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Location:
Fairfield Lane,
Whitby

Report Type:
Arboricultural Impact Assessment

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ARB/CP/1439

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Contents

Appendices

1 Introduction

1.1 Acting upon the request of the client a survey of trees on land to the east of Fairfield Way, Whitby was carried out on the 18th November 2016 to assist with future development layout decisions and form the basis of this Impact Assessment. The tree survey and report production were undertaken by Charles Prowse of Elliott Consultancy Ltd.

1.2 Scope of the report:

- This report provides arboricultural information and advice in relation to inform re-development decisions for the site.
- All trees within the site were assessed and categorised with regard to their quality and a retention value was assigned using criteria outlined in British Standard 5837:2012 – 'Trees in Relation to Design, Demolition & Construction' (BS5837:2012). Appendix 4 provides information regarding the categorisation.
- Matters pertinent to tree retention and protection are briefly discussed within Section 4. Following receipt of detailed engineering drawings providing service runs and ground level alterations all measures relating to tree removal, tree retention and protection should be finalised within an Arboricultural Method Statement where required.
- Section 5 evaluates the proposals in context to the existing trees, with potential issues discussed and remedial options offered.

1.4 This report should be read in conjunction with the Tree Constraints Plans (Appendix 2) and the Arboricultural Impact Plan (Appendix 3).

2 Site Information

2.1 The area surveyed is located to the east of Fairfield Way, Whitby. Figure 1 shows the extent of the site.

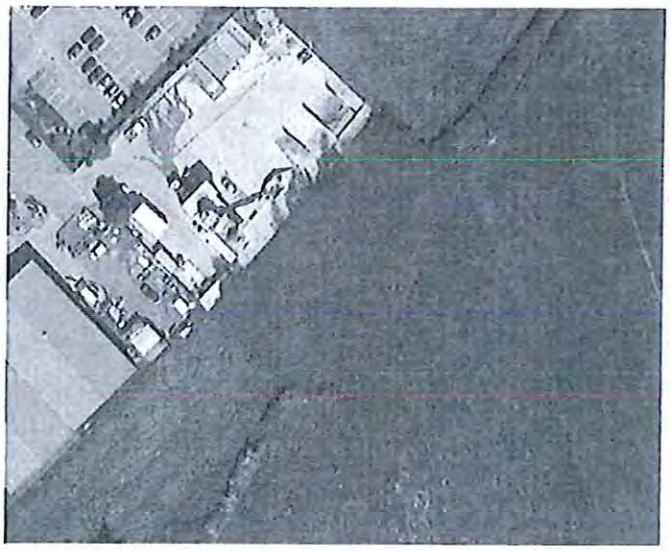

Figure 1: Area Surveyed Highlighted

2.2 The site is an area of unused grassland located on the edge of an industrial/business park. The site is adjacent to a concrete mixing plant.

2.3 The trees surveyed are predominantly located in a line adjacent to the northwest boundary. Two groups of hawthorn and blackthorn were surveyed, both of which are elements of existing field boundary hedgerows.

2.4 On the day the site was surveyed the sky was clear which presented good levels of light. Any visibility issues encountered are noted within Appendix 1).

3 Tree Category Evaluation

3.1 The criteria used for evaluating how suitable each tree is for retention within a development is that suggested within 5837:2012; a copy of the categorisation sheet can be found within Appendix 4.

3.2 BS5837:2012 notes that all trees apart from those with stem diameters <150mm or classified as Category U should be considered for retention and viewed as a potential site constraint. When inspected, each tree and or group feature is assigned one of four categories that signify how suitable that tree/group would be for retention within any development proposals, and therefore the degree to which it should constrain the site. The four categories are as follows:

3.2.1 **Category A** (coloured green) trees are those of high quality and value, and of a condition whereby they could make a substantial contribution to the site. The retention of Category A trees should be considered during the design phase and afforded adequate physical protection during the construction phase in accordance with BS 5837:2012 where retained. This means keeping proposed features and alterations to ground levels outside of root protection areas and crown spreads so as to ensure that the tree remains in an adequate condition post-development. Root protection areas and crown spreads are displayed upon the Tree Constraints Plan, Appendix 2. None of the trees were classified as Category A.

