

Anticipated arboricultural impact

5.9 Given the location of trees around the site periphery, I anticipate no loss of B category trees or healthy C category trees.

6 Tree protection requirements

Root Protection Areas (RPAs) and Construction Exclusion Zones (CEZ)

6.1 In order for retained trees to be protected during construction and to flourish post-development, it will be essential to prevent root severance or compaction of soils within the Root Protection Areas.

6.2 The RPA dimensions are provided on the tree survey schedule and are calculated for most trees using the trees diameter: with measurements taken at 1.5metres for trees with a single stem, and above the root flare for twin and multi-stemmed trees.

6.3 Robust protective barrier fencing should be erected, preferably at the limit of the RPA, (or in a position to be agreed once further detailed proposals are available) to form Construction Exclusion Zones around retained trees. This must be done before any construction activity takes place or machinery is brought to site.

6.4 The design of fencing suitable for purpose and compliant with BS 5837 is given at appendix 1. The fencing shall be at least 2.1m high and comprise of standard 'Heras' welded mesh mounted on a scaffold framework. All fencing must be fixed in to the ground to withstand accidental impact from machinery and to ensure that the protective area is maintained.

6.5 Where the use of recommended Heras fencing is not practicable due to topography for example, then a more suitable fencing specification should be agreed in writing with the Local Authority Arboricultural Officer.

6.6 Within the CEZs the following prohibitions must apply:-

- No vehicular or plant access
- No mechanical digging or scraping
- No storage of plant, equipment, materials, or soil
- No hand digging
- No lighting of fires
- No handling discharge or spillage of any chemical substance, including cement washings

Underground utilities

6.7 Guidelines set out in the National Joint Utilities Group publication NJUG *Volume 4, Guidelines for the Planning, Installation and Maintenance of Utility apparatus in Proximity to Trees* will be adhered to during excavation works close to or partially within the RPAs.

6.8 NJUG Volume 4 can be downloaded at <http://www.njug.org.uk>

Trees and construction: overview

6.9 Tree rooting is widely misunderstood, and it is a surprising fact that typically, 80% of roots will be found in the upper half metre of soil and often extend well beyond the canopy spread. Threat to trees from development comes from:-

- Root severance and fracture
- Compaction of the soil, preventing gaseous exchange and moisture percolation
- Possible changes to moisture gradients due to surface water run-off or interception
- Physical damage to low branches, trunk, and root crown

6.10 The consequences for the tree of such damage are:-

- Instability, if severe enough
- Entry points for pathogenic fungi at wounds and fractures
- Loss of vitality and predisposition to pathogens

All of these can lead to root death which can cause a general decline or possible death of the tree.

6.11 As well as the physical footprint of any new structure, allowance needs to be made for the essential space requirements for construction activity. This includes machinery access, material storage and parking.

7 ARBORICULTURAL RECOMMENDATIONS

7.1 Tree works: and removals recommended in this report should be carried out by suitably experienced tree surgeons. Tree felling and pruning should comply with BS 3998: 2010 'Tree Work'.

7.2 Statutory wildlife obligations: The Wildlife and Countryside Act 1981 as amended by the Nature Conservation (Scotland) Act 2004 provide statutory protection to birds, bats and other species that inhabit trees. All tree work operations are covered by these provisions. Prior to undertaking any tree work, the trees should be inspected by a suitably qualified ecologist for the presence of Bat roosts. If Bats and/or roosts are identified, Scottish Natural Heritage (SNH) should be contacted, and an agreement made with regard to measures to be undertaken to protect Bats before undertaking any work which might constitute an offence.

7.3 Tree protection measures: should be used to protect the retained trees as indicated in this report. The implementation of these measures and subsequent adherence should be supervised by an arboricultural consultant/and or the Local Authority tree officer.

7.4 An Arboricultural Method Statement (AMS): may be required where construction within the **RPAs** is unavoidable and tree retention is desired. The AMS will detail special mitigation construction measures and procedures that will minimise damage to tree roots and the surrounding soil. It should be supported with a Tree Protection Plan, detailing the alignment of tree protective fencing.

