Preliminary Ground Level Roost Assessment

Site:

Jewish and Congregationalist Cemeteries, Ponsharden, Falmouth, Cornwall

Grid Reference: SW 7945 3383

14th December 2020

Plan for Ecology Ltd

Tremough Innovation Centre

Tremough Campus, Penryn, Cornwall, TR10 9TA

Tel: 01326 218839

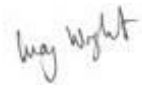
www.planforecology.co.uk

Document Control:

Site Name:	Jewish and Congregationalist Cemeteries, Ponsharden, Falmouth, Cornwall
OS Grid Reference:	SW 7945 3383
Surveyor:	Katherine Biggs BSc (Hons) MSc ACIEEM
Report Author:	Katherine Biggs BSc (Hons) MSc ACIEEM
Document Approved by:	Dr Lucy Wright BSc (Hons) MSc PhD MCIEEM
Client:	Falmouth Town Council; BOD Heritage
Report Reference Number:	P4E2177
Version:	01
Date:	14th December 2020

Declaration:

"The information, evidence and advice, which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology & Environmental Management's (CIEEM) Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions."

Katherine Biggs	
Lucy Wright	

Report Lifespan:

Ecological features can change over time, particularly if site management/ use changes. Typically, Preliminary Ground Level Roost Assessments are valid for one year (until December 2021).

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

CONTENTS

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Summary

Bat evidence?	A number of trees and structures within/ adjacent to the Jewish and Congregationalist Cemeteries, Ponsharden were visually inspected for evidence of roosting bats on 7th December 2020. This included 14 individual trees, three clusters of between 6 and 8 smaller trees on boundary features within the site, one of the tombs and a WWII structure adjacent to the south western boundary. No evidence of use of the WWII structure or tomb by roosting bats was found, with no significant crevices noted which could be used by crevice-dwelling bat species. However, the WWII structure provides some potential to be used by hibernating bats with suitable access present, although the interior is very damp which is likely to have reduced its overall suitability for roosting bats. The WWII structure was, therefore, assessed as being of **'low suitability'** for roosting bats. The tomb was assessed as being of **'negligible suitability'** for roosting bats. No evidence of roosting bats was observed on any of the trees and they were all assessed as being of **'negligible suitability'** for roosting bats.
Bat mitigation recommendations?	No further surveys for bats are required of the tomb or trees. Precautionary recommendations are provided. As far as we are aware no works are proposed to the WWII structure in relation to the restoration of the adjacent cemeteries. However, if any future works are proposed to this structure, further survey work is recommended in order to determine the presence or absence of roosting bats.
Bird evidence?	No evidence of nesting birds, including barn owl, was noted within the WWII structure or the tomb adjacent to CT28. The structures have **negligible potential** to support barn owl. No evidence of nesting birds was noted within the trees. However, there is potential for birds to nest within the tree canopies and within the ivy growth on some of the trees.
Bird mitigation recommendations?	Although no current evidence of nesting birds was observed within the trees, absence cannot be assumed. A precautionary approach should be adopted. Works to the trees, including removal of vegetation (ivy), should be undertaken between October and February, when birds will not be nesting, or, alternatively, preceded with a thorough search for nesting birds (to be undertaken by an ecologist) immediately prior to works commencing. Further surveys for birds are not recommended as part of this assessment. There is opportunity to enhance the site for roosting bats, nesting birds and other species within the site.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

	Recommendations for biodiversity enhancements are provided.
Other ecological constraints?	Habitats within the site provide potential for reptiles and amphibians, including sheltering and hibernating reptiles. Precautionary recommendations are provided to avoid harming reptiles and amphibians during restoration works. Three-cornered leek (*Allium triquetrum*) was noted growing across the site. This plant is an invasive non-native species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). As such, it is an offence to cause this plant to spread to the wild. Prior to any ground works being undertaken at this site, suitable measures must be taken to control its spread and to avoid an offence being committed. Outline recommended control measures are provided.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

1.0 Introduction

1.1 Background

Falmouth Town Council commissioned Plan for Ecology Ltd to undertake a Preliminary Ground Level Roost Assessment (PGLRA) of a number of trees on the Jewish and Congregationalist Cemeteries, Ponsharden, Falmouth, Cornwall (OS Grid Ref: SW 7945 3383) in November 2020. The client has achieved National Lottery Heritage Fund approval for a major restoration of the cemeteries, including works to the monuments, walls and works to stabilise the bank along the north eastern boundary within the Scheduled Ancient Monument. Prior to the restoration work, some selective tree removal is required where trees are causing damage to monuments and structures. This will include coppicing, monolithing, or felling of some trees. An underground former WWII structure adjacent to the Scheduled Ancient Monument boundary and one of the tombs on site were also inspected for evidence of roosting bats due to presence of suitable access points. An Extended Phase 1 Habitat Survey of the site was undertaken by Cornwall Environmental Consultants Ltd in 2017 (CEC Ltd, 2017).