3.2.2 **Category B** (coloured blue) trees are those of moderate quality and value, and of a condition that they make a substantial contribution to the site. The retention of Category B trees should be considered during the design phase and afforded adequate physical protection during the construction phase in accordance with BS 5837:2012 where retained. Five of the trees were classified as Category B; their numbers being 2, 6, 7, 9 and 10.

3.2.3 **Category C** (coloured grey) trees are considered to be of low quality and value, but of an adequate condition to remain in the short-term. Trees with a stem diameter of less than 150mm (measured at 1.5m above ground level) are classified as Category C; these trees should also be retained where possible but where they form a significant constraint to development their removal should be permitted. Where they are to be retained they should be

afforded adequate consideration during the design phase and physical protection during the construction phase in accordance with BS 5837:2012. Five individual trees and two groups were classified as Category C; their numbers being Trees 1, 3, 4, 5, 8, and Groups 1 and 2.

3.2.4 **Category U** (coloured red) trees are of such a condition that any existing value would be lost within 10 years. As a result it is recommended that Category U trees are not considered a constraint for development and are removed prior to construction commencing. Tree 11 was classified as Category U.

3.2.5 In addition to the four main categories explained above, each tree/group is assigned a sub-category which signifies its overriding value as determined by the surveyor, which is noted by adding a suffix of 1, 2 or 3 alongside the category letter. 1 signifies that the trees/groups main value is arboricultural e.g. it may be a particularly good example or may be rare. 2 signifies that the overriding factor was due to the landscape value that the tree/group provides e.g. it may be part of a group feature such as a screen. 3 indicates that a cultural factor was the overriding value e.g. it may have historical or commemorative importance.

Summary of Categories Awarded			
Category	Tree Numbers	Group Numbers	Hedgerow Numbers
A			
B	2, 6, 7, 9, 10		
C	1, 3, 4, 5, 8	1, 2	
U			

3.3 Overall the majority of the trees within the site are of reasonable to good physiological and structural condition with few arboricultural issues noted. Specific details for trees, groups and hedgerows can be found within Appendix 1.

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4 Constraints and Retention Considerations

4.1 The individual trees within the survey area are located in a line adjacent to the northwest boundary which is shared with the neighbouring concrete plant. The trees provide an element of visual screening to the plant.

4.2 Many of the trees are within close proximity to one another and their crown form has been affected as a result. As a cohesive group such crown form is not an issue but when assessing how development layouts could affect tree retention particular attention will need to be given to potential form of trees that could be retained whilst others are removed.

4.3 Any tree retained within the design will require protection in accordance with *BS 5837 'Trees in relation to design, demolition and construction'* 2012 regardless of its initial retention category. This protection will usually require trees enclosed by a barrier in areas equal to the Root Protection Areas (As detailed within Appendix 2); this should be undertaken prior to any work beginning, including demolition and site preparation works. The specification for the fencing and for any other protection measures required must be provided within the **Arboricultural Method Statement** and approved by the Local Planning Authority.

4.4 Root protection areas should be considered sacrosanct from any disturbance throughout the entire development process - with no ground disturbance, material storage, or physical encroachment allowed. Where possible trees should be protected with continuous barriers protecting trees as groups rather than individual specimens – this is of particular merit around the periphery of the site to protect boundary trees on and off-site.

4.5 Areas that have been identified for post-development tree planting should also be protected to ensure that the soil does not become compacted or contaminated.

4.6 No new utility runs must be located within any of the retained trees root protection areas. Any works to existing utilities will be undertaken with regard for the retained tree cover and will be in accordance with NJUG (National Joint Utility Groups) guidelines.

