

CARDIGAN TIDAL FLOOD RISK MANAGEMENT SCHEME

Appendix 6.8 - Preliminary Roost Assessment Report



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Natural Resources Wales



Afon Teifi / River
Teifi
**Proposed Flood
Defences
Cardigan**



**A Preliminary Roost
Assessment Report
By:**



On Behalf Of:



**Cyfoeth
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Cymru
Natural
Resources
Wales**

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Client	Natural Resources Wales
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1 Executive Summary

- 1.1 Natural Resources Wales are proposing to construct more robust flood defences along the Afon Teifi in Cardigan, situated close to the town centre. Previous survey effort conducted by Binnies UK Limited identified the potential presence of bats in several buildings along the Teifi, and that the proposed works to construct the flood defences, particularly works that are loud or generate lots of vibration and dust (such as piling works) had potential to adversely affect roosting bats in close proximity with the works themselves. The location of the proposed piling is known although duration of works and predicted levels of noise and vibration are not yet known.
- 1.2 Just Mammals Limited were engaged to conduct more detailed assessment on a number of features identified as part of the survey by Binnies UK Limited. Survey by Just Mammals Limited comprised a Preliminary Roost Assessment on features B4, B5, B7, B8, B10, B12, B13, the southernmost property in group G2, along with trees T3, T4 and T5. Due to inconsistencies in mapping, another tree in close proximity with T5 was also assessed, named in this report as TN8. Survey was undertaken by an experienced and NRW-licensed senior ecologist, along with an assistant in July 2023.
- 1.3 During the assessment, no live bats nor evidence of their presence was identified in any of the features named above. However, potential for them to be present was identified in features B4, B5, B7, B8, B10, B12, B13, the southernmost property within Group G2 and tree T4. Levels of potential ranged from Low to Moderate.
- 1.4 Further survey will be required in order to understand the actual presence of roosting bats in these features. Survey effort ranges from one survey for buildings considered to have Low potential, and a minimum of two surveys on buildings assessed to have Moderate potential. No further survey is required on trees that are judged to have Low potential.
- 1.5 Surveys will consist of dusk emergence/activity observations, dawn re-entry/activity observations or a combination of the two. These must be commenced in the main summer period of May-August, with the second survey (where required) completed within the period May – September. An appropriate number of surveyors in order to ensure sufficient visual cover of each feature will be required. Included in this report is an indication of how many surveys and observers will be required for each feature.
- 1.6 Enhancements will be a requirement of any development in order to comply with Welsh Planning Policy (PPW11). These are best considered once the impacts of the proposed works on potential bat roosts are known, and are recommended to be provided in detail in the report following completion of the bat surveys recommended above.

2 Introduction

- 2.1 Natural Resources Wales (NRW) wish to install strengthened flood defences along a stretch of the Afon Teifi / River Teifi in the centre of the town of Cardigan, in order to prevent extreme flooding events that the town currently experiences on occasion. An approximate central position of the area surveyed is at National Grid Reference SN 17978 45958, at an altitude of approximately 5m Above Ordnance Datum (AOD). The area surveyed spans a stretch of river approximately 200m in length.
- 2.2 Proposed works to construct the flood defences include works with a high level of noise, disturbance and vibration, such as piling works that will be within distances of between 5-35m from all of the surveyed features. While the location of the works are known, the predicted levels of noise and vibration are not yet known. To support the proposals and inform the planning process, Just Mammals Limited were engaged to carry out a targeted Preliminary Roost Assessment (PRA) of eight buildings and three trees in Cardigan, Ceredigion. Surveys were undertaken in early July 2023. Surveys were informed by a Preliminary Ecological Appraisal (PEA) of the area conducted in January 2022 by Binnies UK Limited, where the eight buildings and three trees were identified as having low, moderate or high potential to support roosting bats.
- 2.3 The main objective of this report is to identify any development impacts that may arise in relation to the presence of legally protected species – namely bats and nesting birds. Therefore, the assessment was undertaken in order to:
 - consider the presence of bats or potential roosts in the buildings;
 - determine the presence of nesting birds in the buildings;

- assess whether bats or nesting birds are likely to be impacted by the proposed works, and;
- gather sufficient information to be able to make appropriate recommendations.

3 Survey Team Experience

- 3.1 Leading the survey was Grace Dooley, who is also author of this report. Assisting with the survey was Phoebe Williams.

Table 1: Survey Team Experience

Name	Licences	Experience
Grace Dooley BSc (Hons) MSc ACIEEM Senior Ecologist	S091842/1; expiry November 2024	Grace holds an MSc in Conservation and Ecology and has over 9 years' practical experience with ecological surveys and impact assessments for bats, great crested newts, badgers, birds, reptiles and botanical communities for projects ranging in size from small-scale householder development projects to large, multi-faceted Developments of National Significance (DNS). Grace holds survey licences for bats and great crested newts in Wales, and great crested newts in England. She is a Senior Ecologist with Just Mammals Limited and is an Associate Member of the Chartered Institute of Ecology and Environmental Management (ACIEEM)
Phoebe Williams BA (Hons) MSc Ecologist		Phoebe, who is co-author of this report, is a Geography graduate from Exeter University, and a former trainee at Gwent Wildlife Trust. She completed a Natural Talent trainee programme, studying Hemiptera at the National Museum of Wales. Practical experience includes survey work for dormice, botany, newts, reptiles, and invertebrates. Phoebe has recently completed an MSc in Wildlife and Conservation Management at the University of South Wales. Phoebe is an Ecologist with Just Mammals Limited