1.2 Project Administration

Property Address:	Jewish and Congregationalist Cemeteries, Ponsharden, Falmouth, Cornwall
OS Grid Reference:	SW 7945 3383
Client:	Falmouth Town Council; BOD Heritage
Planning Authority:	Central 1
Planning Reference Number:	N/A
Report Reference Number:	P4E2177
Proposed work:	Restoration of the cemeteries; including works to the monuments, bank and walls and coppicing/ monolithing/ felling of some trees
Survey Date:	7th December 2020
Ecologist & Licence Number:	Katherine Biggs BSc (Hons) MSc ACIEEM; Bat licence No. 2016-22188-CLS-CLS; Barn owl licence no. CL29/00552

1.3 Legislation & Planning Policy

Planning: The local planning authority has a statutory obligation to consider impacts upon protected species resulting from development. Planning permission will not be granted with outstanding ecological surveys, and if applicable an appropriate mitigation plan.

Bats: In the UK all bat species are listed on Annex IV(a) of the European Communities Habitats Directive and as such are European Protected Species (EPS). In Britain protection of bats is achieved through their inclusion on Schedule 2 of the Conservation and Habitats Regulations 2010, Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 12 of the Countryside and Rights of Way Act 2000 (HM Government, 1981, 2000 & 2010).

As a result of this statutory legislation it is an offence to:

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat/s in its roost;
- Intentionally or recklessly damage, destroy or obstruct access to a bat roost (even if bats are not occupying the roost at the time);
- Possess or sell or exchange a bat (dead or alive) or part of a bat.

Works with potential to cause significant disturbance to roosting bats may require a European Protected Species (EPSL) licence or Bat Mitigation Class Licence (CL21) from Natural England before works can legally commence. Works likely to result in less significant disturbance may be carried out under a Bat Mitigation Method Statement. The magnitude of disturbance and therefore the requirement for an EPSL, Bat Mitigation Class Licence or method statement is assessed on a case by case basis by the bat ecologist. The Bat Mitigation Method Statement or EPSL must be prepared and/or applied for by a suitably experienced and licenced bat ecologist. Where planning permission is required, the appropriate licence cannot be obtained until planning permission has been granted.

Birds: In Britain the nests (whilst in use or being built) and eggs of wild birds are protected against taking, damage and destruction under the Wildlife and Countryside Act 1981 (as amended) (HM Government, 1981). The barn owl (*Tyto alba*) is listed on Schedule 1 of the Wildlife and Countryside Act (HM Government, 1981); this legislation makes it an offence to:

- Intentionally capture, injure or kill a barn owl;
- Intentionally or recklessly disturb a barn owl whilst nesting;
- Intentionally or recklessly disturb a dependent young barn owl.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

2.0 Methodology

The ecologist (Katherine Biggs) assessed the suitability of the trees, WWII structure, a tomb adjacent to tree CT28 and the surrounding habitat to support bats and birds (see site plan; Appendix 1). A high-power torch was used to illuminate all accessible areas of the trees and structures with potential to support roosting bats and roosting/ nesting birds. The ecologist searched for signs of bats and birds including droppings, staining, feeding remains, bird nests, barn owl pellets and liming. Accessible crevices with potential to conceal a roosting bat were inspected using an endoscope.

A Preliminary Ground Level Roost Assessment was undertaken of 14 individual trees and of three clusters of between 6 and 8 smaller trees each on boundary features within the Jewish and Congregationalist Cemeteries. This consisted of a detailed inspection of the exterior of the trees from ground level to look for potential features that bats could use for roosting (PRFs). The tree species and diameter at breast height were all noted, where access allowed. The trees were systematically searched for PRFs.

PRFs that may be used by bats include:

- woodpecker holes;
- rot holes;
- hazard beams;
- other vertical or horizontal cracks and splits (such as frost cracks) in stems or branches;
- partially detached, platey bark;
- knot holes arising from naturally shed branches, or branches previously pruned back to branch collar;
- man-made holes or cavities created by branches tearing out from parent stems;
- cankers (caused by localised bark death) in which cavities have developed;
- other hollows or cavities, including butt rots;
- double-leaders forming compressed forks creating potential cavities;
- gaps between overlapping stems or branches;
- partially detached ivy with stem diameters in excess of 50mm;
- bat, bird or dormouse boxes.

Signs of a bat roost include:

- presence of bats;
- bat droppings in, around or below a PRF;
- odour emanating from a PRF;
- audible squeaking at dusk or in warm weather;
- staining below the PRF.

The assessment was carried out in accordance with the 'Bat Survey for Professional Ecologists - Good Practice Guidelines' produced by the Bat Conservation Trust (Collins, 2016).

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

2.1 Ecological Evaluation

Potential bat roosts identified during the visual inspection of the building were categorised as to their suitability in accordance with the Bat Conservation Trust's (BCT) Good Practice Guidelines (Collins, 2016) as described below:

Negligible: negligible features with potential to support roosting bats.

Low: one or more features with potential to support individual bats on an occasional basis. Unlikely to support large numbers of bats.

