



Arboricultural Survey Report

in respect of

***Section 73 Application For 3No. Changes to the Limits of
Extraction within the Existing Permitted Planning Boundary of
Ballswood Quarry***

for

Cheshire and North Wales Sand and Gravel Ltd

Prepared By

Heaton's

August 2020

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1.0 INTRODUCTION

- 1.1 Heatons have been commissioned by Cheshire and North Wales Sand and Gravel Ltd to undertake an Arboricultural Assessment of land at Ballswood Quarry (hereafter referred to as the site). This report aims to inform the proposed design scheme regarding impacts on trees.

Appraisal Objectives

- 1.2 The objectives of this arboricultural Assessment are to evaluate the overall condition of the trees on, and adjacent to the site. We have considered the arboricultural impacts of both the construction and operational phases of the scheme. We have also considered potential impacts to trees which may be affected by construction or access works which may be located some distance from the actual site boundary.
- 1.3 A Tree Constraints Plan has been produced to inform the Proposed Development (please see Appendix A).
- 1.4 The arboricultural survey aims to assess the following:
- The suitability of trees for retention as categorised in accordance with BS 5837: 2012 'Trees in relation to design, demolition and construction – Recommendations';
 - the constraints presented by the trees;
 - impacts of the scheme development in relation to any retained trees;
 - the arboricultural impacts of the proposed scheme; and
 - the requirements for tree management where appropriate.
- 1.5 British Standard (BS) 5837: 2012 'Trees in relation to design, demolition and construction – Recommendations' requires that information on the constraints associated with retained trees be sent to the project designers. This information is detailed in a Tree Constraints Plan. The constraints, which are covered by BS 5837, are associated with issues relating to retained trees both above and below ground, and the necessary measures to ensure their safe retention.

Site location and description

- 1.6 Ballswood Quarry is located at Gegin Lane, Wrexham, LL12 0NU, and is one of three active sand and gravel quarries in the County Borough of Wrexham (the others being Borrass Quarry and Hafod Quarry). Ballswood Quarry is operated by Cheshire and North Wales Sand and Gravel Ltd.
- 1.7 The majority of the site is comprised of existing quarry, with areas of scattered scrub and tall ruderal vegetation located around existing soil bunds. The boundaries of the existing quarry are comprised of broad-leaved semi natural woodland and hedgerows. There are a number of waterbodies located within the existing quarry. The eastern section of the site is comprised of arable fields and heavily grazed improved grassland.

Proposed Development

- 1.8 The proposed development is to enable 3 proposed changes to the extraction boundary of Ballswood Quarry utilising existing quarry infrastructure and access. The proposed development will release currently sterilised mineral within the permitted planning boundary of the site. Access to the site for the purpose of extending mineral extraction from the existing quarry to the west would best be supplied through the existing quarry site.

2.0 NATIONAL POLICY AND LEGISLATION

Tree Preservation Orders

2.1 Trees in the United Kingdom may be protected by a Tree Preservation Order (TPO). Government guidance in relation to Tree Preservation Orders and trees in Conservation Areas states that: "Tree Preservation Orders are made by the Local Planning Authority to protect specific trees, groups of trees or woodlands in the interests of amenity. An order prohibits the:

- Cutting down;
- Topping;
- Lopping
- Uprooting
- Wilful damage; and
- Wilful destruction.

of trees without the Local Planning Authorities written consent." "In the Secretary of State's view, cutting roots is also a prohibited activity and requires the authorities consent."

2.2 Prior to undertaking work on trees protected by a TPO, permission must be sought from the Local Planning Authority by submitting a standard application form.

2.3 Information obtained from Wrexham County Borough Council has identified a total of one tree located within the plant site is protected under Tree Preservation Order (TPO). This tree is located at Grid Reference SJ345562.

Ecological Legislation

2.4 Tree work or tree removal will give rise to ecological impacts which may be constrained by current legislation including:

2.5 The Conservation Regulations (2017),

2.6 The Wildlife and Countryside Act (1981),

- 
- 2.7 The Natural Environmental and Rural Communities (NERC) Act (2006), and
 - 2.8 The Countryside and Rights of Way Act (2000).
 - 2.9 Further specialist surveys may be required if works are likely to impact trees of ecological importance.

