

Appendix 12.5

Bats

Transport Scotland

August 2018



Table of contents

Chapter	Pages
1. Introduction	1
2. Methodology	1
2.1. Desk Study	1
2.2. Field Survey	6
3. Impact Assessment Methodology	13
3.2. Nature Conservation Evaluation	14
3.3. Impact Assessment	15
3.4. Mitigation	17
4. Results	21
4.1. Desk Study	21
4.2. Field Survey	21
5. Nature Conservation Evaluation	52
6. Potential Impacts	56
6.1. Construction	56
6.2. Operation	57
7. Mitigation	57
8. Residual Impacts	65
8.2. Construction	65
8.3. Operation	70
9. Conclusions	71

Tables

Table 2.1: Assessment of Tree Suitability for Roosting Bats	2
Table 2.2: Assessment of Building Suitability for Roosting Bats	3
Table 2.3: Assessment of Bridge and Culvert Suitability for Roosting Bats	3
Table 2.4: Classification of Commuting and Foraging Habitats	5
Table 2.5: Buildings Subject to Survey	7
Table 2.6: Structures Subject to Survey	8
Table 2.7: Rock Faces Subject to Survey	10
Table 2.8: Junction Transect Locations	13
Table 3.1: Importance Criteria	14
Table 3.2: Impact Magnitude and Character for Ecological Features	16
Table 4.1: Summary of Roost Locations along the Proposed Scheme	22
Table 4.2: Trees with Confirmed Roost	24
Table 4.3: Buildings and Structures Photographs and Roost Locations (shown in red)	26
Table 4.4: Rock Face Activity Survey Results	49
Table 5.1: Valuation of Confirmed Bat Roosts	52
Table 5.2: Valuation of Crossing Points and Transects	56
Table 7.1: A9 Standard Mitigation Commitments	58
Table 7.2: Project Mitigation Commitments	60
Table 8.1: Specific Impacts, Mitigation and Residual Impacts – Construction	67

1. Introduction

- 1.1.1. This appendix provides the details of bat surveys and desk studies undertaken to inform the DMRB Stage 3 Assessment for the Proposed Scheme. The appendix includes a nature conservation evaluation and impact assessment.

2. Methodology

2.1. Desk Study

- 2.1.1. The following organisations were contacted for bat records within 2km of the existing A9:
- Scottish Bat Conservation Trust (BCT);
 - The Highland Biological Recording Group (HBRG);
 - North East Scotland Biological Records Centre (NESBReC); and
 - Scotland Transerv.
- 2.1.2. Data from within the last 10 years has been considered within this assessment. Any data pre-2007 has not been included as it does not provide any indication of current bat activity.
- 2.1.3. Due to the presence of the existing A9, 2km was considered to be a suitable search area for records. The existing road is already a barrier to movement, severing foraging, roosting and commuting habitats.
- 2.1.4. The Scottish BCT advised that their records could be obtained from the National Biodiversity Network (NBN) Atlas Scotland website.

Habitat Suitability Assessment

- 2.1.5. A habitat suitability assessment for bats was undertaken in October 2015. The assessment encompassed the Proposed Scheme and a 50m buffer and is defined as the Bat Study Area. The Bat Study Area was agreed with Scottish Natural Heritage (SNH) through the Environmental Stakeholders Forum. The Bat Study Area is illustrated in Figure 12.14.
- 2.1.6. The habitat suitability assessment included a review of the Phase 1 habitat data gathered by CH2M (CH2M, 2015ⁱ), aerial photography and a site walk-over survey, undertaken in October 2015. The aim of the assessment was to identify features considered to offer potential to support foraging, commuting and roosting bats.
- 2.1.7. Potential roosting sites for bats within trees were assessed to identify suitable roosting features, with evidence of bat use such as the presence of droppings, feeding remains, potential access/egress points, staining and live or dead bats searched for. Trees were inspected externally, from the ground using torches to identify suitable features for use by bats (hazard beams, cracks and splits, raised bark, knot holes, rot holes and cankers, wood pecker holes, and other hollows/cavities). Trees were assessed as per Table 2.1 below (classified in accordance with Collins. J (ed.) (2016)ⁱⁱ). Only trees with moderate and high potential were taken forward for detailed surveys, as prescribed by Collins. J (ed.) (2016)ⁱⁱ. Tree locations were recorded using GPS. Where woodland blocks were present, the block as a whole was assessed for its suitability for roosting bats. Where

blocks supported trees of varying potential, the block was assigned the highest level of potential recorded within that block.

Table 2.1: Assessment of Tree Suitability for Roosting Bats

Category (potential to support roosting bats)	Description
Negligible potential	Tree (or trees within a woodland block) contains limited features suitable for roosting bats. Usually young (sapling or semi-mature) trees with some ivy or some loose bark but no obvious cracks or fissures. No evidence of bats found (e.g. droppings/staining).
Low potential	A tree (or trees within a woodland block) of sufficient size and age that it may contain suitable roosting features, but none seen from the ground, or features seen only have limited roosting potential. No evidence of bats found (e.g. droppings/staining).
Moderate potential	Tree (or trees within a woodland block) contains one of more suitable roosting features that could be used by bats based on their size, shelter, protection, conditions and surrounding habitat but are unlikely to support a roost of high conservation status. No evidence of bats found (e.g. droppings/staining).
High potential	A tree (or trees within a woodland block) with one or more suitable roosting features that are suitable for use by larger numbers of bats on a more regular basis and potentially longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. No evidence of bats found (e.g. droppings/staining).
Confirmed Roost	Bats discovered roosting within the tree (during climb and inspect survey), or recorded emerging/entering the tree at dusk/dawn. Tree found to contain conclusive evidence of occupation by bats, such as bat droppings. A confirmed record (as supplied by an established source such as the local bat group) would also apply to this category.

- 2.1.8. A preliminary roost assessment of structures and features such as rock outcrops, bridges, culverts and buildings was undertaken in October 2015 within the Bat Study Area. Visual examinations were undertaken from the ground, during daylight hours and were aided using binoculars and a high-powered torch. The inspections involved looking for potential entry and exit points for bats or other potential roost locations (e.g. holes in brickwork, cracks and gaps in masonry, lifted tiles etc.). It was not possible to inspect all the suitable features identified within each structure and rock face due to the height, and bridge arches could not be safely accessed. Structures were assessed to identify suitable roosting features such as raised flashing, gaps underneath roof lining, gaps in beams, raised tiles, cavity walls and missing mortar and crevices in rock faces. No internal surveys of buildings were undertaken as no access permission was granted at that time. The location of the structures/ rock features were identified using GPS and were assigned a Bat Roost Potential (BRP) category of confirmed roost, high, moderate, low or negligible potential (these categories were assigned following the descriptions in Table 2.2 and Table 2.3, classified in accordance with Collins. J (ed) (2016)ⁱⁱ).
- 2.1.9. Features with low, moderate or high potential were then subject to detailed bat survey where they were identified as being at risk of impact from the Proposed Scheme, as detailed in Section 2.3 below.

Table 2.2: Assessment of Building Suitability for Roosting Bats

Category (potential to support roosting bats)	Description
Negligible potential	Buildings with no features capable of supporting roosting bats. Often these buildings are of a 'sound' well-sealed nature, or have a single skin and no roof void. They tend to have high interior light-levels, and little or no insulation. Buildings without any roofs may also fall into this category.
Low potential	Buildings with limited features for roosting bats (e.g. shallow crevices where mortar is missing between building blocks/bricks). They may have open locations which may be subject to large temperature fluctuations and bat-access points may be constrained. No evidence of bats found (e.g. droppings/staining). Buildings may be surrounded by poor or sub-optimal bat foraging habitat. No evidence of bats found.
Moderate potential	Buildings with some features suitable for roosting bats. Buildings usually of brick or stone construction with a small number of features of potential value to roosting bats e.g. loose roof/ridge tiles, gaps in brickwork, gaps under fascia boards, and/or warm sealed roof-spaces with under-felt. These buildings may be used as occasional or transient roosts in the summer, but are unsuitable for large colonies. No evidence of bats found.
High potential	Buildings with many features or extensive areas of obvious potential for roosting bats. Generally, they have sheltered locations, with a stable temperature regime and suitable bat-access points. Could be suitable for a maternity roost. No evidence of bats found.
Confirmed roost	Bats discovered roosting within the building, or recorded emerging/entering the building at dusk/dawn. Building found to contain conclusive evidence of occupation by bats, such as bat droppings. A confirmed record (as supplied by an established source such as the local bat group) would also apply to this category.

Table 2.3: Assessment of Bridge and Culvert Suitability for Roosting Bats

Category (Potential to support roosting bats)	Description
Negligible potential	Bridge/structure with no features capable of supporting roosting bats. Often these are modern or well-maintained and/or of a 'sound' well-sealed nature, or consist of a solid structure, prefabricated steel or sheet materials with no voids or cavities present and no cracks or crevices present.
Low potential	Bridge/structure with limited features for roosting bats (e.g. gaps between joints, shallow crevices where mortar is missing between building blocks/bricks). They may have open locations and/or bat-access points may be constrained. No evidence of bats found (e.g. droppings/staining). May be surrounded by poor or sub-optimal bat foraging habitat. No evidence of bats found.
Moderate potential	Bridge/structures with some features suitable for roosting bats. Usually of brick or stone construction with a small number of features of potential value to roosting bats e.g. gaps between brickwork (e.g. where mortar has fallen out, usually >100mm deep). These bridges/structures may be used as occasional or transient roosts in the summer, but are unsuitable for large colonies. No evidence of bats found.

Category (Potential to support roosting bats)	Description
High potential	Bridge/structure with many features or extensive areas of obvious potential for roosting bats. Often poorly maintained and provide suitable sheltered access points for bats. Generally, in areas of high quality bat foraging/commuting habitat or over watercourses. Could be suitable for a maternity roost. No evidence of bats found.
Confirmed roost	Bats discovered roosting within the bridge/structure, or recorded emerging/entering the structure at dusk/dawn. Found to contain conclusive evidence of occupation by bats, such as bat droppings. A confirmed record (as supplied by an established source such as the local bat group) would also apply to this category.

- 2.1.10. In addition to roosts, the habitat suitability assessment field survey element also identified suitable bat flight crossing points across the existing A9 corridor, for example where suitable commuting habitat and corridors are present either side of the road. The survey identified potential commuting routes and foraging areas such as watercourses, woodland edges and rides. This survey considered the suitability of commuting and foraging habitats and classified these in accordance with Collins. J (ed.) (2016)ⁱⁱ as detailed in Table 2.4. Only locations where habitats were assessed to be of moderate suitability or above were subject to activity surveys.
- 2.1.11. Crossing locations assessed to be of low suitability were not subject to survey, with features at these crossing points offering limited navigational aid and likely only to be used by low numbers of bats, relative to crossing locations identified as moderate or high suitability.
- 2.1.12. The methodologies within the Defra report WC1060ⁱⁱⁱ were reviewed to determine their applicability to the Scheme. The WC1060 methodology prescribed for assessing the effectiveness of mitigation recommends identifying potential bat commuting routes before construction, with two preliminary dusk and dawn surveys at any significant habitat feature or boundary feature.
- 2.1.13. A review was undertaken of potential linear habitat features where severance effects have the potential to be greater than that of the existing A9. Rather than preliminary surveys being undertaken, all such features identified were subject to detailed survey.
- 2.1.14. In September 2016, the suitable crossing locations identified during the walkover survey in October 2015 were visited to assess suitability for commuting and foraging habitats in the surrounding areas. The crossing locations were classified in accordance with Table 2.4, subsequently informing the level of detailed survey.
- 2.1.15. In May 2017, proposed junction locations were subject to habitat assessment, to determine the level of detailed survey effort required. These locations were targeted as these constitute the areas of greatest habitat loss as a result of the Scheme. The habitats at the junction locations were classified in accordance with Table 2.4.

Table 2.4: Classification of Commuting and Foraging Habitats

Suitability	Habitats
Negligible	Negligible habitat features on site that could be used by commuting or foraging bats, site open and exposed.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated burn, which is not well connected to other habitat features. Suitable, but isolated habitat that could be used by small numbers of bats such as a patch of scrub.
Moderate	Continuous habitat connected to the wider landscape, such as a line of trees or a hedgerow. Habitat which is connected to the wider landscape which could be used for foraging, such as trees, scrub, grassland or water. Habitat close to areas which may contain roosts.
High	Continuous high-quality habitat that is well connected to the wider landscape which is likely to be used by commuting bats, such as watercourses, hedges, woodland edges and tree lines. High quality habitat that is well connected to the wider landscape that is likely to be used by foraging bats, such as broadleaved woodland and tree lined watercourses. Site close to and connected to known roosts.

- 2.1.16. The results of the habitat suitability assessment were reviewed against the Proposed Scheme to determine which locations would require detailed bat survey. The following approach was taken to determine survey requirements of features within the Bat Study Area:
- all trees identified with moderate or high bat roosting potential to be subject to detailed survey, to include aerial tree climbing inspection or activity surveys, or a combination of the two methods where required;
 - all woodland blocks classified with moderate or high bat roosting potential to be subject to detailed survey (inspections using tree climbing, or emergence and return surveys where unsuitable for climbing);
 - the specific locations of buildings, bridges, culverts and rock outcrops/faces identified with 'low', 'moderate', and 'high' potential to be assessed in relation to the Proposed Scheme and likely risk of direct and indirect impacts to bats;
 - all structures and rock outcrops with the potential for direct or indirect impacts to be subject to detailed survey, including all buildings and structures to be removed or modified as part of the road construction and at risk of disturbance from noise or vibration during construction and operation. Where properties are located within 20m of the Proposed Scheme, identified with low bat roost potential or greater, detailed surveys to be undertaken (where access allowed, see limitations);
 - areas of habitat removal to accommodate junction locations to be subject to transect survey to determine impacts to commuting/foraging bats; and
 - all locations identified as suitable commuting routes (i.e. those with moderate or high suitability commuting habitats either side of the A9) either over or under the A9 were subject to detailed survey.
- 2.1.17. Following activity surveys of crossing points undertaken in 2016, locations were identified where higher levels of bat activity were recorded. At these locations, a second year of survey information was collected, with surveys undertaken at these sites between May and September 2017. At all other locations surveyed in 2016, either no bats, or less than five bats, were recorded in any given survey session and as such two years of survey data at these locations was not considered necessary.

- 2.1.18. In 2017, three “control” crossing points were surveyed to provide comparative activity levels along the Scheme. These were chosen at random along the route (and not in areas where any suitable crossing features were present), although consideration was given to health and safety constraints associated with night time access.

2.2. Field Survey

Trees

- 2.2.1. Detailed tree inspections were undertaken in 2017 by two surveyors both of whom are qualified tree climbers and SNH licensed bat workers. Trees were inspected from the ground and, where necessary, aerial inspection of potential roosting features was undertaken, looking for signs of usage by bats including droppings, staining and bats. A torch, endoscope (Ridgid Micro CA-100) and binoculars (10x42 magnification) were used to aid in the survey. All trees with potential roosting features were marked using a small round aluminium numbered tree tag nailed to the stem at 1.5m height. The location of the trees with potential roosting features was identified using GPS, and the trees categorised as whether they held low, moderate or high roost suitability after inspection (as per Collins, 2016)ⁱⁱ.
- 2.2.2. If trees could not be fully inspected during the inspection (e.g. a cavity was deeper than the endoscope could reach), or were unsafe to climb (e.g. the tree was dead), emergence and re-entry surveys were undertaken. No lone working was undertaken, with a tree surveyed by a single surveyor only when other members of the team were within close proximity. Dusk surveys commenced c.15 minutes prior to sunset and continued until c.120 minutes after sunset. Dawn surveys commenced c.120 minutes before sunrise and ended c.15 minutes after sunrise. Surveyors looked for bats exiting or entering suitable roosting features on the trees. Bat activity was recorded using frequency division bat detectors (Batbox Duet) and digital recorders (either Roland R-05 or Zoom H1) to allow later analysis with BatSound version 4.1.4 software.
- 2.2.3. Following design revisions, trees TR130-156 and TR672-700 were subject to ground based and aerial inspections (where required and possible) at the end of the bat activity season, with surveys taking place in September and October 2017.
- 2.2.4. Subsequently, those trees identified within 20m of the Proposed Scheme were subject to detailed survey:
- total of 51 trees subject to ground assessment only, utilising a polecam for inspection of features at height but accessible from ground level;
 - total of 23 trees subject to climbed aerial inspection by certified tree climbers;
 - total of eight trees subject to dusk emergence and dawn re-entry surveys due to inaccessibility to climbed aerial inspection (e.g. due to health and safety concerns regarding the health of the tree);
 - total of six trees aerially inspected and additionally subject to dusk emergence/dawn re-entry surveys; and
 - total of two trees subject to further inspection with use of a ladder.

Buildings and Structures

- 2.2.5. Internal building inspections involved searches of loft spaces for bat evidence (droppings, urine staining and bats). Buildings subject to survey and subsequently categorised as either ‘low’, ‘moderate’, or ‘high’ bat roost potential or as a ‘confirmed roost’ are listed in Table 2.5.

2.2.6. An assessment of hibernation roost potential was also undertaken for each building, although specific surveys to confirm hibernation have not been undertaken and a precautionary approach to the assessment has been taken. Hibernation roost potential was assessed as either 'negligible', 'low', 'moderate' or 'high' on the basis of features present (see Table 2.2); the characteristics of a structure (e.g. whether occupied and therefore likely to be heated throughout the winter period) and whether roosting bats were present during internal/external inspections and dusk emergence/dawn return surveys.

Table 2.5: Buildings Subject to Survey

Label	Easting	Northing	Name	Internal / External Inspection Completed	Distance from Proposed Scheme
ST01	287955	810440	Lynwilg Farm House	Internal and external inspection	6m
ST02	288627	810820	Building adjacent to quarry	External inspection only	4m
ST03	288983	811022	Kinakyle	External inspection only	1m
ST05	289139	811309	Birch View	Internal and external inspection	9m
ST07	289195	811641	High Range	Internal and external inspection	3m
ST08	289889	815056	Red Stag Lodge	Internal and external inspection	0m Located within land take boundary
ST09	290383	816725	Avielochen farmhouse	Internal and external inspection	3m
ST10	289673	822498	Dunelm	Exterior only (sheds also internally accessed)	6m
ST11	287156	824085	Telephone exchange	Internal and external inspection	5m
ST12-1	289140	812460	MacDonald Hotel – Highlands Hotel	External inspection only	8m
ST12-2	289150	812370	MacDonald Hotel – Activity Centre	External inspection only	9m
ST12-3	289140	812527	MacDonald Hotel – Staff Accommodation Block A	External inspection only	21m
ST12-4	289130	812562	MacDonald Hotel – Staff Accommodation Block C	External inspection only	16m

Label	Easting	Northing	Name	Internal / External Inspection Completed	Distance from Proposed Scheme
ST12-5	289140	812750	MacDonald Hotel – Scandinavian Village Building North	External inspection only	15m
ST12-6	289144	812699	MacDonald Hotel – Scandinavian Village Building South	External inspection only	18m
ST20	289717	822565	Broom Cottage	Internal and External Inspection	12m
ST21	289127	822746	Lynphail House	Internal and external inspection	16m
ST22	289168	822668	Derelict Cottage – Lynphail	External inspection only	2m
ST23	289214	822660	Lynphail Farmhouse	Internal and external inspection	8m
ST24	289228	822643	Lynphail Animal Shed	External inspection only	<1m
ST25	288046	810154	Lynwilg Railway Cottage	External inspection only	16m

Table 2.6: Structures Subject to Survey

Label	Easting	Northing	Name	Preliminary Survey Effort	Distance from Proposed Scheme
BR08	291046	818302	Bridge 2	Inspected from ground level	3m
BR12	289709	822507	Bridge 12	Inspection from ground level	0m
BR19	289707	822492	Bridge 19	Inspected from ground level	0m
BR20	289671	822549	Bridge 20	Inspected from ground level	0m
BR21	289126	823144	Bridge 21	Inspected from ground level	0m
BR22	289126	822696	Bridge 22	Inspected from ground level – single feature surveyed with endoscope	2m
CU25	284057	824948	Culvert 25	Inspection from ground	0m
CU27	284047	824954	Culvert 27	Inspection from ground	0m
CU28	283734	825390	Culvert 28	Inspection from ground	0m

Label	Easting	Northing	Name	Preliminary Survey Effort	Distance from Proposed Scheme
UP02	289268	813692	Underpass 2	Inspection from ground	0m
UP09	289453	822883	Underpass 9	Inspection from ground	0m

- 2.2.7. Surveys comprising dusk emergence and dawn re-entry surveys were employed for all structures and buildings identified with bat roost potential (i.e. those in detailed in Table 2.5 and Table 2.6 above). Culvert CU27, underpass UP02, and bridge BR22 were subject to endoscope inspection during preliminary assessment and subsequently excluded from the need for dusk and dawn surveys due to the lack of evidence of presence and confirmation that the structures have negligible potential to support bats.
- 2.2.8. Structures and buildings with low, moderate and high bat roost potential were surveyed as detailed below and in-line with best practice guidelines for bat surveys of buildings (Collins, 2016)ⁱⁱ:
- one dusk emergence, one dawn re-entry and one other dusk or dawn survey was undertaken for each building and structure identified as having high suitability for roosting bats, with surveys spaced a minimum of two weeks apart to provide survey data across the active season;
 - buildings and structures assessed to provide moderate potential to support roosting bats were subject to a single dusk emergence and single dawn re-entry survey; and
 - a single dusk emergence or dawn re-entry survey was undertaken of buildings and structures assessed as having low bat roost potential (subsequently increased to three surveys in the event a roost was identified).
- 2.2.9. All surveys were undertaken between May and September 2017 and June and July 2018.
- 2.2.10. Experienced bat surveyors were used for surveys, each survey team was led by a licenced ecologist or another ecologist experienced in bat surveys. The name of the surveyors with SNH Bat Roost Licence are provided below:
- David Dowse (SNH Bat Licence Number 36740);
 - Gareth Parry (SNH Bat Licence Number 76059);
 - Elaine Anderson (SNH Bat Licence Number 68122);
 - Aaron Middleton (SNH Bat Licence Number 52415);
 - Laura Carter-Davis (SNH Bat Licence Number 88465);
 - Mingaile Zebaite (SNH Bat Licence Number 104717);
 - Laura Spence (SNH Licence Bat Number 106372);
 - Rachel Tierney (SNH Bat Licence Number 39985); and
 - Greg Chamberlain (SNH Bat Licence Number 99332).
- 2.2.11. Surveyors were in position c. 15 minutes before sunset for emergence surveys¹, and the watch continued until at least 120 minutes after sunset. For re-entry surveys the surveyors were in position c. 120 minutes before sunrise, and the watch continued until

¹ If bats were flying prior to the survey starting an additional 15 minutes was added to the dusk survey.

c. 15 minutes after sunrise. Surveyors were positioned around structures (at ground level) to observe all visible aspects of the structure. These timings ensured that emergence and return times for all species that could potentially be found on the site were included. All surveys were undertaken between May and September 2017 and survey visits were spaced out across the survey period to detect seasonal changes in roost usage and activity levels.

- 2.2.12. Surveys were undertaken using Batbox Duets, Anabat SD2 and Wildlife Acoustics Echo Meter 3 (EM3) bat detectors. Recordings were made using the Anabat SD2 detectors to allow for later analysis (using the Anlook software) to assist in the identification of species.

Rock Faces

- 2.2.13. A total of 13 areas of exposed rock faces were identified during the initial preliminary assessment in October 2015 to assess their potential for bat roosts to be present. These locations were reviewed against the Proposed Scheme to identify those requiring detailed survey. The locations were also assessed to determine what level of survey would be possible, given the health and safety constraints associated with the nature of these features.
- 2.2.14. Table 2.7 below details the ten rock faces requiring detailed survey following the preliminary assessment.

Table 2.7: Rock Faces Subject to Survey

Target Note	Easting	Northing	Survey Type	Distance from Proposed Scheme
RF01	288527	810824	Rope access aerial inspection	6m
RF02	288626	810782	Endoscope	0m
RF04	289004	811148	Rope access aerial inspection	0m
RF06	289518	814377	Endoscope	0m
RF08	285205	823909	Rope access aerial inspection	0m
RF10	283981	825225	Rope access aerial inspection and static detectors	0m
RF12	285170	823899	Rope access aerial inspection	0m
RF13	285344	823865	Endoscope and ladder	0m
RF14	285045	823876	Endoscope	6m
RF15	284973	823911	Rope access aerial inspection	0m

- 2.2.15. At rock face RF10, six static monitoring bat detectors (Anabats SD2) were placed along the base of the rock face, located below the areas with greatest suitability for roosting bats, to provide an indication of use of the rock face by roosting bats. The microphone on each detector was placed facing the rock face. These were set to record for at least five nights per month beginning in early May, through to September 2017. Detectors were set to record continuously for 30 minutes before dusk to 30 minutes after dawn.
- 2.2.16. Static detectors were redeployed at RF10 in October to November 2017 to record activity during the end of the bat active season, in search of indications of potential hibernating bat activity (i.e. movement of bats around the rock face during this period may indicate potential hibernation roost presence in the rock face). Static detectors were

subsequently redeployed during February to May 2018 to record any bats leaving hibernation roosts.

- 2.2.17. Suitable roosting features on rock faces were inspected in the daytime using an endoscope, with the rock faces accessed using rope climbing techniques where required. These surveys were undertaken between September and December 2017. Surveys were completed by an SNH Licensed Bat Surveyor (licence number 36740) accompanied by a certified rope climber (IRATA) technician.
- 2.2.18. All areas with potential bat roost features (i.e. cracks, crevices) across a rock face were accessed by rope and inspected with torch and endoscope where necessary.
- 2.2.19. For health and safety reasons, only one rock face, RF01 (the former Lynwilg quarry), which is set back from the road, was subject to dusk emergence and dawn return to roost surveys following the methodology as prescribed for surveys of buildings. Emergence and return surveys were conducted here due to the accessibility of the rock face (i.e. localised away from the carriageway or traffic) and the limited extent of the rock face making it possible for a number of surveyors to view the rock face in its entirety.
- 2.2.20. An assessment of hibernation roost potential was undertaken. However, specific hibernation roost surveys have not been undertaken. Hibernation roost potential was classified as either 'negligible', 'low', 'moderate' or 'high' dependent on features recorded during aerial inspection surveys (feature profiles and characteristics); and the presence of roosting bats recorded during aerial inspection or through dusk emergence/dawn return surveys.

Crossing Points

- 2.2.21. A total of 24 locations which were assessed to have suitable habitat or boundary features were subject to survey during the 2016 bat activity season. Where bat passes at a crossing point averaged five bats or less across all surveyed nights, or a peak count of less than ten bats during any given survey, a second year of survey was not undertaken during the 2017 bat activity season (May to September). Exceptions to this approach were at CP19 and CP21 where very low numbers of bats (i.e. less than 5) were recorded across the majority of surveys, with single peaks of double digit bat passes during a single night of survey. These were not assessed to be important commuting routes and therefore one season of survey data is considered to be appropriate for this assessment.
- 2.2.22. In addition to the areas of suitable habitat identified for crossing points in 2016, a further two were identified for survey during 2017 (crossing points CP25 and CP26) and were additionally complemented by three 'control' crossing points. The 'control' crossing points were selected at random, in areas safe to access for surveying purposes. Surveys at these locations were undertaken to provide comparative data to that of sites selected with suitability for commuting bats across the A9. Habitats in the locations of the control crossing points do not have suitable commuting lines either side of the A9.
- 2.2.23. The WC1060 methodology details that significant habitat and boundary features should be subject to survey, but does not define how to determine which features should be considered significant. In order to determine features to survey, the suitability of the commuting habitat was classified in accordance with Collins, J (ed.) (2016)ⁱⁱ. Those classed as being of high and moderate suitability were taken to be significant habitat features.

- 2.2.24. The WC1060 methodology requires that a minimum of six 60 min dusk or dawn surveys should be carried out at each site, including at least three at dusk, to account for night to night variability in bat activity patterns. Sites assessed to be of high suitability, were subject to one dusk survey and one dawn survey each month between May and September, and thus were subject to greater than the minimum number of surveys. The control crossing points and crossing points considered to be of moderate suitability were subject to alternative dusk and dawn surveys each month between May and September, so totalling five survey visits. Surveys did not commence in April 2017 due to unsuitable weather conditions. The results of the first five survey visits indicated that all locations of moderate suitability and the control points had fewer than five bats crossing so this was considered to provide sufficient survey data to assess activity levels. The WC1060 method only requires a full set of surveys where more than 10 bats are observed crossing the road during a survey.
- 2.2.25. Surveys were undertaken using both Batbox Duet and Anabat SD2 bat detectors. Recordings were made using the Anabat SD2 detectors to allow for later analysis (using the Analook software) to assist with accurate identification of species.
- 2.2.26. Surveyors stood on either side of the carriageway to watch for bats crossing the A9 at these various locations. In addition to noting crossings over the A9, notes on species and behaviour were also recorded. Where crossing locations also had suitability for roosting bats (e.g. culverts under the A9) any roosting activity observed was recorded.
- 2.2.27. Surveyors were in position c. 15 minutes before sunset for dusk surveys², and the watch continued until c. 120 minutes after sunset. For dawn surveys the surveyors were in position c. 120 minutes before sunrise, and the watch continued until c. 15 minutes after sunrise. The surveys were timed over this period to capture the main commuting periods. This survey duration is longer than the survey methodology detailed in Defra report WC1060ⁱⁱⁱ, a longer duration was chosen for the surveys as a number of the crossing locations also had suitability for roosting bats and thus the surveys also allowed potential roosts to be surveyed. This methodology was applied across all survey locations to maintain consistency in approach and to ensure a repeatable method across the assessment. The method employed at each location is repeatable both during and post construction to provide comparable pre-and post-construction data in order to assess effectiveness of mitigation.
- 2.2.28. Vision at night (to confirm roost locations and crossings over the A9) was gained using an FLIR T640bx infra-red thermal camera helping to ensure that bats were not missed exiting or entering roosts or crossing over the road during the dark periods of the surveys.

Transects

- 2.2.29. Where habitat suitability was assessed as moderate to support commuting and foraging bats, transects were undertaken on a monthly basis (May to September inclusive). Where habitat suitability was low, transects were completed seasonally through the bat activity season (May, July and September)ⁱⁱ.
- 2.2.30. At Aviemore and Granish Junctions, habitat of moderate suitability was identified and monthly surveys were undertaken on both sides of the carriageway, alternating between a dusk or dawn transect each month. At Black Mount, low suitability habitat was identified on the southbound side; a transect survey was undertaken in May, July and September 2017. The northbound side was assessed to be of negligible suitability for bats and as such no further surveys were undertaken at this location.

² If bats were flying prior to the survey starting an additional 15 minutes was added to the dusk survey.

- 2.2.31. Transect routes were devised so that a representative range of all suitable areas of habitat were covered on a monthly basis. All open habitats and edge habitats were included in the transect routes. The routes were walked at a constant, slow steady pace, stopping at predetermined stopping points for 5 minutes. The surveyor carried a Batbox Duet detector and Roland R-05 digital recorder. The use of the recorder allowed for subsequent species analysis using BatSound v4.1.4. A Global Positioning System (GPS) was used so that each bat record could be geo-referenced.
- 2.2.32. The dusk transect surveys started c. 20 minutes before sunset and lasted until c. 120 minutes after sunset, with the first stopping point 20 minutes before until 30 minutes after sunset. The dawn surveys started c. 120 minutes before sunrise and finished c. 15 minutes after sunrise. The final stopping point was surveyed c. 30 minutes before sunrise until the end of the survey.
- 2.2.33. Dusk transects followed by a dawn transect in the same 24 hours were not undertaken. Monthly transect surveys were judged to be appropriate for gathering information of bat use of a site, particularly in cognisance of the habitat types and habitat condition present. Junction locations were subject to walked transect surveys only; no static detectors were deployed due to the risk of theft.

Table 2.8: Junction Transect Locations

Transect Number	Junction Name	Easting	Northing
J1 North (A)	Aviemore South (northbound)	287669	810378
J1 North (B)	Aviemore South (northbound)	287745	810415
J1 South (A)	Aviemore South (southbound)	287733	810221
J2 North	Granish (northbound)	289839	815321
J2 South	Granish (southbound)	290014	815259
J3 South	Black Mount (southbound)	287484	824183

Other Surveys

- 2.2.34. In addition to the effectiveness of mitigation and local scale effects survey (i.e. crossing point surveys), the methodologies within the Defra report WC1060ⁱⁱⁱ also details a landscape scale effects survey.
- 2.2.35. The landscape scale effects survey does not provide data for impact assessment but provides a baseline for pre, during and post construction monitoring to determine effects of upgrading roads (or new roads) on bat populations. As the current programme for road construction is not known, but is unlikely to commence until at least 2021, this survey has not been undertaken as part of this assessment. The requirement for this survey will be reviewed pre-construction, based on the levels of bat activity recorded during the 2016/2017 surveys to determine the extent of landscape effect survey to undertake. This will be reviewed three years prior to the construction date, to allow the surveys to be planned and undertaken in the two years prior to construction.

3. Impact Assessment Methodology

- 3.1.1. Ecological features have been subject to nature conservation evaluation. Impact significance has then been assessed taking into account the nature and magnitude of potential impacts (including duration, extent and reversibility) and their consequent

effects on important ecological features. The approach to nature conservation evaluation and impact assessment was agreed across the wider A9 Dualling Programme.

3.2. Nature Conservation Evaluation

- 3.2.1. The general approach to defining the importance of ecological features follows that of CIEEM (2016)^{iv}. The approach is also in line with advice given in DMRB Interim Advice Note 130/10 ‘Ecology and Nature Conservation: Criteria for Impact Assessment’^v.
- 3.2.2. Bat roosts and habitats used by bats within the Ecological Zone of Influence (EZol³) are assigned levels of importance for nature conservation based on the criteria set out in Table 3.1.
- 3.2.3. The rarity, ability to resist or recover from environmental change, and uniqueness of an ecological feature, function/role within an ecosystem, and level of legal protection or designation afforded to a given ecological feature are all factors taken into account in determining its importance.

Table 3.1: Importance Criteria

Importance	Criteria
International	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> internationally designated areas or undesignated areas that meet the criteria for designation; and/or viable populations of species of international conservation concern. <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> the maintenance of qualifying habitats, communities and assemblages that occur within internationally designated sites or within undesignated areas that meet the criteria for such designation.
National	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> qualifying communities and assemblages that occur within nationally designated sites or within undesignated areas that meet the criteria for such designation; and/or viable populations of species of national conservation concern. <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> the maintenance of qualifying habitats, communities and assemblages that occur within nationally designated sites or within undesignated areas that meet the criteria for such designation; or the maintenance and restoration of biodiversity and ecosystems at a national level, as defined in the Scottish Biodiversity Strategy (SBS) (Scottish Government, 2013, 2015)^{vi}.
Regional	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> communities and assemblages that occur within regionally important sites or localities listed as being of conservation importance in the Highland Biodiversity Action Plan (BAP) or Cairngorms Nature Action Plan (CNAP)

³ EZol is an area defined by the assessment in which there may be ecological features subject to impacts and subsequent effects as a result of the Proposed Scheme.

Importance	Criteria
	<p>(including Local Nature Reserves (LNR)) or within undesignated areas that meet the criteria for such designation; and/or</p> <ul style="list-style-type: none"> viable populations of species of regional conservation concern. <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> the maintenance and restoration of biodiversity and ecosystems at a regional level, as defined in the Highland BAP or CNAP.
Authority Area	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> populations of species of conservation concern within the authority area. <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> the maintenance and restoration of biodiversity and ecosystems within a relevant area such as Aviemore in the CNAP.
Local	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> populations of species of conservation concern within the local area (for example a Local Nature Reserve). <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> the maintenance and restoration of biodiversity and ecosystems at a local level.
Less than Local	<p>Ecosystems and Habitats</p> <ul style="list-style-type: none"> Ecosystems or habitats that do not meet the above criteria, i.e., supporting at least populations of species of conservation concern within the local area <p>Species</p> <ul style="list-style-type: none"> Features that are considered to be absent or do not meet any of the above criteria.

3.3. Impact Assessment

3.3.1. For the purposes of this assessment, the impact descriptors in Table 3.2 are taken to summarise the overall characterisation of positive or negative impacts in accordance with CIEEM (2016)^{iv}, including:

- impact extent/scale (e.g. entire habitat loss, partial habitat loss or indication over specific area affected);
- direct or indirect impact (e.g. direct mortality of individuals from vehicle collisions, or indirect mortality of individuals from reduced prey resources due to pollution of watercourses);
- reversibility of impact (reversible or irreversible);
- frequency of impact (single event, recurring or constant);
- duration of impact (short-term, medium-term, long-term or permanent); and
- likelihood of occurrence (certain/near certain, probable, unlikely or extremely unlikely).

3.3.2. The character of impacts is defined using the criteria set out in Table 3.2. Impact character was identified as ‘High’, ‘Medium’, ‘Low’ or ‘Negligible’, following the above impact characterisation approach.

Table 3.2: Impact Magnitude and Character for Ecological Features

Impact Descriptor	Impact Characterisation
High	An impact resulting in a permanent effect on the distribution and/or abundance of a habitat, species assemblage/community or population, in such a way as to alter the integrity of the feature and its conservation status. If negative, this type of effect would reduce the integrity of the feature and its conservation status. If positive, it would result in an improvement to the conservation status of the feature.
Medium	An impact resulting in a long-term but reversible effect on the distribution and/or abundance of a habitat, species assemblage/community or population. If negative, this type of effect would have neutral long-term implications for the integrity of the feature or its conservation status. If positive, it would not alter the long-term conservation status of the feature.
Low	An impact resulting in a short-term reversible effect on the distribution and/or abundance of a habitat, species assemblage/community or population.
Negligible	No discernible impact on the distribution and/or abundance of a habitat, species assemblage/community or population.

Impact Significance

3.3.3. Each feature’s importance and the potential impacts upon it have been determined through surveys and consultation, to provide a robust basis for making a professional decision on the appropriate focus of the impact assessment. The assessment is then focused on those impacts that result in potentially significant effects on important ecological features. For example, an area of amenity grassland would not meet the criteria for local ecological importance and would not progress through the assessment process, as the assessment only includes features of local importance or above. However, any impact on a Site of Special Scientific Interest (SSSI) would progress through the assessment process as these sites are designated as nationally important. Habitats, species and species groups that are considered to have a nature conservation value of less than local are not considered important ecological features⁴ in the context of this assessment. Any impact on such a feature as a result of the Proposed Scheme is considered unlikely to have a significant effect on the conservation status of such habitats or species on a local, regional, national or international scale. Therefore, features assessed to be of less than local nature conservation value have been scoped out of the Ecological Impact Assessment (EclA).

3.3.4. CIEEM (2016)^{iv} notes that impacts that are likely to be relevant in an assessment are those that are predicted to lead to significant effects (negative or positive) on important ecological features. Significant effects are those that undermine the conservation status⁵ of important ecological features. Knowledge and assessment of construction methods and operational activities, together with the ecological knowledge of ecologists with

4 An ecological feature is considered important based on many factors including its rarity, diversity, naturalness, context in the wider landscape, size and distribution as set out in A Nature Conservation Review (Ratcliffe, 1977).

5 Conservation status for habitats is determined by the sum of the influences acting on the habitat and its typical species that may affect its long-term distribution, structure and function as well as the long-term distribution and abundance of its population within a given geographical area. Conservation status for species is determined by the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its population within a given geographical area.

experience of similar large-scale infrastructure projects, has been used to identify the potential impacts of the project on ecological features.