7.5 Appropriate replacement tree planting should be carried out post-construction to ensure sustained, effective long term tree cover on site. Choice of species should fit well with site conditions, planting conditions and future growth in relation to infrastructure. Planning should consider species habitat and future maintenance of the trees, as well as the presence and likely future threat of diseases. Any new planting should be in keeping with the character of the area.

Martin Langton
Bsc (Hons), For, MICFor, CEnv

Photographs



Plate 1: View easterly of trees beside Peniel Place, predominantly Elm regrowth



Plate 2: View North westerly of trees beside Peniel Place



Plate 3: View of T371 Elm, unstable regrowth from rotten stump

Photographs continued



Plate 4: View southerly of tree cover immediately beyond southern boundary. 2 small linear groups of early mature Sitka Spruce



Plate 5: View westerly of scattered group of Hawthorn beyond security fence at west of site



Plate 6: View northerly along security fence at west of site. No crown overhang.

Appendix 1: Tree protection measures

Tree Protection Fencing

Specifications (specifically outlined by outline box)

Heras Fencing

Heras fencing describes the 2.1m galvanised steel mesh panelled fencing normally supplied with pre-cast concrete bases. **Bases can be replaced with a fixed wooden frame to which panels are clamped/firmly fixed.** For extra stability, scaffold poles/4 x 4 wooden posts can be firmed in to the ground as supporting posts and supporting struts are to be attached at a 45 degree angle on the 'tree side' of the fencing and fixed in to the ground, as required.

1.5m (min) Chestnut Paling Fence on Scaffold

Chestnut Paling to be affixed to a scaffold framework comprising two horizontal braces (top and bottom) supported by vertical scaffold posts driven firmly into the ground at 4.0m or less. Angled supporting struts are to be affixed 'tree-side' as appropriate.

1.5m (min) Chestnut Paling on wooden supporting frame

Stakes – 1.8m half round 100mm diameter untreated posts @ 1.8m centres (or as directed).

- 2 x 38 x 87mm rails (motorway)
- 1.2m Chestnut Paling will be industrially stapled to the rails

Extra wooden supports to be affixed at an angle on the tree side of the fence.

2.4m Hoarding

3.0m 100 x 100mm square wooden posts

3 x 38 x 87mm wooden rails affixed to posts

2.4m x 1200mm outside grade ply panels (12mm) affixed to rails.

50 x 100mm angled supporting struts affixed internally (quantity as required).

(Supporting posts fixed into position using concrete. All posts holes to be hand excavated. Post holes to be no larger than 300 x 300mm.)

