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New England Resource Recovery Centre

Appendix 12/18: Additional Bat Surveys

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APPENDICES

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1.0 INTRODUCTION

1.1 Background

This report provides additional information with respect to bats at the New England Resource Recovery Centre following information requests from Devon County Council (DCC). This report supplements existing ecological surveys and assessment provided in the Environmental Statement and subsequent additional information supplied under Regulation 19.

1.2 Consultation Information Requests and Clarification

DCC¹ requested *“a visual assessment of trees lost to the development should be carried out asap in order to identify whether any are category 1 or 2a, and therefore whether further survey work is required prior to determination.”*

1.3 Response

Subsequent to an initial visual inspection of woodland for bat roosting potential presented in R19.72², all trees identified as being likely to be lost by development have been subject to detailed visual inspection.

Where necessary, i.e. Cat 1 and Cat. 2a trees, further surveys have been undertaken, i.e. tree climbing inspections and dusk/dawn surveys, to provide a full assessment of the likely impacts to tree-roosting bats in accordance with published good practice, i.e. BCT (2007) Good Practice Guidelines for Bat Survey. The surveys undertaken represent Stage 1 and Stage 2 assessment, under BCT Guidelines (See Appendix A). Information with respect to mitigation measures (Stage 3), should the development be approved, are presented in Section XX below.

The proposed methodology for bat surveys was discussed in depth with Sarah Jennings at DCC and agreed in email correspondence³

Following additional bat surveys of trees, a re-evaluation of likely effects upon tree-roosting bats is presented in Section XX below.

¹ Email to SLR Consulting from Sarah Jennings, DCC County Ecologist, 15th March 2011

² SLR Consulting Ltd (October 2010) Response to Regulation 19 Request, Additional information Volume 7b - R19.72 – Bats

³ Email to SLR Consulting from Sarah Jennings, DCC County Ecologist, 11th April 2011.

2.0 SURVEY METHODOLOGY

2.1 Good Practice Guidelines

The detailed tree survey followed Stages 1 and 2 of the protocol for tree survey written by SLR Consulting Ltd and published by BCT (2007) Good Practice Guidelines for Bat Survey (Appendix A).

2.2 Methodology

The proposed access route was identified on the ground through topographic survey in April 2011 in order that each tree potentially affected by proposals could be easily identified prior to the daytime visual inspection for bats.

Trees within and those whose canopy encroached the route of the proposed access track, including areas of proposed embankments at the proposed river crossing point were subject to detailed visual inspection from ground level by a licensed bat worker.

Remaining woodland within the application site that could be affected by the development⁴ was also subject to detailed visual inspection, following the same approach. This area of the proposed development site has not had the development boundary topographically surveyed and marked on the ground and therefore the development boundary was estimated using map data with a precautionary approach taken to those trees close to the boundary that are likely to be affected.

Each tree with the potential to support bats was tagged and classified in accordance with the tree survey protocol (Appendix A). Category 2a trees, difficult to view trees and those covered in dense ivy were then immediately climbed by the batworker and/or arborist under supervision of the batworker, to seek any confirming evidence of the presence of bats and to give a better understanding of the nature of the features under investigation. Endoscopes, binoculars, high powered torches and pencil torches were used to aid detailed investigation.

The methodology agreed with DCC included that where bat roosts were identified, the ecologist would collect bat droppings as evidence, which would be sent for DNA analysis to determine or confirm species present. Any roosts identified would be assessed by the batworker as to their likely status and usage.

2.3 Weather Conditions, Timing and Survey Personnel

Surveys were undertaken over three days. Initial tree and tree climbing assessments were undertaken on 12th and 13th April 2011 by J. Colebrook, CEnv, MIEEM (NE Licence no 20101878), assisted by N. Boden (arborist and bat surveyor).

A re-inspection of trees within the zone of disturbance of the proposed road embankment following concerns that this area was not included in the pegged access route was undertaken on 17th May and identified 1 additional tree at risk from development.

Dusk emergence surveys at two trees identified for further survey in April 2011 were undertaken on 16th and 17th May by Alastair Campbell MIEEM. Two anabat recorders were used overnight between the 16th and 17th May to record bat activity in the vicinity of these trees throughout the night and at dawn.

