

Welsh Government

M4 Corridor around Newport

Environmental Statement
Supplement
Volume 3: Appendix S10.7

Bat Hibernation Roost Survey

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Bat Hibernation Roost Survey

M4 Corridor around Newport

For

**RPS Planning and
Development**

Project No.: MRPS108/008

August 2016

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Figure 1 Site Location

Figure 2 Bat Hibernation Roost Survey

Figure 3 Photographs of Trees and Buildings Surveyed for Hibernating Bats

1. Summary and Main Recommendations

1.1 Summary

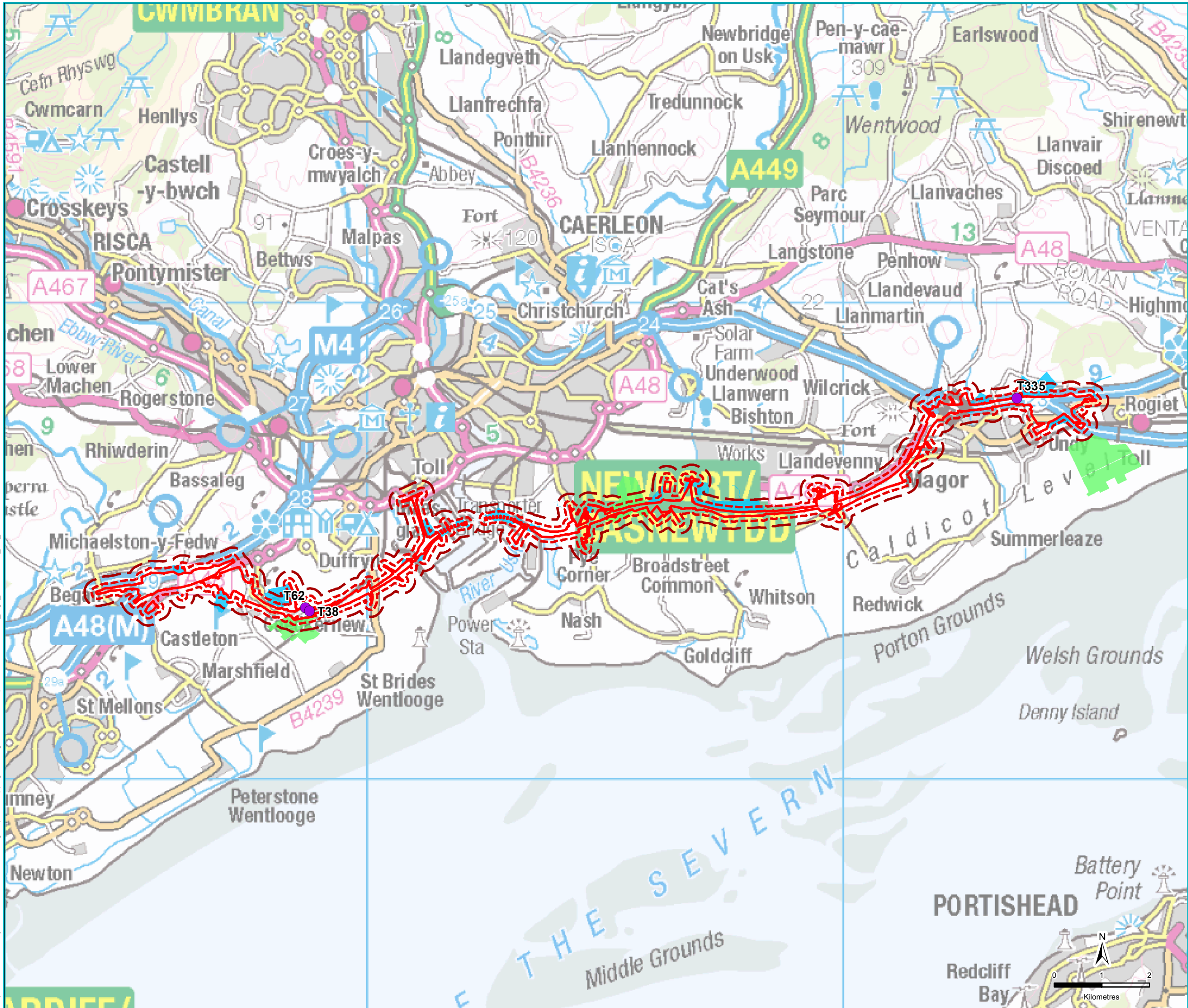
- 1.1.1 RPS Planning and Development Ltd (RPS) commissioned Thomson Ecology to carry out bat hibernation roost surveys of selected trees and a building along the route of the proposed new section of motorway to the south of Newport as part of the M4 Corridor around Newport project.
- 1.1.2 In 2015, Thomson Ecology carried out bat surveys of trees and a building identified by RPS as being of high potential for bat roosts within 250m of the proposed new section of motorway and/or proposed construction compounds. Surveys included ground level inspection of 36 trees and one building, followed by tree climbing inspections of 23 trees which were accessible and/or safe to climb. Thomson Ecology then undertook dusk emergence and dawn return to roost bat surveys of 16 of the trees/building confirmed to have high potential following the tree inspections within the footprint of the proposed new section of motorway.
- 1.1.3 During the climbing inspection survey, two trees (T38 and T62) and one building (T335) were assessed as having potential to support hibernating bats. A bat hibernation roost survey to inspect for use by hibernating bats was recommended following best practice guidelines (Collins, J., 2016).
- 1.1.4 In February 2016, RPS commissioned Thomson Ecology to undertake hibernation roost inspections of two trees (T38 and T62) and one building (T335) using tree climbing and ground inspection to search for bats, or evidence of bats.
- 1.1.5 No bats or evidence of bats were found during the hibernation inspections of T38, T62 and T335 although the features present on T38, T62 and T335 still have the potential to support hibernating bats.

