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Bat Survey

Northern United

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Summary

- AEW Ltd. were commissioned by Forest of Dean District Council to carry out a detailed bat survey of the site at Northern United. The surveys were required to inform the proposed demolition of three derelict buildings.
- AEW Ltd. have carried out surveys and monitoring of bats across the site since 2013.
- Four evening emergence surveys were conducted on the 21st May, 12th June, 27th July and 14th September 2017. Six surveyors and four night vision video cameras were positioned around accessible areas of the buildings, with particular focus on features with bat access potential.
- The surveys show that the buildings are still being used by a small percentage of the lesser horseshoe colony. Additionally, the buildings are used by a low number of bats of other species. Peak counts for the buildings were: two common pipistrelles and two soprano pipistrelles emerged from the Bathhouse, one common pipistrelle and one soprano pipistrelle emerged from the Canteen, and one common pipistrelle emerged from the Office.
- The surveys have confirmed that all three buildings are used by bats. Aside from lesser horseshoe, the buildings are used by six other species of bat. The number of bats of each species recorded emerging from the buildings is low, typical of an intermittent or occasional roost for individual or low numbers of bats, rather than a maternity colony for any of these species.
- The proposed demolition of the Office, Canteen and Bathhouse will result in direct impacts on bats present and on the roost sites present, therefore a full EPS licence from Natural England will be required before any works can proceed.

This report has been prepared by AEW Limited, with all reasonable skill, care and diligence within the terms of the Contract with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

1 Introduction

- 1.1 AEW Ltd. were commissioned by Forest of Dean District Council to carry out a detailed bat survey of the site at Northern United. The surveys were required to inform the proposed demolition of three derelict buildings.
- 1.2 The surveys were carried out in accordance with Bat Surveys: Good Practice Guidelines (Bat Conservation Trust, 2016). This report details the results of four evening emergence surveys carried out on the 21st May, 12th June, 27th July and 14th September 2017.
- 1.3 The emergence surveys were designed to:
 - Update the survey results for the site
 - Identify the bat species present.
 - Estimate the size and status of any existing bat roost within the buildings.
 - Determine the potential impacts on any bat roost from the proposed demolition works.

Legislation

- 1.4 All species of bat in the UK are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and Schedule 2 of the Conservation (Natural Habitats, &c.) Regulations 2010. The Regulations implements the European Habitats and Species Directive (EC Directive 92/43/EEC). Bats are therefore European protected species.
- 1.5 The Act and Regulations give full protection to bats from intentional/deliberate killing, injuring, taking and reckless or intentional disturbance. In addition, bat breeding and resting places (i.e. bat roosts) are also protected from damage, destruction and reckless or intentional obstruction of access to such places.
- 1.6 A roost is defined as 'any structure or place which a bat uses for shelter or protection'. As bats tend to reuse the same roosts, legal opinion is that a roost is protected whether or not bats are present at the time of survey.
- 1.7 Barbastelle Bats *Barbastella barbastellus*, Bechstein's Bat *Myotis bechsteinii*, Noctule *Nyctalus noctula*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Brown Long-eared Bat *Plecotus auritus*, Greater Horseshoe Bat *Rhinolophus ferrumequinum* and Lesser Horseshoe Bat *Rhinolophus hipposideros* are also listed as being species of principle importance to the conservation of biodiversity in England under Section 41 of the Natural Environment and Rural Communities Act 2006.

2 Background

- 2.1 A major regeneration development project is proposed for land to the north of Cinderford, referred to as the 'Cinderford Northern Quarter' of which a part of the site includes a number of now abandoned former colliery buildings for the former northern united site.
- 2.2 Three buildings remain on the northern united site, the Office (Building C), Canteen (Building G) and Bath House (Building H), which all have historical records of bats present, notably Lesser Horseshoe bats. the proposals for the site will result in the demolition of all three buildings and loss of all bat roosts present. See Figure 1
- 2.3 Surveys for Lesser horseshoe bats are ongoing through monthly monitoring reports (See AEWC yearly reports on Lesser Horseshoe monthly monitoring) however surveys for all species are required to inform for the development and demolition of the buildings on the site.
- 2.4 All species emergence surveys were last conducted in 2013, these and the monthly surveys over 4.5 years have identified a total of 7 species using the buildings.



Figure 1: Showing the three buildings on the site subject to survey.

- 2.5 Monthly monitoring of Lesser Horseshoe is still ongoing, these surveys were not to inform for the lesser Horseshoe activity but aimed at concentrating and identifying all other species that may be using the buildings.