Appendix 1: Tree protection measures continued

Tree Protection Fencing

Default specification for protective barrier

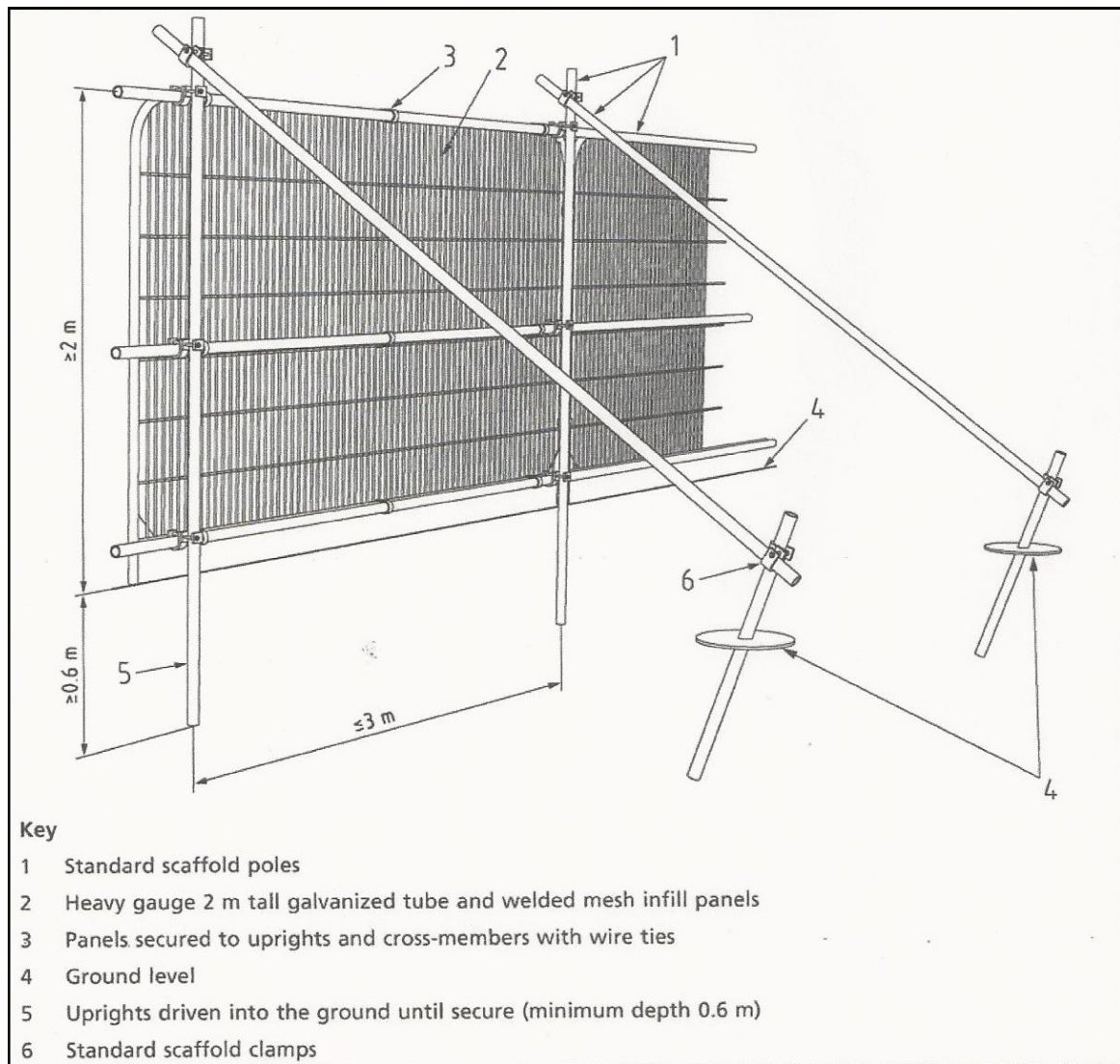
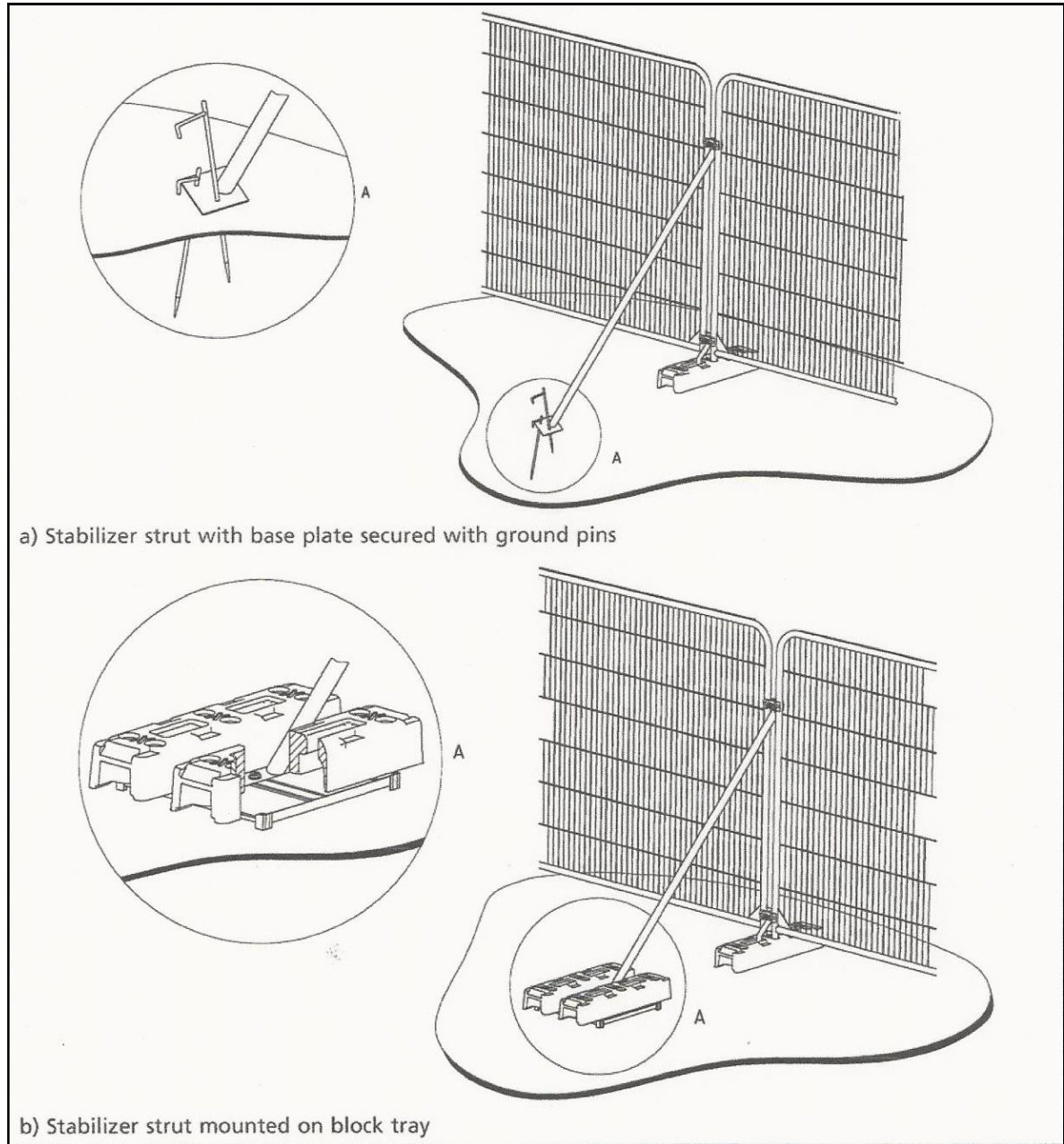