1.2 Main Recommendations

- 1.2.1 To follow best practice guidelines an additional hibernation roost survey of features with high potential for roosting bats should be undertaken. If this can not be completed then a precautionary method of works should be undertaken.
- 1.2.2 Although no bats were found to be hibernating, removal of tree T62 outside of the bat hibernation season is recommended as the features on the tree still have potential to support hibernating bats. As sufficient previous dusk and dawn bat surveys have been undertaken to establish that bats are likely to be absent (Thomson Ecology Report Reference: MRPS108/005/002/003, issued November 2015), T62 should be removed in late April or mid to late October when bats are least sensitive to disturbance. Prior to the removal of the tree all features suitable for bats should be inspected in a pre-construction bat roost inspection.
- 1.2.3 To establish if tree T38 and building T335 support transitional and/or maternity roosts a further two dusk emergence and/or dawn return to roost surveys should be undertaken as recommended in the Bat Tree Inspections, Dusk Emergence and Dawn Return to Roost Bat

Surveys report (Thomson Ecology Report Reference: MRPS108/005/002/003, issued November 2015). If no bats are found to roost in tree T38 and building T335 during the dusk and dawn surveys, T38 and T335 could be removed outside of the bat hibernation period (mid-November to March), following a pre-construction bat roost inspection.