3 Method

Emergence Surveys

- 3.1 Four evening emergence surveys were conducted on the 21st May, 12th June, 27th July and 14th September 2017. Conditions were good for all bat surveys with warm weather and any bats still present were likely to be active. The emergence surveys began approximately 15 minutes before sunset and finished after 1 and a half hours after sunset on each survey.
- 3.2 Batlogger M bat detectors were used for taking time-expanded recordings of any bats when they may emerge from the buildings. These recordings were analysed on Elekon bat analysis software that facilitates species identification.
- 3.3 Professional night vision video cameras were used to film areas of the building with the assistance of an external infra-red lamp to accurately identify if bats emerge from that selected area of the building.
- 3.4 Surveyors and night vision video cameras were positioned around accessible areas of the buildings, with particular focus on features with bat access potential for a range of species not including horseshoes.

4 Results

Emergence Surveys

- 4.1 **21st May** - Weather conditions were good for the survey (18°C with 60% cloud cover and a moderate breeze at 21:26) and any bats present were likely to be active. Six surveyors and four night vision cameras monitored the Office, Canteen and Bathhouse.

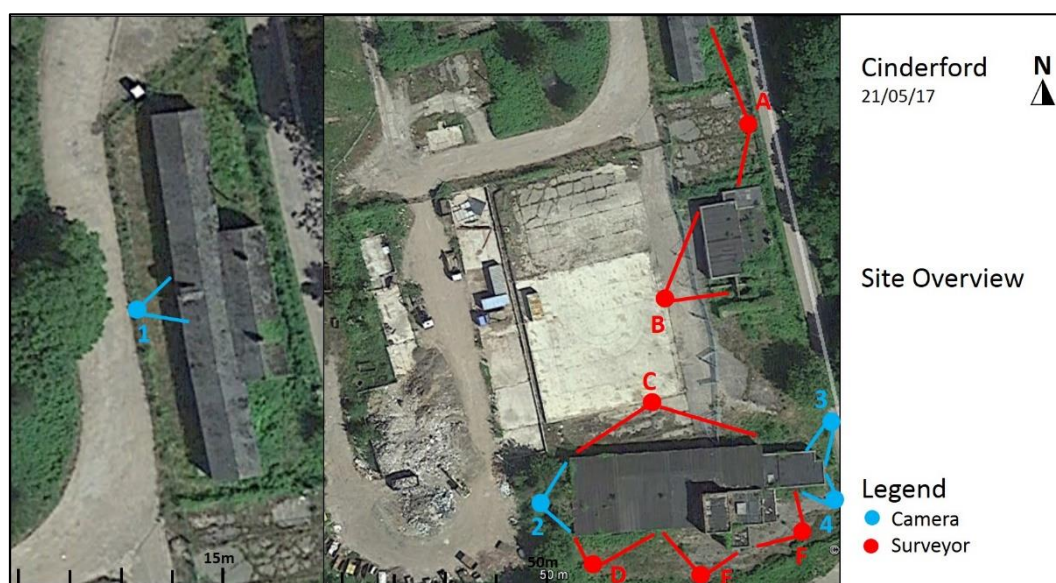


Figure 1: Showing positions of surveyors and cameras around the Office (left), Canteen and Bathhouse (right) on 21st May.

- 4.2 The survey identified a good level of foraging activity of common and soprano pipistrelle and lesser horseshoe, with passes of noctule and a myotis species also recorded, and a single greater horseshoe. Lesser horseshoes were identified emerging from and re-entering known emergence points: the porthole window on the western elevation of the office building, the two small windows on the south-east corner of the Bathhouse and the three windows on the western elevation of the Bathhouse. Aside from this, one common pipistrelle emerged from the southern side of the dormer window on the west elevation of the Office, and two common pipistrelles were identified emerging from the southern elevation of the Bathhouse: one from the flat roof just west of the tower, the other from the east-facing door to the east of the tower. Full results are detailed in Table A1 in the Appendix.