3.0 METHODOLOGY

- 3.1 The arboricultural survey was undertaken by Steven Pagett BSc from Heatons on the 12th of August 2020. The weather was clear and visibility was good.
- 3.2 Three trees which are adjacent to the site may also be affected by the proposed development and have also been considered.
- 3.3 Trees were photographed and measured for height, crown spread, and stem diameter. The physical and structural condition of each tree, or group of trees, was noted and recommendations made for tree work or on-going maintenance requirements are detailed in the Tree Survey Schedule presented as Appendix B.
- 3.4 Tree were recorded using Otiss BS5837 software. Survey data is shown on the Tree Survey Schedule (Appendix A) and Tree Constraints Plan (Appendix B).

Principal Trees Age Classification

- 3.5 The following classification has been employed:
- Young: Saplings and young trees under 10 years of age.
 - Middle Aged: Trees older than 10 years but less than one third of the life expectancy of their species, normally making substantial extension growth.
 - Mature: Trees between one third and two thirds of the life expectancy of their species. Approximately full height and girth, increasing only slowly over time.
 - Over mature: Trees beyond two thirds of the life expectancy of their species. No significant extension growth. Crown starting to break up and decrease in size.
 - Veteran Trees are beyond the over mature stage but because of their size and age are significant features within the landscape and which can be rejuvenated and conserved by appropriate management.

Tree Survey and Tree Condition

- 3.6 The surveyor assessed the individual condition of the trees identified within the area. The assessment of condition is based on a visual inspection only.
- 3.7 Each tree was assessed by consideration of the following:

- a) any visible structural defects,
- b) the size and form and the suitability of its position, and
- c) the location with regard to the position of other relevant features.

Categories for Tree Constraints Plan

3.8 Individual trees are assessed and then placed into one of four categories as detailed below. For tree numbers please refer to the appended Tree Constraints Plan in Appendix B.

- **Category A** (marked Green on the Tree Constraints Plan). Trees which are significant, and which must be retained, wherever possible, within the layout. Category A trees which are particularly good examples of their species or are essential components of a group (e.g. the dominant and/or principal trees within an avenue).
- **Category B** (marked Mid Blue on the Tree Constraints Plan). These trees should be retained, wherever possible, within any development proposals. These trees have been downgraded due to impaired condition, such that they are unlikely to be suitable for retention beyond 40 years.
- **Category C** (marked in Grey on the Tree Constraints Plan). Trees which do not have sufficient arboricultural merit to constrain development proposals.
- **Category U** (marked in Red on Tree Constraints Plan). Trees which will not remain safe features beyond the short term and should be removed as part of any development proposals.

3.9 BS5837 requires that trees are further identified according to any particular merits defined as:

- Arboricultural specimens – sub division 1
- Trees of landscape importance – sub division 2
- Trees with ecological, historical or cultural significance – sub division 3

3.10 The design layout should allow for the retention of Category A and B trees where possible. Category C trees should only be retained in locations where they will not over constrain development proposals or present additional amenity issues.

3.11 Mitigation will be required for the loss of any trees, or groups of trees, which have been classified as Category A or B.

Root Protection Area

- 3.12 BS5837 defines the Root Protection Area (RPA) as a “layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability, and where the protection of the roots and soil structure is treated as a priority”.
- 3.13 For each tree the RPA has been calculated. For single stemmed trees, the RPA is calculated as an area equivalent to a circle with a radius 12 times the stem diameter. For trees with more than one stem, the RPA has been calculated using the Helliwell Method with each stem being measured at 1.5m above ground level to calculate the basal area in m². The shape and position of the RPA may be adjusted by the arboriculturist to take into consideration site factors such as soil type and depth, prevailing wind, slope and drainage or built structures such as roads or footings. The overall size of the RPA cannot be changed.