Moderate: one or more features with potential to support roosting bats but unlikely to be of high conservation status.

High: one or more features with potential to support large numbers of bats on a regular basis.

2.2 Limitations

Preliminary Bat & Bird Assessment of the WWII structure and tomb: All areas of the WWII structure were fully accessible, although the interior of the tomb could only be inspected from a small opening in the granite slab at ground floor level (*c.* 150 mm high x 300 mm wide). Weather during the survey was in line with seasonal norms i.e. dry and sunny with a light breeze, part cloud and a temperature of 5°C. There are no limitations associated with weather conditions.

Preliminary Ground Level Roost Assessment of trees: Preliminary ground level roost assessments of trees are best carried out in winter (December – March) after the leaves have fallen and before new leaves replace them in spring to allow for maximum visibility. The survey was carried out in December. It was possible to access all sides of the trees and the visibility of the trunks and branches was good. There are no limitations to the survey associated with time of year.

For two of the three clusters of trees (JG2 and CG2 on the north eastern boundary), it was not possible to fully inspect the trees on health and safety grounds. This is due to the bank at the northern boundary being unstable, with part of it having collapsed.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

3.0 Assessment Results

3.1 Site Description

The 'Jewish and Congregationalist Cemeteries, Ponsharden' are located high-up on a steep earth bank above the A39 Falmouth Road, *c.* 0.6 km south east of Penryn on the north western edge of Falmouth in Cornwall. The Jewish Cemetery forms the north western section of the site and the Congregationalist Cemetery forms the southern and eastern sections of the site. The site is immediately surrounded by an area of dense scrub to the west and south west, with fragments of broadleaved woodland further south west and mixed farmland enclosed with Cornish hedgebanks further west. The Penryn River is located *c.* 0.18 km north east of the site, Sainsbury's supermarket is *c.* 0.05 km south of the site and the Falmouth Branch Line is present *c.* 0.4 km south west of the site. The Fal and Helford Special Area of Conservation (SAC) is located *c.* 0.85 km east of the site. Buildings in the wider area comprise a mixture of period and modern properties, with industrial and commercial properties, agricultural outbuildings and barns. In combination, these features provide potential good quality foraging and roosting habitat for bats, and suitable nest sites, roosts and foraging habitat for birds.

3.2 Bat Assessment

The assessment was undertaken on 7th December 2020.

WWII Structure (site plan ref: C104)

This structure lies just outside of the Scheduled Ancient Monument boundary, to the south west (see site plan; Appendix 1). It consists of a rectangular concrete block bunker with a flat concrete roof covered with ephemeral vegetation and cement rendered external walls (Figs. 1 and 2). It features an open doorway on its north eastern elevation, covered with a metal gate/ grille, and there are narrow openings at the eaves on the north western elevation (*c.* 200 mm high x 400 mm wide), all of which provide potential access for bats into the interior (Fig. 3). The south western and south eastern elevations are built into the earth and are vegetated with grasses and scrub.

Internally, this structure consists of a single room with bare block walls, with one of the corners partially enclosed from the rest of the room by a block wall. It is fairly dark internally, with some light penetrating through the open door and openings in the north western wall. The ceiling and walls are very damp with water dripping from the ceiling onto the earth/ concrete floor. There are some stored materials present.

No evidence of use of this structure by roosting bats was found, with no significant crevices noted, which could be used by crevice-dwelling bat species. The structure does provide some potential to be used for hibernation by horseshoe bat species (*Rhinolophus hipposideros* and *R. ferrumequinum*), as it is dark internally, partially sunken into the ground and there are suitable access points present. However, as the interior is very damp this is likely to have reduced its overall suitability for roosting bats.

This structure was, therefore, assessed as being of **'low suitability'** for roosting bats.

As far as we are aware no works are proposed to this structure in relation to the restoration of the adjacent cemeteries.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Figure 1: North eastern elevation of WWII structure (site plan ref: C104)

Figure 2: South eastern and north eastern elevations of WWII structure

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Figure 3: Interior of WWII structure (viewed towards the south west)

Tomb adjacent to tree CT28

Tree CT28 is growing out of the corner of a tomb in the south east of the Congregationalist Cemetery (south east of the site) (see site plan; Appendix 1). The tomb has granite slabs on top, partly covered with ephemeral vegetation, with a narrow gap underneath one of these slabs at ground level (*c.* 150 mm high x 300 mm wide), which is to be sealed up during the restoration works (Fig. 4).

This gap was mostly covered with leaf litter and is situated at ground level, which is likely to have reduced its overall suitability for use by bats. However, the interior of the tomb has some potential for roosting bats. It was not possible to fully inspect the interior of the tomb, although it was possible to inspect the majority of the underside of the granite slabs via the narrow gap. The interior consists of bare brick walls, which appear to be well-pointed, with a granite ceiling reinforced with a metal girder (Fig. 5).