5 Arboricultural Impact Assessment

5.1 This section concentrates on the proposed development and how it relates to the current tree population within the site. Any conflict issues between the proposed layout and existing trees are discussed and remedial options, where possible, suggested.

5.2 It is proposed that an office and business premises will be constructed within the site which comprises a large building and hard standing apron for goods vehicle access and car parking, as displayed within Figure 2.

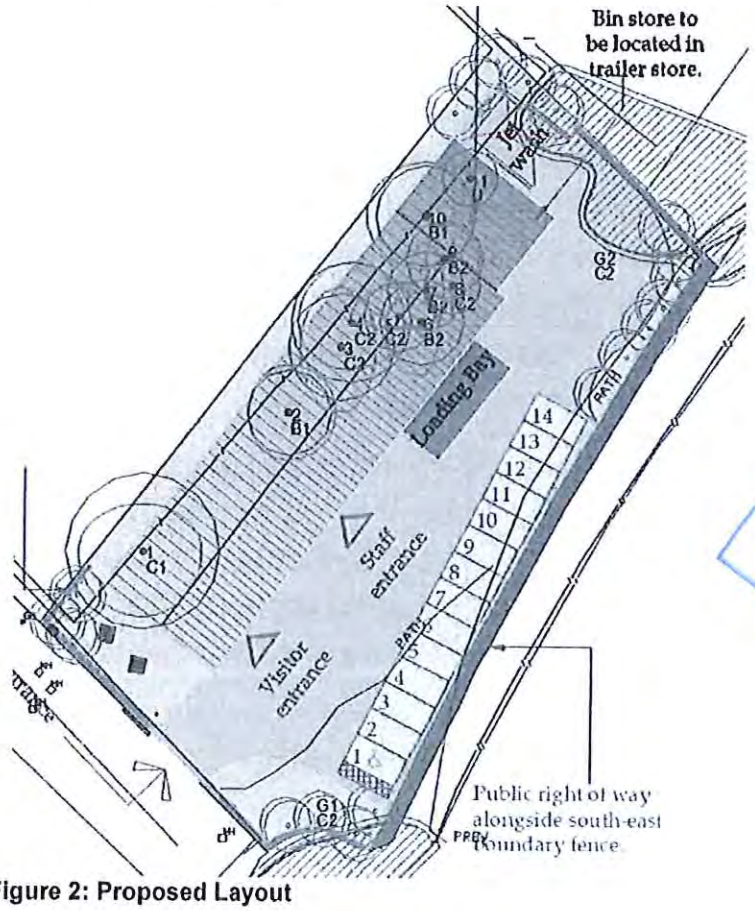


Figure 2: Proposed Layout

5.3 **Conflict 1: Loss of trees due to the proposed layout.**

As shown within Figure 2 the construction of the proposed development will necessitate the removal of all of the individual trees and sections of the groups.

Mitigation / Justification: The trees within the site, predominantly willow and poplar, are of mixed quality with factors of slightly poor form, such as co-dominant

and multi-stems being the reason for lower classification of some over others. A mix of BS5837 Category B and C was commonly applied. The trees do provide an element of visual screening to the adjacent concrete plant but many are within close proximity to the boundary fence and/or adjacent structures meaning that future pruning to abate contact issues are likely. Proposed structures such as hard surfacing, the jet wash and boundary fencing will require the partial removal of Groups 1 and 2. None of the individual trees or the groups are particularly important or valuable assets and their loss is unlikely to be detrimental to the wider landscape. The establishment of a hedgerow and the planting of numerous trees are indicated upon the design proposals. The realisation of which would certainly mitigate the tree losses required to enable the scheme.

5.4 **Conflict 2: Construction of proposed structures in close proximity to trees.**

The boundary fencing will be erected in close proximity to the remaining sections of Groups 1 and 2, which has the potential to result in damage to the trees.