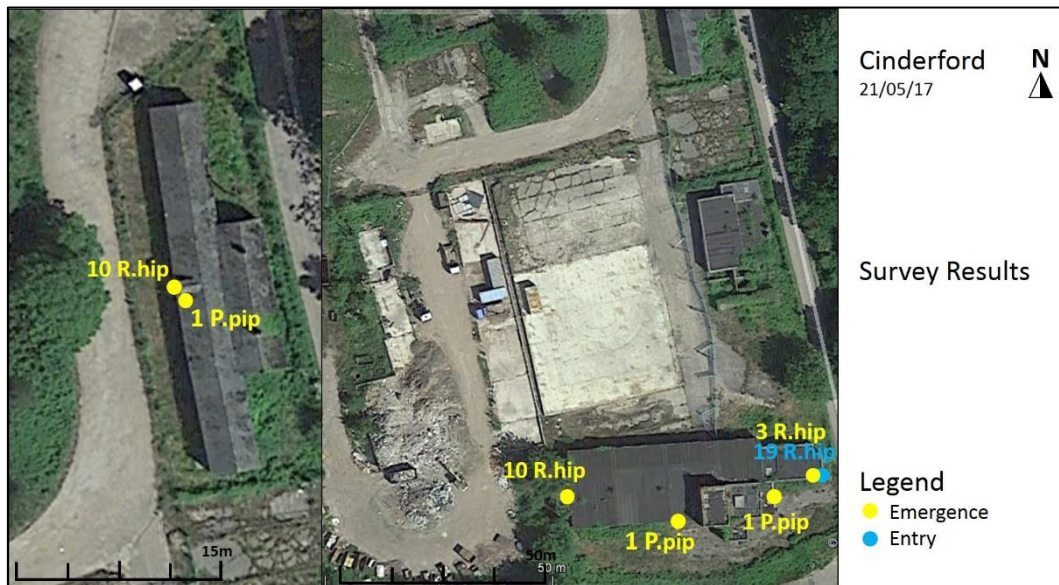


Figure 2: Showing emerging and re-entering bats recorded during the 21st May survey.

- 4.3 **12th June** - Weather conditions were good for the survey (14°C, clear and calm at 21:28) and any bats present were likely to be active. Six surveyors and four night vision cameras monitored the Office, Canteen and Bathhouse.

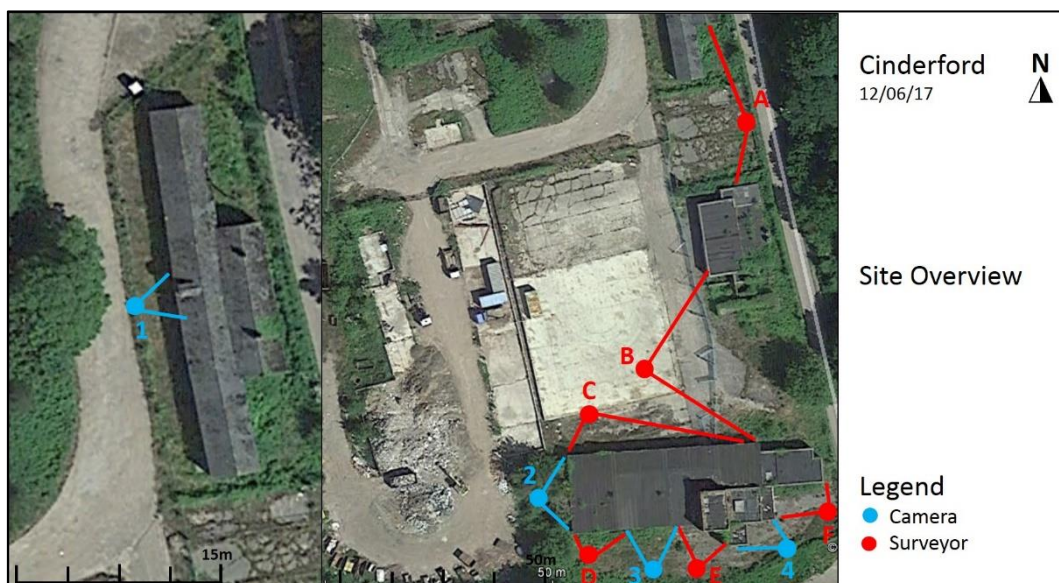


Figure 3: Showing positions of surveyors and cameras around the Office (left), Canteen and Bathhouse (right) on 12th June.

- 4.4 The survey identified a moderate level of foraging activity of common and soprano pipistrelle and lesser horseshoe, with a single noctule and long-eared bat pass recorded. Lesser horseshoes were identified emerging from and re-entering known emergence points: the porthole window on the western elevation of the office building, the two small windows on the south-east corner of the Bathhouse and the three windows on the western elevation of the Bathhouse. One soprano pipistrelle was identified emerging from the south-western corner of the Canteen building. Full results are detailed in Table A2 in the Appendix.



Figure 4: Showing emerging and re-entering bats recorded during the 12th June survey.