- 3.3.5. Following the above approach, the assessment aims to characterise ecological impacts rather than placing a reliance only on magnitude. The character of an impact is used to inform the determination of whether or not the impact on the feature in question is a significant one.
- 3.3.6. Where impacts on internationally, nationally or regionally important ecological features are characterised as 'Medium' or 'High', they are considered to be potentially significant under the terms of the Environmental Impact Assessment (EIA) Regulations^{vii}.
- 3.3.7. Impacts characterised as 'Low' on internationally important features, can be determined as potentially significant as can impacts characterised as 'high' impacts on features of authority area importance. There may, in addition be a number of impacts on a feature that, whilst not of a character to be significant in themselves, may cumulatively result in a significant effect on that feature.
- 3.3.8. Where significant impacts are identified, mitigation will be developed to reduce impacts where feasible and are taken into account in the assessment of residual effects.

3.4. Mitigation

- 3.4.1. The principles of the mitigation hierarchy^{viii} have been applied when considering potential impacts and subsequent effects on ecological receptors within the EZoI.
- 3.4.2. The principles of the mitigation hierarchy are that impacts on biodiversity should be subject to the following sequential mitigation actions:
- avoidance;
 - mitigation;
 - compensation; and
 - enhancement.
- 3.4.3. For the purpose of this assessment, mitigation refers to measures that are considered essential to avoid and reduce negative impacts of the Proposed Scheme. Compensation refers to measures taken to make up for the loss of, or permanent damage to, biological resources through the provision of replacement areas. Unless otherwise stated, all compensatory measures are considered to be part of the essential mitigation package.
- 3.4.4. The mitigation measures described within this EclA have been incorporated into the design and construction programme and taken into account in the assessment of residual effects. The mitigation aims to avoid or negate impacts on ecological features in accordance with best practice guidance and UK, Scottish and local government environmental impact, planning and sustainability policies. These mitigation measures include those required to achieve the minimum standard of established good practice together with additional measures to further reduce any negative impacts of the Scheme. The mitigation measures include those required to reduce or avoid the risk of committing legal offences.
- 3.4.5. Mitigation is also designed to produce a net gain for biodiversity where practicable in line with policy and guidelines.

- 3.4.6. Mitigation measures set out in this Environmental Statement (ES) will be specified as environmental commitments in the contract documents to ensure implementation by the appointed Contractor.
- 3.4.7. Impacts that are not significant (including those where compliance with regulation is required) would be expected to be avoided or reduced through the application of a Construction Environmental Management Plan (CEMP) and best working practice (e.g. mitigation of potential pollution impacts through adherence to standard best practice and guidelines). Significant ecological impacts are expected to be mitigated through a combination of best practice and typical, proven mitigation methods along with mitigation targeted to specific locations as described in the assessment.

Limitations and Deviations

- 3.4.8. Ecological surveys are limited by factors which affect the presence of bats such as the time of year, and behaviour. The absence of evidence of any bat should not be taken as conclusive proof that the species is not present or that it will not be present in the future.
- 3.4.9. Analysis of all survey data collected by Anabat units was undertaken using the Anabook software for bat call analysis and was completed by experienced bat surveyors. During analysis it is not always possible to definitely attribute recorded bat calls to species. Registrations are defined as separate files produced by the recording device (Anabat unit) that contain bat echolocation⁶. Registrations containing very weak and/or very short call structures can sometimes be impossible to attribute to genus level. Where such registrations have been encountered they have simply been labelled 'unk' for unknown.
- 3.4.10. It is not possible to definitely attribute registrations with calls >49 and <51 kHz to either common pipistrelle (*Pipistrellus pipistrellus*) (typical characteristic frequency of 45 kHz) or soprano pipistrelle (*Pipistrellus pygmaeus*) (typical characteristic frequency of 55 kHz). Call sequences (registrations) within these parameters have thus been labelled as 'Upip' (*Pipistrellus* sp) for unknown pipistrelle.
- 3.4.11. It is not possible to definitely attribute the majority of *Myotis* calls to species level with absolute certainty. The species potentially present on site (Daubenton's bat (*Myotis daubentonii*) and Natterer's bat (*Myotis nattereri*)) have very similar call characteristics. Registrations from these species should only ever be described as possessing characteristics of call that are most typical of a specific species. For the purposes of clarity, all calls belonging to this genus have been attributed to *Myotis* sp.
- 3.4.12. Hibernation surveys have not been undertaken. Where suitable hibernation habitat has been identified, in order to ensure that all likely significant effects of the Proposed Scheme are identified, a precautionary approach to valuation has been adopted. Precautionary values have been assigned to both known receptors and potential receptors based on the best available information.
- 3.4.13. Due to the nature of their echolocation, brown long-eared bats (*Plecotus auritus*) may have been under recorded during surveys across the Proposed Scheme. The echolocation calls of brown long-eared bats are extremely quiet, with calls only registering when a bat is in close proximity to a recorder^x (typical characteristic frequency of 33 kHz). Brown long-eared bats glean prey from the surface of leaves and other surfaces, also catching prey mid-flight and do not regularly produce a 'feeding buzz' akin to other bat species. The species is common across the UK and is one of four species identified as widespread across the Highlands^x.

⁶ i.e. species presence within a 15 second (s) [max.] file. Multiple passes/calls/pulses of the same species within a (maximum) 15 s file counts as a single registration - two species within the same 15 s file are counted as two registrations

- 3.4.14. The Proposed Scheme has undergone several (increasingly minor) design iterations alongside the development of the EclA. The latest design iteration resulted in an extension of the original Study Area for some features, typically in the order of a few metres. The impact on bats and need for mitigation in these areas has been assessed on a precautionary basis and taking into account existing knowledge and professional judgement. Additional survey is being undertaken to confirm the impact assessment and inform detailed mitigation design.
- 3.4.15. Where a precautionary approach has been employed, this is not considered to have been a constraint to the assessment of features within this chapter. Further surveys, including pre-construction surveys, will be undertaken with a view to updating baseline results (those informing this assessment), and informing requirements for mitigation/licensing where required, to ensure construction of the Proposed Scheme remains compliant with legislation.

Trees

- 3.4.16. Following revisions to the Proposed Scheme, further tree assessments were undertaken encompassing trees TR74 to TR100, and TR672 to TR700. Surveys were undertaken in September and October 2017 at the end of the bat activity season. These trees were subject to ground based inspection and aerial tree climbing inspection where possible and required. Twenty trees had features that could not be sufficiently inspected during these inspections, for example trees that were unsafe to climb, or a cavity was too deep to survey using an endoscope and inspect thoroughly. These trees have not been subject to emergence or re-entry surveys given the lateness of the season and subsequently a precautionary assessment has been undertaken to the valuation and assessment of these trees.

Buildings and Structures

- 3.4.17. It was not possible to inspect all suitable features identified within each structure due to height of structures and bridge arches that could not be safely accessed. In these locations assessments of bat roost potential were made utilising binoculars and torches, where appropriate, to determine potential roost features and inform this assessment.
- 3.4.18. Internal surveys were unable to be completed at ST03 and ST10, as access was not granted by property owners. All six buildings associated with the MacDonald Highlands Hotel (ST12 buildings 1-6) resort were subject to external survey only. At ST02 and ST22, internal access was not possible due to health and safety concerns regarding the integrity of the structure. Internal access was not possible at ST24 due to the presence of livestock.
- 3.4.19. During a dusk emergence survey of the Scandinavian village buildings in August 2017, nine bats were observed originating from close to the buildings. Their exact point of origin could not be determined due to the distance of the surveyor and the flight line of the bat. Surveyors were unable to determine whether the bats exited a roost and were additionally impeded by low light levels resulting in poor visibility. However, bats were confirmed to enter and exit roosts during surveys in May 2017 and subsequently, confirmed roosts were recorded in both buildings. Given their proximity to construction they will be subject to pre-construction surveys. As the building has been confirmed as a roost site, the inconclusive observations of bats close to the buildings during August surveys is not considered to affect the findings of the impact assessment.
- 3.4.20. Activity surveys at Lynhail House (ST21) were restricted to dusk emergence surveys only at the landowner's request. Three dusk surveys were completed in line with best practice for properties with high bat roost potential and/or confirmed roosts. The

absence of a dawn return-to-roost survey amongst the three surveys is not considered to have negatively impacted the assessment process, with bats recorded exiting roosts during all three survey visits.

- 3.4.21. Dedicated surveys to confirm hibernating bats or hibernation roosts were not undertaken as part of this assessment, however, an assessment of hibernation roost potential and a precautionary view has been taken with respect to the assessment.
- 3.4.22. At ST26 and ST27, only external assessments of buildings from distance could be completed as access to properties was not possible. Following these at-distance inspections, buildings were assessed as 'High' potential to support bat roosts and have therefore subsequently been assessed on a precautionary approach.

Rock faces

- 3.4.23. As several rock faces were located immediately adjacent to the road, emergence and return surveys were not undertaken as it was not considered safe for surveyors to stand at the roadside edge at night. To mitigate this, climb and inspect surveys were undertaken of rock faces where possible, with further endoscopic inspections carried out under the safety of traffic management. Due to the accessibility of the rock faces, the use of static detectors was not suitable given the risk of theft, with the exception of rock face RF10 where it was considered safe to deploy them.
- 3.4.24. At RF10 (Slochd Beag), it was not possible to survey and inspect an overhang located within the rock face during rope access surveys due to health and safety concerns associated with the instability of rock in this area. Subsequently, the feature was assessed from distance and a precautionary approach has been employed during the assessment.
- 3.4.25. The central section of rock face RF13 could not be surveyed from ground level or with a ladder due to its height and will require rope access aerial inspection. This was not undertaken during surveys to inform this assessment and will subsequently be undertaken in surveys being undertaken in 2018. Ground based and ladder inspection of the rock face was undertaken of the remainder of the rock face. The unsurveyed central section at height is not judged to have limited the assessment of RF13 given the rock faces' proximity to the road and it being encompassed by metal mesh, to prevent rock fall onto the carriageway, limiting roosting potential of the rock face. The presence of wire mesh additionally restricted direct access to sections of the rock face for surveying with some features unable to be directly accessed by person or endoscope. A precautionary approach has been taken with respect to this rockface.

Crossing point surveys

- 3.4.26. With respect to crossing points, where a culvert was the principal feature being observed, crossings were recorded if a bat entered the culvert from one side and exited out of sight or detector range on the opposite side, regardless of behaviour displayed between the initial entry and final exit (e.g. foraging within the culvert entrance). With regard to bat crossings through culverts, it is not always possible to definitely attribute crossings to the recorded observations of bat behaviour. During surveys, foraging behaviour has been frequently observed within culverts, often by multiple bats and from both surveyor positions at either end of the culvert at the same time. Therefore, ascertaining if a bat has actually passed through (or through and back) a culvert can be difficult. When encountered and recorded as crossings or foraging on survey sheets, such behaviour has been included as crossings within the summary table (i.e. potential crossing) in line with the precautionary principle and in order to avoid under-counting of actual crossings.

- 3.4.27. On reviewing the sound files, it was not always possible to definitely attribute or verify a pipistrelle species to each survey sheet record. For example, where both common pipistrelle and soprano pipistrelle were recorded by the recording device (Anabat SD2) at the same time as both species have been within the detectable range of the unit (and appear as such on the corresponding sound file). Therefore, the following approach has been taken when reviewing this data:
- for crossings where one pipistrelle bat was observed, but it could not be identified to species level in the field, the crossing has been marked as unknown pipistrelle if review of the corresponding sound files cannot definitively ascribe the record to either common pipistrelle or soprano pipistrelle;
 - for crossings where two bats were observed, the crossings have been marked as one common pipistrelle and one soprano pipistrelle if recorded as such on the survey sheet and verified by sound files containing echolocation typical of both species. In the absence of sound file verification, bats have been classified as “unknown”; and
 - for crossings where more than two bats were observed where both common pipistrelle and soprano pipistrelle were identified in the field and/or appear on the corresponding sound files, these crossings have been attributed to unknown pipistrelle (as it is not possible to confirm the numbers of each species).
- 3.4.28. During the crossing point surveys there were instances where a single bat was observed crossing during the survey but the review of the sound files showed more than one species of bat present at that particular time. This is likely to be attributable to the observer being focused on the crossing location, and associated structure where applicable, but the recording device picking up other bats within its recording range but which are not in the view of the surveyor. In these instances, the bat species on the sound files have not been counted as crossing. Such bats recorded were most likely to have been commuting or foraging in the vicinity, but not crossing the road.
- 3.4.29. A lack of survey at crossing locations assessed of low suitability does not limit the overall findings and subsequent mitigation with survey effort proportionate to the likely impacts on the conservation status of local bat populations.

4. Results

4.1. Desk Study

- 4.1.1. Records of bats were requested from NESBReC and HBRG with only a single record of a pipistrelle bat species returned by HBRG from 2008. Only a four-digit grid reference was detailed so an accurate location of this record is not known.
- 4.1.2. A search for SAC's designated for bats returned no sites within 30km of the Proposed Scheme.

4.2. Field Survey

- 4.2.1. Bat roosts recorded during field surveys across the Scheme are summarised in Table 4.1 below and subsequently further discussed in their relevant feature categories and illustrated on Figure 12.14.

Table 4.1: Summary of Roost Locations along the Proposed Scheme. Distances are given for feature's closest point to the Proposed Scheme.




Feature Name	Type of Roost	Easting	Northing	Distance from Proposed Scheme
TR71 (Tree roost)	Individual non-breeding <i>Myotis</i> sp. roost	290135	815627	0m
TR95 (Tree roost)	Individual non-breeding pipistrelle roost	287472	810470	58m
TR678 (Tree roost)	Individual non-breeding roost	289770	815246	45m
Lynwilg Farmhouse – ST01	Brown long-eared maternity roost	287955	810434	6m
	Common and soprano pipistrelle non-breeding roost			
Kinakyle – ST03	Brown long-eared and common pipistrelle non-breeding roost	289006	811040	1m
Birch View – ST05	Non-breeding pipistrelle roost	289144	811275	9m
Red Stag Lodge – ST08	Individual non-breeding pipistrelle roost	289893	815048	0m
Avielochan House – ST09	Maternity roost & summer non-breeding	290383	816725	3m
Telephone Exchange – ST11	Individual non-breeding pipistrelle roost	287168	824090	5m
Highland Hotel - ST12-1	Individual, non-breeding roost	289140	812460	8m
Scandinavian Village Buildings (north and south buildings) - ST12-5/ST12-6	Non-breeding roosts identified in both buildings	289140/289144	812750/ 812699	15/18m
Staff Accommodation Block A - ST12-3	Individual non-breeding roost	289140	812527	21m
ST21 – Lynphail House	Non-breeding pipistrelle roost	289127	822746	16m
ST23 – Lynphail Farmhouse	Non-breeding pipistrelle roost	289214	822660	8m
ST25 – Lynwilg Railway Cottage	Common and soprano pipistrelle non-breeding roost	288046	810154	16m

Feature Name	Type of Roost	Easting	Northing	Distance from Proposed Scheme
RF01	Roost with x2 bats – possible hibernation	288590	810845	6m
	Roost with x3 bats – possible hibernation	288550	810795	
RF04	Unknown roost – single dropping recovered – likely transition roost	289068	811258	0m
RF10	Unknown roost – single Natterer's bat dropping recovered – likely transition roost	284002	825265	0m
RF15	Roost with droppings only – likely transitional roost	285100	823954	0m
	Roost with droppings only – likely transitional roost	825105	823953	

Tree Survey Results

- 4.2.2. A total of 175 trees were subject to ground based inspection during initial scoping of trees within woodland blocks considered to contain trees with potential roost features. Of these 175 trees, four were assessed to provide negligible opportunities to support bats; 36 assessed to provide low suitability; 130 with moderate suitability and 5 assessed with high suitability to supporting roosting bats.
- 4.2.3. A total of 82 of these trees are within 20m of the Proposed Scheme. Results of the detailed surveys of these trees can be found in Annex A, Table 1.1 with results illustrated on Figure 12.14.
- 4.2.4. Three roosts were confirmed during surveys; survey information and roost locations are illustrated on photographs in Table 4.2.
- 4.2.5. A single *Myotis* sp. bat was recorded entering a feature on tree TR71 during a dawn survey; a single roosting common pipistrelle was viewed within tree TR95 under loose bark; and, a third unidentified (due to the bat's position within the feature) bat was recorded within a cavity in a birch tree TR678, with the latter two observations recorded during ground-based tree inspections.

Table 4.2: Trees with Confirmed Roost

ID	Description of Tree and Roost Location	Photographs of Tree
TR71	<p>Silver birch located at NH 90135 15627. Co-dominant stem with bracket fungus, two holes, one at 4m and one at 3m above ground. On a dawn activity survey on 18/07/2017 one <i>Myotis</i> sp. bat was seen to enter the upper hole and roost (see picture).</p>	
TR95	<p>Dead stump (unknown species) at NH 87472 10470. Cavities were found behind loose bark on the north face at 1m above the ground (circled in picture), and during the ground inspection on 31/08/2017 one pipistrelle bat was seen behind the bark (see second picture).</p>	
TR678	<p>Silver birch tree located at NH 89770 15246. A rot hole extends upwards on the south face at 4m above ground (circled in picture). During the aerial inspection on 03/10/2017 one bat was identified within the cavity, through use of the endoscope. It wasn't possible to identify the bat to species level due to its position in the roost.</p>	

Buildings, Bridges and Culverts Results

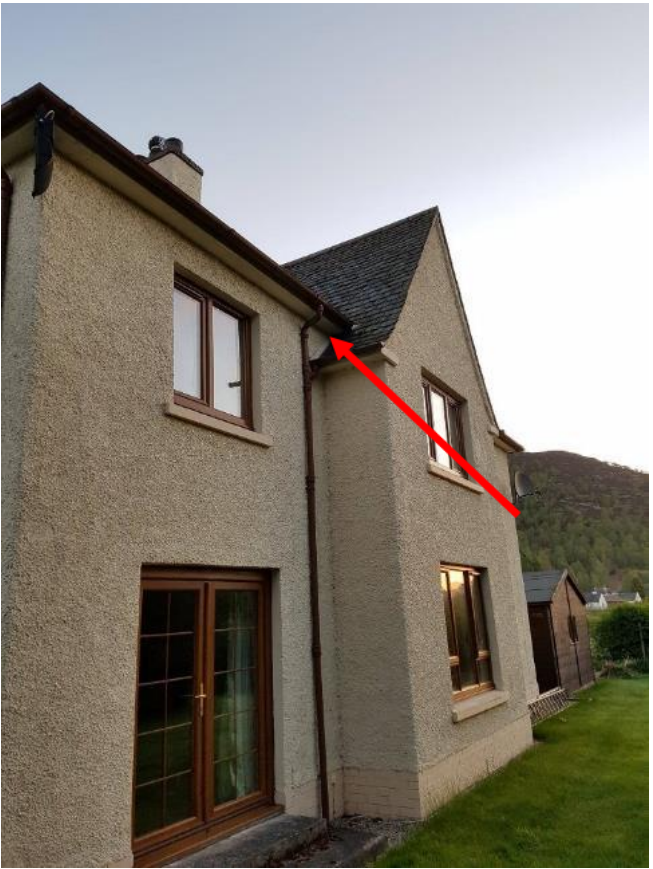
Buildings

- 4.2.6. A total of 21 buildings were surveyed as part of the schedule of surveys. Confirmed roosts were recorded within 13 buildings, with all buildings containing non-breeding, summer roosts; and ST01 and ST09 both additionally containing maternity roosts. No evidence of hibernation roosting was recorded within any buildings. The results of the hibernation suitability assessment recorded five buildings with moderate suitability to support hibernation roosts.
- 4.2.7. ST26 and ST27 were externally assessed from a distance only, and whilst features with bat roost potential were observed on both properties, no photographs could be taken. Both buildings were assessed to be of 'High' roosting potential and have therefore been assessed using a precautionary approach and are omitted from Table 4.3.
- 4.2.8. Table 4.3 details the results of initial building inspections, the results of the emergence and re-entry surveys; and the results of the hibernation suitability assessment, including photographs illustrating locations of roost features. Figure 12.14 illustrate the locations of buildings along the Proposed Scheme.



Bridges, Culverts and Underpasses

- 4.2.9. No evidence of roosting bats was recorded during emergence and return surveys of bridges BR08, BR12, BR19, BR20, BR21, culverts CU25, CU28, or underpass UP09. Culvert CU27 and underpass UP02 were subject to endoscope survey with bridge BR22, containing a single feature with roost potential, also subject to survey. No evidence of bat activity or presence was recorded at any of the structures. Locations of structures are illustrated on Figure 12.14.


Table 4.3: Buildings and Structures Photographs and Roost Locations (shown in red)


Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>ST01 - Lynwilg Farmhouse</p> <p>The house is constructed from brick with a render covering, and is two storeys with a pitched slated roof. There are two chimneys on the roof. The loft has a light in it and is floored. There is a timber garage to the north of the house although there appeared to be no Potential Roost Features (PRFs) in it.</p> <p>The slates on the roof all appeared old and irregular shaped so there were gaps underneath them. The ridge tiles were raised in various places. There were cavities under the flashing around the chimneys and in the valleys. The wallheads were generally tight so there were few access points associated with those.</p>	 <p>Photograph 1</p>	<p>A large amount of bat droppings and two dead brown long-eared bats were found in the loft during the PRA. One confirmed brown long-eared bat entered a roost at the rear (south-east face) of the house at the red arrow (first photo), between the wall and the pitch of the roof on 17/05/2017.</p> <p>On 19/06/2017 one soprano pipistrelle and five brown long-eared bats emerged from the same point as shown in picture one. In addition, a common pipistrelle emerged from under a slate on the south facing pitched roof and another emerged from the east corner under the gutter (no picture). One soprano pipistrelle entered a roost on the east side near the satellite dish (no picture).</p> <p>On 19/07/2017, 11 brown long-eared bats entered the roost shown in the first picture while a common pipistrelle entered above the gutter (picture two) and an unidentified pipistrelle entered adjacent to that (picture two). Three common pipistrelle and two soprano pipistrelle entered roosts on the south-west side of the building as shown in the third picture.</p> <p>Roost Classification:</p> <p>Brown long-eared – Maternity Common pipistrelle – Non-breeding Soprano pipistrelle – Non-breeding</p> <p>Hibernation Roost Potential - Moderate</p> <p>There are numerous areas for potential roosting including under slates, at wallheads, within the loft and within cracks in stonework. Due to the house being inhabited it will have a certain level of heat throughout the winter which means a hibernation roost of high conservation significance is less likely, but there is the opportunity for smaller numbers or individual bats to roost.</p>



Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
	 <p>Photograph 2</p>  <p>Photograph 3</p>	



Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>ST02 – Quarry Building</p> <p>This is a concrete structure with only two sides visible (it may be solid concrete so there is no internal access). There is a deep vertical crack on the south-east face. The crack extended deep into the structure and although there was unlikely to be a high conservation status roost present there were a number of cavities evident and the surrounding habitat was good for foraging and commuting.</p> <p>BRP – Moderate</p>	 <p>Photograph 4</p>	<p>No roosts were recorded during the surveys.</p> <p>Hibernation Roost Potential – Low</p> <p>The crack present on the concrete extends deep into the structure, although it may not provide a suitable level of protection from the elements and water and/or frost may inundate in winter. It is unlikely therefore to be suitable for regular use or use by large numbers of bats.</p>
<p>ST03 – Kinakyle</p> <p>This is a two-storey stone building with multiple pitched slated roofs and two chimneys. There is one dormer on the south pitch and two on the north pitch, and a skylight on the east pitch. The stone walls are rendered on the north and east sides. The west side has a small entrance way of wooden construction with a small slated pitched roof; there is a glass conservatory on the west. There are soffit boxes on the west side and any gaps between the box and the wall look to have been filled. The building is split into two flats and the</p>	 <p>Photograph 5</p>	<p>No roosting bats were seen during the first (21/06/2017) or second (11/07/2017) surveys. During the dawn survey on 16/08/2017 two roosting locations were identified. Two brown long-eared bats entered a roost on the south-east corner of the house (red triangle in the second picture) and one common pipistrelle entered under a slate near the dormer window on the south-east face (circled in picture two).</p> <p>Roost Classification:</p> <p>Brown long-eared – Non-breeding Common pipistrelle – Non-breeding</p> <p>Hibernation Roost Potential – Moderate</p> <p>There are numerous areas for potential roosting including under slates, at wallheads, within the loft and within cracks in</p>


Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>entry to the upper is up a metal set of stairs on the exterior.</p> <p>There were gaps under slates on all pitches, gaps under the lead flashing, and cavities under the wooden fascias on the gable end, on the south facing wall on the lower section of the building, on the north facing wall, on the west face above the conservatory and on north-west corner. In addition, there were gaps at the wallheads on the east and west faces.</p>	 <p>Photograph 6</p>	<p>stonework. Due to the house being inhabited it will have a certain level of heat throughout the winter which means a hibernation roost of high conservation significance is less likely, but there is the opportunity for smaller numbers or individual bats to roost.</p>
<p>ST05 – Birch View</p> <p>The single storey house was built in 1927 from railway sleepers. The roof is pitched corrugated metal. There are brick chimneys at each end of the house and wooden barge boards around the wallheads. There was a loft space which couldn't be fully inspected due to the shallow height and the lack of flooring There is a summerhouse at the east end of the house, wooden construction with a pitched roof of felt with wooden slats nailed over. There is a mono-pitch section at the rear (south) of the summerhouse. There are several outbuildings (used as a garage and storage sheds) at the north-west of the house. The</p>	 <p>Photograph 7</p>	<p>One unidentified pipistrelle bat returned on 02/06/2017 and one emerged on 13/07/2017 from building roof ridge on the south eastern corner of the building. On the 27/07/2017 two unidentified pipistrelle bats entered the building one on the southern aspect of the roof above the door and the other on the road edge on the south face of the building. All identified as non-breeding unidentified pipistrelle roost.</p> <p>Roost Classification:</p> <p>Unidentified pipistrelle – Non-breeding</p> <p>Hibernation Roost Potential – Low</p> <p>The structure has a loft although the metal roof means it may be exposed to extremes of temperature which isn't suitable for winter roosting bats. There are areas for potential roosting throughout the house and outbuildings although the majority</p>


Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>western-most shed is constructed of wood with a plyboard clad interior, and a corrugated metal roof. The shed closest to the house is made of wood, with a pitched felt roof secured with wooden batons.</p> <p>There were gaps under the wooden cladding on the gable ends of the house which may extend upwards. The front edge of the house had occasional gaps under barge boards. There were gaps around the porch window lintel and gaps where the wooden cladding meets the brick of the chimney on the south-east facing gable. There was also damage to the wooden sleepers on that gable end. On the rear of the house there were gaps where the wooden cladding met the fascias above the sunroom. There were a number of gaps around the exterior of the building which would allow bats access although there was unlikely to be a cavity wall due to the construction of the building.</p> <p>The only area of potential on the summerhouse was on the rear (south-east corner) at an area of raised roofing. The outbuildings had PRFs including holes around the doorways and gaps on the interior between the wooden construction and plyboard cladding. There was evidence of nesting birds from a previous year in the shed at the west.</p>	 <p>Photograph 8</p>	<p>would be unlikely to give the required level of protection to bats in winter.</p>


Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>ST07 – High Range House</p> <p>High Range House was built as a kit house around 30 years ago; it is wooden clad on a block base with both single and two storey sections. The roof is pitched and tiled. There is a floored loft above the single storey part of the house, running the full length of it with windows at each end. The two-storey section has a small, cleaner loft. There is a single storey triple garage to the north-west of the house, of wooden construction with a pitched roof. A small garden shed lies to the south-west of the house.</p> <p>There were occasional areas of potential under some of the roof tiles, but no gaps under the wallheads or on the cladding at the gable ends. There were no PRFs on the garage or the shed. The BRP was assessed as low as the house had very few PRFs which could only be used by a small number of bats.</p> <p>BRP – Low</p>	 <p>Photograph 9</p>	<p>No roosts were found during the surveys.</p> <p>Hibernation Roost Potential – Low</p> <p>There are very few areas which could be accessed by bats throughout the building, and so this means that likelihood of hibernation is low.</p>


Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>ST08 – Red Stag Lodge</p> <p>The main lodge is a two-storey building with a brick base and wooden clad upper. There is a pitched tiled roof with dry verge system on the roof at the front (east). The roof at the rear (west) is pitched with pan tiles. There are soffit boxes around the roof line. The garage (to the north-west of the house) is of brick construction with a corrugated metal roof. The summer house building north of the garage is of wooden construction with a pitched felt roof.</p> <p>On the main house, there were gaps at the lower end of all of the cladding boards leading in to the space behind, and gaps at the top of the walls where the fascias met the soffits. There were crevices on the north-east facing gable end where the fascias met the soffits. There were very few gaps in the summerhouse except a potential hole on the rear wallhead. The garage had a few gaps around the wallheads and the corrugations of the metal roof, and cavities at the apex on the side nearest the summer house, and where the soffit box has come away from the wall.</p> <p>The BRP was classed as high. There were numerous features around the exterior of the main</p>	 <p>Photograph 10</p>  <p>Photograph 11</p>	<p>No bats observed emerging from the build during the first (01/06/2017) and third (27/07/2017) surveys. One pipistrelle bat (species unidentified) observed entering the western side of the building by the window in a gap under a tile.</p> <p>Roost Classification:</p> <p>Unidentified pipistrelle – Non-breeding</p> <p>Hibernation Roost Potential – Low</p> <p>There are no lofts within the structure and so the only areas which bats could use for roosting are under tiles and within/behind gaps in fascia boards. These wouldn't likely provide particularly suitable habitat requirements for hibernating bats.</p>



Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>lodge and a small number on the adjacent garage which could be used by roosting bats.</p>		
<p>ST09 – Avielochan Farmhouse</p> <p>The farmhouse is of stone construction and two-storey (upstairs built into roof; dormer windows with hanging slates). The roof is pitched and slated with underlying wooden sarking and a single loft running the length of the property. There are chimney stacks at either end of the house. A single storey flat roof extension houses the kitchen, which is brick covered with render with a flat felt roof. At the rear is a single storey corrugated metal extension with a mono-pitched metal roof and wooden fascias. There is a glasshouse on the south end of the house, and a small porch on the front (east).</p>	 <p>Photograph 12</p>  <p>Photograph 13</p>	<p>Roost evidence at was found at the north end of the loft in the form of droppings which were DNA tested and found to be common pipistrelle. The main concentration of droppings was against the stone wall of the chimney, and gaps visible at the apex of the gable (daylight seen from within loft) where bats could access. There was a known roost (identified by the owner) at the front porch, at a gap where the porch adjoins house and three droppings were seen on the south side (the owner regularly cleans droppings from the windows of porch). These droppings were also DNA tested as common pipistrelle. There were also gaps under slates around the whole house and raised slates adjacent to the chimney stacks. There was a possible gap on the south gable wall under the cope stone of chimney, and a crevice at the wallhead along most of the length of the building at the front and rear.</p> <p>A common pipistrelle maternity roost was located within the building. A large number of bat droppings were found within the north end of the loft. The roost emerged from under slates and flashing around the north chimney, as shown by the labels on the photos. There was also a common pipistrelle roost entrance where the porch wall joins the main house of the east face, and a roost at the apex of the gable of the porch, again east facing. Access points are shown by the red arrows (see also photo below).</p> <p>Roost Classification:</p> <p>Common pipistrelle – Non-breeding Common pipistrelle – Maternity</p> <p>Hibernation Roost Potential – Moderate</p>



Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
		<p>There are numerous areas for potential roosting including under slates, at wallheads, within the loft and within cracks in stonework. Due to the house being inhabited it will have a certain level of heat throughout the winter which means a highly conservation significant hibernation roost is less likely, but there is the opportunity for smaller numbers or individual bats to roost.</p>
<p>ST10 – Dunelm</p> <p>Dunelm is a single storey house with a converted home office, and two garden sheds close to the A9. The office is constructed from wood with a mono-pitched corrugated metal roof. The main house has a metal roof with underlying bitumen and is of wooden construction but wasn't surveyed as it is situated over 12m from the road and is shielded by the office from the road. The porch at the front of the house has a wooden wall which was part stone clad, with a flat felt roof.</p> <p>The whole structure was in the process of being clad in stone, with parts completed already. There were gaps at each corrugation of the metal roof, and where the wooden cladding met with the gutter. There was also a gap where a plank had pulled away from the wall on the south end, and a deep crack in the wood on the north side.</p> <p>The sheds (to the east of the house) are both wooden, with pitched felt roofs. The shed to the south had holes in the rear (north-east face)</p>	 <p>Photograph 14</p>	<p>No roosts were found during the surveys.</p> <p>Hibernation Roost Potential – Low</p> <p>The sheds do not have the preferred levels of insulation that a bat would require in winter to roost although as there are gaps allowing access it cannot be ruled out that opportunistic bats may roost. The office, although having some roosting potential, has a corrugated metal roof and its walls are being clad in stone, and so the roost potential is low.</p>


Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>leading into the interior. There was a gap between the fascia and wall, and a gap where the felt roof had pulled away from the fascia on the south side. The shed to the north had no daylight visible from the inside, and the only gap on the exterior was on the north-facing edge where the fascia sat away from the wall.</p> <p>The BRP of the sheds and the office was assessed as low. The house was further from the works (over 12m from the road), looked newer and was in the process of being clad with stone, and although there were still potential areas a bat could roost it is sheltered from the works by the office and so wasn't surveyed.</p> <p>BRP – Low</p>	 <p>Photograph 15</p>	



Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>ST11 – Telephone exchange</p> <p>The derelict main building is of brick construction with render and corrugated asbestos pitched roof. There is a small extension on south face. The large door on the west face was open and there were broken windows throughout. The interior was in poor condition; the cladding under the asbestos roof looked fire damaged and was broken in places, revealing a small void between roof sheeting and cladding. There were small gaps in the brick interior walls leading from the main room into the extension. A separate room at the east end had possible asbestos on floor (fallen from ceiling) so was not inspected. An adjacent outbuilding was also derelict and open on the north face. The exterior has an asbestos fascia and asbestos roof. There were gaps at the wallheads on north and south faces of the main building under the corrugations of the asbestos sheeting. On the east gable and south face were vents which may lead into the building. On the extension at the rear there were small gaps on the west face, and on the east face under the corrugations of the roofing.</p> <p>The structure had moderate BRP as there were multiple areas where bats could roost but the structures</p>	 <p>Photograph 16</p>	<p>A pipistrelle (species unconfirmed) emerged from the apex of the roof (see red arrow) on 23/05/2017. It was likely to be a male or non-breeding female bat roost.</p> <p>Roost Classification:</p> <p>Unidentified pipistrelle – Non-breeding</p> <p>Hibernation Roost Potential – Low</p> <p>The buildings have open doors and windows and so the internal temperature will not be constant. There is a lack of suitable crevices to provide deep shelter to bats and so it may only be used by opportunistic bats in winter.</p>




Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>are unlikely to support large numbers of bats or roosts of high conservation significance.</p>		
<p>ST12-5 & ST12-6 – Scandinavian Village</p> <p>Scandinavian Village is a complex of guest accommodation buildings, which are two storey brick construction with render. The roofs are pitched and tiled. The two blocks closest to the A9 were surveyed (blocks north (5) and south (6)).</p> <p>Both blocks appeared to have no gaps on the pitched roofs at either tiles or ridges. On both blocks there were gaps at the gable ends where the soffits met the render. There were also large gaps under the fascia boards which would facilitate bat access. There was bird nesting evidence throughout.</p>	 <p>Photograph 17 – northern building</p>	<p>Nine roosting locations were identified across the two buildings (as illustrated in Photographs 17 and 18) on 24/05/2017 with 11 (either common pipistrelle or unidentified pipistrelle) roosting bats entering in total. On 16/08/2017 three bats (two common pipistrelle and one soprano pipistrelle) were confirmed to leave roosts and a further nine potential roosting bats (five common pipistrelle, one soprano pipistrelle, two unidentified pipistrelle and one unidentified species) also observed.</p> <p>Roost Classification:</p> <ul style="list-style-type: none"> Common pipistrelle – Non-breeding Soprano pipistrelle – Non-breeding Unidentified pipistrelle – Non-breeding <p>Hibernation Roost Potential of both buildings – Moderate</p> <p>There are numerous gaps within the buildings and so due to the structures and the usage of the buildings by bats in summer there is more likelihood of bats being present in winter. However, due to habitation of the structures a large roost is unlikely to be present.</p>



Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
	 <p>Photograph 18 – southern building</p>	
<p>ST12-3 and ST12-4 – Macdonald Staff Accommodation Blocks A & C</p> <p>The staff accommodation block C (ST12-4) is a three-storey structure built of brick with render, and a pitched tiled roof. Generally, wallheads and soffits were tight with very few gaps. Roofs looked in good condition. The second staff accommodation, Block A (ST12-3) is two-storey of the same brick construction and a pitched roof with concrete roof tile. On staff accommodation block C, a dry verge system covers the tile ends at the gables, with the exception of one cap which was loose, and a there was a gap in the soffit box at the northern end.</p>	 <p>Photograph 19 – Block A</p>	<p>Staff accommodation: One common pipistrelle emerged from under a roof tile on block A at the north end of the gable at 22:30 on 20/06/2017 (as shown by circle on Photograph 19, area is hidden from view by tree). No roosting bats were seen on 10/07/2017 or 07/09/2017.</p> <p>Roost Classification:</p> <p>Common pipistrelle – Non-breeding</p>



Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>Staff block A had no caps over the ends of the tiles and so there was the possibility of bat access.</p> <p>BRP for Block C - Moderate</p> <p>ST12-2 – Activity Centre and ST12-1 - Macdonald Highlands Hotel</p> <p>Further south the rear of the Highlands Hotel building is single storey with a tiled, mono-pitch roof. The tiles were tight to one another and there were no cavities at the wallheads. Adjacent to this is a four-storey tall section and adjoined to that a three-storey block of guest rooms. Both of these were in good condition with tiles flush to one another and no gaps at wallheads. There was a small gap at the apex of the south-facing gable end leading under the ridge.</p> <p>The activity centre is low height at the rear with a pitched slate roof. The slates looked generally in good condition although there were gaps visible due to the irregular shape of the slates. The flashing around the skylights and vents was also in good condition and flat with no gaps. There may be gaps under the edges of the tiles in the valleys between the roofs. There were potential gaps at the edge of the gable where the slates end. There</p>	 <p>Photograph 20 – Block C</p>  <p>Photograph 21</p>	<p>Hotel: One common pipistrelle entered at the apex of the gable end (see red arrow) of the Highlands Hotel block to the immediate north of the activity centre on 24/05/2017. No roosting bats were seen on 07/09/2017.</p> <p>Roost Classification:</p> <p>Common pipistrelle – Non-breeding</p> <p>Activity centre: No bats were roosting in the structure during the surveys.</p> <p>Hibernation Roost Potential – Staff Accommodation, Hotel and Activity Centre – Low</p> <p>There are very few areas of potential on the staff accommodation building and Highlands hotel which could be used by bats, which makes winter usage less feasible. The activity centre has a slated roof and there are more potential areas for roosting, although this building will be heated all year round and therefore it is likely to be too hot for hibernating bats.</p>

Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>is a large louvered vent which is meshed behind in parts but there could be potential for bats to enter and access the plant room. There were also some gaps under the concrete ridge tiles.</p> <p>BRP – Moderate</p>		
<p>ST20 – Broom Cottage</p> <p>The house has a low suitability for summer roosting bats and negligible suitability for hibernating bats. With the exception of a very small crawl space above the upstairs hall there is no loft space within the property. There is no access to the crawl space for bats. On the flat roofed section of the property there is a mix of both metal and wooden barge boards with wallheads flush, offering no potential roost features. The pitched roof section of the house presented with very small gaps at the wallheads behind the wooden barge boards. The roof of the property is corrugated tin. There is access for bats beneath the folds of the corrugated tin sheeting on the roof, however metal sheeting is considered to offer low suitability for roosting. Gaps within the flashing over the roof ridge were also present.</p> <p>There are various sheds and outbuildings within the site,</p>	 <p>Photograph 22</p>	<p>No evidence of current or historic bat roosting was recorded during the internal and external inspections of the property.</p> <p>Hibernation Roost Potential – Negligible</p> <p>Given the limited features present, the construction materials of the property and constant habitation of the property there is negligible hibernation roost potential.</p>

Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>however, none of these presented with opportunities to support roosting bats.</p> <p>BRP – Low</p>		
<p>ST21 – Lynphail House</p> <p>The building comprises two perpendicular sections: a single-storey sandstone section with a chimney and a two-storey section. Both sections have pitched slated roofs, lead flashing and roughcast render. The exterior of the building contains potential roost features such as gaps between the wall-head and soffit box on the eastern and western corners of the south-facing gable, as well as gaps around dormer windows providing access into an enclosed space between the wooden panelling and the roof. Gaps were also visible at the apex of the eastern gable end.</p> <p>The loft space within the two-storey part of the building contained wooden floors, rafters, sarking, and membrane. The loft was well-sealed, with no gaps visible other than an area where daylight was visible at the apex of the eastern gable end, providing potential access into the loft space.</p> <p>The single-storey section of the building contained no loft space.</p>	 <p>Photograph 23</p> 	<p>Seven roost access/egress points were identified during dusk activity surveys (no dawn surveys completed at property owner's request). Roost features included gaps between the wallhead and roof, at window-roof interface, and from beneath tiles on the southern aspect of the property (Photograph 23), and a single roost access/egress point on the northern aspect of the property. Small numbers of bats were recorded using features, with no more than four emergences occurring from any one roost feature.</p> <p>Roost Classification:</p> <ul style="list-style-type: none"> Common pipistrelle – Non-breeding Soprano pipistrelle – Non-breeding Unknown species – Non-breeding <p>Hibernation Roost Potential – Negligible</p> <p>Given the structure of the property and its year-round occupation, the building is considered unlikely to support a hibernation roost given a lack of humid conditions.</p>

Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>ST22 – Derelict Cottage</p> <p>The cottage is a sandstone building with pitched slated roof and lead flashing along the ridge. There are multiple gaps within the roof leading into the cottage interior. There were also multiple gaps in the sandstone, including the chimney. Potential access points into the building also included open doors and broken windows.</p> <p>As the cottage was in a very poor state of repair, it was unsafe to access and fully inspect internally.</p> <p>BRP - High</p>	<p>Photograph 24</p>  <p>Photograph 25</p>  <p>Photograph 26</p> 	<p>No evidence of current or historic bat roosting was recorded during the external inspection of the property. Internal inspection of the property was not undertaken due to the H&S concerns regarding the integrity of the structure. It was noted that birds were nesting within the property during survey.</p> <p>Hibernation Roost Potential – Moderate</p> <p>The derelict structure and presence of multiple potential roost features, as well as access egress opportunities, is likely to result in the building maintaining a cold, humid climate during the hibernation period, and it is therefore assessed to offer moderate hibernation roost potential.</p>

Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>ST23 – Lynphail Farmhouse</p> <p>The farmhouse consisted of single-storey and two-storey sections with wooden-clad porches at the front and the rear. The house is a stone and render building with pitched slated roof and lead flashing. Multiple gaps were seen to be present at wall-heads that could potentially provide access into the loft spaces. There were also multiple gaps under the roof slates and under the lead flashing.</p> <p>The loft space within the single-storey section was floored and covered in old wooden cladding which was bent in some places.</p> <p>The loft space within the two-storey section could only be inspected from the loft hatch due to the small size of the hatch. The loft contained wooden rafters, sarking and a layer of insulation on the floor. No light from outside was visible.</p> <p>The garage adjacent to the house was a rendered breeze block structure with corrugated roofing sheets. The interior was open with no suitable roosting locations. Potential access into the garage</p>	 <p>Photograph 27</p>  <p>Photograph 28</p>	<p>No evidence of bat activity or presence was recorded during the external or internal inspection of the property. Low numbers of bats (less than five) were recorded exiting or returning to features about the property during activity surveys. Re-entry of one common pipistrelle was recorded at the base of the chimney and one soprano pipistrelle recorded entering at a gap between the skylight window and roof tiles. One emergence from apex of roof at dormer window by soprano pipistrelle.</p> <p>Roost Classification:</p> <p>Common pipistrelle – Non-breeding Soprano pipistrelle – Non-breeding Unknown species – Non-breeding</p> <p>Hibernation Roost Potential – Low</p> <p>As the property is inhabited year-round, conditions are likely to be unsuitable during the hibernation roosting season, however, given the presence of multiple PRFs hibernation roosting by bats cannot be ruled out.</p>

Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>was provided by the gap above the garage door.</p>		
<p>ST24 – Lynphail Animal Shed</p> <p>The building had stone walls and corrugated roofing sheets over wooden rafters. The building also contained a wooden extension to the south-east. The potential access points into the stone building included open doors and windows. Despite the presence of access points there were limited roosting locations within the building.</p> <p>BRP - Moderate.</p>	 <p>Photograph 29</p>  <p>Photograph 30</p>	<p>No evidence of current or historic bat roosting was recorded during the external inspections of the property and internal inspection was not possible. No evidence of bat emergence or return was recorded during activity surveys.</p> <p>Hibernation Roost Potential – Negligible</p> <p>Given the limited number of opportunities for roosting bats, albeit ample access/egress points are present, and the likely permanent presence of livestock use of the structure during the hibernation period, the building is considered to have negligible hibernation roost potential.</p>

Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
<p>ST25 – Lynwilg Railway Cottages</p> <p>The building is of stone construct with slate roof and lead flashing, with an additional rear wooden porch on the western aspect of the building.</p> <p>Potential roost features included upturned flashing at the base of the chimney and roof ridge, slipped and missing tiles along the roof, gaps beneath the soffit box at the gable end of the property and gaps between the apex of the wooden porch extension and roof tiles.</p>	  <p>Photograph 31 Photograph 32</p>	<p>Evidence of bat activity and presence was recorded during the external survey of the property with bat droppings recorded on the northern gable wall, with a single dropping recorded at the foot of the wall, and further droppings observed stuck to the wall beneath a PRF.</p> <p>Activity surveys confirmed the presence of roosts with common pipistrelle and soprano pipistrelle recorded emerging and re-entering at a number of features on the property, with both foraging and commuting activity taking place in the immediate area of the property.</p> <p>Roost Classification:</p> <p>Common pipistrelle – Non-breeding Soprano pipistrelle – Non-breeding</p> <p>Hibernation Roost Potential – Low</p> <p>Whilst the building is inhabited year-round, the number of potential roost features, and confirmed roost access points, it is assessed that the building provides low hibernation roost potential for small numbers of bats, by virtue of the number of features present around the building.</p>

Description of Structure/ Building and Potential Roost Location	Photographs of Structure/ Building	Roost Locations and Hibernation Roost Potential
	 <p>Photograph 33</p>	


Rock Face Results

- 4.2.10. Full survey results of rock face surveys are provided within Annex A, Tables 1.2 to A1.10. Results below are discussed with reference to photo annotations within tables in Annex A.
- 4.2.11. Bat roosts were recorded in one rock face, RF01 (former Lynwilg quarry). This rock face has a variety of fissures and features with the potential to support roosting bats, particularly within the higher reaches of the rock face. Whilst no roosting activity was recorded during activity surveys (see Table 4.4 below), two roosts were identified during aerial inspection surveys, with two common pipistrelle recorded within an upwards facing crack at the northern end of the rock face (Annex A, Table 1.1 – ref. annotation 3). The roost was recorded as occupied by two bats on two separate survey visits (26/09/17 and 02/11/17). Given the date of the second visit to the roost and the continued presence of bats, the roost has been assessed to be a hibernation roost. A second roost was recorded at the southern end of the rock face (Annex A, Table 1.2 ref. annotations 14 & 15), with three common pipistrelle recorded within a cavity set amongst large boulders. The roost was judged to be a hibernation roost with the bats recorded on 02/11/17.
- 4.2.12. Rock face RF04, located south of Aviemore and illuminated at night, has numerous fissures and features present along much of the length of the rock face. Potential roost features were limited towards the southern end of the face due to recent rock fall and loose material. A single dropping, likely of pipistrelle species (dropping unable to be recovered for analysis), was recorded at the northern end of the rock face (Annex A, Table 1.4 – ref. annotation 1), however, no bats were recorded during the aerial inspection.
- 4.2.13. Rock face RF10, located at the northern end of the Scheme, is the largest single rock face along the Proposed Scheme. The rock face has numerous features with potential to support roosting bats, with multiple cracks and apertures along its length. Two caves were identified towards the northern end of the rock face with the cave at a higher elevation in the rock face confirmed as a roost (Annex A, Table 1.7 – ref. annotation 13) owing to the presence of a single dropping which, following DNA analysis, was confirmed as Natterer's bat. No other roosts were recorded during aerial surveys, however, a section of overhanging rock was unable to be inspected due to the instability of the rock and loose material. When viewed from adjacent abseils and from ground level the overhang presented with various cracks and cavities and was assessed to offer 'high' bat roost potential (Annex A, Table 1.7 ref. annotation 6).
- 4.2.14. South of RF10, rock face RF15 comprises a former quarry site. The majority of the rock face has limited roosting potential, although there are localised pockets of suitable features. Two pipistrelle roosts were recorded at the former quarry face at the southern end of the rock face (Annex A, Table 1.10 ref. annotations 6 & 7). Whilst no bats were found in either roost, both contained several droppings with DNA analysis confirming the roost species to be common pipistrelle.
- 4.2.15. Static detectors were deployed during the bat active period to monitor bat activity at rock face RF10. Full results and detailed analysis of static detector data is provided within Annex A.
- 4.2.16. Common pipistrelle and *Myotis* sp. were the most commonly recorded species, with common pipistrelle most often recorded across the survey period. Across the whole recording period (350+ hours) common pipistrelle registrations comprised c. 87% of total registrations (8870 registrations of a total of 10,140). In context, *Myotis* sp. registrations,

the second most commonly recorded, comprised c. 5% of registrations (total of 544 registrations).

- 4.2.17. Of the six detectors deployed, Point 5 recorded the greatest numbers of bats each month, only failing in June to achieve the greatest number of registrations (Point 3 with 377 registrations). Of the total registrations (10,140), Point 5 registered c. 38% (3,932).
- 4.2.18. The static at Point 5 was located at the base of RF10, below the overhang that could not be inspected during climbing surveys. As the overhang was assessed to provide bat roost potential, following ground based inspection, and in cognisance of the density of registrations at this location it is considered likely a roost is present within the overhang.
- 4.2.19. Rock faces RF02, RF06, RF08, RF12, RF13 and RF14 all have features of varying potential to support roosting bats. However, evidence of roosting bats or bat activity (either current or historic) was absent. Rock faces RF02 and RF06 are located directly adjacent to the carriageway and were assessed to offer sub-optimal habitat given their proximity to the road and shallow nature, with the majority of features assessed as of low potential and located close to the ground (Annex A, Tables 1.3 and 1.5).
- 4.2.20. Rock faces RF08 and RF12 are located adjacent to a minor road (the U2400) and were subject to aerial inspection under traffic management. Whilst features with potential to support roosting bats are present, no current or historic evidence of roosting bats was recorded (Annex A, Table 1.6).
- 4.2.21. Rock face RF13 (Annex A, Table 1.8) was surveyed from ground level and using a ladder along its length, the central section of the rock face stands at approximately 15m in height and was unable to be surveyed, requiring rope access aerial survey. The entire rock face is encompassed by metal wire mesh preventing rock fall onto the adjacent carriageway. No evidence of bat activity or roost presence was recorded.
- 4.2.22. Rock face RF14 (Annex A, Table 1.9) is located adjacent to the A9 carriageway, opposite the location of rock face RF15. The majority of features were recorded to be of low roost potential, situated low to the ground and likely to be covered by vegetation during the warmer months. A single large vertical crack within a rock outcrop was assessed to be of high bat roost potential (Annex A, Table 1.9 ref. annotation 24). This feature could not be fully inspected; however, there was no evidence of bat roosting observed, although the feature was dry.

Table 4.4: Rock Face Activity Survey Results

Description of Structure/ Building and Roost Location	Photographs of Structure/ Building	Roost locations and Hibernation Roost Potential
<p>RF01 – Lynwilg Quarry Face</p> <p>The quarry face is 40m wide by 25m high. There were numerous gaps and crevices in rock, and the rock escarpment is stepped at the north-east section. The upper sections of the rock escarpment could not be clearly surveyed from the ground even with binoculars and a torch.</p> <p>BRP – High</p>		<p>Whilst no roosts were identified during dusk emergence or dawn re-entry surveys, two roosts were recorded during aerial inspection surveys. A roost containing two common pipistrelle and a second roost containing three common pipistrelle were recorded during aerial surveys.</p> <p>The roost with two common pipistrelle recorded was surveyed on two separate occasions (26/9/17 and 02/11/17) with two bats present during the second visit. Given the time of year of the second visit it was considered that this is likely a hibernation roost.</p> <p>Roost Classification: Common pipistrelle – Non-breeding Common pipistrelle – Hibernation</p> <p>Hibernation roost potential (rest of rock face) – Moderate</p> <p>Given the limited knowledge surrounding hibernation roost selection, particularly in respect to rock faces, and in cognisance of the abundant features present along the rock face as well as the presence of two bats roosting during a roost inspection in November, the remainder of rock face RF01 has been assessed as of moderate potential to support roosting bats.</p>

Crossing Point Survey Results

- 4.2.23. Crossing point survey locations are illustrated within Figure 12.14. Those crossing points with the highest levels of bat crossing activity have been summarised below.
- 4.2.24. Crossing point CP02 had the highest numbers of bats recorded during a single survey, with a peak of 51 passes during a dusk survey in July 2017. Further notable peaks included 28 bat passes during a dusk survey in May 2016; 37 bat passes during a dawn survey in July 2016; 21 bats during a dawn survey in May 2017 and 46 bats during a dusk in June 2017. Common pipistrelle constituted the majority of passes recorded, with soprano and unidentified pipistrelle. The extent of crossing activity recorded, both during 2016 and 2017 hints at the likely presence of roosts in proximity to the crossing point, with a building (Druim Mhor) located c. 75m south of the crossing point considered as a potential roost location. This building was not subject to survey, lying outwith the 50m survey buffer to the Proposed Scheme.
- 4.2.25. CP25 had a peak of 24 crossings (June 2017), all common pipistrelle. All bats were observed to fly over the carriageway at heights between 3 to 8m, crossing northbound to southbound. Common pipistrelle comprised the majority of crossings across all surveys, with soprano pipistrelle, unknown pipistrelle, unknown bat species and single instances of brown long-eared and *Myotis* sp. also recorded.
- 4.2.26. Crossing point CP06 had a peak of 17 bats recorded (July 2016). Bats were recorded flying over despite the presence of an underpass at this location. Five surveys registered limited numbers (i.e. less than five bats) of bats flying through the underpass.
- 4.2.27. Subsequent surveys at CP06 during 2017 recorded a peak of 22 bats crossing the carriageway during a dusk survey in July, consisting of 18 bats overflying the carriageway and four bats (2 common pipistrelle and 2 soprano pipistrelle) flying through the underpass.
- 4.2.28. At crossing Point CP08, a peak of 32 bats were recorded flying over the archway beneath the A9 carriageway in May 2016. Further peaks of 24 bats and 22 bats were recorded during consecutive monthly dusk surveys, all flying over the carriageway. The majority of registrations pertained to common pipistrelle, with soprano pipistrelle, unidentified pipistrelle and unknown bat species also recorded.
- 4.2.29. At crossing point CP03, 13 and 12 bats were recorded respectively during dusk surveys in July and September 2016. During July, the majority of bats flew through the underpass being surveyed with only two flying over, whereas in September all but one of the bats overflew the carriageway. Soprano pipistrelle was the main species, with a single common pipistrelle recorded. Low numbers were recorded during surveys between the two peak surveys. During 2017 surveys, a peak of 17 bats was recorded in July with fourteen bats recorded to fly over the carriageway, and three passing through the underpass.
- 4.2.30. The three control locations, CP27, CP28 and CP29 in general showed limited activity. Crossing point CP27 returned a peak of three bats crossing. Crossing point CP28 returned a peak of two bats crossing.
- 4.2.31. Crossing point CP29 returned a peak of 21 crossing bats during the first survey undertaken, at dusk in May 2017. The initial high number of passes across the carriageway was not repeated, with subsequent surveys across the consecutive months failing to reach double digit records. The unexpected peak in registrations recorded

during the initial dusk survey may be a result of a single bat, or a low number of bats, repeatedly crossing the road and may explain the low numbers of crossings recorded thereafter (i.e. low numbers of bats didn't cross the road as frequently during subsequent surveys).

- 4.2.32. The reduced activity at the control points (in comparison to non-control crossing point locations) suggests that bats are selecting locations with suitable features and habitats either side of the road as crossing locations, evidenced by the numbers of bats recorded crossing at a number of the crossing locations.
- 4.2.33. Twenty-four locations with suitable habitat to facilitate passage of bats were assessed along the route and subject to survey in 2016. Of these only four were subject to resurvey in 2017 having registered more than ten bat crossings of the carriageway during surveys in 2016. This additionally clarifies the key locations where bats are crossing the A9 and emphasises that bats crossing of the carriageway is not consistent along the length of the Proposed Scheme.

Transect Survey Results

- 4.2.34. In total six transects were completed at junction locations or through land adjacent to, proposed junction locations. Transect locations are illustrated on Figures 12.14, with survey results provided within Annex A.

Aviemore Junction

- 4.2.35. All three transects were conducted in improved grassland and mixed woodland habitat with the majority of bats recorded being common pipistrelle or soprano pipistrelle, although small numbers of unidentified pipistrelle and unknown bat species were also encountered. Where bats were seen during transects, their activity generally comprised foraging and commuting along woodland edge habitat and the linear feature afforded by this habitat type.
- 4.2.36. Bats were recorded during each survey of all three transects. The number of bat passes recorded for each transect was generally consistent across each survey month, with more bat passes recorded during dusk surveys than that of dawn surveys, reflecting the peak in commuting and foraging activity anticipated during dusk hours. The highest number of bat passes (33) was recorded at transect J1A south during a dusk survey in August. This transect also registered the least number of bat passes recorded between the three transects, with seven passes recorded during a dawn transect in May. From northbound transects, a peak of 27 bats was recorded in July, with a minimum of nine bats recorded in both June and August.
- 4.2.37. For both northbound carriageway transects, bat activity commenced within one hour of sunset or ceased one hour before sunrise. The fastest first recording of bat came after 13 minutes after sunset in July; whilst with the southbound transect all three dusk transects undertaken recorded their first bats within 20 minutes of sunset. Given the times of recordings of first bats and last bats during transects bats are likely to be roosting within the immediate surrounding area.

Granish Junction

- 4.2.38. Transect J2 north comprised areas of broadleaved and coniferous plantation woodland, watercourses and track; whilst transect J2 south comprised areas of semi-improved grassland and mixed woodland, also passing near waterbodies and burns. As with Aviemore Junction transect, bat passes primarily comprised common pipistrelle, with less registrations of soprano pipistrelle, but also including passes by *Myotis* sp. Two

passes of *Myotis* sp. were recorded during a dawn survey and a single pass during a dusk survey in June along J2 north; whilst single passes were recorded during a dusk in June and a dawn in July, and two passes recorded during a dusk in September along transect J2 south. The presence of *Myotis* sp. is likely attributable to the presence of waterbodies and watercourses along both transects. Single passes of brown long-eared bat were also encountered along each transect during dusk surveys in August.

- 4.2.39. Activity along both transects was similar in terms of number and species encountered. The northbound transect recorded a peak of eight bats during a dusk transect in June, and across all surveys the first and last bats recorded occurred an at least half an hour before sunrise or after sunset. Conversely, the southbound transect recorded a peak of 13 bats during a dusk transect in July, with the first recorded bat occurring eight minutes after sunset. Throughout the three dusk transects, the first recorded bat occurred within 15 minutes of sunset. Given the times of recordings of first bats and last bats during transects bats are likely to be roosting within the immediate surrounding area.

Black Mount Junction

- 4.2.40. Transect J3 south was conducted through open ground, roads and coniferous plantation with the limited bat activity recorded during transect surveys indicative of the sub-optimal habitats present across the transect.
- 4.2.41. A single soprano pipistrelle pass was recorded during the dusk transect survey in May and heard but not seen. A total of five bat passes were recorded during the second survey visit, a dawn in July, comprising one common pipistrelle, two soprano pipistrelle, one *Myotis* sp. and one unknown bat species. During dusk transects the first bats were recorded an hour or more after sunset; whilst the dawn transect, undertaken in May, also recorded the last bat over an hour before sunrise. Given the limited activity of bats in general across the surveys, knowledge of timings of activity, and in cognisance of other survey results, it is likely there are no roosts within the immediate vicinity of the proposed junction.

5. Nature Conservation Evaluation

- 5.1.1. Bat roosts confirmed during surveys have been individually assessed to determine their respective nature conservation valuation, given each individual roost is unique, both in terms of the number of bats utilising a roost and their species composition. Table 5.1 below provides the valuation of each individual roost across the Proposed Scheme, with a rationale for this valuation.
- 5.1.2. Features recorded across the Proposed Scheme and Study Area that have not been confirmed as roosts but assessed as 'Low', 'Moderate' or 'High' bat roost potential have been collectively valued. Although no confirmed roosts have been recorded at these features, their potential to support bat roosts has inherent value to bat populations in the Highlands; they have therefore been valued *up to* Local level.

Table 5.1: Valuation of Confirmed Bat Roosts

Roost Location	Valuation	Rationale for Valuation
Tree – TR71	Local	Roosts recorded within trees comprised lone bats utilising features present. These were assessed as being transient summer roosts and not assessed to be viable hibernating, maternity or breeding roosts and as such are judged not to represent key features for bat populations so are valued at a Local level.
Tree – TR95		
Tree – TR678		



Roost Location	Valuation	Rationale for Valuation
Lynwilg Farmhouse – ST01	Authority Area	Roost features were recorded around the building, and during the final dawn survey 11 brown long-eared bats were recorded entering roosts, alongside common and soprano pipistrelle. Given the number of brown long-eared bats recorded, it was assessed that the property contained a brown long-eared maternity roost and non-breeding common and soprano pipistrelle roosts. The property was additionally assessed to provide moderate hibernation roost potential for bats, given the features present. The property supports a maternity roost of brown long-eared bats, and is the only roost of its type recorded along the Scheme. Given an absence of information of further brown long-eared maternity roosts for the area, as well as the presence of non-breeding common bat species, the property is assessed, using a precautionary approach, to represent a key feature for bat populations at an Authority Area Level.
ST03 – Kinakyle	Local	Two roost access points were identified during the final survey of the property and included two brown long-eared bats and one common pipistrelle; with no bats recorded during two prior surveys. The roosts were assessed to be non-breeding roosts sustaining low numbers of bats, as such is assessed to represent a key feature for bat populations at a Local level.
Birch View – ST05	Local	Emerging and returning unidentified pipistrelle were recorded using features along the southern aspect of the property in low numbers, with two bats recorded entering features during the final survey. Given the low numbers of common bat species roosting, the roosts were assessed as non-breeding roosts unlikely to support hibernation, maternity or breeding roosts; and therefore is assessed to represent a key feature for bat populations at a Local level.
Red Stag Lodge – ST08	Local	A lone unidentified pipistrelle was recorded emerging from the western aspect of the building during the second survey of the property, with no further instances of bat roosting activity recorded during other surveys. The roost was assessed as an individual, non-breeding roost of a common bat species, unlikely to support hibernating, maternity or breeding roosts and is assessed to represent a key feature for bat populations at a Local level.
Avielochan Farmhouse – ST09	Authority Area	Bats were recorded utilising various roost features across the survey effort. Most notably, 55 common pipistrelle were recorded entering a roost on the western aspect of the property, 21 common pipistrelle emerging from a roost on the eastern aspect and 24 soprano pipistrelle recorded emerging from the chimney location. These three roosts were assessed to be maternity roosts, with the property additionally assessed to offer moderate hibernation roost potential. Given the presence of maternity and non-breeding roosts of common species and the potential for hibernation of bats, using the precautionary approach the property is assessed to represent a key feature for bat populations at an Authority Area level.

Roost Location	Valuation	Rationale for Valuation
Telephone Exchange – ST11	Local	A single unidentified pipistrelle was recorded emerging during the primary survey. No further instances of roosting activity were recorded during subsequent surveys; and the roost was therefore assessed as an individual, non-breeding roost. Features present were not assessed to be viable hibernating, maternity or breeding roosts and therefore not judged to represent key features for bat populations at an Authority Area level.
ST12-1 - Highlands Hotel	Local	A single common pipistrelle was recorded entering a roost during the primary survey. No bats were recorded in subsequent surveys. The roost was assessed as a non-breeding, summer roost of a common bat species, unlikely to be a hibernation, maternity or breeding roost; and is assessed to represent a feature for bat populations at a Local level.
ST12-3 - Staff Accommodation Block A	Local	A single common pipistrelle was recorded entering a roost during the primary survey. No bats were recorded in subsequent surveys. The roost was assessed as a non-breeding, summer roost of a common bat species, unlikely to be a hibernation, maternity or breeding roost; and is assessed to represent a feature for bat populations at a Local level.
ST12-5 & ST12-6 - Scandinavian Village (north and south buildings)	Local	Nine roosting locations were identified during the primary survey of the buildings, with eleven common pipistrelle observed entering roost features. During subsequent surveys only two common pipistrelle were recorded utilising roost features. Roosts were assessed as non-breeding, summer roosts of common bat species, unlikely to be hibernation, maternity or breeding roosts; and is assessed to represent a key feature for bat populations at a Local level.
Lynphail House – ST21	Local	Seven features on the property were identified with bat emergence/return activity with low numbers (less than five bats) recorded during each dusk survey, comprising common and soprano pipistrelle. Roosts were assessed as non-breeding, summer roosts of common bat species unlikely to be hibernation, maternity or breeding roosts; and is assessed to represent a key feature for bat populations at a Local level.
Lynphail Farmhouse – ST23	Local	Four roost entry points were confirmed during activity surveys of the property with low numbers of bats recorded. Common pipistrelle were observed emerging and re-entering a roost under a slate at the base of the chimney, and a further re-entry to a roost next to a skylight window. Roosts were assessed as non-breeding, summer roosts of common bat species unlikely to be hibernation, maternity or breeding roosts; and is assessed to represent a key feature for bat populations at a Local level.
Lynwilg Railway Cottage – ST25	Local	Nine roosting locations were identified about the property with common pipistrelle and soprano pipistrelle the most commonly encountered species. Both species were confirmed emerging and re-entering the structure throughout activity surveys, utilising slipped/missing tiles, gaps within soffits and beneath apexes. Roosts were assessed as non-breeding, summer roosts of common

Roost Location	Valuation	Rationale for Valuation
		bat species unlikely to be hibernation, maternity or breeding roosts; and is assessed to represent a key feature for bat populations at a Local level.
Rock Face – RF01 (Lynwilg Quarry)	Local	Dusk emergence and dawn re-entry surveys returned no instances of bat roosting, however, during aerial inspections two roosts were recorded; a roost comprising two common pipistrelle in one location and a second roost containing three common pipistrelle. The roost containing two bats was surveyed on two separate occasions with two bats present both surveys. Given the repeated presence of bats at the rock face it is assessed that rock face supports hibernating bats, although in low numbers and of common species is assessed to represent a key feature for bat populations at a Local level.
Rock Face – RF04	Local	A single roost was confirmed owing to the presence of a <i>pipistrelle-type</i> dropping observed within a crack at the northern end of the rock face (the dropping was unable to be retrieved for DNA analysis). The roost was assessed as a non-breeding, summer roost of a common bat species, unlikely to be a hibernation, maternity or breeding roost; and not represent a key feature for bat populations at an Authority Area level.
Rock Face – RF10	Authority Area	<p>A single roost was confirmed during surveys of RF10, with DNA analysis of a dropping recovered from a cave in the central region of the rock face indicating roosting by a Natterer's bat. The confirmation of the presence of Natterer's bat, represents a roost in an area close to the northern range of the species^{xi}. Whilst this was the only roost confirmed, it is assumed further roosts (of more common species) may be present in the area of the overhang, which due to health and safety concerns with accessing, was directly surveyed and subsequently assessed from distance. Static detector monitoring additionally indicated high bat activity levels, particularly of pipistrelle and <i>Myotis</i> sp., along the rock face, notably in the region of the overhang (static detector 5).</p> <p>The rock face is a prominent feature of the area. Other roosting opportunities are limited given the habitats present surrounding the rock face (namely moorland and coniferous plantation woodland) and an absence of other roosting opportunities (e.g. buildings). As similar rock face habitat, both in profile and extent, is absent in the wider area RF10 has been assessed to represent a key feature for bat populations at an Authority Area level.</p>
Rock Face – RF15	Local	Like RF10, RF15 offers habitat that is limited within the wider area, given its former use as a quarry, although less isolated than that of RF10. Whilst two common pipistrelle roosts were identified during aerial surveys, the rock face generally offers limited roosting opportunities with only pockets of suitable features identified. The roosts were assessed as non-breeding summer roosts of common bat species; unlikely to be hibernation, maternity or breeding roosts; and not represent a key feature for bat populations at an Authority Area level.

5.1.3. Table 5.2 details the valuation of those crossing points with the highest numbers of bat crossings (more than ten crossings in a single survey) and therefore inferred increased level of value to commuting bats. Aviemore and Granish Junctions transects are additionally discussed below given their levels of activity, whilst Black Mount Junction is omitted given the low levels of bat activity recorded.

Table 5.2: Valuation of Crossing Points and Transects

Roost Location	Valuation	Rationale for Valuation
Crossing Point – CP02	Local	Of all the crossing points surveyed, the highest numbers of bats crossing the A9 were recorded at CP02, with a peak of 51 bat crossings in a single survey. The crossing point is considered to be of Local value given the high number of bat crossings recorded during surveying, in comparison to other crossing points along the Proposed Scheme. The crossing point facilitates movement of bats across the carriageway to suitable foraging habitat associated with Loch Alvie. Given the number of bats recorded crossing the carriageway at this location during consecutive years of survey, and in cognisance that the majority of registrations pertained to pipistrelle species, the most commonly recorded species through a variety of survey types across the Proposed Scheme and one of the most common species present through Scotland; it is assessed that the crossing location represents a feature that is of Local value to bats and does not represent a key feature for bat populations at an Authority level.
Crossing Point – CP03	Less than Local	The majority of bat crossings related to commuting pipistrelle species with peak numbers of crossings ranging between 20-30 crossings in a single survey, however, these numbers were not consistent over repeated surveys and in most cases one-off events. Given this low level of crossing activity at each location It is therefore assessed that crossing points CP03, 06 and 08 are of Less than Local value and do not represent key features for bat populations at a Local level.
Crossing Point – CP06		
Crossing Point – CP08		
Aviemore Junction Transect	Local	Both transects at the proposed Aviemore Junction comprised woodland and improved grassland habitat mosaics, with bats observed utilising linear features afforded by woodland. Foraging activity was also recorded along the southbound transect (J1A) in proximity to a waterbody, which will not be affected by the Proposed Scheme. Transects undertaken at Granish Junction encompassed areas of woodland – broadleaved and coniferous plantation, waterbodies, burns and open ground. Bats were recorded foraging and commuting with the majority of registrations pertaining to pipistrelle species. The habitats encountered across all transects are abundant within the local area, either side of the A9 carriageway. Given the mosaic of habitats located at the proposed junction locations including edge habitat suitable for foraging and commuting these areas are assessed to represent a feature for bat populations at a Local level, in the knowledge that the footprint of the junctions is small comparative to the remaining habitat bounding the junction locations.
Granish Junction Transect		

6. Potential Impacts

6.1. Construction

- 6.1.1. During construction bats may be affected as a result of the following:
- destruction of roosts;
 - damage to roosts;
 - disturbance of bats within roosts;
 - loss/severance of commuting and foraging habitat (both temporary and permanent); and
 - direct mortality.

6.2. Operation

- 6.2.1. During operation bats may be affected as a result of the following:
- disturbance of individuals within roosts due to road noise levels;
 - disturbance of individuals whilst commuting and foraging due to road noise levels;
 - habitat severance and fragmentation associated with the widening of the A9 carriageway, junctions, access tracks and inclusion of roadside lighting; and
 - direct mortality.

7. Mitigation

- 7.1.1. A list of standard mitigation measures has been developed for all projects within the A9 Dualling Programme. A full list is provided in ES Chapter 12: Ecology and Nature Conservation; those measures of relevance to bats have been extracted and are detailed in Table 7.1. In addition to these, scheme specific mitigation measures have also been developed as detailed in Table 7.2. Some of these mitigation measures are relevant to a number of species; all species are referred to in the tables below for consistency between ES Chapter 12 and the other Appendices. Scheme specific mitigation measures are illustrated in Figure 13.4 – Landscape and Ecological Mitigation plan.
- 7.1.2. The Proposed Scheme incorporates embedded mitigation measures into the design, for example increasing the size of underpasses situated beneath the carriageway to facilitate passage of bats through underpasses rather than flying over the carriageway.

Table 7.1: A9 Standard Mitigation Commitments

Mitigation Item ⁷	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
SMC-E1	Throughout Proposed Scheme	Pre-Construction	Pre-construction surveys will be undertaken to verify and, where required, update the baseline ecological conditions set out in the ES. The scope of the pre-construction surveys will be confirmed with SNH prior to them being undertaken.	To update the baseline ecological conditions set out in the ES.	SNH
SMC-E2	Throughout Proposed Scheme	Pre-Construction	<p>Prior to construction a suitably qualified (or team of suitably qualified) Ecological Clerk of Works (ECoW) will be appointed and will be responsible for implementation of the Ecological Management Plan. The ECoW will:</p> <ul style="list-style-type: none"> • provide ecological advice over the entire construction programme, at all times as required; • undertake or oversee pre-construction surveys for protected species in the areas affected by the proposed scheme; and ensure mitigation measures are implemented to avoid and reduce impacts on ecological features; and • monitor the implementation of the mitigation measures during the construction phase to ensure compliance with protected species legislation and commitments within the ES. <p>The ECoW will be a member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and will have previous experience in similar ECoW roles. All ECoWs will be approved by Transport Scotland to be appropriately qualified for the role. The ECoW will be appointed in advance of the main construction programme commencing to ensure pre-construction surveys are undertaken and any advance mitigation measures required are implemented.</p>	To ensure the implementation of the Ecological Management Plan.	None required
SMC-E6	Throughout Proposed Scheme	Pre-Construction	The Contractor will obtain and comply with the requirements of any protected species derogation licences in respect of works that have the potential to breach applicable conservation	To comply with conservation legislation.	SNH

⁷ Only items relevant to bats are listed

Mitigation Item ⁷	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
			legislation necessary to construct the project. Licensing may be for the UK and/or protected species.		
SMC-E8	Throughout Proposed Scheme	Pre-Construction & Construction	Any tree felling will be carried out by experienced contractors to reduce direct mortality of protected species according to agreed felling methods between contractors and the ECoW.	To protect fauna during removal of habitat.	None required
SMC-E9	Throughout Proposed Scheme	Pre-Construction, Construction & Post-Construction	Plant and personnel will be constrained to a prescribed working corridor through the use of, where practicable, temporary barriers to minimise the damage to habitats and potential direct mortality and disturbance to animals located within and adjacent to the Proposed Scheme working corridor.	To protect habitats and fauna.	None required
SMC-E10	Throughout Proposed Scheme	Construction	The use of construction lighting will be in accordance with BS5489 Code of Practice for the Design of Road Lighting ^{xii} and follow best available guidance on lighting with regards to protected species (e.g. Bat Conservation Trust (2009) ^{xiii} and Institute of Lighting Engineers (2007) ^{xiv}). The construction lighting design will take into account the need to avoid illuminating sensitive mammal habitats (e.g. for bats and badgers) in locations such as: adjacent to watercourses; along woodland edges; and, where there is known activity identified through pre-construction ecological surveys (refer to Mitigation Item SMC-E1). Where this is not possible the Contractor will agree any exceptions with SNH.	To protect sensitive mammal habitats from illumination.	Exceptions to be agreed with SNH
SMC-E12	Throughout Proposed Scheme	Construction & Post-Construction	Planting will be undertaken to replace any trees that were intended to be retained which are felled or die as a result of construction works. The size, species and location of replacement trees will be approved by Transport Scotland and other relevant stakeholders.	Replacement of trees lost that are to be retained.	Transport Scotland and other relevant stakeholders
n/a (note)	Throughout Proposed Scheme	Construction	Best practicable means will be employed to avoid the disturbance of sensitive species and habitats with noise, dust and air pollution. The Standard Mitigation Measures as detailed in ES Chapter 11 (Road Drainage and the Water Environment), ES Chapter 13 (Landscape and Visual), ES Chapter 16 (Air Quality) and ES Chapter 17 (Noise and Vibration) will be	To protect aquatic and terrestrial habitats and species.	n/a

Mitigation Item ⁷	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
			implemented to protect aquatic and terrestrial habitats and species.		

Table 7.2: Project Mitigation Commitments

Mitigation Item ⁸	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
P11-E16	Throughout Proposed Scheme	Pre-Construction & Construction	The working area will be kept to the minimum necessary for construction of the project to reduce habitat loss. A Habitat Management Plan will be produced pre-construction and agreed with SNH. This will include specific plans and measures for working on the border of the Craigellachie SSSI/NNR and Alvie SSSI, as well as other sensitive habitats (such as aspen woodland), detailing avoidance, mitigation and rehabilitation measures to further reduce residual impacts.	To protect all habitats, including those located on the boundary of Craigellachie SSSI/NNR and Alvie SSSI.	SNH
P11-E17	Throughout Proposed Scheme	Pre-Construction & Construction	The removal of any trees identified for retention within the ES will be avoided and, if unavoidable, shall be undertaken in consultation with CNPA. Assessment of the trees at such locations will be undertaken and where any trees that were intended to be retained are identified as requiring felling or die as a result of construction works these will be replaced. Any changes to the extent of tree removal from that assessed within the ES, will be subject to assessment using the same methods as detailed within the ES to determine the appropriate mitigation requirements. Where required any additional impacts identified will be appropriately mitigated for using the same methods as detailed within the ES. The size and species of replacement trees will be agreed in consultation with SNH, CNPA and relevant stakeholders,	To protect retained trees.	SNH and CNPA

⁸ Only items relevant to bats are listed

Mitigation Item ⁸	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
			and will take account of management plans of immediately adjacent woodland.		
P11-E20	Throughout Proposed Scheme	Construction	<p>Mitigation and compensation for the loss of ecologically important habitats will occur through habitat creation. This will include roadside planting, where appropriate, as shown on Landscape and Ecological Mitigation plan (Figure 13.4).</p> <p>Where feasible important habitats will be replaced on a like for like basis, with habitats of a similar type and character to be created within the vicinity of the area where the loss has occurred. Where this is not possible, habitat creation will occur within other suitable areas identified within the Proposed Scheme.</p> <p>Landscape planting and newly created habitat will be comprised of locally obtained native species of local provenance, and will comprise a mixture of species.</p> <p>Sowing/planting should be undertaken in the appropriate planting season but as soon as possible following completion of the works to reduce the likelihood of the areas being colonised by invasive, non-native species which are of lower value to wildlife.</p> <p>Replacement habitats will be monitored and managed during the aftercare and operation phase of the Proposed Scheme.</p> <p>Where practicable habitat creation will fill in existing gaps in linear vegetation features, adjoin or connect existing blocks of woodland or act as stepping stones between habitat areas.</p>	To compensate for the loss of ecologically important habitats (including woodland, dry heath, and blanket bog).	None
P11-E31	Throughout Proposed Scheme	Construction	<p>Construction works to be undertaken taking into account sensitive ecological seasons (e.g. breeding, hibernation or migration seasons) and the potential impact that the type of construction work could have on protected species within that season. Prior to construction, consultation will</p>	To protect aquatic species (including salmonids) and bats during construction works affecting watercourses.	SNH, SEPA, and Spey Fishery Board.