Mitigation / Justification: It is likely that the fence will only require post holes to be dug which will limit the impact upon the ground. The post holes should be created using hand-operated tools only with care taken to minimise any disruption to root tissue.

5.5 **Potential Conflict 3: Location of utilities runs with Root Protection Areas.**

Damage can be caused to root tissue during the installation of utilities runs.

Mitigation / Justification: No new utility runs must be located within any of the retained trees root protection areas. Any works to existing utilities will be undertaken with regard for the retained tree cover and will be in accordance with NJUG (National Joint Utility Groups) guidelines. Details of intended service runs should be made available once the technical information has been drafted in order to complete the Arboricultural Method Statement.

5.6 **Potential Conflict 4: Damage to trees within site during construction.**

Trees may be damaged due to a variety of reasons during a development process.

Mitigation / Justification: A physical demarcation will be created between the retained trees and demolition/development areas to ensure that the trees and the medium within which they are rooting are protected from damage. The actual method of creating the demarcation might vary, where appropriate, but will typically

be a physical barrier. As only the sections of Groups 1 and 2 that are located outside the site will be retained, any site hoarding or security fencing erected may protect these group elements without the need for additional protection.

5.7 **Potential Conflict 5: Damage to structures from trees.**

Trees are capable causing damage to structures either directly, such as physical contact damage or indirectly given the right conditions, such as subsidence.

Mitigation / Justification: As would be expected irrespective of recommendation, Chapter 4.2 'Building near Trees' of the NHBC Standards should be consulted by those responsible regarding building foundation depths required according to the species of adjacent trees, and for suitable species to be planted given their intended positions to new and existing structures.

Appendix 1 Tree Details

Key for Tree & Group Data tables:

