



BS 5837:2012 Arboricultural Impact Assessment

CNG Watling Street, Hinckley

Presented
to: CNG Fuels

Issued: May 2023

Delta-Simons Project No: 87785.545092

Report Details

Client	CNG Fuels
Report Title	BS 5837:2012 Arboricultural Impact Assessment
Site Address	Watling Street, Hinckley
Project No.	87785.545092
Delta-Simons Contact	Gareth Meadows (gareth.meadows@deltasimons.com)

Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
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				Gareth Meadows Lead Arboriculturist	Jennifer Britt Associate	Jennifer Britt Associate

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As part of Lucion Services, our combined team of 500 in the UK has a range of specialist skill sets in over 50 environmental consultancy specialisms including asbestos, hazardous materials, ecology, air and water services, geo-environmental and sustainability amongst others.

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1.0 Introduction

1.1 Purpose and Scope of the Survey

Delta-Simons Ltd was instructed by CNG Fuels ('the Client'), to produce an Arboricultural Impact Assessment (AIA) to British Standard (BS) 5837:2012. The AIA was undertaken of an area of land situated off Watling Street, Hinckley ('the Site'). The assessment was undertaken to inform a planning application for the development of a CNG Fuelling Station at the Site.

The aims of the AIA were to:

- Detail foreseeable tree related issues within this Report to inform the Local Planning Authority (LPA);
- Provide an initial analysis of the impacts that the proposed development is projected to have on trees both within the Site and, where considered pertinent and where practicable, on land immediately adjacent to its boundaries; and
- Provide guidance on suitable retained tree management and mitigation for projected losses, along with advice on appropriate tree protection measures in the context of the proposed development in accordance with current guidance.

1.2 Site Description

The Site is centred at Ordnance Survey (OS) grid reference SP 40762 92574 and covers approximately 0.74 ha. The Site comprises improved grassland that is regularly utilised for grazing cattle. Species poor hedgerows are present on the north-eastern boundary adjacent to the main road and the north-western boundary. A line of conifer trees defined the south-eastern boundary. The Site also incorporates a section of the road verge which comprises of poor semi-improved grassland.

The Site layout and area surveyed is shown in Figure 1.

1.3 Proposed Development

It is understood that the Site is being considered for the proposed development of a CNG fuelling station.

1.4 Site Visit, Data Collection and Tree Plans

Further to the completion of a Tree Survey of the Site by Delta Simons, which took place in March 2023, all tree data collected from the Site is set out in the attached tabulated Tree Survey Schedule (TSS) at Appendix B and shown on the Tree Constraints Plan (TCP) (Figure 1).

The survey identified three groups of trees (prefixes 'TG'). The surveyed vegetation has been numbered accordingly on the TCP and Tree Impact Plan (TIP), as appended (see Figure 1 and Figure 2, respectively). The TCP details the existing Site with the readily definable tree constraints, whilst the TIP also has an overlay of the development proposals along with associated projected tree related impacts. The plans are based on topographical survey of the existing and proposed Site plans that were provided in electronic format by the Client, and for the purpose of this Report, it is assumed that these are accurate.

The results of the desk search undertaken on 5th October 2022 on the following website: <https://www.hinckley-bosworth.gov.uk/tpomap>, indicate that all trees within the proposed development Site are outside of any Conservation Area. No trees on-Site nor on land adjacent to the Site are covered by a TPO.

2.0 Legislation

2.1 Tree Preservation Orders and Conservation Area Designations

The Town & Country Planning Act (1990) (the Act) and associated Regulations empower LPAs to protect trees in the interests of amenity by making TPOs. The Act also affords protection for trees of over 75 mm diameter that stand within the curtilage of a CA. Subject to certain exemptions, an application must be made to the LPA in question to carry out works upon or remove trees that are subject to a TPO, whilst six weeks' notice of intention must be given to carry out works upon or remove trees within a CA that are not protected by a TPO.

2.2 Protected Species

2.2.1 Nesting Birds

Nesting birds are afforded statutory protection under the Wildlife & Countryside Act (1981, as amended) and their potential presence should, therefore, be considered when trimming hedges, removing climbing plants and pruning and removing trees. The breeding period for nesting birds runs from March to late July, inclusive. Hedges provide valuable nesting sites for many birds and management should, therefore, be avoided during this period. Trees, hedges and ivy should be inspected for nests by a suitably qualified ecologist prior to pruning or removal, and any work likely to destroy or disturb active nests should be avoided until the young have fledged.

2.2.2 Bats

All bats and their roosts are protected under Section 9 of the WCA 1981 (as amended) and Annex IV of the Habitats and Species Regulations 2017 (as amended).

It is an offence, either deliberately or recklessly, to destroy, damage or obstruct access to any bat roost, or to disturb a bat using such a place. It should be noted that a roost is protected whether or not bats are present and any activity or works affecting a roost, even when bats are absent, are likely to require a Natural England European Protected Species Licence.

2.3 Felling Licences

Subject to certain exemptions the Forestry Act (1967) requires that a 'Felling Licence' be obtained to remove growing trees amounting to more than five cubic metres of timber in a calendar quarter. Felling Licences are administered by the Forestry Commission and contravention of the associated controls can incur substantial penalties. A Felling Licence is, however, not required where tree removals are required for the purpose of implementing a development authorised by detailed (i.e. full) planning permission granted under the Act (1990).

