

HAFOD HOUSING ASSOCIATION

COWBRIDGE SCHOOL, ABERTHIN ROAD, VALE OF GLAMORGAN

HIBERNATION SURVEY - ADDENDUM REPORT

12 NOVEMBER 2019



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DOCUMENT REF: E1884501/Doc 02. 12 NOVEMBER 2019

Issue	Revision	Stage	Date	Prepared by	Approved by	Signed
1	-	Final	06/03/2019	Danielle Fry (Senior Ecologist) & Daniel Jones (Ecologist)	Dr Matthew Watts (Director)	
1	Text & appendices updated to include planting plans	Draft	17/09/2019	Danielle Fry	Dr Matthew Watts (Director)	
1	Revised lighting plans added and text updated in response to client feedback	Final	12/11/2019	Danielle Fry	Dr Matthew Watts (Director)	

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1.0 INTRODUCTION

- 1.1 The former Cowbridge School (the site) is located along Aberthin Road, Cowbridge. The scale of the proposal involves the demolition of the former school building, including the loss of the immediately surrounding habitat, and design of up to 48no. residential units at the site.
- 1.2 This report presents the findings and recommendations following a bat hibernation survey and tree assessment undertaken at the former Cowbridge School.
- 1.3 Winter bat hibernation surveys were undertaken at the site, as recommended within the December 2018 Soltys Brewster Ecology report¹, in order to inform the Method Statement and mitigation measures ahead of the proposed work at the site. The current report presents the findings of the winter hibernation survey and should be read in conjunction with the December 2018 report to provide an up to date appraisal of the site conditions and status of the identified bat roost.
- 1.4 The illustrative master plan of the proposed development lists 5no. trees scheduled for removal at the site. Due to access restrictions these trees were not previously assessed for their potential to support roosting bats during the 2018 survey. The current report includes the findings of a day-time appraisal of these trees.

¹ Soltys Brewster Ecology (2018), Extended Phase 1 & Bat Survey Report
Hafod Housing Association
Cowbridge School, Aberthin Road
[Ecology Addendum Report](#)
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2.0 METHODOLOGY

Bat survey – hibernation

- 2.1 The bat hibernation surveys were undertaken from December 2018 – February 2019 (inclusive) by a suitably experienced and licenced ecologist.² Static bat detectors were placed within the basement, ground-floor and first-floor lofts of the former school building (Appendix I). A combination of Anabat Express units, Anabat SD2 units and Peersonic unit were used see Appendix II for full details. The detectors were left *in situ* for a two-week duration each month, with batteries replaced at the one-week interval. Recordings were later analysed via desktop bat analysis software.
- 2.2 In addition, on each return visit to the site the internal rooms, basement and loft spaces were inspected for any new evidence of bat activity e.g. live bats or droppings not previously recorded.
- 2.3 An additional nearby hibernation site was identified during the previous survey (SBE 2018) under the A48 flyover. This was surveyed on two separate occasions during the survey period.

Tree assessment

- 2.4 A ground-level inspection of 5no. trees at the site were undertaken on 12th February 2019. This involved the use of binoculars, high powered torch and ladder to identify if trees contained potential bat roost features and any evidence of use by bats e.g. staining. The survey aimed to establish the potential of the trees to support roosting bats based on guidelines published by Bat Conservation Trust (2016), including the following descriptions:

- **Known or confirmed roost**
- **High** - A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
- **Moderate** – A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
- **Low** - A tree of sufficient size and age to contain PRFs but with none seen from the ground or features see with only very limited roosting potential. .
- **Negligible** – Negligible habitat features on site likely to be used by roosting bats.

²BSc (Hons) Zoology, PhD, NRW bat licence no: SO85043/1
 Hafod Housing Association
 Cowbridge School, Aberthin Road
 Ecology Addendum Report
 E1884501/Doc 02

A48 flyover inspection

2.5 The nearby roost under the A48 flyover³ was inspected on two occasions on the 12th and 19th of February 2019. It was inspected systematically to ensure complete coverage using a high powered torch (Clulite SM126).

Survey constraints

2.6 During the hibernation survey, 3no. Anabat SD2 units and 1no. Anabat Express unit malfunctioned and subsequently collected no recording data for 9 of the 14 survey days during December. One of these detectors was later found to be faulty and was not used for any further surveys.

2.7 The detectors deployed (3no. Anabat Express units) within the ground-floor rooms of the former school building during the January surveys were subject to vandalism, with batteries removed/discarded and detectors thrown to the floor. . As a result these three detectors collected data for 4 of the 14 survey days and were not re-deployed within the ground-floor rooms for the remainder of the hibernations surveys.

2.8 Despite the constraints outlined it is felt that a sufficient number of detectors were deployed over a sufficient amount of time to return reliable results on which to draw conclusions.

³ The presence of a roost under the flyover was advised by the local authority ecologist
Hafod Housing Association
Cowbridge School, Aberthin Road
[Ecology Addendum Report](#)
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3.0 RESULTS

Bat survey – hibernation

3.1 A summary of findings are given below and full details can be found at Appendix II.

December 2018

3.2 December 2018 - The detector placed within one of the ground-floor rooms (location 4) returned a number of possible *Myotis* passes on 4 out of the 14 survey days (4th-8th December). A further likely *Myotis* call was picked up in location 5, also on the ground floor. In addition, two calls likely to be that of a Noctule *Nyctalus noctula*, were recorded during the December recording session.

January 2019

3.3 A single Lesser horseshoe call was recorded (24th January) in the first-floor loft space (location 7). More calls which are suggestive of a Noctule bat were recorded.

February 2019

3.4 Lesser Horseshoe were calls were recorded at 07:14 and 22:33 on the 16th February indicating that they were present during the day. A further Lesser Horseshoe call was recorded on the 17th February. These calls were also from location 7. A further possible *Myotis* call was recorded from the loft space (location 3) on 13th February.

3.5 The calls described as “possible” or “likely to be” above were all pieces of calls or very short samples making positive identification difficult.

3.6 No live bats were seen during the inspections.

Tree assessment

3.7 A single Holly Highclere *Ilex x altaclerensis* located within the ditch at the southern boundary of the site was initially considered to have a low potential to support roosting bats. The tree contained potential bat roosting features including some pruning wounds and thick ivy cover. A deeper hole was located along the main limb which extends over the site boundary into a residential garden. After closer inspection (via ladder) it was discovered that this hole narrows and terminated at about 10cm depth. It showed no evidence of use by bats. Other trees on site were assessed to have negligible potential to support roosting bats (Appendix III).

3.8 During the activity surveys undertaken in 2018 no activity was recorded in relation to any of the trees on site other than commuting and foraging. It is acknowledged that the building was the primary focus of these surveys but the trees were within the visual range of the surveyors during these surveys.

A48 flyover

3.9 Following consultation with the ecologist suggested to us by the local authority ecologist, the location of the previously identified hibernation roost was discovered and is shown in Appendix IV and on Plate 1. It lies approximately 50m northeast of the site. Inspection of this roost found that works have been undertaken to repair and fill gaps (Plate 2). A scattering of droppings, including some old ones were seen and feeding remains were present. It is considered that this roost is no longer used for hibernation purposes but is still active as a night roost and feeding perch.

Plate 1 – Roost under A48 flyover



Plate 2 – Repair works and blocking of gaps





4.0 CONCLUSIONS AND RECOMMENDATIONS

Winter use

- 4.1 It should be noted that the winter of 2018/19 has been relatively mild with average daily temperatures remaining above the 30 year average (Appendix V). February concluded what has been a relatively warm, dry and sunny winter season (December to February) for the country as a whole. Late January into early February experienced the most significant cold spell of the season. Overall it was the 7th warmest, 6th sunniest, and 23rd driest winter in series from 1910 (Met office, 2019). It will go in the record books as the first winter in which the Met Office have officially recorded a daily maximum temperature above 20 C (Met office, 2019).
- 4.2 Despite the cold spell at the end of January and beginning of February there has not been a prolonged cold period and as such a typical hibernation period may not have occurred during the 2018-2019 winter period. Each year licensed bat workers monitor hibernation sites around the UK and the results of many of them are published by the Bat Conservation Trust (BCT). The 2018-2019 data has not been published at the time of writing but anecdotal evidence suggests that hibernation behaviour this year has been as atypical as the weather. Torpid bats have been discovered in locations which would not typically be considered as having hibernation potential (Diane Morgan, personal communication) and one Lesser horseshoe colony spent longer in what is typically the breeding area of the roost with fewer individuals being counted in what is typically the main hibernation location (Diane Morgan, personal communication). Other ecologists have reported that bats at hibernation sites were much more active than they would typically expect.
- 4.3 No bats were seen during the inspections of the A48 flyover. Works have been undertaken to the bridge structure that reduces its suitability for hibernation and it is considered unlikely that this structure is currently used for hibernation purposes. It is considered that it may still be used as a night roost or feeding perch. The proposal will not have any detrimental impact on this roost due to its status and physical separation from the proposed development site.
- 4.4 One of the larger loft spaces within the Main School Building is confirmed as a winter roost for Lesser horseshoe bats. The calls recorded were clear and indisputably made by this bat species. Because of the relatively quiet and directional nature of the calls produced by this species it is likely that the bat would have been within 5m of the detector (Anabat training, 2014 and Appendix VI). The individual must therefore have been within the building and specifically within the first floor loft space. The dates and times of the recordings lead us to conclude that this species is present during the day, i.e. not visiting the building at night from a nearby day roost, and throughout the winter. Summer and winter roost sites are generally no more than 5-10km apart (BCT/BMT Cordah Limited, 2005).