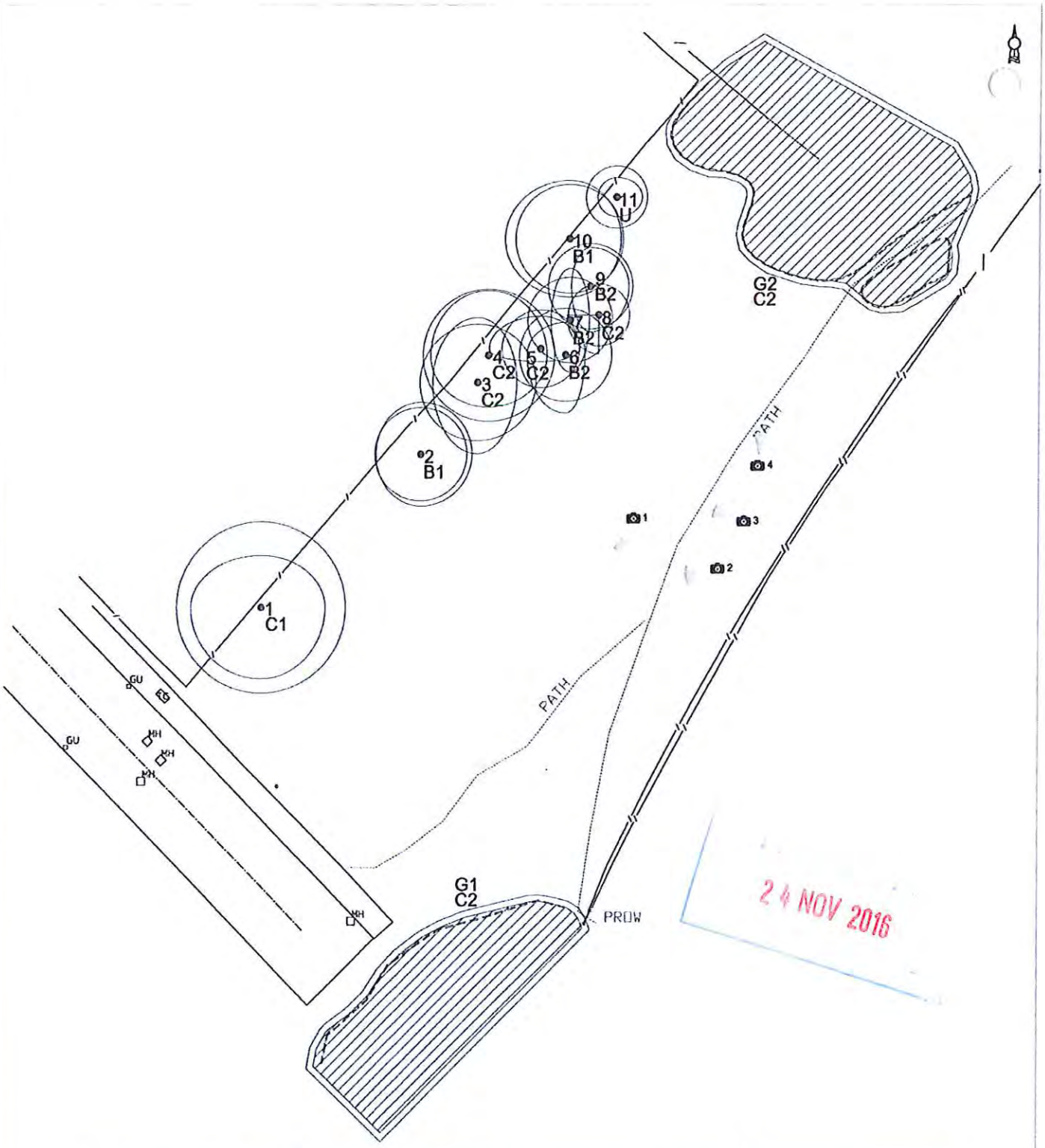
No.	Tree Number
Species	Tree Name (common)
Age	Y = Young; SM = Semi-mature; EM = Early-mature M = Mature; OM = Over-mature; V = Veteran; D = Dead
DBH	Diameter at Breast Height (measured at 1.5m above ground level to the nearest cm)
Stems	The number of stems the tree has
Height	Overall tree height measured in metres
Crown Spread	Measured along the four cardinal points in metres
CH	Canopy Height (height of crown above ground)
1st Branch	The height and aspect of the 1st significant limb e.g. 2 NE = 1st limb at 2m growing in a north-easterly direction.
EstD	Indication of whether any of the trees dimensions were estimated: Y=Yes, N=No.
General Observations	Appraisal of trees general condition
EstCont	Estimated remaining contribution (years)
BS Cat	British Standard 5837:2012 retention category
Recommendation	Remedial works that may be required should the tree be retained (Note: these recommendations do not relate to proposed development requirements – such recommendations should be covered within the Arboricultural Method Statement)

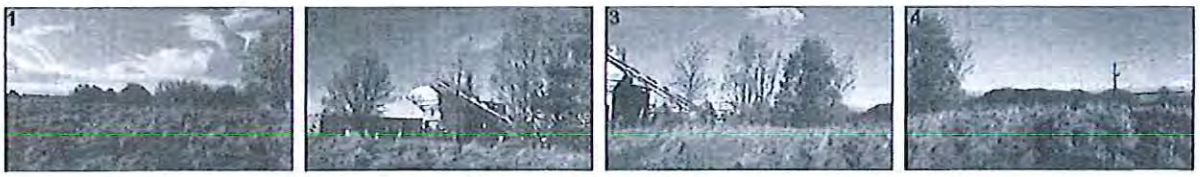
Tree Survey Data - Fairfield Way, Whitby