Mitigation Item ⁸	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
			<p>be undertaken with SNH to confirm the programme of construction works.</p> <p>The key sensitive period for salmonids is mid-October to June, inclusive. However, the most acceptable timing will depend on which sensitive species are present and will be agreed with SEPA, SNH and the Spey Fishery Board. Percussive (hammer) piling will be avoided adjacent to the watercourse in favour of softer alternatives (e.g. silent sheet piling, vibratory sheet piling) where ground conditions allow. Where not possible, soft start piling procedures should be utilised. The soft-start duration should be a period of not less than 20 minutes, and should piling cease for a period greater than 20 minutes, the soft start procedure must be repeated.</p> <p>During any river dewatering and/or in-channel working, an ecological watching brief and fish rescue plan will be instigated in consultation with SNH and SEPA. The key sensitive periods for bats are between May-August (inclusive) when bats form maternity roosts; and between November-February (sometimes extending into October and March dependent on weather conditions) when bats occupy hibernation roostsⁱⁱ.</p>		
P11-E34	Throughout Proposed Scheme	Pre-Construction & Construction	Species Protection Plans to be produced pre-construction and agreed with SNH. Plans will be produced for bats. Where appropriate, the Species Protection Plans will include monitoring plans.	To comply with conservation legislation and to protect fauna.	SNH
P11-E35	Throughout Proposed Scheme	Construction	Appropriate exclusion zones in line with best practice and as agreed with SNH should be maintained. Where exclusion zones of the required size are not possible and if a licence is not needed the amended buffer zone should be agreed with the relevant statutory body.	To comply with conservation legislation and to protect fauna.	SNH

Mitigation Item ⁸	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
P11-E41	Throughout Proposed Scheme	Construction	At structures and crossing locations, planting will be designed with the aim of encouraging bats to fly over the A9 carriageway, above potential collision height with traffic, or to encourage bats to fly to and through structures beneath the carriageway. Locations of prescribed planting design are included within the Landscape and Ecological Mitigation plan (Figure 13.4) with principles of planting also included. In line with P11-E34, a post-construction monitoring programme will be defined within the bat species protection plan. This will determine the use of bat 'hop over/fly-under' locations and new structures beneath the carriageway. Results from this monitoring will help demonstrate the effectiveness of implemented crossing location mitigation and inform future maintenance of roadside vegetation to ensure bat commuting to either side of the carriageway is maintained.	To maintain/enhance bat crossing locations.	None
P11-E42	Throughout Proposed Scheme	Construction	No working within 30m of known roost locations during the hours of darkness taken to be 30 minutes before sunset through to 30 minutes after sunrise. Where works are required, the nature of the works should be discussed with the ECoW to establish what mitigation measures are required. Works may only take place with the agreement of the ECoW.	To prevent disturbance to bats leaving/entering roosts.	SNH
P11-E43	Throughout Proposed Scheme	Construction	The confirmed roost at ST08 – Red Stag Lodge will necessitate the removal of the roof by hand and in the presence of a licensed bat worker. Any bats uncovered during roof removal works will be captured and translocated to a compensatory bat box (ref. P11-E45). Demolition of Red Stag Lodge will then be completed under a watching brief by a licensed bat worker.	To comply with conservation legislation and protect roosting bats.	None
P11-E44	Throughout Proposed Scheme	Construction	All trees assessed with bat roost potential that require to be pruned or felled to accommodate the Proposed Scheme will be subject to a pre-felling inspection no more	To comply with conservation legislation and protect roosting bats.	None

Mitigation Item ⁸	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
			than 24 hours prior in search of roosting bats. Where features cannot be wholly assessed and ambiguity exists over the possible presence of bats, trees will be 'soft-felled' (i.e. felled in small sections) with care taken not to compromise the integrity of any potential roost feature in order to safeguard any potential bats present. Rock faces subject to blasting or reprofiling works, will be surveyed for the presence of bat roosts. Any bats present within roosts will be translocated to bat boxes erected to mitigate the loss of the roost and proportionate to the type of roost to be lost (see P11-E45). Location of bat box placement will be under direction and guidance of a bat licensed ecologist and be in accordance with P11-E45. Thereafter, the roost and any features with roost potential within a 10m circumference of the roost, will be filled with expanding foam (or equivalent).		
P11-E45	Throughout Proposed Scheme	Pre-Construction & Construction	European Protected Species licences will be in place for all bat roosts to be removed or disturbed. Any bat roosts to be lost will be mitigated through the erection of bat boxes (or other suitable roosting feature), to be erected prior to the loss of a roost. The requirement for replacement roosts will be determined following pre-construction surveys. Where roosts have already been identified, locations for compensatory bat boxes have been identified and are presented within the Landscape and Ecological Mitigation plan (Figure 13.4). However, their ultimate placement within those predefined areas will be completed under guidance of a Suitably Qualified Ecologist/ECOW. The specification of mitigation bat box will be proportionate to that of the roost to be lost and selected by the suitably qualified ecologist/ECOW, with two bat boxes provided for each roost lost.	To comply with conservation legislation and protect roosting bats. To replace bat roosting habitat.	SNH

8. Residual Impacts

8.1.1. This impact assessment assumes the adoption of the mitigation measures detailed above and as such detailed assessment is only provided on residual impacts. Pre-mitigation impact characterisation is provided for these impacts for clarity. Those features assessed of 'less than local' value have not been assessed further.

8.2. Construction

8.2.1. Four roosts will be permanently lost as a direct result of the Proposed Scheme:

- individual, non-breeding roost at Red Stag Lodge (ST08);
- individual non-breeding roost in tree TR71; and
- two non-breeding pipistrelle roosts at rock face RF15.

8.2.2. Applications to SNH for European Protected Species licences to destroy a bat roost will be required for all roosts to be lost to the Proposed Scheme, and will be informed by results of further surveys undertaken as part of pre-construction works. Bespoke mitigation and method statements for the destruction of roosts will be informed by updated survey results.

8.2.3. Destruction of the roosts listed above is required to facilitate construction of the Proposed Scheme. Damage to other identified roosts is considered unlikely given their relative distances to the Proposed Scheme. Rock face RF04 will be subject to minor superficial rock works, and whilst it is currently envisaged that the bat roost identified at the northern end of the rock face will not be directly impacted, should works take place at this location a roost destruction licence will be required. It is considered that a disturbance licence is required to facilitate works at the rock face given its proximity to construction of the Proposed Scheme.

8.2.4. Roosts were identified within 20m of the Proposed Scheme and may be subject to disturbance as a result of construction activities (in the absence of highly disruptive construction activities e.g. blasting/piling). The level of disturbance will be influenced by the proximity of roosts to the construction envelope and the type of works proposed. All roosts considered likely at risk of disturbance during construction will be subject to applications for European Protected Species licencing to disturb bats in roosts.

8.2.5. Pre-construction surveys of rock faces including re-survey of identified roosts will be completed in line with mitigation items in Tables 7.1 and 7.2. Confirmed roost locations will be subject to infill with expanding foam (or other equivalent means of blocking a roost) following translocation of bats from the roost (if present), along with potential roost features within 10m of the confirmed roost. Given the scale of rock faces, accessibility to all features is not possible, and infill of all potential roost features is considered impractical. Infill of confirmed roosts and features within close proximity is considered a practical and pragmatic approach to bat welfare.

8.2.6. Impacts on features with bat roost potential but no confirmed roosts are not assessed separately. These features will be part of the pre-construction surveys that will be undertaken to take account of changes in ecological characteristics and to determine the requirement for licencing.

8.2.7. Impacts on known roosts are considered in detail in Table 8.1 below.



- 8.2.8. Habitat will be permanently lost along defined corridors adjacent to the existing A9 carriageway, with additional land take required for the construction of junctions at Aviemore, Granish and Black Mount, Sustainable Urban Drainage System (SuDS) ponds and access tracks. Suitable foraging and commuting habitat is present along the majority of the Proposed Scheme, albeit in varying degrees of suitability, and whilst this loss will result in changes to foraging and commuting pathways; given the abundance of habitat remaining in the wider area and that to be created as part of embedded mitigation, construction (e.g. SuDS ponds) and compensation (e.g. creation of new habitats areas), impacts on bats as a result of the loss of foraging habitat are not considered significant.
- 8.2.9. Crossing point CP02 registered the highest number of bat crossings in a single survey consistently over the two years of survey, registering 51 bat passes in a single survey night crossing over the carriageway. Crossing points CP03, CP06, CP08 and CP25 also registered high levels of crossing activity (in comparison to those crossing points surveyed in 2016 and control points surveyed during 2017). Detailed impact assessment in relation to these locations is considered in Table 8.1 below.
- 8.2.10. Only those features assessed as being of Local value and above have been further discussed within Table 8.1.





Table 8.1: Specific Impacts, Mitigation and Residual Impacts – Construction

Feature	Potential Impact	Characterisation of Impact (Pre-mitigation)	Mitigation	Residual Impact
<p>Building - Red Stag Lodge – ST08 (289893, 815048) Value: Local</p> <p>Tree - TR71 (290135, 815627) Value: Local</p> <p>Rock face – RF15 (284973, 823911) Value: Local</p>	Loss of roosts	<p>Extent:</p> <ul style="list-style-type: none"> Loss of individual, non-breeding roost, with a single common pipistrelle recorded during one survey of three undertaken at the property (ST09). Loss of individual, non-breeding roost of a <i>Myotis</i> sp. recorded entering a feature on a tree during a dawn return to roost survey (TR71). Loss of x2 non-breeding roosts of common pipistrelle recorded during aerial surveys of rock face (RF15). <p>Effect: Direct negative Duration: Permanent Frequency and timing: One-time event Reversibility: Irreversible Likelihood: Certain</p> <p>Impact Descriptor: Medium</p>	<p>SMC-E1 SMC-E2 SMC-E6 SMC-E8 SMC-E9 SMC-E10 P11-E20 P11-E34 P11-E42 P11-E43</p>	Not significant
<p>Building – Lynwilg Farmhouse – ST01 (287955, 810434) Value: Authority Area</p>	Disturbance	<p>Extent:</p> <ul style="list-style-type: none"> Maternity brown long-eared bat roost, and non-breeding common pipistrelle and soprano pipistrelle roosts recorded at Lynwilg with the property designated at Authority Level, given the presence of a maternity roost and potential for hibernation roost during winter. Property is located within 6m of the Proposed Scheme and therefore may be subject to disturbance <p>Effect: Indirect negative Duration: Short term Frequency and timing: Recurring Reversibility: Reversible Likelihood: Likely</p> <p>Impact Descriptor: Medium</p>	<p>SMC-E1 SMC-E2 SMC-E6 SMC-E9 SMC-E10 P11-E31 P11-E34 P11-E35 P11-E42</p>	Not Significant
<p>Rock face – RF10 (283981, 825225) Value: Authority Area</p>	Disturbance	<p>Extent:</p> <ul style="list-style-type: none"> Disturbance of non-breeding roost of Natterer's bat recorded within cave of rock face directly above works location. A single dropping identified during surveys was confirmed through DNA analysis to be that of a Natterer's bat. On a precautionary basis and in the absence of further evidence of bats the cave has been assessed as a roost supporting non-breeding Natterer's bat. The roost is located towards the northern-most range of the species and will not be lost during construction and will remain suitable for use following completion of the Scheme. Roost is located 0m from the Proposed Scheme and therefore will likely be subject to disturbance. Blasting activities at Slochd Mor and Slochd Summit may also result in disturbance to the roost. Whilst unable to be directly surveyed during rope access surveys (due to health and safety concerns) the overhang at RF10 was considered to 'likely' contain a roost given the density of bat activity recorded on Static 5, located at the foot of the feature. Employing a precautionary approach, the overhang will likely be subject to disturbance as a result of construction of the Proposed Scheme, however, direct impacts on the feature are not considered likely. <p>Effect: Indirect negative Duration: Short Term</p>	<p>SMC-E1 SMC-E2 SMC-E6 SMC-E9 SMC-E10 P11-E31 P11-E34 P11-E35 P11-E42</p>	Not Significant



Feature	Potential Impact	Characterisation of Impact (Pre-mitigation)	Mitigation	Residual Impact
		Frequency and timing: Recurring Reversibility: Reversible Likelihood: Likely Impact Descriptor: Low		
Building – Kinakyle – ST03 (289006, 811040) Value: Local Building – Birch View – ST05 (289144, 811275) Value: Local Building – Avielochan House – ST09 (290383, 816725) Value: Authority Area Building – Telephone Exchange – ST11 (287168, 824090) Value: Local Building – MacDonald Hotel Complex – <ul style="list-style-type: none"> • ST12-1 - Highland Hotel (289140, 812460) • ST12-3 - Staff Accommodation Block A (289140 812527) • ST12 – 5 - Scandinavian Village north building (289140 812750) • ST12- 6 - Scandinavian Village south building (289144 812699) Value: Local Building – Lynphail House – ST21 (289127, 822746) Value: Local Building – Lynphail Farmhouse – ST23 (289214, 822660) Value: Local Building – Lynwilg Railway Cottage – ST25 (288046, 810154) Value: Local Building – Keepers Cottage – ST26 (290991, 818860) Value: Local (precautionary) Building – Kennels – ST27 (291024, 818822) Value: Local (precautionary) Rock face - RF01 (288590, 810845 and 288550, 810795) - Value: Local Rock Face – RF04 (289068, 811258) Value: Local	Disturbance	Extent: <ul style="list-style-type: none"> • Disturbance of non-breeding brown long-eared and common pipistrelle roost recorded within Kinakyle located c. 1m from the Proposed Scheme; • Disturbance of non-breeding unidentified pipistrelle roost within Birch View located c. 9m from the Proposed Scheme; • Disturbance of maternity and non-breeding pipistrelle roosts within Avielochan House c. 3m from Proposed Scheme; • Disturbance of individual non-breeding pipistrelle roost within Telephone Exchange located c. 5m from the Proposed Scheme; • Disturbance of non-breeding roosts within MacDonald Hotel affiliated buildings: <ul style="list-style-type: none"> – Highland Hotel – individual non-breeding roost – Scandinavian Village north building – non-breeding roosts – Scandinavian Village south building – non-breeding roosts – Staff Accommodation Block A – individual non-breeding roost • Disturbance to non-breeding pipistrelle roosts within Lynphail House located c. 16m from Proposed Scheme; • Disturbance to non-breeding pipistrelle roosts within Lynphail Farmhouse located c. 8m from Proposed Scheme; • Disturbance to non-breeding pipistrelle roosts within Lynwilg Railway Cottage located c. 16m from Proposed Scheme; • Disturbance to Keepers Cottage, a building of ‘High’ bat roost potential, located c. 12m from Proposed Scheme; • Disturbance to Kennels, a building of ‘High’ bat roost potential, located c. 19m from Proposed Scheme; • Disturbance of two roosts located within rock face RF01 – non-breeding pipistrelle species roosts, also probable hibernation roosts; • Disturbance of likely transition roosts within rock face RF04. Effect: Indirect negative Duration: Short term Frequency and timing: Recurring Reversibility: Reversible Likelihood: Likely Impact Descriptor: Low	SMC-E1 SMC-E2 SMC-E6 SMC-E9 SMC-E10 P11-E31 P11-E34 P11-E35 P11-E42	Not significant



Feature	Potential Impact	Characterisation of Impact (Pre-mitigation)	Mitigation	Residual Impact
<p>Crossing Point - CP02 (287147, 810269) Value: Local</p>	Severance/fragmentation of commuting corridor	<p>Extent: Whilst the commuting route won't be completely lost as a result of construction of the Scheme, construction will require felling of vegetation currently channelling bats into this corridor of passage and providing their flight line. Additionally, the increase in width of the carriageway may deter bats from commuting over the carriageway. This additional width increases the potential mortality risk associated with flying over the carriageway (i.e. an extension of time taken flying in open habitat with potential for vehicle collision/attack by a predator). Loss of vegetation/tree line adjacent to A9 carriageway and single-track crossroad will reduce the quality of the linear feature used by bats. Peak of 51 bats recorded crossing during a single survey during both 2016 and 2017.</p> <p>Effect: Direct Negative Duration: Permanent Frequency and Timing: One-time event Reversibility: Irreversible Likelihood: Certain</p> <p>Impactor Descriptor: Medium</p>	<p>SMC-E1 SMC-E2 SMC-E6 SMC-E7 SMC-E8 SMC-E9 SMC-E10 P11-E17 P11-E20 P11-E34 P11-E35 P11-E41 P11-E42 P11-E44</p> <p>Retain flight line associated vegetation as long as possible. Utilise fencing/potted trees to maintain flight line corridor once vegetation is felled. Ensure no barrier to movement across carriageway in this area</p>	Not Significant
<p>Aviemore Junction transects: J1 Northbound A J1 Southbound A J1 Southbound B Value: Local</p>	<p>Severance/fragmentation/ of commuting/foraging habitat</p> <p>Loss of commuting/foraging habitat</p>	<p>Extent: Severance, fragmentation and loss of commuting and foraging habitat due to the construction of junctions either side, and encompassing, the A9 carriageway. Likely displacement of bats to new areas for foraging due to loss of foraging and edge habitat. Loss of commuting habitat with the removal of linear roadside habitat to accommodate junctions.</p> <p>At Aviemore junction, habitats lost will primarily comprise semi-improved grassland and semi-natural broadleaved woodland. Whilst woodland edge habitat does provide suitable foraging and commuting opportunities, the loss of semi-improved grassland is less</p> <p>At Granish Junction, semi-natural broadleaved woodland will be the main habitat type lost to the Scheme. This woodland is interspersed with open pockets and rides providing good habitat for commuting and foraging bats. Ample habitat akin to that being lost will remain in the immediate area of the junction continuing to offer commuting and foraging opportunities.</p> <p>Effect: Direct negative Duration: Permanent Frequency and Timing: One-time event Reversibility: Irreversible Likelihood: Certain</p> <p>Impact Descriptor: Low</p>	<p>SMC-E1 SMC-E2 SMC-E6 SMC-E7 SMC-E8 SMC-E9 SMC-E10 P11-E17 P11-E20 P11-E34 P11-E35 P11-E42 P11-E44 P11-E45</p>	Not Significant
<p>Granish Junction transects: J2 Northbound J2 Southbound Value: Local</p>				

8.3. Operation

- 8.3.1. Given the presence of the existing A9, the effects of noise on bats are not considered to be significant, given their habituation to disturbance associated with existing traffic and road noise. Operational impacts upon bats are therefore considered to comprise direct mortality of bats (in small numbers, given the numbers recorded crossing the A9 during surveys) and effects as a result of increased habitat severance and fragmentation associated with the widening of the A9 carriageway, junctions, access tracks and inclusion of roadside lighting.
- 8.3.2. Bats may be affected during operation of the Proposed Scheme due to the increase in road width creating a larger 'void' which bats must fly over in order to exploit habitat on either side of the carriageway. The increased width of the carriageway may also result in increased mortality rates as a result of flying through this larger open area across the A9, with an increased energy expenditure required to traverse this space and through the collision risk with traffic. Bats may need to alter their commuting and foraging habits to accommodate this obstacle, or may cease crossing of the carriageway altogether.
- 8.3.3. At the majority of crossing points bats were recorded flying over the carriageway, with smaller numbers of bats utilising culverts and underpasses to access habitat on the opposite side of the carriageway. Given the extended width of the carriageway post-construction this will increase potential mortality of bats through vehicle collisions.
- 8.3.4. Crossing point CP02 was the sole crossing point location surveyed where neither a culvert nor underpass was present, with a crossroads forming the crossing feature. The crossing point had the highest number of bats recorded for a crossing point survey over two consecutive years. The proposed hop over will utilise staggered vegetation heights to create a 'ramp' either side of the A9 carriageway to encourage bats to fly over at a safe height, in cognisance that the carriageway will more than double in width at this location (from c. 12m to c. 28m in width). The design of the hop over is provided within Figure 13.4 – Landscape and Ecology Mitigation plan.
- 8.3.5. At retained and new culvert and underpass structures, planting will be designed with the aim of encouraging bats to fly through structures beneath the carriageway and discourage flight over the carriageway. This will be implemented through planting of vegetation 'barriers' linearly along the carriageway roadside whilst additionally providing a tiered vegetation structure sloping down to structures, both existing and new.
- 8.3.6. For the majority of its length, the carriageway will not be lit. Lighting is restricted to the roundabout, and its approaches, associated with Granish Junction, Grampian Road underbridge, a private road leading to residential properties; Old Meall Road underbridge, a public road which has existing lighting; and the NMU/maintenance underpass at Slochd. Lighting will be directional at all locations to prevent light spill onto surrounding habitat bounding roads. Lighting will not illuminate any known roost locations, or those discovered during pre-construction surveys. Although these structures will provide new safe routes between habitats either side of the A9, it remains uncertain as to whether bats will utilise these new structures given their length, albeit their size will be suitable for passage.
- 8.3.7. New roosting opportunities will be afforded by the reprofiling of rock faces at Slochd and Aviemore. Whilst rock face RF15 will not be as steep as its pre-construction state, the rock face will still provide apertures and cavities to be exploited, given the nature and type of rock present, with the rock face to have a 'stepped' design, with small shrub planting along the ledges. At RF04, minor reprofiling works will remove loose rock from the face of the rock face opening up new opportunities for roosting.

- 8.3.8. With the improvements to structures along the carriageway and inclusion of additional structures; alongside associated landscaped planting to encourage passage beneath the carriageway, operational impacts on bats are not anticipated.

9. Conclusions

- 9.1.1. Whilst desk study records for bats along the Scheme were limited, surveys undertaken in 2016, 2017 and 2018 have resulted in extensive information regarding bat presence and movement within the Study Area.
- 9.1.2. Four non-breeding bat roosts (TR71, ST08, and two roosts within RF15) will be lost as a direct result of construction, however, given the ample opportunities for roosting in the wider area and implementation of mitigation, this is not assessed to be significant. Particularly with regards the blasting and reprofiling of RF15, whilst two roosts will be lost, ample opportunities will result amongst the reprofiled rock face, with the structure of rock in this area naturally resulting in fissures and cracks.
- 9.1.3. Disturbance to roosts will likely result from construction of the Proposed Scheme, however, with implementation of mitigation during construction and robust working methods under protected species licensing, disturbance effects are not assessed to be significant.
- 9.1.4. Underpasses and culverts have been modified and included within the Scheme design. With the inclusion of sympathetic planting to channel bats towards these structures, these will provide safe passage for bats beneath the carriageway. This will reduce the effects of severance by providing connectivity between habitats either side of the carriageway and reducing mortality risk associated within flying over the carriageway. Loss of commuting and foraging habitat is not considered to be significant. As such no significant impacts on bats from either construction or operation of the Proposed Scheme are anticipated.

ⁱ CH2MHill (2015) Preliminary Ecological Appraisal. North Scheme – Dalraddy to Moy

ⁱⁱ Collins. J (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd ed.). The Bat Conservation Trust, London.

ⁱⁱⁱ DEFRA, Birthinussen and Altringham (2016) WC1060 Development of a cost effective method for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure.

^{iv} Chartered Institute of Ecology and Environmental Management (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

^v Design Manual for Roads & Bridges (2010) Interim Advice Note (IAN) 130/10 - Ecology and Nature Conservation: Criteria for Impact Assessment

^{vi} Scottish Government (2013, 2015) Scottish Biodiversity Strategy. Available at: <http://www.gov.scot/Publications/2013/06/5538> (Accessed 14/06/2016).

^{vii} <http://www.legislation.gov.uk/ukxi/2011/1824/contents/made> (Accessed 18/04/2017)

^{viii} Department for Communities and Local Development (2012). National Planning Policy Framework, Paragraph 118. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> (Accessed 14/06/2016).

^{ix} Russ, Jon (2012) British Bat Calls – A Guide to Species Identification. Pelagic Publishing, Exeter

^x The Highland Council (2013). Highland's Statutorily Protected Species – Supplementary Guidance.

^{xi} Joint Nature Conservation Committee (2007) Second Report by the UK under Article 17 on the implementation of the Habitats Directive from January 2001 to December 2006. Peterborough

^{xii} British Standards Institute (2012) BS5489-1:2013 - Code of practice for the design of road lighting. Lighting of roads and public amenity areas.

^{xiii} Bat Conservation Trust (2009) Bats and Lighting in the UK. Bats and the Built Environment Series.

^{xiv} Institution of Lighting Engineers (2007) Lighting of pedestrian crossings.

Appendix 12.5

Bat Report Annexes

Transport Scotland

August 2018



Table of contents

Chapter	Pages
1. Field Survey Results	3
1.1 Tree Survey Results	3
1.2 Rock Face Survey Results	11
1.3 Crossing Point Survey Results	76
1.4 Transect Survey Results	122
1.5 Static Detector Results	126

Tables

Table 1.1: Bat Roosts – Tree Survey Results	3
Table 1.2: Rock face RF01 inspection results	11
Table 1.3: Rock face RF02 inspection results	17
Table 1.4: Rock face RF04 inspection results	22
Table 1.5: Rock face RF06 inspection results	29
Table 1.6: Rock faces RF08 & RF12 inspection results	37
Table 1.7: Rock face RF10 inspection results	46
Table 1.8: Rock face RF13 inspection results	52
Table 1.9: Rock face RF14 inspection results	55
Table 1.10: Rock face RF15 inspection results	69
Table 1.11: Crossing Location CP05 – Survey Results	76
Table 1.12: Crossing Location CP04 - Survey Results	77
Table 1.13: Crossing Location CP06 - Survey Results	78
Table 1.14: Crossing Location CP09 - Survey Results	80
Table 1.15: Crossing Location CP08 - Survey Results	81
Table 1.16: Crossing Location CP10 - Survey Results	83
Table 1.17: Crossing Location CP11 - Survey Results	84
Table 1.18: Crossing Location CP13 - Survey Results	86
Table 1.19: Crossing Location CP12 - Survey Results	87
Table 1.20: Crossing Location CP14 - Survey Results	88
Table 1.21: Crossing Location CP15 - Survey Results	89
Table 1.22: Crossing Location CP16 - Survey Results	91
Table 1.23: Crossing Location CP17 - Survey Results	92
Table 1.24: Crossing Location CP22 - Survey Results	93
Table 1.25: Crossing Location CP30 - Survey Results	94
Table 1.26: Crossing Location CP23 - Survey Results	96
Table 1.27: Crossing Location CP21 - Survey Results	97
Table 1.28: Crossing Location CP18 - Survey Results	98
Table 1.29: Crossing Location CP02 - Survey Results	98
Table 1.30: Crossing Location CP19 - Survey Results	100
Table 1.31: Crossing Location CP20 - Survey Results	102
Table 1.32: Crossing Location CP03 - Survey Results	103
Table 1.33: Crossing Location CP07 - Survey Results	105
Table 1.34: Crossing Location CP01 - Survey Results	107
Table 1.35: Crossing Location CP02 - Survey Results	108
Table 1.36: Crossing Location CP03 (TN279) 4 - Survey Results	110
Table 1.37: Crossing Location CP06 - Survey Results	112
Table 1.38: Crossing Location CP25 - Survey Results	115
Table 1.39: Crossing Location CP26 - Survey Results	117
Table 1.40: Crossing Location CP27 Control - Survey Results	117
Table 1.41: Crossing Location CP28 Control - Survey Results	118
Table 1.42: Crossing Location CP29 Control - Survey Results	119
Table 1.43: Crossing Location CP08 – Survey Results	121
Table 1.44: Bat Roosts – Transect 1 Survey Results	122

Table 1.45: Bat Roosts – Transect 2 Survey Results	123
Table 1.46: Bat Roosts – Transect 3 Survey Results	124
Table 1.47: Bat Roosts – Transect 5 Survey Results	124
Table 1.48: Bat Roosts – Transect 6 Survey Results	125
Table 1.49: Bat Roosts – Transect 7 Survey Results	126
Table 1.50: Slochd Rock Face (Static Detector) Monthly Activity in 2017 (May to September)	126
Table 1.51: Slochd Rock Face (Static Detector) Total Passive Monitoring Survey Results (May to September 2017)	127
Table 1.52: Registrations per point per month	130
Table 1.53: Averaged species' registrations per night recording	131
Table 1.54: Averaged species' registrations per night recording (all points combined)	132
Table 1.55: First and last bat recordings for Static detector 5 in August 2017	133
Table 1.56: Slochd rock face activity levels (average registrations/night)	134
Table 1.57: Typical activity levels (registrations/night) according to species and habitat class (from HEL dataset)	135
Table 1.58: Slochd rock face (static detector) total passive monitoring survey results (October & November 2017)	135
Table 1.59: Total registrations per minute	136

Figures

Chart 1: Species registrations recorded against time of night (all records, all points, May – September 2017)	128
Chart 2: Species registrations recorded against minutes after sunset (all records, all points, May – September 2017)	129
Chart 3: Species registrations recorded against minutes before sunrise (all records, all points, May – September 2017)	129
Chart 4: Myotis registrations recorded against minutes after sunset (all records, all points, May – September 2017)	130
Chart 5: Averaged species' registrations per night recording	132
Chart 6: Averaged species' registrations per night recording (all points combined)	133



This annex provides detailed survey results for the following surveys:

- Ground based inspection, aerial inspection and emergence and return to roost surveys of trees;
- Ground based inspection and aerial inspection of rock faces;
- Transect survey results for proposed Aviemore, Granish and Blackmount junction locations; and
- Results and analysis from static detector monitoring at Slochd rock face.

This data should be read in conjunction with Environmental Statement (ES) Chapter 12 and ES Appendix 12.5 to fully understand the conclusions, recommendations and mitigation discussed within the documents.

1. Field Survey Results

1.1 Tree Survey Results

Table 1.1: Bat Roosts – Tree Survey Results

ID	OS grid reference	Tree Species	Description of tree and BRP	Surveys Conducted	Survey Date (DD/MM/YY) and sunset (SS)/ sunrise (SR) times	Start time; End time (24hr clock)	Weather Conditions				Survey Results Including Bat Roost Potential BRP)								
							Temp (°C)	Cloud (0 – 8) ¹	Rain (0 – 5) ²	Wind (0 – 12) ³									
TR11	NH 86925 10152	Silver birch	Crevice within trunk at approximately 0.8m above ground, extends back and upwards for at least 30cm. Additional feature at 5m above ground, cavity in limb.	Aerial inspection	11/04/2017						0.8m cavity located on the south face of the tree, and a small hole in the trunk on the north side of the tree at around 2m above ground level which leads into the large hollow trunk, neither of which could be fully inspected. Feature on south side at 5m doesn't go anywhere. BRP - moderate.								
												Emergence and re-entry	20/06/2017 (SR 04:19)	02:19	8	1	0	1	No roosting bats emerged from the tree. Twenty-four bats were recorded (the majority of which were common pipistrelle) although all but one were not seen by surveyors.
														04:34	6	1	0	1	
												17/07/2017 (SS 21:56)	21:38	14	0	0	1	No bats were observed roosting in the tree. There was almost constant bat activity during the survey, starting 3 minutes before sunset. Soprano, common and unidentified pipistrelle were recorded and bats that were seen were flying in a southerly direction along the tree line.	
23:56	13	0	0	1															
TR15	NH 88423 10604	Dead tree	Dead standing mature tree with hollow section and numerous features at 2m, 3m and 5m above ground, including cavities in the trunk and limbs.	Ground assessment	11/04/2017						Unable to fully inspect the features from the ground as the tree was not safe to climb and the polekam could not see into the features. BRP - moderate.								
												Emergence and re-entry surveys	23/05/2017 (SR 04:41)	02:41	7	0	0	0	No bats recorded at all during the survey.
														04:56	6	1	0	0	
												21/06/2017 (SS 22:15)	21:55	17	8	1	1	No roosting bats emerged from the tree. The majority of bat passes were not able to be confidently identified to species level due to calls recorded being too faint. Where bats were seen, they either flew north to south (away from A9), east to west (parallel to A9) or east to south (away from A9).	
00:15	16	8	0	1															
TR16	NH 88438 10616	Alder	Hollow sections of the trunk with several entrances into the interior of the tree. Possible hibernation potential.	Ground assessment	11/04/2017						Whilst the trunk was partly hollow, the internal structure meant it could not be fully inspected using a torch and endoscope, and therefore not all features were able to be inspected fully. BRP - moderate.								

¹ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

² Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

³ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





ID	OS grid reference	Tree Species	Description of tree and BRP	Surveys Conducted	Survey Date (DD/MM/YY) and sunset (SS)/ sunrise (SR) times	Start time; End time (24hr clock)	Weather Conditions				Survey Results Including Bat Roost Potential BRP)
							Temp (°C)	Cloud (0 – 8) ¹	Rain (0 – 5) ²	Wind (0 – 12) ³	
				Emergence and re-entry	23/05/2017 (SR 04:41)	02:41	7	0	0	0	No bats recorded at all during the survey.
						04:56	6	1	0	0	
					21/06/2017 (SS 22:15)	21:55	17	8	1	1	No roosting bats emerged from the tree. The majority of bat passes were not able to be confidently identified to species level due to calls recorded being too faint. Where bats were seen, they either flew north to south (away from A9), east to west (parallel to A9) or east to south (away from A9).
						00:15	16	8	0	1	
TR30	NH 89014 12783	Birch	Woodpecker holes and bracken limb at the top of the tree. Unable to view clearly from the ground.	Ground assessment	12/04/2017						Nesting material within feature, so lower potential for roosting bats to be present. BRP - low.
TR62	NH 89863 15263	Birch	Trunk cavity ~5m above ground, west facing. The tree has lots of damaged limbs but no other obvious suitable features to support roosting bats.	Ground assessment	12/04/2017						Co-dominant stemmed tree both broken topped, shallow hole in northern most stem, fully inspected with polekam, cannot climb the tree to block the feature. BRP - moderate.
TR65	NH 89932 15324	Silver birch	North facing trunk cavity. Unable to tell if it the feature is suitable for roosting bats (may extends up/down), ~10m above ground.	Aerial inspection	12/04/2017						Not able to fully inspect as cavity and crack extends too far. BRP - moderate.
				Emergence and re-entry	28/06/2017 (SR 04:22)	02:22	11	8	1	1	No roosting bats entered the tree. Only a few bat passes including a <i>Myotis</i> bat and common pipistrelle; the last bat was recorded at 03:28, almost an hour before sunrise.
						04:37	11	8	0	1	
				17/07/2017 (SS 21:56)	21:36	140	0	0	0	No roosting bats emerged from the tree. Common and soprano pipistrelles were recorded, and seen to be foraging over the water to the west of the trees.	
23:56	13	0	0		1						
TR66	NH 90031 15328	Silver birch	East facing hole in trunk at 1.5m above ground extends upwards in to a cavity within the trunk.	Ground assessment	11/04/2017						Cannot fully inspect cavity with endoscope. BRP - moderate.
				Emergence and re-entry	16/05/2017 (SR 04:54)	02:54	14	8	0	2-3	No roosting bats were seen entering the tree. Only two common pipistrelle commuting passes were recorded, one at 03:44 and one at 03:47.
						05:09	14	7	0	6	
				07/06/2017 (SS 22:06)	21:47	10	2	0	0	No roosting bats emerged from the tree. Two bat passes were recorded, a soprano pipistrelle at 23:34 and a common pipistrelle at 23:51.	
00:06	3	1	0		0						
TR67	NH 89918 15346	Silver birch	North facing trunk cavity at 6m above ground.	Ground assessment	12/04/2017						Tree not possible to climb and inspect tree due to form and damage on stem. BRP - moderate.
				Emergence and re-entry	28/06/2017 (SR 04:22)	02:22	11	8	1	0	No roosting bats entered the tree. Only four bat passes were heard, and they were all brief and faint. The last was recorded at 03:30.
						04:37	11	8	0	0	
				17/07/2017 (SS 21:56)	21:36	140	0	0	0	No roosting bats emerged from the tree. Common and soprano pipistrelles were recorded, and seen to be foraging over the water to the south of the trees.	
23:56	13	0	0		1						
TR68	NH 89895 15357	Silver birch	North facing trunk cavity that extends up within the trunk of the tree, ~3m above ground.	Ground inspection	12/04/2017						Cavity extends upwards into the trunk, very wet and full of slugs, not able to fully inspect, bats could roost in lower areas of this cavity. BRP - moderate.
				Emergence	28/06/2017	02:22	11	8	1	0	No roosting bats entered the tree. Only four bat passes





ID	OS grid reference	Tree Species	Description of tree and BRP	Surveys Conducted	Survey Date (DD/MM/YY) and sunset (SS)/ sunrise (SR) times	Start time; End time (24hr clock)	Weather Conditions				Survey Results Including Bat Roost Potential BRP)
							Temp (°C)	Cloud (0 – 8) ¹	Rain (0 – 5) ²	Wind (0 – 12) ³	
				and re-entry	(SR 04:22)	04:37	11	8	0	0	were heard, and they were all brief and faint. The last was recorded at 03:30.
					17/07/2017 (SS 21:56)	21:36 23:56	140 13	0 0	0 0	0 1	No roosting bats emerged from the tree. Common and soprano pipistrelles were recorded, and seen to be foraging over the water to the south of the trees.
TR71	NH 90135 15627	Silver birch	Co-dominant stem with bracket fungus, two holes, one at 4m and one at 3m above ground.	Ground inspection	11/04/2017						Unsafe to climb due to fungal decay and not able to be fully inspected using endoscope. BRP - moderate.
				Emergence and re-entry	18/07/2017 (SR 04:47)	02:47 05:02	9 9	0 0	0 0	0 0	Only three bats were recorded during the survey, and the third bat recorded, a <i>Myotis</i> species, entered the higher feature and roosted at 03:55. CONFIRMED ROOST.
					06/09/2017 (SS 19:58)	19:38 21:58	13 13	7 7	0 0	1 1	No roosting bats emerged from the tree. Only three bats were recorded during the survey, and they were all heard but not seen (one <i>Myotis</i> species, one common pipistrelle and one unidentified bat).
TR73	NH 90304 16533	Silver birch (standing deadwood)	South facing woodpecker hole at ~5m above ground extends downwards into the tree. Additional woodpecker holes at 3.5m on the east side of the tree, 3.5m on the west and 5m on the south-west.	Aerial inspection	10/04/2017						Woodpecker holes could not be fully inspected due to the angle and depth they extend into the tree. BRP - moderate.
				Emergence and re-entry	16/05/2017 (SS 21:32)	21:12 23:32	11 7	1 0	0 0	0 0	No bats were seen to emerge from the tree. The first bat (common pipistrelle) was recorded at 21:49. Soprano and common pipistrelle bats were commuting overhead and foraging throughout the survey. No passes were recorded in the last 30 mins of the survey.
					21/06/2017 (SR 04:19)	02:19 04:34	9 10	0 7	0 0	0 0	No bats entered the tree. Common and soprano pipistrelle bats, and one <i>Myotis</i> bat, were recorded commuting and foraging.
TR84	NH 90780 14266	Rowan	Partially dead, with two large access points into trunk cavity extending upwards. Features at 1m and 3m above ground, east and south facing.	Ground inspection	10/04/2017						Inspected and unable to fully inspect with torch / endoscope / polekam. Lowest feature at 1m on south side extends upwards and downwards, while the upper feature on the east at 3m extends downwards. BRP - moderate.
				Emergence and re-entry	16/05/2017 (SR 04:54)	02:54 05:09	14 14	8 7	0 0	4 6	No roosting bats emerged from the tree, and one common pipistrelle pass was recorded at 03:11.
					10/07/2017 (SS 22:05)	21:45 00:05	10 9	8 8	2-3 2	1 1	No bats were recorded during the survey.
TR96	NH 91098 18815	Silver birch	First feature is cavity in trunk approximately 3.5m above ground, the second is approximately 5m above ground.	Ground inspection	10/04/2017						Tree was not safe to climb, it was inspected using polekam but couldn't be fully inspected. BRP - moderate.
				Emergence and re-entry	16/05/2017 (SS 21:31)	21:11 23:31	10 8	1 1	0 0	1 1	No roosting bats emerged from the tree. Most bat passes were recorded within the first hour of the survey and generally flew either north to south or south to north. In the last 75 mins of the survey only one pass (a <i>Myotis</i> species) was recorded.
					21/06/2017 (SR 04:19)	02:19 04:34	11 12	8 7	0 0	0 0	No roosting bats entered the tree. Both common and soprano pipistrelle were heard, with some very brief passes from unidentified species. The last bat was heard at 03:52.