3.0 The Tree Population

The Site is described in Section 1.0 of this Report.

As noted previously, three groups of trees were surveyed for the purpose of this appraisal.

There are a very limited range of tree species on, and immediately adjacent to, the Site. The only significant arboricultural features were two cypress hedgerows and a group of small ash trees.

The distribution of the tree groups across the Site is largely limited to boundary features. The most common species for natural regeneration is Ash, and the plantation trees are mainly coniferous Leyland Cypress trees.

All trees surveyed are Early mature, or young. None of the trees within the Site boundary show signs of past management. All on-Site groups of trees appear to be in poor to moderate condition, with normal amounts of deadwood.

In respect to the TSS, it should be noted that tree quality is categorised within the existing Site context without taking any development proposals into account. However, recommendations for works included in the TSS takes both current Site usage into consideration and the proposed Site development where there are definable development related issues with regards to specific trees.

The TSS includes a column ('Cat. Grade') listing the trees' respective retention values, where they are rated either 'A', 'B', 'C' or 'U', as per BS5837:2012 Table 1 (Appendix B). 'A' category trees are those considered to be of 'high quality' and, accordingly, the most suitable for retention, whilst 'B' category trees are those considered to be of 'moderate quality'. As detailed in Table 1 (below), no trees were categorised as high quality ('A'), One tree group were categorised as moderate quality ('B'), and one tree group were assessed as being of low quality ('C'). The remaining tree group (TG3) was categorised as being of poor quality, due to evidence of Ash Dieback ('U').

Table 1: BS5837-2012 Retention Categories of the Surveyed Trees

Tree Quality	Ret. Cats.	Tree/Group Numbers	Totals
Those of a moderate or high quality that should be afforded appropriate consideration in the context of development	'A'	-	-
	'B'	TG1	1 Tree Groups
Those of a low quality that should not be considered a material constraint to development	'C'	TG2	1 Tree Group
Those that should be removed for management reasons regardless of site proposals	'U'	TG3 (Ash Dieback)	1 Tree Group
Totals			3 Tree Groups

It is understood that the Site is proposed for a CNG fuelling Station with associated hard and soft landscaping (Drawing 1).

Accordingly, the TCP has been overlaid on the development plan provided by the Client in order to appraise the projected impacts that the development will potentially have on the Site vegetation, as detailed on the TIP.

3.1 Projected Arboricultural Losses Relating to the Proposal

As detailed in Table 2, below, and on the TIP, implementation of the proposed development as it stands is projected for the partial removal of one tree group of moderate quality will be required. The remainder of trees are to be retained, although TG3 may require removal due to ash die-back.

Table 2: Arboricultural Impacts of Proposed Development and Other Tree Removal Proposals

Tree Quality	Ret. Cats.	Removals Necessary to Implement Development	Removals Suggested for Non-Development Related Reasons	Total Number of Tree Removals
Those of a moderate or high quality that should be afforded appropriate consideration in the context of development	'A'	-	-	0 Trees
	'B'	TG1/69 TG1/82	-	Partial removal of 1 Tree Group
Those of a low quality that should not be considered a material constraint to development	'C'	-	-	0 Tree Group
Those that should be removed for management reasons regardless of Site proposals	'U'	-	TG3 (Ash Dieback)	1 Tree group
Totals				1 Partial Removal Tree Group and 1 Tree Group

3.2 Mitigation for Projected Tree Losses as Part of Site Landscaping

New tree planting as part of the Site landscaping plans is proposed within the Site, as shown on Drawing 1. The proposals include provision for tree planting within the west of the Site.

4.0 Summary and Conclusions

The Site is located at Watling Street, Hinckley. A total of 3 groups of trees were surveyed in respect of the proposed development of the Site. The existing Site is proposed to be developed to a CNG Fuelling Station, with hardstanding for access roads and fuelling yard together with areas of soft landscaping. New tree planting is proposed at the Site and tree and vegetation cover is to be retained around the boundaries, with predominantly trees in the east of the Site removed to facilitate the proposed development.

No trees were categorised as having high retention values, two tree groups were made of low to moderate value where the final group is considered to be of poor value due to the presence of Ash Dieback.

An evaluation of the proposed development in the context of the existing Site has indicated that it will be necessary to remove one complete tree group with poor retention value and a section of another tree group of moderate retention value. However, the provision of new tree planting within the development's landscaping is projected to mitigate (TG1/69 -TG1/82 & TG3) for the necessary development related and possible Ash Dieback tree losses.

In consideration of the above findings, it is concluded that, from the details provided to date, the Site in question can be developed as proposed, whilst retaining the individual trees and tree groups around the boundaries and, in turn providing new tree planting within the Site, within the west of the Site. This should provide a varied age range within the tree stock and allow retained trees to grow to maturity while providing younger trees space to grow. However, in order to ensure successful existing tree preservation, it is essential that the retained trees are protected in strict accordance with current Government guidance and the recommendations included herein.