⁴ Development footprint derived from Masterplan Drawing 12/3

Weather conditions during all surveys was mild and dry and suitable for the surveys undertaken.

2.4 Limitations

No limitations to the surveys undertaken have been reported.

3.0 RESULTS

Results of detailed visual assessment of trees and any subsequent climb and inspect or dusk/dawn surveys are presented in Table 3/1 and Table 3/2 below.

3.1 Results Summary

- 55 trees with some bat potential (2a or 2b) would be directly affected by construction (either within or directly adjacent to construction zone)
- 13 Category 2a trees have been identified, with 10 retained as Cat. 2a trees following climbing inspections.
- 42 Category 2b trees have been identified, with further 3 Cat 2a trees reclassified following climbing inspections.
- Detailed climbing inspections at 2 trees were not possible due to the complex cavities present. Dusk emergence survey and Anabat remote recording device were used to confirm current bat status of these two trees and no evidence of roosting bats was observed.
- No evidence of roosting bats discovered at any tree with the potential to be affected by development.

NB: Where trees carried a tag from previous surveys the original tag number is used to avoid confusion. The result is that tag numbers are not sequential. However, the trees as listed in table 3/1 below progress from south to north, along the proposed access track.

Table 3/1 – Bat Surveys of Trees Within Proposed Access Track and Embankments

Tag No.	Tree Species	Initial Inspection Category & Details	Additional survey undertaken/needed
0800	Goat Willow	2b Multi-stemmed tree with some old wounds and loose bark	
0799	Hazel	2b Coppice with some ivy and occasional small rot holes	
0798	Beech	2a Tree with large spreading crown. Cavities and branch union within canopy.	Climbed. No signs of bats present. However the tree remains 2a due to the presence of ideal roosting structures.
0797	Oak	2b Some ivy present	
0796	Holly	2a Adjacent to ditch, with horizontal low level branch. Rot and damage at 5m height on upright trunk.	Climbed. No signs of bats present. However the tree remains 2a due to the presence of ideal roosting structures.
0795	Ash	2b Three stemmed tree adjacent to river. Ivy and canker present.	Poor for most bat species, some potential for barbastelle.
0794	Ash	2a Coppice with long healed split along length of trunk. Directly adjacent to river.	Complex cavity, not possible to adequately survey using endoscopes etc. Dusk survey (16 th May) did not identify any emerging bats; Anabat did not record any significant activity at sunrise, making the presence of a roost in this area

Tag No.	Tree Species	Initial Inspection Category & Details	Additional survey undertaken/needed
			unlikely. Tree remains 2a.
0793	Ash	2b Ivy clad.	Poor for most bat species, some potential for barbastelle.
0792	Beech	2a Cavity present on main trunk.	Climbed. No signs of bats present. However the tree remains 2a due to the presence of ideal roosting structures.
0791	Ash	2b - Ivy clad.	Poor for most bat species, some potential for barbastelle.
0788	Beech	2b Some wounds and small cavities.	
0789	Beech	2b - Small cavities on trunk.	
0790	Ash	2a Hollow trunk.	Climbed. No signs of bats present. However the tree remains 2a due to the presence of ideal roosting structures.
0787	Goat Willow	2a Large broken/half fallen trees with hollows, fractures and cracks.	Climbed. No signs of bats present at accessible portions. However, due to the complex cavities present, not possible to adequately survey using endoscopes etc. Dusk survey (16 th May) did not identify any emerging bats; Anabat recorded very little bat activity in the vicinity of this tree at any time, making the presence of a roost in this area highly unlikely. Tree remains 2a.
0384	Ash	2b - Ivy clad.	Poor for most bat species, some potential for barbastelle.
0786	Hazel	2b Ivy clad, with some areas of rot.	Poor for most bat species, some potential for barbastelle.
0389	Ash	2a 3-stems, hollow present on the thinnest one	Climbed. No signs of bats present. Found to be poor for most bat species, some potential for barbastelle.
0781	Beech	2b Small wound and limited amounts of rot	
0780	Ash	2b Multistemmed tree, ivy clad.	
0785	Ash	2b Multistemmed tree, with ivy and some splits.	Poor for most bat species, some potential for barbastelle.
0784	Ash	2b Multistemmed tree, ivy clad.	Poor for most bat species, some potential for barbastelle.
0778	Ash	2b Multistemmed tree, ivy clad.	Poor for most bat species, some potential for barbastelle.
0783	Holly	2b On old bank adjacent to path. Ivy clad	
0779	Holly	2b- Ivy clad	
0777	Holly	2a. Ivy clad, with cavity at base of trunk	No signs of bats present. Recategorise as 2b due to poor quality of cavity.
0664	Ash	2b Multistemmed ash with some canker.	Poor for most bat species, some potential for barbastelle.
0776	Ash	2a Thick dense ivy, with deadwood and splits.	Climbed. No signs of bats present. However the tree remains 2a due to the presence of ideal roosting structures.
0775	Ash	2a	Climbed. No signs of bats present.