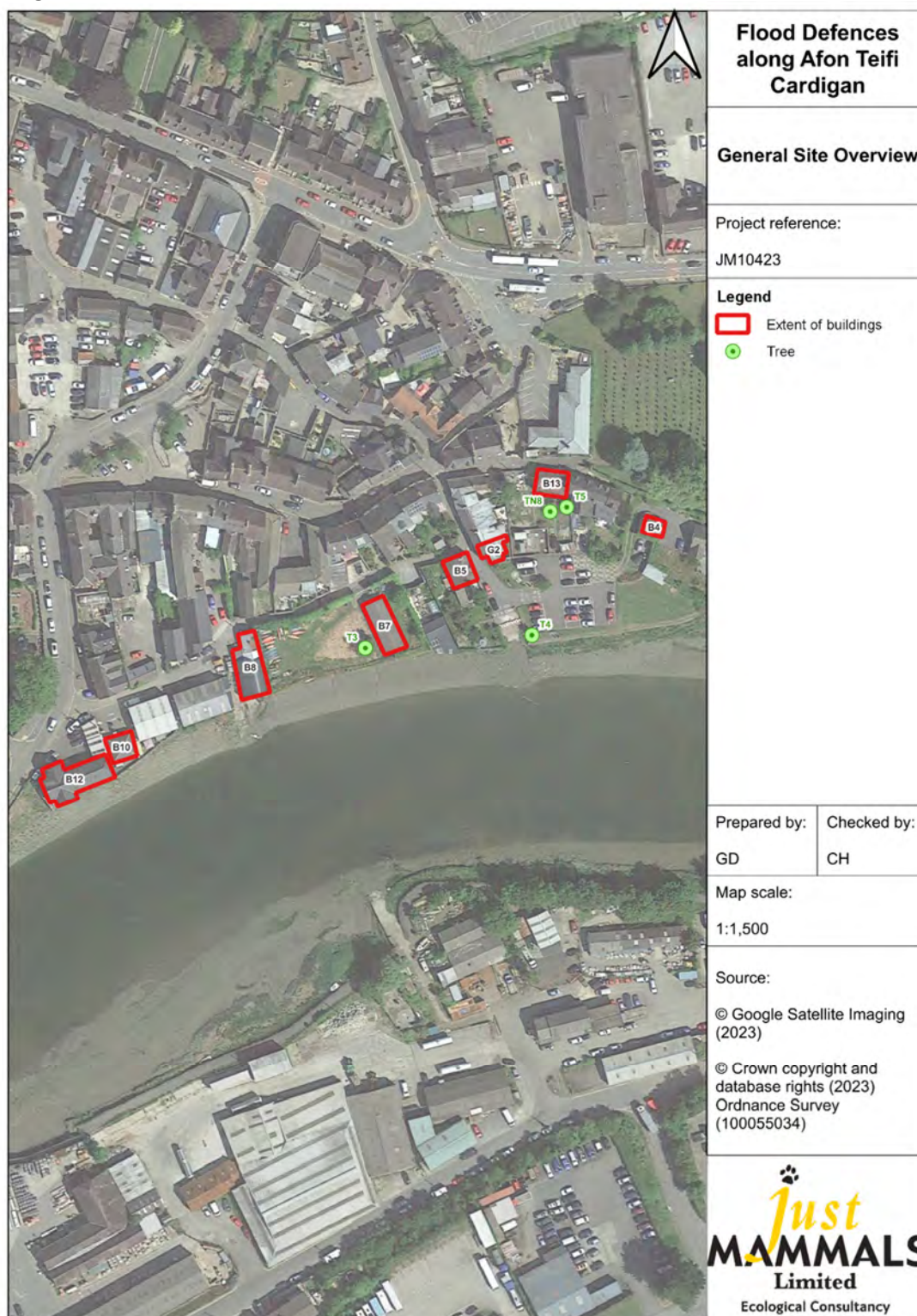
4 Survey Methodology

- 4.1 Prior to the site visit, a desktop study was undertaken, involving a standard search of a 2km radius from the site (using a central grid reference), using the web-based MAGIC database (www.MAGIC.gov.uk). Details of statutory sites, designated for nature conservation were obtained. These included sites with statutory designations of international importance; Special Areas of Conservation (SACs), Special Protected Areas (SPAs), and Ramsar sites, as well as sites of national importance; Sites of Special Scientific Interest (SSSIs), and National Nature Reserves (NNRs).
- 4.2 The West Wales Biodiversity Information Centre (WWBIC) was consulted for records of bats and roof-nesting birds (BaRB). This includes a search for bats within 2km of the site, roof-nesting birds within 150m, and SSSIs and SACs (designated for presence of bats) within 10km.
- 4.3 A PRA was conducted on the features of interest on Monday 17th July and Tuesday 18th July. Details of the survey, and weather conditions, are provided in Table 3. The PRA was undertaken with the aim of detecting any signs of bat or bird presence. With respect to bats, outer surfaces of the buildings were examined from the ground seeking signs of use, including bat faeces (droppings) on walls, ledges, doors and sills. Urine staining on paintwork and window glass or staining on the surfaces of exposed timbers caused by oil from bat fur were also searched for. A torch and binoculars were used to examine Potential Roost Features (PRFs), and any gaps or crevices in the structures were inspected as closely as possible. The context of the buildings in the surrounding landscape was also assessed at this time.
- 4.4 Internal survey sought the presence of bats, or the remains of dead bats (including dead juvenile bats and babies), which might indicate the presence of a maternity roost, and other roosting signs (e.g. droppings), on floors, ledges, walls, and other surfaces. The roof structures and any lofts were inspected for bats or evidence for their presence, including discarded fragments of insects, such as moth wings, which might indicate feeding activity.
- 4.5 Trees were also inspected for the potential presence of bats. Any features that were considered to have potential to support roosting bats were inspected using an endoscope where the height of ladders and surveyor safety allowed.
- 4.6 Nesting birds were also considered at the time of assessment, with the surveyor looking for signs of current and historic bird activity, nest remains, evidence of collections of bird dropping, feathers or any other indications of use by birds.