- 4.5 **27th July** - Weather conditions were good for the survey (16°C with 75% cloud cover and a moderate breeze at 21:08) and any bats present were likely to be active. Six surveyors and four night vision cameras monitored the Office, Canteen and Bathhouse.



Figure 5: Showing positions of surveyors and cameras around the Office (left), Canteen and Bathhouse (right) on 27th July.

- 4.6 The survey identified a moderate level of foraging activity of common and soprano pipistrelle and lesser horseshoe, with passes of noctule, long-eared bat and a myotis species also recorded. Lesser horseshoes were identified emerging from and re-entering known emergence points: the porthole window on the western elevation and roller door on the northern elevation of the Office building, the two small windows on the south-east corner of the Bathhouse and the three windows on the western elevation of the Bathhouse. No species other than lesser horseshoe bat were observed or recorded emerging from the buildings on this survey. Full results are detailed in Table A3 in the Appendix.

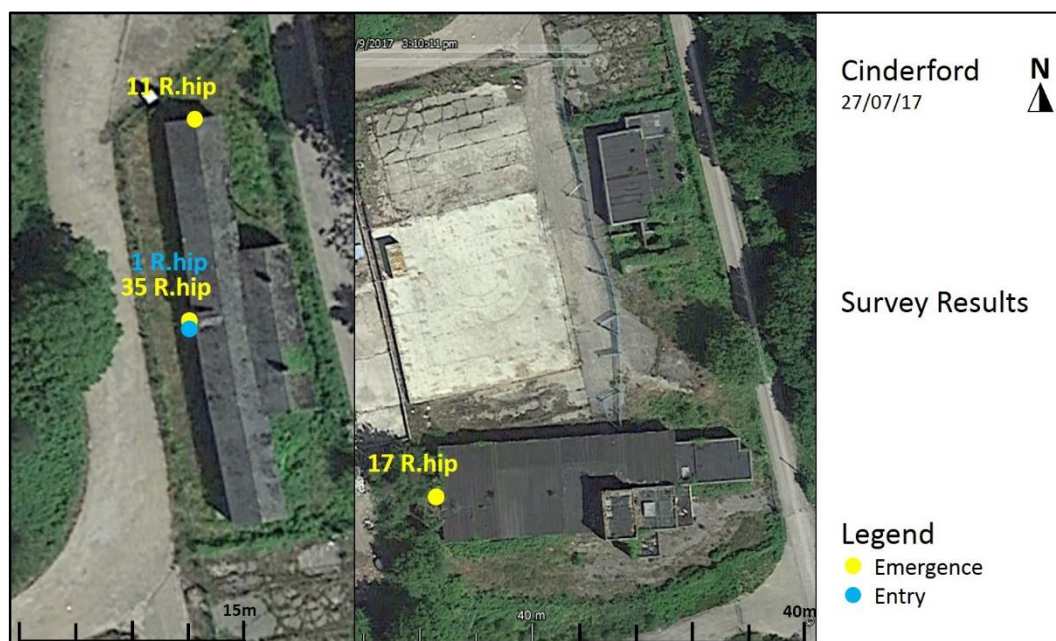


Figure 6: Showing emerging and re-entering bats recorded during the 27th July survey.

- 4.7 **14th September** - Weather conditions were okay for the survey (10°C and clear with a very slight breeze at 19:26) and any bats present were likely to be active. Six surveyors and four night vision cameras monitored the Office, Canteen and Bathhouse.