Key For The Tree Survey Schedule

Table 1: Key for the Tree Survey Schedule	
Height	Measured with clinometer in metres
Stem Diameter	Diameter measured at 1.5 m from ground level with tape in mm
Spread area (N,S,E,W))	Crown spread measured in metres at the points on the compass
Height of Crown Clearance	In metres to inform on ground clearance, shading and crown to stem ratio.
Age Class	Y-Young, SM- Semi-mature, M-Mature, OM-Over mature, V-Veteran
Physiological Conditions	Good, Fair, Poor, Dead
Structural Condition	Visual evidence of the presence of decay or danger of collapse
Category Grading	A-good, B-Moderate, C-Poor, U-Dead or dangerous

4.0 SURVEY RESULTS

- 4.1 The survey results are shown in the Tree Survey Schedule presented in Appendix A. The layout and root protection areas are shown in the Tree Constraints Plan presented in Appendix B. Trees have been assessed individually or in groups where several similar trees form a single management unit.

Desktop Study

- 4.2 There is one tree located within the site which is covered by a Tree Preservation Order. This tree is located within the existing quarry plant site and is located at Grid Reference SJ345562.

Recorded Trees

- 4.3 Six individual trees were covered within the tree survey, these trees include:
- Horse chestnut (*Aesculus hippocastanum*) – Located at Grid Reference SJ3459556208;
 - Sycamore (*Acer pseudoplatanus*) – Located at Grid Reference SJ350056862;
 - Pedunculate oak (*Quercus robur*) – Located at Grid Reference SJ3500556744;
 - Large leaved Lime (*Tilia platyphyllos*) – Located at Grid Reference SJ3503256719;
 - Scot's Pine – Located at Grid Reference SJ3493456672; and
 - Hawthorn – Located at Grid Reference SJ3493556670.

Classification

4.4 The classification of the individual trees recorded within the site is as follows:

- **Horse chestnut (Category A) (Tree 1)** – This tree has been categorised as Category A as it is protected under a Tree Preservation Order (TPO). In addition, this tree presents a landscape feature within the local surrounding area. This tree slopes to the south-west. However, this tree was assessed to be in good physiological and structural condition.
- **Sycamore (Category B) (Tree 2)** – This tree was assessed as a landscape feature screening the road and adjacent housing/farm buildings from the existing quarry. This will also become of further screening importance with the proposed eastern extension. This tree was assessed to be in good physiological and structural condition.
- **Pedunculate oak (Category A) (Tree 3)** – This tree was also assessed as a landscape feature, mainly due to the large crown size screening the road and adjacent housing/farm buildings from the existing quarry. This tree is also important for biodiversity as there are many cracks and crevices within the tree providing nesting suitability for bird species and roosting potential for bats.
- **Large leaved Lime (Category B) (Tree 4)** - This tree was assessed as a landscape feature screening the road and adjacent housing/farm buildings from the existing quarry. This will also become of further screening importance with the eastern extension. This tree was assessed to be in good physiological and structural condition.
- **Scot's Pine and Hawthorn (Category C) (Tree 5 and 6)** – These two trees are located next to each other on the eastern boundary of the existing quarry, adjacent to the arable fields. These trees provide limited screening as and also provide limited value for biodiversity.

5.0 LIKELY IMPACTS

- 5.1 The proposed development involves the 3 extensions which are within the permitted red line boundary of the existing Ballswood Quarry, although outside the extraction area on the approved plans. Access to the site for the purpose of extending mineral extraction from the existing quarry to the west would best be supplied through the existing quarry site. The proposed development will release currently sterilised mineral within the permitted planning boundary of the site.
- 5.2 The arboricultural survey has identified individual trees of ecological and landscape value within the Site. The arboricultural impacts identified in this section will inform the design process and enable notable trees to be retained or replaced. The impact assessment will be updated once detailed development plans are available.

Arboricultural Impacts

- 5.3 In total, there are three individual trees that will be required to be removed in order to facilitate the development proposals. The trees to be removed are T1 the horse chestnut tree which is currently protected under Tree Preservation Order (TPO). Other trees to be removed include T5 and T6, these trees are the Scot's pine and hawthorn located on the eastern site boundary. T3, T4 and T5 are all to be retained during the extent of the works.
- 5.4 The impact of removing T1 is considered to be **high** because of its value as a Category A tree and a tree protected under Tree Preservation Order (TPO).
- 5.5 The impact of removing T5 and T6 is considered to be **low** because these trees are semi mature and in arboricultural terms were considered to be low value Category C trees.