5.0 Recommendations for Successful Tree Retention in the Context of Development

5.1 Root Protection Areas and Construction Exclusion Zones

Adequate protection of the Root Protection Areas (RPAs) of retained trees during construction is essential to ensure their long-term viability. RPAs, which are calculated through a method provided in BS5837:2012, are ground areas that must be protected by temporary protective fencing (Specification given in Appendix C) as Construction Exclusion Zones (CEZs) throughout the development process, thereby keeping the trees' root zones free from disturbance, including compaction. Consequently, the RPA distances, as detailed in the TSS, and included on the TCP and TIP indicate the likely on-Site below-ground constraints in respect of tree roots, whilst assisting in planning for appropriate tree retention in relation to feasible development. In certain situations, such as at this Site, there is a limited degree of flexibility in the CEZ positioning, as discussed below.

The TSS includes two columns listing the RPAs of the individually surveyed trees and, where applicable, the largest of the trees in any surveyed groups as overall areas in square metres and as radial distances. The radial RPAs are indicated as blue coloured circles on the TCP and TIP. With regard to CEZs the design, materials and construction of the fencing should be appropriate for the intensity and type of site construction works and should conform to at least section 6.2 of BS5837:2012, and should be secured by the imposition of a suitably worded planning condition. A default Temporary Protective Fencing Specification is included at Appendix C.

5.2 Underground Utilities

The installation of underground utilities in close proximity to trees can cause serious damage to their roots. As such, it is essential that utilities be routed outside RPAs unless there is no other available option, and specifics regarding these routes should be included as part of a detailed planning application. Where RPAs cannot be avoided then guidelines set out in the National Joint Utilities Group publication '*Volume 4: NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Issue 2) - Operatives Handbook*' should be followed (e.g. trenches of a very limited width to be hand dug or the use of directional drilling).

5.3 Arboricultural Method Statement and Tree Protection Plan

Government guidance recommends that, where considered practical by the LPA, an Arboricultural Method Statement (AMS) and a Tree Protection Plan (TPP) be prepared detailing mitigation for trees during the construction process. Essentially, the AMS and TPP describe and detail the procedures, working methods and protective measures to be used in relation to retained trees in order to ensure that they are adequately protected during the construction process.

6.0 Other Recommendations

6.1 Non-Development Related Tree Works and Recommendations

Any general management pruning works for retained trees that are stated to be non-development related, as detailed in the TSS, are recommended in accordance with prudent arboricultural management and should, therefore, be carried out regardless of any development proposals and potential changes in land usage associated with the Site. All tree works should be carried out in accordance with BS3998:2010 - Tree Work – Recommendations.

6.2 Tree Work Related Consents

No tree pruning nor removal works should commence on-Site until necessary consents have been obtained from the LPA.

6.3 Arboricultural Contractors

All tree works should be carried out by suitably qualified and experienced arboricultural contractors carrying appropriate public liability insurance cover and be implemented to the minimum current UK industry standards and in accordance with industry codes of practice. Only certificated personnel should, in accordance with The Control of Pesticides Regulations, apply any pesticides.

6.4 Contractors and Subsequently Identified Tree Defects

Tree contractors should be made aware that, should any significant tree defects become apparent during operations that would not have been immediately obvious to the surveyor, then such defects should be notified immediately to the Client and subsequently confirmed to the consultant within five working days.

6.5 New Tree Planting

All tree planting at the Site should be carried out in accordance with BS4428:1989 - Code of Practice for General Landscape Operations, BS3936-1:1992, Nursery Stock – Part 1: Specification for Trees and Shrubs and BS4043:1989, Transplanting Root-Balled Trees where applicable, or any ensuing superseding guidance where applicable.

6.6 Retained Tree Management

Any tree risk management appraisals and subsequent recommendations made in this report were based on observations and Site circumstances at the time of the survey. It should be noted that trees are dynamic living organisms with constantly changing structures, and even those evidently in good condition can succumb to damage and/or environmental stress. In this respect, it should be noted that, under the Occupiers' Liability Act (1957 & 1984), Site occupants have a duty of care to take reasonable steps to prevent or minimise the risk of personal injury and/or damage to property from any tree located within the curtilage of the land they occupy. It is accepted that these steps should normally include commissioning a qualified and experienced arboriculturist to survey their trees in order to identify any risk of harm to persons or damage to property that they may present and, where unacceptable risks are identified, taking suitable remedial action to negate those risks.

7.0 Limitations of the Arboricultural Impact Assessment

The recommendations contained in this Report represent Delta-Simons' professional opinions, based upon the information referred to in Section 1.0 of this Report, exercising the duty of care required of an experienced Environmental Consultant.

This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed as defined in Section 1.1 of this Report. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Figure A - CEZ Warning Sign

CEZ Warning Sign

– TREE PROTECTION AREA – KEEP OUT!