No evidence of bats using the tomb for roosting was found. Because the only potential access to the interior of this structure is at ground level, and because it is partially covered with leaves/ low-growing vegetation, it is very unlikely to be used by bats. This tomb was, therefore, assessed as being of **'negligible suitability'** for roosting bats.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Figure 4: Gap under tomb stone (yellow arrow) adjacent to tree CT28 (viewed towards the east)

Figure 5: View into interior of tomb adjacent to tree CT28 (viewed towards the east)

Trees CT2 & CT3

These two trees are on the south eastern boundary of the Congregationalist Cemetery and consist of a sycamore (*Acer pseudoplatanus*) (one stem) and common ash (*Fraxinus excelsior*) (two stems) which have fused and are growing together, with three stems in total (see site plan; Appendix 1). The two common ash stems are between *c.* 550–580 mm in diameter at chest height and the sycamore stem is *c.* 630 mm in diameter at chest height (Fig 6).

There are no notable PRFs present on these trees, with the exception of a rot hole at the base of the sycamore stem. However, this feature was inspected with an endoscope and was found to be

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

no more than *c.* 300 mm deep, with no evidence of roosting bats noted, including staining or polishing around the opening which could indicate potential use by bats (Fig. 7). Both trees are estimated to be *c.* 70-75 years of age and both measure *c.* 10 m in height. These trees are growing alongside the boundary wall and are causing it to distort and lean outwards. It is proposed to monolith the stems to *c.* 3-4 m and remove any shoots.

Figure 6: Trees CT2 & CT3 (viewed towards the north east)

Figure 7: Rot hole at base of sycamore tree (CT2) on its northern elevation

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Tree CT6

This is an Irish yew (*Taxus baccata 'fastigiata'*) and is located in the south east of the Congregationalist Cemetery (see site plan; Appendix 1). It measures *c.* 430 mm in diameter at chest height. The majority of the crown has been lost, but it now appears to be recovering. There are no notable PRFs present on this tree (Fig. 8). This tree is estimated to be *c.* 100-110 years of age and measures *c.* 7 m in height. It is proposed to reduce the crown by *c.* 3 m to encourage growth lower down.

Figure 8: Irish yew (CT6) (viewed towards the east)

Tree CT16

This is a common ash that is growing between two headstones near to the south eastern boundary of the Congregationalist Cemetery, causing them to distort (see site plan; Appendix 1). This tree measures *c.* 470 mm in diameter at chest height. There are no notable PRFs present on this tree (Fig. 9). This tree is estimated to be *c.* 55-60 years of age and measures *c.* 9 m in height. It is proposed to fell this tree to *c.* 0.5 m height, below the top of one of the headstones.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Figure 9: Common ash (CT16) (viewed towards the south)

Tree CT17

This is a sycamore present to the south west of CT16, near the south eastern boundary of the Congregationalist Cemetery (see site plan; Appendix 1). This tree is growing over ironwork and distorting the stone kerb of a monument which is to be fully restored. It measures *c.* 500 mm in diameter at chest height. There is a small amount of ivy growth on its southern elevation, but the ivy stems are not thicker than 50 mm and no notable PRFs were noted on this tree (Fig. 10). This tree is estimated to be *c.* 55-60 years of age and measures *c.* 10 m in height. The proposal is to fell and cut the tree out below ground level to allow reinstatement of stone kerbs.

Figure 10: Sycamore (CT17) (viewed towards the south east)

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Tree CT18

This is a sycamore growing on the southern corner of a grave in the south east of the Congregationalist Cemetery, north of CT16 (see site plan; Appendix 1). It consists of two stems which measure between *c.* 350-420 mm in diameter at chest height. There is ivy growth on the lower parts of the tree stems, but the ivy stems are not thicker than 50 mm and no notable PRFs were noted on the tree (Fig. 11). This tree is estimated to be *c.* 40-45 years of age and measures *c.* 9 m in height. It is proposed to fell this tree to ground level as it is damaging the monument.

Figure 11: Sycamore (CT18) (viewed towards the south east)

Tree CT19

This is a sycamore growing on the south eastern boundary in the east of the Congregationalist Cemetery, north east of CT2 & CT3 (see site plan; Appendix 1). The single stem measures *c.* 460 mm in diameter at chest height. There are no notable PRFs present on this tree, with the exception of a rot hole/ split at the base of the stem. However, this feature was inspected with an endoscope and was found to be no more than *c.* 300 mm deep, with no evidence of roosting bats noted, including staining or polishing around the opening which could indicate potential use by bats (Fig. 12). This tree is estimated to be *c.* 50-55 years of age and measures *c.* 9 m in height. It is proposed to fell this tree to ground level as it is growing close to the boundary wall and a grave monument.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Figure 12: Sycamore (CT19) showing rot hole/ split on south eastern elevation (viewed towards the north east)