- 4.5 It is also likely that Myotis bats are present in the structure during the winter period but it was not possible to identify exactly where. The majority of potential calls were from the ground floor but also a single detection in the first floor loft space. The term Myotis encompasses several species and the calls could therefore be more varied in directional quality and decibel levels. A precautionary 40m buffer was placed on the location on the Myotis calls (Appendix VI). On this basis it is considered likely that the calls came from within the buildings.
- 4.6 Noctule bats produce very loud calls and can be detected up to 100m away (Anabat training, 2014). Accordingly 100m buffer has been put on the detection locations (Appendix VI). The calls were detected on 11th December and 16th January when it was still relatively mild and just before temperatures fell for a short cold snap (Appendix V). The recordings were of partial calls and it is considered likely that if the call came from within the building a clearer recording would have been made. In addition, Noctule do not typically roost within buildings, although there are occasional examples. On this basis it is considered most likely that the bat recorded was outside the building and the structure is not a winter roost for this species.
- 4.7 Although no records were made for other species, survey in 2018 has established that Common and Soprano pipistrelles and BLE bats use the building at other times of year (SBE 2018). Brown long-eared bats have very quiet call and are notoriously difficult to pick up with a detector. However, they prefer to hibernate at very low temperatures, just above freezing (Bat Conservation Trust, 2010) and it is considered unlikely that the structure provided them with the necessary conditions this winter. In winter pipistrelles species are found singly or in small numbers in the crevices in buildings. This building provides plenty of suitable crevices of all orientations and particularly in light of Diane Morgan's findings (Section 4.2) it is considered possible that small numbers of pipistrelles hibernate in the structure.
- 4.8 The proposal will result in the loss of a winter roost for small numbers of Lesser horseshoe, Myotis and probably pipistrelle as well. It is recommended that the bat house previously described (SBE, 2018 and Appendix VII) remain unaltered i.e. the cool room element of the house will be required to mitigate for the loss of this roost.

Overall use

- 4.9 In addition to the winter use of the building it is also confirmed as a day roost for small numbers of Common Pipistrelle, Soprano Pipistrelle *Pipistrellus pipistrellus/P. pygmaeus*, *Myotis*, Lesser horseshoe *Rhinolophus hipposideros* and Brown-long-eared *Plecotus auritus* bats (SBE, 2018 during the active part of the year (April – October).
- 4.10 It is considered that, given the deteriorating state of the building, it is becoming less and less suitable for use as a maternity site and no evidence to suggest this level of use has been recorded over the course of the 2018/19 surveys or during the previous site inspection completed in 2017 (David Clements Ecology, 2017, referenced in SBE 2018). Brown-long eared bats often exhibit a high fidelity for their roosts (Entwhistle *et.al.*, 1997) and are often the last species found remaining in buildings such as this. It is therefore considered likely that small numbers of Brown long-eared bat use the building as a day roost although use as a maternity roost is unlikely. The average number of bats visible in maternity roosts for this species is 15 – 20 individuals although the actual number of a maternity colony averages 30 – 50 individuals (Entwhistle *et al.*, 2000). Similarly, based on the number of Lesser horseshoe droppings observed, the presence of a maternity roost for this species is unlikely – the size of recorded maternity colonies ranges from 30 – 500 animals (Schofield, 1997). There are however areas of loft that were not possible to physically inspect and these may provide further suitable conditions but due to the physical decay of the structure it is again considered unlikely to be in large numbers. It is considered that this site previously, i.e. when in use and in a better state of repair, would have supported greater numbers of bats. In its current state it supports what are likely to be remnants of previously larger colonies. If left to deteriorate further it will become increasingly less suitable for use by bats and numbers will dwindle further.
- 4.11 It is considered highly unlikely that pipistrelles use the structure for maternity purposes being generally found in newer buildings and typically in features, such as between tiles and felt or cavity walls, which are lacking at this site.
- 4.12 A derogation licence must be obtained prior to any works taking place on site. A detailed method statement will be required as part of the licence application and will be subject to approval by NRW during the licencing process. The main elements of the mitigation strategy are outlined in the SBE 2018 report and remain unchanged in light of the new data gathered on use over the winter and reported in this current document.
- 4.13 The proposed bat house (Appendix VII) has been designed to provide suitable conditions for the range of species and roost types identified at the site. The location of the bat house within the site has been carefully considered in conjunction with a range of constraints that apply to the site including significant root protection

zones and the flyover easement zone which must be kept clear for maintenance. These constraints are illustrated in Appendix VIII.

- 4.14 Connectivity from the bat house to the wider landscape has been carefully incorporated into the site design maintaining a vegetated corridor (Appendix IX) along the western boundary and a sensitive lighting plan (Appendix X). The external lights are all fixed in a downward direction and fitted with motion sensors and set to remain on for a maximum of one minute. The bollards at the western edge of the carpark are floor mounted and allow the vegetative corridor along this boundary to achieve a less than 0.5 lux (Appendix X) which is considered acceptable for continued use by the sensitive species present on this site.

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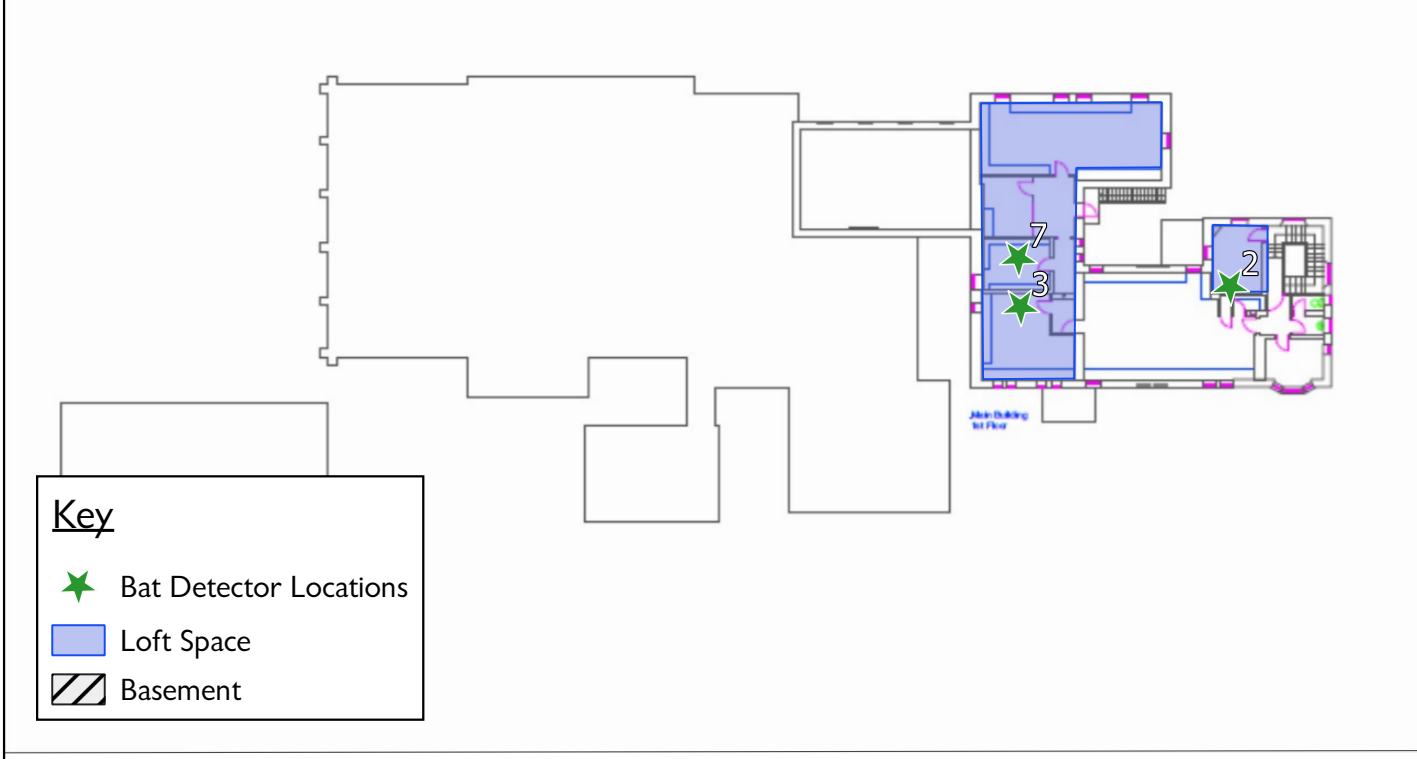
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APPENDIX I BAT DETECTOR LOCATION PLAN

Ground Floor



First-Floor



PRELIMINARY	PLANNING	DESIGN	TENDER	CONSTRUCTION
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Hafod Housing Association
Former Cowbridge School, Aberthin Road
 E1884501
 Bat Detector Locations
 Initials DJ
 08 February 2019

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APPENDIX II BAT HIBERNATION SURVEY RESULTS

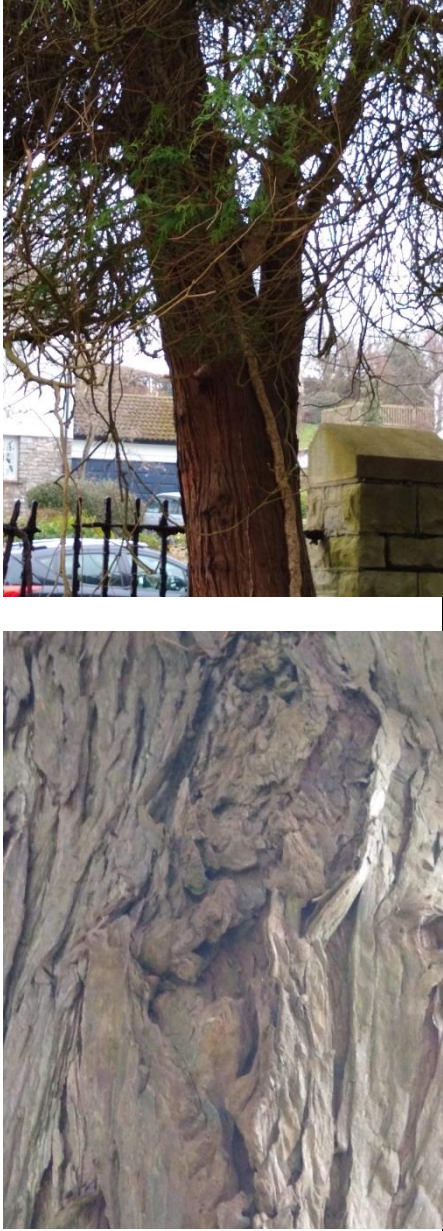
		Express	Express	Express	Anabat	Anabat	Anabat		
		1 - Basement	2 - Cupboard	3 - Loft	4 - Ground floor front	5 - Ground Floor Rear	6 - Ground Floor		
Dec-18									
Deployed	04/12/2018				Rain. Possible Myotis	Other			
	05/12/2018				Possible Myotis	Other			
	06/12/2018				Possible Myotis	Other			
	07/12/2018	Rain & Other	Rain		Possible Myotis	Other, Rain, Possible Myotis			
	08/12/2018	Noise	Rain		Possible Myotis	Rain			
	09/12/2018	Noise							
	10/12/2018								
	11/12/2018				Possible Noctule				
Batteries changed			Batteries dead	Batteries dead			Detector failed		
	12/12/2018	Noise	Rain						
	13/12/2018								
	14/12/2018								
	15/12/2018								
	16/12/2018	Noise							
	17/12/2018								
Collected	18/12/2018								
		Batteries ok	Batteries ok	SD Card Failed	Flickered, low battery	Flickered, low battery			