ID	OS grid reference	Tree Species	Description of tree and BRP	Surveys Conducted	Survey Date (DD/MM/YY) and sunset (SS)/ sunrise (SR) times	Start time; End time (24hr clock)	Weather Conditions				Survey Results Including Bat Roost Potential BRP)
							Temp (°C)	Cloud (0 – 8) ¹	Rain (0 – 5) ²	Wind (0 – 12) ³	
TR120	NH 87217 10181	Silver birch	Hole in stem facing south-east where branch has broken off, at about 5m above ground.	Aerial inspection	11/04/2017						Hole extends into tree and cannot be fully inspected. BRP - moderate.
				Emergence and re-entry	08/06/2017 (SS 22:07)	21:46	9	8	0	3	No bats emerged from this tree. A number of pipistrelles (mostly common) were recorded commuting within the area.
						00:07	9	8	0	3	
					12/07/2017 (SR 04:38)	02:38	9	8	0	0	No roosting bats entered this tree. There was fairly constant activity in the area, with common and soprano pipistrelles recorded, as well as three <i>Myotis</i> bats.
04:53	8	4	0	1							
TR121	NH 87228 10185	Silver birch	Hole in scar from broken branch at 5m above ground on east face.	Aerial inspection	11/04/2017						Hole at scar extends too far to allow full inspection. BRP - moderate.
				Emergence and re-entry	08/06/2017 (SS 22:07)	21:46	9	8	0	3	No bats emerged from this tree. A number of pipistrelles (mostly common) were recorded commuting within the area.
						00:07	9	8	0	3	
					12/07/2017 (SR 04:38)	02:38	9	8	0	0	No roosting bats entered this tree. There was fairly constant foraging activity in the area, with common and soprano pipistrelles recorded, as well as one <i>Myotis</i> species of bat and one brown long-eared bat.
04:53	8	4	0	1							
TR122	NH 87879 10409	Dead	Cavity on west side at 2m above ground, loose bark.	Aerial inspection	11/04/2017						Can't fully inspect the cavity as the full extent cannot be reached from the ground and the tree cannot be climbed as it is dead. BRP - moderate.
				Emergence and re-entry	23/05/2017 (SR 04:41)	02:41	6	1	0	1	No roosting bats entered the tree. Only two bat passes were heard, a soprano pipistrelle at 03:29 and a common pipistrelle at 04:15.
						04:56	6	3	0	1	
					28/06/2017 (SS 22:15)	21:53	9	8	0	2	No roosting bats emerged from the tree. The first bat was recorded 4 minutes before sunset. Both common and soprano pipistrelle bats were heard commuting and foraging near the tree, with some constant foraging between 22:23 and 22:58, and 23:15 and 23:26.
00:15	9	8	0	2							
TR124	NH 90412 16749	Cherry	Large broken limb on south side within which is a hazard beam and splintered wood. Features are horizontal and 1.7-2m above ground. Also a cavity associated with a sawn limb at 1.5m on west, and flaky bark.	Aerial inspection	10/04/2017						Can't fully inspect hazard beam. BRP - moderate.
				Emergence and re-entry	16/05/2017 (SS 21:32)	21:12;	9	2	0	1	No roosting bats emerged from the tree. Two or three pipistrelles (common and soprano) were foraging constantly nearby for the majority of the survey.
						23:32	7	0	0	0	
21/06/2017 (SR 04:19)	02:19	10	8	0	1	No roosting bats entered the tree. A total of 14 bat passes (common and soprano pipistrelle, with some unknown species) were recorded although none were seen, due to the tree canopy cover.					
	04:34	11	2	0	1						
TR130	NH 87840 10143	Rowan (dead)	Hollow centre with access hole on north-west face at 2m above ground; some extensive cavities. Cavity not large enough to roost of high conservation value.	Ladder inspection	30/08/2017						No evidence detected but cannot fully inspect. BRP - moderate
TR131	NH 87844 10152	Not known (dead stump 2m high)	Cracks all over stump, leading into shallow cavities	Ground inspection	30/08/2017						No evidence detected but cannot fully inspect. BRP – low
TR132	NH 87847 10160	Not known	Shallow gaps behind bark on south-east	Ground	30/08/2017						No evidence detected, fully inspected.





ID	OS grid reference	Tree Species	Description of tree and BRP	Surveys Conducted	Survey Date (DD/MM/YY) and sunset (SS)/ sunrise (SR) times	Start time; End time (24hr clock)	Weather Conditions				Survey Results Including Bat Roost Potential BRP)
							Temp (°C)	Cloud (0 – 8) ¹	Rain (0 – 5) ²	Wind (0 – 12) ³	
		(dead stump)	face at 2-4m above ground	inspection							BRP – low.
TR133	NH 87563 10179	Silver birch	Rot hole extending into shallow cavity on north and east faces at 2m above ground	Ground inspection	30/08/2017						No evidence detected, fully inspected. BRP – low.
TR134	NH 87562 10183	Aspen	Hollow limb projecting north-west from main stem at 1.5m above ground with cavity	Ground inspection	30/08/2017						No evidence detected but cannot fully inspect. BRP - moderate.
TR135	NH 87590 10174	Silver birch	Cavities in both twin stems at 1.5-3m above ground; opening faces north on both	Ground inspection	30/08/2017						No evidence detected, fully inspected. BRP - low.
TR136	NH 87939 10189	Silver birch	Hollow limb with stem; opening to cavity on east face at 2.5m above ground	Aerial inspection	30/08/2017						No evidence detected, fully inspected. BRP – moderate.
TR137	NH 87653 10175	Unknown (dead stump)	Loose bark creating shallow cavities at various locations on east face	Ground inspection	30/08/2017						No evidence detected, fully inspected. BRP - low.
TR138	NH 87661 10205	Unknown (fallen dead horizontal stem)	Stem hollow at base; extends into substantial cavity. The opening to cavity is just off the ground	Ground inspection	30/08/2017						No evidence detected, fully inspected. BRP - low
TR139	NH 87649 10137	Silver birch	Cavity in limb on south face at 6m above ground. The cavity was wet.	Aerial inspection	30/08/2017						No evidence detected, fully inspected. BRP - low
TR140	NH 87608 10127	Silver birch	Cavity in limb on south face at 6m above ground	Aerial inspection	30/08/2017						No evidence detected, fully inspected. BRP - moderate.
TR141	NH 87588 10166	Silver birch	Cavity in limb on north face at 3m above ground	Aerial inspection	30/08/2017						No evidence detected, fully inspected. BRP - low.
TR142	NH 87834 10040	Rowan (dead)	Shallow cavities behind loose bark all over tree	Ground inspection	30/08/2017						No evidence detected, fully inspected. BRP - low.
TR143	NH 87834 10029	Silver birch	Main stem hollow with multiple openings on south and west faces at 2-4m above ground	Ground inspection	30/08/2017						No evidence detected, but cannot fully inspect. BRP - moderate.
TR144	NH 87822 10006	Silver birch	Opening on north-west face at 6m above ground	Aerial inspection	30/08/2017						No evidence detected, fully inspected. BRP - low.
TR145	NH 87758 10463	Silver birch	Cavity in rotten branch stump on east face at 2m above ground. Cavity contained a bird nest.	Aerial inspection	31/08/2017						No evidence detected, fully inspected. BRP - low
TR146	NH 87751 10438	Silver birch	Hollow stem with opening on west face at 1m above ground. The opening of the cavity is low to the ground.	Ground inspection	31/08/2017						No evidence detected, fully inspected. BRP - low
TR147	NH 87703 10467	Pedunculate oak	Hazard beam on central limb facing north at 12m above ground	Aerial inspection	31/08/2017						No evidence detected, fully inspected. BRP - moderate.
TR148	NH 87692 10490	Pedunculate	Large rot hole with small opening leading	Ladder	31/08/2017						No evidence detected, fully inspected.





ID	OS grid reference	Tree Species	Description of tree and BRP	Surveys Conducted	Survey Date (DD/MM/YY) and sunset (SS)/ sunrise (SR) times	Start time; End time (24hr clock)	Weather Conditions				Survey Results Including Bat Roost Potential BRP)
							Temp (°C)	Cloud (0 – 8) ¹	Rain (0 – 5) ²	Wind (0 – 12) ³	
		oak	into cavity in main stem on west face at 3m above ground	inspection							BRP - low.
TR149	NH 87607 10442	Pedunculate oak	Hazard beam on east face at 12m above ground	Aerial inspection	31/08/2017						No evidence detected, fully inspected. BRP - low.
TR150	NH 87603 10456	Pedunculate oak	Cavity on W face where twin stems join at 6m above ground	Aerial inspection	31/08/2017						No evidence detected, fully inspected. BRP - low.
TR151	NH 87472 10470	Unknown (dead stump)	Cavities behind loose bark on north face at 1m above ground. The cavity is fairly shallow so unlikely to support a large roost.	Ground inspection	31/08/2017						One unidentified pipistrelle bat identified behind bark. Bat was unable to be identified due to inaccessibility of roost. - CONFIRMED ROOST. BRP - moderate
TR152	NH 87485 10432	Pedunculate oak	Cavities in rotten wound on both twin stems on east and west faces at between 0.25 and 1.5m above ground	Ground inspection	31/08/2017						No evidence detected, fully inspected. BRP - moderate.
TR153	NH 87471 10425	Pedunculate oak	Hazard beam at end of broken branch projecting south from main stem at 12m above ground	Ground inspection	31/08/2017						Unsafe to climb to required height so not inspected. BRP - moderate.
TR154	NH 87510 10431	Pedunculate oak	Hazard beam in middle of broken branch projecting south from main stem at 5m above ground	Aerial inspection	31/08/2017						No evidence detected, fully inspected. BRP - low.
TR155	NH 87418 10448	Silver birch	Cavity in rotten wound on main stem at 1m above ground	Ground inspection	31/08/2017						No evidence detected but cannot fully inspect feature. BRP - moderate.
TR156	NH 87383 10441	Aspen	Cavity on eastern face of main stem at 10m above ground; cavity extending into twin stem	Ground inspection	31/08/2017						Unsafe to climb to required height so not inspected. BRP - moderate.
TR 672	NH 89877 15445	Birch	Cavity at the top of branch wound on the north facing side 3m above ground	Ground inspection	20/09/2017						No bat evidence detected, was fully inspected. BRP - low (cavity was very shallow).
				Aerial inspection	03/10/2017						
TR 673	NH 89817 15329	Birch	Cavity under limb on the west face 6m above ground	Ground inspection	20/09/2017						No bat evidence detected, was fully inspected. BRP - moderate.
				Aerial inspection	03/10/2017						
TR 674	NH 89777 15271	Birch	Hazard beam in main stem running 4-5m above ground	Ground inspection	20/09/2017						Could not inspect from ground and tree was deemed unsafe to climb. BRP - moderate.
TR 675	NH 90941 19172	Dead	Loose bark on the south face at 4m above ground	Ground inspection	19/09/2017						Ground inspection carried out. No evidence was found and was fully inspected. BRP - moderate.
TR 677	NH 90915 19299	Birch	Rot hole on the south facing side 2m above ground	Ground inspection	19/09/2017						Ground inspection carried out. No evidence was found and full inspection completed. BRP - moderate.
TR678	NH 89770 15246	Birch	Rot hole extending upward on the south side at 4m above ground	Ground inspection	20/09/2017						One bat identified roosting in cavity, couldn't identify species due to position of bat - CONFIRMED ROOST. BRP - moderate.
				Aerial	03/10/2017						





ID	OS grid reference	Tree Species	Description of tree and BRP	Surveys Conducted	Survey Date (DD/MM/YY) and sunset (SS)/ sunrise (SR) times	Start time; End time (24hr clock)	Weather Conditions				Survey Results Including Bat Roost Potential BRP)
							Temp (°C)	Cloud (0 – 8) ¹	Rain (0 – 5) ²	Wind (0 – 12) ³	
				inspection							
TR 679	NH 90964 19046	Dead	Loose bark and various woodpecker holes. Most potential on the west face 6m above ground	Ground inspection	19/09/2017						Cannot inspect from the ground and tree is unsafe to climb. BRP - moderate.
TR 680	NH 90906 19030	Scots Pine	Broken limb on the north face at 6m above ground	Ground inspection	19/09/2017						No evidence detected but cannot fully inspect with the endoscope, due to the sharp angles within the cavities in the broken limb. BRP - moderate.
				Aerial inspection	03/10/2017						
TR 682	NH 90973 14034	Aspen	Split limb with cavity on the east facing side at 2m above ground	Ground inspection	19/09/2017						Ground inspection carried out, no evidence was found and fully inspected. BRP - moderate.
TR 684	NH 90785 18694	Birch	Large wound extending up the main stem on the west facing side 7m above ground	Ground inspection	19/09/2017						Could not inspect from the ground and deemed unsafe to climb. Activity surveys required. BRP - moderate.
TR685	NH 90772 18668	Birch	Branch wound on east facing side at 2m above ground	Ground inspection	19/09/2017						No evidence was detected but could not fully inspect using endoscope. BRP - moderate.
TR 686	NH 90951 18761	Birch	Branch wound on south facing side at 6m above ground	Ground inspection	19/09/2017						Too high to fully inspect from the ground. Upon aerial inspection feature was fully inspected and no bat evidence seen. BRP - moderate.
				Aerial inspection	03/10/2017						
TR 687	NH 87091 10347	Silver birch	Hollow main stem with openings on east and west faces at 1m-2m above ground	Aerial inspection	31/08/2017						No evidence detected but features cannot be fully inspected. BRP - moderate.
TR 688	NH 87178 10323	Silver birch	Rot hole on west face at 2.5m above ground leading down into cavity	Aerial inspection	31/08/2017						No evidence detected, fully inspected. BRP - low.
TR689	NH 87196 10319	Aspen	Multiple shallow cavities behind loose bark	Ground inspection	31/08/2017						No evidence detected, fully inspected. BRP - low.
Tag 690	NH 87191 10329	Silver birch	Opening in main stem leading into substantial cavity on south-west face at 1.5m above ground	Ground inspection	31/08/2017						No evidence detected, fully inspected. BRP - low (cavity was wet so had limited potential).
TR 691	NH 87172 10333	Silver birch	Rot hole on east face leading into substantial cavity at 5m above ground	Aerial inspection	31/08/2017						No evidence detected, fully inspected. BRP - moderate.
TR 692	NH 87185 10345	Silver birch	Multiple features – hollow stem at 4m-6m above ground on north-east face; rot hole on west face at 3m above ground; rot hole leading to hollow stem on north face of other twin stem at 4m above ground	Ground inspection	31/08/2017						No evidence detected but feature cannot be fully inspected. BRP - moderate.
TR693	NH 87215 10324	Aspen	Large cavity in main stem on south-east face at 6m above ground	Ground inspection	31/08/2017						No evidence detected but feature cannot be fully inspected. BRP - moderate.
TR694	NH 87213 10330	Silver birch	Small cavity at top of branch wound on E face of main stem at 1.5m above ground	Ground inspection	31/08/2017						No evidence detected, fully inspected. BRP - low.
TR695	NH 87255 10386	Silver birch	Horizontal cavity in rotten limb projecting south at 2m above ground	Ground inspection	31/08/2017						No evidence detected, fully inspected. BRP - low.





ID	OS grid reference	Tree Species	Description of tree and BRP	Surveys Conducted	Survey Date (DD/MM/YY) and sunset (SS)/ sunrise (SR) times	Start time; End time (24hr clock)	Weather Conditions				Survey Results Including Bat Roost Potential BRP)
							Temp (°C)	Cloud (0 – 8) ¹	Rain (0 – 5) ²	Wind (0 – 12) ³	
TR696	NH 87356 10427	Aspen	Opening in main stem on east face leading into cavity at 3m above ground	Ground inspection	31/08/2017						Unsafe to climb to required height so not inspected. BRP - moderate.
TR697	NH 87348 10426	Aspen	Rotten limb leading into cavity on north face at 8m above ground	Ground inspection	31/08/2017						Unsafe to climb to required height so not inspected. BRP - moderate.
TR698	NH 87337 10408	Aspen	Rot hole in main stem on west face at 6m above ground, extending upwards	Ground inspection	31/08/2017						Unsafe to climb to required height so not inspected. BRP - moderate.
TR699	NH 87380 10431	Unknown (dead stump)	Rot hole extending into hollow stem on west face at 2m above ground	Ground inspection	31/08/2017						No evidence detected but cannot fully inspect feature. BRP - moderate.
TR700	NH 91169 18730	Rowan	Rot hole on south-west face of main stem at 1.6m above ground extending downwards and then extending back up main stem at base of cavity	Ground inspection	01/09/2017						No evidence detected but feature cannot be fully inspected. BRP - moderate.





1.2 Rock Face Survey Results

1.2.1 Rock Face RF01 summary: x 5 common pipistrelle recorded in two locations of former quarry. Features of high potential to support roosting bats throughout face, generally on higher, steeper ground.

Table 1.2: Rock face RF01 inspection results

Overview of quarry with abseil references annotated	
Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>East of Scots pine, one drill hole provides limited suitability for roosting bats (refer photo annotation 1). West of Scots pine, one crack with good suitability for roosting bats (ref. annotation 2). Other cracks lower down noted to be wet, often running with water, and unsuitable for roosting bats.</p> <p>BRP Moderate</p>	
<p>Occasional cracks in rock from cliff top to c. 3 m down face provide limited suitability for roosting bats.</p> <p>BRP Low</p>	



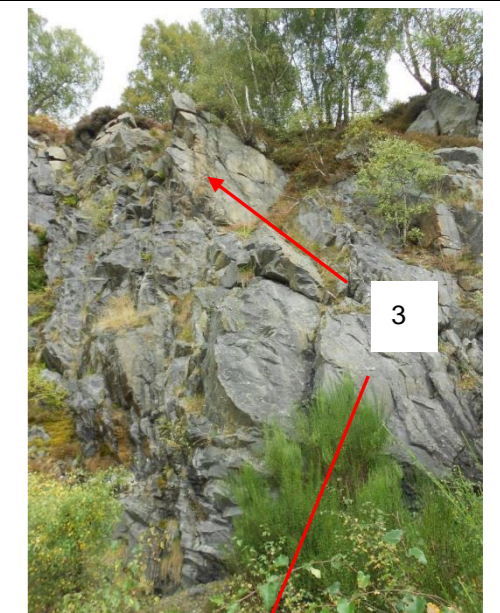


Overview of quarry with abseil references annotated



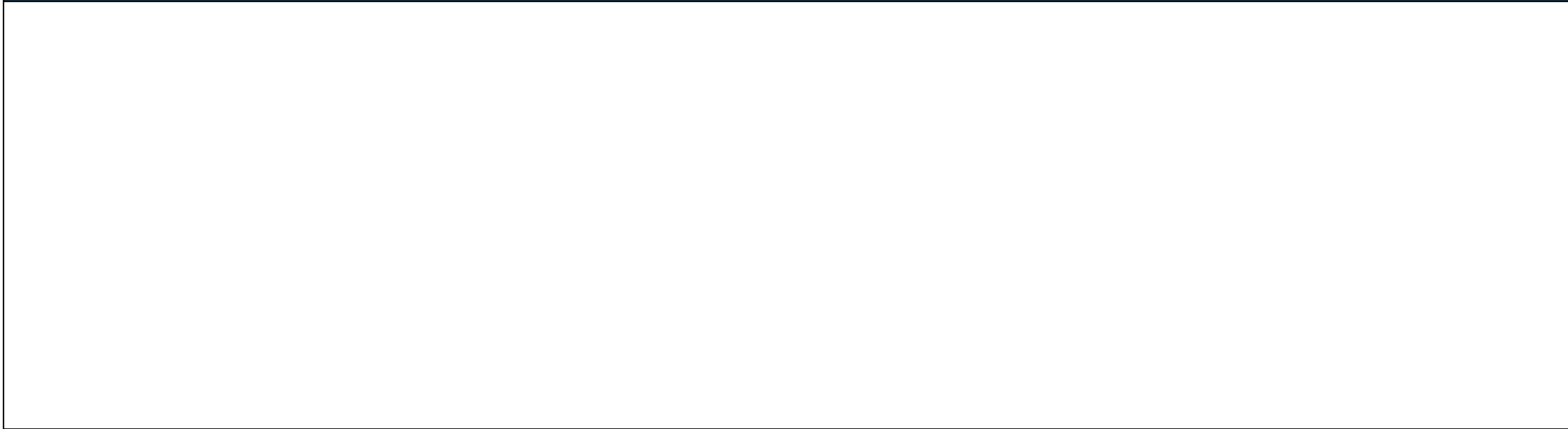
Good suitability for roosting bats in cracks and crevices in rock from cliff top to c. 5m down face.
 Roost identified (288590 810845): x2 pipistrelle observed in upwards facing crack (ref. annotation 3) on 26/09/2017. Cavity extends beyond bats for c. 50cm into rock. Despite facing upwards cavity noted to be dry and has some protection from precipitation ingress due to rock above x2 pipistrelle observed in exactly same locations on 02/11/2017.
 Both bats considered to be common pipistrelle from analysis of endoscope and camera photographs.
 Bat closest to surface of rock face on 02/11/2017 c. 1 cm from surface of rock in warm sunlight (ref. annotation 4); night temperatures near freezing but both animals active.
 Dropping sample collected on 26/09/2017 from c. 50cm from roost location confirmed as common pipistrelle through DNA analysis.

One confirmed roost, with remainder of rock face of High BRP.



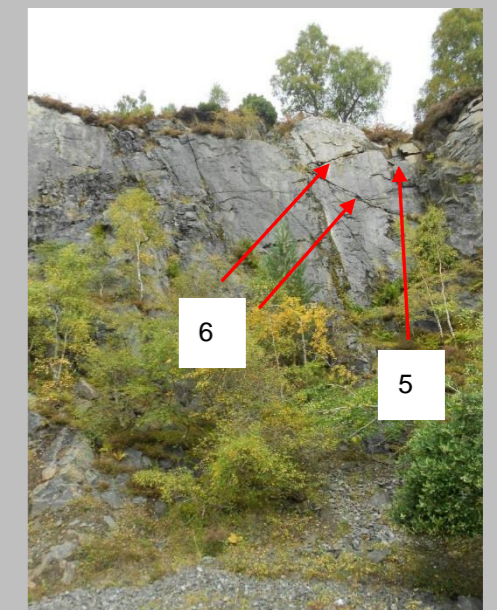


Overview of quarry with abseil references annotated



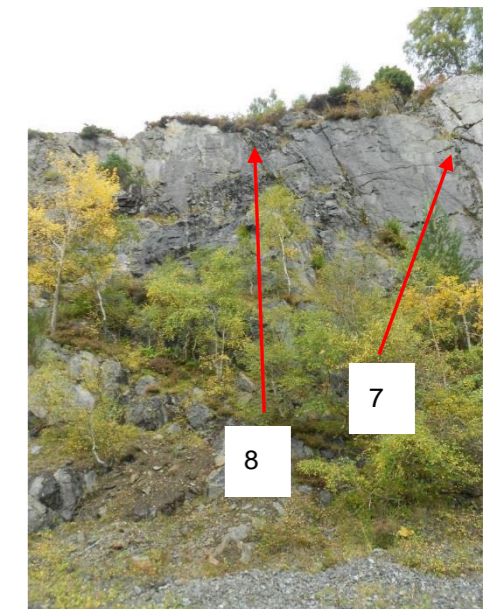
Good suitability for roosting bats in boulder outcrops in corner of quarry (ref. annotation 5) and cracks and crevices in rock from cliff top to c. 4m down face. Cracks lower down noted to be wet, often seeping water, and unsuitable for roosting bats. Large obvious cracks in main vertical headwall (ref. annotation 6) have areas of limited suitability only due to water ingress.

BRP High



Cracks in vertical section of main headwall noted to be wet and unsuitable for roosting bats (ref. annotation 7). Much of headwall noted to be blank (no cracks/crevices present). Occasional cracks of limited suitability for roosting bats amongst boulders in first 2m of face from top (ref. annotation 8).

BRP Low

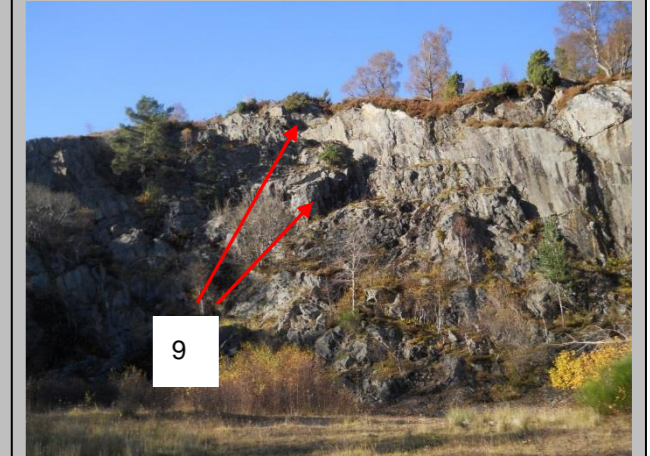




Overview of quarry with abseil references annotated

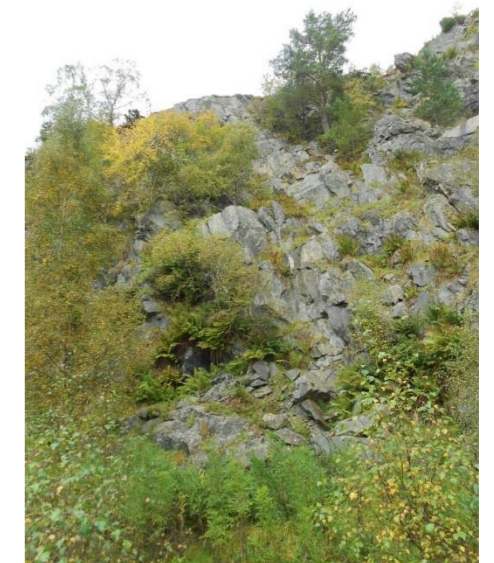
Occasional cracks of good suitability for roosting bats in quarry wall (ref. annotation 9) with some extending back into rock > 50cm.

BRP High



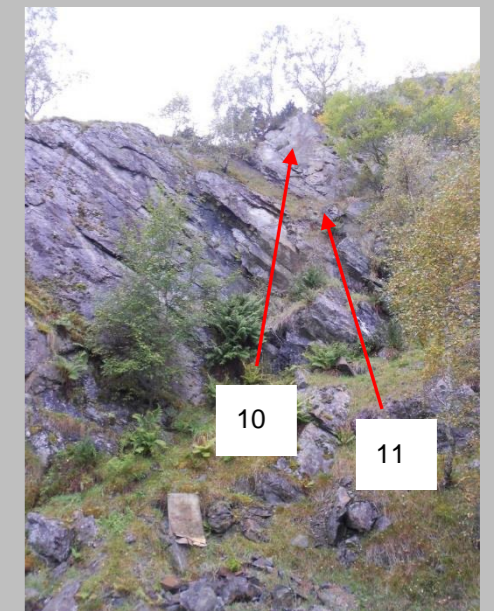
Occasional cracks of good suitability for roosting bats within top half of quarry face. Cracks noted to be dry with some extending back into rock > 50cm. Loose unstable material to north of outcrop at top of quarry.

BRP High



Occasional cracks of good suitability for roosting bats within outcrop in corner of quarry (ref. annotation 10). Large dry cavity (ref. annotation 12) extending back into rock >75cm. Beneath vegetated ramp halfway down face (ref. annotation 11), no suitability for roosting bats recorded.

BRP High



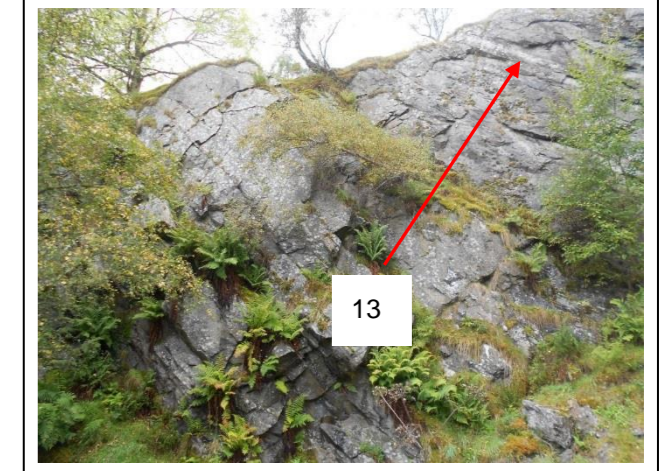


Overview of quarry with abseil references annotated



No suitability for roosting bats noted within section of predominantly featureless rock. Very shallow and wet cracks beneath layers near top of face (ref. annotation 13).

BRP Unsuitable



Roost identified (288550 810795): x3 common pipistrelle identified within cavity amongst large boulders immediately below top of face (ref. annotations 14). All animals noted to be active (ref. annotation 15). Cavity extends back into rock >40cm although all three animals located within c. 15 cm of the rock exterior.

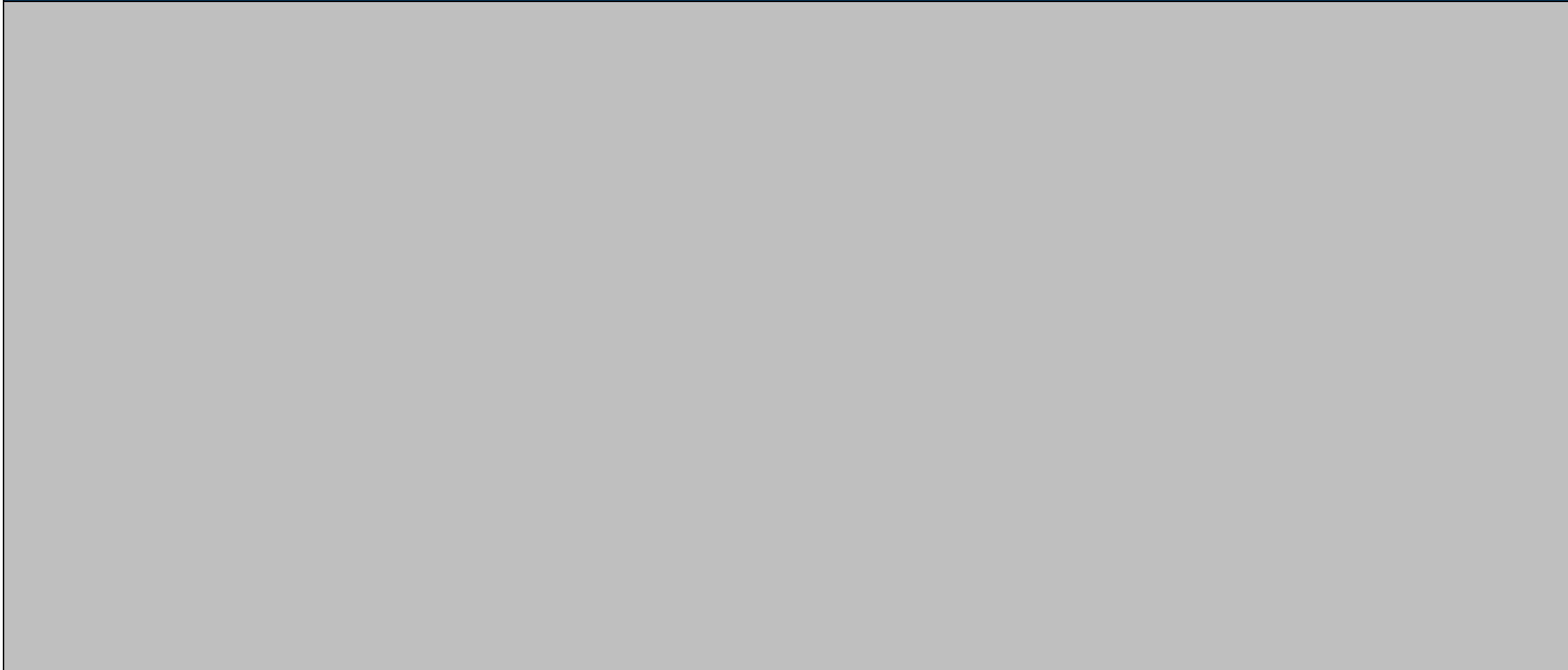
Area of cracks to east also provide good suitability for roosting bats.

One confirmed roost, with remainder of rock face of High BRP.





Overview of quarry with abseil references annotated


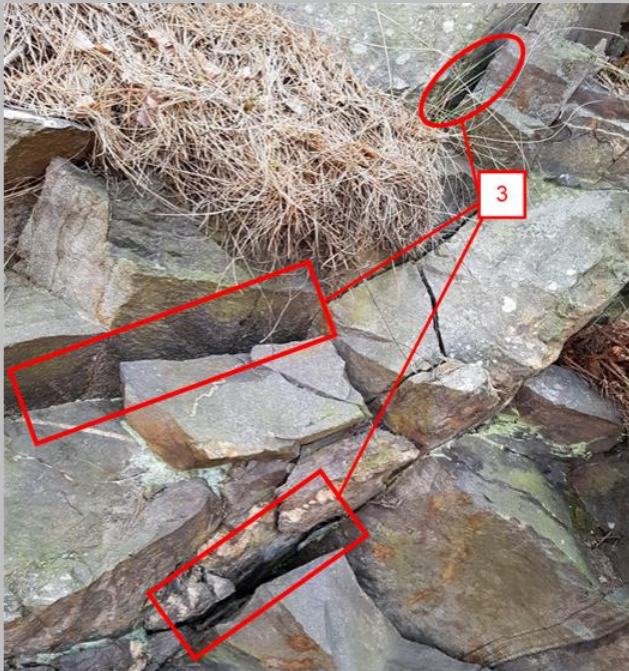


1.2.2 Rock face RF02 summary: No evidence of roosting bats was seen during the inspection of the rock face. The south end of the rock face is amongst larch trees. The majority of the features were low to the ground and had low BRP. All features not mentioned in the table below were inspected and found to have negligible BRP. All features were able to be fully inspected using a torch and/or an endoscope unless otherwise stated.








Table 1.3: Rock face RF02 inspection results

Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Cavity in between two sheets of rock, c. 25cm long and 10cm deep. Feature is low and amongst trees - Low BRP. (ref. annotation 1)</p> <p>Gap under a rock and extending into a cavity which cannot be fully inspected (ref. annotation 2). - Low BRP.</p>	
<p>A number of upward facing crevices which are dry and sheltered (ref. annotation 3). - Low BRP.</p>	






Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>A few small gaps up and under rocks on a sheer face, inaccessible on foot to inspect (ref. annotation 4).</p> <p>Moderate BRP.</p>	
<p>10m length of rock face which could only be torched from the ground. Numerous crevices and cavities between sheets of rock although they don't appear to be deep. There is lots of dead grass which in summer will cover some of the features. There are areas with water running through which will be unsuitable for bats (ref. annotation 5).</p> <p>Moderate BRP.</p>	
<p>Gaps in between rocks which extend back and cannot be fully inspected (ref. annotation 6).</p> <p>Low BRP.</p>	







Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Gap above a loose rock which extends back; feature is about 15cm long and 10cm deep (ref. annotation 7).</p> <p>Low BRP.</p>	
<p>Shallow vertical crack and gaps under rock (ref. annotation 8).</p> <p>Low BRP.</p>	







Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Crevices behind loose rocks which could house a single bat (ref. annotation 9)</p> <p>Low BRP.</p>	
<p>Crevices behind loose rocks which could house a single bat (ref. annotation 10)</p> <p>Low BRP.</p>	





Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Crevices under a rock but can't fully inspect as the feature cannot be reached from on foot (ref. annotation 11).</p> <p>Low BRP.</p>	
<p>Piles of rocks with cavities and crevices extending behind. Complex feature means it cannot be surveyed by endoscope due to the multiple directions the cavities travel in (ref. annotation 12).</p> <p>Low BRP.</p>	






Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>The upper reaches of the rock face were not accessible on foot although it was torched from the ground and no features were seen.</p> <p>Low BRP.</p>	



1.2.3 Rock Face RF04 summary: x1 dropping of pipistrelle sp. type recorded at northern end of rock face. Good suitability for roosting bats for much of length (c. 250m), although recent rockfall and very loose material at southern end. Jackdaw nests present throughout northern and central sections.