Tree CT20

This is a sycamore growing next to the stone stairwell at the former entrance to the Congregationalist Cemetery in the north eastern corner of the site and it is impacting on the boundary wall (see site plan; Appendix 1). The tree consists of two stems; some overhanging branches on the northern elevation of the tree have been removed and there are suckers growing at the base (Fig. 13). The larger stem measures *c.* 550 mm in diameter at chest height. There are no notable PRFs present on this tree, with the exception of a rot hole/ split at the base of the stem. However, this feature was inspected with an endoscope and was found to be no more than *c.* 100-200 mm deep, with no evidence of roosting bats noted, including staining or polishing around the opening which could indicate potential use by bats (Fig. 14). This tree is estimated to be *c*. 60-65 years of age and measures *c*. 11 m in height. It is proposed to monolith this tree to 3 m, potentially removing it completely.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Figure 13: Sycamore (CT20) (viewed towards the north east)

Figure 14: Rot hole/ split at base of tree on northern elevation of CT20

Tree CT21

This is a sycamore growing on the bank on the north eastern boundary of the Congregationalist Cemetery (see site plan; Appendix 1). It consists of three stems which measure between *c.* 180-450 mm in diameter at chest height. There is ivy growth on the lower parts of the tree stems, but the ivy stems are not thicker than 50 mm and no notable PRFs were noted on the tree (Fig. 15). This tree is estimated to be *c.* 30-35 years of age and measures *c.* 10 m in height. It is proposed to remove this tree to ground level and create a new hedge along this boundary.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Figure 15: Sycamore (CT21) (viewed towards the east)

Tree CT26

This is a small sycamore with two narrow stems and a treated stump at ground level, in the north eastern corner of the Congregationalist Cemetery, south west of CT20 (see site plan; Appendix 1). It is growing adjacent to the corner of the former mortuary (now a ruined, roofless stone structure) and a grave. The stems measure between *c.* 130-160 mm in diameter at chest height. No notable PRFs were noted on the tree (Fig. 16). This tree is estimated to be *c*. 15-20 years of age and measures *c*. 7 m in height. It is proposed to remove this tree to prevent it damaging the adjacent historical features in future.

Figure 16: Sycamore (CT26) (viewed towards the north east)

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Tree CT29

This is a sycamore in the centre of the Congregationalist Cemetery, which is one of a group of four sycamore stems surrounding a footpath (see site plan; Appendix 1). This tree measures *c.* 550 mm in diameter at chest height. No notable PRFs were noted on the tree (Fig. 17). This tree is estimated to be *c.* 60-65 years of age and measures *c.* 10 m in height. It is proposed to remove tree CT29 and widen the pathway, with the other three stems to be retained.

Figure 17: Sycamore (CT29) (yellow arrow, viewed towards the south)

Tree CT31

This is a sycamore growing between a number of graves in the south of the Congregationalist Cemetery, south west of CT17 (see site plan; Appendix 1). This tree measures *c.* 530 mm in diameter at chest height (Fig. 18). No notable PRFs were noted on the tree, with the exception of a rot hole at the base of the tree on the southern elevation. However, this feature was inspected with an endoscope and was found to be no more than *c.* 1 m deep, with no evidence of roosting bats noted, including staining or polishing around the opening which could indicate potential use by bats (Fig. 19). This tree is estimated to be *c.* 60-65 years of age and measures *c.* 10 m in height. It is proposed to monolith this tree to the level of the adjacent headstones. Three-cornered leek (*Allium triquetrum*) was noted growing out of the base of this tree (Fig. 19). Care should be taken during works to the tree not to cause this non-native invasive plant species to spread (see Section 4.3).

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Figure 18: Sycamore (CT31) (viewed towards the south west)

Figure 19: Rot hole/ split at base of tree on southern elevation of CT31 (showing three-cornered leek)

Tree JT1

This is a coppiced sycamore growing on and into the masonry wall of a former Ohel in the north western corner of the Jewish Cemetery, adjacent to its former entrance gate, in the north west of the site (see site plan; Appendix 1). This tree consists of a number of stems each measuring *c.* 250 mm in diameter at chest height (Fig. 20). This tree measures *c*. 6 m in height, it was not possible to estimate the age of this tree due to it having been coppiced. No notable PRFs were noted on the tree stems. It is proposed to remove the tree to ground level, re-coppicing it and avoiding damage to the wall. The roots cannot be cut out without dismantling the wall.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Figure 20: Sycamore (JT1) (Viewed towards the east)

Tree JT3

This is a young turkey oak (*Quercus cerris*) growing in the north west of the Jewish Cemetery, in the north west of the site (see site plan; Appendix 1). This tree measures *c.* 260 mm in diameter at chest height (Fig. 21). No notable PRFs were noted on the tree. This tree is estimated to be *c.* 15-20 years of age and measures *c.* 9 m in height. It is proposed to fell this tree to ground level to prevent it damaging the adjacent historical features in future.

Figure 21: Turkey oak (JT3) (yellow arrow, viewed towards the west)

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Tree group CG1

This is a group of six small trees, including elm (*Ulmus spp.*), sycamore and hazel (*Corylus avellana*) with narrow stems growing out of an earth bank between the Congregationalist Cemetery and the Jewish Cemetery in the north of the site (see site plan; Appendix 1). The trees measure between *c.* 180-200 mm in diameter at chest height. There is ivy growth on the elm and sycamore trees, but the ivy stems are not thicker than 50 mm and no notable PRFs were noted on any of the trees (Fig. 22). These trees are estimated to be *c*. 20-25 years of age and measure *c*. 5 m in height. It is proposed to coppice all trees to bank level and allow them to regrow.