5 Site Description

- 5.1 The site is positioned along the northern banks of the Afon Teifi in Cardigan, and consists of a total of eight buildings and three trees. Some of the buildings are positioned directly on the waterfront, with others set back a short distance. Trees are part of the land boundary of some of the buildings inspected, with a single tree standing within an area of council-owned land. Figure 1 overleaf outlines the general location of all the features.

Figure 1: General Site Overview



Building 4 (Caerhuan, Church Street, Cardigan SA43 1DJ)

- 5.2 Building 4 (B4) is situated at NGR SN 18052 46000 at 5m AOD.
- 5.3 The outbuilding at Caerhuan is a simple, detached rectangular building, appearing modern in construction with a smooth cement render cladding the exterior. It forms part of the land ownership and dwelling of Caerhuan, positioned within the driveway of the property. It was not possible to gain access inside and therefore it was not possible to know whether it is built in brick or concrete blockwork. It is situated on an east/west position, and is covered with a pitched roof laid with slate-type composite tiles and clay ridge tiles. Associated roof features, such as soffits/fascia boards/barge boards are timber, with all rainwater goods formed from uPVC. Access would normally be possible through doors on each gable to the east and west, with an up-and-over metal garage door present on the eastern gable end. Windows are set into the north elevation, and appear to be double-glazed and set in timber-style uPVC frames.

Building 5 (Teifi House, The Strand, Cardigan SA43 1EX)

- 5.4 Building 5 (B5) is situated at NGR SN 17987 45985 at 5m AOD.
- 5.5 The dwelling of Teifi House is a detached structure on the corner of Gloster Road and The Strand. It is a dwelling built in stone as is traditional for the area, with a saltbox-style roof laid with slate. The dwelling stands on a north-south position, and is covered with a saltbox-style roof laid with slate. The longer of the two pitches faces west, and to the east a half/wall and pitched dormer projects from the roof. Stone chimneys stand at both the northern and southern gable ends, with the southern gable clad in painted pebbledash rendering. Windows where present appear to be double-glazed and set into uPVC sash frames. A small wraparound garden is present to the east and south. Internal access was not permitted during the survey, however, due to positioning of windows on the east elevation it appears that the loft space has been converted for use.

Building 7 (Scout Hut, The Strand, Cardigan)

- 5.6 Building 7 (B7) is situated at NGR SN 17962 45969 at 5m AOD.
- 5.7 The Scout hut is a simple, rectangular and detached structure set within a grassed enclosure. It is situated on a north-south position, appears to be constructed from concrete panels clad in Canterbury spar rendering. A pitched roof covers the structure, laid with interlocking concrete tiles and clay ridge tiles. Fascia and barge boards are formed from uPVC, with no soffit present. The gable ends are clad with uPVC boards affixed to an external timber framework, covering only the section between the ceiling and gable apex. Windows are single-glazed and set into metal frames. Access was possible via a door on the northern elevation.
- 5.8 Inside, the building is a single space divided in two. The first is a large area for group activities, the second is further divided into smaller rooms for storage purposes. No loft space is present, as the ceilings are fully vaulted.

Building 8 (The Smithy & Cardigan Bay Active, The Strand, Cardigan SA43 1EX)

- 5.9 Building 8 (B8) is situated at NGR SN 17917 45961 at 8m AOD.
- 5.10 The Smithy is a rectangular structure situated on a north-south position, built in brick with a pitched roof covered with corrugated metal sheeting. A metal chimney or vent is present centrally along the ridge, with a metal, cylindrical flue protruding from the western roof pitch. Barge boards and fascia boards are timber, no soffit is present. At the south-west corner, a small, square structure also built in brick is noted to form part of the Smithy building. This square structure has a flat roof covered in glass-reinforced plastic (GRP), a strong yet light polyester resin that is reinforced using chopped strand mat glass fibres that form a GRP laminate. Access was possible via metal sliding doors on the west elevation. Doors and windows elsewhere are present on the northern gable end of the Smithy and north and west elevations of the small square structure.
- 5.11 Access was possible inside the Smithy. The structure is used as a combination of a forge, a woodworking business and a crafting business. Two loft spaces are present, both of which are accessible via hatches in the main part of the structure to the north, and via the small square structure to the south-west. Loft spaces are not boarded, but have been laid with fibreglass insulation between ceiling joists. No roof lining was noted.

- 5.12 The Smithy directly abuts the Cardigan Bay Active unit on the Smithy's southern elevation. Cardigan Bay Active is a structure built in a combination of brick, stone and corrugated metal sheeting. The unit is covered by a curved roof, laid with curved metal sheeting. Access was possible via a sliding door on the west elevation, with windows and other doors present on the western, southern and eastern elevations.
- 5.13 Inside, the unit is a single space modified to house various pieces of watersports equipment available for rental. No loft space is present.