Table 1.4: Rock face RF04 inspection results

Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Northern end of rock face.</p> <p>Large crack in psammite c. 2m beneath top (ref. annotation 1). Roost identified (289068 811258) - Bat dropping of pipistrelle type within crack but not possible to recover. Large complex cavity extending into face behind crack. No bats observed through endoscope inspection.</p> <p>Large crack exposed from area of fallen psammite with complex cavity extending up c. 3m and out of sight (ref. annotation 2).</p> <p>One confirmed roost, with remainder of rock face of Moderate BRP.</p>	


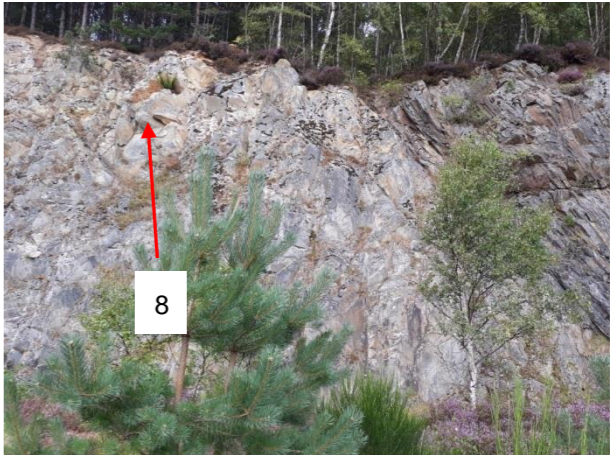





Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Northern end of rock face. Large cracks in psammite predominantly in first 3m beneath top of face, leading to complex cavities extending into face behind crack. Jackdaw nest recorded within cavity (ref. annotation 3).</p> <p>BRP High</p>	
<p>Northern end of rock face Large cavity beneath boulder at top of face: jackdaw nest recorded within cavity (ref. annotation 4). Large gaps recorded around quartzite seam in psammite (ref. annotation 5). Large cracks in psammite extending back c. >1.5m and out of sight (ref. annotation 6): no bat roost evidence observed through endoscope inspection.</p> <p>BRP High</p> <p>Photo annotation 7 illustrates example of crack in psammite with good suitability for roosting bats.</p>	


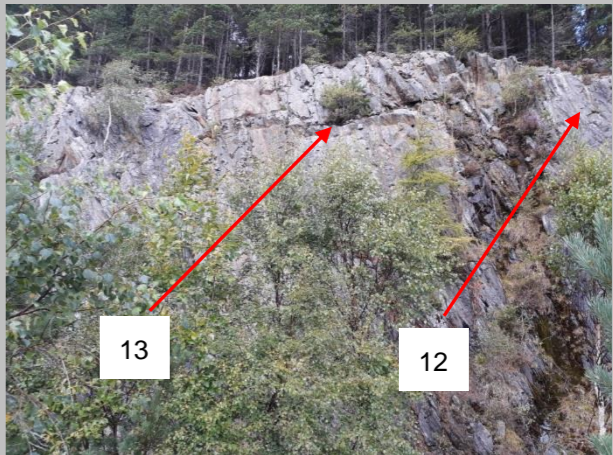





Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Northern end of rock face. Area with fewer cracks and features with bat roost potential than sections to east. Quartzite becoming more prevalent with loose material on face.</p> <p>BRP Low</p>	
<p>Northern central rock face. Very few areas of cracks providing potential bat roost features. Sections of quartzite with very loose material on face. No suitability for roosting bats noted (ref. annotation 8).</p> <p>BRP Low</p>	
<p>Northern central rock face. Section with quartzite/psammite interface (ref. annotation 9). Some limited suitability for roosting bats noted within cracks in consolidated psammite immediately south of interface; no suitability recorded in quartzite.</p> <p>BRP Low</p>	


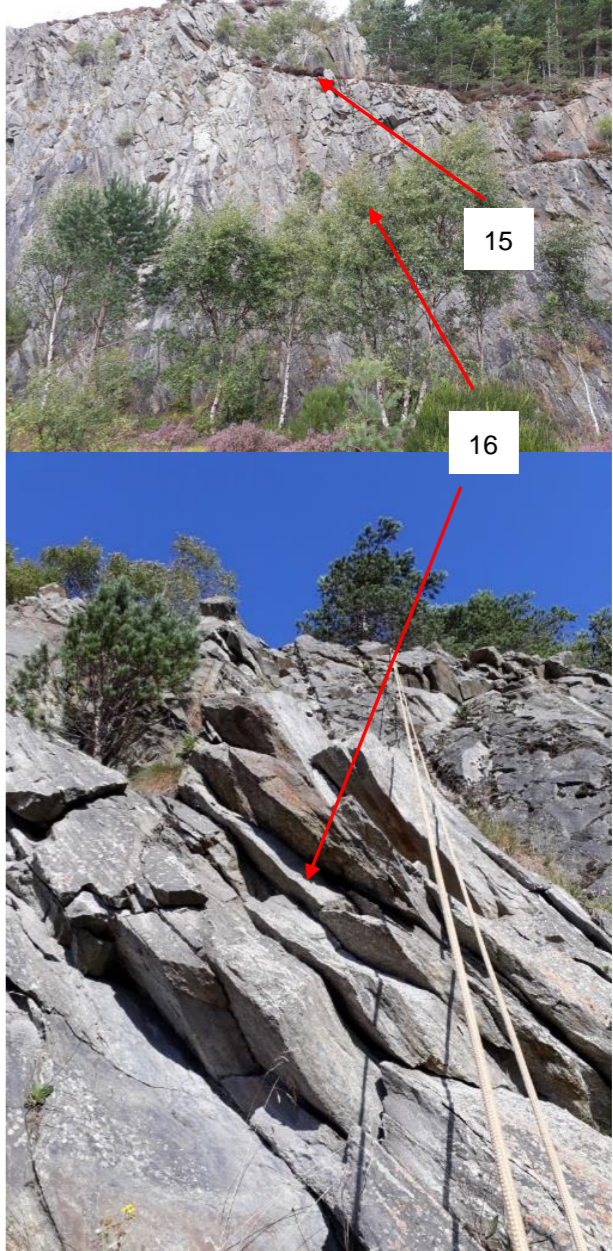




Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Northern central rock face. Crack with good suitability for roosting bats c. 3m above base of rock face (ref. annotation 10). Cavity extends up behind cleft for c. 1.2m. Other cracks above noted to be of limited suitability due to shallowness. Predominantly damp but gaps of limited suitability behind large flake c. 3m below top of rock face. Drill holes also present, again providing limited suitability for roosting bats (ref. annotation 11).</p> <p>BRP Moderate</p>	
<p>Central rock face. Occasional gaps behind psammite layers in top half of rock face provide limited suitability for roosting bats (ref. annotation 12). Large cavities behind psammite block c. 3m from top of rock face (ref. annotation 13). Cavities too large and complex to fully inspect by endoscope. Jackdaw nests present.</p> <p>BRP High</p>	
<p>Central rock face. Large cavities behind psammite blocks c. 3m from top of rock face provide good suitability for roosting bats. Jackdaw nest present.</p> <p>BRP High</p>	


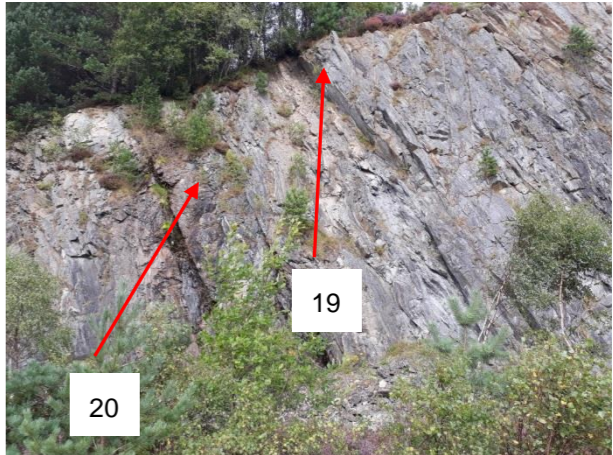





Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Central rock face. Several large cracks in psammite provide good suitability for roosting bats across length of face inspected. Drill holes (ref. annotation 14) present and as blocked at top provide suitable bat roost features.</p> <p>BRP High</p>	
<p>Central rock face. Areas of large cracks and crevices behind flakes and in strata across length of face inspected to c. 3m above foot of rock face. Large crack in top section (above vegetated ramp) provides cavity extending back > 1m (ref. annotation 15). Drill hole present lower down face and as blocked at top provides suitable bat roost feature. Several jackdaw nests present in large cavities near top of face.</p> <p>Photo annotation 16 shows detail of cracks in psammite with good suitability for roosting bats.</p> <p>BRP High</p>	







Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Southern central rock face. Areas of large cracks and crevices behind layers and outcrop provide good suitability for roosting bats (ref. annotation 17). Occasional cracks and two drill holes provide suitable bat roost features on fairly blank main face to south of rib (ref. annotation 18). Jackdaw nests present in large cavities near top of face.</p> <p>BRP High</p>	
<p>Southern central rock face. Cracks of limited suitability for roosting bats near top of face (ref. annotation 19). Drill hole present near top of face and as blocked at top provides suitable bat roost feature. Lower down (lower two thirds) consisted of very loose material with no suitability for roosting bats. Section for c. 7m to south has recent rockfall and very loose material: no suitability for roosting bats (ref. annotation 20).</p> <p>BRP Low</p>	
<p>Southern end rock face. Section has recent rockfall and very loose material: no suitability for roosting bats (ref. annotation 21).</p> <p>BRP Unsuitable</p>	





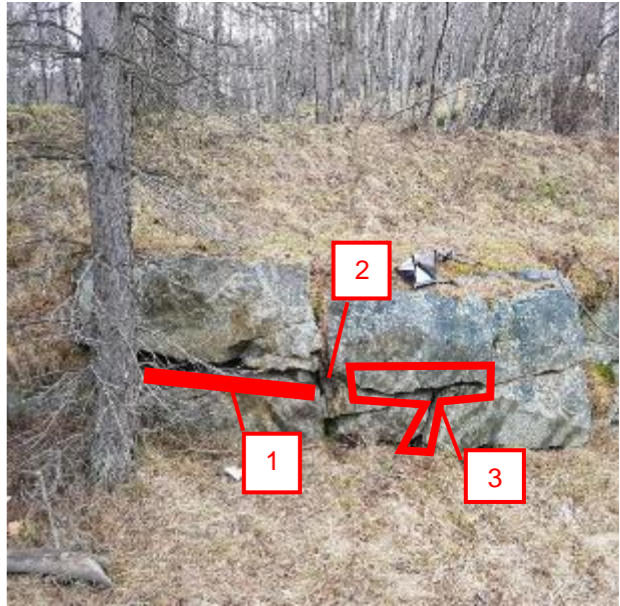
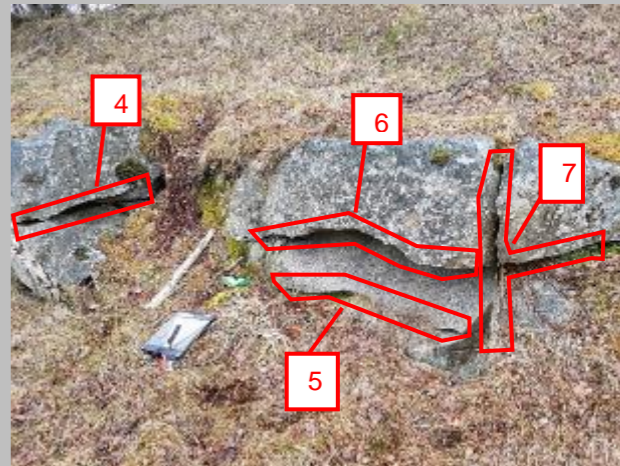
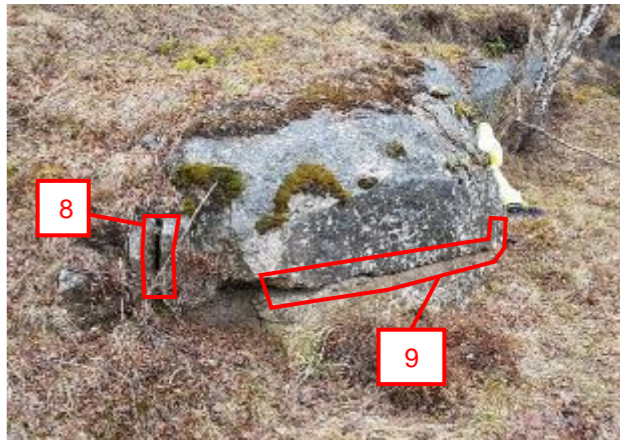
Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Southern end rock face. Section largely unsuitable for roosting bats; one small crack between bedding plane in smooth section provides very limited suitability. Section for c. 10m to south has very loose material: no suitability for roosting bats</p> <p>BRP Negligible</p>	
<p>Southern end rock face. Section largely unsuitable for roosting bats; few cracks amongst blocks at top of face provide very limited suitability. Becomes vegetated (pine, birch and gorse) at southern end of rock face.</p> <p>BRP Negligible</p>	

1.2.4 Rock face RF06 summary: No evidence of roosting bats was seen during the inspection of the rock face. Majority of features were low to the ground and may be obscured by vegetation during the active bat season. All features not mentioned below were inspected and found to have negligible BRP.



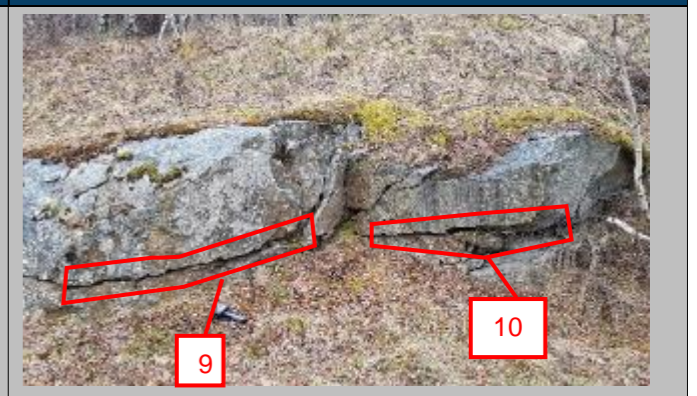

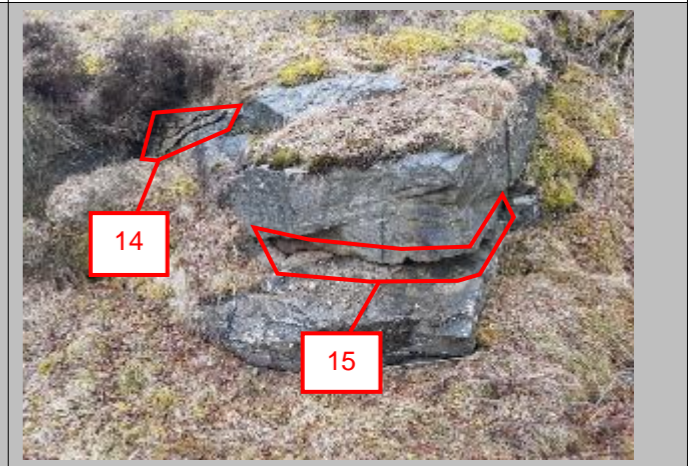
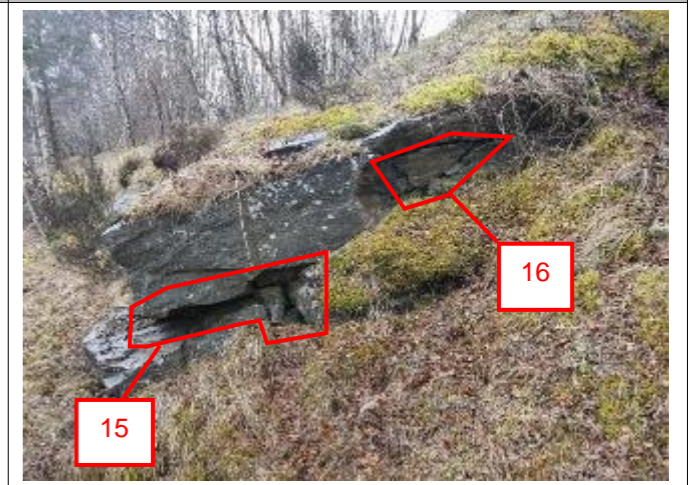


Table 1.5: Rock face RF06 inspection results

Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Large open crack can be fully inspected with a torch (ref. annotation 1) BRP Low</p> <p>Large vertical gap, extends deeper than endoscope can reach, could not be fully inspected (ref. annotation 2) BRP Moderate</p> <p>The large vertical gap could not be fully inspected. The horizontal section was not as deep and could be seen fully with a torch (ref. annotation 3) BRP Moderate</p>	
<p>Shallow crevice could be fully inspected with torch (ref. annotation 4) BRP Low</p> <p>Very shallow cracks, low to the ground (ref. annotation 5) BRP Negligible</p> <p>Shallow open crack, open to the elements (ref. annotation 6) BRP Negligible</p> <p>Crack filled with vegetation and open at the top to the elements (ref. annotation 7) BRP Negligible</p>	
<p>Vertical crack, sheltered within, extends far back into the rock face. Cannot be fully inspected with an endoscope (ref. annotation 8) BRP Moderate</p> <p>Small crack which extends around the boulder. Large enough for a roosting bat, and extends further back than can be seen with a torch. Too small to be inspected by an endoscope (ref. annotation 9). BRP Low</p>	








Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Open crevice which can be fully inspected with a torch, and seen to be more open to the elements (ref. annotation 10)</p> <p>BRP Low</p>	
<p>Small hole with vegetation all around. Can be fully inspected with a torch (ref. annotation 11)</p> <p>BRP Low</p> <p>Shallow gap with no protection from the elements (ref. annotation 12)</p> <p>BRP Negligible</p> <p>Rock overhang with a shallow open gap beneath (ref. annotation 13)</p> <p>BRP Negligible</p>	
<p>Narrow gaps that could not be fully inspected with an endoscope. Gaps have running water through them (ref. annotation 14)</p> <p>BRP Negligible</p> <p>Large horizontal gap; could not be fully inspected with an endoscope, gap narrows down towards back (ref. annotation 15)</p> <p>BRP Moderate</p>	
<p>Narrow gap extends down into the rock face. Could not be fully inspected (ref. annotation 16)</p> <p>BRP Low</p>	

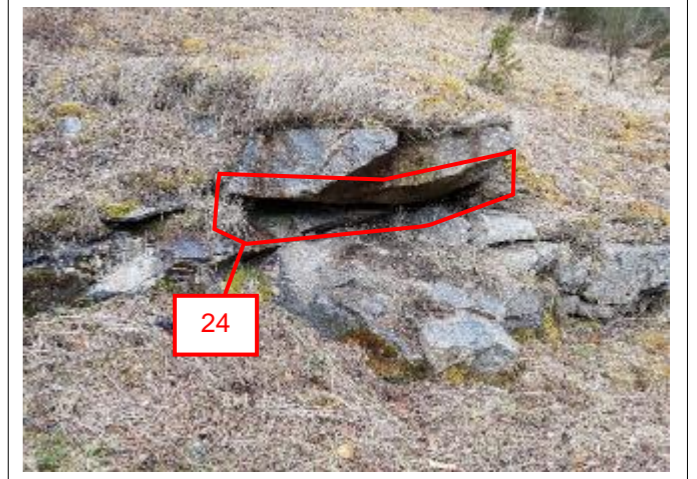






Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Small gap, narrows quickly, could be fully inspected. Small amount of vegetation within (ref. annotation 17) BRP Low</p> <p>Large crack, extends deeper into the rock and appears to open up within. Could not be fully inspected (ref. annotation 18) BRP Moderate</p> <p>Small, narrow crack which could be fully inspected (ref. annotation 19) BRP Negligible</p>	
<p>Small gaps which narrow quickly inside the rock. Could be fully inspected (ref. annotation 20) BRP Negligible</p> <p>Gap extending upwards behind the rock face. Could not be fully inspected (ref. annotation 21) BRP Low</p>	
<p>Narrow gap which is filled with bracken (ref. annotation 22) BRP Negligible</p> <p>Long narrow gap which was unable to be fully inspected in sections (ref. annotation 23) BRP Low</p>	



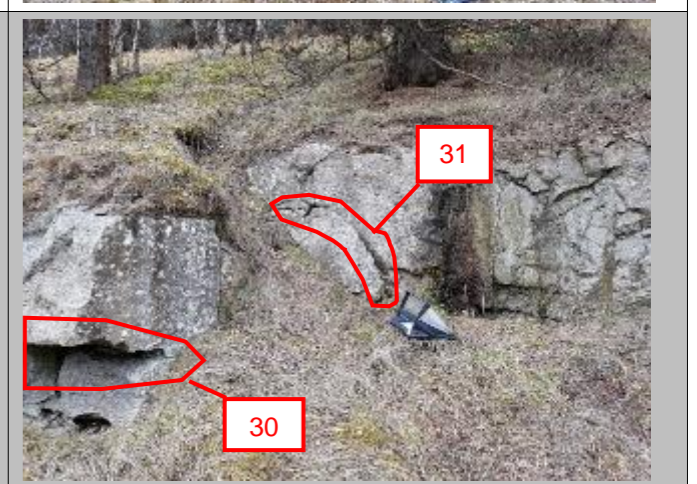




Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Very large cavity which narrows towards the back. Smaller cavities potentially present towards the back of the larger cavity. Could not be fully inspected (ref. annotation 24)</p> <p>BRP Low</p>	
<p>Opening to the left of a cavity can be fully inspected, the right section of the cavity extends back into the rock and narrows. Could not be fully inspected (ref. annotation 25)</p> <p>BRP Low</p>	
<p>Shallow cavity which was fully inspected (ref. annotation 26)</p> <p>BRP Negligible</p> <p>Large crack on the front and to the right of the rock face extending backwards. Could not be fully inspected (ref. annotation 27)</p> <p>BRP Moderate</p>	


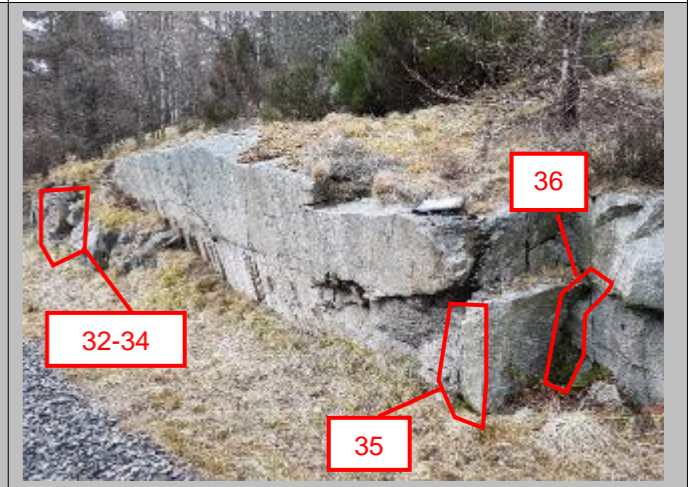
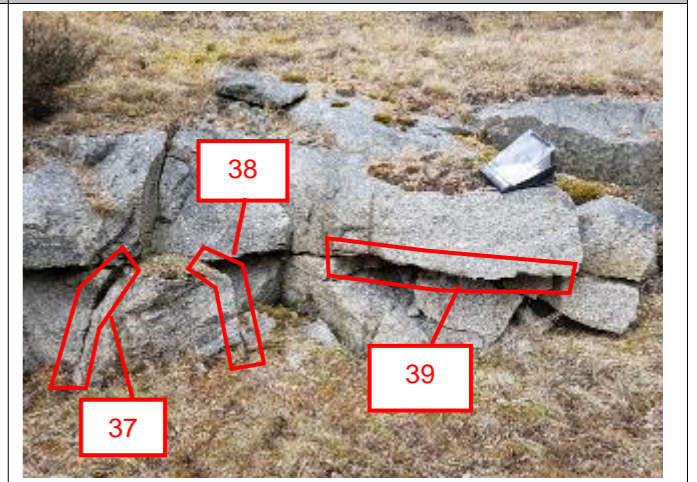




Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Shallow gap narrows quickly, could not be fully inspected (ref. annotation 28)</p> <p>BRP Low</p>	
<p>Narrow gap behind the rock face, extending inwards from the side. Could not be fully inspected (ref. annotation 29)</p> <p>BRP Low</p> <p>Large gap which narrows as it extends backwards. Dry and sheltered gap. Could not be fully inspected (ref. annotation 30)</p> <p>BRP Low</p>	
<p>Gap behind the rock which narrows towards the back. Could be fully inspected (ref. annotation 31)</p> <p>BRP Low</p>	

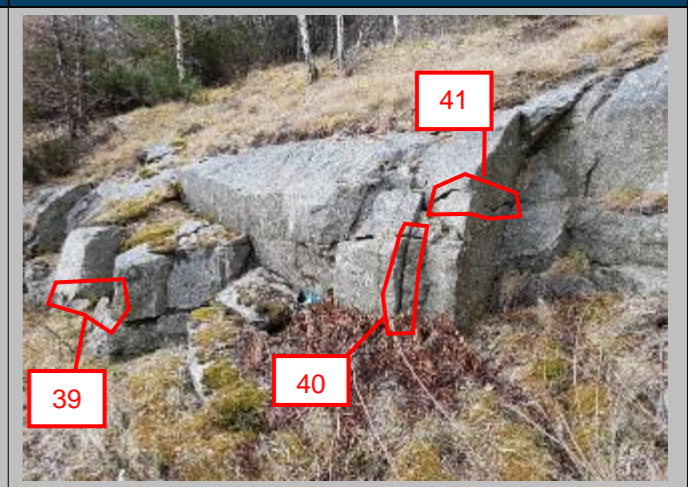
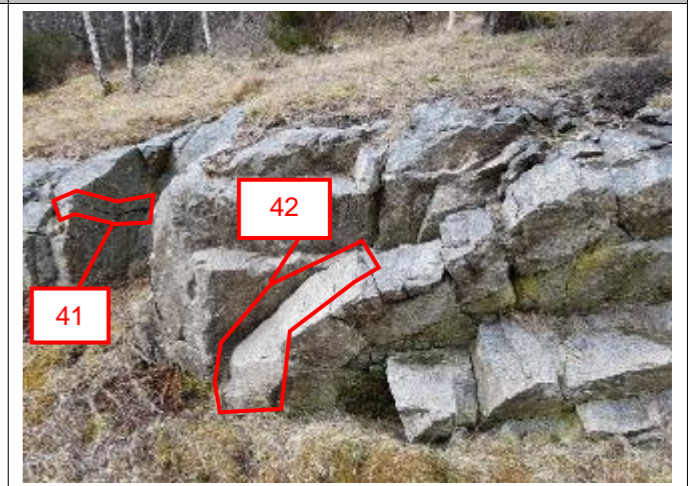
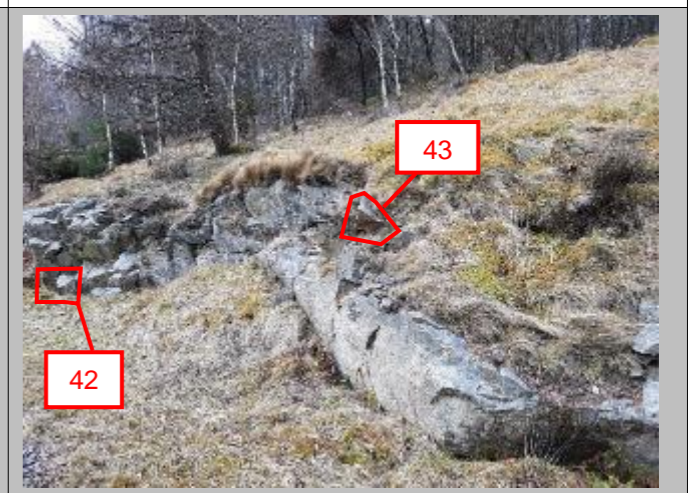




Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Narrow, vertical gap extending backwards. Could not be fully inspected (ref. annotation 32) BRP Low</p> <p>Small cavity, fully inspected (ref. annotation 33) BRP Low</p> <p>Narrow cavity, fully inspected (ref. annotation 34) BRP Low</p>	
<p>Narrow, vertical crack extending backwards into rock face. Could not be fully inspected (ref. annotation 35) BRP Low</p> <p>Crack which extends backwards to the left of the feature and opens up vertically. Could not be fully inspected (ref. annotation 36) BRP Moderate</p>	
<p>Narrow, vertical crack, could not be fully inspected (ref. annotation 37) BRP Low</p> <p>Large, vertical crack which narrows as it extends back. Could not be fully inspected (ref. annotation 38) BRP Moderate</p> <p>Ridge with gap underneath, could not be fully inspected (ref. annotation 39) BRP Low</p>	


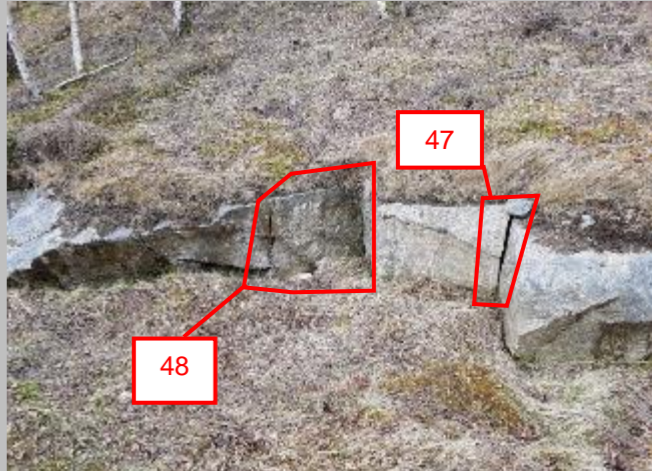




Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Vertical crack which narrows as it extends backwards. Could be fully inspected (ref. annotation 40) BRP Low</p> <p>Horizontal crack extends backwards to the right. Could not be fully inspected (ref. annotation 41) BRP Moderate</p>	
<p>Large, slanting cervices. Open to the elements. Could be fully inspected (ref. annotation 42) BRP Negligible</p>	
<p>Small hole, could be fully inspected (ref. annotation 43) BRP Low</p>	





Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Vertical cavity, extends backward and narrows, extends downwards. Could not be fully inspected (ref. annotation 44) BRP Low</p> <p>Vertical cavity, extends backward and narrows, extends downwards. Could not be fully inspected (ref. annotation 45) BRP Low</p> <p>Vertical cavity, extends backward and narrows, extends downwards. Could not be fully inspected (ref. annotation 46) BRP Low</p>	
<p>Vertical cavity, extends backwards and narrows. Could not be fully inspected (ref. annotation 47) BRP Moderate</p> <p>Two shallow cavities, could be fully inspected (ref. annotation 48) BRP Negligible</p>	

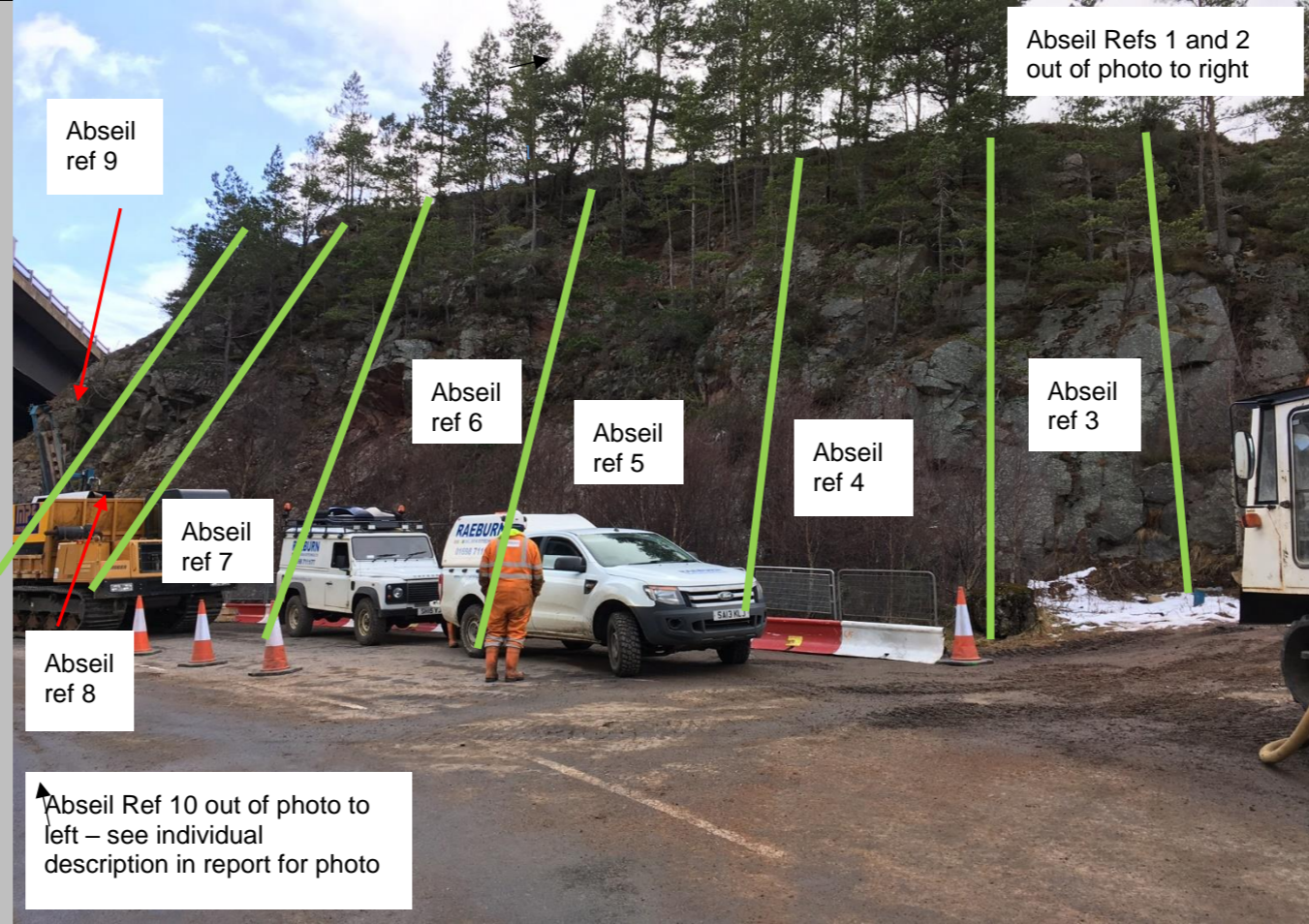
1.2.5 Rock face RF08 and RF12 summary: No bats present at the time of survey and no droppings identified. The majority of abseil sections identified only low or moderate potential for roosting bats with a general lack of suitable features present. However, better suitability was identified towards the northern end of the rock face (abseil refs 9 and 10) where some sections with moderate to high potential were noted. Generally, the rock face in this area is more exposed and less sheltered by trees and vegetation.





Table 1.6: Rock faces RF08 & RF12 inspection results

Overview of rock face with abseil references annotated	
<p>Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)</p>	<p>Photograph</p>





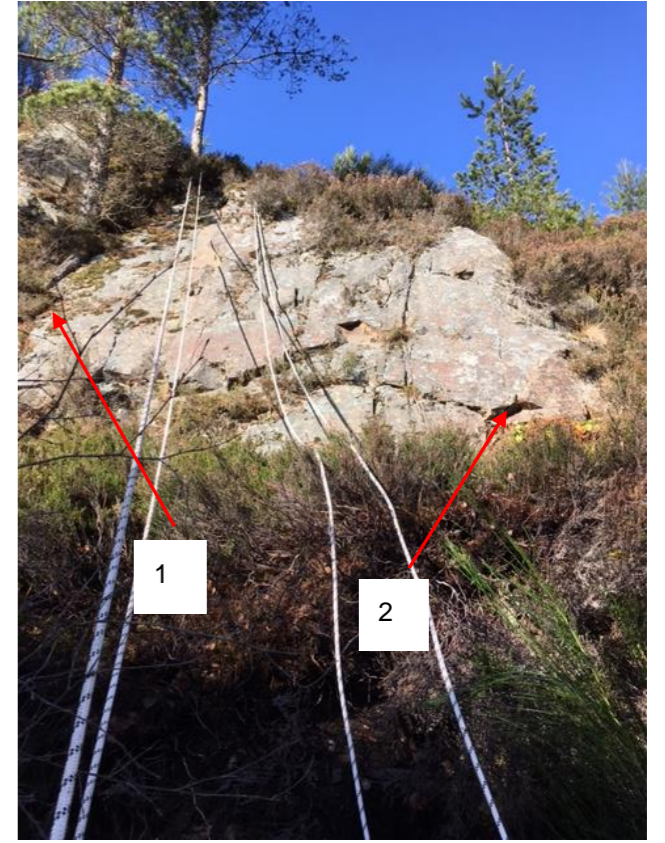
Overview of rock face with abseil references annotated

Far southern end of rock face consisting of small slabs amongst heather slope. No evidence of roosting bats and only two suitable crevices:

Ref. annotation 1 - Entrance c.10cm extending c. 10cm behind rock, one drill hole also present providing limited suitability for roosting bats.

Ref. annotation 2 – Diagonal shallow split in face of rock. Entrance partially upwards facing but suitable. Cavity c. 40cm in length, 2cm width and extending 10cm into rock.

BRP Low.

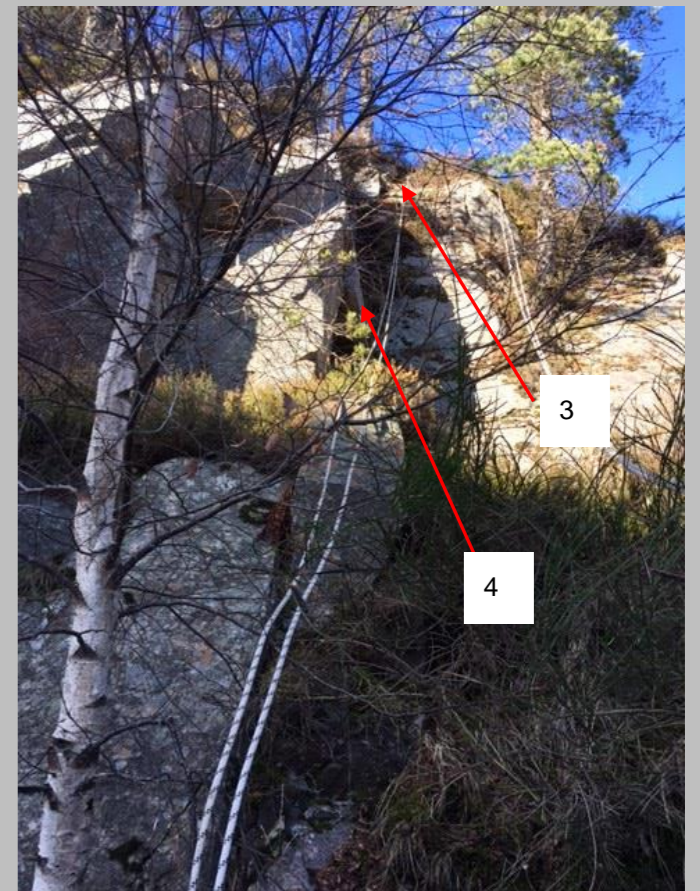


Occasional cracks in rock from cliff top all way down face but only two noted to provide roost suitability. No evidence of bats.

Ref. annotation 3 - Good crevice just below Scots pine to right of photo. Entrance c. 30cm width and 2cm height, at side of rock extending in approx 1m and beyond the view of the torch and endoscope. Clean inside and no evidence of roosting bats recorded.

Ref. annotation 4 – Horizontal split in slab. Very dirty inside but provides suitable bat roost feature. Entrance c. 1.5m wide extending c. 20cm into rock.

BRP Moderate





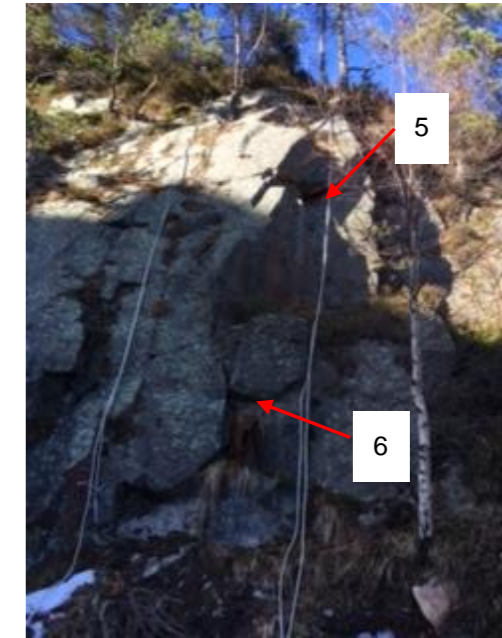
Overview of rock face with abseil references annotated

Two suitable bat roost features noted. No signs of droppings and no bats present.

Ref. annotation 5 – Horizontal crack under overhang c. 30cm in length but only suitable in small sections and only for low/single numbers of bats (1-3 max). Entrance height c.1.5 to 2cm.

Ref. annotation 6 – Lower vertical crack c. 2.5m from ground. Crack width 2cm by c. 30cm, extending 10-15cm into rock. Clean but no evidence of roosting bats identified.

BRP Moderate



Two suitable bat roost features noted. No signs of droppings and no bats present.

Ref. annotation 7 – Crevice under rock slab with good bat roost suitability (see photos below annotated image). Crevice c. 15cm wide with entrance 2-3cm height, extending c.15cm into rock.