Figure 22: Group of six trees (CG1) (viewed towards the north west)

Tree group CG2

This is a group of six small trees, mostly holly (*Ilex aquifolium*), with a possible spindle (*Euonymus europaeus*) at the north easternmost end (species to be confirmed) (see site plan; Appendix 1). These trees have narrow stems, with no notable PRFs noted on any of the trees (Fig. 23). It was not possible to measure the diameters of these trees or to estimate the age of the trees on health and safety grounds, due to the instability of the north eastern bank. It is proposed to retain these trees and plant a new beech hedge on the north eastern boundary. The trees within CG2 may require coppicing to enable the new hedge to establish, subject to stabilisation works to the bank.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

Figure 23: Group of six trees on north eastern boundary (CG2) (viewed towards the south east)

Tree group JG2

This is a group of eight small common ash, sycamore and beech (*Fagus sylvatica*) (see site plan; Appendix 1). These trees have narrow stems, with no notable PRFs noted on any of the trees (Fig. 24). It was not possible to measure the diameters of these trees or to estimate the age of the trees on health and safety grounds, due to the instability of the north eastern bank. It is proposed to coppice these trees and plant a new beech hedge on the north eastern boundary.

Figure 24: Group of eight trees on north eastern boundary (JG2) (viewed towards the north east)

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

No evidence of roosting bats was observed on any of the trees within the cemeteries and they were assessed as being of **'negligible suitability'** for roosting bats. Further surveys of the trees are not recommended to inform the proposed works.

3.3 Bird Assessment

WWII structure and tomb adjacent to tree CT28

No evidence of nesting birds, including barn owl, was noted within these structures. The structures have **negligible potential** to support barn owl.

Trees

No evidence of nesting birds was noted within the trees. However, there is potential for birds to nest within the tree canopies and within the ivy growth on some of the trees.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

4.0 Mitigation Recommendations

4.1 Bat Mitigation

WWII structure (site plan ref: C104)

No evidence of use of this structure by roosting bats was found, with no significant crevices noted which could be used by crevice-dwelling bat species. The structure does provide some potential to be used for hibernation by horseshoe bat species, as it is dark internally, partially sunken into the ground and there are suitable access points present. However, as the interior is very damp, this is likely to have reduced its overall suitability for roosting bats.

This structure was, therefore, assessed as being of **'low suitability'** for roosting bats.

As far as we are aware, no works are proposed to this structure in relation to the restoration of the adjacent cemeteries. However, if any future works are proposed to this structure, further survey work is recommended in order to determine the presence or absence of roosting bats.

Tomb adjacent to tree CT28

No evidence of bats using the tomb for roosting was found. Because the only potential access to the interior of this structure is at ground level, and because it is partially covered with leaves/ low-growing vegetation, it is very unlikely to be used by bats. This tomb was, therefore, assessed as being of **'negligible suitability'** for roosting bats.

No further surveys are required for bats of the tomb adjacent to tree CT28. Although no current evidence of roosting bats was found, absence cannot be assumed. A precautionary approach should be adopted. The site contractors should be made aware that bats can roost unseen within the building structure. If, during restoration work, a bat(s) is uncovered, the bat must not be handled, and works must stop immediately (as soon as it is safe to do so). Advice must be sought from an experienced bat ecologist (Plan for Ecology Ltd: 01326 218839) or Bat Conservation Trust (Tel: 0345 1300 228). See Section 1.3 for relevant legislation.

Trees

No evidence of roosting bats was observed on any of the trees and they were all assessed as being of **'negligible suitability'** for roosting bats. Further surveys of the trees are not recommended to inform the proposed works.

4.2 Bird Mitigation

No evidence of nesting birds, including barn owl, was noted within the WWII structure or the tomb adjacent to CT28. The structures have **negligible potential** to support barn owl. No evidence of nesting birds was noted within the trees; however, there is potential for birds to nest within the tree canopies and within the ivy growth on some of the trees.

Although no current evidence of nesting birds was observed within the trees, absence cannot be assumed. A precautionary approach should be adopted.

Works to coppice/ fell/ monolith any of the trees, including removal of vegetation (ivy), should be undertaken between October and February, when birds will not be nesting, or, alternatively, preceded with a thorough search for nesting birds (to be undertaken by a suitably experienced ecologist). If, during works, an active bird nest is uncovered, works within 5m of the nest must

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

stop immediately (as soon as it is safe to do so) and delayed until nesting activity has ceased. Works are most likely to be delayed between April and July.

Further surveys for birds are not recommended as part of this assessment.