		Anabat	Peersonic	Anabat	Anabat	Anabat	Express	Express	Express
		1 - Basement	1 - Basement	2 - Cupboard	3 - Loft	7 - Loft further round where LHS seen	4 - 1st floor front	5 - 1st Floor Rear	6 - First Floor
	Jan-19	Boarded up so not able to access		Deployed	Deployed	Deployed	Deployed	Deployed	Deployed
	16/01/2019			Rain	Rain	Rain	Possible Noctule tiny bit of a call	Rain	Rain
	17/01/2019								Rain
	18/01/2019								Rain
	19/01/2019						Rain		
	20/01/2019								
	21/01/2019								
	22/01/2019								
	23/01/2019	Deployed	Deployed						
Batteries changed				Batteries dead	Batteries ok	Batteries dead	Express sabotaged 20/01/2019 - collected. Not redeployed	Express sabotaged 20/01/2019 - collected. Not redeployed	Express sabotaged 20/01/2019 - collected. Not redeployed
	24/01/2019			Noise - us resetting		LHS			
	25/01/2019								
	26/01/2019								
	27/01/2019								
	28/01/2019								



	29/01/2019	Batteries changed	Batteries changed	Collected	collected	collected			
	30/01/2019								
	31/01/2019								
	01/02/2019								
	02/02/2019								
	03/02/2019								
	04/02/2019								
	05/02/2019	Collected	Collected						
		Anabat - Express	Anabat	Annabat	Anabat - Express				
	Feb-19	1 - Basement	2- Cupboard	3 - Loft	7 - Loft further round where LHS was seen				
Deployed	05/02/2019		Noise of us setting up						
	06/02/2019								
	07/02/2019				Rain				
	08/02/2019				Rain				
	09/02/2019	Noise							
	10/02/2019	Bird call							
	11/02/2019								
Batteries changed		Batteries ok	Batteries ok	Batteries ok	Batteries ok				
	12/02/2019		Noise of us re-setting						
	13/02/2019			Myotis					


	14/02/2019								
	15/02/2019								
	16/02/2019				LHS (07:14 & 23:33)				
	17/02/2019				LHS				
	18/02/2019								
Collected	19/02/2019	Flickered, low battery	Flickered, low battery	Flickered, low battery	Flickered, low battery				

APPENDIX III TREE ASSESSMENT REPORT

Map ID	Tree Species	DBH (m)	Details of features	Grade (H, M, L)	Picture
T1	Conifer sp.	0.75	Very shallow cracks in the trunk where the bark peels. Male sparrow being very vocal in this tree.	Negligible	

Map ID	Tree Species	DBH (m)	Details of features	Grade (H, M, L)	Picture
T2	Yew	2.5-3	<p>Small (5x10cm) hole in trunk about 0.5m from the ground, <10cm deep.</p> <p>Approx. 4m up main trunk, similar hole as described above but very shallow, doesn't go anywhere.</p>	Negligible	

Map ID	Tree Species	DBH (m)	Details of features	Grade (H, M, L)	Picture
T3 & T4	Hawthorn & Ash	<0.5	None	Negligible	
T5	Highclere Holly	2 Double trunk	Some broken branch or pruning wounds – mostly shallow but one on the main limb (which goes across the site boundary into the residential garden) has a deeper hole. Closer inspection confirmed it is approx. 10cm deep and there are no signs of use by bats. A split limb with a large panel of bark lifted. A single thick ivy trunk up one site.	Initially L, but no further survey considered necessary	

Map ID	Tree Species	DBH (m)	Details of features	Grade (H, M, L)	Picture
					

APPENDIX IV A48 FLYOVER ROOST LOCATION



Key

 Red line

 A48 roost location

 Buildings

Google Satellite Image 2018

Google.cn Normal

	PLANNING	DESIGN	TENDER	CONSTRUCTION
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Client:Hafod Housing Association

Drawing Title: Site it relation to A48 roost

Project:Cowbridge School

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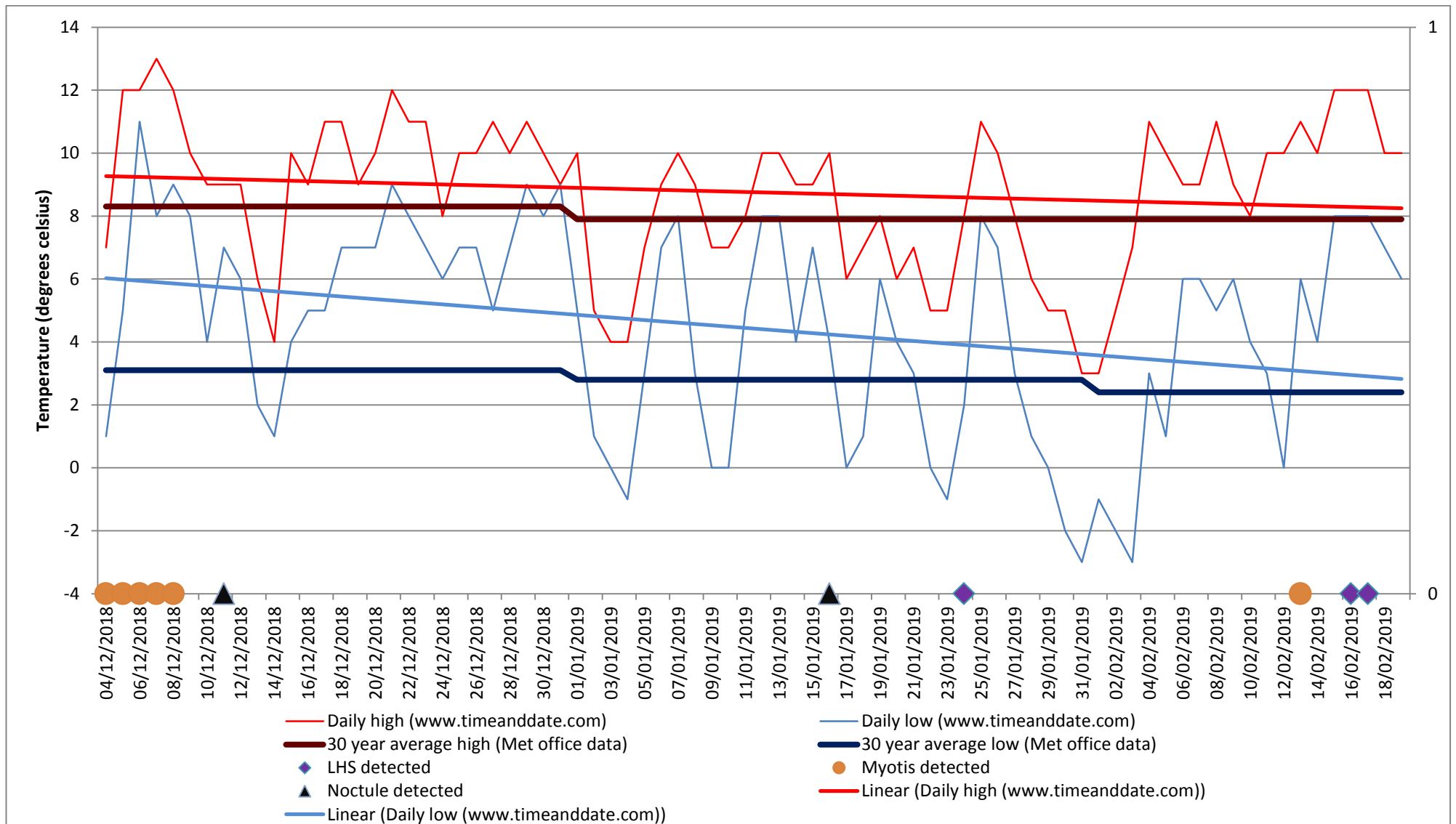
Project Code: E1884501/Doc 02

