



Sirius Planning

Land off Goat Mill Road, Merthyr Tydfil

Arboricultural Assessment

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CONTENTS

1.0	INTRODUCTION	2
2.0	PLANNING POLICY	3
3.0	SURVEY METHODOLOGY	4
4.0	RESULTS.....	8
5.0	ARBORICULTURAL IMPACT ASSESSMENT	9
6.0	NEW TREE AND HEDGEROW PLANTING.....	11
7.0	TREE PROTECTION MEASURES	13
8.0	CONCLUSION	16

TABLES

Table 1: Summary of Trees by Retention Category

Table 2: Summary of Impact on Tree Stock

Table 3: Example of calculating Soil Volume for New Tree Planting

PLANS

Tree Survey Plan (9131-T-01)

Tree Retention Plan (9131-T-02)

APPENDICES

Appendix A: Tree Schedule

Appendix B: Protective Fencing Specifications

1.0 INTRODUCTION

- 1.1 This report has been prepared by FPCR Environment and Design Limited on behalf of Sirius Planning to present the findings of an Arboricultural Assessment and survey of trees located at Land off Goat Mill Road, Merthyr Tydfil (hereafter referred to as the site), OS Grid Ref SO062069.
- 1.2 The survey was carried out on 31st July 2019.

Scope of Assessment

- 1.3 The tree survey and assessment of existing trees has been carried out in accordance with guidance contained within British Standard 5837:2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*' (hereafter referred to as BS5837). The guidelines set out a structured assessment methodology to assist in determining which trees would be deemed either as being suitable or unsuitable for retention.
- 1.4 The guidance also provides recommendations for considering the relationship between existing trees and how those trees may integrate into designs for development; demolition operations and future construction processes so that a harmonious and sustainable relationship between any retained trees and built structures can be achieved.
- 1.5 The purpose of the report is therefore to firstly, present the results of an assessment of the existing trees' arboricultural value, based on their current condition and quality and to secondly, provide an assessment of impact arising from the proposed development of the site.
- 1.6 This report has been produced to accompany a planning application for a proposed Plastic recycling and processing facility with associated office accommodation, external storage area, vehicular parking and weighbridge, surface water lagoon. It has included an assessment of any impact to the tree cover. The survey has therefore focused on any trees present within or bordering the site that may potentially be affected by the future proposals or will pose a constraint to any proposed development.

Site description

- 1.7 The brownfield site is located on the north east edge of Merthyr Tydfil, lying immediately west of the A4060 which runs along the eastern edge of the town. The land itself is comprised of one large compartment sandwiched between two roads to the east and west. The outer edges comprise of groups of trees which have been planted for screening whilst the inner area is scrubland with footpaths running through. Lack of management on site has allowed for self-set groups to start appearing amongst the planted belts as pioneer species have started to take hold. On the southern boundary of the site there is a small residential development and to the north the site is bordered by commercial buildings.

2.0 PLANNING POLICY

Planning Policy Wales Edition 11 (February 2021)

- 2.1 National Planning Policy is defined by the National Planning Policy Framework (NPPF). This sets out the Government's most current and up to date planning policies for England and how these should be applied. The current NPPF is dated February 2019.
- 2.2 Paragraph 11 of the NPPF states that there is a presumption in favour of sustainable development and states that for decision making, the LPA should be '*c) approving development proposals that accord with an up-to-date development plan without delay*'. In the absence of a development plan or the development plan is out of date, the acting LPA should grant planning consent so far as the development proposals do not breach the policies and guidance outlined in the NPPF.
- 2.3 In relation to arboriculture, the NPPF also states that:
- 175(c) '*development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists*';
- and provides specific guidance that:
- 175(d) '*development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity*'.
- 2.4 Examples of what is deemed to be '*wholly exceptional*' are included within Footnote 58 and provides the examples of '*infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat*'.

Statutory Considerations

- 2.5 Local authorities have a Duty under the Town and Country Planning (Trees) (Amendment) (Wales) Regulations 2017 to create Tree Preservation Orders (TPO) in order to protect and preserve specific trees and woodlands that bring significant amenity benefit to a particular site or location. Under a TPO it is a criminal offence to cut down, top, lop, uproot or wilfully destroy a tree protected by that Order, or to cause or permit such actions, if carried out without the prior written consent of the acting LPA. Anyone found guilty of such an offence is liable and in serious cases, may result in prosecution and incur an unlimited fine.
- 2.6 It is understood following consultation with the Local Planning Authority, Merthyr Tydfil County Borough Council, that there are no Tree Preservation Orders or Conservation Area designations that would apply to any trees present on, or in close proximity to the assessment site and therefore no statutory constraints would apply to the development in respect of trees.
- 2.7 Information provided on Tree Preservation Orders and Conservation Areas is accurate to the date of this assessment and cannot be assumed to remain unchanged. The last check was carried out on the 17th November 2020.

3.0 SURVEY METHODOLOGY

- 3.1 The survey of trees has been carried out in accordance with the criteria set out in Chapter 4 of BS5837. The survey has been undertaken by a suitably qualified and experienced arboriculturist and has recorded information relating to all those trees within the site and those adjacent to the site which may be of influence to any proposals. Trees were assessed for their arboricultural quality and benefits within the context of the proposed development in a transparent, understandable and systematic way.
- 3.2 Trees have been assessed as groups where it has been determined appropriate.
- The term group has been applied where trees form cohesive arboricultural features either aerodynamically, visually or culturally including biodiversity or habitat potential for example parkland or wood pasture.
- 3.3 An assessment of individual trees within groups has been made where a clear need to differentiate between them, for example, in order to highlight significant variation between attributes including physiological or structural condition or where a potential conflict may arise.

Ancient and Veteran Trees`

- 3.4 Veteran trees and Ancient Woodland are important components of the landscape, their importance can be for a number of reasons including that of their ecological, social, cultural and historic value.
- 3.5 Veteran Trees and Ancient Woodlands are material considerations within the planning process and their importance is specifically recognised within the Planning Policy Wales Edition 11 (February 2021), which defines the terms ancient or veteran tree as:

6.4.26 Ancient woodland and semi-natural woodlands and individual ancient, veteran and heritage trees are irreplaceable natural resources, and have significant landscape, biodiversity and cultural value. Such trees and woodlands should be afforded protection from development which would result in their loss or deterioration unless there are significant and clearly defined public benefits; this protection should prevent potentially damaging operations and their unnecessary loss. In the case of a site recorded on the Ancient Woodland Inventory, authorities should consider 144 145 the advice of NRW. Planning authorities should also have regard to the Ancient Tree Inventory. 6.4.27 The protection and planting of trees and hedgerows should be delivered, where appropriate, through locally specific strategies and policies, through imposing conditions when granting planning permission, and/or by making Tree Preservation Orders (TPOs)¹²⁵. They should also be incorporated into Green Infrastructure Assessments and plans.

- 3.6 Various published methodologies are currently available which, due to the complexity and subjectivity of the process of defining and assessing these trees, often have conflicting definitions. This assessment, and the criteria used for defining ancient/veteran trees and the identification of attributable ancient/veteran features, has been based on a range of currently published guidance and resources.