Tag No.	Tree Species	Initial Inspection Category & Details	Additional survey undertaken/needed
		Thick dense ivy, with deadwood and splits.	However the tree remains 2a due to the presence of ideal roosting structures.
		2b Growing on bank. Crossing stems.	
0457	Holly		
0461	Ash	2b - Adjacent to path. Ivy clad.	
0462	Beech	2b - Adjacent to path. Ivy clad.	
		2b - Leaning over stream. Ivy clad.	
0651	Oak		
0649	Sycamore	2b - Adjacent to stream. Ivy clad.	
		2b Close to pylons at north of woodland. Sections of dead ivy.	Climbed. Poor for most bat species, some potential for barbastelle.
0476	Sycamore		
		2b Close to pylons at north of woodland. Ivy clad.	Climbed. Poor for most bat species, some potential for barbastelle.
0475	Sycamore		
		2b small rot holes, appear shallow from ground; small amount of loose bark.	
0428	Beech		
		2b Small rot holes, appear shallow from ground; small amount of loose bark.	
0429	Oak		
0430	Beech	2b - Small rot holes on main stem	

Table 5/2 – Bat Surveys of Trees affected by development within Application Site, excluding Access Road

Tag No.	Tree Species	Initial Inspection Category & Details	Additional survey undertaken/needed
		2b Some ivy and split dead ends.	
0774	Sycamore		
		2b Some ivy and split dead ends.	
0773	Sweet Chestnut		
		2b Some ivy and split dead ends.	
0772	Sweet Chestnut		
		2a Cavity in trunk at 3m.	Climbed. No signs of bats present. Recategorise as 2b due to poor quality of cavity.
0771	Oak		
		2b Some ivy and split dead ends.	
0770	Oak		
		2b Some ivy and split dead ends.	
0769	Oak		
		2b Some ivy and split dead ends.	
0768	Oak		
		2b Hollow at base.	
0767	Beech		
		2b Some ivy and split dead ends.	
0766	Oak		
		2a. Wounds and branch union at height.	Climbed. No signs of bats present. However the tree remains 2a due to the presence of ideal roosting
0765	Beech		

Tag No.	Tree Species	Initial Inspection Category & Details	Additional survey undertaken/needed structures.
0764	Sycamore	2b. Long cavity, no evidence of bats.	
0763	Beech	2b Wound on trunk.	
0762	Sycamore	2a Very thin tree with small opening at 0.5m height leading to hollow trunk.	No signs of bats present. However the tree remains 2a due to the presence of ideal roosting structures.
0761	Oak	2b Ivy clad	
0760	Goat willow	2b. Ivy clad with some rotten parts	
0759	Oak	2b Ivy clad.	

3.2 Summary of Results of Dusk and Anabat Remote Recording Device Surveys – May 2011

Dusk surveys at Goat Willow (Tag 0787) and in the vicinity of Ash (Tag 0794) did not observe any bat emergence from these trees or any trees in the surrounding area.