Building 10 (Presbytery, The Strand, Cardigan SA43 1EX)

- 5.14 Building 10 (B10) is situated at NGR SN 17875 45927 at 8m AOD.
- 5.15 Sandwiched between two light industrial units, the Presbytery is a detached, square structure covered with a pyramidal roof, laid with slate composite tiles and clay ridge tiles. It appears to be built in modern concrete blockwork, with associated roof coverings such as barge boards and soffits formed from a combination of timber and uPVC. Windows are double-glazed and set in uPVC frames. A double glazed, uPVC-panelled porch stands to the front, on the northern elevation. A small conservatory is present to the rear, at the southern elevation, where a small enclosed garden overlooks the Afon Teifi.
- 5.16 Inside, a loft space is absent with the upstairs rooms having vaulted ceilings. It is currently used as a residential dwelling.

Building 12 (Cardigan Bathroom Centre, Riverside Showrooms, The Strand, Cardigan SA43 1EX)

- 5.17 Building 12 (B12) is situated at NGR SN 17859 45916 at 8m AOD.
- 5.18 Riverside Showrooms is an active business positioned on the banks of the Afon Teifi. It is essentially a rectangular structure positioned on an east/west position, with two cross-gabled sections projecting to the north and south toward the western end of the building. The entirety of the building is clad in overlapping timber boards, and the roof is pitched and laid with slate along with clay ridge tiles. The cross-gabled sections are laid with the same materials. Soffits, fascia boards and barge boards are timber, with doors and window frames formed from uPVC aside from the street-side, north-facing cross gable end which is almost entirely glazed, and set in timber frames. Access around the building for external inspection was difficult, due to the proximity of the Afon Teifi.
- 5.19 Inside, the ground floor is given over to the bathroom showroom, with the upper floor set aside for office and storage spaces, which are largely empty. A loft space is present that connects the two cross-gabled roof sections, with the remainder of the building being vaulted. The loft space is not boarded and has no fibreglass insulation laid between the joists. The trussed rafter arrangement that supports the roof is a key feature of the loft space, and a breathable/modern lining membrane is visible above the rafters and below the slates.

Building 13 (6 Church Street, Cardigan SA43 1DJ)

- 5.20 Building 13 B13 is situated at NGR SN 18018 46014 at 5m AOD.
- 5.21 6 Church Street is a detached property set on an east/west orientation. It is a rectangular dwelling, covered with a pitched roof. At the time of survey, the majority of the dwelling had no roof as it was in the process of being re-laid. The owner of the property is living on site whilst renovation works are carried out. The dwelling is built in stone and is rendered on the north elevation with a Canterbury spar render. Windows and doors are present on both the north and south elevations. Associated roof features, such as fascia boards, barge boards and soffits were absent at the time of survey. A newly-repaired brick chimney stands on the western gable end.
- 5.22 Internal access was possible, and due to the ongoing renovation works it was possible to view the underside of the rafters and battens from the first floor, where a breathable/modern roofing membrane was observed. No loft space was present on account of this.

Group 2 (5 Gloster Row, SA43 1DL)

- 5.23 The southernmost property of the group of houses G2 is situated at NGR SN 17999 45991 at 5m AOD.

5.24 River View, which is the southernmost property of group G2 is positioned on a north-south orientation, owing to its association with the Gloster Row terrace of houses which runs north-south. It appears to originally have had a simple, slate-covered pitched roof with a southerly gable end: a southern gable end is still present although a large, full-height extension is situated on the east elevation. This is a largely flat-roofed extension, including a garage that abuts the southern gable end. The property is almost entirely clad in painted pebbledash render. Doors and windows are set in uPVC frames, are double-glazed and are on all elevations. The full-height extension is covered with GRP and appears to support metal rainwater goods.

5.25 Internal access was granted at the time of survey, no accessible loft space was observed.

Tree 3 (Pear tree, SN 17955 45960)

5.26 Tree 3 T3 is situated at NGR SN 17955 45960 at 5m AOD.

5.27 The pear tree (*Malus sp.*) is located within the grassed enclosure and grows in proximity to the Scout hut (B7). It is approximately 5m in height and is a mature specimen, with a main trunk that grows at a 45° angle and a secondary trunk that grows in the opposite direction. At approximately 1m in height, the main trunk splits into multiple secondary trunks that form the main canopy of the tree. Semi-ripe fruits were growing at the time of survey. The tree appeared to be in good health, with no dead limbs and no dead leaves noted to be still attached to the tree.

Tree 4 (Laburnum tree, SN 18012 45964)

5.28 Tree 4 T4 is situated at NGR SN 18012 45964 at 5m AOD.

5.29 The laburnum tree (*Laburnum anagyroides*) is positioned at the south-western corner of the Gloster Row car park. It is approximately 3m in height and appears to be a semi-mature specimen. The tree grows at an approximate 20° angle toward the river. The main trunk splits into two secondary trunks at approximately 1.5m in height. The tree appears to be in declining health with a long split in the bark that runs from the ground up to the tip of both secondary trunks, exposing the heart of the tree. This split does not appear to be recent, as either side of the trunk has swollen.

Tree 5 (Two trees; apple and holly, SN 18019 46007)

5.30 The specific location of Tree 5 (T5) was not clear in the Binnies Ltd report, as there were two trees reported to have potential to support roosting bats in the same location: one noted as T5, the other as Target Note 8 (TN8). T5, a mature holly tree (*Ilex aquifolium*) is situated at SN 18019 46007 at 5m AOD, while the tree at TN8, a mature apple tree (*Malus sp.*) is situated at SN 18020 46003 at 5m AOD.