BS5837 Categories

- 3.7 Trees have been divided into one of four categories based on Table 1 of BS5837, '*Cascade chart for tree quality assessment*'. For a tree to qualify under any given category it should fall within the scope of that category's definition (see below).
- 3.8 Category U trees are those which would be lost in the short term for reasons connected with their physiology or structural condition. They are, for this reason not considered in the planning process on arboricultural grounds. Categories A, B and C are applied to trees that should be of material considerations in the development process. Each category also having one of three further sub-categories (i, ii, iii) which are intended to reflect arboricultural, landscape and cultural or conservation values accordingly.
- 3.9 **Category (U) – (Red):** Trees which are unsuitable for retention and are 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 within this category are:
- Trees that have a serious irremediable structural defect such that their early loss is expected due to collapse and includes trees that will become unviable after removal of other category U trees.
 - Trees that are dead or are showing signs of significant, immediate, or irreversible overall decline.
 - Trees that are infected with pathogens of significance to the health and/ or safety of other nearby trees or are very low-quality trees suppressing adjacent trees of better quality.
 - Certain category U trees can have existing or potential conservation value which may make it desirable to preserve.
- 3.10 **Category (A) – (Green):** Trees that are considered for retention and are of high quality with an estimated remaining life expectancy of at least 40 years with potential to make a lasting contribution. Such trees may comprise:
- Sub category (i) trees that are particularly good examples of their species, especially if rare or unusual, or are essential components of groups such as formal or semi-formal arboricultural features for example the dominant and/or principal trees within an avenue.
 - Sub category (ii) trees, groups or woodlands of particular visual importance as arboricultural and / or landscape features.
 - Sub category (iii) trees, groups or woodlands of significant conservation, historical, commemorative or other value for example veteran or wood pasture.
- 3.11 **Category (B) – (Blue):** Trees that are considered for retention and are of moderate quality with an estimated remaining life expectancy of at least 20 years with potential to make a significant contribution. Such trees may comprise:
- Sub category (i) trees that might be included in category A but are downgraded because of impaired condition for example the presence of significant though remediable defects, including unsympathetic past management and storm damage.

- Sub category (ii) 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.
- Sub category (iii) trees with material conservation or other cultural value.

3.12 **Category (C) – (Grey):** Trees that are considered for retention and are of low quality with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150mm. Such trees may comprise:

- Sub category (i) unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.
- Sub category (ii) trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value or trees offering low or only temporary / transient screening benefits.
- Sub category (iii) trees with no material conservation or other cultural value.

Site Plans

- 3.13 The individual positions of trees and groups have been shown on the Tree Survey Plan. The positions of trees are based on a topographical / land survey, as far as possible, supplied by the client. Where topographical information has not identified the position of trees these have been plotted using a global positioning system and aerial photography to provide approximate locations. The crown spread, root protection area and shade pattern (where appropriate) are also indicated on this plan.
- 3.14 As part of this assessment, a Tree Retention Plan has been prepared to show the proposed layout in relation to the existing tree cover allowing an assessment of any potential conflicts. The plan also identifies which trees would be required to be removed or retained as part of the proposed development.

Tree Constraints and Root Protection Areas

- 3.15 Below ground constraints to future development are represented by tree roots and the soil environment in which they grow which needs to be protected if the tree is to be retained. Tree rooting systems are essential for the uptake of water and nutrients, serving the storage of carbohydrates for the future growth and function of the tree, and form structural anchorage and support for the stem and crown. The perceived rooting area of the tree; referred to as the root protection area (RPA) needs to be protected if the tree is to be retained.
- 3.16 The RPA is a notional area considered to be the minimum zone that must be protected to avoid any adverse impacts on retained trees. The RPA has been calculated in accordance with Annex C, D and Section 4.6 of BS5837:2012 and requires suitable protection in order for the tree to be successfully incorporated into any future scheme. As such, the RPA of existing trees is an important material consideration when considering site constraints and planning development activities.

- 3.17 Where applicable the shape of the Root Protection Area has been modified to consider the presence of any nearby obstacles (existing or past) which may have restricted root growth and the likely root distribution i.e. the presence of hard standing, structures and underground apparatus. Where groups of trees have been assessed, the Root Protection Area has been shown based on the maximum sized tree in any one group and so may exceed the Root Protection Area required for some of the individual specimens within the group. Further detailed inspection of the individual trees forming a group may be required where development impacts upon the group.
- 3.18 Whilst it is generally accepted that a trees roots may extend far greater distances than the notional RPA, with the distribution of the root system relating directly to the availability of suitable conditions for growth (namely oxygen, water and nutrients), with roots predominantly located in the upper 1,000 mm of the soil horizon; the RPA offers an accepted protective buffer from development.
- 3.19 Above ground constraints such as the current crown spread of the trees and an illustration of the shade pattern (where appropriate) have been considered and identified within the Tree Survey Plan and Tree Retention Plan indicates their potential area of shading influence.

Considerations and Limitations of the Tree Survey

- 3.20 The survey was completed from ground level only and from within the boundary of the site. Aerial tree inspections or an assessment of the internal condition of the stem/s or branches were not undertaken at this stage as this level of survey is beyond the scope of the initial assessment.
- 3.21 The statements made in this report regarding defects in assessed trees does not take into account the effects of extreme / adverse weather conditions, changes in land use prior to the site's development, unforeseen accidents or anti-social behaviours, such as vandalism, which occur since the date of the survey. As such, the assessment of tree condition given within applies to the date of survey and cannot be assumed to remain unchanged.
- 3.22 It will be necessary to review all comments and observations made within this report, in accordance with sound arboricultural practice, within two years of the date of survey (unless explicitly stated elsewhere within this report). Further review may also be necessary where site conditions change or works to trees are carried out which have not been specified in detail within this report.
- 3.23 Hedgerows are identified as a Habitat of Principal Importance (HPI) as listed within Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. The tree survey conducted, in accordance with BS5837, does not assess hedgerows against the Hedgerow Regulations 1997 or specifically from an ecological perspective, and is outside the scope of this assessment.
- 3.24 It may be necessary during detailed design to undertake further assessment and accurate positioning of woody species within tree groups and hedgerows to assist structural calculations for foundation design of structures in accordance with current building regulations. The exact position of individual trees or species included as part of a tree group should be checked and verified on site prior to any decisions for foundation design, tree operations or construction activity being undertaken. Further survey work would be required for calculating foundation depths in accordance with NHBC Chapter 4.2 Building near Trees.

4.0 RESULTS

- 4.1 A total of 13 groups of trees were surveyed as part of the Arboricultural Assessment. Trees were surveyed as individual trees and groups of trees where examples are clearly present as per the description. Refer to the Tree Survey Plan and Appendix A – Tree Schedule for full details of the trees included in this assessment. The table below summarises the trees assessed.

Tree Schedule

- 4.2 Appendix A presents details of any individual trees and groups found during the assessment including heights, diameters at breast height, crown spread (given as a radial measurement from the stem), age class, comments as to the overall condition at the time of inspection, BS5837 category of quality and suitability for retention and the root protection area.
- 4.3 General observations particularly of structural and physiological condition for example the presence of any decay and physical defect and preliminary management recommendations have also been recorded where appropriate.
- 4.4 Several of the trees have been discussed in more detail following the table, owing to their physical condition or arboricultural significance.

Results Summary

- 4.5 Tree cover was broadly restricted to the site boundaries with a few exceptions where self-set groups, such as G9, G11 and G12 had begun to spread through the inner site
- 4.6 A total of 13 groups were identified with 6 being of moderate value, category B, and the remainder being of category C, low value. The reasons for these low valuations were a lack of post planting management has created densely packed groups of unremarkable trees whose primary value is that of screening.