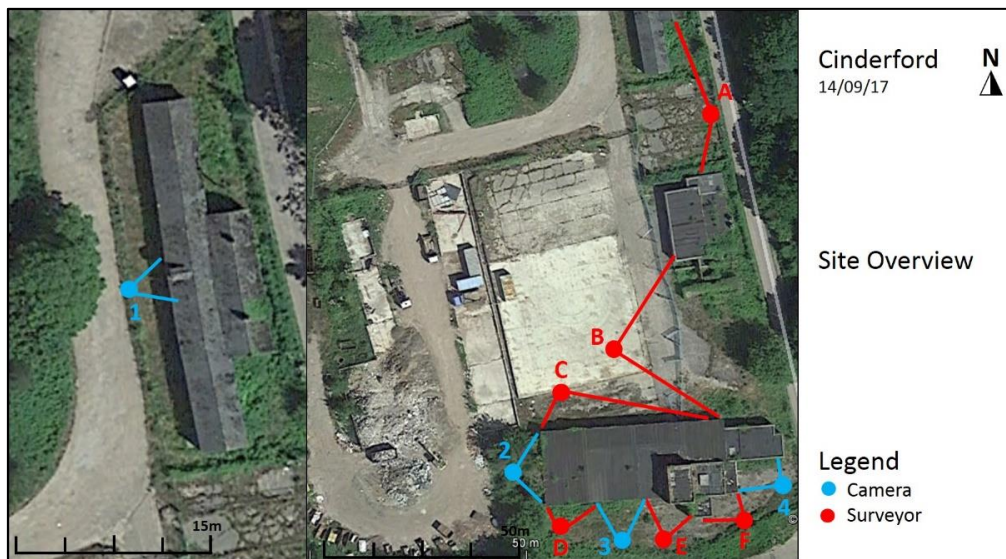


Figure 7: Showing positions of surveyors and cameras around the Office (left), Canteen and Bathhouse (right) on 14th September.

- 4.8 The survey identified a good level of foraging activity of common and soprano pipistrelle and lesser horseshoe, with several long-eared bat passes, and a pass of noctule barbastelle bat. Lesser horseshoes were identified emerging from and re-entering known emergence points: the porthole window on the western elevation of the office building, the two small windows on the south-east corner of the Bathhouse and the three windows on the western elevation of the Bathhouse. Aside from this, two soprano pipistrelles were identified emerging from the southern elevation of the Bathhouse, from the flat roof just west of the tower, and one common pipistrelle emerged from the southwestern corner of the Canteen, from the roof above the door. Full results are detailed in Table A4 in the Appendix.

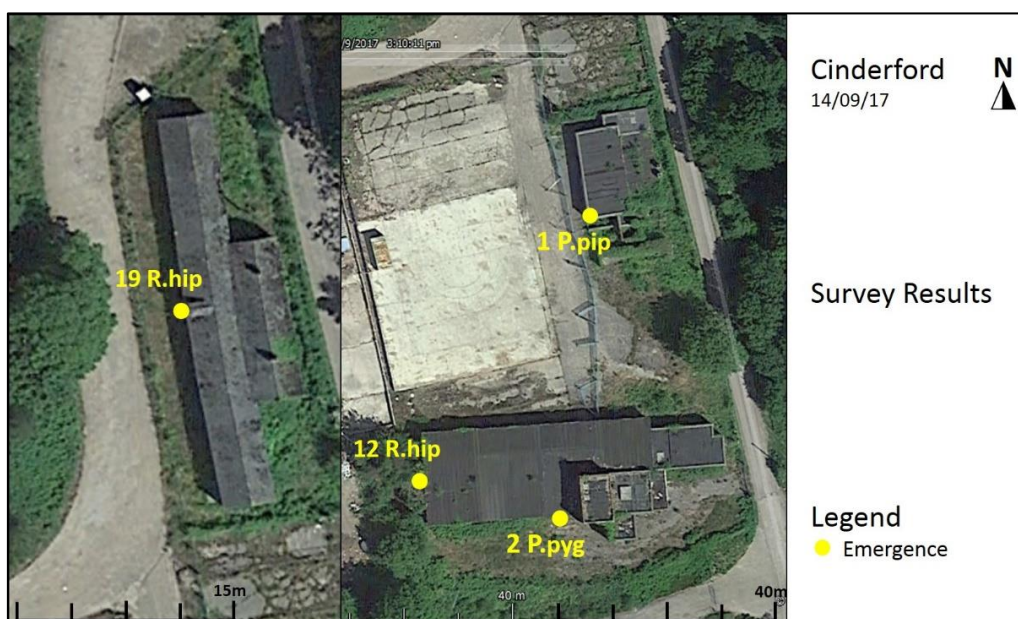


Figure 8: Showing emerging bats recorded during the 14th September survey.

5 Constraints/Limitations

- 5.1 Bats are difficult to locate in large structures, with so many potential roosting areas, particularly in inaccessible areas such as large buildings, finding the exact roosting site can be difficult, especially male/single bat roosting sites.
- 5.2 Bats can have seasonal use of buildings and being so mobile may arrive and start using a site after it has been surveyed, or roost somewhere else during the period it was surveyed. For this reason, bats may potentially be present but remain undetected, particularly during day time assessment.

6 Conclusions

- 6.1 The surveys show that the buildings are still being used by a small percentage of the lesser horseshoe colony, these are surveyed in greater detail in the monthly monitoring conducted at the site (See AEW C Lesser Horseshoe monthly monitoring report). Additionally, the buildings are used by a low number of bats of other species. Emergence surveys carried out in 2013 and 2017, and monthly monitoring since 2013, have recorded six additional species using the buildings (Table 1).