Initials DF 05 March 2019

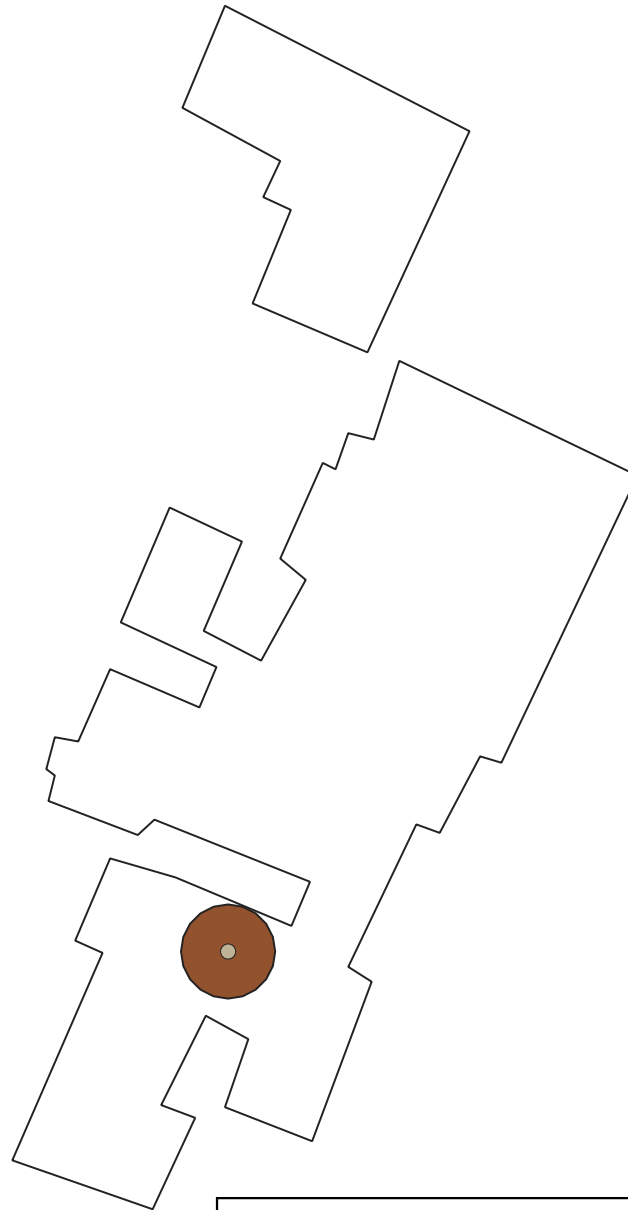


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


APPENDIX V TEMPERATURE GRAPH



APPENDIX VI BAT RECORDING LOCATIONS AND DETECTION BUFFERS




Key

-  Buildings
-  5m Buffer
-  LHS calls



	PLANNING	DESIGN	TENDER	CONSTRUCTION
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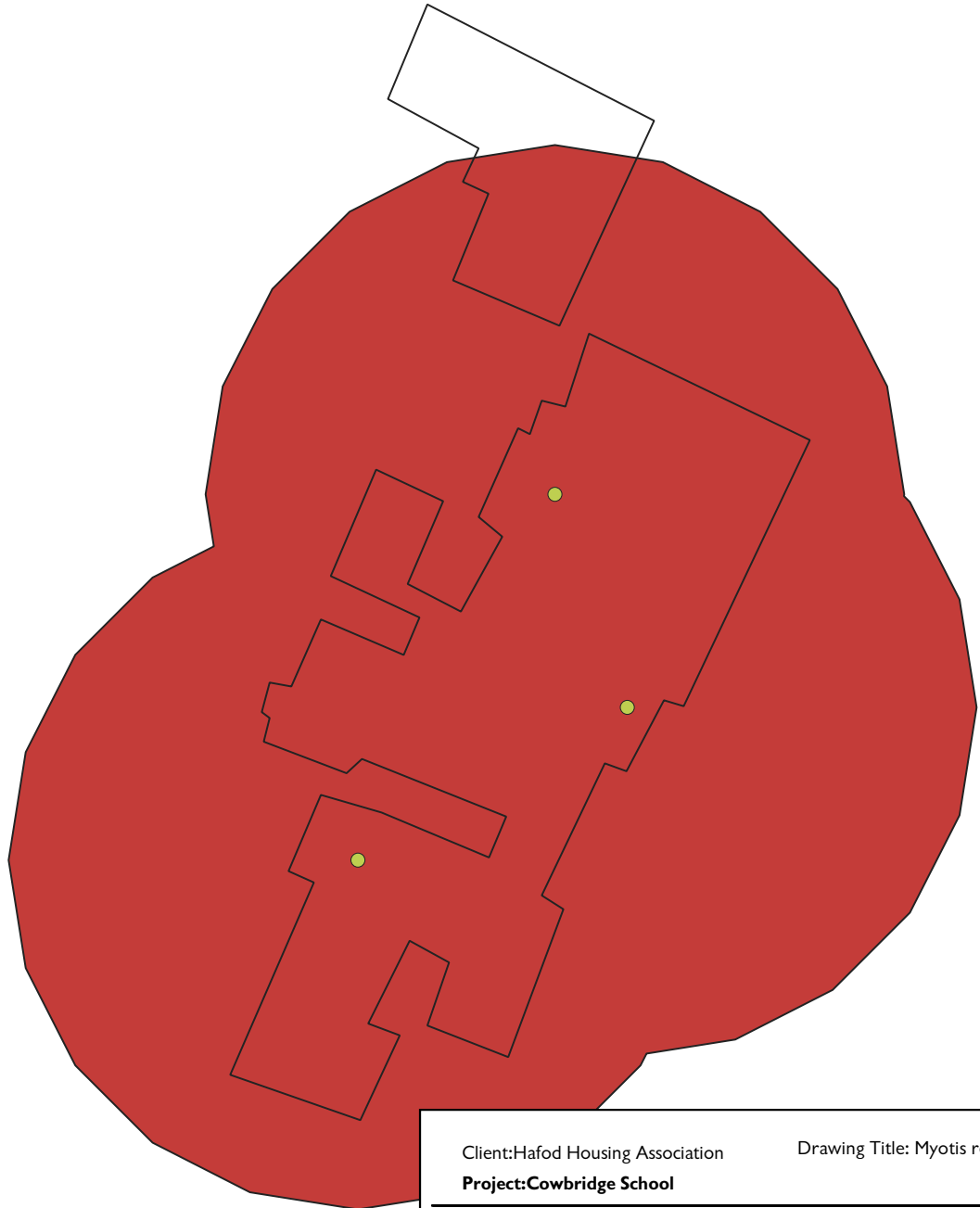
<p>Client: Hafod Housing Association Project: Cowbridge School</p> <hr/> <p>Project Code: E1884501/Doc 02</p>	<p>Drawing Title: Lesser horseshoe records and range</p> <p>Initials DF 04 March 2019</p>
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Key

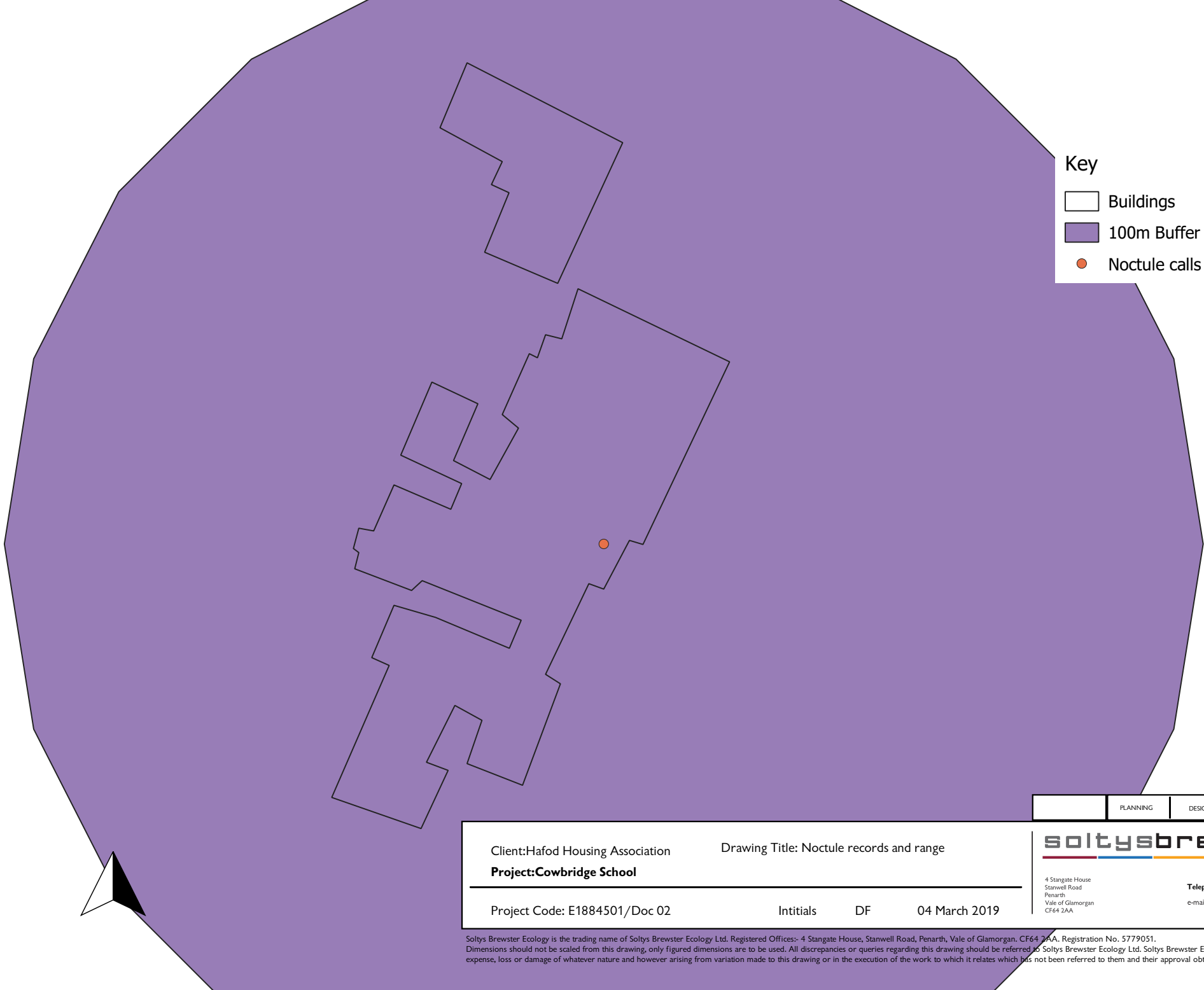
-  Buildings
-  40m Buffer
-  Myotis calls






	PLANNING	DESIGN	TENDER	CONSTRUCTION
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<p>Client: Hafod Housing Association Project: Cowbridge School</p> <hr/> <p>Project Code: E1884501/Doc 02</p>	<p>Drawing Title: Myotis records and range</p> <p>Initials DF 04 March 2019</p>	<p>soltysbrewster</p> <hr/> <p>4 Stangate House Stanwell Road Penarth Vale of Glamorgan CF64 2AA</p> <p>Telephone:- + 44(0) 29 2040 8476 e-mail:- enquiry@soltysbrewster.co.uk</p>
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Soltys Brewster Ecology is the trading name of Soltys Brewster Ecology Ltd. Registered Offices:- 4 Stangate House, Stanwell Road, Penarth, Vale of Glamorgan, CF64 2AA, Registration No. 5779051. Dimensions should not be scaled from this drawing, only figured dimensions are to be used. All discrepancies or queries regarding this drawing should be referred to Soltys Brewster Ecology Ltd. Soltys Brewster Ecology Ltd accept no liability for any expense, loss or damage of whatever nature and however arising from variation made to this drawing or in the execution of the work to which it relates which has not been referred to them and their approval obtained.