5.31 T5, the mature holly tree stands approximately 5m in height and is essentially a monolithic specimen that is still alive. It appears to have undergone recent extreme pollarding, with the tree trunk appearing to have been topped at a height of 5m. Very small and stubby radial branches are still present and still have healthy leaves, giving the tree its appearance of a lollipop with a very thick stem. It appears to be in good health, with no cavities or tears in the bark.

5.32 TN8, the mature apple tree stands at a height of approximately 4m and consists of a single, thin stem that supports the spreading canopy that reaches an approximate radius of 2m. The tree appears to be in good health, with no cavities or tears in the bark that could be observed. It is important to note that the tree used to have a second, possibly larger stem, although this has recently been removed: a large stub is noted at the base of the tree.

6 Survey Constraints

6.1 Access inside features B4 and B5 was not possible due to either landowner unavailability or unwillingness to permit access inside the property. This is not a major constraint as further survey, by way of dusk activity observations, will be undertaken.

7 Desktop Study

7.1 Sites of nature conservation interest within a 2km radius of each of the sites were identified using the web-based MAGIC database (www.MAGIC.gov.uk). These included sites with statutory designations of international importance; SAC's, SPA's, and Ramsar sites, as well as sites of

national importance; SSSI's, and NNR's. Details of Sites Important for Nature Conservation were also noted. Their details are shown overleaf, in Table 2.

Table 2: Sites Designated for Nature Conservation

Site and Designation (In Order of Distance)	Distance and Direction to Site	Primary Reasons for Designation
Afon Teifi / River Teifi SSSI SAC	Between <1m – 45m South	Bullhead (<i>Cottus gobio</i>) River lamprey (<i>Lampetra fluviatilis</i>) Brook lamprey (<i>Lampetra planeri</i>) Flating water-plantain (<i>Luronium natans</i>) Otter (<i>Lutra lutra</i>) Sea lamprey (<i>Petromyzon marinus</i>) Atlantic salmon (<i>Salmo salar</i>) Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or the <i>Isoeto-Nanojuncetea</i>
Coedydd a Corsydd Aberteifi (Teifi Estuary Woodlands and Marshes SSSI)	485m South-East	Unvegetated mudflats Estuarine transition mire Ancient woodland Unimproved pasture

- 7.2 The proximity of the Afon Teifi SSSI and SAC to the structures surveyed indicates that there are likely to be impacts arising from the proposed works. However, the reason for this survey being commissioned is to gather information with regards to these impacts in particular to roosting bats. Other impacts are considered in the Binnies UK Limited report, and are not considered further here.
- 7.3 The primary reasons for designation of the Coedydd a Corsydd Aberteifi (Teifi Estuary Woodlands and Marshes SSSI) is for rarer and more sensitive habitats. Given the proximity of the SSSI to the structures under study, it is considered that any bat roosting activity within the SSSI is unlikely to be associated with the structures, and is also unlikely to be adversely impacted by the proposed works. Therefore, this site is not considered further in this report.
- 7.4 A record search was carried out where a request for records was made to the West Wales Biodiversity Information Centre (WWBIC) for records of bats within 2km and nesting birds within 150m. This returned a total of 83 records of bats: within this number, records of 50 roosts within 2km of the site were returned, the closest of which was a record for a greater horseshoe roost (*Rhinolophus ferrumequinum*), at an approximate distance of 100m to the west. Roosts for common pipistrelle (*Pipistrellus pipistrellus*), Daubenton's bat (*Myotis daubentonii*), soprano pipistrelle (*Pipistrellus pygmaeus*), whiskered bat (*Myotis mystacinus*), lesser horseshoe bat (*Rhinolophus hipposideros*), Natterer's bat (*Myotis nattereri*) and brown long-eared bat (*Plecotus auritus*). Roost types comprise non-breeding day roosts, maternity roosts and hibernation roosts.
- 7.5 Records of foraging and commuting activity was also returned within 2km, from the species named above, as well as from serotine (*Eptesicus serotinus*), Leisler's bat (*Nyctalus leisleri*), barbastelle (*Barbastella barbastellus*) and Brandt's bat (*Myotis brandtii*).
- 7.6 A total of 833 records of birds were returned. None of these records were noted to be of roof-nesting birds actively nesting in a building or tree within 150m of the features under study.

8 Survey Results, Discussion and Conclusions

- 8.1 Table 3 below summarises dates, times, and weather conditions, when survey work took place, with wind speeds recorded using the Beaufort scale.

Table 3: Summary of Survey Activity and Weather Conditions

Date	Survey Type	Timing	Weather Conditions (average)
17/07/2023 – 18/07/2023	Daytime internal and external inspection of features B4, B5, B7, B8, B10, B12, B13 and G2. Also included daytime ground level inspection of trees T3, T4, T5 and TN8 (GD, PW)	11:00 – 17:00 British Summer Time (BST) 09:00 – 13:00 BST	Air temperature: 21°C Cloud cover: 1/8 oktas Wind speed: F1, calm Conditions: Dry
Surveyors Grace Dooley (GD), Phoebe Williams (PW)			

- 8.2 The assessment results are presented in Table 4 overleaf.