Table 1: Summary of Trees by Retention Category

	Individual Trees	Total	Groups of Trees	Total
Category U - Unsuitable		0		0
Category A (High Quality / Value)		0		0
Category B (Moderate Quality / Value)		0	G1, G3, G4, G5, G6, G13	6
Category C (Low Quality / Value)		0	G2, G7, G8, G9, G10, G11, G12	7

- 4.7 Where groups had been planted in the past, they were characterised by overcrowding and in many cases declining conditions of trees due to the competition between trees. The value of all trees on the boundaries of the site was primarily attributed to screening. That aside, trees on site provided structural habitat suitable for nesting birds.

- 4.8 G1, G3, G4, G5, G6 and G13 were groups which collectively surrounded the site. They were all a mix of native and ornamental specimens which had been planted as screening. With this objective fulfilled and the targeted roads being obscured by the plantings the groups were allocated category B status due to their landscape value as screening but were largely unremarkable arboriculturally.
- 4.9 G7, G8 and G10 were all planted groups which followed a dry ditch running just to the east of centre vertically through the site. These groups contained a large mix of species which were densely packed and unremarkable from an arboricultural perspective which led to a category C classification.
- 4.10 G9, G11 and G12 were self-seeded groups dotted across the site. These were scrubby groups of pioneer species such as downy birch *Betula pubescens* and goat willow *Salix caprea* which were taking advantage of the unmanaged conditions and utilising the soil and light to initialise colonisation of the open area. For these reasons these groups were deemed unremarkable and warranted no more than a category C status.

Ancient and Veteran Trees

- 4.11 None of the assessed trees were considered as ancient or veteran trees in accordance with accepted methodologies and guidance.

5.0 ARBORICULTURAL IMPACT ASSESSMENT

- 5.1 The following paragraphs present a summary of the tree survey and discussion of particular trees and groups recorded in the context of any proposed development in the form of an Arboricultural Impact Assessment in accordance with section 5.4 of BS5837. Any final tree retentions will need to be reconciled with the advice contained within this report.
- 5.2 The AIA has been based upon the Site Layout (Drwg: JAY1001 04 05 R3) and seeks to outline the relationship between the proposals and the existing trees and hedgerows. The drawing shows the proposals for a development, which will recycle and process plastic materials. An overlay of the layout has been incorporated in the Tree Retention Plan to assist in identifying the relationship and any potential conflicts between the proposals and the existing trees and hedgerows.

- 5.3 Table 2 provides a summary of expected tree losses and retentions as a result of the proposals.

Table 2: Summary of Impact on Tree Stock

	Trees to be Retained	Total	Trees to be Removed in full or part	Total
Category U - Unsuitable				
Category A (High Quality / Value)				
Category B (Moderate Quality / Value)	G3, G4, G5, G6, G13	5	G1	1
Category C (Low Quality / Value)			G2, G7, G8, G9, G10, G11, G12	7

- 5.4 The largest groups on the site are proposed for retention by virtue of their location on the boundaries of the site. The primary arboricultural value of these trees, i.e. screening from adjacent roads will therefore be maintained post development.
- 5.5 In the long term, **all** retained groups would benefit from management. Therefore, in accordance with sound arboricultural practice it would be recommended that the groups are selectively “thinned”. Select trees, i.e. those in poorest condition, should be removed to provide space and promote growth of their neighbours. This approach would ensure the long-term viability of the groups, and maintain their primary value, which is screening to/from the site.
- 5.6 Retained group G13 will require pruning to allow for the construction of the perimeter fence line, though not shown in the tree retention plan the small amount of tree cover present to the east of the fence line can be removed.
- 5.7 As indicated in Table 2 a number of groups have been shown for removal. All were recorded within the site, rather than on the boundaries. The vast majority of the groups that have been shown for removal consist of native self-seeded pioneer tree stock, i.e. *Betula* sp. and *Salix* sp. None are considered to have any particular merit from an arboricultural perspective. Further, the primary value attributed to trees recorded during the survey of the site, Screening, does not apply to those shown for removal due to their locations internally within the site. Accordingly, the loss of such trees is not considered a constraint to the proposals from an arboricultural perspective.

Tree Management

- 5.8 All retained trees should be subjected to sound arboricultural management as recommended within section 8.8.3 of BS5837 *Post Development Management of Existing Trees*, where there is a potential for public access in order to satisfy the landowner's duty of care. Additionally, inspections annually and following major storms should be carried out by an experienced arboriculturist or arborist to identify any potential public safety risks and to agree remedial works as required.
- 5.9 All tree works undertaken should comply with British Standard 3998:2010 and should therefore be carried out by skilled tree surgeons. It would be recommended that quotations for such work

be obtained from Arboricultural Association Approved Contractors as this is the recognised authority for certification of tree work contractors.

- 5.10 All vegetation and, particularly, woody vegetation proposed for clearance should be removed outside of the bird-breeding season (March - September inclusive) as all birds are protected under the Wildlife and Countryside Act, 1981 (as amended) whilst on the nest. Where this is not possible, vegetation should be checked for the presence of nesting birds prior to removal by an experienced ecologist.

6.0 NEW TREE AND HEDGEROW PLANTING

- 6.1 Any trees to be planted as part of the landscape proposals should be considered carefully. As stated in the separate Ecology Report (FPCR, December 2020) the site is currently an Open Mosaic Habitat. High volumes of tree planting would therefore not be in keeping with the current character of the site. This is especially true, given that the largest and most dominant (from a landscape perspective) tree stock on site is to be retained on all boundaries.
- 6.2 Consequently, specifications for new tree stock should consider the current site condition and its historic past. To this end, any new tree planting should seek to maintain the open nature and character of the site.

Trees

- 6.3 The landscaping scheme should consider the use of both native tree species (for their low maintenance requirements and nature conservation value) and ornamental species (for their contribution to urban design and amenity value). Species choices should be selected on the basis of their suitability for the final site use. Furthermore, during the design process consultation should be made with the Local Planning Authority to obtain information on their tree strategy and incorporate the planting proposals with any local policies and initiatives and/or Biodiversity Action Plans (BAP).
- 6.4 When deciding upon suitable tree species, careful consideration would need to be given to the following: ultimate height and canopy spread, form, habit, density of crown, potential shading effect, colour, water demand, soil type and maintenance requirements in relation to both the built form of the new development and existing properties.
- 6.5 Through careful species selection, the landscape scheme shall reduce the risk of trees being removed in the future on the grounds of nuisance. Nuisance can be perceived in a number of ways and vary from person to person however most commonly, within the context of trees, low overhanging branches, excessive shading, seasonal leaf fall and the misinformed perception that trees close to buildings cause damage.
- 6.6 Examples of recommended species for planting are listed below:
- *Betula pendula*
 - *Sorbus aucuparia*
 - *Salix caprea* and *cinerea*
 - *Alnus glutinosa*

- *Pinus sylvestris*

6.7 Ornamental cultivars of the same species & genus' as the above would also make suitable choices. For example, for planting in more formalised areas such as around the proposed office buildings and carpark areas.