(TOWN & COUNTRY PLANNING ACT 1990)

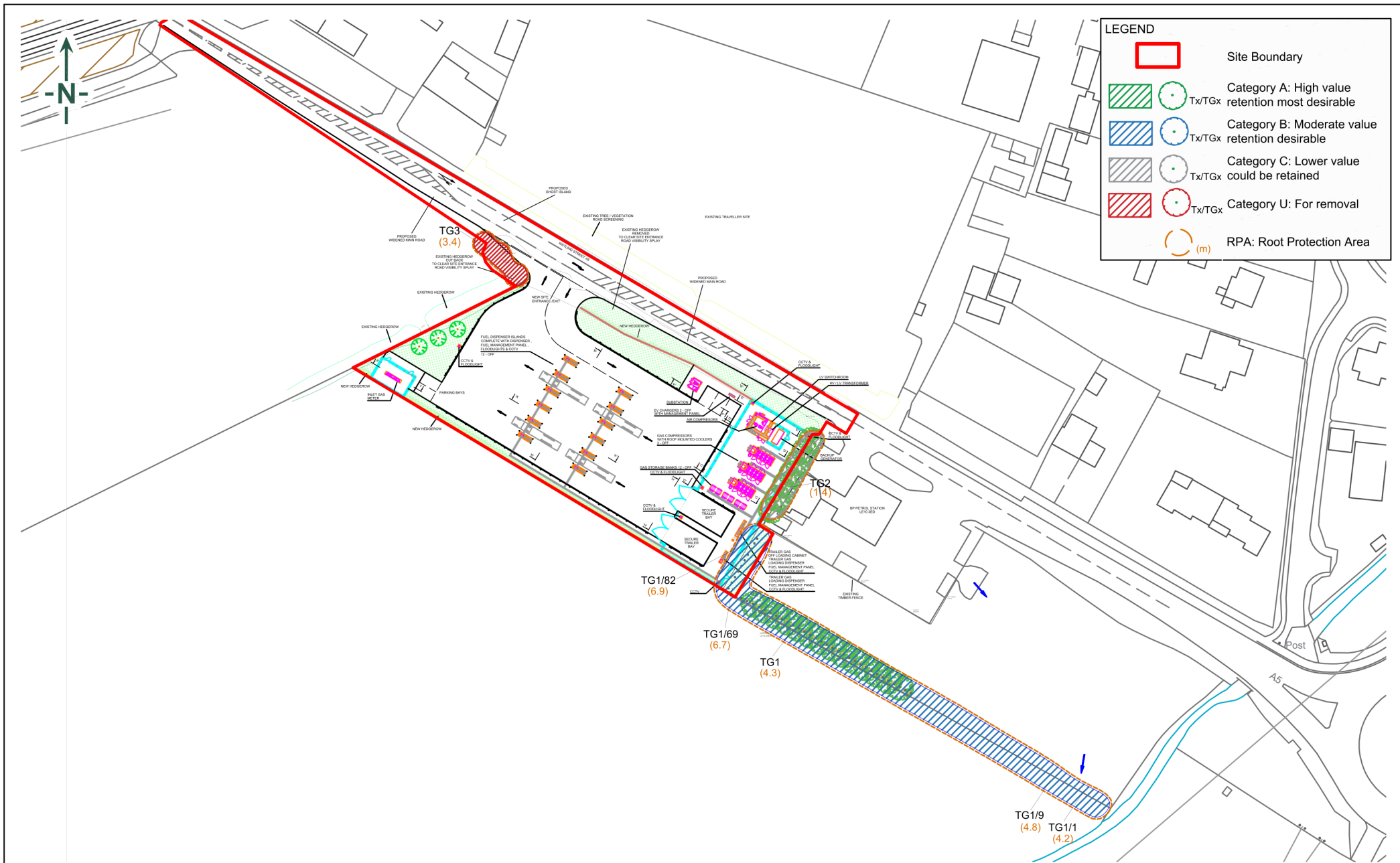
THE TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING
CONDITIONS, THE CONTRAVENTION OF WHICH MAY LEAD TO CRIMINAL
PROSECUTION.

THE FOLLOWING MUST BE OBSERVED BY ALL PERSONNEL:

- △ THE PROTECTIVE FENCING MUST NOT BE MOVED
- △ NO PERSON SHALL ENTER THE CONSTRUCTION EXCLUSION ZONE
- △ NO MACHINE, PLANT OR VEHICLES SHALL ENTER THE EXCLUSION ZONE
- △ NO MATERIALS SHALL BE STORED IN THE EXCLUSION ZONE
- △ NO SPOIL SHALL BE DEPOSITED IN THE EXCLUSION ZONE
- △ NO EXCAVATION SHALL OCCUR IN THE EXCLUSION ZONE
- △ NO FIRES SHALL BE LIT IN THE EXCLUSION ZONE