Table 4: Survey Results and Recommendations for Further Survey

Feature	Live bats?	Evidence of bats?	Potential for bats to be present?	Further detail	Level of potential to support roosting bats	Additional survey required?	Number of surveyors recommended
B4	X	X	✓	- gaps between the walls and timber soffit along the northern & southern elevations, as well as at both gable ends; - lifted ridge tile toward the western end of building.	Moderate	Two (2)	Three (3)
B5	X	X	✓	- lifted render on east elevation, above ground-floor window; - cracks between mortar and stonework on east elevation; - gap between barge board and pebbledash render on south gable end; - lifted roof tiles on western roof pitch; - gaps between fascia board and render on west elevation.	Moderate	Two (2)	Three (3)
B7	X	X	✓	- gaps between uPVC fascia board and Canterbury spar rendering on east and west elevations; - gaps between external timber framework and Canterbury spar rendering on north and south gable ends.	Low	One (1)	Two (2)
B8	X	X	✓	- gaps at wall tops on north gable end, between wall and roof coverings; - arrow-slit window at north gable apex; - small gaps in brickwork on northern and western elevations; - gaps between brickwork and old timber lintels on western elevation; - gaps behind sign on western elevation.	Moderate (Smithy) Negligible (Cardigan Bay Active)	Two (2) (Smithy only)	Two (2)
B10	X	X	✓	- gaps between soffit and wall on all elevations; - small gaps underneath ridge tiles on southern and northern elevations where mortar is missing.	Moderate	Two (2)	Two (2)
B12	X	X	✓	- gaps under lifted timber cladding on all elevations, particularly at eaves height and at soffits on gable ends; - gaps behind sign on northern elevation - gaps between timber window frame and stonework on northern cross-gable end.	Moderate	Two (2)	Four (4)
B13	X	X	✓	gaps in stonework on western gable end.	Moderate	Two (2)	One (1)
G2	X	X	✓	- gap between fascia board and wall on east elevation of full-height extension; - gaps under lifted ridge tiles at southern end of ridge; - gap between windowsill and wall on first-floor window on west elevation; - gap between fascia board and pebbledash rendering on west elevation; - gaps between barge board and pebbledash rendering on the southern gable end.	Moderate	Two (2)	Two (2)
T3	X	X	X	no features identified on the tree that were deemed suitable to support roosting bats.	Negligible	None	-
T4	X	X	X	long crack from floor level to the full height of branches, showing heart of the tree. Very small opening present at the top of the crack leading into the tree trunk, however this was inspected and no bats were found to be present. The cavity in question is extremely narrow. Slugs and woodlice were also present within these cavity, indicating the damp nature of them.	Low	None*	-
T5	X	X	X	no features identified on the tree that were deemed suitable to support roosting bats.	Negligible	None	-
TN8	X	X	X	no features identified on the tree that were deemed suitable to support roosting bats.	Negligible	None	-

* Trees with 'Low' potential are not required to be subject to further survey effort. (Collins [ed.] 2016)

9 Discussion and Conclusions

- 9.1 The location of the proposed piling is known although duration of works and predicted levels of noise and vibration are not yet known. The record search returned from WWBIC, which returned records of 50 bat roosts within 2km (the closest of which is within 150m) indicates that the site and its surroundings are suitable to support roosting activity. Daytime assessment further established that buildings B4, B5, B7, B8, B10, B12, B13 and the southernmost property within Group G2 have Low or Moderate potential to support roosting bats. Further survey will be required in order to clarify whether these features do indeed support these animals, as well as to characterise the roost and identify species and numbers of bats concerned, if present.
- 9.2 Tree T4 was identified as having Low potential to support roosting bats. As per the Bat Survey Guidelines (Collins [ed.] 2016), no further survey is required on trees categorised as having Low potential.
- 9.3 The number of surveys required and the number of surveyors recommended to ensure full coverage of the features are provided in Table 4.
- 9.4 Presence of bats at other times of year was considered. None of the buildings were recorded to have cellars, or suitable sheltered northern elevations with deep crevices at a low level. Therefore, all buildings and trees are assessed as having negligible suitability for hibernating bats.
- 9.5 No active bird nests were noted during the survey, however, many of the buildings surveyed are suitable for nesting birds. All nesting birds are protected under the provisions of the Wildlife and Countryside Act 1981 (as amended), and active bird nests cannot legally be disturbed or destroyed. Precautionary measures are therefore recommended to avoid such impacts.
- 9.6 With regard to statutory designated sites in proximity with the site, the sites concerned are not assessed as likely to be affected by the proposed works where the sites' potential to support roosting bats are concerned. This is on account of the proximity to the area of the proposed works.

10 Recommendations

- 10.1 Bats are protected under the provisions of Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), whilst their roosting places are also protected under the provisions of the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019. All bats, and their places of rest, are fully protected under British legislation, and as such, where there is evidence for the presence of bats, or where there is potential for them to be present, detailed assessment is appropriate.
- 10.2 Further survey is recommended on features B4, B5, B7, B8, B10, B12, B13 and the southernmost property within Group G2. Details on numbers of surveys and numbers of surveyors required are provided in Table 4. Surveys will need to be commenced within the main summer period of May-August, with second surveys of those requiring more than one being undertaken in the period May-September.
- 10.3 Enhancements will be a requirement of any development in order to comply with Welsh Planning Policy (PPW11). These are best considered once the impacts of the proposed works on potential bat roosts are known, and are recommended to be provided in detail in the report following completion of the bat surveys recommended above.