Figure 1: Tree Protective Fencing diagram from BS 5837: 2012

Appendix 1 continued

Figure 3 Examples of above-ground stabilizing systems (from BS 5837: 2012)



Appendix 2

Tree Survey Schedule

Appendix 3

Tree Survey and Constraints Plan

Appendix 4: Cascade chart for tree quality assessment: BS 5837: 2012

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Table 1 Cascade chart for tree quality assessment				
Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<ul style="list-style-type: none">Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unsuitable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)Trees that are dead or are showing signs of significant, immediate, and irreversible overall declineTrees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <p><i>NOTE. Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>			See Table 2
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value, and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

BS 5837:2012

BRITISH STANDARD

Appendix 2

Tree survey schedule: Wallace Cottage, Broxburn

Requested by: Mr Euan Wardrop

Site: Peniel Place, Broxburn

Date of Survey: 6th January 2021

Arboricultural consultant/surveyor: Martin Langton

Weather: Dry and bright

Tag	Species	Height (m)	Diam (m)	Stem Br <1.5m	Crown Spreads (m)				Height CC (m)	RPA Rad (m)	Age Class	Phys Cond	BS Cat	Est rem cont.	Comments	Recommendations
366	Elm <i>Ulmus glabra</i>	5	0.20	M	3.0	4.0	4.0	5.0	1.5	2.00	Y	Poor	C3	<10	[0.08 to 0.12] South east of one of intermittent line of multi-stemmed elm rerowth beside road. Crown die-back, possible Dutch elm disease.	-
367	Elm <i>Ulmus glabra</i>	3	0.12	M	3.0	1.0	3.0	3.0	1.0	1.20	Y	Fair	C2	5 to 20	2 stems from base.	-
368	Elm <i>Ulmus glabra</i>	5	0.30	M	3.0	3.0	3.0	3.0	2.0	3.00	S-M	Dead	U	0	Multi-stemmed. Dead tree with retained structure. Probable Dutch elm disease.	Consider removing tree.
369	Elm <i>Ulmus glabra</i>	6	0.40	M	4.0	5.0	4.0	7.0	2.0	4.00	S-M	Poor	C2	<10	[0.3; 0.3; 0.15] 3 main stems from base, with crown die-back.	-
370	Elm <i>Ulmus glabra</i>	5	0.25	M	2.0	2.0	2.0	2.0	2.0	2.50	S-M	Dead	U	0	Dead tree.	Consider removing tree.
371	Elm <i>Ulmus glabra</i>	5	0.20	M	4.0	2.0	2.0	5.0	1.5	2.00	Y	Fair	U	<10	Regrowth from old rotten stump. Likely to be weakly attached.	Consider felling stems.
372	Elm <i>Ulmus glabra</i>	4	0.20	M	3.0	3.0	3.0	3.0	1.0	2.00	Y	Good	C2	5 to 20	2 main stems from base; open crown, bias north towards road.	-
373	Elm <i>Ulmus glabra</i>	6	0.30	M	4.0	4.0	5.0	4.0	1.0	3.00	S-M	Fair	C2	5 to 20	Multi-stemmed from base. East stem with decay. Spreading crown.	-
374	Hawthorn <i>Crataegus monogyna</i>	4	0.30	M	4.0	3.0	4.0	3.0	1.0	3.00	M-A	Good	B2	20 to 30	Open spreading crown and reasonable form.	-
Group 375	Elm <i>Ulmus glabra</i>	4 to 9	0.15 to 0.25	M	4.0	3.0	5.0	5.0	2.0	2.50	S-M	Fair	C1	10 to 20	Group of closely spaced stems, comprising suckering Cherry and Elm, on banking besider road. Around 10 stems.	-

Trees located adjacent southern site boundary

1	Sitka Spruce <i>Picea sitchensis</i>	15	0.40	1	4.0	4.0	4.0	3.0	1.0	4.80	M-A	Good	B2	20 to 30	Minor lean east. Located at east end of line of trees providing screening.	-
2	Sitka Spruce <i>Picea sitchensis</i>	17	0.40	1	6.0	5.0	3.0	5.0	1.0	4.80	M-A	Good	B2	20 to 30	Erect tree with crow bias North towards site.	-
3	Sitka Spruce <i>Picea sitchensis</i>	12	0.30	1	3.0	3.0	3.0	3.0	2.0	3.60	M-A	Dead	U	0	Dead tree.	-