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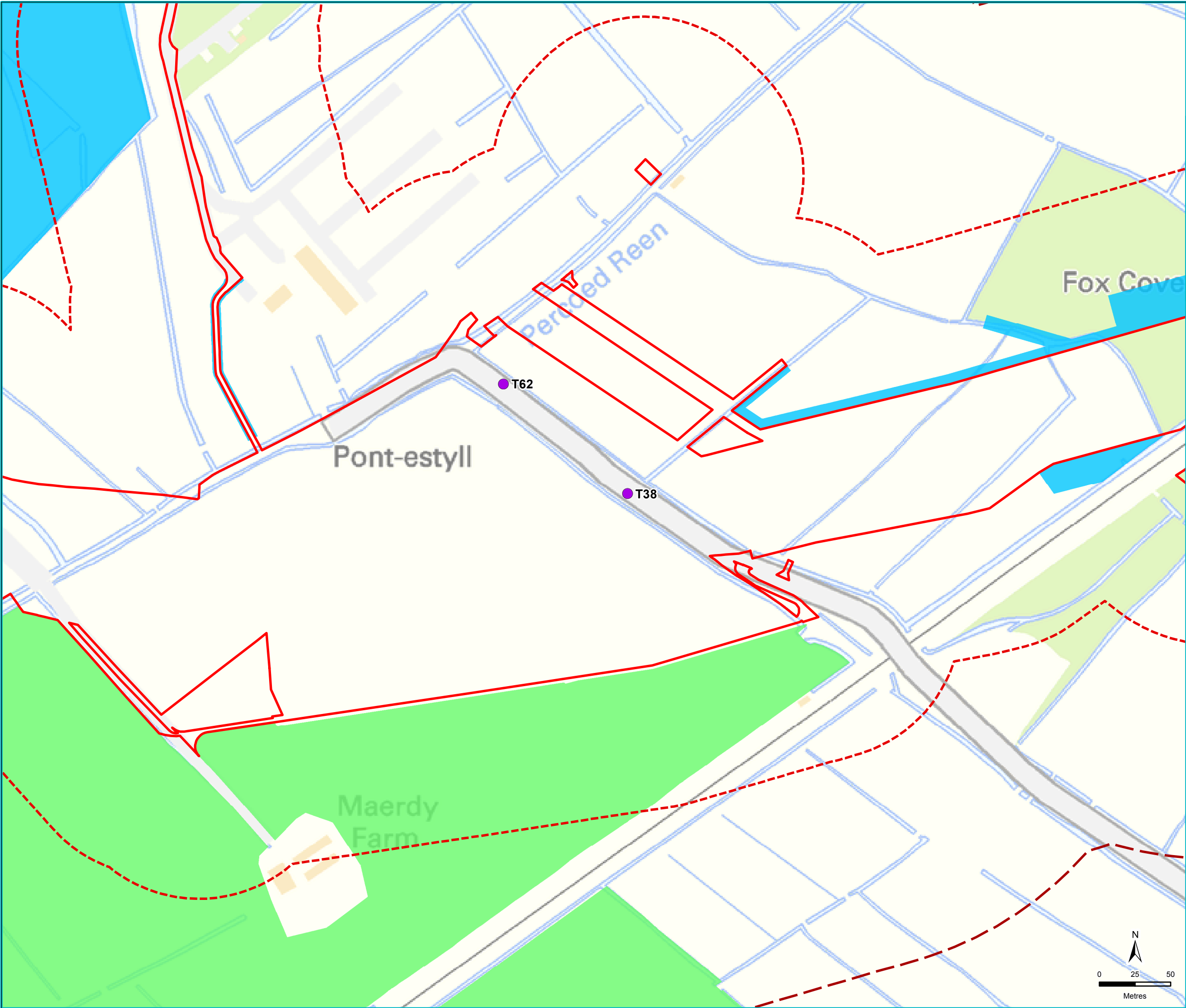


- Legend
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 - Ecological Mitigation
 - Temporary Construction Land
 - Permanent Land Take 100m Buffer
 - Permanent Land Take 250m Buffer
 - Permanent Land Take

Site Grid Reference: 334,816 185,739
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Legend

- Building/Tree Inspected for Hibernation Roost Survey
- Permanent Land Take 100m Buffer
- Permanent Land Take 250m Buffer
- Ecological Mitigation
- Temporary Construction Land
- Permanent Land Take