Ecological Impacts

- 5.6 The 2020 breeding bird surveys identified breeding birds nesting within T4. Breeding birds were not observed nesting within any other trees within any of the other surveyed trees.
- 5.7 A brown long eared (*Plecotus auratus*) bat was detected emerging from T1 on the 13/08/2020 as well as soprano pipistrelles (*Pipistrellus pygmaeus*) emerging on two occasions on the initial survey 21/07/2020.

6.0 MITIGATION PROPOSALS

Tree planting

- 6.1 To help provide mitigation for the trees lost during the proposed works, it is proposed that new tree planting is undertaken as part of the restoration scheme, at a minimum of a 1:2 ratio basis following mineral extraction (in other words for each individual tree proposed for removal, it is proposed that a minimum of 2 No. replacement trees are planted). It is recommended that the new planting uses like for-like native species, of local provenance, and that extra heavy standard tree stock are specified (for the individual tree planting), as a minimum.
- 6.2 The proposed restoration strategy includes a significant amount of mitigation and enhancement in the form of:
- a. Native tree and shrub planting
 - b. Long Term Management Plan
- 6.3 In respect of a) it is proposed to plant and establish 21,750 new trees and shrubs. These will help recreate and diversify local landscape character and setting, create new habitat suitable for wildlife connectivity and Biodiversity. The planting will also help visually support ancient woodland along the southern boundary of the site. The planting will commence in winter 2020/21 and would progress as land becomes available through restoration.

Tree Protection Measure

- 6.4 BS 5837 specifies that a Tree Protection Plan (TPP) should be prepared to show the impact of the proposed development on existing trees at the site. Please see Appendix B.
- 6.5 Information from the TPP should be incorporated into subsequent drawings and method statements to ensure that all interested parties are fully aware of the areas in which access and works may and may not take place.
- 6.6 The following protection measures have been recommended for all construction works where excavation or other activities could impact on retained trees.

Construction Exclusion Zone (CEZ)

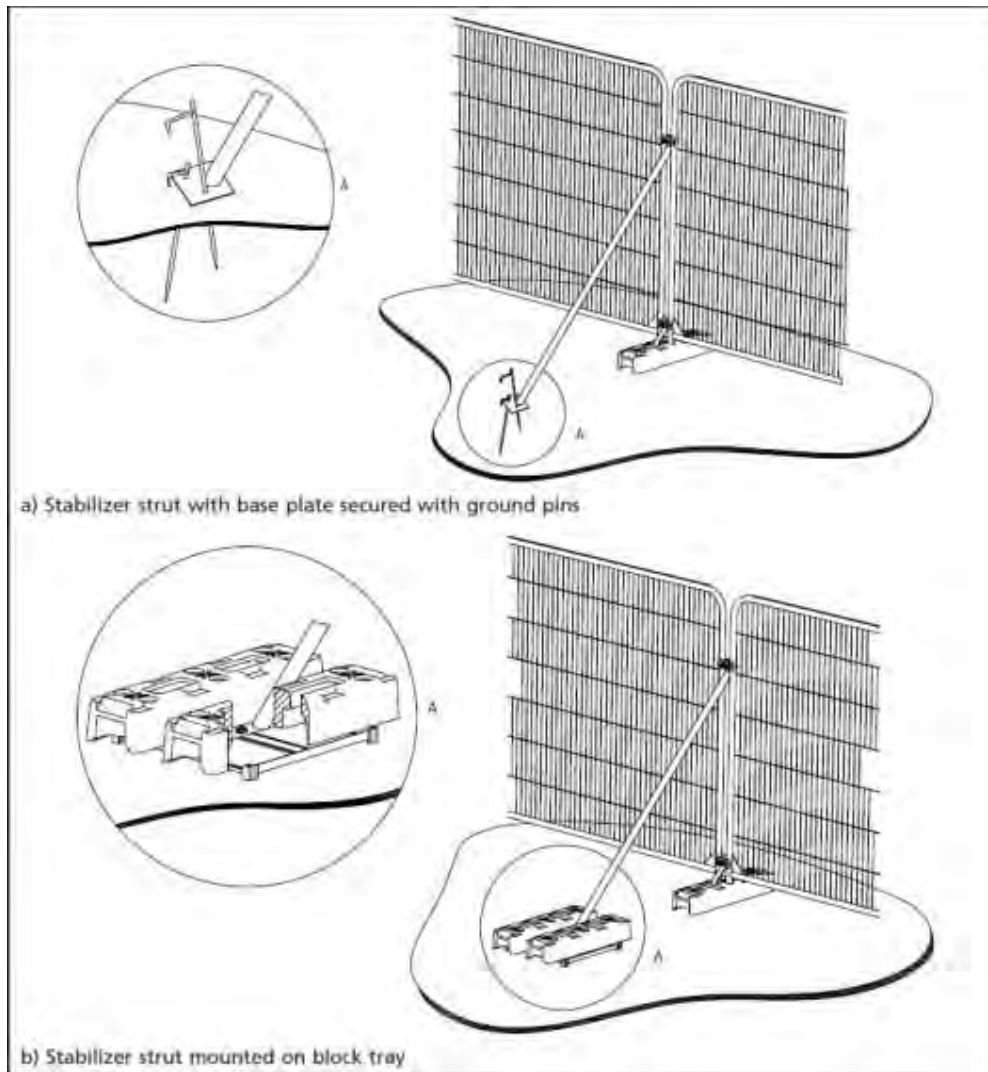
- 6.7 During construction, care must be taken to ensure that the existing ground levels around trees are maintained as trees are sensitive to any changes in water level or factors which alter the aeration of the root system.