Appendix 2

Tree survey schedule: Wallace Cottage, Broxburn

Tag	Species	Height (m)	Diam (m)	Stem Br <1.5m	Crown Spreads (m)				Height CC (m)	RPA Rad (m)	Age Class	Phys Cond	BS Cat	Est rem cont.	Comments	Recommendations
4	Sitka Spruce <i>Picea sitchensis</i>	16	0.30	1	3.0	3.0	2.0	4.0	1.0	3.60	M-A	Fair	B2	20 to 30	Crown bias west at end of line.	-
5	Ash <i>Fraxinus excelsior</i>	9	0.16	1	2.0	2.0	3.0	3.0	3.0	1.92	S-M	Fair	C1	10 to 20	Erect tree beside boundary fence. Forks at 3m.	-
6	Sitka Spruce <i>Picea sitchensis</i>	16	0.35	1	6.0	3.0	6.0	2.0	1.0	4.20	M-A	Good	B2	20 to 40	Erect tree at east end of line of 4 trees providing screening.	-
7	Sitka Spruce <i>Picea sitchensis</i>	17	0.28	1	4.0	2.0	2.0	2.0	1.0	3.36	M-A	Good	C1	10 to 20	Slender tree with restricted crown development in line.	-
8	Sitka Spruce <i>Picea sitchensis</i>	18	0.40	1	7.0	4.0	3.0	3.0	1.0	4.80	M-A	Good	B2	20 to 40	Erect tree in line. Crown bias North towards site.	-
9	Sitka Spruce <i>Picea sitchensis</i>	17	0.42	1	5.0	4.0	2.0	5.0	1.0	5.04	M-A	Good	B2	20 to 40	Located at west end of line. Crown bias towards space.	-
Trees beyond western site boundary																
Group 1	Hawthorn <i>Crataegus monogyna</i>	2 to 4	0.2 to 0.3	M	3.0							Fair-Good	B2	20 to 30	Group of scattered trees. None with crown overhanging over site.	-

Key:-

Stem branch <1.5m: M = multi-stemmed; 2 = twin stemmed

Height CC: Height of crown clearance

RPA radius: radius of Root Protection Area

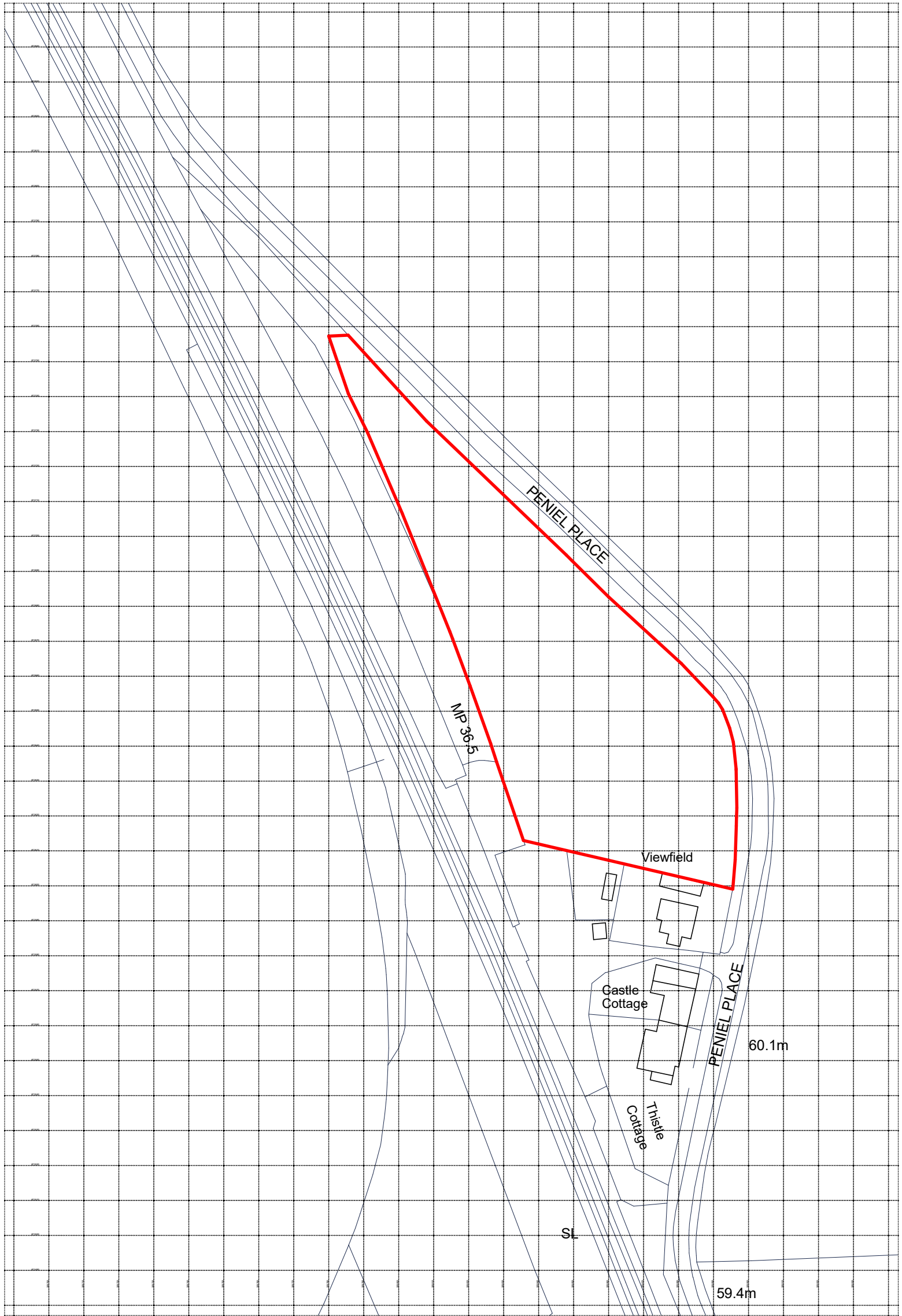
Age-class: 0-M = over-mature; M = mature; M-A = early mature; S-M = semi-mature; Y = Young