Rooting Environment and Soil Volumes

- 6.8 The success of any landscaping scheme relies on an adequate provision of a high-quality rooting environment within which trees can thrive and reach their full potential. Planting trees with due care and consideration can, in the long term, provide a greater return on a schemes green investment and ensure trees remain healthy and grow to mature proportions. Healthy mature trees integrate well into the built environment; increase the maturity of the landscape; help provide a natural green and leafy urban environment in which people would want to reside whilst also benefiting local wildlife.
- 6.9 The planting of trees within confined urban environments should consider the use of appropriately designed planting pits specifically engineered to promote tree health and longevity. Crucially the aim will be to provide an adequate volume of quality soil for roots to suitably develop by calculating the amount of available soil volumes needed and selecting species whose mature size is compatible with the site. This is an integral component of the planning stage (Lindsey & Bassuk, 1991).
- 6.10 In a natural environment free from constraints to growth, it has been proven through research that root systems can extend up to three times the radius of the tree crown and although in an urban environment there is often insufficient space to accommodate the extent of the full potential for root growth, all efforts should be made to at least provide as much soil volume as possible. One researched method of calculating the minimum required soil volume is presented below in Table 3.

Table 3: Example of calculating Soil Volume for New Tree Planting (Source: CIRIA C712 and Calculating Target Soil Volumes – Green Blue Urban)

Projected canopy area of mature tree (m) x depth 0.6m		
Calculation 1	Projected mature canopy diameter (metres)	= 3 (Diameter)
Calculation 2	Projected mature canopy area (square metres), ($n \times \text{Radius}^2$)	= 7.1 (Area)
Calculation 3	Target soil volume (cubic metres), (Area x 0.6m)	= 4.24 (Volume)
	Target soil volume	= 4.24m ³

General Planting Recommendations

- 6.11 Wherever possible, following discussions with the developer and utility companies, common service trenches should be specified to minimise land take associated with underground service provision and facilitation access for future maintenance.
- 6.12 Tree planting should be avoided where they may obstruct overhead power lines or cables. Any underground apparatus should be ducted or otherwise protected at the time of construction to enable trees to be planted without resulting in future conflicts.

General Design Principles in Relation to Retained Trees

- 6.13 The routing of below ground services should also be considered with regard to the retained trees as part of a subsequent reserved matters application pursuant to layout. As recommended by the guidance given in section 7.7 of BS5837 services, where possible, should not encroach within the Root Protection Areas of retained trees. If below-ground services are proposed within a Root Protection Area, modifications to the alignment of the service route may need to be made in order to minimise adverse effects on root stability and overall tree health.
- 6.14 Consideration may also need to be given to the potential for tree roots of newly planted trees to affect or compromise the future services. As far as feasible, it would be preferable that proposed services near both the existing and any new planting should be ducted for ease of access and maintenance and grouped together to minimise any future disturbance.

7.0 TREE PROTECTION MEASURES

- 7.1 Retained trees will be adequately protected during works ensuring that the calculated root protection area for all retained trees can be appropriately protected through the erection of the requisite tree protection barriers. Measures to protect trees should follow the guidance in BS5837 and will be applied where necessary for the purpose of protecting trees within the site whilst allowing sufficient access for the implementation of the proposed layout. These have been broadly summarised below.

General Information and Recommendations

- 7.2 All trees retained on site will be protected by suitable barriers or ground protection measures around the calculated RPA, crown spread of the tree or other defined constraints of this assessment as detailed by section 6 and 7 of BS5837.

- 7.3 Barriers will be erected prior to commencement of any construction work and before demolition including erection of any temporary structures. Once installed, the area protected by fencing or other barriers will be regarded as a construction exclusion zone. Fencing and barriers will not be removed or altered without prior consultation with the Project Arboriculturist.
- 7.4 Any trees that are not to be retained as part of the proposals should be felled prior to the erection of protective barriers. Particular attention needs to be given by site contractors to minimise damage or disturbance to retained specimens.
- 7.5 Where it has been agreed, construction access may take place within the root protection area if suitable ground protection measures are in place. This may comprise single scaffold boards over a compressible layer laid onto a geo-textile membrane for pedestrian movements. Vehicular movements over the root protection area will require the calculation of expected loading and the use of proprietary protection systems.
- 7.6 Confirmation that tree protective fencing or other barriers have been set out correctly should be gained prior to the commencement of site activity.

Tree Protection Barriers

- 7.7 Tree protection fencing should be fit for the purpose of excluding any type of construction activity and suitable for the degree and proximity of works to retained trees. Barriers must be maintained to ensure that they remain rigid and complete for the duration of construction activities on site.
- 7.8 In most situations, fencing should comprise typical construction fencing panels attached to scaffold poles driven vertically into the ground. For particular areas where construction activity is anticipated to be of a more intense nature, supporting struts, acting as a brace should be added and fixed into position through the application of metal pins driven into the ground to offer additional resistance against impacts.
- 7.9 Where site circumstances and the risk to retained trees do not necessitate the default level of protection an alternative will be specified appropriate to the level / nature of anticipated construction activity. The recommended methods of fencing specifications for this site have been illustrated in Appendix B.
- 7.10 It may be appropriate on some sites to use temporary site offices, hoardings and lower level barrier protection as components of the tree protection barriers. Details of the specific protection barriers for the site can be provided should the application be approved, as part of a site specific Arboricultural Method Statement for a Reserved Matters application and in accordance with the guidance contained within BS5837.

Protection outside the exclusion zone

- 7.11 Once the areas around trees have been protected by the barriers, any works on the remaining site area may be commenced providing activities do not impinge on protected areas.
- 7.12 All weather notices should be attached to the protective fencing to indicate that construction activities are not permitted within the fenced area. The area within the protective barriers will then remain a construction exclusion zone throughout the duration of the construction phase of the proposed development. Protection fencing signs can be provided upon request.

- 7.13 Wide or tall loads etc should not come into contact with retained trees. Banksman should supervise transit of vehicles where they are in close proximity to retained trees.
- 7.14 Oil, bitumen, cement or other material that is potentially injurious to trees should not be stacked or discharged within 10m of a tree stem. No concrete should be mixed within 10m of a tree. Allowance should be made for the slope of ground to prevent materials running towards the tree.
- 7.15 No fires will be lit where flames are anticipated to extend to within 5m of tree foliage, branches or trunk, taking into consideration wind direction and size of fire.
- 7.16 Notice boards, telephone cables or other services should not be attached to any part of a retained tree.
- 7.17 Any trees which need to be felled adjacent to or are present within a continuous canopy of retained trees, must be removed with due care (it may be necessary to remove such trees in sections).

Protection of Trees Close to the Site

- 7.18 A number of trees were located on the boundaries of the site and therefore the root protection area and crown spread of these trees will need to be protected in the same way as all the retained trees within the site. All trees located outside the boundaries of the assessment site yet within close proximity to works should be adequately protected during the course of the development by barriers or ground protection around the calculated root protection area.
- 7.19 Any trees which are to be retained and whose Root Protection Areas may be affected by the development should be monitored, during and after construction, to identify any alterations in quality with time and to assess and undertake any remedial works required as a result.