ANY INCURSION INTO THE EXCLUSION ZONE MUST BE WITH THE
WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY

Figure 1 - Tree Constraints Plan



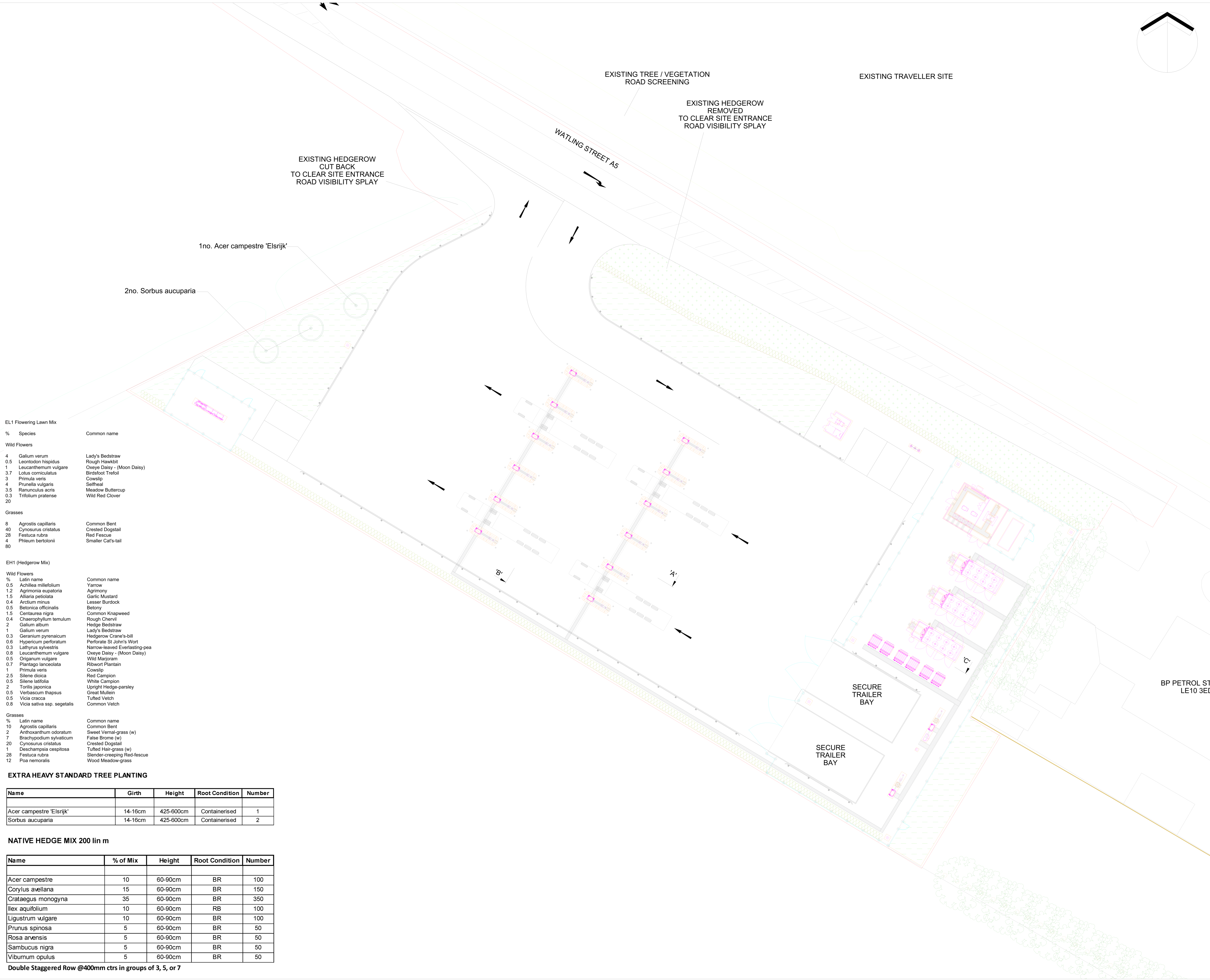
LEGEND

- Site Boundary
- Tx/TGx Category A: High value retention most desirable
- Tx/TGx Category B: Moderate value retention desirable
- Tx/TGx Category C: Lower value could be retained
- Tx/TGx Category U: For removal
- (m) RPA: Root Protection Area

Site Plan Provided by Client

Figure 2 – Tree Impact Plan

Drawing 1 - Proposed Development Plan



EL1 Flowering Lawn Mix		
%	Species	Common name
Wild Flowers		
4	Galium verum	Lady's Bedstraw
0.5	Leontodon hispidus	Rough Hawkbit
1	Leucanthemum vulgare	Oxeye Daisy - (Moon Daisy)
3.7	Lotus corniculatus	Birdsfoot Trefoil
3	Primula veris	Cowslip
4	Prunella vulgaris	Selfheal
3.5	Ranunculus acris	Meadow Buttercup
0.3	Trifolium pratense	Wild Red Clover
20		
Grasses		
8	Agrostis capillaris	Common Bent
40	Cynosurus cristatus	Crested Dogtail
28	Festuca rubra	Red Fescue
4	Phleum bertolonii	Smaller Cat's-tail
80		
EH1 (Hedgerow Mix)		
Wild Flowers		
%	Latin name	Common name
0.5	Achillea millefolium	Yarrow
1.2	Agrimonia eupatoria	Agrimony
1.5	Alliaria petiolata	Garlic Mustard
0.4	Arctium minus	Lesser Burdock
0.5	Betonica officinalis	Betony
1.5	Centaurea nigra	Common Knapweed
0.4	Chaerophyllum temulum	Rough Chervil
2	Galium album	Hedge Bedstraw
1	Galium verum	Lady's Bedstraw
0.3	Geranium pyrenaicum	Hedgerow Crane's-bill
0.6	Hypericum perforatum	Perforate St. John's Wort
0.3	Lathyrus sylvestris	Narrow-leaved Everlasting-pea
0.8	Leucanthemum vulgare	Oxeye Daisy - (Moon Daisy)
0.5	Origanum vulgare	Wild Marjoram
0.7	Plantago lanceolata	Ribwort Plantain
1	Primula veris	Cowslip
2.5	Silene dioica	Red Campion
0.5	Silene latifolia	White Campion
2	Torilis japonica	Upright Hedge-parsley
0.5	Verbascum thapsus	Great Mullein
0.5	Vicia cracca	Tufted Vetch
0.8	Vicia sativa ssp. segetalis	Common Vetch
Grasses		
%	Latin name	Common name
10	Agrostis capillaris	Common Bent
2	Anthraxanthum odoratum	Sweet Vernal-grass (w)
7	Brachypodium sylvaticum	False Brome (w)
20	Cynosurus cristatus	Crested Dogtail
1	Deschampsia cespitosa	Tufted Hair-grass (w)
28	Festuca rubra	Slender-creeping Red-fescue
12	Poa nemoralis	Wood Meadow-grass