Phys cond: Physiological condition

Est. rem cont: Estimated remaining contribution (years).

Prel. Man. Res.: Preliminary management recommendations

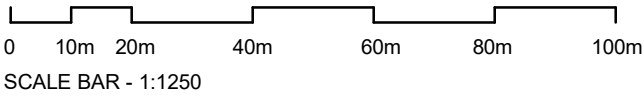
Cat Grading: Category grading as per B.S. 5837: 2012.

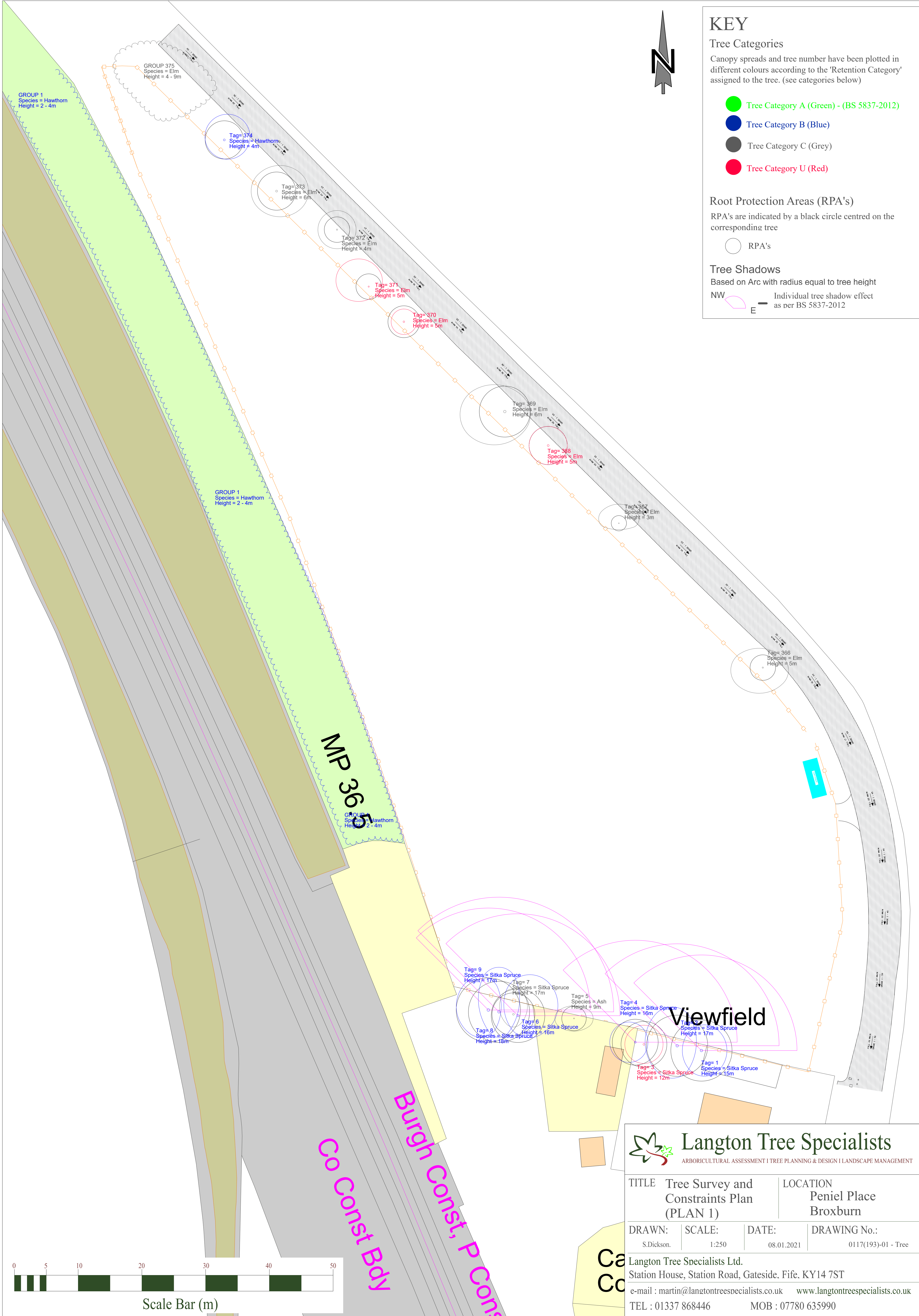


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LOCATION PLAN

1:1250





KEY

Tree Categories

Canopy spreads and tree number have been plotted in different colours according to the 'Retention Category' assigned to the tree. (see categories below)

- Tree Category A (Green) - (BS 5837-2012)
- Tree Category B (Blue)
- Tree Category C (Grey)
- Tree Category U (Red)

Root Protection Areas (RPA's)

RPA's are indicated by a black circle centred on the corresponding tree



Tree Shadows

Based on Arc with radius equal to tree height

NW Individual tree shadow effect as per BS 5837-2012



GROUP 1
Species = Hawthorn
Height = 2 - 4m

GROUP 375
Species = Elm
Height = 4 - 9m

Tag= 374
Species = Hawthorn
Height = 4m

Tag= 373
Species = Elm
Height = 6m