4.3 Other Ecological Constraints

Reptiles and Amphibians

The semi-improved neutral grassland, scrub, Cornish hedgebanks, earth banks, stone walls and stone piles on site provide potential habitat for reptiles and amphibians (see CEC Ltd, 2017 for a description and map of the habitats present within the site). The site however lacks standing water, a prerequisite for breeding amphibians. Due to the small size of the suitable habitats on site, and because the majority of the site is shaded by trees and the majority of the grassland and hedgebanks are to be retained, further surveys for reptiles are not recommended. To avoid harming reptiles and amphibians, in addition to the recommendations provided in Section 3 of the Extended Phase 1 Habitat survey report (CEC Ltd, 2017), we also recommend that the following precautions are undertaken during restoration works:

If removal or disturbance of grassland is required, mow the sward to a height of 200mm, slowly in a single direction towards the perimeter of the site and leave for a period of 24 hours before mowing for a second time, slowly to height a 100mm. Any reptiles present will have an opportunity to escape. Removal of any scrub vegetation should be carried out in a two-phased process comprising a first cut to a height of 200mm (to be undertaken between October-February to avoid the bird nesting season, or under an ecological watching brief), followed by a second cut to ground level, during the reptile active season (April – September) so any reptiles present can escape. Alternatively, carry out works under an ecological watching brief.

Invasive Non-native Plant Species

Three-cornered leek was noted growing across the site, mainly within the Congregationalist Cemetery in the north east and south east of the site. It was also noted growing at the base of tree CT31, which is to be monolithed. This plant is an invasive non-native species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). As such, it is an offence to cause this plant to spread to the wild. Prior to any ground works being undertaken at this site, suitable measures must be taken to control its spread and to avoid an offence being committed. Please see outline recommended control measures below, alternatively, commission a specialist invasive weed control contractor:

- This plant can be removed by digging the plant out, which is easier in spring when its surface vegetation is visible to ensure removal of all parts of the plant and bulbs. Mechanical cutting over a number of years may then be required until the seed bank is depleted.

- Any removed/ excavated plant material and immediately surrounding soil must be disposed of as controlled waste at a licensed landfill, or carefully buried deeply on site.

- Herbicide applied in spring before flowering can also be used to reduce the spread of this plant. An appropriate glyphosate-based herbicide should be applied by wiping the leaves. This may need to be repeated multiple times until the seedbank and bulbs are depleted.

NB: Any use of herbicides within 5m of a watercourse has potential to impact water quality and must be approved by the Environment Agency. Always use the herbicide in

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

accordance with the manufacturer's instructions including use of Personal Protective Clothing (PPE).

4.4 Opportunities for Biodiversity Enhancement

Net gain is described as a measurable target(s) for development projects where impacts on biodiversity are outweighed by the mitigation hierarchy approach to first avoid, and then minimise, impact including through restoration and/ or compensation (Baker *et al.,* 2019).

The biodiversity value of the site could potentially be enhanced by successfully implementing the following recommendations:

- Maximise the value of the site for invertebrates, amphibians, reptiles and hedgehog by providing piles of deadwood or stones within and around the perimeter of the cemeteries.

- Maximise the value of the site for foraging and commuting bats by creating new hedges across the site, connecting to existing hedges wherever possible to boost habitat connectivity. These should be planted with native tree and shrub species (over and above planting required to mitigate any loss of scrub or hedgerow habitat) as opposed to introduced ornamental species.

- Removal/ control of invasive plant species, notably three-cornered leek, on-site has potential to enhance the ecological value of the site, and will potentially protect semi-natural habitats in the wider area from degradation arising from the introduction of invasive species.

- There is opportunity to enhance the site for roosting bats by installing bat boxes onto trees within the cemeteries and on the retained hedgebanks. Suitable products for trees include 1FF and 2F Schwegler bat boxes. There is opportunity to enhance the site for nesting birds by installing bird boxes onto trees within the cemeteries and on the retained hedgebanks. Suitable products for trees include 1B Schwegler Nest Box and 2H Schwegler Robin Box. Plan for Ecology Ltd can provide detailed recommendations upon request.

NB: suitable products are available from www.nhbs.com, www.wildcareshop.com and www.greenandblue.co.uk

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

5.0 References

Baker, J., Hoskin, R. and Butterworth, T. (2019) Biodiversity Net Gain. Good Practice Principles for Development. A Practical Guide. CIRIA, 2019. ISBN: 978-0-86017-791-3.

British Standard Institution (2013) BS42020: 2013 Biodiversity – A Code of Practice for Planning and Development. BSI Standards Limited 2013. ISBN 978 0 580 77917 6.

Collins (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edition, Bat Conservation Trust, London.

Cornwall Council (2018) Cornwall Planning for Biodiversity Guide. Cornwall Council. Truro.

Cornwall Environmental Consultants (CEC) Ltd (2017) Phase 1 Habitat Survey Report for Jewish and Congregationalist Cemeteries at Ponsharden, Falmouth. CEC Ltd, Cornwall

HM Government (2010) The Conservation of Habitats and Species Regulations 2010. HMSO, London.

HM Government (2006) The Natural Environment and Rural Communities Act 2006. HMSO, London.