EXTRA HEAVY STANDARD TREE PLANTING

Name	Girth	Height	Root Condition	Number
Acer campestre 'Elsrijk'	14-16cm	425-600cm	Containerised	1
Sorbus aucuparia	14-16cm	425-600cm	Containerised	2

NATIVE HEDGE MIX 200 lin m

Name	% of Mix	Height	Root Condition	Number
Acer campestre	10	60-90cm	BR	100
Corylus avellana	15	60-90cm	BR	150
Crataegus monogyna	35	60-90cm	BR	350
Ilex aquifolium	10	60-90cm	RB	100
Ligustrum vulgare	10	60-90cm	BR	100
Prunus spinosa	5	60-90cm	BR	50
Rosa anensis	5	60-90cm	BR	50
Sambucus nigra	5	60-90cm	BR	50
Viburnum opulus	5	60-90cm	BR	50

Double Staggered Row @400mm ctrs in groups of 3, 5, or 7

KEY

EXISTING HEDGE TO BE RETAINED

PROPOSED NATIVE HEDGE PLANTING - 200 lin m

PROPOSED EHSTD TREES

PROPOSED EL1 FLOWERING LAWN MIX GRASS SEED - 690m²

PROPOSED EH1 HEDGEROW MIX GRASS SEED - 400m²

PROPOSED 2.4m HIGH, CLOSE BOARDED TIMBER BOUNDARY FENCE

PROPOSED 2.4m HIGH, V-MESH BOUNDARY FENCE

PROPOSED 2.4m HIGH, SECURITY PALISADE FENCE

NOTES:

PLANTING OPERATIONS SPECIFICATION

TOPSOIL
Imported topsoil for tree pits and hedge shall comply with BS 3882 and shall be good quality, medium topsoil loam, acid or slight acid (ph not less than 5.0), stones not greater than 50mm in any dimension, perennial weeds and any other foreign matter, free from chemical or other polluted subsoil, weeds, straw, sticks, stones, clay lumps and other deleterious material. Topsoil containing a significant proportion of subsoil or other foreign matter will not be accepted on the site. On no account shall topsoil be brought on the site in excessively wet conditions or in a water logged state. It shall be from an approved source, shall be fertile with a humus and fibre content and shall have a good crumb structure with medium texture.

All areas of wildflower grass seeding shall be made up of low nutrient sub-soil to assist establishment and maintenance of the meadow grasslands.

TREE PLANTING
Extra Heavy Standard tree pits shall be 1m x 1m x 0.75m. The bottom 150mm of each tree pit to be broken up to assist drainage. Compacted ground to be broken up. Backfill shall be excavated material with 50:50 mixed with peat free tree planting compost (Sample to be approved) for the top 300mm and excavated sub soil for the bottom 450mm. 4No Sierrablén gro-tabs to be incorporated into each planting pit.

All EHStd and Standard trees shall be short double staked, 300mm to be driven into the ground and 600mm maximum above ground. A flexible webbing cross bar within 25mm of the top of the stake shall be used and fixed to the trunk with expandable ties. Each tree shall have a 50mm diameter perforated plastic irrigation pipe, with plastic cap, wrapped in a circle above and around the sides of the rootball.

HEDGE PLANTING
Whip planting areas shall be cultivated to the full depth of the topsoil and bare root stock notch planted to accommodate the full depth of the roots. Planting density shall be as set out in the accompanying schedules and the layout shall be random, in groups of no less than 3 or more than 7 of the same species, ensuring that no three plants are aligned in any one direction. Each whip shall be protected with a biodegradable spiral tree guard, 0.6m high x 130mm diameter, supported by a single timber stake placed to prevent the natural movement of the tree being impeded or restrict growth.

WILDFLOWER SEEDING
Seeding to occur during August/September. All noxious weeds to be spot sprayed until meadow area fully established. Any areas of failure to be re-seeded. Grass seed mix shall be Emsgate (or similar approved by the LPA) EL1 Flowering Lawn Mix, 690m², and EH1 Hedgerow Mix, 400m², sown at a rate of 5g/m².