No.	Species	Age	DBH	Stems	Height	Crown Spread				CH	EstD	General Observations	EstCont	BS Cat	Recommendation
						N	S	E	W						
1	Willow spp	M	54	1	12	4	6	5	6	0.5	N	Crown encroaching structures within neighbouring site.	20+	C1	Prune to clear structures if retained
2	Poplar spp	SM	30	1	12	4	4	4	4	0.5	N		40+	B1	No work required
3	Willow spp	M	37	2-5	12	5	6	3	4	1.5	N	Multi-stemmed. Co-dominant crown.	20+	C2	No work required
4	Willow spp	M	42	2-5	11	5	4	5	5	0.5	N	Co-dominant stems at base. Co-dominant crown.	20+	C2	
5	Pine spp	SM	24	1	8	3	1	3	4	0.5	N	Co-dominant crown.	40+	C2	No work required
6	Alder spp	SM	30	1	10	3	5	2	3	0.5	N		40+	B2	No work required
7	Willow spp	SM	28	1	11	4	4	2	2	1.5	N	Co-dominant crown.	40+	B2	No work required
8	Willow spp	SM	20	1	8	0	3	0	3	0.5	N	Slightly suppressed form.	40+	C2	No work required
9	Poplar spp	SM	27	1	12	3	4	3	2	1	N	Co-dominant crown.	40+	B2	No work required
10	Poplar spp	SM	35	1	12	5	5	4	5	0.5	N		40+	B1	No work required
11	Field Maple	SM	21	5+	3.5	2	2	2	2	0.5	N	Multi-stemmed. Bark necrosis throughout	<10	U	No work required

Group Data - Fairfield Way, Whitby

Group Number	Dominant Species	Lesser Species	DBH	Average Height	Age	Average Spread	Condition/Comments	Recommendations	EstCont	BS Cat
1	Blackthorn Hawthorn		12	3	EM	2	Small scrubby field edge group grown out from hedgerow	No work required	40+	C2
2	Blackthorn	Hawthorn	10	3	EM	1	Small scrubby field edge group grown out from hedgerow	No work required	40+	C2