- 6.8 As a general guide, the full root protection area (RPA) should be observed, and BS 5837 adhered to.
- 6.9 BS 5837 states that all retained trees should be protected by RPAs marked by the erection of a protective barrier. The Tree Constraints Plan and the Tree Survey Schedule shows the RPA for each tree or group of trees.
- 6.10 BS 5837 specifies the minimum RPA in square metres rather than a radial distance; the final barrier position will be shown on the TPP.
- 6.11 BS 5837 enables the professional arborist to make small changes to the shape (but not the area) of the RPA to fit with local conditions.
- 6.12 The TPP should also detail routes for services and site facilities.
- 6.13 If services need to pass through the CEZ, directional drilling or thrust boring techniques must be employed at a suitable depth (≥ 1 metre) under the trees. This will minimise damage to tree roots. Any works which need to take place within the CEZ must be notified to the project arborist in advance. The project arborist should produce a suitable arboricultural method statement for the works and may recommend that the work is undertaken under a professional watching brief.

Protection Measures for Retained Trees

- 6.14 Retained trees will require ground protection around their RPA using a combination of barriers and ground protection.
- 6.15 All barriers should conform to the standard specified in BS 5837:2012 and are shown in Figure 1 below.

Figure 1: Tree Protection Fencing



- 6.16 The protective barriers should comprise a scaffold frame from which “heras” type fencing (or similar) should be firmly attached. The barrier must be strong enough to protect the trees from the expected level of construction activity and should be constructed so that it cannot be easily moved.
- 6.17 Once the exclusion zone has been protected by barriers and/or ground protection, construction work can commence. All weather notices must be erected on the barriers stating “*Construction Exclusion Zone KEEP OUT*”. It is recommended that the protective fencing is erected under the supervision of an arborist to ensure that adequate protection is provided.
- 6.18 The location of protective barriers will need to be shown on the TPP. Once the protective fencing is in place it should be inspected by the project arborist, who

should then inform the local authority tree officer that the erection work has been completed.

Other Protection Measures

6.19 Other protection measures to be considered during construction include:

- Material which will contaminate the soil, such as concrete mixings, diesel and vehicle washings, should not be discharged within 10 metres of the tree stem.
- Notice boards, telephone cables or other services should not be attached to any part of the tree.
- Fires should not be lit within 5 metres of any tree trunk, branch or foliage.
- No materials or rubbish should be left within the CEZ.