Site Grid Reference: 328,760 183,518

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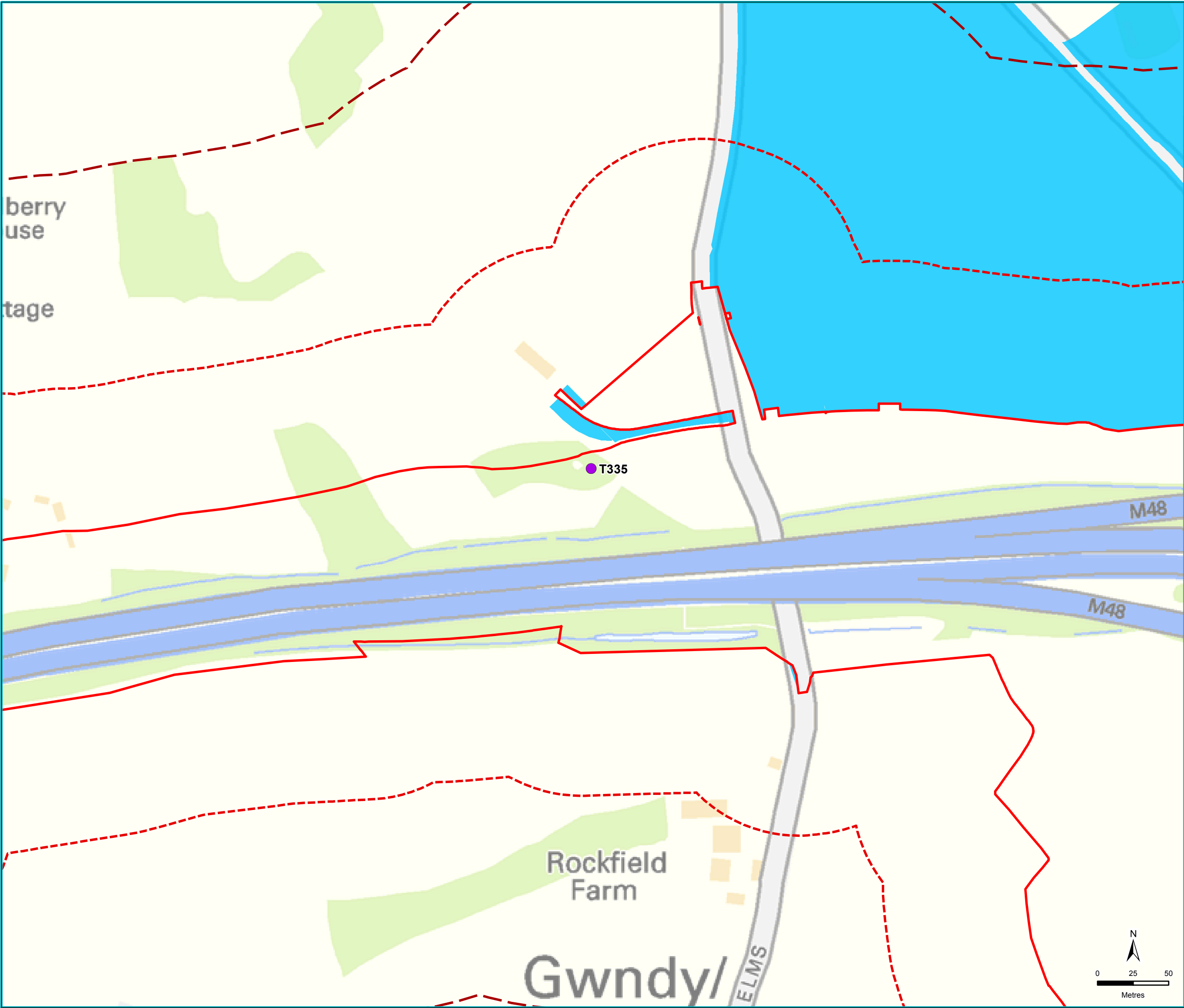
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Appendix S10.7 - Bat Hibernation Roost Survey	



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Legend

- Building/Tree Inspected for Hibernation Roost Survey
- Permanent Land Take 100m Buffer
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Site Grid Reference: 343,660 187,979

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Figure Title	
Appendix S10.7 - Bat Hibernation Roost Survey	



Photograph 1:
T38




Photograph 2:
T62



Photograph 3:
T335

Client	RPS Group PLC		Drawing Ref	MRPS108/20512/1	
Figure Number	3		Scale at A4	Not applicable	
Figure Title	Appendix S10.7 - Photographs of Trees and Buildings Surveyed for Hibernating Bats		Drawn	KM	Checked NS
			Date	September 2016	Date Septemebr 2016



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2. Introduction

2.1 Development Background

- 2.1.1 The Welsh Government proposes to build a new section of motorway to the south of Newport, Gwent, extending between Castleton to the west and Magor to the east (see Figure 1).