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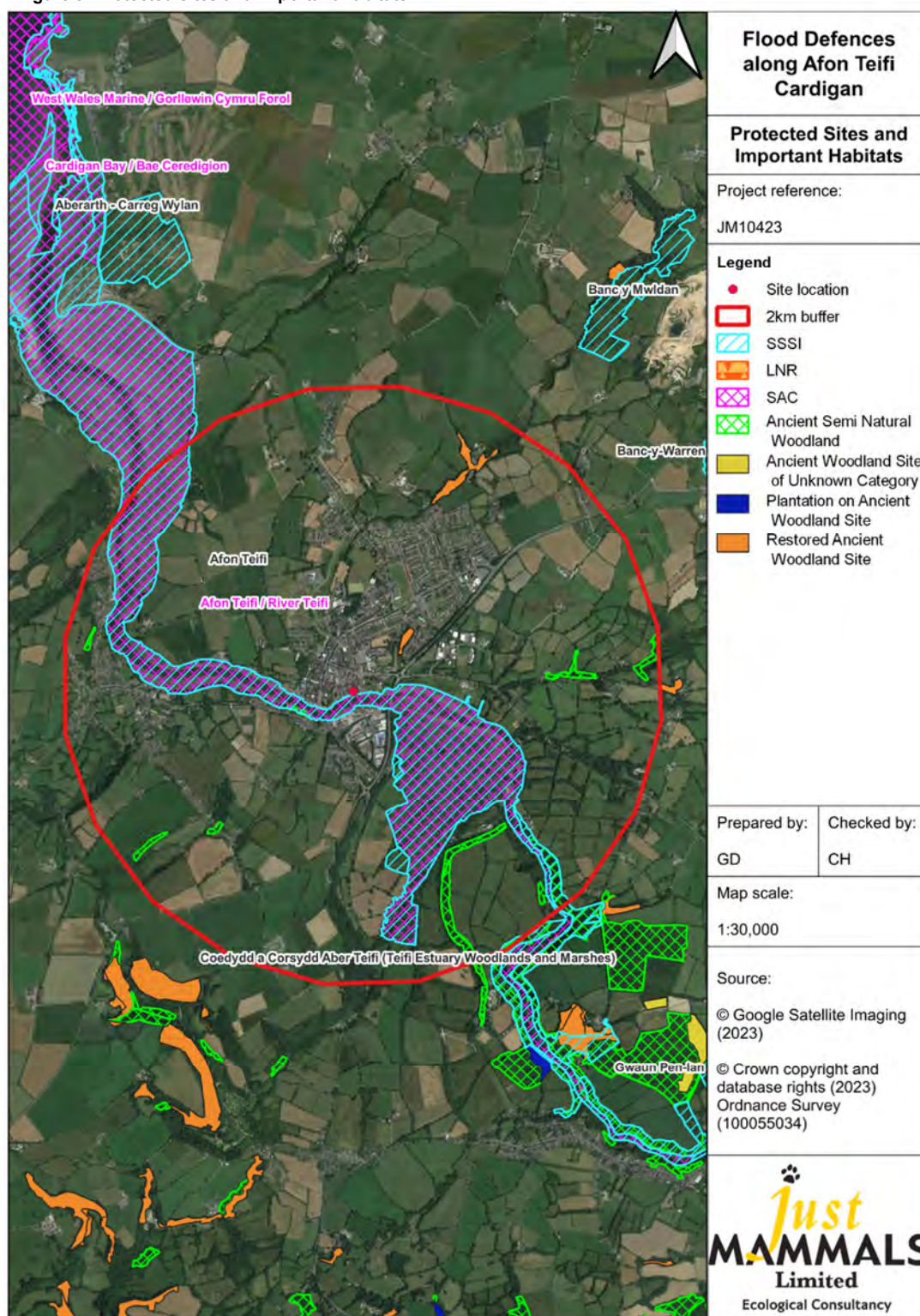
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Appendix I: Site Plans

Figure 2: Aerial view of the features in Cardigan under study



Figure 3: Protected sites and important habitats



Appendix II: Site Photographs

Plate 1: North-west corner of B4



Plate 2: East gable end of B4



Plate 3: South-east corner of B5



Plate 4: North-west corner of B5



Plate 5: North-west corner of B7



Plate 6: South-west corner of B7



Plate 7: Loft space above B8 (The Smithy)



Plate 8: Interior of B8 (Cardigan Bay Active)



Plate 9: South-west corner of B8 (Cardigan Bay Active)



Plate 10: North-west corner of B8 (The Smithy)



Plate 11: South-east corner of B10



Plate 12: North-west corner of B10



Plate 13: Southern roof pitch of B10



Plate 14: North-east corner of B12



Plate 15: North elevation of B12



Plate 16: Southern cross-gable of B12



Plate 17: Loft space of cross gable on B12



Plate 18: South-west corner of B13



Plate 19: North elevation of B13



Plate 20: View of underside of roof battens and rafters of B13 (daylight was visible due to lack of slates/tiles)



Plate 21: South elevation and SW corner of G2



Plate 22: South-east corner of G2



Plate 23: T3 (pear tree)



Plate 24: Swollen crack on T4 (common laburnum)



Plate 25: T5 (holly tree)



Plate 26: TN8 (apple tree)



Appendix III: Ecology of British Bats

There are at least 18 species of bats breeding in Britain. Most of them are regarded as threatened due to a variety of factors including habitat loss, intolerance and disturbance/damage or loss of roosts. Of these species a number regularly use buildings at certain times of year in order to find safe secure roost sites. Often several different species can use a building over the course of the year, and not all species are present at the same time, making assessment of their presence complex.