Protection for Aerial Parts of Retained Trees

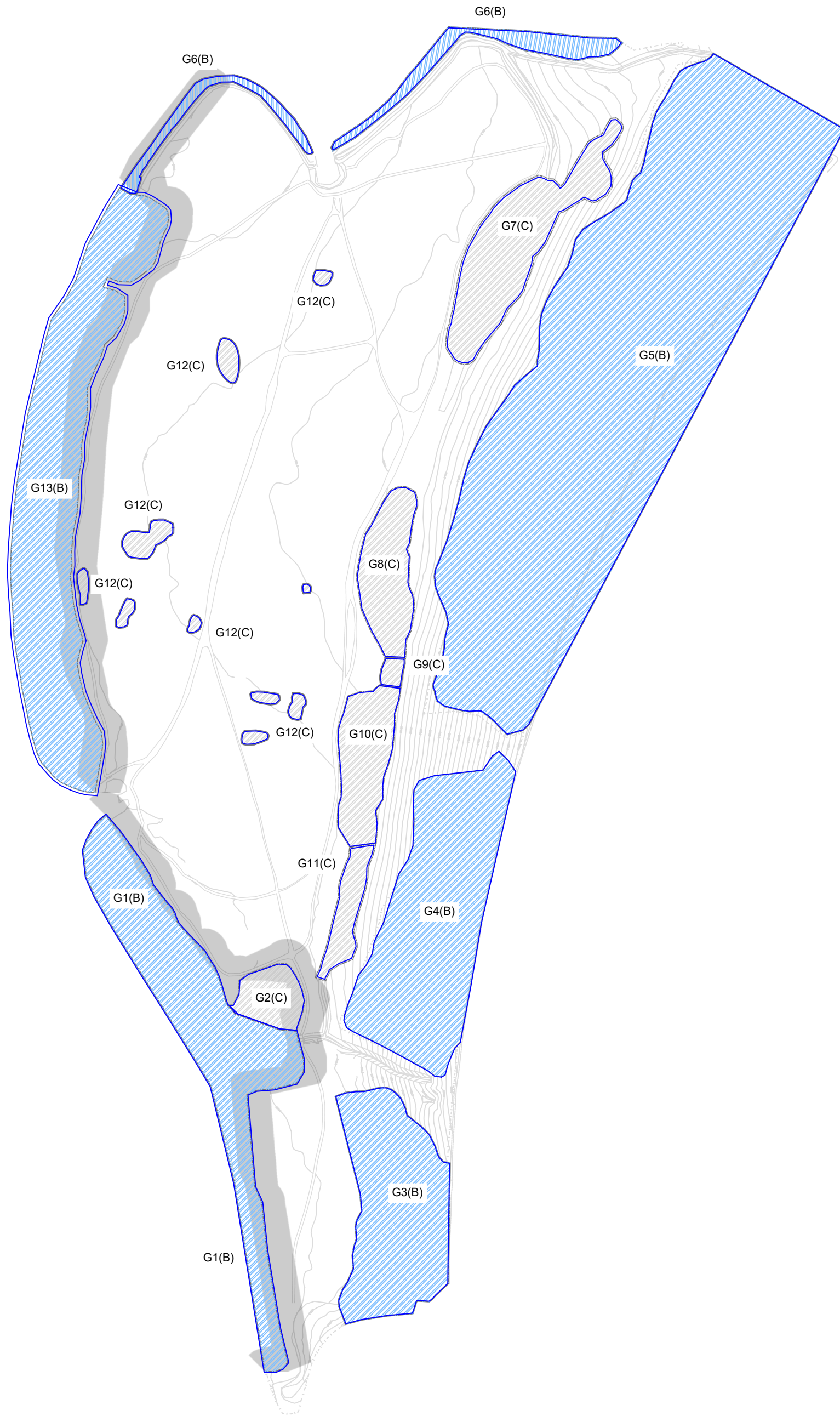
- 7.20 Where it is deemed necessary to operate wide or tall plant within close proximity to trees it is best advised that appropriate, but limited tree surgery, be carried out beforehand to remove any obstructive branches as any such equipment would have potential to cause damage to parts of the crown material, i.e. low branches and limbs, of retained trees within the protective barriers. This is termed as 'access facilitation pruning' within BS5837. Any such pruning should be undertaken in accordance with a specification prepared by an arboriculturist.
- 7.21 A pre-commencement site meeting with contractors who are responsible for operating machinery is advised to firstly highlight the potential for damage occurring to tree crowns and to ensure that extra care is applied when manoeuvring machinery during such operations within close proximity to retained trees to avoid any contact.
- 7.22 In the event of having caused any branch or limb damage to retained trees it is strongly recommended that suitable tree surgery be carried out, in accordance with British Standard 3998:2010 and in agreement with the Local Planning Authority prior to correcting the damage, upon completion of development.

8.0 CONCLUSION

- 8.1 A tree survey in accordance with BS5837 (2012) has been conducted on a brownfield site lying to the west of Merthyr Tydfil. The works sought first to record all trees present on site, and secondly to assess the impacts of proposed development on the trees present. A new plastic recycling and processing facility with associated buildings and hardstanding are proposed for the site.
- 8.2 No individual trees were picked out as being noteworthy during the survey. 13 groups of trees were recorded, of which six were deemed to merit a moderate (Category B) classification. The remaining seven groups were deemed to be low value (Category C) in accordance with BS5837(2012).
- 8.3 The primary value attributed to all trees on site was amenity, with those on the boundaries of the site deemed to be worth relatively higher owed to their visibility from offsite. To a lesser extent the trees provided structural habitat for nesting birds.
- 8.4 The proposals will see the retention of the majority of moderate value tree stock, by virtue of their locations on the boundaries of the site and their separation from the proposed development. Six of the seven Category C groups will see some or all of their tree stock removed.
- 8.5 It is considered that through this approach the primary arboricultural value of the site will be maintained post development. Losses will be limited to internal groups of trees, the visual impact of which from offsite will be minimal.
- 8.6 Tree losses can be mitigated through the provision of carefully selected tree planting. However, any such tree planting must be considered in context of the site's history and character.
- 8.7 Finally, the proposals should be used as a means of securing ongoing management for those trees that remain. Currently all groups on site lack any targeted management. There is therefore an opportunity, through sound arboricultural practice, to maximise the quality of the retained trees via selective thinning of poorer stock. This would ensure the long-term value of these trees, which in context of the site is their screening and amenity contribution.

FIGURES

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KEY

- 

Category U - Trees / Groups Unsuitable for Retention
(BS 5837:2012)
- 

Category A - Trees / Groups of High Quality
(BS 5837:2012)
- 

Category B - Trees / Groups of Moderate Quality
(BS 5837:2012)
- 

Category C - Trees / Groups of Low Quality
(BS 5837:2012)
- 

Root Protection Area (The RPA has been altered
where appropriate to reflect underground constraints)
- T1 (A)
G1 (A)

Individual / Group Number and BS5837:2012 Category
- 

Indicative Shade Pattern (in accordance with
BS5837:2012 where appropriate)

Scale 1:2500 @ A3



NOTES

All dimensions to be verified on site. Do not scale this drawing, use figured dimensions only. All discrepancies to be clarified with project Arboriculturalist. Drawing to be read in conjunction with Arboricultural Assessment and Appendix A - Tree Schedule.

Drawing has been produced in colour and is based on digital information in .dwg format, aerial images and/or GPS location where appropriate. A monochrome copy should not be relied upon. The exact position of individual trees or species included as part of a tree group, woodland or hedgerow should be checked and verified on site prior to any decisions for foundation design, tree operations or construction activity being undertaken. Further survey work would be required for calculating foundation depths.

Trees are living organisms that change over time, the condition of all trees illustrated herein, are to be checked, by the project Arboriculturalist should works commence 12 months after the date of this survey.

SOME TREES MAY BE SUBJECT TO STATUTORY CONSTRAINTS. IT IS THEREFORE ADVISED THAT NO WORKS SHOULD BE UNDERTAKEN TO ANY TREES ILLUSTRATED HEREIN WITHOUT FIRST OBTAINING THE RELEVANT AUTHORISATION TO DO SO UNLESS AGREED AS PER THE APPROVED PLANS THROUGH PLANNING CONSENT.