2.2 Ecology Background

- 2.2.1 Surveys of trees within 250m of the 2007/08 alignment were carried out in 2014 by Arup to record features suitable for use by bats. In 2015, Thomson Ecology carried out surveys of trees (and one building) identified by RPS as having high potential for roosting bats within or adjacent to (within approximately 100m) the proposed new section of motorway and/or construction compounds (Thomson Ecology Report Reference: MRPS108/005/002/003, issued November 2015). Surveys included ground level bat inspections of 36 trees and a building, and tree climbing bat inspections of 23 trees, followed by dusk emergence and dawn return to roost surveys of 16 trees/structures that still had high potential to support roosting bats and were within the footprint of the proposed new section of motorway. Two trees (T38 and T62) and one building (T335) were identified to have high potential to support hibernation roosts. The potential hibernation roost features identified during inspections are detailed in Table 3, Section 4. A bat hibernation roost survey of the two trees (T38 and T62) and one building (T335) was recommended following best practice guidelines (Collins, J., 2016).

2.3 The Brief and Objectives

- 2.3.1 RPS commissioned Thomson Ecology on 24th February 2016 to undertake a bat hibernation roost survey of two trees and one building identified as having high potential to support roosting bats. The brief was to:
- Provide two ecologists to undertake one climbing inspection of two trees (T38, T62) and inspection of one building (T335) identified as having high potential for hibernating bats (see Thomson Ecology Report Reference: MRPS108/005/002/003).
 - Produce a written report detailing methodology, results and any legal and planning policy issues regarding the trees and building. The report will include recommendations for mitigation or further survey where necessary; and
 - Support with appropriate digitised mapping.

2.4 Limitations

- 2.4.1 One bat hibernation roost survey was undertaken on 29th February 2016. This is an optimal time period to survey for hibernating bats. Best practice guidelines (Collins, J., 2016) recommend that two hibernation roost surveys are carried out during the bat hibernation period. It was not possible to undertake two hibernation checks two weeks apart in the suitable bat hibernation period. Recommendations for further survey are provided in Section 6.

2.5 Surveyors

- 2.5.1 The hibernation roost survey was undertaken on 29th February 2016 by Steve Wadley who holds the Natural Resources Wales Bat Survey Licence (61740:OTH:CSAB:2015) and Chris Wildblood BSc (Hons) MSc GradCIEEM.

3. Methodology

3.1 Tree Climbing Inspection for Bats

3.1.1 Trees with high potential to support hibernating bats (T38 and T62 on Figure 2a) were climbed with the aid of a ladder and/or ropes. A second surveyor was positioned at the base of the tree for safety reasons. All accessible potential roosting opportunities were inspected by the climber using a torch and endoscope. Further assessment of the suitability of the potential roosting opportunities was also undertaken.

3.1.2 The search for hibernating bats and evidence of bats focused on the areas around and within potential roosting opportunities for hibernating bats, such as:

- Natural crevices and holes;
- Woodpecker and rot holes;
- Loose bark, splits and cracks;
- Bird and bat boxes; and
- Dense ivy or dense epicormic growth.

3.2 External Inspection

3.2.1 A pre-1914 two arch brick kiln building at ground level with the potential to support hibernating bats (T335 on Figure 2b), was inspected using a torch and endoscope. Features inspected were internal cracks and voids, missing brickwork and mortar gaps on the external face, gaps and voids within internal stonework and gaps in the brickwork and mortar.

3.2.2 Evidence of hibernating bats searched for included:

- Hibernating bats;
- Dark staining below an access point that may be caused by bat faeces;
- Staining around a hole that may be caused by the natural oils in bat fur;
- Scratch marks around the hole made by bat claws; and
- Bat droppings.

3.2.3 Any inaccessible or partially accessible cavities were noted.

3.2.4 The information recorded for each potential roost included the site type and a description of the potential roost and its location, including aspect and height above ground level.

3.3 Categorisation of Results

3.3.1 Each tree/building was assigned a level of potential to support a bat roost. This was achieved by placing the results for each of four attributes recorded during the survey into three categories

(see Table 1). The combination of categories for each tree/building was then used, together with the judgement of the Natural Resources Wales (NRW) surveyor, based on knowledge of bat ecology and experience, to arrive at a level of potential (see Table 2). Trees/buildings which could not be thoroughly inspected, but were nevertheless of a type which typically support bat roosts, were assumed to have high potential for roosting bats.

Table 1. Attributes influencing the likelihood of a bat occupying a tree or building as a roost.