Table 1: Showing peak counts for bat species other than lesser horseshoe in each building from emergence and internal counts.

Species	Office		Canteen		Bathhouse	
	2013	2017	2013	2017	2013	2017
Common pipistrelle	2	1	2	1	3	2
Soprano pipistrelle	1	0	0	1	0	2
Brown long-eared	1	1	1	0	1	1
Natterer's	0	0	1	1	1	0
Bechstein's	0	0	0	0	1	0
Greater horseshoe	0	0	0	0	1	0

- 6.2 The number of bats of each species recorded emerging from the buildings is low, typical of an intermittent or occasional roost for individual or low numbers of bats, rather than a maternity colony for any of these species.
- 6.3 Bats are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation contravening (Natural Habitats &c.) Regulations 2010, (which make it illegal to intentionally kill, injure or otherwise disturb bats, or to damage, destroy or obstruct access to a bat roost, whether bats are present or not).
- 6.4 The proposed demolition of the Office, Canteen and Bathhouse will result in direct impacts on bats present and on the roost sites present, therefore a full EPS licence from Natural England will be required before any works can proceed.

7 References

Bat Surveys for Professional Ecologists: Good Practice Guidelines – Bat Conservation Trust 2016

Bat Workers Manual – Mitchell-Jones & McLeish 2004

Bat Mitigation Guidelines – Natural England 2006

The Conservation and Habitat Regulations 2010

Appendix: Tables of full results

Table A1: Results of the survey on 21st May 2017

DATE	SURVEYOR POSITION	TIME	SPECIES	NOTES
				NB - blackbird nesting in thick ivy on S side of Bathhouse tower
21.05.17	A	2126	P.pip	Flying E over S end of Office, not seen emerge
		2138	P.pip	HNS down lane to E
		2141	P.pip	Approached from E, foraging around S end of Office
		2154	P.pip	HNS down lane to E
		2155	P.pip	Semi-constant foraging activity around S end of Office
		2157	R.hip	Commuted SW over surveyor and behind Canteen
		2158	R.hip	Commuting, HNS
		2205	P.pip & R.hip	Regular P.pip and intermittent R.hip foraging activity
		2215	N.noc	HNS
	B	2150	Myotis sp.	HNS
		2153	P.pip	Commuted from N, foraging in area
		2155	P.pip	HNS
		2202	P.pip	Two bats approached from S, foraging
		2207	P.pyg	HNS
		2211	N.noc	Two passes, HNS
	C	2144	P.pip	HNS
		2155	P.pip	Two bats flying E along N elevation of Bathhouse until 2159
		2204	P.pip & P.pyg	HNS
		2207	Myotis sp.	HNS
		2212	Myotis sp.	HNS
		2214	P.pip & N.noc	HNS
		2217	R.fer	Very brief pass, HNS
		2221	N.noc	HNS
	D	2110	P.pyg	HNS
		2129	P.pyg	Flying E, foraging
		2148	R.hip	HNS
		2151	P.pyg	HNS
		2155	R.hip	HNS
		2201	P.pyg	Foraging along S elevation for remainder of survey
		2211	R.hip	HNS
	E	2110	P.pyg	Brief distant call, HNS
		2118	P.pip	Emerged from flat roof to the west of the tower
		2123	P.pip	Foraging, HNS
		2130	P.pyg	Flew E along S side of Bathhouse
		2136	No ID	Silent bat flew S over Bathhouse just W of tower, flying very close to flat roof
		2139	No ID	Silent bat flew S over Bathhouse just W of tower, flying very close to flat roof
		2140	No ID	Silent bat flew S over Bathhouse just W of tower, flying very close to flat roof
		2141	R.hip	Intermittent passes for several minutes, HNS
		2141	N.noc	HNS
		2144	P.pyg	HNS
		2146	R.hip	Two bats flew S over Bathhouse just W of tower, flying very close to flat roof
		2149	P.pip	Approached from S, flew E
		2151	P.pyg	Regular foraging along S elevation of Bathhouse until end of survey
		2158	Myotis sp.	Two bats foraging in front of tower