Key

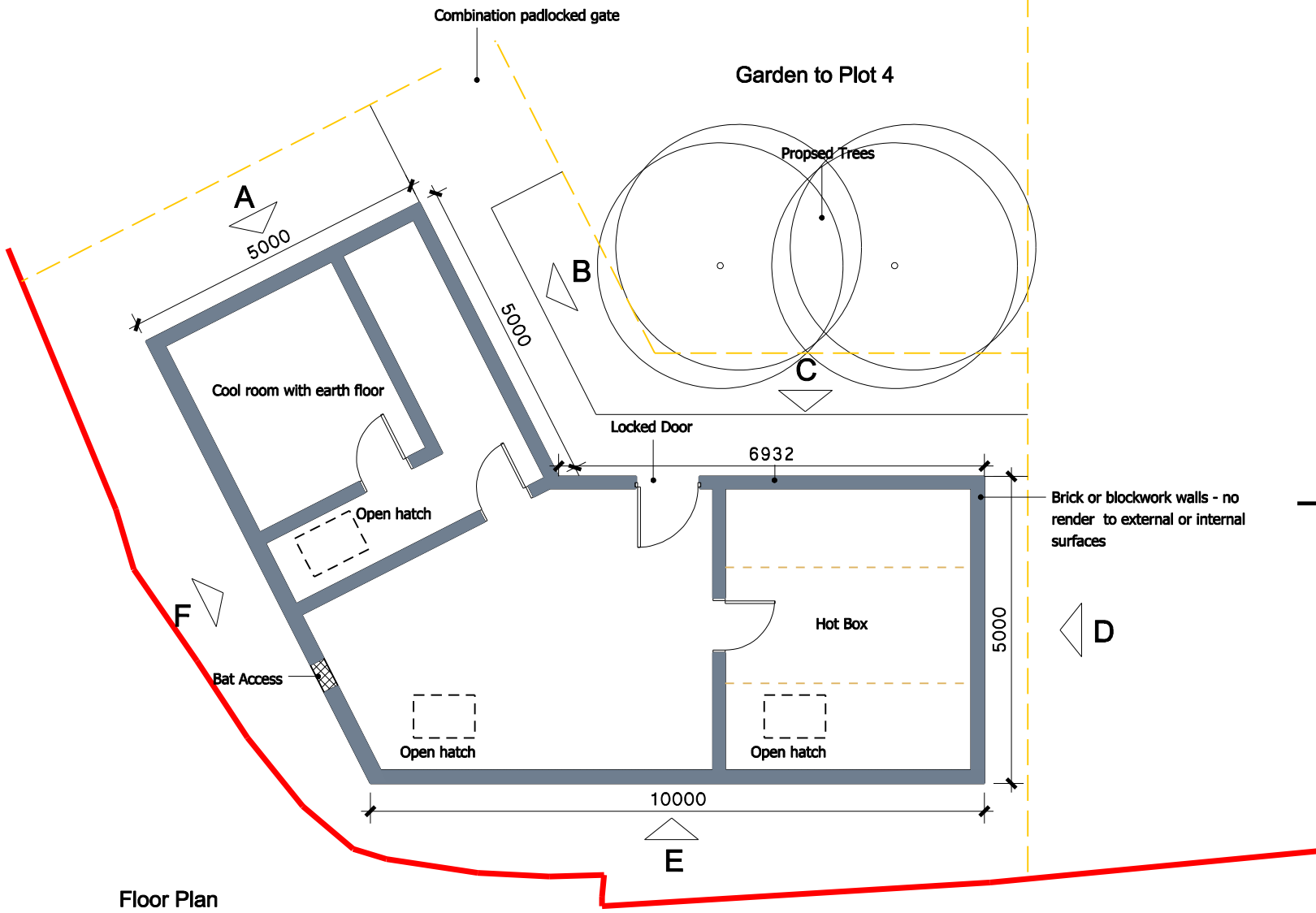
-  Buildings
-  100m Buffer
-  Noctule calls

	PLANNING	DESIGN	TENDER	CONSTRUCTION
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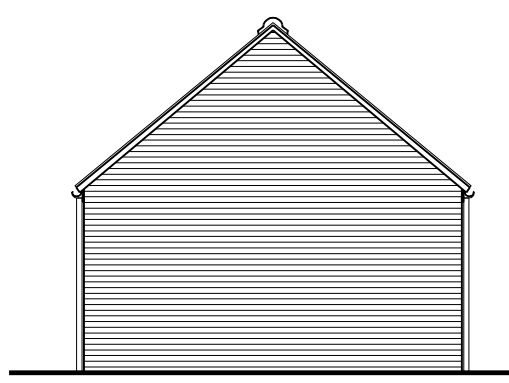
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Project: Cowbridge School		
Project Code: E1884501/Doc 02	Initials DF	04 March 2019
4 Stangate House Stanwell Road Penarth Vale of Glamorgan CF64 2AA		Telephone:- +44(0) 29 2040 8476 e-mail:- enquiry@soltysbrewster.co.uk

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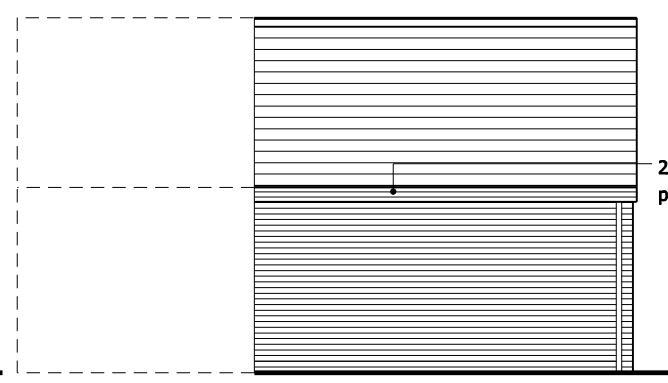
APPENDIX VII BAT HOUSE DETAILS



Floor Plan

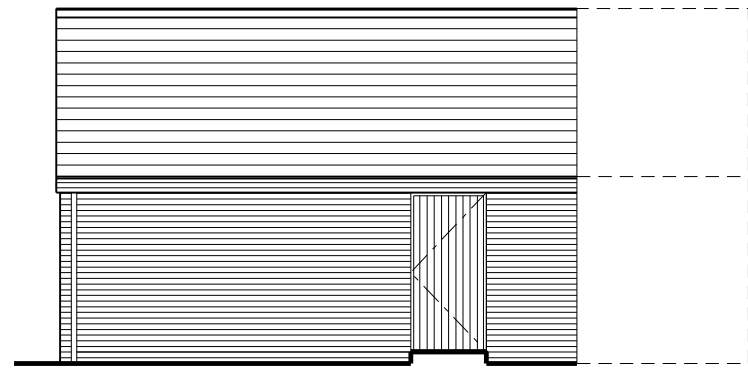


Elevation A

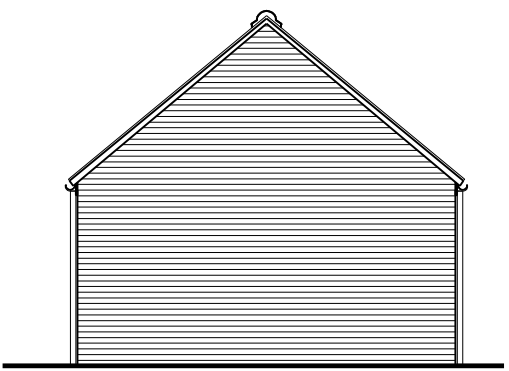


Elevation B

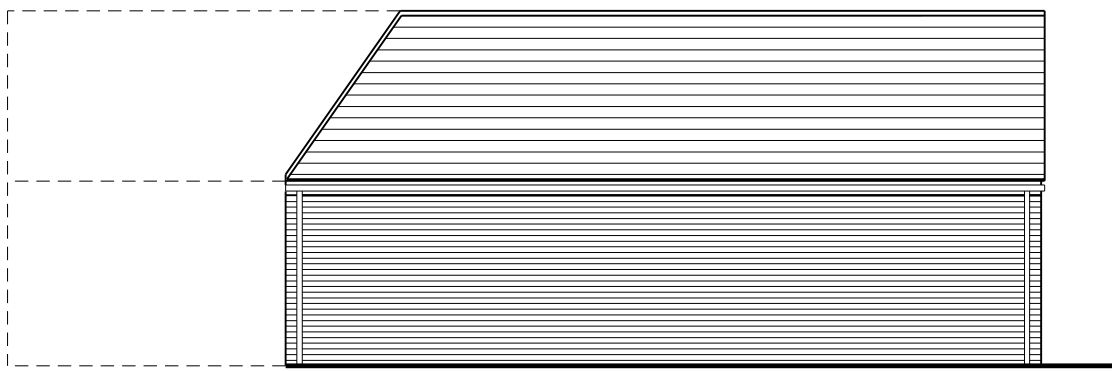
20-30mm gap between fascia & wall to permit bat access



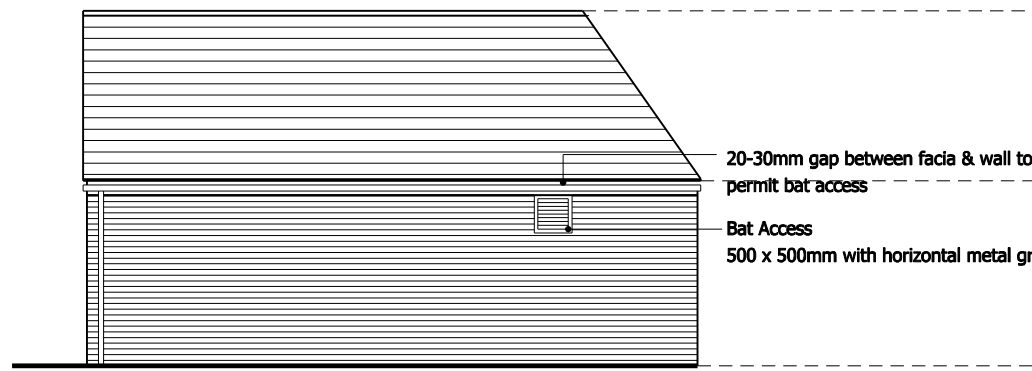
Elevation C



Elevation D



Elevation E



Elevation F

20-30mm gap between fascia & wall to permit bat access
Bat Access
500 x 500mm with horizontal metal grill

Boundary Treatments Key

- Site Boundary - Condition of fence to be assessed and replaced with 1800mm high timber close boarded fence if needed.
- - - 1800mm high timber close boarded fence.

Finishes

- Walls**
Stock facing brickwork.
No render.
- Fascias**
Dark grey PVCu (RAL 7016).
- Doors**
Timber door.
- Rainwater Goods**
Black PVCu.
- Pitched Roof**
Cambrian slate tile (grey).
with bitumastic felt & timber battens.

pentan
architects

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Cardiff CF11 9LJ

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Project
Aberthin Road, Cowbridge

Client
Hafod Housing

Drawing Title

Proposed Bat Roost

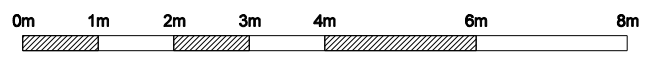
Date
Aug '19

Scale
1:100 @ A3

Drawing No.
3703 / PA / 230

Rev.