Tag= 372
Species = Elm
Height = 4m

Tag= 371
Species = Elm
Height = 5m

Tag= 370
Species = Elm
Height = 5m

Tag= 369
Species = Elm
Height = 6m

Tag= 368
Species = Elm
Height = 5m

Tag= 367
Species = Elm
Height = 3m

Tag= 366
Species = Elm
Height = 5m

MP 36

GROUP 1
Species = Hawthorn
Height = 2 - 4m

Tag= 9
Species = Sitka Spruce
Height = 17m

Tag= 7
Species = Sitka Spruce
Height = 17m

Tag= 5
Species = Ash
Height = 9m

Tag= 4
Species = Sitka Spruce
Height = 16m

Tag= 3
Species = Sitka Spruce
Height = 12m

Tag= 1
Species = Sitka Spruce
Height = 15m

Tag= 6
Species = Sitka Spruce
Height = 16m

Tag= 8
Species = Sitka Spruce
Height = 18m

Viewfield

Burgh Const, P Const

Co Const Bdy



Scale Bar (m)



Langton Tree Specialists
ARBORICULTURAL ASSESSMENT | TREE PLANNING & DESIGN | LANDSCAPE MANAGEMENT

TITLE		Tree Survey and Constraints Plan (PLAN 1)		LOCATION		Peniel Place Broxburn	
DRAWN:	SCALE:	DATE:	DRAWING No.:				
S.Dickson.	1:250	08.01.2021	0117(193)-01 - Tree				

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