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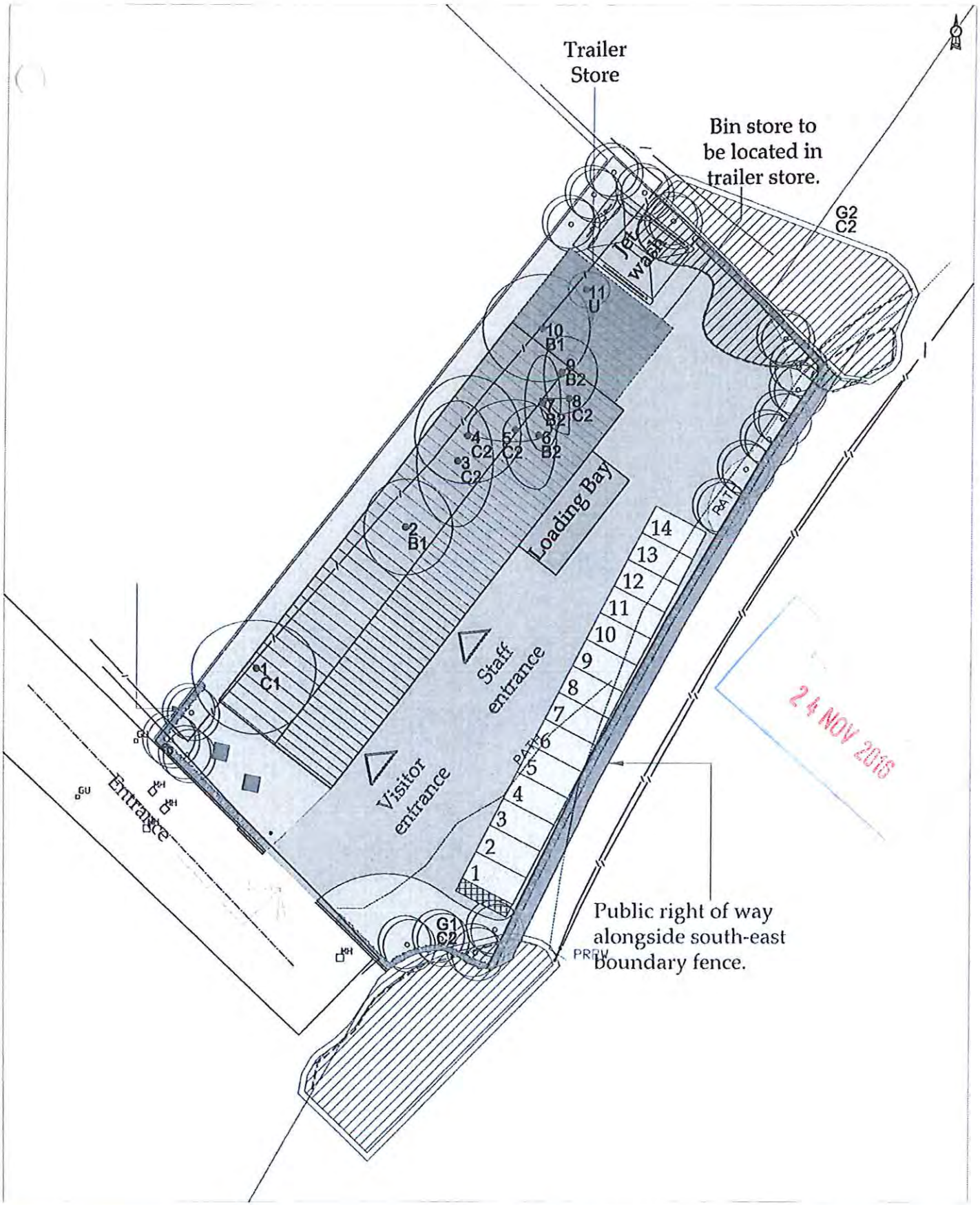
- Tree Position Showing Crown Extents and BS5837 Category A
- Tree Position Showing Crown Extents and BS5837 Category B
- Tree Position Showing Crown Extents and BS5837 Category C
- Tree Position Showing Crown Extents and BS5837 Category U
- Root Protection Area - to remain free from disturbance
- Group of Trees
- Hedgerow
- Photo Number, Position and Aspect
- TG1 Tree/Group
- A1/B1/C1/U BS5837 Retention Category

APPENDIX 2

Drawing Title	Tree Constraints Plan
Project	Fairfield Way, Whitby
Drawing Number	ARB/CP/1436/TCP
Date	November 2016
Scale	1:200 @ A3
Client	Mr Fusco



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Tree to be Retained

Tree to be Removed

Group of Trees to be Retained

Group of Trees to be Removed

Root Protection Area - to remain free from disturbance

1G1 Tree/Group

A1B1/C1U BS5837 Retention Category

APPENDIX 3

Drawing Title	Arboricultural Impact Plan
Project	Fairfield Way, Whitby
Drawing Number	ARB/CP/1436/AIP
Date	November 2016
Scale	1:200 @ A3
Client	Mr Fusco

Table excerpt from BS5837:2012

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	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable 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 decline • Trees 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 *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve, see 4.5.7*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
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

Appendix 5 Arboricultural Glossary

Abiotic Factors – Nonliving factors of the environment, including temperature & wind.

Age-class – A general classification of the tree into either - young, semi-mature, early-mature, mature, over-mature, or senescent.

Amenity Value – A general classification based on the trees contribution to local amenity. Factors such as location and visibility from public spaces, size, maturity and species are taken into account.

Apical Bud/Shoot – The apical bud, also known as the leading shoot, is responsible for shoot extension and is dominant.

Apical Dominance – A singular, leading shoot remains dominant.

Biotic factors - Living factors. For example, animals and pathogens.

Bottle Butt – Term used to describe shape of stem base, usually associated with an internal defect – refer to 'Reaction Wood' below.

Branch union/junction - The point at which a branch joins a larger stem. Can be a point of weakness, especially in certain species.