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-	07.08.19	First Issue	EKP/JRM
rev	date	description	by



masterplanning

environmental assessment

landscape design

urban design

ecology

architecture

arboriculture

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Sirius Group

project
Land off Goat Mill Road
Merthyr Tydfil

drawing title
TREE SURVEY PLAN

scale
1:2500 @ A3

drawn/checked
EKP/JRM

date
August 2019

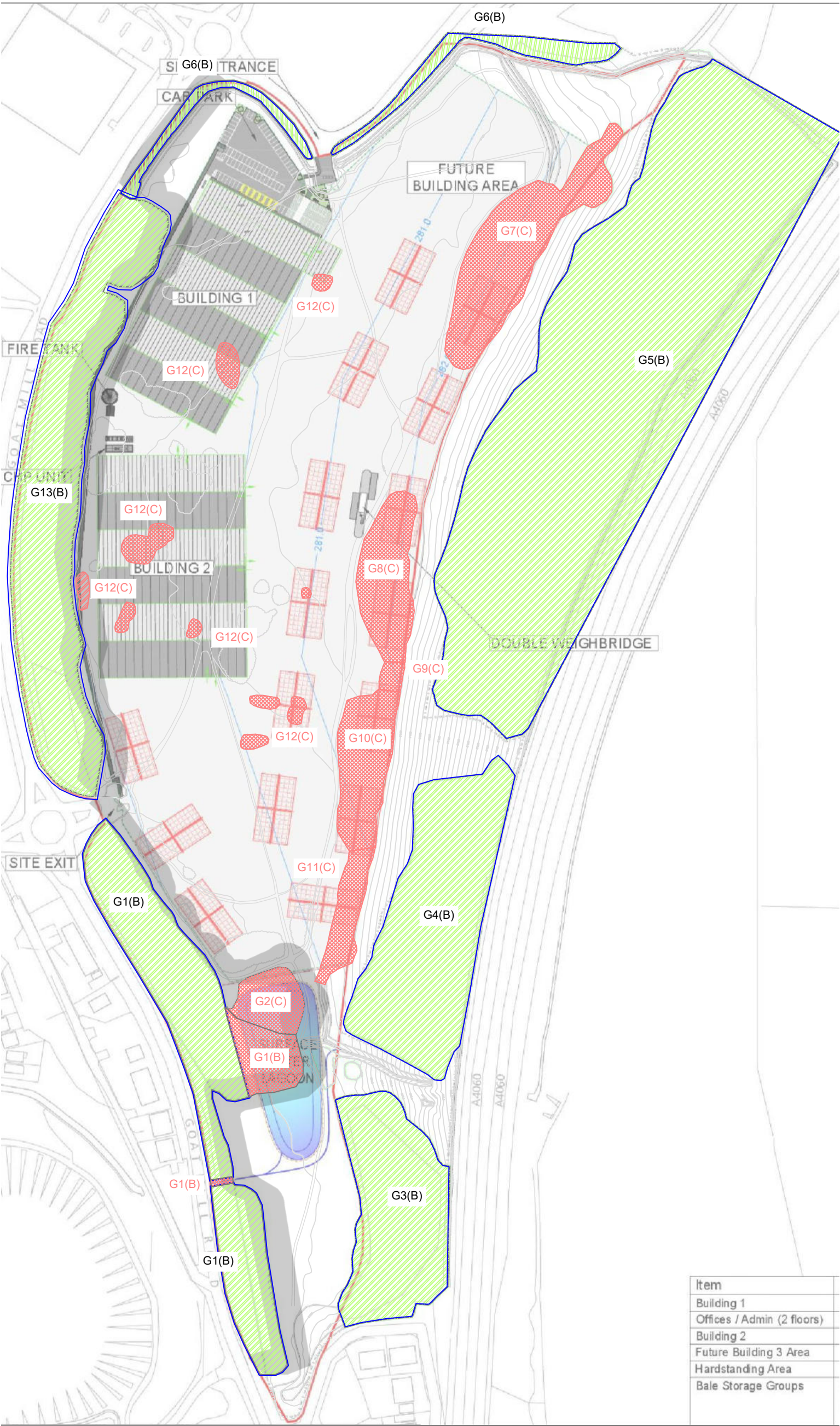
drawing number

9131-T-01

rev

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T1 (A)	
G1 (A)	

T1 (A)
G1 (A)

-	12.11.20	First Issue	RWM/JRM
A	19.08.21	Updated	TEP/JRM
B	07.03.2022	Revised layout	JRM

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Item
Building 1
Offices / Admin (2 floors)
Building 2
Future Building 3 Area
Hardstanding Area
Bale Storage Groups

rev

B

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APPENDICES

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Appendix A - Tree Schedule

Measurements	Age Classes	Quality Assessment of BS Category	ULE (relates to BS Category)
Height - Measured using a digital laser clinometer (m)	YNG: Establishing, typically with good vigour and fast growth rates and strong apical dominance; c. less than 1/3 life expectancy	Category U - Trees 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.	<10 years
Stem Dia. - Diameter measured (mm) in accordance with Annex C of the BS5837	SM: Semi-mature trees less than 1/3 life expectancy	Category A - Trees of high quality with an estimated remaining life expectancy of at least 40 years.	40+ years
Crown Radius - Measured using a digital laser clinometer radially from the main stem (m)	EM: Established, typically vigorous and increasing in apical height and lateral spread; 1/3 - 2/3 life expectancy. Offers landscape significance	Category B - Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.	20-40 years
Abbreviations est - Estimated stem diameter avg - Average stem diameter for multiple stems upto - Maximum stem diameter of a group	M: Fully established over 2/3 life expectancy, generally good vigour and achieving full height potential with crown still spreading	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 150mm.	10-20 years
	OM: Fully mature, at the extremes of expected life expectancy, vigour decreasing, declining or moribund	Sub-categories: (i) - Mainly arboricultural value (ii) - Mainly landscape value (iii) - Mainly cultural or conservation value	
	V: biological, cultural or aesthetic value comprising niche saproxylic habitat. Individuals of large proportions (stem girth) in comparison to trees of the same species/surviving beyond the typical age range for their species.	The BS category particular consideration has been given to the following: • The presence of any structural defects in each tree/group and its future life expectancy • The size and form of each tree/group and its suitability within the context of a proposed development • The location of each tree relative to existing site features e.g. its screening value or landscape features • Age class and life expectancy	

Structural Condition	Physiological Condition
Good - No significant structural defects	Good - No significant health problems
Fair - Structural defects that can be remediated	Fair - Symptoms of ill-health that can be remediated
Poor - Significant defects beyond remediation, present a risk of failure in the foreseeable future	Poor - Significant ill-health. Unlikely the tree will recover in the long term
Dead - Dead tree with structural integrity of tree severely compromised	Advanced Decline / Dead - Advanced state of decline and unlikely to recover or Dead

