan, on completion of the development.

These plans should tie into existing habitat networks in the locale. An arboriculturist should be engaged to produce a woodland habitat management plan to mitigate the loss of tree and hedgerows on the development site, in order to comply with *National Planning Framework 4 Policy 6 Forestry, Woodland and Trees*.

2.6 Conclusion

The proposals will require the complete removal of six tree groups totalling an area of approximately 4686² and two hedgerows totalling approximately 338m in length. There are eighteen mature field boundary trees that require removal.

Of the five tree groups to be removed, one was assessed as being of high retention value, category A and five were assessed as being of moderate retention value, category B.

Tree removal within groups includes the removal of 1062m²³ of high value, category A and 3624m²³ of moderate value, category B.

One hedgerow was assessed as being of high retention value, category A, and one was assessed as being of moderate retention value, category B. The hedgerow removal proposed includes 168m of hedgerow of high value and 170m of hedgerow of moderate value.

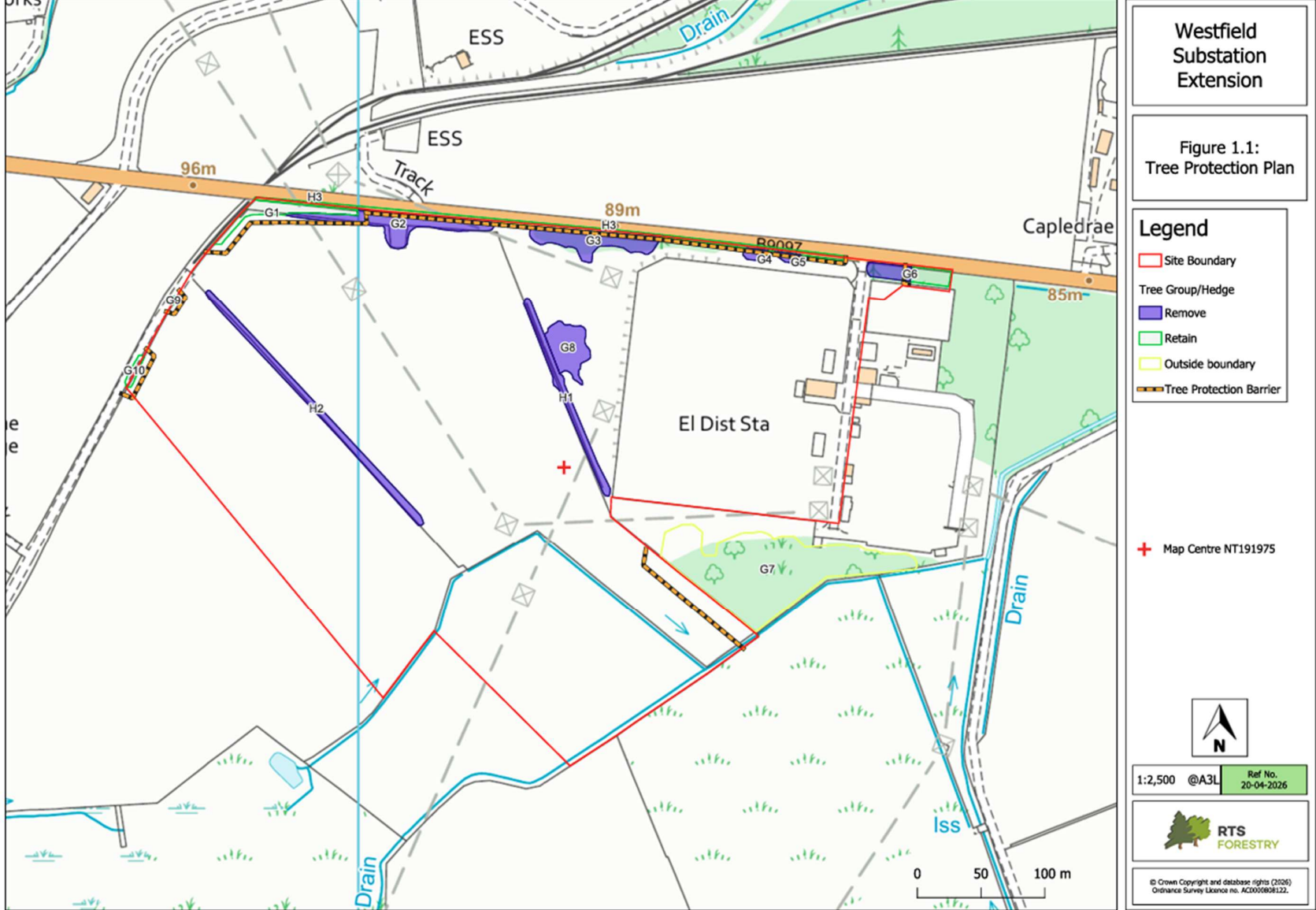
Of the eighteen mature field boundary trees to be removed: two were assessed as being of high retention value, category A; two were assessed as being of moderate retention value, category B; eleven were assessed as being of low retention value, category C and three were assessed as being unsuitable for retention, category U.