Cambium - A lateral meristem (see below) in vascular plants located just beneath the bark responsible for secondary growth, e.g. production of annual growth rings.

Canker – A clearly defined area of dead and sunken or malformed bark, caused by bacteria or fungi. Can have a bearing on structural integrity of infected limb(s) depending on size and location.

Chlorosis/Chlorotic – Abnormal yellow or yellow-green coloration of usually green leaves. Essentially a reduction of chlorophyll levels often as a result disease or nutrient deficiency.

Co-dominant stems - A growth characteristic, where two or more stems of similar size grow from the same point. Can create an inherent weakness.

Coppice - The method of managing trees by cutting the stems at between 1.0 inch and 1.0 foot from the ground level on a regular cycle, the cut stumps of the trees or shrubs are allowed to re-grow many new stems.

Crown spread - Gives distances between extreme limits of the crown and the stem, usually along the four compass points. Helps to show crown symmetry.

Crown Reduction – The removal of branch ends to reduce the extreme limits of a trees branch spread and height.

Crown Thin – The removal of selected branches within the crown to thin the internal branch structure.

D.B.H. - 'Diameter at Breast Height', an industry standard to gauge tree stem size and development. Within arboriculture, breast height is taken to be 1.5m above ground level.

Dieback - The reduction in crown vigour and extension growth progressing to death of distal parts; often associated with decline.

Epicormic/adventitious growth - New growth from dormant buds that can often form tenuous attachments. Although some species readily form such shoots, it can be an indication of stress.

Hanger – Term used to describe a branch that has become detached and is being supported by other branches. Can be a hazard to persons and property below.

Hazard Beam – After the loss of a distal part, a limb concentrates growth upwards creating adverse end weights that can render the limb susceptible to failure.

Hyphae – Fine branching tubes that make up the body (or mycelium) of a multi-cellular fungus.

Included bark – Growth characteristic usually caused when two or more stems/branches growing in close proximity 'fuse' together entrapping the bark from when the parts were separate in the middle, creating a potential structural weakness. Some trees are able to strengthen such 'weakened' unions with adaptive growth.

Meristem - The undifferentiated plant tissue from which new cells are formed, such as that at the tip of a stem or root.

Meristematic Disorder – A growth disorder caused by a disruption of the meristem (see above) from any of a number of biotic factors (see above). Manifests as growths such as 'Witches Brooms' & 'Galls'.

Mycelium – Mass of hyphae that constitutes the vegetative part of a fungus.

Necrosis/Necrotic – Death of tissues usually characterised by a blackening in colour.

Occlusion/Occluded – Normally used to describe the overgrowth of a wound. Also, immoveable foreign objects in contact with a tree part can become encased or 'occluded' by the tree as it grows incrementally.

Pathogen - An agent that causes disease, especially a living micro-organism such as a bacterium or fungus.

Pollard – The removal and subsequent regular re-removal of the crown of a tree above animal browsing height. Can be an effective method of controlling the size of trees in urban areas. This is ideally begun in the trees early stages and maintained throughout its life.

PSULE – Potential Safe Useful Life Expectancy. A general classification as to the trees life expectancy.

Reaction wood - Essentially additional wood laid down by the tree to compensate for structural defects such as a cavities.

Ring barking/Girdling – the removal of bark around the entire circumference of a stem or branch, causing the death of all distal parts.

Rhizomorphs – Dense bundles of mycelium, blackened by melanin for protection, that aid in the spread of the fungus.

Root Protection Area – An area, usually represented as a circle, around each tree which should remain free from disturbance during a development in order to protect the roots of a tree.

Saprophyte – An organism which exists on dead plant material.

Scaffold branches - The main structural branches within the crown.

Veteran tree – Tree that, by recognised 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.

Vigour - A general classification, as to the present and future potential growth and development of a tree. A comment regarding the health status of the tree specific to its species.