7.0 SUMMARY

- 7.1 The survey results are shown in the Tree Survey Schedule in Appendix A. The root protection areas are shown in the Tree Constraints Plan in Appendix B. The Tree Constraints Plan has been produced to inform the design process.
- 7.2 A total of six individual trees were surveyed. Two trees have been placed in Category A, two trees in Category B and two trees have been placed in Category C.
- 7.3 Of these trees, T1, T5 and T6 are to be removed in order to facilitate the proposed works. T2, T3 and T4 are to be retained during the extent of the works. The impact of removing T1 is considered to be **high** because of its value as a Category A tree and a tree protected under Tree Preservation Order (TPO).
- 7.4 The impact if removing T5 and T6 is considered to be **low** because these trees are semi mature and in arboricultural terms were considered to be low value Category C trees.
- 7.5 The proposed restoration strategy includes a significant amount of mitigation and enhancement in the form of:
- c. Native tree and shrub planting
 - d. Long Term Management Plan
- 7.6 In respect of a) it is proposed to plant and establish 21,750 new trees and shrubs. These will help recreate and diversify local landscape character and setting, create new habitat suitable for wildlife connectivity and Biodiversity. The planting will also help visually support ancient woodland along the southern boundary of the site. The planting will commence in winter 2020/21 and would progress as land becomes available through restoration.
- 7.7 It is assessed that the removal of T1 will have a minor short-term impact due to the removal of a landscape feature and also due to the removal of habitat for roosting bats. However, the large areas to be replanted will have a major medium/long-term positive impact replacing this existing landscape feature with larger areas of broad-leaved woodland and creating future habitat for roosting and foraging bats as well as habitat for other protected species.

8.0 REFERENCES

1. BS 5837: 2012 'Trees in relation to design, demolition and construction – Recommendations'
2. BS 3998: 2010 'Tree Work - Recommendations'
3. National Joint Utilities Group (NJUG) Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. Volume 4, issue 2. London:
4. Lonsdale D. Principles of Tree Hazard Assessment and Management. TSO London 1999