Category Attribute	A	B	C
Age (buildings only)	before 1914	1914 -1960	later than 1960
Life Stage (trees only)	Veteran, Senescing or Dead	Mature or Mid- aged tree	Formative growth, before optimum crown size achieved
Construction (buildings only)	traditional - brick or stone, with roof (if present) of wooden joists and tiles	modern - concrete	modern - steel framed and sheet material
Exposure of crevice/void to wind and rain	Low	Moderate	High
Setting	Rural	Sub-urban	Urban

Table 2. Levels of bat potential together with an indication of the types of tree or building which qualify (see Table 1 for category definitions)

Type of roost Level of potential	Maternity roost	Summer or transitional roost used by non-breeding bats	Hibernation roost
Confirmed	Presence of bats or evidence of bats. Determining the level of current use and the type and number of bats may require further survey.		
High bat potential	Building or tree with suitable maternity roost space* and Category As only.	Building or tree with accessible crevice(s) and Category As only.	As summer roost and also underground structures such as a mine, tunnel, ice-house, cellar or natural cave, with access point for bats and Category As only.
Moderate bat potential	Building or tree with suitable maternity roost space* and mostly Category As, maximum 2 Category Bs and maximum 1 Category C.	Building or tree with accessible crevice(s) and mostly Category As, maximum 2 Category Bs and maximum 1 Category C.	As summer roost and also underground structures or caves with mostly Category As, maximum 2 Category Bs and maximum 1 Category C.
Low bat potential	Building or tree with suitable maternity roost space* and more than 2 Category Bs or maximum of 2 Category Cs.	Building or tree with accessible crevice(s) and more than 2 Category Bs or maximum of 2 Category Cs.	As summer roost and also underground structures or caves with more than 2 Category Bs or maximum of 2 Category Cs.
Negligible bat potential	Building or tree without a suitable maternity roost space* or with one but lacking access points or more than 2 Category Cs.	Building or tree without crevices or with them but lacking access points or more than 2 Category Cs.	Building or tree without voids or crevices or with them but lacking access points or more than 2 Category Cs. Underground structure or cave without access points.

* void, large crevice or space behind cladding which is accessible to bats.

4. Results

- 4.1.1 The survey found no evidence of bats or hibernating bats in trees T38, T62 or building T335.
- 4.1.2 The trees and building were found to have features suitable to support hibernating bats.
- 4.1.3 The information recorded during the survey, including a description of potential roost features is given in Table 3. Photographs of the trees and building inspected for hibernating bats are shown in Figure 3.

Table 3. Summary of ground level and climbing inspection of high potential trees and building.

Tree / Building ID (Species/ Structure Type)	Surveys type undertaken	Potential Roost Features (PRFs) * ¹	Evidence of bats * ²	Bat potential after 2015 inspection	Results of Hibernation Survey	Recommendations for Further Survey
T38 (Oak)	Ground level inspection and tree climbing inspection (roped)	Hollows/cavities <u>Canker 1.5m, hazard beams 8m, branch fracture 9m, cavity in trunk 8m.</u>	Fur polishing and scratch marks on branch fracture 9m	Transitional - High, Maternity - High, Hibernation - High Overall - HIGH	No bats, or evidence of bats found	Two further dusk emergence and/or dawn return to roost surveys. Pre-construction Bat Roost Inspection.
T62 (Oak)	Ground level inspection and tree climbing inspection (roped)	Hollows/cavities <u>Knot hole 3m, branch fracture 7m, hollow trunk from ground to 7m.</u>	None	Transitional - High, Maternity - High, Hibernation - High Overall - HIGH	No bats, or evidence of bats found	Pre-construction Bat Roost Inspection.
T335 (Old lime kiln)	Ground level inspection (tree climbing survey not applicable)	Small brick structure with internal cracks and voids <u>Missing brickwork and mortar gaps on external face, gaps and voids within internal stonework.</u>	None	Transitional - High, Maternity - Unknown, Hibernation - High Overall - HIGH	No bats, or evidence of bats found	Two further dusk emergence and/or dawn return to roost surveys. Pre-construction Bat Roost Inspection.