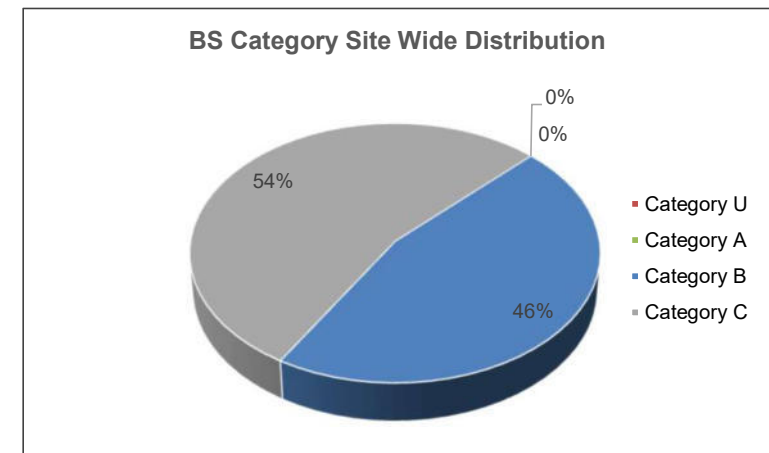
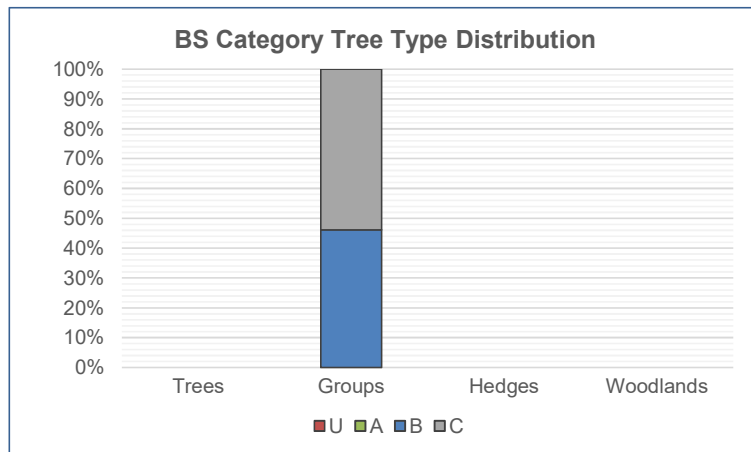
Root Protection Area (RPA)
• The RPA Radius column provides the extent of an equivalent circle from the centre of the stem (m). • The RPA is calculated using the formulae described in paragraph 4.6.1 of British Standard 5837: 2012 and is indicative of the rooting area required for a tree to be successfully retained. Tree roots extend beyond the calculated RPA in many cases and where possible a greater distance should be protected. • Where veteran trees have been identified the RPA has been calculated in accordance with Natural England guidance i.e. 15x the stem diameter, uncapped.

Appendix Summary

	Individual Trees	Totals	Tree Groups and Hedgerows	Totals
Category U		0		0
Category A		0		0
Category B		0	G1, G3, G4, G5, G6, G13	6
Category C		0	G2, G7, G8, G9, G10, G11, G12	7
	Total	0	Total	13

BS Category Tree Type Distribution displays the proportion of trees assessed in each type to enable a better understanding of the category distribution.

BS Category Site Wide Distribution shows the proportion of trees assessed in each category across the whole site which allows an interpretation of the site's overall quality.



Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
INDIVIDUAL TREES										
							No individual trees recorded			

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
GROUPS OF TREES										
G1	Fraxinus excelsior Goat Willow Salix caprea Norway Maple Acer platanoides Sycamore Acer pseudoplatanus Wild Cherry Prunus avium Alder Alnus glutinosa Aspen Populus tremula Downy Birch Betula pubescens Italian Alder Alnus cordata Red Oak Quercus rubra Rowan Sorbus aucuparia White Willow Salix alba Guelder rose Common Larch Larix decidua Dogwood Cornus sanguinea Osier Salix viminalis Red alder Alnus rubra	14	est 300	3	EM / M	F	Screening planting. Mix of native and ornamental specimens. Unremarkable in character. Category B rather than C due to screening value and visual presence on site. Includes taller stand to the south to c.18m high.	41	3.6	B (ii)
G2	Goat Willow Salix caprea Sycamore Acer pseudoplatanus Wild Cherry Prunus avium Aspen Populus tremula White Willow Salix alba Sea buckthorn Scots Pine Pinus sylvestris	15	est 300	4	EM / M	F	Dense ivy cover on main stem Dense undergrowth at the base Unremarkable mix of mostly native specimens.	41	3.6	C (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G3	Ash Fraxinus excelsior English Oak Quercus robur Goat Willow Salix caprea Hawthorn Crataegus monogyna Sycamore Acer pseudoplatanus Wild Cherry Prunus avium Alder Alnus glutinosa Aspen Populus tremula Downy Birch Betula pubescens Hazel Corylus avellana Italian Alder Alnus cordata Rowan Sorbus aucuparia White Poplar Populus alba Red alder Alnus rubra Common Larch Larix decidua Scots Pine Pinus sylvestris Dogwood	14	est 300	4	EM / M	F	Screening group. Mix of ornamental and native specimens. All unremarkable in terms of quality. Category B rather than C due to screening value.	41	3.6	B (ii)

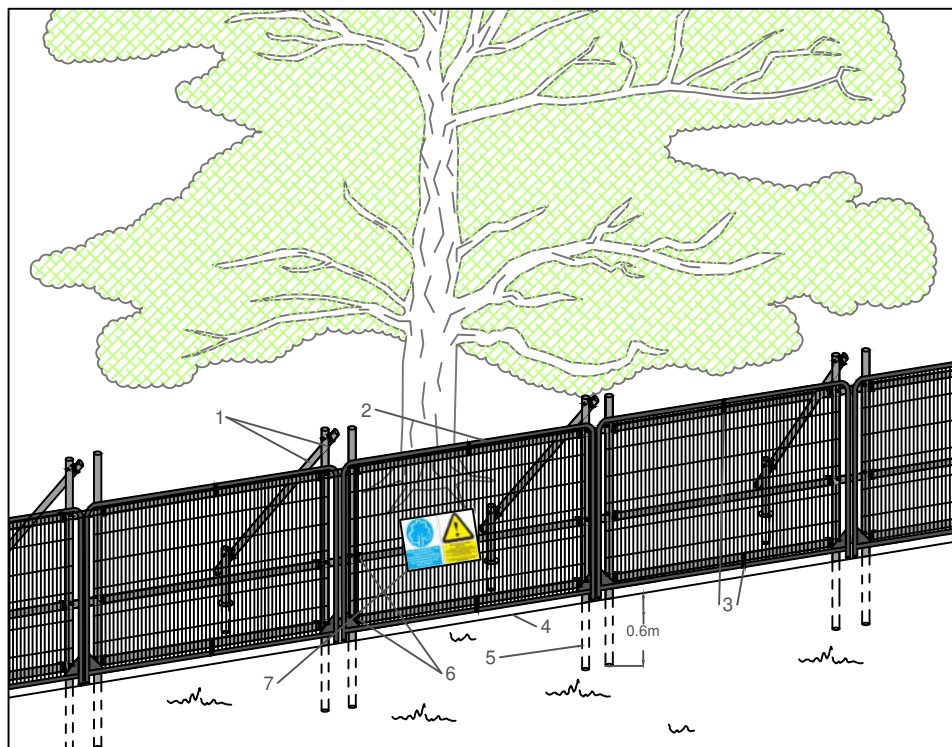
Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G4	Ash Fraxinus excelsior English Oak Quercus robur Field Maple Acer campestre Goat Willow Salix caprea Hawthorn Crataegus monogyna Sycamore Acer pseudoplatanus Wild Cherry Prunus avium Alder Alnus glutinosa Aspen Populus tremula Downy Birch Betula pubescens Hazel Corylus avellana Holly Ilex aquifolium Italian Alder Alnus cordata Rowan Sorbus aucuparia White Poplar Populus alba White Willow Salix alba Red Alder	15	est 350	4	EM / M	F	As with G3. Screening group. Mix of ornamental and native specimens. All unremarkable in terms of quality. Category B rather than C due to screening value.	55	4.2	B (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G5	ASH Fraxinus excelsior English Oak Quercus robur Field Maple Acer campestre Goat Willow Salix caprea Hawthorn Crataegus monogyna Sycamore Acer pseudoplatanus Wild Cherry Prunus avium Alder Alnus glutinosa Aspen Populus tremula Downy Birch Betula pubescens Hazel Corylus avellana Holly Ilex aquifolium Italian Alder Alnus cordata Rowan Sorbus aucuparia White Poplar Populus alba White Willow Salix alba Red Alder	15	est 300	4	SM / EM / M	F	As with G3 and G4. Screening group. Mix of ornamental and native specimens. All unremarkable in terms of quality. Category B rather than C due to screening value. Includes stands of more recently planted younger stock.	41	3.6	B (ii)
G6	English Oak Quercus robur Field Maple Acer campestre Goat Willow Salix caprea Silver Birch Betula pendula Alder Alnus glutinosa Aspen Populus tremula Downy Birch Betula pubescens Rowan Sorbus aucuparia White Willow Salix alba Sea buckthorn Common Larch Larix decidua Scots Pine Pinus sylvestris	12	est 200	3	EM	F	Situated offsite Unable to gain access Category B for screening value. Unremarkable group of mainly native specimens.	18	2.4	B (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G7	Ash Fraxinus excelsior Blackthorn Prunus spinosa Elder Sambucus nigra Goat Willow Salix caprea Hawthorn Crataegus monogyna Italian Alder Alnus cordata Rowan Sorbus aucuparia White Poplar Populus alba Red alder Common Larch Larix decidua Osier Salix viminalis	13	est 250	4	SM / EM / M	F	Unremarkable mixed group planted to follow course of dry ditch.	28	3.0	C (ii)
G8	Ash Fraxinus excelsior Blackthorn Prunus spinosa Elder Sambucus nigra Goat Willow Salix caprea Hawthorn Crataegus monogyna Norway Maple Acer platanoides Italian Alder Alnus cordata Rowan Sorbus aucuparia White Poplar Populus alba Red alder Common Larch Larix decidua Osier Salix viminalis	13	est 280	4	SM / EM / M	F	Unremarkable mixed group planted to follow course of dry ditch.	35	3.4	C (ii)
G9	Goat Willow Salix caprea Grey willow	5	est 80 80	2	EM	F	Self seeded group of willow following course of dry ditch.	6	1.4	C (iii)