Appendix A

Tree Survey Schedule

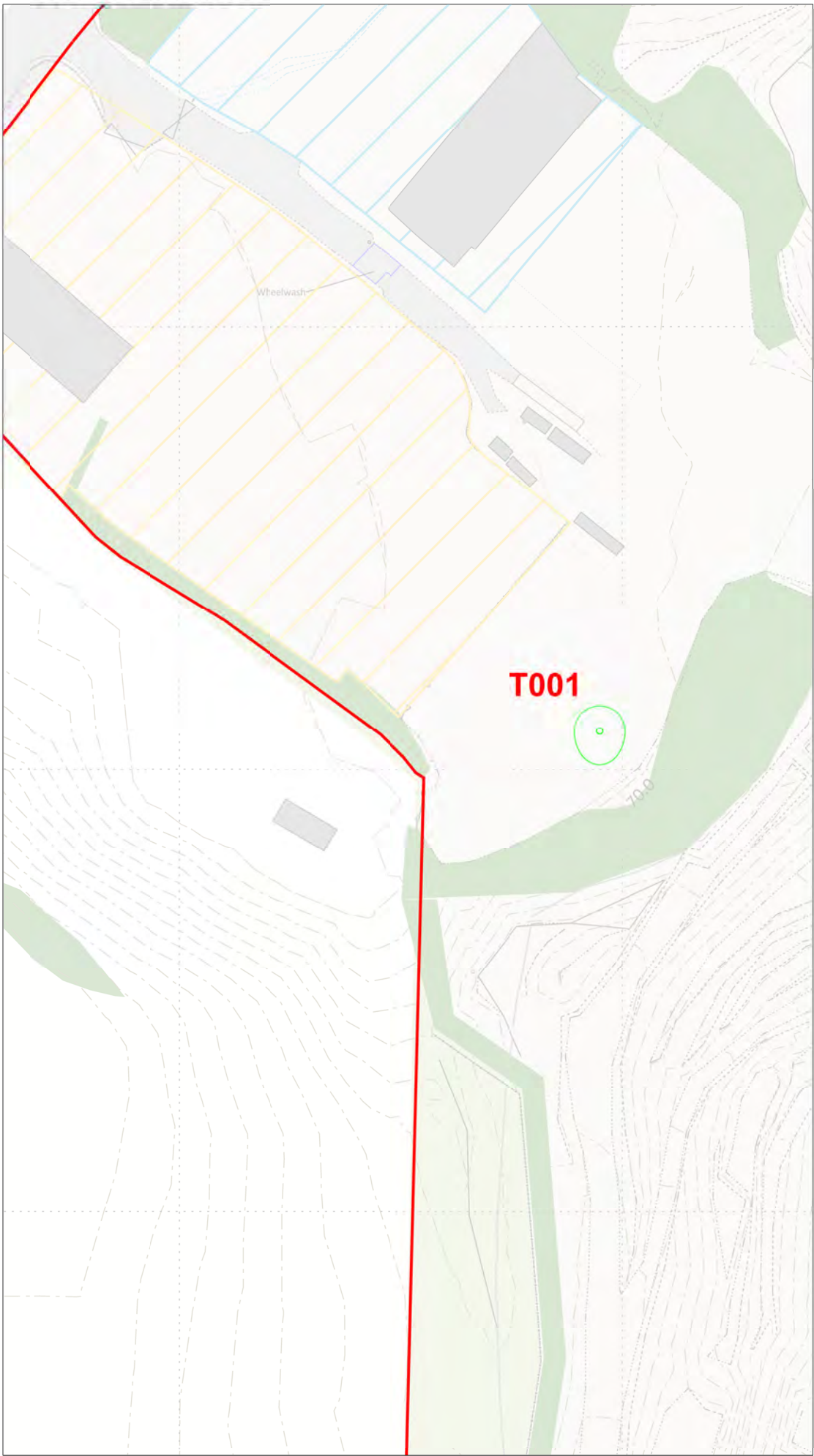
Structure	Ref.	Common Name	Botanical Name	Height (m)	Num. Stems	Stem Diam (mm)	Multiple Stem diam (mm)	RPA	North	South	East	West	Physiological Condition	Structural Condition	Bat Habitat	Life Stage	General Observations	Retention Category
Tree	T001	Horse Chestnut	<i>Aesculus hippocastanum</i>		2		600,800	17	5	7	5	5	Good	Good	Moderate	Mature	Multiple Stems, slight sloping to the south-west. Typical crown with no obvious major defects. TPO.	A2,3
Tree	T002	Sycamore	<i>Acer pseudoplatanus</i>	29	1	1600		19	10	12	13	15	Good	Good	Moderate	Mature	Nature tree in good condition.	B2,3
Tree	T003	Oak, pedunculate	<i>Quercus robur</i>	18	1	1900		22	9	10	8	12	Good	Good	High	Veteran	Veteran oak tree, with a high roosting potential for bats. Structure and crown in good condition.	A2,3
Tree	T004	Lime, Common	<i>Tilia x europaea</i>	14	1	1100		13	4	5	3	4	Good	Good	Moderate	Mature	Mature tree in good condition.	B2,3
Tree	T005	Pine, Scots	<i>Pinus sylvestris</i>	5	1	300		4	1	1	1	2	Fair	Fair	Negligible	Semi mature	Tree sloping to the west. No obvious major defects with typical crown form.	C1
Tree	T006	Hawthorn,Common	<i>Crataegus monogyna</i>	4	1	150		2	1	1	1	1	Fair	Fair	Negligible	Semi mature	Typical crown form with no obvious major defects. Located Immediately adjacent to Scot's Pine.	C1