*¹ Features identified during 2014 RPS surveys are given in standard font, additional features/details identified during 2015 Thomson Ecology surveys are underlined

*² Identified during 2015 Thomson Ecology surveys

5. Legal Protection

5.1.1 British bats receive comprehensive protection under the Conservation of Habitats and Species Regulations 2010, and some additional but limited protection under the Wildlife and Countryside Act 1981 (as amended). Taken together the legislation makes it an offence to:

- Deliberately capture, injure or kill a bat;
- Deliberately disturb a bat in such a way as to be likely:
 - i. to impair its ability to survive, to breed or reproduce, or to rear or nurture its young; or
 - ii. to impair its ability to hibernate or migrate; or
 - iii. to affect significantly the local distribution or abundance of the species to which they belong.
- Damage or destroy a breeding site or resting place of a bat;
- Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead bat, or any part of, or anything derived from a bat.

5.1.2 A roost is any structure or place used by bats for shelter or protection. As bats tend to re-use the same roosts year after year, once a roost is identified, it is protected whether bats are present or not.

6. Recommendations

6.1 Further survey

- 6.1.1** Although no bats were found to be hibernating, the features on the trees (T38 and T62) and in the building (T335) have potential to support hibernating bats. Best practice methodology (Collins, 2016) would recommend carrying out a second bat hibernation roost survey in the hibernation period. If bats are found during the hibernation survey a licence will be required, which will be accompanied by a method statement to include timings of work (i.e. when bats are least likely to be present, dependent on other roost status) and appropriate mitigation (e.g. provision of a replacement roost which provides similar conditions suitable for hibernating bats). If a second survey cannot be completed then precautionary methods of works will be required.
- 6.1.2** Tree T62 should be removed outside the bat hibernation season as sufficient previous dusk and dawn bat surveys have been undertaken to establish that bats in a transitional roost are likely to be absent (Thomson Ecology Report Reference: MRPS108/005/002/003, issued November 2015). The tree should be removed immediately following a pre-construction bat roost inspection, i.e. the same day to prevent the possibility of bats entering the tree between survey and felling). The survey and felling should take place in late April, or mid to late October to avoid the maternity roosting period also, avoiding the time when bats are most sensitive. If bats are found during the pre-construction bat roost inspection then the felling would not be able to take place until a licence has been granted, and appropriate mitigation put in place.
- 6.1.3** To establish if tree T38 and building T335 support transitional and/or maternity roosts a further two dusk emergence and/or dawn return to roost surveys between May and August as recommended in the Bat Tree Inspections, Dusk Emergence and Dawn Return to Roost Bat Surveys report (Thomson Ecology Report Reference: MRPS108/005/002/003, issued November 2015) should be carried out. If no bats are found to be roosting in T38 and T335 during the dusk and dawn survey; T38 and T335 could be removed outside of the bat hibernation period (mid-November to March), following a pre-construction bat roost inspection. If bats are found to be roosting during the dusk and dawn surveys then felling would not be able to take place until a licence has been granted, and appropriate mitigation put in place.

7. Conclusion

- 7.1.1** A tree climbing inspection of trees T38 and T62 and ground level inspection of building T335 was undertaken to search for hibernating bats or evidence of bats. No bats, or evidence of bats was found during the survey.
- 7.1.2** If tree T62 is to be removed, works should be undertaken outside of the bat hibernation period immediately following a pre-construction bat roost inspection. If bats are found during the survey then no felling can take place until a licence has been granted and appropriate mitigation put in place.
- 7.1.3** A further two dusk emergence and/or dawn return to roost surveys are recommended in May to August to establish if tree T38 and building T335 support transitional and/or maternity roosts as recommended in the Bat Tree Inspections, Dusk Emergence and Dawn Return to Roost Bat Surveys report (Thomson Ecology Report Reference: MRPS108/005/002/003, issued November 2015). If no bats were found to roost in tree T38 and building T335 during the dusk and dawn survey; T38 and T335 could be removed outside of the bat hibernation period (mid-November to March), following a pre-construction bat roost inspection. If bats are found during the survey then no felling can take place until a licence has been granted and appropriate mitigation put in place.

8. References

- 8.1.1 Collins, J. ed. (2016) *Bats Surveys for Professional Ecologists; Good Practise Guidelines*. (3rd ed) Bat Conservation Trust London.
- 8.1.2 Thomson Ecology (2016) Bat Tree Inspections, Dusk Emergence and Dawn Return to Roost Bat Surveys, M4 Corridor around Newport, MRPS108/005/002/003.