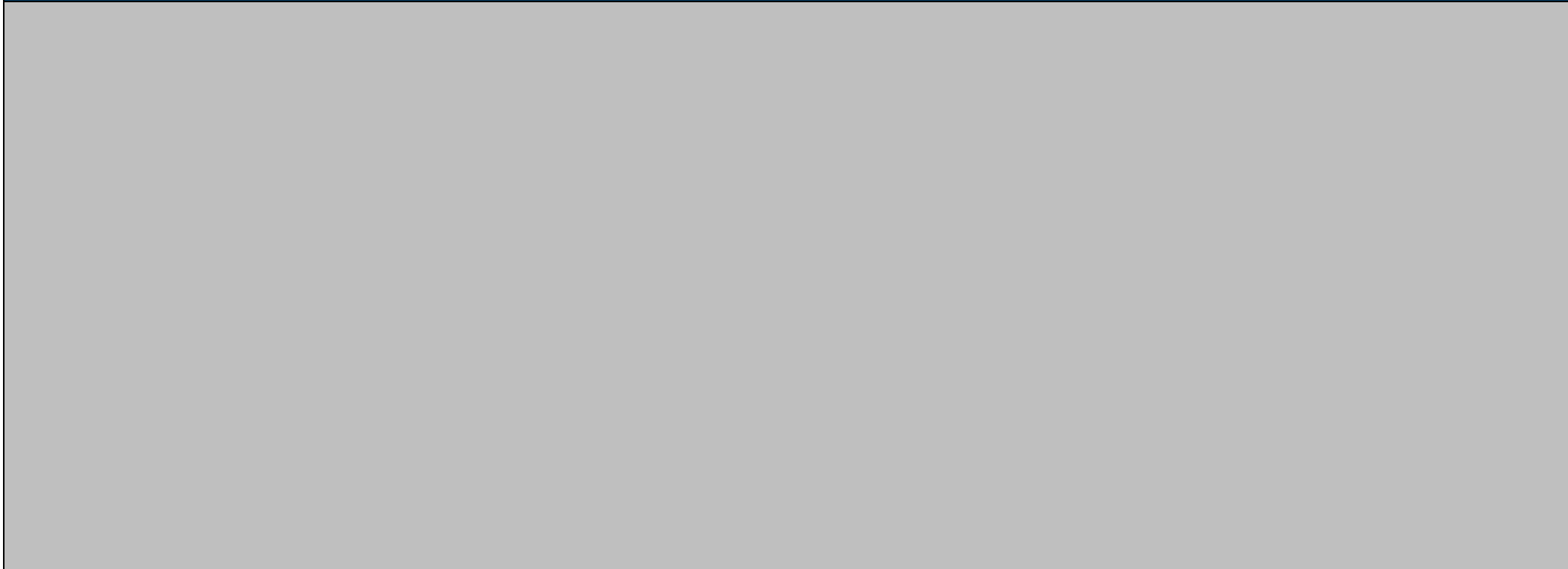
Ref. annotation 8 – Series of shallow cracks in lower section of rock. Low roosting potential and no evidence of roosting bats recorded.

BRP High





Overview of rock face with abseil references annotated



Section of very low suitability for roosting bats due to an almost complete lack of crevices in larger slabs forming middle and lower section of slope.

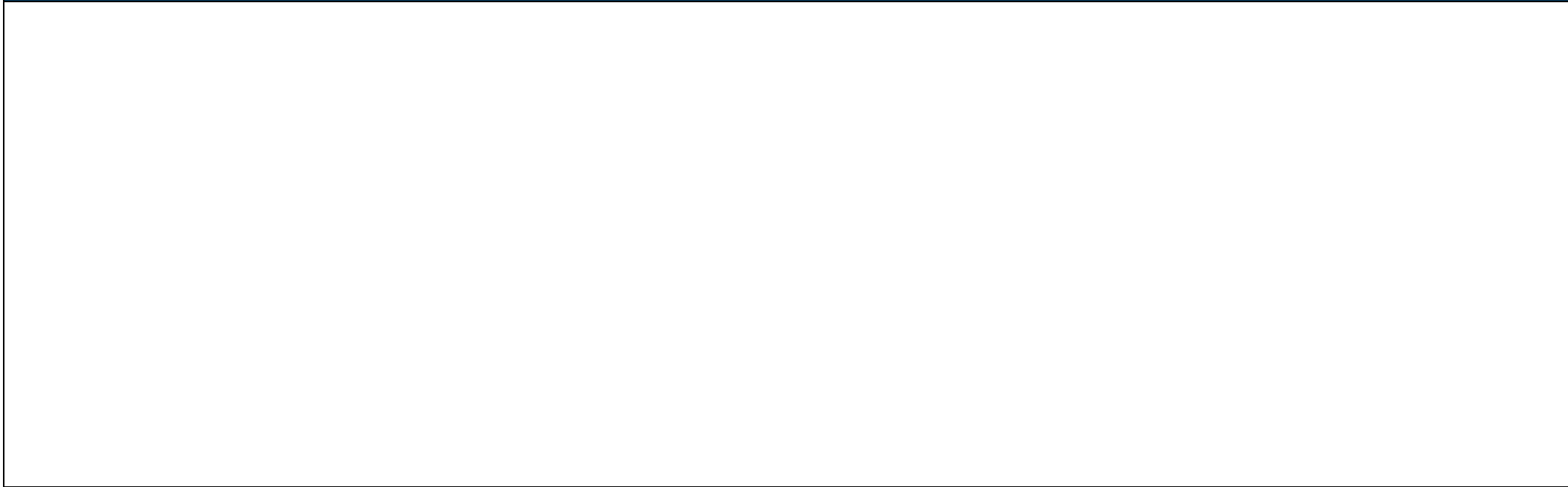
One suitable crevice identified in upper section, just below treeline. Feature vertical and extending c. 10cm into rock. Entrance c. 15cm x 2cm (ref. annotation 9).

BRP Low





Overview of rock face with abseil references annotated



No suitable bat roost features identified.

BRP Unsuitable

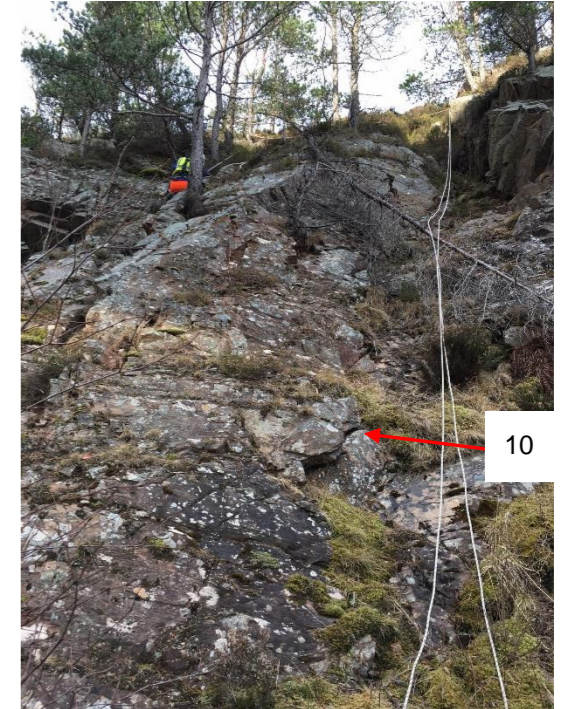




Overview of rock face with abseil references annotated

Gully section of rock face between two slabbed overhang sections. Loose rock prevalent. One suitable bat roost feature identified near the base:
 Ref. annotation 10- Suitable crevice for roosting bats under rock slab c. 3 m above base of rock face. Feature c. 40cm in length, extending c. 25cm into rock with an entrance 5cm high. No evidence of bats but the feature was clear and free of debris.

BRP Moderate



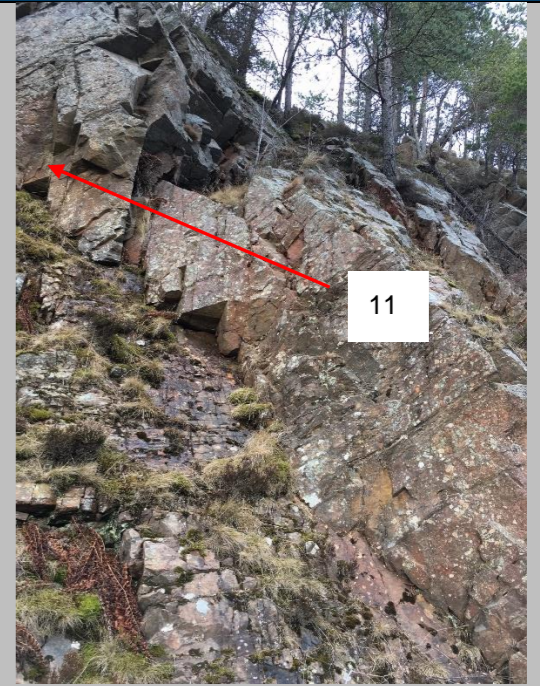
Section to left (north) of the gully abseil. Features with high suitability for roosting bats in section but no bats or droppings identified.
 Ref. annotation 11 – Large, horizontal crack with soil base. Entrance over a metre wide and 2-5cm in height. Crevice extends over a metre and beyond endoscope reach.
 Ref. annotation 12- Vertical crack close to feature 1. Moderate suitability for small numbers of bats. Entrance c. 30cm in length (height) and 2-3cm in width. Extending c. 10 to 15cm into rock.
 Ref. annotation 13 – Additional 1 small crevice. Suitability for one or two bats only. Entrance c. 10cm by 2-3cm extending c.10cm into rock.

BRP High





Overview of rock face with abseil references annotated





Overview of rock face with abseil references annotated

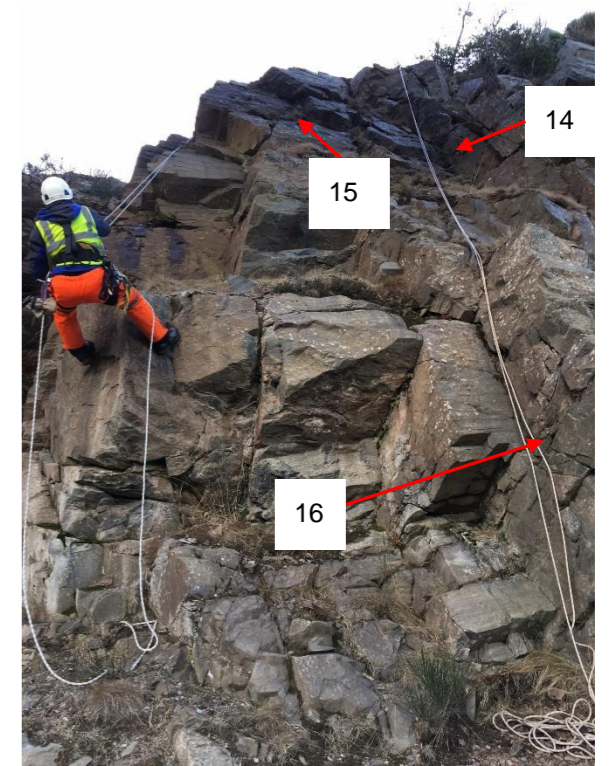
Section over overhang on corner of rock face (far left of summary photograph). Numerous small shallow crevices throughout of low bat roost suitability. Features of note outlined below:

Ref. annotation 14 – Split behind rock slab extending 30-40cm into rock provides good suitable bat roost feature. Entrance c. 40cm in length and 2-3cm height. Cavity clear of debris but no evidence of roosting bats identified.

Ref. annotation 15 – Small cavity c.10 x 10cm between two rock slabs with narrow entrance c.1.5-2cm. Suitable for low/single numbers of bats.

Ref. annotation 16 – Crevice c. 3m above base of rock face provides good suitable bat roost feature extending c. 15cm down into rock. No evidence of bats but cavity clear of debris.

BRP High



Section covering corner of rock face almost directly beneath A9 road bridge. Large vertical cracks present at the top section to the left of the corner provide excellent suitability for roosting bats. The large slab of rock to the right provides few small shallow cracks of limited suitability for roosting bats and no features considered worth detailing.

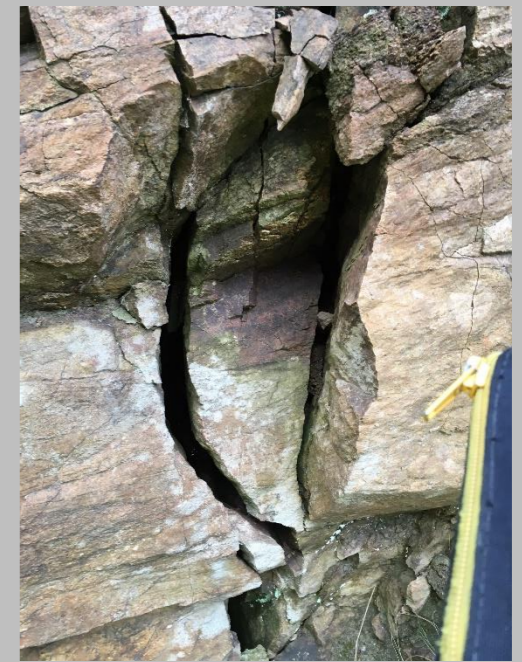
Ref. annotation 17 – Slab containing vertical cracks which extend deep into rock. Crevices c. 1m high with entrances (c. 5cm) leading to internal cavities. No evidence of roosting bats identified.

BRP High





Overview of rock face with abseil references annotated

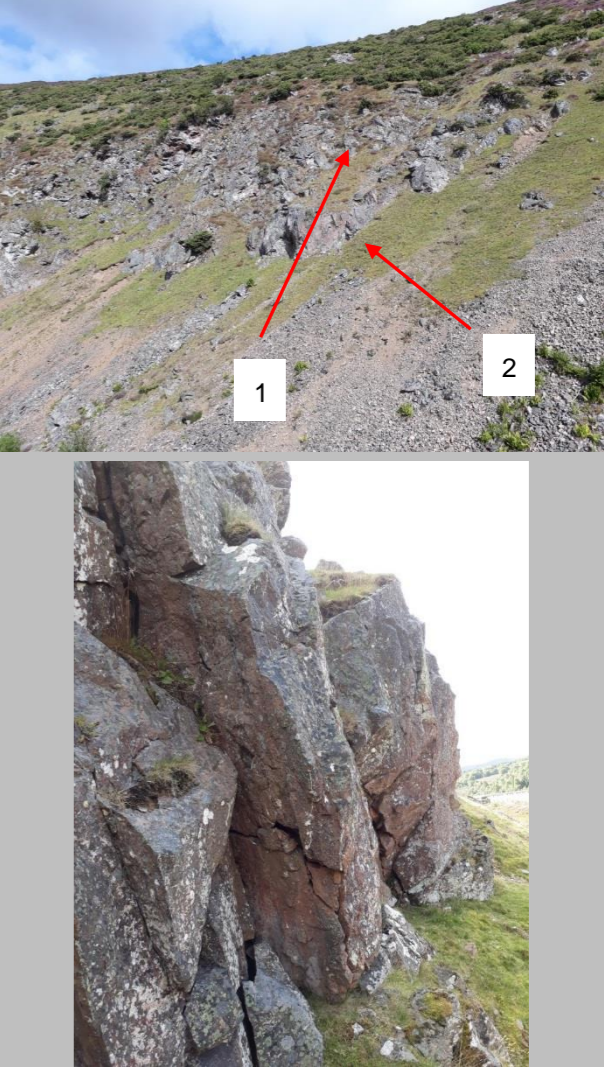



1.2.6 Rock Face RF10 summary: x 1 dropping recorded within upper cave at northwest end of RF10. Confirmed through DNA analysis as Natterer's bat. Distinct areas of bat roost suitability generally confined to steeper ground. One section with large overhang not possible to survey as composed of very unstable material.



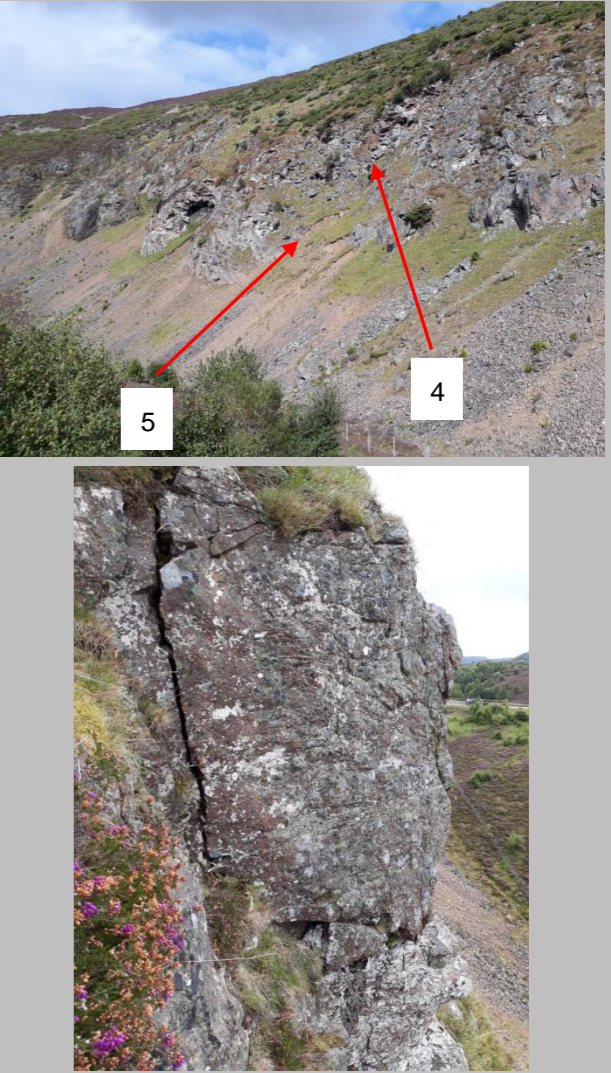



Table 1.7: Rock face RF10 inspection results

Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Occasional areas of cracks in foliated psammite/semi-pelite beds and overhang formations provide suitable bat roost features (ref. annotation 1). Good suitability for roosting bats in outcrop at southern end at base of steep ground. Cavities extending >1.5m into rock from crack (ref. annotation 2).</p> <p>BRP High</p>	
<p>Vegetated overhang largely unsuitable for roosting bats due to lack of suitable cavities/cracks: occasional shallow cracks provide limited suitability (ref. annotation 3). Section for c. 9m to north composed of unconsolidated material/loose rock with no suitability for roosting bats present.</p> <p>BRP Low</p>	





Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Occasional cracks amongst boulders in overhang section provide limited suitability for roosting bats; cavities generally shallow and extend back < 0.3m (ref. annotation 4). Two large cracks behind very large outcrop provide good suitability for roosting bats with large dry cavities extending into rock for > 0.75m (ref. annotation 5).</p> <p>BRP High</p>	
<p>Large overhang section between buttresses. Survey access not possible as considered too dangerous through prevalence of very loose material. Good suitability for roosting bats with cracks and cavities amongst blocks of rock and into overhang when viewed from ground level and from adjacent abseils.</p> <p>BRP High</p>	

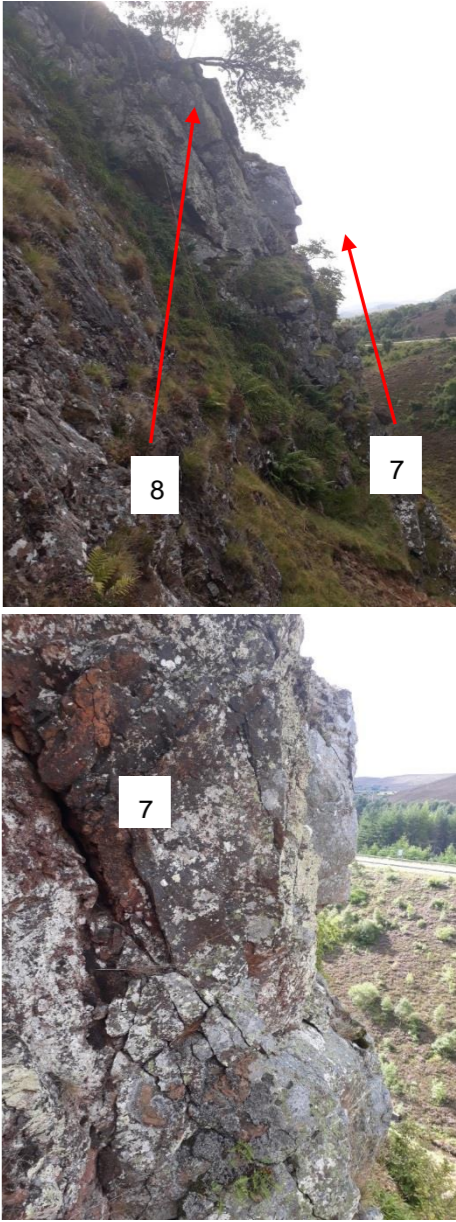





Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Buttress to north of unsurveyed overhang section. Good suitability for roosting bats amongst boulder outcrops (ref. annotation 6). Several cavities noted to extend > 0.5m into rock.</p> <p>BRP High</p>	



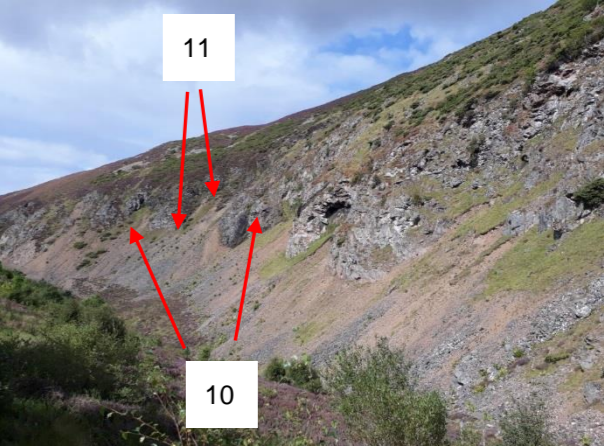




Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>North side of buttness to north of unsurveyed overhang section (area of soldier's head). Good suitability for roosting bats in area of soldier's head and to north with several cavities noted to extend > 0.5m into rock (ref. annotation 7). Limited suitability to north in area around rowan and aspen (ref. annotation 8).</p> <p>BRP High</p>	
<p>Wet flushy section of shallower gradient with no suitability for roosting bats noted.</p> <p>BRP Unsuitable</p>	






Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Good suitability for roosting bats in cracks in outcrop area around rowan and aspen (ref. annotation 9). Cracks in surrounding outcrop sections (including beneath suitable outcrop) noted to be wet and often running with water.</p> <p>BRP Moderate</p>	
<p>Wet section of shallower gradient with no suitability for roosting bats noted.</p> <p>BRP Unsuitable</p>	
<p>Section at northern end with generally shallower gradient than sections to south. No suitability for roosting bats noted (ref. annotation 10) except for two small caves (ref. annotation 11 for locations).</p> <p>Lower cave extends back c. 4m and is 1.5m wide and 1m high (ref. annotation 12). Few crevices present but suitable for roosting bats.</p> <p>Upper cave extends back c. 4.5m and is 1m wide and 2.5m high (ref. annotation 13). Good suitability for roosting bats within internal cracks and crevices. Roost identified (284002 825265). Dropping found toward back of cave beneath crevice: confirmed as Natterer's bat through DNA analysis.</p> <p>One roost confirmed, remainder of rock face of High BRP.</p>	





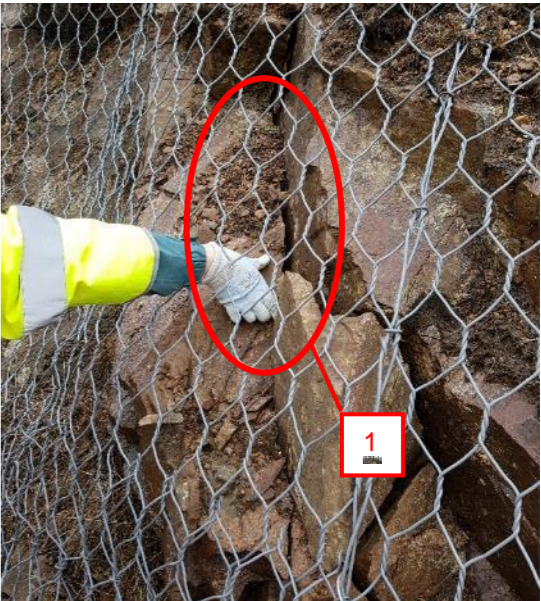

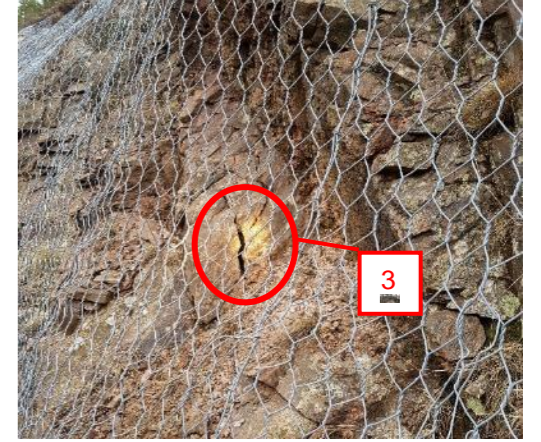
Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
	

1.2.7 Rock face RF13 summary: No evidence of roosting bats was seen during the inspection of the rock face, in the areas which could be reached. The entire rock face is netted to prevent rock falls but this restricted access to the rock meant that many features could not be reached to inspect using a torch or endoscope. The rock face is low at the north and south ends (c. 3m) but is very high in the centre (c. 15m) and would require survey by rope.








Table 1.8: Rock face RF13 inspection results

Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Crack between rocks (ref. annotation 1), open at top but extends deep into rock. Around 1m from ground level.</p> <p>BRP Low</p>	
<p>Hole between rocks (ref. annotation 2), extending back. About 1.5m above ground level in rock face -</p> <p>BRP Low</p>	
<p>Crack extending in to the rock and upwards, unable to be inspected internally so depth of crack indeterminable (ref. annotation 3).</p> <p>BRP Low</p>	


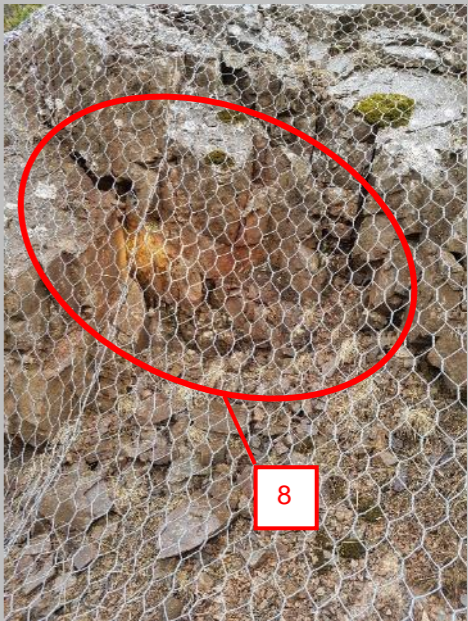





Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Crevice leading under rocks, 1.5m above ground level (ref. annotation 4).</p> <p>BRP Low</p>	 A photograph showing a crevice leading under rocks, 1.5m above ground level. A red circle highlights a specific feature, and a red box with the number '4' is connected to it by a line.
<p>Crevice at the side of and under rocks, 1.5m above ground level (ref. annotation 5) –</p> <p>BRP Low</p>	 A photograph showing a crevice at the side of and under rocks, 1.5m above ground level. A red circle highlights a specific feature, and a red box with the number '5' is connected to it by a line.
<p>Cavity and gaps around the sides of the rocks (ref. annotation 6).</p> <p>BRP Low</p>	 A photograph showing a cavity and gaps around the sides of the rocks. A red circle highlights a specific feature, and a red box with the number '6' is connected to it by a line.

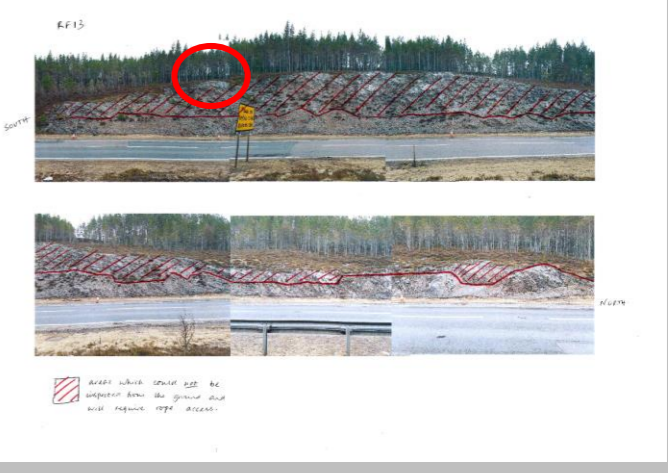




Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Vertical crack in recessed area of rock (ref. annotation 7).</p> <p>BRP Moderate</p>	
<p>Area with many cracks (ref. annotation 8).</p> <p>BRP Low</p>	
<p>Slightly steeper section of outcrop at top of slope with occasional shallow (<20cm) cracks. Material beneath rock mesh noted to be extremely unstable (ref. annotation 9).</p> <p>BRP Low</p>	






Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Rope access summary: Hatched area as shown in photograph subject to rope access inspection. One section noted to provide Low BRP as indicated in photo annotation 9. Entirety of remainder of rock slope considered to provide no suitability for roosting bats. Material noted to be very unstable beneath rock mesh and likely to be mobile.</p>	

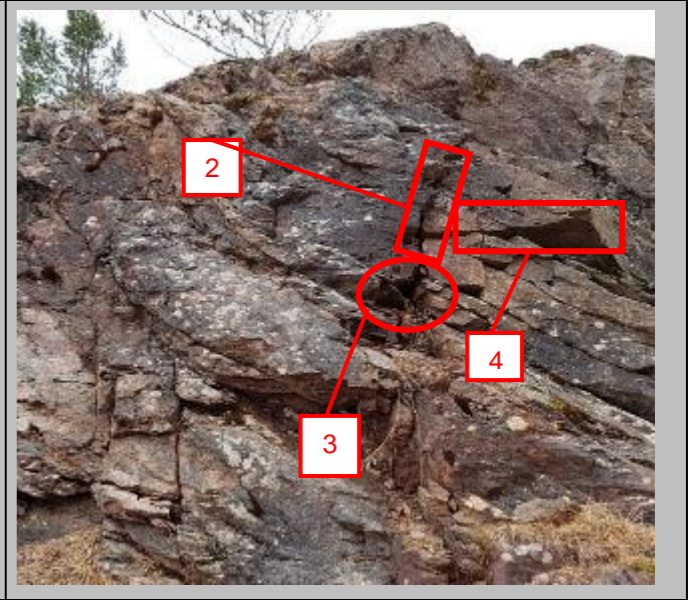


1.2.8 Rock face RF14 summary: No evidence of roosting bats was seen during the inspection of the rock face. The majority of features were shallow and of low bat roost potential (BRP); many were low to the ground and likely to be obscured by vegetation during the active bat season. Any features not detailed in the table below were inspected and found to have negligible BRP. All features were able to be fully inspected unless otherwise specified.

Table 1.9: Rock face RF14 inspection results

Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Recess under sheet of rock. Extends back about 15cm. The feature is dry but low to the ground (ref. annotation 1). BRP Low</p>	








Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Vertical crack; at the top it extends about 10cm then narrows towards the back (ref. annotation 2) – Low BRP.</p> <p>Feature 3 is beneath feature 2 and is a larger crack with ferns at the entrance. With summer plant growth the crack may be covered. The feature narrows after about 10cm (ref. annotation 3) – Low BRP.</p> <p>Adjacent to feature 2. A horizontal crack/gap extending back about 15cm (ref. annotation 4) – Low BRP.</p>	
<p>A deeper gap between two rocks. The feature extends back about 25cm and is approximately 8cm high. The gap can be fully viewed. Partially covered by moss/heather (ref. annotation 5) – Low BRP.</p>	
<p>Vertical crack in rock which is dry inside. Quite a tight gap but potentially room for one bat to squeeze in (ref. annotation 6).</p> <p>BRP Low</p>	


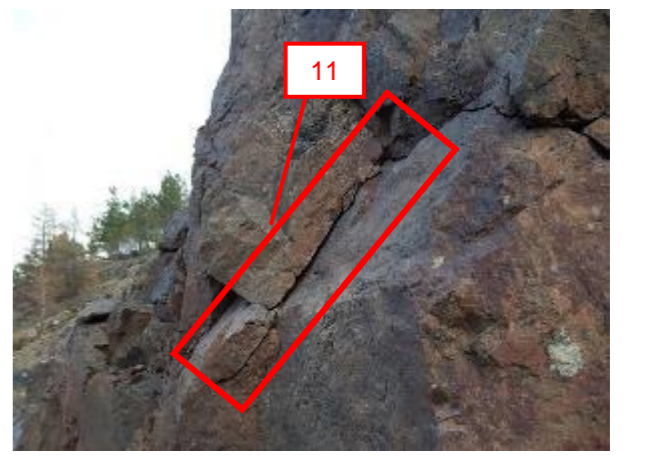





Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Crevice underneath a small outcrop of rock. The feature is very close to the ground and partially covered with heather, larch saplings and grass (ref. annotation 7)</p> <p>BRP Low</p>	
<p>Complicated crevice which extends in various directions into the rock. Cannot be fully inspected with the endoscope due to the complexity of the feature (ref. annotation 8).</p> <p>BRP Moderate</p>	
<p>Vertical crevice between rocks, it narrows towards the back of the feature. It is around 15cm high, although the lower part is obscured by grass (ref. annotation 9).</p> <p>BRP Low</p>	








Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Crevice under loose rock which extends about 15cm but is narrow and filled with small stones (ref. annotation 10).</p> <p>BRP Low</p>	 A photograph showing a close-up of a rock surface. A narrow crevice is visible, partially filled with small stones. A red box highlights the crevice, and a red line connects it to a white box with the number '10'.
<p>Shallow crevice between two rocks (ref. annotation 11).</p> <p>BRP Low</p>	 A photograph showing a shallow crevice between two large rocks. A red box highlights the crevice, and a red line connects it to a white box with the number '11'.
<p>Crevice between rocks; it is open at the top which would allow water ingress although may be suitable on drier days (ref. annotation 12). –</p> <p>BRP Low</p>	 A photograph showing a crevice between two large rocks. The crevice is open at the top. A red box highlights the crevice, and a red line connects it to a white box with the number '12'.








Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Vertical crack between rocks, extends from ground level up to about 20cm high. It narrows inside (ref. annotation 13).</p> <p>BRP Low</p>	
<p>Horizontal crack about 20cm from the ground. It is only c. 5-10cm in depth but would offer a degree of protection (ref. annotation 14).</p> <p>BRP Low</p>	
<p>Small hole in between rocks, c.5cm tall and 5cm deep (ref. annotation 15) –</p> <p>BRP Low</p>	


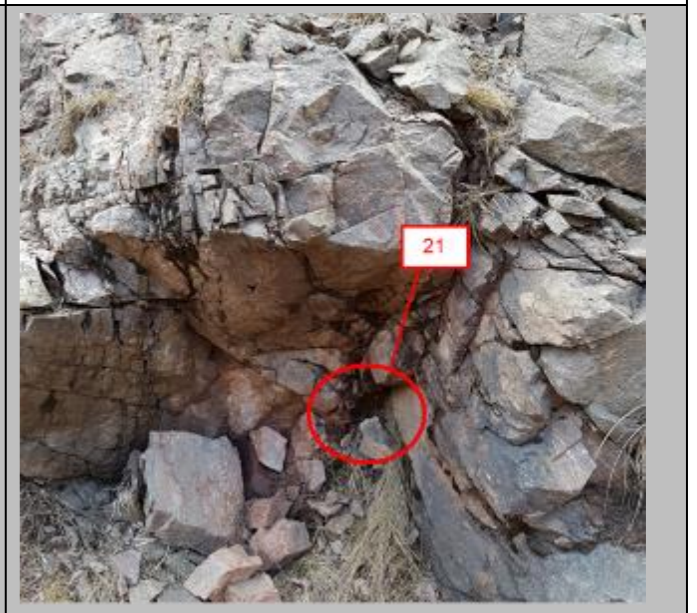




Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Diagonal seam between two rocks. May have water ingress from above during rainfall but at time of survey was dry. Length of feature is c. 60cm, width (ref. annotation 16) BRP Moderate</p> <p>Vertical zig zag crack in rock, doesn't extend very deep into the rock (ref. annotation 17). BRP Low</p>	
<p>Crevices around and under rock which only extend a short distance back (ref. annotation 18). BRP Low</p>	
<p>Crevice behind rock where rock has partially broken off. The feature extends back and cannot be fully inspected (ref. annotation 19) BRP Moderate</p>	






Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Horizontal crack under rock, extends back c. 20cm (ref. annotation 20)</p> <p>BRP Low</p>	
<p>Cavity behind overhang of rock, shallow but sheltered (ref. annotation 21).</p> <p>BRP Low</p>	








Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Gap in between two rocks with a shallow horizontal crack, about 10cm in height, extending from it (ref. annotation 22).</p> <p>BRP Low</p>	
<p>Multiple gaps between rocks which extend back into complex cavities that cannot be fully inspected. Gaps are low to the ground (ref. annotation 23)</p> <p>BRP Moderate</p>	







Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Large, vertical crack on a rock, about 2m in length. Extends deep into the rock, cannot be fully inspected and was dry and appeared highly suitable for bats (ref. annotation 24).</p> <p>BRP High</p>	
<p>Features underneath boulders and vertical crack in stone. Potential small mammal burrow underneath rock (bedding inside) and rabbit skull outside (ref. annotation 25).</p> <p>BRP Low</p>	
<p>Cracks where stone has broken away; shallow but potential space for a single bat (ref. annotation 26) – BRP Low</p> <p>Crack in rock, open at top but may be dry at the bottom due to the zig-zag shape of the feature (ref. annotation 27) – BRP Low</p> <p>Horizontal crack in rocks (ref. annotation 28) –BRP Low</p> <p>Gap behind overhang of rock, although feature is low to the ground (ref. annotation 29) - BRP Low</p>	







Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Horizontal crack around 10cm deep (ref. annotation 30) – BRP Low</p> <p>Vertical crack in rocks, about 25cm long and 10cm deep (ref. annotation 31) – BRP Low</p>	
<p>Many areas of shallow features where rock is shearing away in layers. Feature shown in photo (ref. annotation 32)</p> <p>BRP Low</p>	

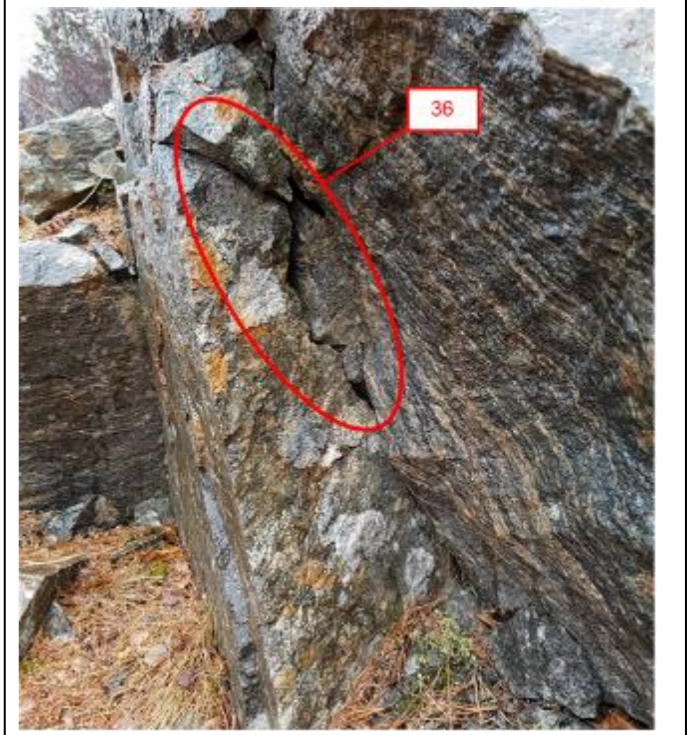




Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Horizontal crack; upper end is wet with water ingress but lower end is dry (ref. annotation 33) –</p> <p>BRP Low</p>	
<p>Diagonal crack on a small rock about 30cm long and 15cm deep with a vertical hole on other face of the rock (ref. annotation 34) –</p> <p>BRP Low</p> <p>Deep hole immediately behind which cannot be fully inspected and extends far into the rock –</p> <p>BRP Moderate</p>	






Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Crack under the base of a rock (ref. annotation 35).</p> <p>BRP- Low</p>	
<p>Vertical crack in rock which cannot be fully inspected; approx. 20cm long (ref. annotation 36). – BRP Moderate</p> <p>Shallow holes extending into surrounding rocks and into the ground - BRP Low (not photographed)</p>	








Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Deep cavity in corner between rocks; cannot be fully inspected (ref. annotation 38)</p> <p>BRP Moderate</p>	
<p>Vertical crevice behind sheets of layered rock; 30cm high and 60cm deep, feature cannot be fully inspected (ref. annotation 39).</p> <p>BRP Moderate</p>	






Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Cavity between rocks which is covered for shelter but open on both sides; c.0.5m high and 25cm deep (ref. annotation 40). BRP Low</p> <p>Shallow horizontal crack in rock (ref. annotation 41) BRP Low</p>	
<p>Small hole (5cm x 2cm) leading into rock which can't be fully inspected as endoscope won't manoeuvre inside (ref. annotation 42) BRP Low</p>	
<p>Multiple small cavities (ref. annotation 43) BRP Low</p>	






Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Cavity between two rocks extends quite far back although is relatively open and other animals may be able to access (ref. annotation 44).</p> <p>BRP Low</p>	

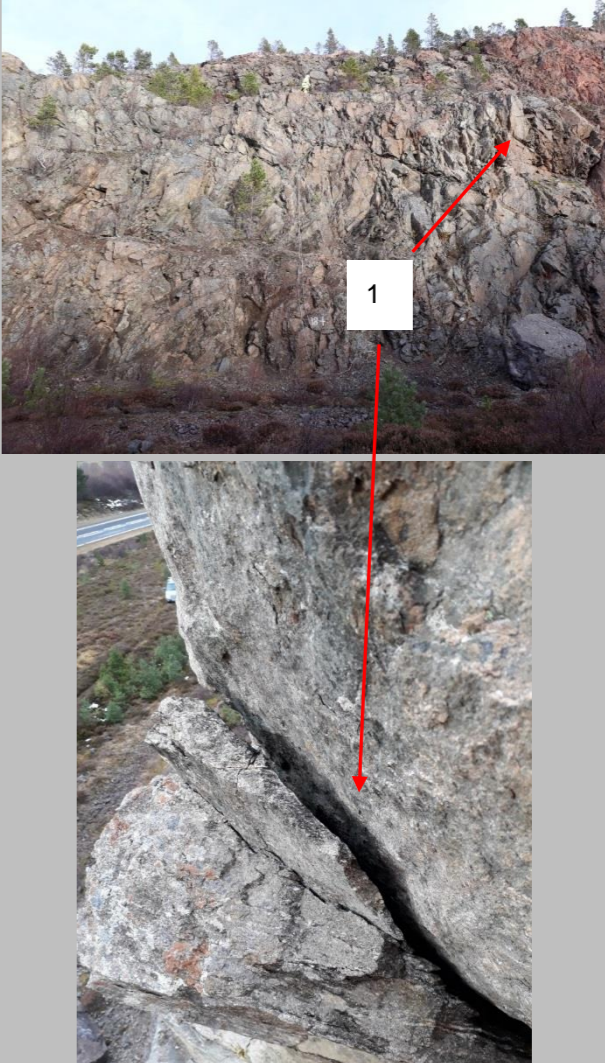

1.2.9 Rock Face RF15 summary: x 2 pipistrelle roost areas recorded within upper face of former quarry at eastern end of RF15. Much of RF15 found to be unsuitable for roosting bats although localised areas of varying suitability present (as detailed below).