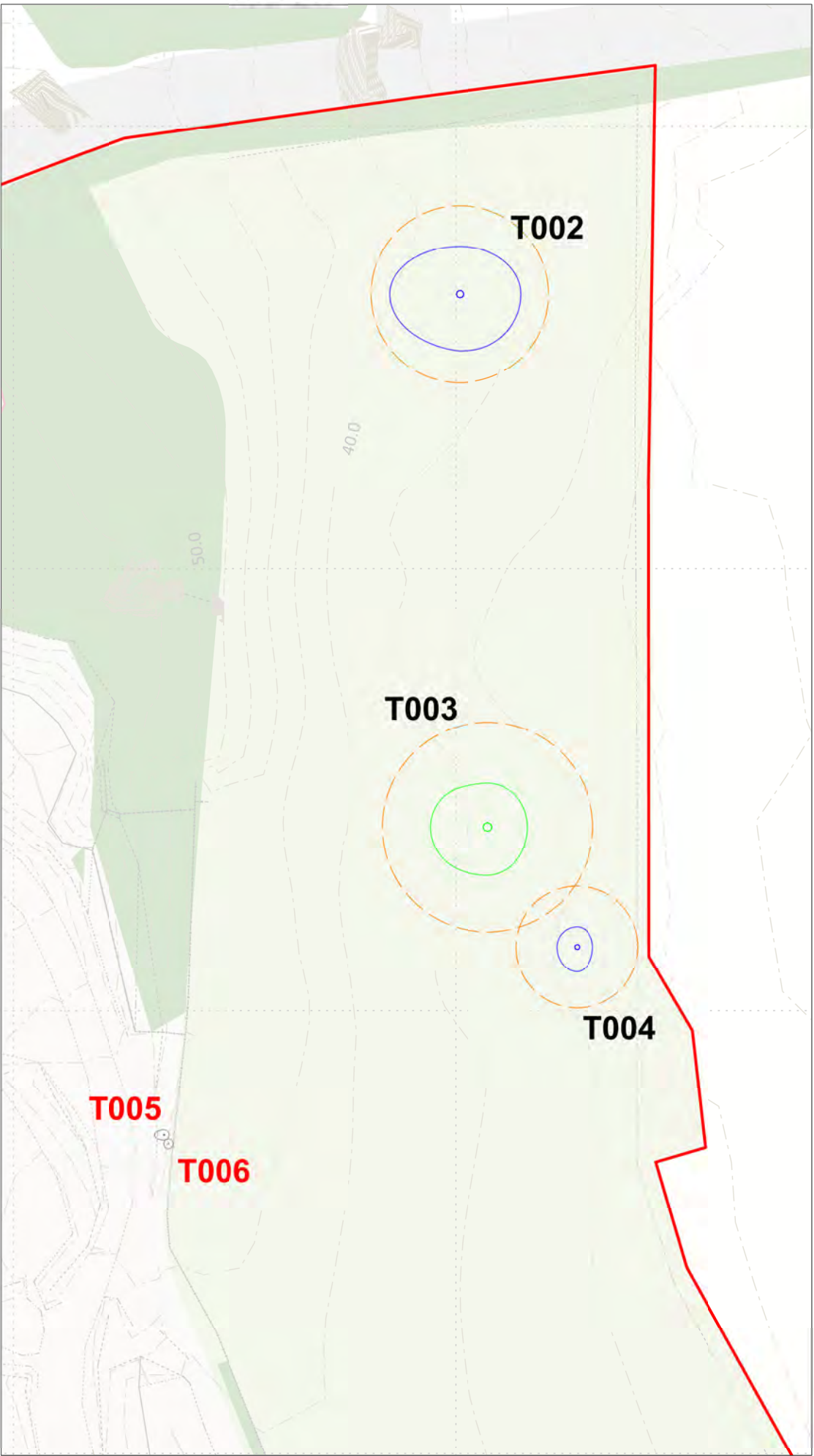
Appendix B

Tree Constraints Plan

INSET PLAN 1: Tree 001



INSET PLAN 2: Trees 002 to 006



LEGEND

Planning Permission Boundary

CATEGORY A TREE

CATEGORY B TREE

CATEGORY C TREE

Proposed Root Protection Area (RPA)

T001

Tree Proposed for Retention

T001

Tree Proposed for Removal

Please refer to Arboricultural Survey Report for detailed assessment.

PROJECT

Ballswood Quarry

DRAWING TITLE

Tree Protection Plan

DATE

August 2020

REFERENCE

KD.BLWQ.1.D.021

SCALE

1:1,250 @ A3

STATUS

FINAL

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Appendix C

Site Photographs



Figure 1: Trunk view of Oak (Tree 003) in arable field east of site.



Figure 2: Whole view of the Sycamore (Tree 002) tree in arable field east of site.



Figure 3: Landscape view of Oak (Tree 003) and Lime Tree (004) in centre of arable field.



Figure 4: Trunk view of Lime tree (Tree 004) in arable field east of site.



Figure 5: Whole view of Lime tree (Tree 004) in arable field east of site.



Figure 6: Trunk view of Sycamore tree (Tree 002) in arable field east of site.



Figure 7: a view of Tree 005 and Tree 006, located near the eastern boundary of the site.



Figure 8 : A view of Tree 001 located within the existing plant site.