		2204	R.hip	HNS
		2213	R.fer	HNS
	F	2118	P.pip	Emerges from door
		2123	P.pip	HNS
		2141	N.noc	HNS
		2143	R.hip	HNS
		2144	P.pyg	Flying W along S elevation
		2149	P.pip	Flying E along S elevation
		2151	P.pyg	Two bats foraging along S elevation - regular foraging activity for remainder of survey
		2153	R.hip	Light-testing and foraging at E end of building for several minutes
		2159	Myotis sp.	Flying W along S elevation
		2205	P.pip	Foraging
		2213	R.fer	HNS
		2215	N.noc	HNS
		2219	N.noc	HNS
	CAM 1		P.pip	1 bat emerged from southern dormer cheek 27 minutes after sunset
			R.hip	9 bats recorded emerging from the porthole window on the W elevation of the Office
	CAM 2		R.hip	10 bats recorded emerging from the middle of the three windows on the W elevation of the Bathhouse
	CAM 3		R.hip	No bats recorded emerging. Bats recorded flying in front of camera, typical R.hip and this is a known night roost location
	CAM		R.hip	Bats recorded entering, and occasionally emerging from, the two small windows, 19 bats entered in total

Table A2: Results of the survey on 12th June 2017

DATE	SURVEYOR POSITION	TIME	SPECIES	NOTES
12.06.17	A	2210	P.pip	Commuting S along the track to the E
		2215	P.pip	Near-constant activity with bats continuously commuting/foraging along track to E of buildings, along woodland edge
		2215	R.hip	Commute S
		2220	P.pip	Social calls along track to E
		2234	Myotis sp.	HNS
	B	2209	P.pyg	Possible emergence from S end of W elevation, just below flat roof
		2227	N.noc	Distant, HNS
		2238	P.pip	HNS
		2242	P.pyg	HNS
	C	2209	P.pyg	Approached from E, flew SW over the Bathhouse
		2238	P.pip	HNS
		2242	P.pyg	HNS
	D	2159	R.hip	Three brief passes at SW corner of building
		2212	R.hip	Foraging at SW corner of building
		2218	R.hip	Foraging at SW corner of building
		2223	P.pyg	Brief pass, HNS
		2227	N.noc	HNS
	E	2151	P.pip	Heard not seen
		2204	R.hip	Two brief passes, HNS
		2207	R.hip	Two brief passes, HNS
		2214	R.hip	Flew S over roof just W of tower
		2216	R.hip	Appeared to emerge in corner just below W edge of tower
		2218	R.hip	Flying above roof just W of tower
		2220	P.pyg	Commuting W on S side of building

		2222	R.hip	Flying E above roof towards tower.
		2224	N.noc	Commuting HNS
		2224	R.hip	Occasional passes until 2238, HNS
		2235	P.pip	Commuting HNS
		2238	R.hip	Two bats flying above roof
		2245	P.aur	Brief pass, HNS
	F	2208	No ID	Silent bat approached from N and flew W
		2211	No ID	Silent bat approached from N and flew W
		2211	R.hip	Flew low past building, heading E
		2214	No ID	Silent bat approached from N and flew W
		2217	R.hip	Entered building at S hole on SE corner
		2218	No ID	Silent bat flying above building
		2223	P.pyg	Approached from the W and headed S
		2224	R.hip	HNS
		2227	N.noc	HNS
		2231	R.hip	HNS
		2238	N.noc	HNS
		2239	P.pip	Approached from N, headed SW
		2247	No ID	Silent bat approached from N and flew W
	CAM 1		R.hip	32 bats recorded emerging from the porthole window on the W elevation of the Office, with one re-entering at the end
	CAM 2		R.hip	9 bats recorded emerging from the middle of the three windows on the W elevation of the Bathhouse, 1 re-entered at the end
	CAM 3			No bats were recorded emerging
	CAM 4			No bats were recorded emerging