NOTES. Do not scale. All dimensions are in millimetres unless stated otherwise



APPENDIX VIII CONSTRAINTS DETERMINING PROPOSED BAT HOUSE LOCATION

The colours on the following plan represent the following:

- Green areas are protected trees and tree protection areas.
- Orange is the easement zone away from the flyover.
- Purple is the location of the buildings – the Planning Authority would expect us to address the main road, so they must be sited in these locations.
- Light blue is the parking areas – car parking must be sited adjacent to the dwellings they serve, but in effect, by this stage, the only logical location for the bat house is the south of the site where it is away from trees; flyover easement; and buildings, as well as being secluded.

Revisions		
A	Minor amendments to apartment block and houses. Scale bar added	14/12/2018
B	Layout amended - houses rotated, apartment block split, number reduced.	15/06/2019
C	Car parking number reduced (in line with apartment number reduction). Amenity space enlarged and gardens around apartments updated. Bike store location changed.	16/08/2019



Boundary Key

	TYPE 01 - 1100mm high black powder coated steel railings
	TYPE 02 - 1800mm high timber close boarded fencing
	TYPE 03 - Proposed retaining wall in strict accordance with Structural Engineer's specification
	TYPE 04 - 1800mm high black powder coated steel railings
	TYPE 05 - 1200mm high flush fitting black powder coated steel railings fixed atop low 600mm high wall
	TYPE 06 - 1100mm high black powder coated steel railings above existing stone boundary wall and between existing / new stone piers
	TYPE 07 - 450mm high facing brick wall

Landscape Key

	A Grass / turfed areas
	B Permeable concrete block pavours
	C Fine grade tarmac

General Key

	Plot number
	Timber garden shed (suitable for bike storage)
	3-arm rotary clothes line
	Site Boundary
	450 x 450mm pre-cast concrete paving slabs
	Existing trees to be retained. Dashed line indicates root protection zone
	Existing trees to be removed
	New tree positions in accordance with Landscape Architect's design & specification
	New low level vegetation in accordance with Landscape Architect's design & specification
	2.6m x 4.8m parking space

General Key

	Plot number
	Timber garden shed (suitable for bike storage)
	3-arm rotary clothes line
	Site Boundary

NOTES

Site plan developed using detailed survey prepared by ALT Surveys ref: "156073A / 156074A" dated: 5th November 2018.

Plans are subject to imposed planning conditions and thorough drainage investigations. Position of all existing in use and redundant drainage runs to be confirmed following further investigation.

Position of any existing underground services to be confirmed following further investigation.

Refer to engineer's proposals for details of upgrading works to existing highways, proposed highways within new development and for proposed site levels and drainage details.

Refer to landscape architect's proposal for details of soft landscaping.

Ownership of all boundaries to be confirmed by client.

SCHEDULE OF ACCOMMODATION

4no. wheelchair accessible apartments
4no. 2B3P apartments
2no. 2B4P apartments
23no. 1B3P apartments
Total = 30 apartments
4no. houses (1 x 4B6P, 1 x 2B4P and 2 x 3B5P)
Total = 34 units

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architects

Project
Aberthin Road, Cowbridge

Date
Nov '18

Client
Hafod Housing

Scale
1 : 200 @ A1

Drawing Title
Proposed Site Layout

Drawing No.
3703 / PA / 010

22 Cathedral Road
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Rev.
C

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NOTES Do not scale. All dimensions are in millimetres unless stated otherwise

APPENDIX IX PROPOSED SITE LAYOUT AND PLANTING PLAN



Boundary Key

	TYPE 01 - 1100mm high black powder coated steel railings
	TYPE 02 - 1800mm high timber close boarded fencing
	TYPE 03 - Proposed retaining wall in strict accordance with Structural Engineer's specification
	TYPE 04 - 1800mm high black powder coated steel railings
	TYPE 05 - 450mm high facing brick wall
	TYPE 06 - 1100mm high black powder coated steel railings above existing stone boundary wall and between existing / new stone piers

Landscape Key

	A Grass / turfed areas
	B Permeable concrete block pavours
	C Fine grade tarmac

General Key

	450 x 450mm pre-cast concrete paving slabs
	Existing trees to be retained. Dashed line indicates root protection zone
	Existing trees to be removed
	New tree positions in accordance with Landscape Architect's design & specification
	New low level vegetation in accordance with Landscape Architect's design & specification
	2.6m x 4.8m parking space

General Key

	Plot number
	Timber garden shed (suitable for bike storage)
	3-arm rotary clothes line
	Site Boundary - Condition of fence to be assessed and replaced with 1800mm high close boarded timber fence if needed.

NOTES

Site plan developed using detailed survey prepared by ALT Surveys ref: "156073A / 156074A" dated: 5th November 2018.

Plans are subject to imposed planning conditions and thorough drainage investigations. Position of all existing in use and redundant drainage runs to be confirmed following further investigation.

Position of any existing underground services to be confirmed following further investigation.

Refer to engineer's proposals for details of upgrading works to existing highways, proposed highways within new development and for proposed site levels and drainage details.

Refer to landscape architect's proposal for details of soft landscaping.

Ownership of all boundaries to be confirmed by client.

SCHEDULE OF ACCOMMODATION

4no. wheelchair accessible apartments
4no. 2B3P apartments
2no. 2B4P apartments
23no. 1B3P apartments
Total = 30 apartments
4no. houses (1 x 4B6P, 1 x 2B4P and 2 x 3B5P)
Total = 34 units

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architects

Project
Aberthin Road, Cowbridge

Client
Hafod Housing

Drawing Title
Proposed Site Layout

Date
Aug '19

Scale
1 : 200 @ A1

Drawing No.
3703 / PA / 210

Rev.
A

22 Cathedral Road
Cardiff CF11 9LJ

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NOTES Do not scale. All dimensions are in millimetres unless stated otherwise

planting specification notes

- Tree locations are subject to confirmation of engineering and foundation details. Foundations shall comply with guidelines set by structural engineering consultants, and shall accord with the current NHBC Standards 'Building near Trees' and shall accommodate immediate and future impact of tree or shrubs on buildings and their foundations.
- The landscape contractor is to make him/herself aware of any underground services prior to planting.
- Any proposed substitutions, whether species, cultivar, pot size or other specification, must be approved by landscape architect prior to planting;
- Any significant layout changes necessitating revised details (such as new retaining walls casting shade on planting beds) should be reported to the landscape architect;
- All container grown stock to be in peat-free compost;
- All native stock to be of local provenance;
- All Nursery Stock to comply with BS3936 Part 1:1992 and all subsequent amendments;
- All Landscape operations to comply with BS4428:1989 and all subsequent amendments;
- All soils to be imported; topsoil and subsoil to be stored in separate, non-overlapping mounds and topsoil should be stripped from any areas used for subsoil storage. The minimum amount of compaction should be applied when forming soil storage mounds, they should not be driven across. Topsoil mounds should be no greater than 2m in height and subsoil mounds should be no higher than 3m;
- The imported soils for tree and shrub planting will comprise sandy loams as per BS 3882:2015 and BS 8601:2013, of slightly acid (pH 5.0-6.5) on placement and with excellent drainage and aeration properties.
- The protection of topsoil and subsoil for planting areas should accord with the Construction Code for the Sustainable Use of Soils on Construction Sites (DEFRA, 2009), BS 3882:2015 and BS 8545:2014;
- Great care must be taken to preserve existing soil quality and integrity. The planting beds will be tyre-ripped to relieve any compaction due to construction works and to ensure the substrate to receive the subsoil is free draining;
- Shrub planting areas to be spread with topsoil to a depth of 300mm for planting beds, above 300mm subsoil; topsoil allowed to settle prior to planting;
- Tree planting areas to be spread with topsoil to a depth of not less than 300mm above 700mm subsoil; topsoil allowed to settle prior to planting;
- Tree pits to be excavated to minimum 1m x 1m x depth of rootball. In sloping ground, maintain horizontal bases and vertical sides with no less than minimum depth throughout. Break up bottoms of pits to a depth of 150mm and scarify sides.
- Tree supply, planting and aftercare must accord with BS 8545:2014. All non-biodegradable wrappings, cages etc. to be completely removed on planting. Biodegradable wrappings also to be removed, but may, where root-ball collapse is a concern, be cut and peeled back to no less than one-third root-ball height;
- Containerised trees to be staked with short double stakes, maximum height one quarter the height of the tree, secured with biodegradable hessian tree ties'
- All rootballed trees to be anchored underground with Greenleaf Rootball Fixing System;
- All trees to be planted with Greenleaf 'Root Rain Urban' watering pipes, fitted according to manufacturer's instructions;
- All trees in grass or wildflower areas to be planted in an edged and mulched bed, 1000mm diameter;
- All planting to receive Green-Tech Mycorrhiza Rootgrow, either as dry granule (container planting areas) or root dipping gel (bare root planting). Application according to manufacturer recommendation;
- All planting beds (but not tree pits) to receive peat-free compost during cultivations at a rate of 1m3 to 20m2 and slow release fertiliser (e.g. Ficote 140) at rate of 25g/plant; beds to be thoroughly watered following planting and before mulching;
- For new wildflower areas and remedial areas: Wildflower grass seed to be Germinol WFG8 'Hedgerows and Shaded areas' sown at 5g/m2 on finely cultivated subsoil using shake-aerator; spread with 10-15mm layer of compost, worked into the top layer and watered in (to ensure some nitrogen but low phosphorus);
- Hornbeam hedges to be planted in double staggered rows at 5/linm; all hedges to be planted a minimum of 400 from adjacent kerb line or wall foundations.
- All soils allowed to settle for at least one week prior to planting, and then topped up as necessary;
- Settled soils to have a slightly raised profile in centre of bed, with gentle falls towards kerbs of paving;
- Bark mulch to be dark brown mixed conifer bark of particle size 8-35mm and pH range 5.0-7.0 to BS PAS 100:2005; mulch to be laid to 75mm (settled) depth;
- Watering to continue as required throughout first growing season following planting;
- Excessive concrete haunching to kerbs or excessive concrete to wall foundations to be reported to site manager for removal prior to planting.
- Any poor site or soil preparation or conditions to be reported to site manager for remediation prior to planting.