Rev C	26.05.23	Layout amended	DR	AG
Rev B	16.05.23	Layout amended	DR	AG
Rev A	10.05.23	Layout amended	DR	AG

Suite 5, Third Floor, Adamson House,
65 Westgate Road, Newcastle-upon-Tyne,
NE1 1SG, Tel: 0191 383 9955
andrew.gardner@tgp.uk.com/www.tgp.uk.com
Also in Glasgow & Edinburgh

Project HINCKLEY WATLING STREET CGN STATION			
Title LANDSCAPE PROPOSALS			
Date 17.04.23	Scale 1:250 @ A1	Drawn DR	Checked AG
Job D333	Suitability -	No. D333.L.001	Issue EXT
LI WORKSTAGE: 0/1	2	3	4

DISCLAIMER:
Do not scale from this drawing.
All dimensions to be verified on site prior to commencement of works.
Drawing to be read in conjunction with related TGP drawings, consultants drawings and any other relevant information.
This drawing is the copyright of TGP Landscape Architects Ltd. unless otherwise specified.

Appendix A - References

References

BS4428:1989 - Code of Practice for General Landscape Operations. BSI British Standards, London.

BS3936-1:1992, Nursery Stock – Part 1: Specification for Trees and Shrubs. BSI British Standards, London.

BS3998:2010 - Tree Work - Recommendations. BSI British Standards, London.

BS4043:1989 - Transplanting Root-Balled Trees. BSI British Standards, London.

BS5837:2012 - Trees in Relation to Design, Demolition and Construction – Recommendations. BSI, London.

National House Building Council (2008). NHBC Standards Chapter 4.2 - Building Near Trees. NHBC, Amersham.

National Joint Utilities Group (2007). Volume 4: NJUG Guidelines for the Planning.

Installation and Maintenance of Utility Apparatus in Proximity to Trees (Issue 2) – Operatives Handbook.

Appendix B - BS5837:2012 Tree Schedule

Table 1 - BS 5837:2012 Tree Schedule

Tree No.	Grid reference	Species	Ht (m)	Stem dia (mm)	No of Stems	Crown Spread	Life Stage	Physical Condition	Structural Condition	Comment	Cat Grading	Estimated remaining contribution (yrs)	Radius of RPA (m)	RPA (sq m)	Recommendations
TG1/1	SP 40908 92445	Leyland Cypress	20	350	1	4-6m	EM	Fair	Moderate	An early mature, untrimmed conifer hedge, start at Sketchley Brook	B2	>20	4.2	55.42	Maintain at current height and spread
TG1/9	SP 40900 92542	Leyland Cypress	20	350-400	9	4-6m	EM	Fair	Moderate	An early mature, untrimmed conifer hedge, up to farm gate.	B2	>20	4.2 4.8	55.42 72.38	Maintain at current height and spread
TG1/69	SP 40786 92514	Leyland Cypress	18	200-560	69	6m	EM	Fair	Moderate	An early mature, untrimmed conifer hedge, up to corner of coniferous block.	B2	>20	2.4 6.7	18.10 141.87	Maintain at current height and spread
TG1/82	SP 40796 92532	Leyland Cypress	20	180-580	13	4-6m	EM	Fair	Moderate	An early mature, untrimmed conifer hedge, end of coniferous block	B2	>20	2.1 6.9	14.66 152.18	Maintain at current height and spread
TG2	SP 40806 92552	Leyland Cypress	7	120	9	Normal for an untrimmed conifer hedge. Some deadwood of various sizes throughout.	Y	Fair	Moderate	Normal for an untrimmed conifer hedge. Some deadwood of various sizes throughout.	C2	>20	1.4	6.51	Maintain at current height and spread
TG3	SP 40721 92618	Ash	6	280	3	Sparse with minor deadwood throughout. The tree has ash die-back disease.	EM	Fair	Poor	Sparse with minor deadwood throughout. The tree has ash die-back disease.	U	<10	3.4	35.47	Monitor for Ash Dieback & Remove

Table 2 - Key to Tree Schedule

BS 5837: 2012 Tree Survey Key to Terminology		
Term	Explanation	Notes
Tree Ref.	Sequential reference number for individual tree or distinct tree in hedgerow	The measurement conventions are as follows. Height, crown spread, and crown clearance are recorded to the nearest half metre (crown spread is rounded up) for dimensions up to 10 m and the nearest whole metre for dimensions over 10 m Stem diameter is recorded in millimetres, rounded to the nearest 5 mm Estimated dimensions (e.g. for off-site or otherwise inaccessible trees where accurate data cannot be recovered) should be clearly identified as such (e.g.suffixed with a "#") RPA_r – Radius of nominal circle of Root Protection Area in metres from centre of tree stem. Figures used originate from Annex D BS5837: 2012 (p.40). Provided as a minimum distance and calculated in accordance with section 4.6 BS5837: 2012 (p.10) RPA_{m2} – Extent of root protection area * signifies dimensions have not been recorded
Common Name	Tree species listed by common name	
Height	Overall tree height measured in metres (m)	
Branch Spread	Taken as a minimum at the four cardinal points (North, South, East & West) to derive a representation of the crown spread	
Stem Diameter	Diameter of single stem trees on level ground measured at 1.5m above ground level. Diameters of other commonly encountered tree stems should be measured in accordance with Annex C (BS5837 2012 p39)	
Existing Height Above Ground Level – FSB/DG	Height of first significant branch (FSB) and its direction of growth (DG) identified as height in metres and direction of growth (e.g. 2.4-N)	Measurements taken to provide information relating to ground clearance, crown/stem ratio and shading of site
Life Stage	Young (Y)	Tree within the first one quarter of life expectancy
	Semi mature (SM)	Tree in second quarter of life expectancy
	Early mature (EM)	Tree in third quarter of life expectancy
	Mature (M)	Tree in final quarter of life expectancy