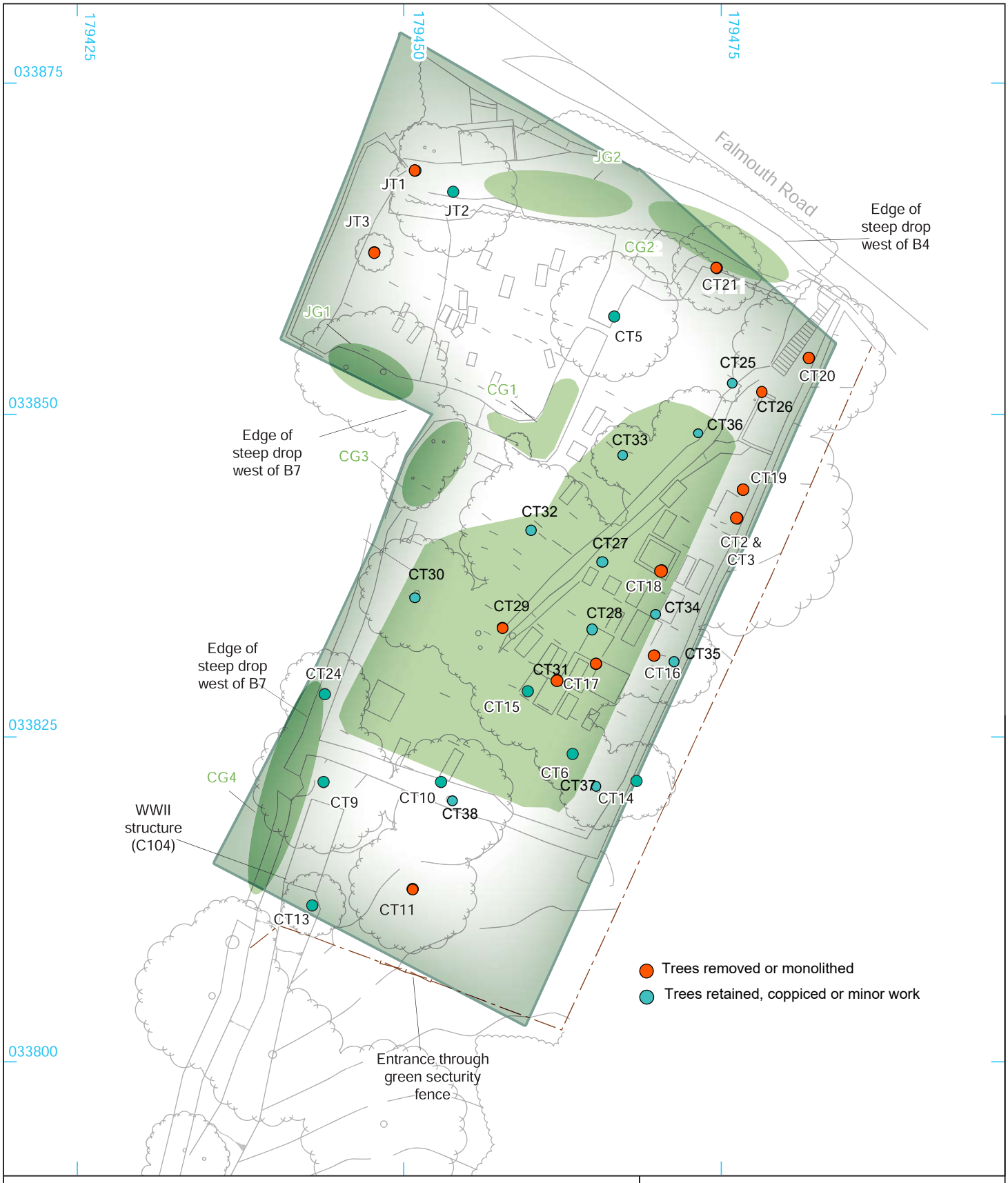
HM Government (1981) The Wildlife and Countryside Act 1981 (as amended). HMSO, London.

HM Government (2000) The Countryside and Rights of Way Act 2000. HMSO, London.

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.

6.0 Appendix 1: Site Plan Showing Location of Trees, Structures and Planned Tree Works

Plan for Ecology Ltd, Tremough Innovation Centre, Tremough Campus, Penryn, Cornwall, TR10 9TA; Tel 01326 218839; Email info@planforecology.co.uk; Web www.planforecology.co.uk;
Company Number: 12071013.



Site boundary

Tree groups

Trees

Green security fence

N

0 1:400 20m

Cotswold Archaeology

Andover 01264 347630
Cirencester 01285 771022
Exeter 01392 826185
Milton Keynes 01908 564660
w www.cotswoldarchaeology.co.uk
e enquiries@cotswoldarchaeology.co.uk

PROJECT TITLE

Ponsharden Cemeteries, Ponsharden, Falmouth

FIGURE TITLE

Trees recorded during inspection

DRAWN BY	CP	PROJECT NO.	880188	FIGURE NO.
CHECKED BY	DJB	DATE	15/06/2017	12
APPROVED BY	JS	SCALE@A4	1:400	