The Anabat placed at Goat Willow recorded a low level of bat activity from two bat species. Small numbers of common pipistrelle were recorded from 20.21 (38 minutes before sunset) until 02.48. The lack of records closer to dawn adds weight to the conclusions of the dusk assessment that this and surrounding trees are not used by this bat species for roosting. A small number of *Myotis* sp. were also recorded. Bat surveyor observations of *Myotis* sp. during dusk activity survey indicates that these records are most likely to be Daubenton's bats.

Bat activity on the bank of the River Yealm in the vicinity of the Ash (Tag 0794) recorded substantially higher bat activity, with common pipistrelle activity constant between 2158 (1 hour after sunset) and 2230, with continued regular activity until around 0200. *Myotis* sp. (considered to be Daubenton's, based upon flight and foraging characteristics) were also regularly recorded between 2230 and 0200. Occasional records of soprano pipistrelle and *Plecotus* sp. were also made between 2310 and 0415. There were a small number of records of barbastelle bat between 0222 until 0423. The timing of these observations of barbastelle are such that it is considered highly unlikely that this bat roosts in the vicinity of this location. Sporadic activity of common pipistrelle continues until 0606 (approximately 40 minutes after sunrise), although the absence of a peak in activity around this time makes it unlikely that individuals roost in the vicinity.

4.0 EVALUATION OF SURVEY RESULTS AND ASSESSMENT OF LIKELY IMPACTS

55 trees with potential roost features were identified within the surveyed area, i.e. those areas of woodland directly affected by the proposed development. The vast majority of the trees are identified as having potential to support bats due to being covered in ivy, rather than having cavities or splits in the tree itself. Cavities, rot holes etc. appear relatively uncommon within the wooded areas surveyed in detail, as the majority of the trees are not of a size or age to have developed them. This supports the findings of the compartment-based survey of tree roost potential undertaken in October 2010 and reported in Appendix 1 of R19.72.

No evidence of tree roosting bats was noted during 2011 surveys. It is considered highly unlikely that a roost used by significant numbers of bats or a rare species of bats is present at the current time within trees that would be affected by development proposals.

There is a possibility that individual bats, in particular common pipistrelle; a species that occurs in relatively high numbers within the woodlands surveyed and regularly uses tree crevice roosts; could occasionally use small features at any of the trees identified, in particular those classified as 2a, as part of a network of tree roosts or night resting places. Nevertheless, with reference to the compartment-based survey of tree roost potential undertaken in October 2010 within the applicant's wider landholding, trees suitable for bats at risk from the proposed development represent a very small proportion of the potential roost resource within the wider woodland network within the applicant's landholding. Therefore, it is considered that the loss of these trees with potential roost features would not result in any significant loss of potential roost features in the wider woodland.

The trees that would be lost to development within the application site are therefore not considered to be of any particular nature conservation value for bats and would not be considered independently as a valued ecological receptor within the Ecological Impact Assessment. Impacts to the wider bat assemblage within the application site are considered in detail within the ES.

In the absence of proposed mitigation and avoidance measures, presented below, no significant impacts to tree roosting bats are predicted as a result of the proposed development. However, due to the legal protection offered to all resting places of bat species, a scheme of mitigation and avoidance measures are proposed to ensure that risks of offences under the Conservation of Habitats and Species Regulations 2010 are minimised. Compensation for the loss of potential tree roosts is also provided within the proposed development scheme.

5.0 AVOIDANCE, MITIGATION AND COMPENSATION MEASURES

The proposed development scheme includes a commitment by the applicant to undertake avoidance and mitigation measures to reduce the risk of harm to bats. With particular reference to tree roosting bats, the following commitments, consistent with good practice approaches to tree works where bats may be affected⁵, have been made by the applicant.