planting specification

Spacing	ID	No.	Latin Name	Scheduled Size	
TREE	Ag	5	Alnus glutinosa	16-18cm	Rootballed
4/m2	AjR	102	Aucuba japonica 'Rozannie'	30-40cm, 3L	3 breaks in lower third, bushy
6/m2	BSil	53	Bergenia 'Silberlicht'	30-40, 5L	Full pot
2/m2	Ca-1	217	Corylus avellana	1+2, 60-80cm	BR
5/linm	Cb-H	105	Carpinus betulus	100-125cm, BR	1+2, 5 breaks
2/m2	Cs	179	Cornus sanguinea	1+1, 60-80cm	BR
3/m2	CsK	77	Cornus stolonifera 'Kelseyi'	30-40cm, 3L	Bushy
4/m2	CWD	199	Choisya dewitteana 'White Dazzler'	40-50cm, 3L	3 breaks in lower third
4/m2	EGB	21	Escallonia exoniensis 'Gold Brian'	30-40cm, 3L	3 breaks in lower third
4/m2	HHB	39	Hebe 'Midsummer Beauty'	30-40cm, 3L	3 breaks in lower third
5/m2	Ho	55	Helleborus x hybridus	20-30cm, 3L	Full pot
3/m2	HPD	69	Hydrangea paniculata 'Pink Diamond'	30-40cm, 5L	5 breaks in lower third
3/m2	Hq	14	Hydrangea quercifolia	30-40cm, 5L	5 breaks in lower third
3/m2	HW	48	Hebe 'Wirimist'	30-40cm, 5L	3 breaks in lower third
2/m2	la	176	Ilex aquifolium	60-80cm, 3L	2/3 breaks in lower third
1/m2	Lp	100	Lonicera periclymenum	60-90cm, 3L	min 2 breaks, cane removed on planting
TREE	Lt	2	Liriodendron tulipifera	20-25cm	Rootballed, 1.5m clear stem
4/m2	Ma	133	Mahonia aquifolium 'Apollo'	20-30cm, 3L	main leader, well branched
4/m2	Mj	124	Mahonia japonica	20-30cm, 3L	main leader, well branched
TREE	MxgG	4	Magnolia x grandiflora 'Gallissoniere'	200L 4m high	2m clear stem
4/m2	PLR	82	Photinia x fraseri 'Little Robin'	40-60, 7L	5 strong breaks in lower third
2/m2	Psp	41	Prunus spinosa	1+1, 60-80cm	BR, 3 breaks
4/m2	RMB	45	Rosa x alba 'Maiden's Blush'	30-40, 3L	5 breaks in lower third
4/m2	RSS	30	Rosmarinus officinalis 'Severn Sea'	30-40cm, 3L	3 breaks in lower third
4/m2	Sc	49	Sarcococca confusa	30-40cm	3L
4/m2	SjFi	45	Spiraea japonica 'Firelight'	30-40, 3L	Bushy, 5 breaks in lower third
2/m2	SR	29	Skimmia 'Reevesiana'	30-40cm, 7L	7 breaks in lower third
3/linm	Tb	138	Taxus baccata	40-60cm	og or br
2/m2	Vo	144	Viburnum opulus	1+2, 60-90cm	BR



legend

- proposed ornamental shrub beds
- proposed native planting beds
- proposed hedge
- proposed turf
- seeding with wildflower mix (refer to ground preparation notes above)
- proposed trees
- existing trees and vegetation (shrub and herbaceous layer) retained; RPAs shown orange (refer to Treescene report)
- existing tree/hedge to be removed

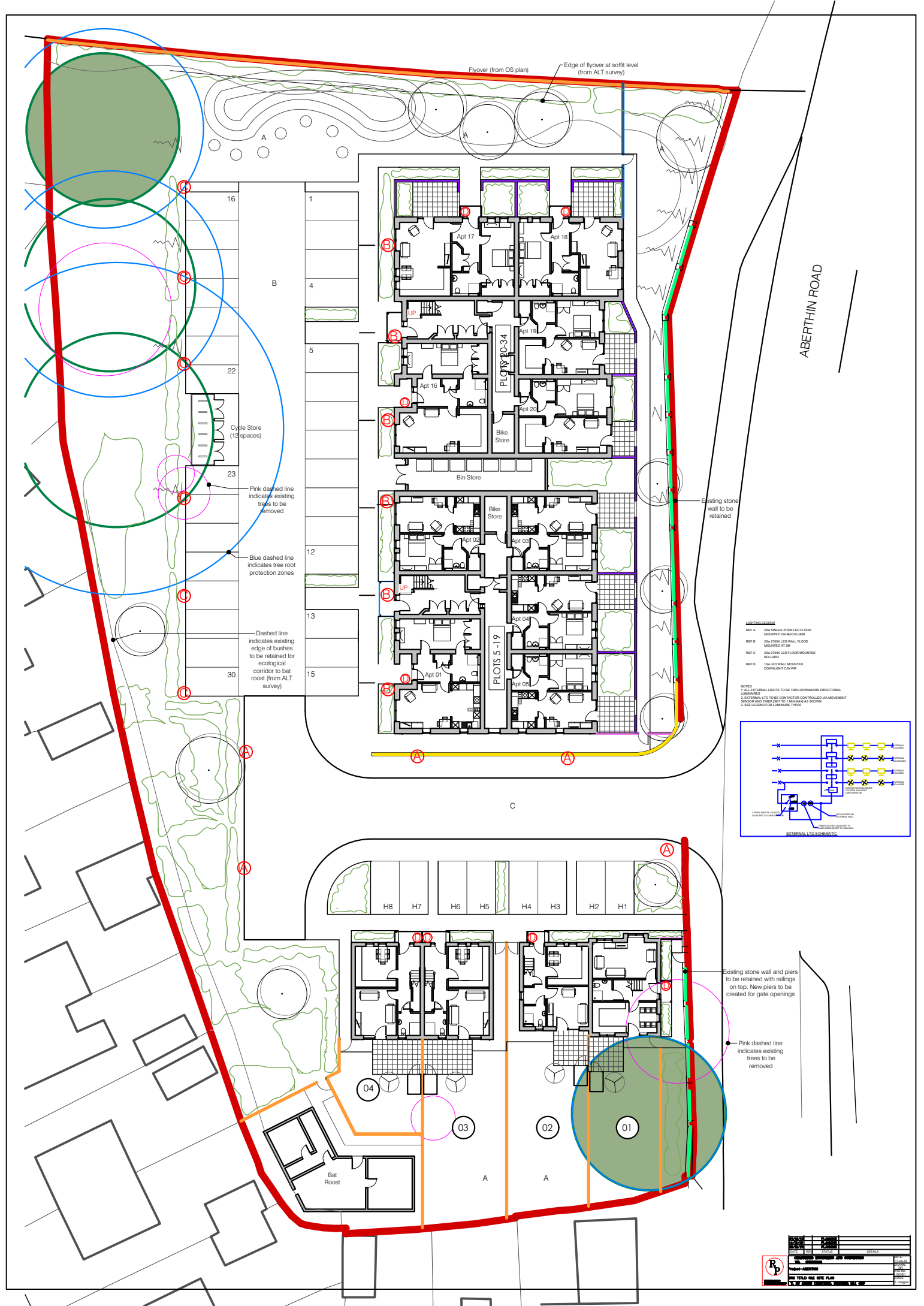
Revision A September 2019: Amended layout

catherine etchell associates
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t: 01874 636903 • e: landscape@etchell.info
Parc Beddw • Libanus • Brecon • LD3 8NN

job title Aberthin, Cowbridge	drawing title Planting Plan	scale • 1:250 at A1
client Hafod	date • December 2018	drawn • CE
	drawing number • 421.01	revision • A

APPENDIX X SENSITIVE LIGHTING PLAN



Flyover (from OS plan)
Edge of flyover at soffit level (from ALT survey)

ABERTIN ROAD

Cycle Store (12 spaces)

Pink dashed line indicates existing trees to be removed

Blue dashed line indicates tree root protection zones

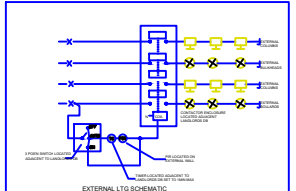
Dashed line indicates existing edge of bushes to be retained for ecological corridor to bat roost (from ALT survey)

Existing stone wall to be retained

LEGEND

- REF A 20W SINGLE 2700K LED FLOOD MOUNTED ON BRICKWORK
- REF B 20W 2700K LED WALL FLOOD MOUNTED AT 3M
- REF C 20W 2700K LED FLOOR MOUNTED DOWNLIGHT
- REF D 10W LED FLOOR MOUNTED DOWNLIGHT C/W FIP

- NOTES**
1. ALL EXTERNAL LIGHTS TO BE 100% DOWNWARD DIRECTIONAL
 2. EXTERNAL LITS TO BE CONTACTOR CONTROLLED VIA MOVEMENT SENSING TRIGGERS TO MINIMISE LIGHT POLLUTION
 3. SEE LEGEND FOR LAMINAIRE TYPES



Existing stone wall and piers to be retained with railings on top. New piers to be created for gate openings