Bats are highly mobile flying mammals, which in Britain, feed entirely on insects. They have evolved over seventy million years and have developed sophisticated mechanisms to allow them to effectively 'see' in the dark by using sound waves. This system is called echo-location which enables them to track and hunt down small moving insects whilst in flight, rather like radar does in a modern military fighter aircraft. It is possible to record this sound, and because each species of bat echo-locates in a different way, determine what the species is without actually handling the animal which made the call.

In winter, when their prey is scarce, British bats hibernate or enter torpor, in cool parts of caves, buildings (cavity walls), and tree cavities. They may wake occasionally and will feed if evening temperatures are greater than 7°C, when flying insects can be active. Generally however, activity during cold winters is very limited and bats only become fully active in spring, with late March and early April being a critical time for animals desperately trying to save energy whilst gaining weight. Disturbance during these months can therefore be more devastating to bats than at other times of year.

By late spring female bats will gather together in maternity roosts in order to give birth and rear their single baby in June. Such maternity roosts are often near to important foraging areas in order to save energy as flight requires vast energy resources. Flight routes to and from such roosts can therefore also be important and some bats are extremely light averse preferring dark locations without street or security lamps which can force them to take complex routes to reach foraging areas. Such lighting can also badly degrade foraging areas where they occur close to buildings and hedgerows and tree lines can be particularly important areas for bat foraging to take place particularly when close to the roost building.

Whilst females form maternity colonies, usually in warmer roofs or trees, male bats tend to seek out cooler sites which may not be so close to the foraging areas. Males are often solitary and do not exhibit the social behaviour that marks out females during the birthing period. Non-breeding females will also roost in this way, when they have no need to spend energy on raising a single baby.

Several British bat species are known to rely heavily on buildings to roost. Of these species, the most likely are the soprano pipistrelle bat and the common pipistrelle. Other bat species regularly found in buildings are the brown long-eared bat; Natterer's bat; Brandt's bats and whiskered bat. Pipistrelle species and the small myotis or mouse-eared species (Brandt's, whiskered etc) often favour locations at the ridge or around the exterior shell of the structure. Brown long-eared and Natterer's tend to prefer living within the roof area of a building – large lofts being popular.

Other species that are known to use the internal areas of built structures such as barns include the two horseshoe species, the greater horseshoe bat, and lesser horseshoe bat, as well as western barbastelle bat (*Barbastella barbastellus*).

Appendix IV: Relevant Legislation

Bats

All species of bat in Britain, and their places of rest are protected under the provisions of the Wildlife and Countryside Act 1981 (WCA), Section 9(1), 9(4)(a) and 9(4)(b) as amended by Schedule 12 of the Countryside and Rights of Way Act 2000. Further protection is afforded by the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019. In relation to structures used by bats for shelter or protection (i.e. roosts), this legislation makes it an offence to either intentionally or recklessly damage, destroy or obstruct access to any site used by bats, whether bats are present at the time or not, or to intentionally or recklessly disturb bats within a roost.

Infringements under this legislation include building demolition, removal of hollow trees, blocking, filling or installing grills over old mines or tunnels, building alteration or maintenance work, re-pointing of stone walls, getting rid of unwanted bat colonies, re-roofing, remedial timber treatment, re-wiring or plumbing in roofs, treatment of wasps, bees or cluster flies (Mitchell-Jones, 1992; Childs, 2001). Greater horseshoe bat, lesser horseshoe bat, Bechstein's bat, greater mouse eared bat and barbastelle are included in Annex II of the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019 and hence require special protection.

Maximum penalties for committing offences relating to bats or their roosts can amount to imprisonment for a term not exceeding six months or to fines of up to Level 5 on the standard scale under the Criminal Justice Act 1982/1991 (i.e. £5000 in April 2001) per roost or bat disturbed or killed, or to both. Bodies corporate and their directors/secretaries are liable for offences under the 2017 Regulations and the WCA. Additionally, where such an offence results in the offender benefitting in a monetary form from the illegal action, confiscation or civil recovery of the proceeds can occur under the Proceeds of Crime Act 2002.

It is sensible to assess as soon as possible if bats are present at potential sites for development – preferable before the land is acquired. In some cases the period required for adequate survey work may span more than one calendar year. If a development, including demolition or change of use, is likely to impact on bats and their roosts then a licence will usually be required. Adequate survey results are a necessary input to any licence application.

The law with respect to dwellings and other structures is applied equally. Where disturbance is deemed likely to have a significant effect on bats to survive, breed and rear their young or will affect the local distribution and abundance of the species, a European Protected Species licence issued by Natural Resources Wales. A licence application must demonstrate that the development will not be detrimental to the maintenance and conservation status of the species concerned.

This explanation must be regarded only as a guide to the law. For further details, reference must be made to the Wildlife and Countryside Act 1981 (as amended), the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019, and the Countryside and Rights of Way Act 2000.

Wild birds

All wild birds, their eggs and nests are protected by The Wildlife and Countryside Act 1981 (as amended). It is an offence, with certain exceptions, to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built;
- intentionally take or destroy the egg of any wild bird;
- sell wild birds or put them on display for sale;
- use traps or similar items to kill, injure or take wild birds; and
- intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Penalties that can be imposed for criminal offences in respect of a single bird, nest or egg contrary to the Wildlife and Countryside Act 1981 (as amended) is an unlimited fine, up to six months imprisonment or both. In exceptional cases NRW and Natural England issues licences for specific purposes, so that legitimate work may be undertaken without breaking the law.

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