	Over mature (OM)	Tree having reached the anticipated maximum height and spread typical for its species and setting and which has entered a period of stasis where physiological processes maintain a functional status quo.
	Veteran tree (V)	Tree that, by recognized criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned. NOTE: These characteristics might typically include a large girth, signs of crown retrenchment and hollowing of the stem. Veteran trees may be subject to a tree preservation order (TPO). Clients are responsible for determining whether a TPO is present.
General Observations	To provide information on the structural and/or physiological condition (e.g. the presence of any decay and physical defects), and/or preliminary management recommendations	
Physiological Condition - An assessment of the physiological condition (i.e. health/vitality) of the tree	GOOD FAIR POOR DEAD	Tree in a healthy condition with no significant problems Tree generally in good health with some problems that can be remediated Tree in poor health with significant problems that can't be remediated Tree without sufficient live material to sustain life
Structural Condition - An assessment of the structural/safe condition of the tree	GOOD MODERATE POOR	Tree in a sound condition with no significant defects Tree in a sound condition at present but with defects or with significant defects that can be remediated Tree with significant defects that can't be remediated
Notes related to both physiological and structural condition follow the categorisation in order support	the statement and give greater detail on the true quality and value of the tree	
Preliminary Management Recommendations	These may include further investigations for the presence or extent of decay or climbed inspections, ivy removal or pruning works when access is a nonmoveable aspect etc. (NB this is not intended to be a specification for	

	tree work and further advice maybe required prior to implementation). Trees assessed as being in apparently immediately hazardous condition will be notified to the client separately as soon as practicable	
Estimated remaining contribution (yrs)	An estimate of the remaining life contribution in years that the tree or group of trees is expected to have based on species, condition on the site in its current context	<10 - Tree is dead or dying and unlikely to contribute beyond 10 years 10+ - Tree is assessed as being able to contribute to the site for 10+ years 20+ - Tree is assessed as being able to contribute to the site for 20+ years 40+ - Tree is assessed as being able to contribute to the site for 40+ years
Category grading	Category of tree in accordance with BS5837 2012 Cascade Chart (Source BS5837 2012 p9)	'U' Unsuitable for retention, within the context of the current land user 'A' Trees of high quality with 40yr remaining lifespan 'B' Trees of moderate quality and remaining lifespan of at least 20yrs 'C' Trees of low quality with an estimated remaining lifespan of at least 10 yrs or young trees with a stem diameter below 150mm Categories A-C are further classified as 1 (mainly arboricultural qualities), 2 (mainly landscape qualities), 3 (mainly cultural values, including conservation). For further details refer to Cascade Chart in BS 5837 2012 p. 9

Appendix C – Temporary Protective Fencing Specification

Temporary Protective Fencing Specification

Temporary Protective Fencing Specification

- **Construction Exclusion Zones (CEZs)**, enclosed by **Temporary Protective Fencing**, as detailed below and to be agreed with the Local Planning Authority (LPA), shall:
- Be retained in place throughout the development process, as specified in the 'Temporary Protective Fencing Construction' section below and detailed in BS5837:2012 ;
- Be sited in the area(s) defined by the Root Protection Areas or, if applicable, the CEZ, as detailed on the associated Tree Plan;
- Be erected prior to any construction, demolition or excavation works and remain in place for the duration of the project;
- Preclude any delivery of site accommodation and/or materials and/or plant machinery;
- Preclude all construction related activity, with the sole exception of specified arboricultural works and any other works to be carried out under supervision that have been agreed by all parties; and
- Preclude the storage of all development related materials and substances including fuels, oils, additives, cement and/or any other deleterious substance. Any incursion into CEZs must be by prior arrangement, following consultation with the LPA.

Temporary Protective Fencing Construction

- Temporary protective fencing panels shall be weldmesh "Heras" panels of at least 2.0 m in height;
- The panels shall butt together and be securely fixed to a scaffold framework, as per 3 to 5 below;
- The scaffold framework shall comprise of upright poles of at least 3.0 m in length driven no less than 0.6 m into the ground at maximum 3.0 m centres with horizontal and diagonal poles fixed to the uprights, as per 4 to 5 below;
- The two horizontal rail poles shall be attached to the uprights at heights of 0.6 and 1.8 m with 3 no. clamps to each joint;
- The diagonal scaffold pole struts be clamped to the top rail of the scaffold framework at a 45° angle and extend back into the CEZ and clamped to a 0.7 m length of scaffold tube that shall be driven no less than 0.5 m into the ground;
- No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts;
- A 600 mm x 300 mm warning sign reading "TREE PROTECTION AREA KEEP OUT" (see Figure A, below) shall be fixed to every 10 m length of protective fencing; and
- On completion and prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials, the LPA shall inspect and approve the Temporary Protective Fencing.