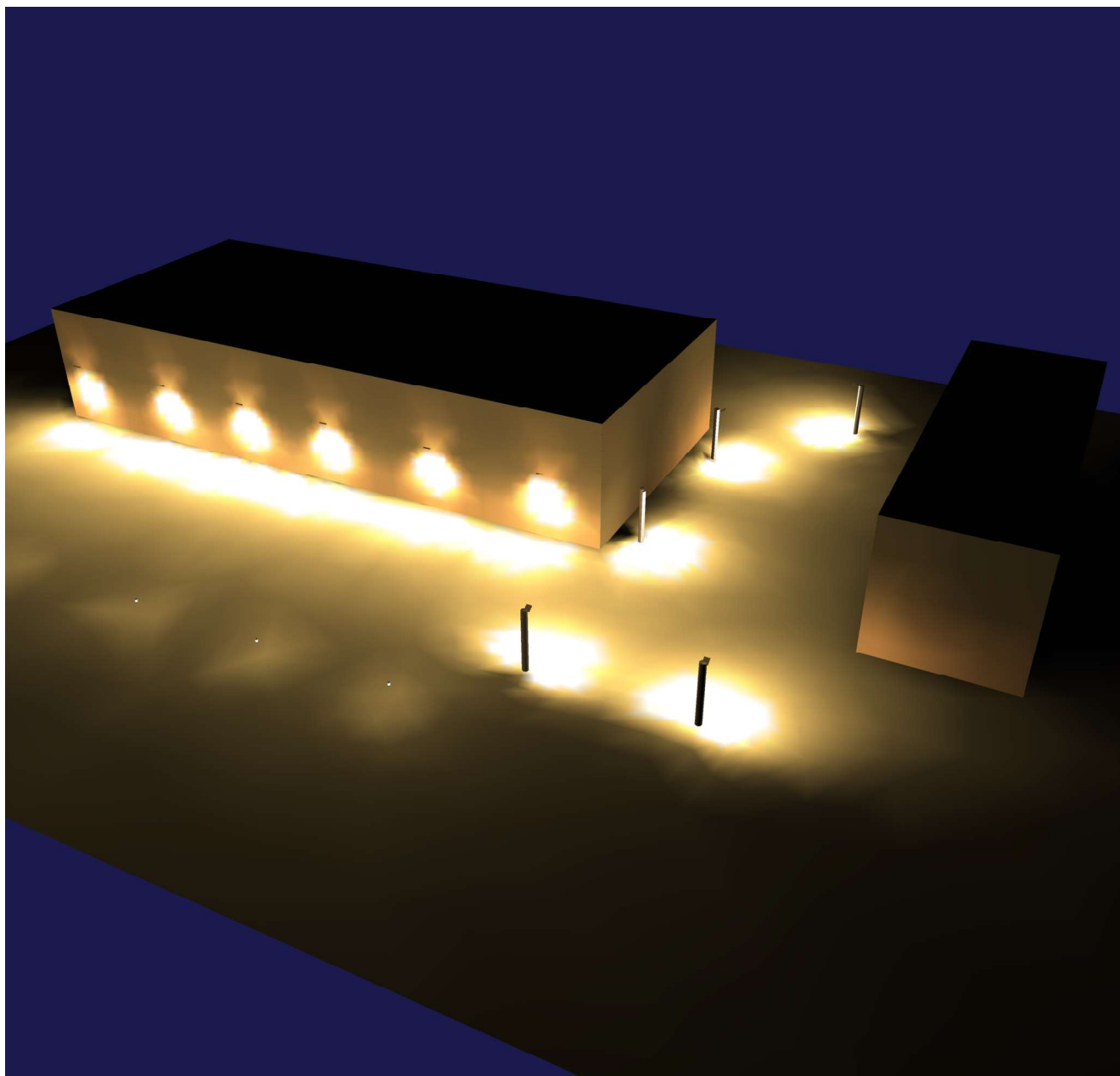
Pink dashed line indicates existing trees to be removed

		REVISIONS	
NO.	DATE	BY	CHKD
1	15/03/2024
PROJECT INFORMATION		CLIENT	
15/03/24 10:00 AM		...	



1.3 Calculation results, Plots as (Bollards, Eyelids, Floods)

1.3.9 3D luminance, View 1



Luminance in the scene

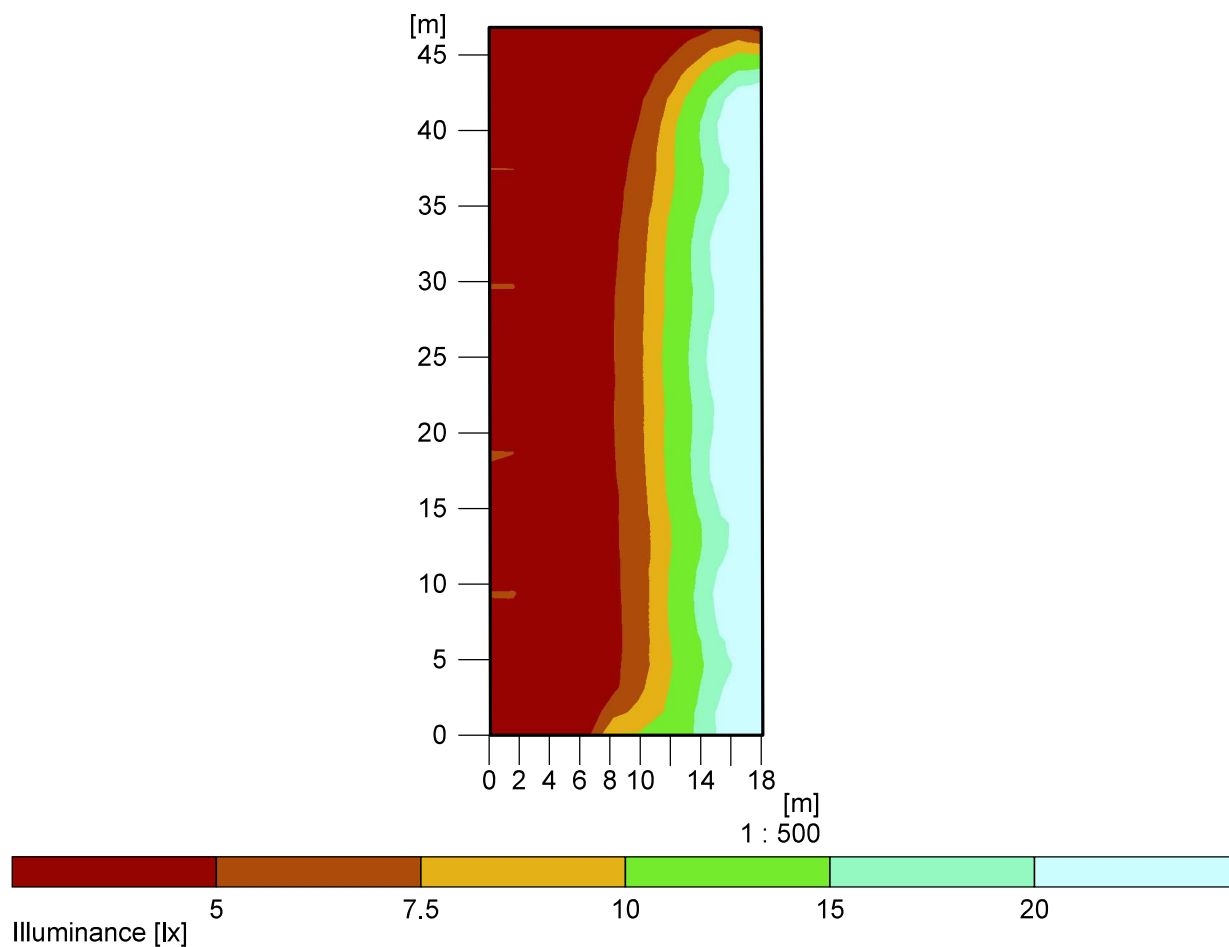
Minimum: : 0 cd/m²

Maximum: : 11.3 cd/m²



1.3 Calculation results, Plots as (Bollards, Eyelids, Floods)

1.3.7 Pseudo colours, REF PLANE - CAR PARK (E)



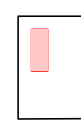
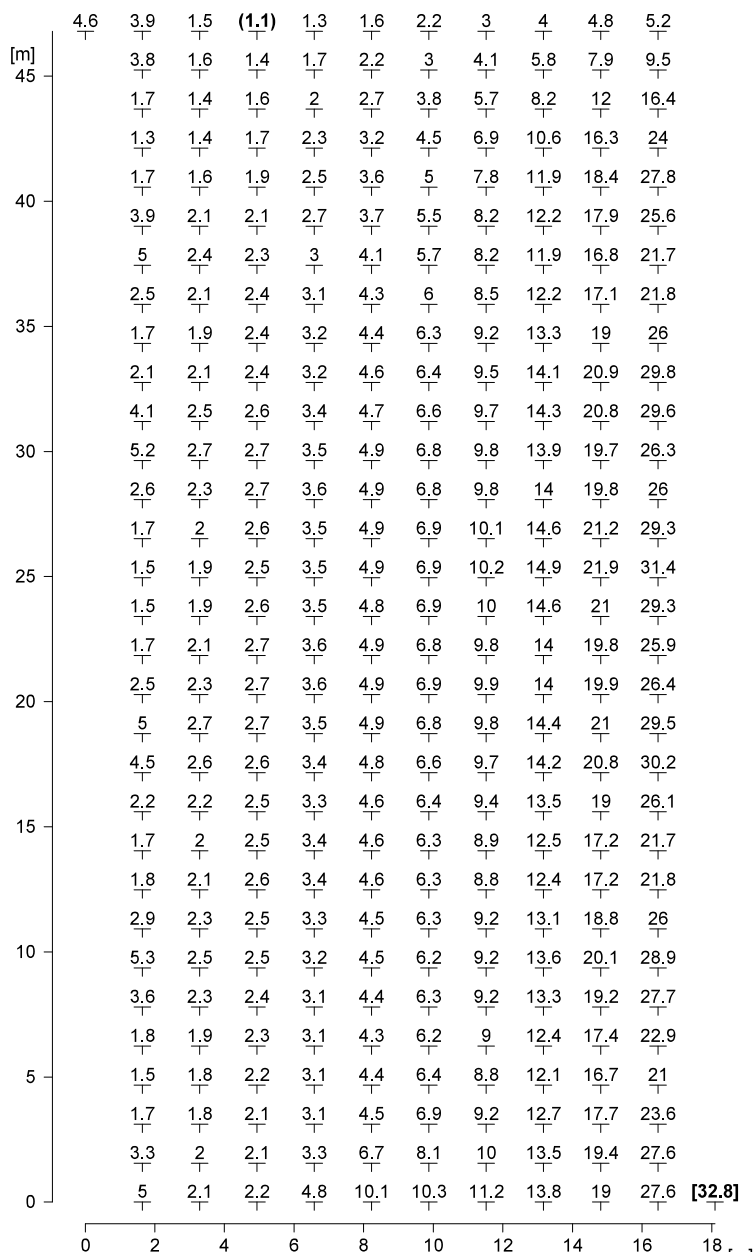
Height of the reference plane

		: 0.00 m
Average illuminance	Eav	: 8.6 lx
Minimum illuminance	Emin	: 1.1 lx
Maximum illuminance	Emax	: 32.8 lx
Uniformity Uo	Emin/Eav	: 1 : 7.57 (0.13)
Diversity Ud	Emin/Emax	: 1 : 28.88 (0.03)



1.3 Calculation results, Plots as (Bollards, Eyelids, Floods)

1.3.3 Table, REF PLANE - CAR PARK (E)



Height of the reference plane

Average illuminance	Eav	: 8.6 lx
Minimum illuminance	Emin	: 1.1 lx
Maximum illuminance	Emax	: 32.8 lx
Uniformity Uo	Emin/Eav	: 1 : 7.57 (0.13)
Diversity Ud	Emin/Emax	: 1 : 28.88 (0.03)