The majority of tree features identified for removal were of moderate quality (category B), it is not anticipated that their loss will have a significant adverse impact on the amenity or landscape of those

areas. However, in order to compensate for their loss, a landscape strategy will be proposed, the details of which will be produced in a separate document.

Where possible, the reinstatement of vegetation would be within the red line boundary. SP Energy Networks is also committed to discretionary planting, which is intended to enhance the wider environment around the substation and which would be delivered through negotiation with landowners. This is in recognition of SP Energy Networks' duty of care to the environment and the view that their projects should go beyond those mitigation measures designed to lessen identified effects and should also seek to bring about positive improvements to the environment.

Appendix 1: Tree Protection Plan



Appendix 2: Tree Works Schedule

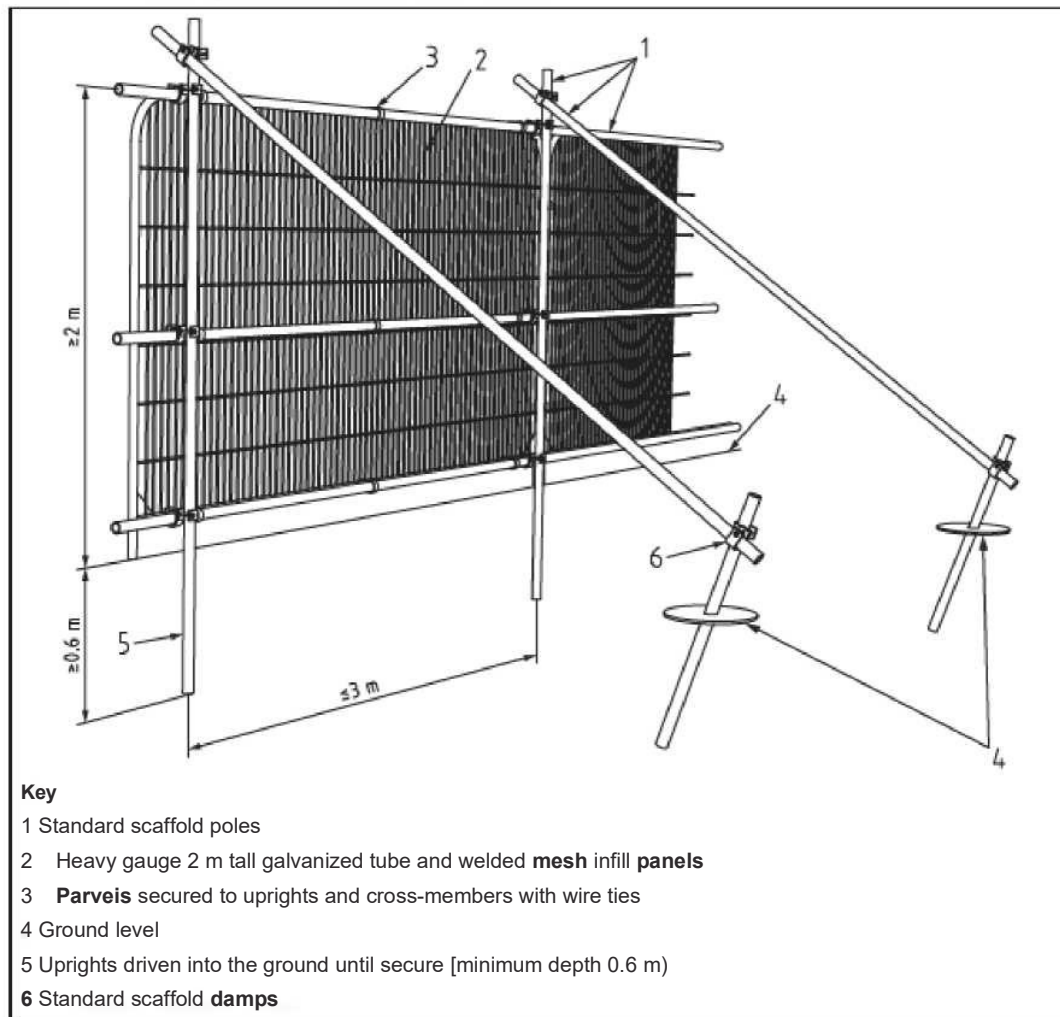
Tree No:	Species	Recommended Management Work
H1, H2	Various	Complete removal of hedgerows
T9, T10, T11, T13, T16, T23, T26, T27, T28, T30, T33, T34, T35, T36, T37, T40, T41	Ash, hawthorn	Complete removal of field boundary trees
G2, G3, G4, G5, G8	Various	Complete removal of tree groups
G6	Various	Partial removal of tree group

Additional Notes:

- All tree work should be carried out in accordance with industry best practice guidelines and Health and Safety standards
- Operatives should be appropriately qualified, competent and insured for the work they are doing
- All tree felling must comply with relevant wildlife legislation
- Deviation from the Tree Works Schedule permitted only with approval from Fife Council

Appendix 3: Example Tree Protection Barrier (BS 5837:2012)

Figure 2 Defaulth specification for protective barrier



References

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