5.1 Reasonable Avoidance Measures

Reasonable Avoidance Measures are recommended prior to commencement of development, i.e. tree felling within woodland areas:

- All remaining Cat. 2a trees identified in Table 5/1 above with the potential to be affected by proposals to be subject to update daytime inspection for roost potential by licensed batworker, with provision for further climb-and-inspect surveys as necessary.
- All trees with potential roost features (Cat 2a and 2b) to be felled in accordance with specific advice provided by the batworker. This advice would generally follow the measures outlined below:
 - cracks and splits to be wedged to prevent closure prior to felling;
 - loose bark and/or ivy to be carefully peeled back to reveal the wood beneath and confirm no bats are present;
 - cavities must not be sawn through; sections that contain potential roost features must be “soft-felled” and roped carefully down to the ground;
 - cavity containing sections should be allowed to remain undisturbed on site for 24 hours following felling to allow any undiscovered bats (or other animals) to escape;
 - where possible, trees would be scheduled for felling during October to mid-November, or Mid-March to the end of April.
- If bats, or evidence of bats is discovered at any time work must cease and the advice of a licensed batworker and/or Natural England be sought. An EPS licence may be required before works can resume.

5.2 Compensation Measures

The ES (para 12.282) makes the commitment to replace lost potential roosting features by erecting 50 bat boxes through the woodland. These will be of a variety of designs including wooden, woodcrete, crevice, cavity and hibernation boxes. A heated bat box will also be erected on a tree near the river; these boxes are automated and provide optimal internal bat roosting conditions, particularly for maternity colonies which tends to seek out warm roosts in summer.

In addition to commitments in the ES for artificial bat boxes, cavity-containing sections of felled 2a and suitable 2b trees, i.e. up to 10 features, would be permanently fixed to retained mature trees within the woodland.

⁵ BCT (2007) Good Practice Guidelines for Bat Survey

6.0 CONCLUSIONS AND SUMMARY

Detailed surveys of trees likely to be affected by the proposed development have concluded that no confirmed bat roosts within trees would be lost. Potential impacts upon tree roosting bats, i.e. through the loss of potential roosting features, are therefore not considered to be significant, even in the absence of mitigation and avoidance measures proposed. Detailed mitigation and avoidance measures, committed to by the applicant, are described which reduce the likelihood of offences under the governing legislation and allow for the potential colonisation of bats into trees currently shown not to support roosting bats.

Compensation measures are also described to ensure that there would be no net loss of potential roosting features as a result of the proposed development.

With the inclusion of all mitigation, avoidance and compensatory measures no significant adverse effects upon tree roosting bats are predicted and there would be no adverse effects upon the favourable conservation status of tree dwelling bats as a result of the development proposals.

7.0 CLOSURE

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Viridor Waste Management Ltd; no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

BAT SURVEY PROTOCOL: TREES

All trees surveyed are classified according to the categories presented below.

Tree Category & Description	Stage 1 Survey requirements prior to determination	Stage 2 Further measures to inform mitigation	Stage 3 Likely mitigation
Category 1 Confirmed bat roost tree with field evidence of the presence of bats, e.g. droppings, scratch marks, oil or urine stains.	Identified on map and on the ground. Further assessment to provide a best professional judgement on the likely use of the roost, numbers and species of bat, by analysis of droppings or other field evidence.	Avoid construction disturbance to trees, where possible. Further dusk and dawn survey to more accurately establish the presence, numbers and type of roosts present and to inform the requirements for mitigation if felling is required.	Felled under Natural England EPS licence following the installation of equivalent habitats as a replacement. Felling would be undertaken taking reasonable avoidance measures (RAM) to minimise the risk of harm to individual bats
Category 2a Trees that have a high potential to support bat roosts	Identified on map and on the ground. Further assessed to provide a best professional judgement on the potential use of suitable cavities based upon the habitat preferences of bats.	Avoid construction disturbance to trees, where possible. More detailed off the ground visual assessment. Further dusk and dawn survey to establish the presence of bats, and if present, the species, numbers and type of roosts to inform the requirements for mitigation if felling is required.	Trees with confirmed roosts following further survey would be upgraded to Cat 1 and felled under licence as above. Trees with no confirmed roosts would be downgraded to Cat 2b and felled taking reasonable avoidance measures.
Category 2b Trees with a moderate/low potential to support bat roosts	None	Avoid construction disturbance to trees, where possible. No further surveys	Trees would be felled taking reasonable avoidance measures.
Category 3 Trees with negligible potential to support bat roosts	None	None	No mitigation for bats required.