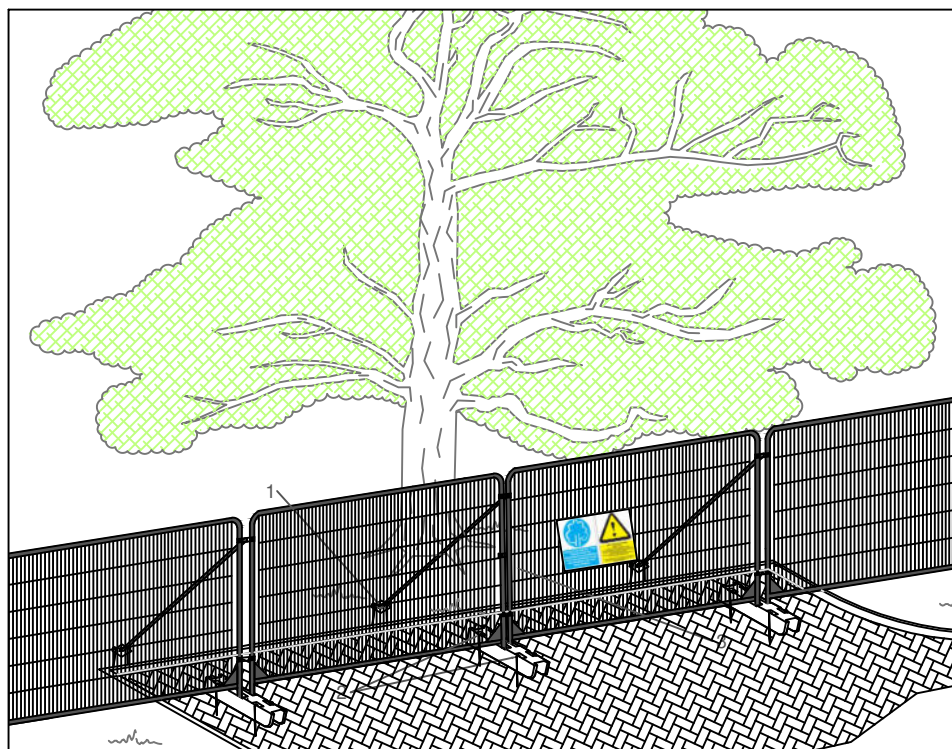
Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G10	Ash Fraxinus excelsior Blackthorn Prunus spinosa Elder Sambucus nigra English Oak Quercus robur Goat Willow Salix caprea Hawthorn Crataegus monogyna Norway Maple Acer platanoides Wild Cherry Prunus avium Italian Alder Alnus cordata Rowan Sorbus aucuparia White Poplar Populus alba Red alder Common Larch Larix decidua Osier Salix viminalis Guelder rose	13	est 300	4	SM / EM / M	F	Unremarkable mixed group planted to follow course of dry ditch.	41	3.6	C (ii)
G11	Goat Willow Salix caprea Downy Birch Betula pubescens	8	est 180	3	EM	F	Sporadic self seeded group.	15	2.2	C (iii)
G12	Goat Willow Salix caprea Hawthorn Crataegus monogyna Downy Birch Betula pubescens	5	est 80 80	2	SM	F	Sparse group of self seeded specimens spread over the central area. Some are growing singly others are present in small groups of 3 or more individuals.	6	1.4	C (iii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G13	ASH Fraxinus excelsior Goat Willow Salix caprea Norway Maple Acer platanoides Sycamore Acer pseudoplatanus Wild Cherry Prunus avium Alder Alnus glutinosa Aspen Populus tremula Downy Birch Betula pubescens Italian Alder Alnus cordata Red Oak Quercus rubra Rowan Sorbus aucuparia White Willow Salix alba Gelder rose Common Larch Larix decidua Dogwood Cornus sanguinea Osier Salix viminalis Red alder Alnus rubra	15	est 400	3	EM / M	F	Dead trees noted Dense ivy cover on main stem Screening planting. Mix of native and ornamental specimens. Unremarkable in character. Category B rather than C due to screening value and visual presence on site.	72	4.8	B (ii)



Standard specification for protective barrier

1. Standard scaffold poles
2. Heavy gauge 2m tall galvanized tube and welded mesh infill panels
3. Panels secured to scaffold frame with wire ties
4. Ground level
5. Uprights driven into the ground until secure (min depth of 0.6m)
6. Standard scaffold clamps
7. Construction Exclusion Zone signs



Above ground stabilising systems

1. Stabiliser strut with base plate secured with ground pins
2. Feet blocks secured with ground pins
3. Construction Exclusion Zone signs

NOTES

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APPENDIX B PROTECTIVE FENCING SPECIFICATIONS

CAD file: S:\Arb resources\Basic Templates\Tree Protection\Appendix B - Protective Fencing A4.dwg