Table A3: Results of the survey on 27th July 2017

DATE	SURVEYOR POSITION	TIME	SPECIES	NOTES
27.07.17	A	2130	R.hip	Emerged from roller door, no echolocation
		2130	P.pip	Foraging nearby to the NW
		2133	R.hip	Emerged from roller door, flew E
		2134	R.hip	Two bats emerged from roller door
		2135	R.hip	Three bats emerged from roller door
		2136	R.hip	Emerged from roller door
		2137	R.hip	Two emerged from roller door
		2139	R.hip	Emerged from roller door
		2154	Myotis sp.	Flying NE over building
		2205	P.auritus	Commuting, HNS
		2207	P.pip	Distant, HNS
	B	2130	N.noc	Distant pass, HNS
		2147	R.hip	Audible behind green door - inside building
		2156	N.noc	HNS
	C	2128	N.noc	Commuting past
		2157	N.noc	Commuting past
		2205	R.hip	Audible inside building behind E doorway on N elevation
		2209	P.aur	Brief pass, HNS
		2216	P.pyg	Quiet pass
	D	2131	R.hip	Approached from E
		2136	R.hip	Foraging overhead
		2148	P.pyg	Pass overhead
		2151	R.hip	Constant foraging at SW corner of building
		2157	N.noc	HNS
		2158	P.aur	Pass overhead
		2208	R.hip	Foraging nearby
		2215	P.pyg	Foraging nearby
		2223	R.hip	HNS
	E	2148	P.pip	HNS
	F	2149	P.pyg	HNS
		2154	P.aur	HNS
		2227	R.hip	HNS
	CAM 1		R.hip	35 bats were recorded emerging from the porthole window on the W elevation of the Office, with one re-entering at the end
	CAM 2		R.hip	17 bats recorded emerging from the middle of the three windows on the W elevation of the Bathhouse
	CAM 3			No bats were recorded emerging
	CAM 4			No bats were recorded emerging

Table A4: Results of the survey on 14th September 2017

DATE	SURVEYOR POSITION	TIME	SPECIES	NOTES
14.09.17	A	1927	P.pip	Very brief commute down track
		1933	P.pip	Commute high over trees E of site, heading from N to S
		1943	P.pip	Very quiet, HNS
		1945	P.pip	Semi-constant activity around the site
		1959	R.hip	Flies over ridge of Office commuting E into woodland - appeared to emerge from dormer on W elevation
		2010	P.pip	Activity dies off as it becomes cold
		2013	Myotis sp.	HNS to the E
		2019	Myotis sp.	Commute down track to E of buildings
		2023	Myotis sp.	Commuting S down W side of Office
	B	1926	P.pip	Emerged from building, by door on roof, flew E
		1945	P.pip	Distant pass, HNS
		1949	No ID	Bird/bat flew from small doorway (did not echolocate), flew E
		2021	P.pip	Pass and social calling
		2024	N.noc	Pass, HNS
		2026	P.pip	Flying around building and social calling until 2028
		2034	P.pip	Social calling nearby
	C	1952	P.pip	Approached from N, flew S over centre of roof
		2012	P.pip	Brief, distant pass, HNS
		2022	P.pip	Distant social calling, HNS
		2025	P.pip	Social calling nearby, HNS
		2032	P.aur	Quiet pass, HNS
		2042	P.aur	Nearby, HNS
	D	1932	P.pyg	HNS
		1944	R.hip	Emerged from W corner by ivy
		1945	R.hip	2 bats emerged from W corner by ivy
		1947	R.hip	Emerged from W corner by ivy
		1950	P.pip	Flying W along hedger
		1950	R.hip	Flying S over building
		1952	P.pyg	Flying E along hedge
		1952	R.hip	Flying W along hedge
		1957	R.hip	Flying N over building
		2000	P.pip	Flying W over building
		2022	R.hip	HNS
	E	1932	P.pyg	Emerged from flat roof to the west of the tower
		1933	P.pyg	Emerged from flat roof to the west of the tower
		1945	R.hip	Approached from E, heading SW
		1947	R.hip	Flying low against the S elevation, heading W
		1949	R.hip	Flew S over roof against the W elevation of the tower
		1952	R.hip	Flew S over roof against the W elevation of the tower, then W
		1952	R.hip	Flew S over roof against the W elevation of the tower, then E
		1953	P.pyg	Distant pass, HNS
		1954	R.hip	Flying W along S elevation
		2005	P.aur	Foraging on S elevation low in front of tower
		2008	P.aur	Flew N over flat roof
	F	1936	P.pyg	Flew S over building
		1944	R.hip	Light sampling in window on E elevation
		1946	R.hip	Light sampling in window on S elevation
		1947	No ID	Silent bat approaches from N around E end and heads W
		1953	P.pip	HNS
		1958	No ID	Silent bat flew E over building
		2004	No ID	Silent bat approached from W and flew N past E elevation
		2005	P.pip	HNS
		2011	B.bar	HNS

		2022	P.pip	Social calling, HNS
		2026	P.pip	HNS
		2028	P.pip	HNS
		2032	P.pip	Social calling, HNS
		2043	P.pip	HNS
	CAM 1		R.hip	19 bats recorded emerging from the porthole window on the W elevation of the Office
	CAM 2		R.hip	12 bats recorded emerging from the middle of the three windows on the W elevation of the Bathhouse
	CAM 3			No bats were recorded emerging
	CAM 4			No bats were recorded emerging