Table 1.10: Rock face RF15 inspection results

Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Western end of rock face – composed of distinct upper and lower section with bench between. Much of face very unstable. Gaps apparent from base found to be very shallow on close inspection and no suitability for roosting bats identified (area of unsuitability as indicated by vertical red lines on photograph).</p> <p>BRP Unsuitable</p>	



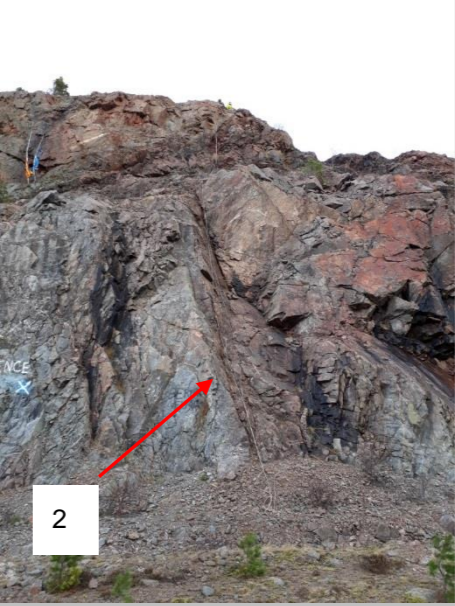




Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Western end of rock face. Generally much of face very unstable and gaps apparent from base found to be very shallow on close inspection with no suitability for roosting bats identified. One gap considered to provide good suitability for roosting bats identified (refer photo annotation 1).</p> <p>BRP High (one gap of high suitability recorded)</p>	
<p>Western central rock face. Occasional fractures in outcrops where more stable material is present on lower half of face. Upper half of face composed of very loose material with no suitability for roosting bats identified.</p> <p>BRP Moderate</p>	

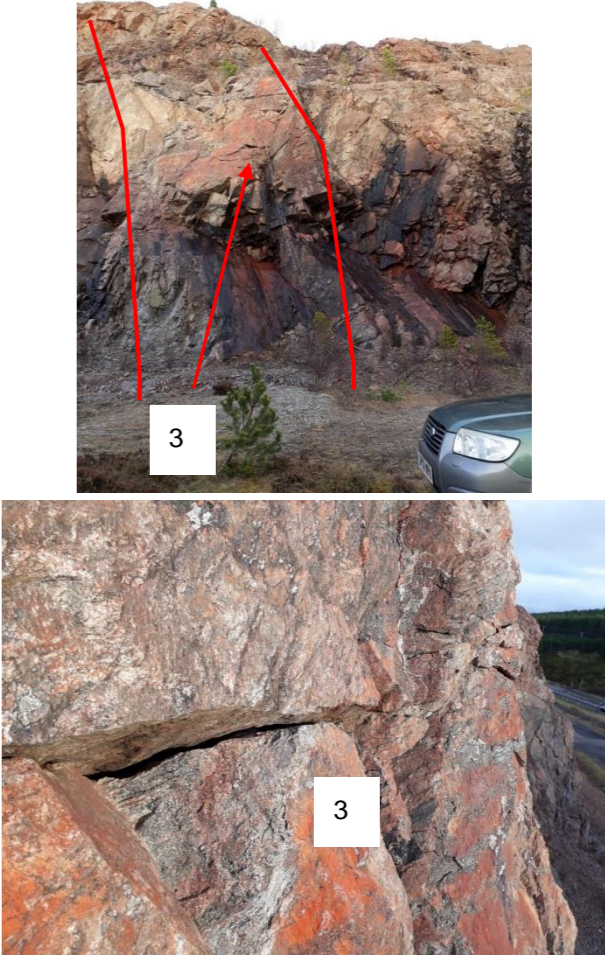





Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Central rock face. Upper half of face composed of loose material with no suitability for roosting bats identified and water running from fractures at base of upper face (behind flags). Lower half of face has occasional fractures with good suitability for roosting bats: cavities extending back into rock >0.75 m and dry.</p> <p>BRP High</p>	
<p>Central rock face. Occasional cracks and fractures on upper and lower halves of rock face provide limited suitability for roosting bats. Cavities, although dry, noted to be shallow; generally extending < 0.3 m. Much loose material on upper half.</p> <p>BRP Moderate</p>	
<p>Central rock face. Vertical fracture (refer photo annotation 2) c. 3 m above toe of lower half of rock face extends back > 0.5 m and is 2.5 – 3 cm wide for visible extent. Although fracture is vertical, cavity is dry as enclosed at top through rockfall ingress.</p> <p>BRP High (one gap of high suitability recorded)</p>	





Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Central rock face. Upper half of face composed of loose material with no suitability for roosting bats identified. Lower half has fractures with large dry cavities extending back > 0.5 m into face. Photo annotation 3 shows best example of fracture recorded.</p> <p>BRP High</p>	
<p>Central rock face. . Upper half of face composed of loose material with no suitability for roosting bats identified. Lower half fractures predominantly wet and running with water (as visible in photograph). Two shallow (< 0.2 m) fractures c. 5 m above toe of lower half of rock face provide very limited suitability for roosting bats.</p> <p>BRP Negligible</p>	





Description / Results

Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)


Central – eastern end of rock face. 100 m section from c. 284990 823930 east to former quarry. All apparent fractures within rockface (as visible from base) discovered to be shallow and unsuitable for roosting based on inspection. Gradient of slope lessens towards eastern end, further reducing any potential areas of bat roost suitability. Much of section (as photographed in series opposite) composed of very loose material.

BRP Unsuitable

Photograph

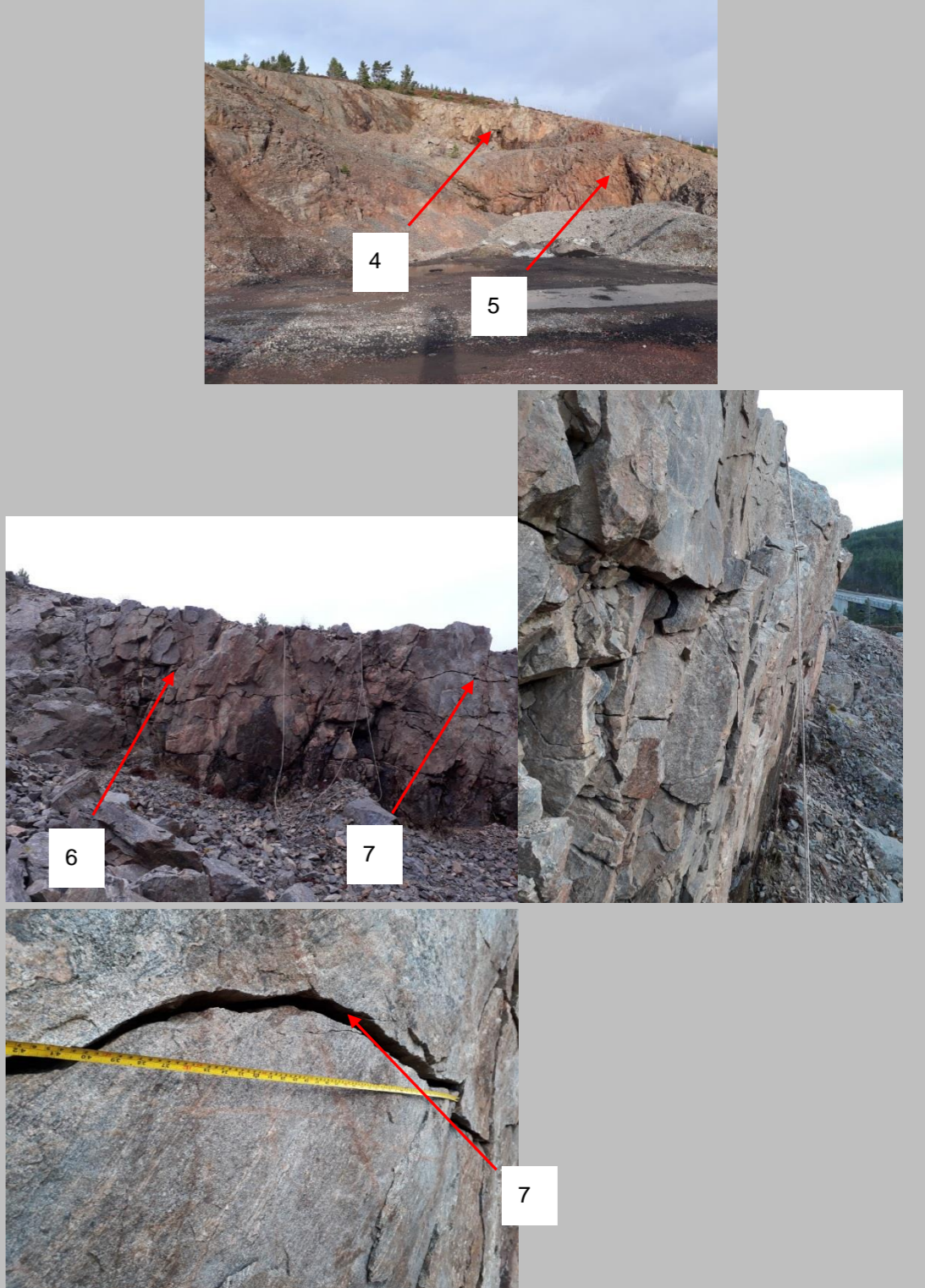




Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
	 The photograph column contains three vertically stacked images of a rocky cliff face. The rock is reddish-brown and shows signs of weathering and fracturing. Sparse vegetation, including small trees and shrubs, is visible on the upper parts of the cliff. The foreground is a dark, gravelly or rocky area.





Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
<p>Former quarry area at eastern end of rock face. Upper quarry face (refer photo annotation 4). Lower quarry face (refer photo annotation 5).</p> <p>Roosts identified (285100 823954 and 285105 823953): x2 pipistrelle roosts identified within fractures in vertical upper quarry face (refer photo annotations 6 & 7). Both fractures have dry cavities extending > 0.75 m into rock (possible cracks/weaknesses widened through blasting and are c. 2 – 3 cm wide. Several droppings of pipistrelle type (refer photo annotation 8) identified within each roost location. Droppings of fresh appearance and those near entrance (as in photo annotation 8) considered unlikely to persist for more than a few days / week. No animals visible in either roost although difficult to thoroughly search eastern roost (refer photo annotation 7) via endoscope due to complexity of cavity at rear due to small wedged rocks.</p> <p>Cavities throughout upper quarry face provide good suitability for roosting bats. Lower quarry face composed of very loose material and bat roost suitability very limited.</p> <p>Two confirmed roosts, with remainder of rock face of High BRP.</p>	





Description / Results Including Bat Roost Potential (BRP) and Potential Roost Features (PRF)	Photograph
	

1.3 Crossing Point Survey Results

1.3.1 Crossing point surveys were undertaken through the bat active seasons of 2016 and 2017, with areas targeted on the basis of habitat and features present likely to facilitate movement of bats over the carriageway. A total of 24 crossing point sites were selected in 2016, thereafter nine crossing points were selected in 2017; five of these were repeat surveys of crossing points with the highest levels of bat crossing from 2016.

2016 Crossing Point Survey Results

Table 1.11: Crossing Location CP05 – Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP05 (TN273) NH 89144 11469									
Habitat Description: Linear feature including underpass and tree line. Residential properties to the west and commercial properties to the east provide opportunities for roosting bats.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = <i>Myotis</i> ; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
18 May 16 Sunrise: 04:49	Start: 02:49 End: 05:04	Start: 12 End: 10	Start: 8 End: 8	Start: 2 End: 3	Start: 0 End: 0	NB SB	No Crossings No Crossings	No Crossings No Crossings	No Crossings No Crossings
20 Jul 16 Sunset: 21:51	Start: 21:31 End: 23:51	Start: 16 End: 14	Start: 8 End: 8	Start: 0 End:	Start: 0 End: 0	NB	One <i>S.pip</i> crossed over the A9 from the west to the east.	One <i>S.pip</i> crossed over the A9 at 22:53 (62 mins after sunset).	Under: 0 Over: 1 <i>S.pip</i> Total Bats: 1

⁴ The peak count represents the total number of bats seen crossing over or under the road. Where a bat has been recorded by surveyors on either side of the carriageway and the timings indicate that this is the same bat, then this is counted as one crossing. Where a bat is recorded crossing the carriageway by one surveyor, but not seen on the other side of the carriageway this is recorded as one crossing as the bat may have crossed using a non-direct flight line.

⁵ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁶ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁷ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP05 (TN273) NH 89144 11469									
Habitat Description: Linear feature including underpass and tree line. Residential properties to the west and commercial properties to the east provide opportunities for roosting bats.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
				0		SB	No Crossings	No Crossings	No Crossings
6 Sep 16	Start: 19:38	Start: 16	Start: 2	Start: 0	Start: 0	NB	No Crossings	No Crossings	No Crossings
Sunset: 19:58	End: 21:58	End: 16	End: 8	End: 0	End: 0	SB	One S.pip crossed over the A9 from the east to the west.	One S.pip crossed over the A9 at 20:40 (42 mins after sunset).	Under: 0 Over: 1 S.pip Total Bats: 1

Table 1.12: Crossing Location CP04 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP04 (TN274) NH 89106 11387									
Habitat Description: Habitat corridor identified as a possible crossing point. Access road leading from five residential properties to the A9. ⁸									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
18 May 16	Start: 02:49	Start: 12	Start: 8	Start: 2	Start: 0	NB	No Crossings	No Crossings	No Crossings
Sunrise: 04:49	End: 05:04	End: 10	End: 8	End: 3	End: 0				
21 Jul 16	Start: 02:53	Start: 13	Start: 8	Start: 0	Start: 0	NB	Two S.pip crossed over the A9 from the west to the east.	Two S.pip crossed over the A9 at 04:16 (37 mins before sunrise) and 04:25 (28 mins before sunrise).	Under: 0 Over: 2 S.pip Total Bats: 2
Sunrise: 04:53	End: 05:08	End: 11	End: 8	End: 0	End: 0				
6 Sep 16	Start: 19:38	Start: 16	Start: 2	Start: 0	Start: 0	NB	One C.pip crossed over the A9 SB to NB and one C.pip crossed NB to Sb over the A9.	The two C.pip crossed over the A9 SB to NB at 20:13 (15 mins after sunset) and NB to SB at 20:32 (34 mins after sunset).	Under: 0 Over: 2 C.pip Total Bats: 2
Sunset: 19:58	End: 21:58	End: 16	End: 8	End: 0	End: 0				

⁸ Only surveyed from the NB as no access to the SB side of carriageway.





Table 1.13: Crossing Location CP06 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP06 (TN297) NH 89140 12020									
Habitat Description: Pedestrian underpass, and woodland walk. West of the A9 is the NNR. Nice connectivity from properties to the east of the A9 to the NNR woodland with pond habitat to the west.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
C. C.pip = common pipistrelle; S.pip = soprano pipistrelle; U.pip = unknown pipistrelle; Myt = Myotis; BLE = brown long-eared; Unk = unknown bat species									
First survey scheduled for May was not conducted due to poor weather conditions (i.e. low temperatures). Therefore only one survey was conducted in May 2016.									
25 May 16 Sunrise: 04:38	Start: 02:38 End: 04:53	Start: 6 End: 5	Start: 8 End: 8	Start: 0 End: 0	Start: 0 End: 0	NB	One S.pip and one C.pip crossed over the A9 (above the overpass, not through it).	The one S.pip crossed over the A9 at 03:44 (54 mins before sunrise) and the one C.pip crossed over the A9 at 03:45 (53 mins before sunrise).	Under: 0 Over: 1 C.pip, 1 S. pip Total Bats: 2
						SB	No Crossings	No Crossings	No Crossings
07 Jun 16 Sunset: 22:07	Start: 21:47 End: 00:07	Start: 15 End: 13	Start: 8 End: 8	Start: 0 End: 0	Start: 0 End: 0	NB	One S.pip crossed under the A9 from the west to the east through the underpass.	One S.pip crossed under the A9 via the underpass at 22:56 (49 mins after sunset).	Under: 1 S.pip Over: 0 Total Bats: 1
						SB	One S.pip and three C.pip crossed over the A9 from the east to the west over the A9, seen by both surveyors. Two C.pip were also seen crossing the A9 from the east to the west by the surveyor on the west (northbound) side.	One bat crossed over the A9 at 22:16 (nine mins after sunset) and three more bats crossed over the A9 between 22:23 (16 mins after sunset) and 22:40 (33 mins after sunset). Two C.pip crossed over the A9 at 22:54 (47 mins after sunset) and 22:56 (49 mins after sunset).	Under: 0 Over: 5 C.pip, 1 S.pip Total Bats: 6
22 Jun 16 Sunrise: 04:19	Start: 02:19 End: 04:34	Start: 14 End: 13	Start: 8 End: 8	Start: 0 End: 0	Start: 1 End: 2	NB	Seven bats crossed the A9 (one C.pip and one S.pip flew through the underpass, two S.pip and three C.pip flew over), all from the west to the east.	Five bats crossed over the A9 at 02:22 (117 mins before sunrise), 02:35 (104 mins before sunrise), 03:48 (31 mins before sunrise), 03:51 (28 mins before sunrise) and 04:09 (10 mins before sunrise). One S.pip crossed under the A9 via the underpass at 03:24 (55 mins before sunrise) and one C.pip crossed under the A9 via the underpass at 03:37 (42 mins before sunrise).	Under: 1 C.pip, 1 S.pip Over: 3 C.pip, 2 S.pip Total Bats: 7
						SB	No Crossings	No Crossings	No Crossings
06 Jul 16 Sunset: 22:10	Start: 21:50 End: 00:10	Start: 12 End: 11	Start: 8 End: 8	Start: 2 End: 2	Start: 3 End: 4	NB	One S.pip and one possible BLE crossed the A9 from the west to the east.	One S.pip crossed over the A9 at 22:45 (35 mins after sunset) and the one possible BLE crossed over the A9 at 23:51 (101 mins after sunset).	Under: 0 Over: 1 S.pip, 1 possible BLE Total Bats: 2
						SB	Eleven bats (four S.pip, five C.pip, one U.pip and one Unk) were seen crossing the A9 from the east to the west. Another six bats (four S.pip and two C.pip) were seen crossing the A9 from the east to the west by the surveyor on the west side.	Seventeen bats crossed over the A9 between 22:04 (6 mins before sunset) and 22:56 (46 mins after sunset).	Under: 0 Over: 7 C.pip, 6 S.pip, 3 U.pip, 1 Unk Total Bats: 17
07 Jul 16	Start:	Start:	Start:	Start:	Start:	NB	Four bats (three C.pip and one U.pip) were seen crossing the	Four bats crossed over the A9 at 03:39 (52 mins before sunrise), 04:02 (29	Under: 0





OS grid reference: Dalraddy to Slochd Crossing CP06 (TN297) NH 89140 12020									
Habitat Description: Pedestrian underpass, and woodland walk. West of the A9 is the NNR. Nice connectivity from properties to the east of the A9 to the NNR woodland with pond habitat to the west.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
Sunrise: 04:31	02:31	12	2	0	0		A9 from the west to the east.	mins before sunrise), 04:12 (19 mins before sunrise) and 04:18 (13 mins before sunrise).	Over: 3 C.pip, 1 U.pip Total Bats: 4
	End: 04:46	End: 10	End: 7	End: 0	End: 0	SB	One C.pip was recorded crossing the A9 from the east to the west.	One C.pip crossed over the A9 at 03:43 (48 mins before sunrise).	Under: 0 Over: 1 C.pip Total Bats: 1
19 Jul 16 Sunrise: 04:49	Start: 02:49	Start: 16	Start: 8	Start: 0	Start: 4	NB	Six bats (five S.pip and one BLE) were seen crossing the A9 from the west to the east.	One BLE crossed over the A9 at 03:29 (80 mins before sunrise), and the first S.pip crossed over the A9 at 04:08 (41 mins before sunrise). The other four S.pip crossed over the A9 between 04:12 (37 mins before sunrise) and 04:26 (23 mins before sunrise).	Under: 0 Over: 5 S.pip, 1 BLE Total Bats: 6
	End: 05:04	End: 15	End: 8	End: 0	Start: 4	SB	Two S.pip were seen crossing the A9 from the east to the west.	Two S.pip crossed over the A9 at 03:58 (51 mins before sunrise) and 04:10 (39 mins before sunrise).	Under: 0 Over: 2 S.pip Total Bats: 2
08 Aug 16 Sunset: 21:12	Start: 20:52	Start: 10	Start: 1	Start: 0	Start: 0	NB	One S.pip flew from the west to the east (only seen by the surveyor on the east side) and another crossed over A9 west to east and then back again (only the first crossing was recorded). One Myotis sp. flew from the west to the east through the underpass.	Two S.pip crossed over the A9 at 21:54 (42 mins after sunset), and 21:58 (46 mins after sunset). The one Myotis sp. crossed under the A9 via the underpass at 22:11 (59 mins after sunset).	Under: 1 Myotis sp. Over: 2 S.pip Total Bats: 3
	End: 23:12	End: 9	End: 0	End: 0	End: 1	SB	One C.pip crossed over the A9 from the east to the west seen by SB surveyor. Further Eleven bats (seven C.pip and four S.pip) were seen crossing over the A9 from the east to the west by NB surveyor. One of them flew back from the west to the east (only the first crossing was recorded).	Twelve bats crossed over the A9 between 21:28 (16 mins after sunset) and 22:02 (50 mins after sunset).	Under: 0 Over: 7 C.pip, 5 S.pip Total Bats: 12
23 Aug 16 Sunrise: 05:59	Start: 03:59	Start: 9	Start: 8	Start: 0	Start: 0	NB	Two S.pip were seen to cross the A9 from the west to the east (one over the A9 and one through the underpass).	One S.pip crossed over the A9 at 05:31 (28 mins before sunrise), one S.pip crossed under the A9 via the underpass at 05:45 (14 mins before sunrise).	Under: 1 S.pip Over: 1 S.pip Total Bats: 2
	End: 06:14	End: 11	End: 8	End: 0	End: 0	SB	One possible Myotis / BLE bat flew over the A9 from the east to the west, north of the surveyor's position.	One possible Myotis/BLE bat crossed over the A9 at 05:24 (35 mins before sunrise).	Under: 0 Over: 1 Possible Myotis /BLE Total Bats: 1
6 Sep 16	Start: 04:28	Start: 18	Start: 8	Start: 0-1	Start: 0	NB	Six bats crossed the A9 west to east. This included two C.pip, one S.pip that crossed through the underpass, and three	Two C.pip and one S.pip crossed under the A9 via the underpass between 05:22 (66 mins before sunrise) and 06:03 (25 mins before sunrise). Three	Under: 2 C.pip, 1 S.pip





OS grid reference: Dalraddy to Slochd Crossing CP06 (TN297) NH 89140 12020									
Habitat Description: Pedestrian underpass, and woodland walk. West of the A9 is the NNR. Nice connectivity from properties to the east of the A9 to the NNR woodland with pond habitat to the west.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
Sunrise: 06:28	End: 06:43	End: 18	End: 8	End: 0-1	End: 0		S.pip flew over the A9. One of the C.pip that crossed through the underpass crossed several times in both directions before flying off west.	S.pip bats crossed over the A9 between 05:59 (29 mins before sunrise) and 06:25 (3 mins before sunrise).	Over: 3 S.pip Total Bats: 6
						SB	Five bats crossed the A9 east to west: one C.pip and one S.pip flew over the road, and two C.pip and one S.pip crossed through the underpass.	Five bats crossed over the A9 or under the A9 via the underpass between 05:16 (72 mins before sunrise) and 06:01 (27 mins before sunrise).	Under: 2 C.pip, 1 S.pip Over: 1 C.pip, 1 S.pip Total Bats: 5
19 Sep 16	Start: 19:02	Start: 14	Start: 6	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunset: 19:22	End: 21:22	End: 10	End: 6	End: 0	End: 0	SB	One C.pip crossed over the A9 from the east to the west.	The one C.pip crossed over the A9 at 19:28 (six mins after sunset).	Under: 0 Over: 1 C.pip Total Bats: 1

Table 1.14: Crossing Location CP09 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP09 (TN309) NH 89346 13856									
Habitat Description: Corrugated steel arch culvert carrying watercourse under the A9. Housing located to the south and broadleaved and coniferous trees to the north.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
<i>C C.pip = common pipistrelle; S.pip = soprano pipistrelle; U.pip = unknown pipistrelle; Myt = Myotis; BLE = brown long-eared; Unk = unknown bat species</i>									
First survey scheduled for May was not conducted due to poor weather conditions (i.e. low temperatures), therefore only one survey was conducted in May 2016.									
23 May 16	Start: 21:25	Start: 10	Start: 8	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunset: 21:45	End: 23:45	End: 7	End: 8	End: 0	End: 0	SB	No Crossings	No Crossings	No Crossings
08 Jun 16	Start: 02:22	Start: 12	Start: 8	Start: 2	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunrise: 04:22	End: 04:37	End: 14	End: 8	End: 1	End: 1	SB	No Crossings	No Crossings	No Crossings
21 Jun 16	Start: 21:55	Start: 13	Start: 8	Start: 0	Start: 2	NB	No Crossings	No Crossings	No Crossings
Sunset: 22:15	End: 00:15	End: 13	End: 8	End: 0	End: 2	SB	No Crossings	No Crossings	No Crossings
06 Jul 16	Start: 02:30	Start: 9	Start:	Start:	Start: 0	NB	No Crossings	No Crossings	No Crossings





OS grid reference: Dalraddy to Slochd Crossing CP09 (TN309) NH 89346 13856									
Habitat Description: Corrugated steel arch culvert carrying watercourse under the A9. Housing located to the south and broadleaved and coniferous trees to the north.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
Sunrise: 04:30	End: 04:45	End: 8	2 End: 6	0 End: 0	End: 0	SB	No Crossings	No Crossings	No Crossings
19 Jul 16	Start: 21:33	Start: 22	Start: 1	Start: 0	Start: 0	NB	No Crossings	No Crossings	No Crossings
Sunset: 21:53	End: 23:53	End: 17	End: 1	End: 0	End: 0	SB	No Crossings	No Crossings	No Crossings

Table 1.15: Crossing Location CP08 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP08 (TN310) NH 89282 13687									
Habitat Description: Corrugated steel arch carrying footpath under A9. Wooded nature walk to south with young broadleaved trees and new build houses with landscaped gardens to north.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
First survey scheduled for May was not conducted due to poor weather conditions (i.e. low temperatures), therefore only one survey was conducted in May 2016.									
24 May 16	Start: 21:26 End: 23:46	Start: 7 End: 4	Start: 7 End: 8	Start: 0 End: 0	Start: 0 End: 0	NB	Two <i>C.pip</i> flew from the west to the east over the A9.	The two <i>C.pip</i> crossed over the A9 at 22:15 (29 mins after sunset) and 22:16 (30 mins after sunset).	Under: 0 Over: 2 <i>C.pip</i> Total Bats: 2
						SB	Thirty-two bats (28 <i>C.pip</i> , three <i>S.pip</i> and one <i>Unk</i>) flew over the A9.	Thirty-two bats crossed over the A9 between 21:34 (12 mins before sunset) and 22:33 (47 mins after sunset), with one bat crossing at 22:51 (65 mins after sunset).	Under: 0 Over: 28 <i>C.pip</i> , 3 <i>S.pip</i> , 1 <i>Unk</i> Total Bats: 32
8 Jun 16	Start: 02:22 End: 04:37	Start: 12 End: 14	Start: 8 End: 8	Start: 2 End: 1	Start: 1 End: 1	NB	Five <i>C.pip</i> crossed over the A9 from the west to the east.	The five bats crossed over the A9 at 03:50 (32 mins before sunrise), and between 03:41 (41 mins before sunrise) and 04:01 (21 mins before sunrise).	Under: 0 Over: 4 <i>C.pip</i> , 1 <i>S.pip</i> Total Bats: 5
						SB	One <i>C.pip</i> and one <i>S.pip</i> crossed over the A9 from the east to the west.	One <i>C.pip</i> and one <i>S.pip</i> crossed over the A9 at 03:45 (37 mins before sunrise) and 03:51 (31 mins before sunrise).	Under: 0 Over: 1 <i>C.pip</i> , 1 <i>S.pip</i> Total Bats: 2
21 Jun 16	Start: 21:55	Start:	Start:	Start:	Start:	NB	Five <i>C.pip</i> bats were observed crossing over the	<i>C.pip</i> were recorded crossing over at A9 between 22:42 (27 mins after	Under: 0





OS grid reference: Dalraddy to Slochd Crossing CP08 (TN310) NH 89282 13687									
Habitat Description: Corrugated steel arch carrying footpath under A9. Wooded nature walk to south with young broadleaved trees and new build houses with landscaped gardens to north.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
Sunset: 22:15	End: 00:15	15	8	0	2		A9 from the west to the east.	sunset) and 22:57 (42 mins after sunset).	Over: 5 C.pip
		End: 13	End :7	End: 0	End: 2	SB	Twenty-four bats crossed over A9 (12 U.pip, 11 C.pip, one S.pip), from the east to the west.	Twenty-four bats crossed over the A9 between 22:17 (seven mins after sunset) and 22:53 (43 mins after sunset).	Under: 0 Over: 11 C.pip, 1 S.pip, 12 U.pip
06 Jul 16 Sunset: 22:10	Start: 21:50 End: 00:10	Start: 12	Start: 8	Start: 2	Start: 3	NB	One U.pip was seen flying over the A9 from the west to the east.	One U.pip crossed over the A9 at 22:47 (37 mins after sunset).	Under: 0 Over: 1 U.pip
		End: 11	End: 5	End: 2	End: 4	SB	Twelve bats (one U.pip, six C.pip, one S.pip and four Unk) were observed crossing over the A9 from the east to the west.	Twelve bats crossed over the A9 at 21:51 (19 mins before sunset), between 22:00 (10 mins before sunset) and 22:26 (16 mins after sunset), and at 22:35 (25 mins after sunset), 22:47 (37 mins after sunset) and 23:07 (53 mins after sunset).	Under: 0 Over: 6 C.pip, 1 S.pip, 1 U.pip, 4 Unk
07 Jul 16 Sunrise: 04:31	Start: 02:31 End: 04:31	Start: 12	Start: 2	Start: 0	Start: 0	NB	Three bats (one U.pip and two C.pip) were confirmed as crossing the A9 from the west to the east.	Three bats crossed over the A9 at 04:01 (30 mins before sunrise), 04:03 (28 mins before sunrise) and 04:12 (19 mins before sunrise).	Under: 0 Over: 2 C.pip, 1 U.pip
		End: 10	End: 6	End: 0	End: 0	SB	No Crossings	No Crossings	Total Bats: 3 No Crossings
19 Jul 16 Sunset: 21:53	Start: 21:53 End: 23:53	Start: 22	Start: 1	Start: 0	Start: 0	NB	One C.pip crossed over the A9 from the west to the east.	One C.pip crossed over the A9 at 22:45 (52 mins after sunset).	Under: 0 Over: 1 C.pip
		End: 17	End: 1	End: 0	End: 0	SB	Twenty-two bats (12 C.pip and ten Unk, which are presumed to be pips but were not echolocating) confirmed crossing the A9 from the east to the west.	Twenty-two bats crossed over the A9 between 21:49 (4 mins before sunset) and 22:45 (52 mins after sunset), with the last bat crossing the road at 23:20 (147 mins after sunset).	Under: 0 Over: 12 C.pip, 10 Unk
08 Aug 16 Sunset: 21:12	Start: 20:52 End: 23:12	Start: 10	Start: 1	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
		End: 9	End: 0	End: 0	End: 1	SB	Ten bats (nine C.pip and one U.pip) were seen crossing the A9 from the east to the west.	Ten bats crossed over the A9 between 21:22 (10 mins after sunset) and 22:05 (53 mins after sunset).	Under: 0 Over: 9 C.pip, 1 U.pip
Total Bats: 10									





OS grid reference: Dalraddy to Slochd Crossing CP08 (TN310) NH 89282 13687									
Habitat Description: Corrugated steel arch carrying footpath under A9. Wooded nature walk to south with young broadleaved trees and new build houses with landscaped gardens to north.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
23 Aug 16 Sunrise: 05:59	Start: 03:59 End: 06:14	Start: 9 End: 11	Start: 8 End: 8	Start: 0 End: 0	Start: 0 End: 0	NB	One S.pip and one C.pip were seen crossing over the A9 from the west to the east.	One S.pip crossed over the A9 at 05:16 (43 mins before sunrise), and the one C.pip crossed over the A9 at 05:38 (19 mins before sunrise).	Under: 0 Over: 1 C.pip, 1 S.pip Total Bats: 2
						SB	One C.pip crossed the A9 from the east to the west.	One C.pip crossed over the A9 at 05:16 (43 mins after sunrise).	Under: 0 Over: 1 C.pip Total Bats: 1
6 Sep 16 Sunrise: 06:28	Start: 04:28 End: 06:43	Start: 18 End: 18	Start: 8 End: 8	Start: 0-1 End: 0-1	Start: 0 End: 0	NB	One C.pip crossed over the A9 from the west to the east.	One C.pip crossed the A9 at 06:01 (27 mins before sunrise).	Under: 0 Over: 1 C.pip Total Bats: 1
						SB	Three bats (two C.pip and one S.pip) flew over the A9 from the east to the west.	Three bats crossed over the A9 at 05:49 (39 mins before sunrise), 05:57 (31 mins before sunrise) and 06:04 (24 mins before sunrise).	Under: 0 Over: 2 C.pip, 1 S.pip Total Bats: 3
19 Sep 16 Sunset: 19:22	Start: 19:02 End: 21:22	Start: 14 End: 10	Start: 6 Start: 6	Start: 0 End: 0	Start: 0 End: 0	NB	No Crossings	No Crossings	No Crossings
						SB	Nine bats (eight C.pip and one S.pip) were seen to cross the A9 from the east to the west.	Nine bats crossed over the A9 between 19:24 (2 mins after sunset) and 19:59 (37 mins after sunset).	Under: 0 Over: 8 C.pip, 1 S.pip Total Bats: 9

Table 1.16: Crossing Location CP10 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP10 (TN316) NH 89353 13949									
Habitat Description: Corrugated steel underpass taking pedestrian path under A9. Vegetation, scrub and young woodland on either side.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
<i>C.pip = common pipistrelle; S.pip = soprano pipistrelle; U.pip = unknown pipistrelle; Myt = Myotis; BLE = brown long-eared; Unk = unknown bat species</i>									
24 May 16 Sunrise: 04:39	Start: 02:39 End: 04:54	Start: 8 End: 6	Start: 8 End: 8	Start: 0 End:	Start: 0 End: 1	NB	One Unk was seen to fly over the A9 from the west to the east.	One Unk crossed over the A9 at 04:09 (20 mins before sunrise).	Under: 0 Over: 1 Unk Total Bats: 1





OS grid reference: Dalraddy to Slochd Crossing CP10 (TN316) NH 89353 13949									
Habitat Description: Corrugated steel underpass taking pedestrian path under A9. Vegetation, scrub and young woodland on either side.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
				0		SB	No Crossings	No Crossings	No Crossings
07 Jun 16	Start: 21:47	Start: 15	Start: 8	Start: 0	Start: 0	NB	No Crossings	No Crossings	No Crossings
Sunset: 22:07	End: 22:07	End: 13	End: 8	End: 0	End: 0	SB	No Crossings	No Crossings	No Crossings
06 Jul 16	Start: 02:30	Start: 9	Start: 2	Start: 0	Start: 0	NB	No Crossings	No Crossings	No Crossings
Sunrise: 04:30	End: 04:45	End: 7	End: 7	End: 0	End: 0	SB	No Crossings	No Crossings	No Crossings
09 Aug 16	Start: 20:50	Start: 7	Start: 1	Start: 0	Start: 1	NB	Two C.pip were seen crossing the A9 from the west to the east.	Two C.pip crossed over the A9 at 21:58 (48 mins after sunset) and 22:11 (61 mins aftersunset).	Under: 0 Over: 2 C.pip Total Bats: 2
Sunset: 21:10	End: 23:10	End: 6	End: 3	End: 0	End: 0	SB	One S.pip crossed the A9 east to west (and then back again).	One S.pip crossed over the A9 at 21:53 (43 mins after sunset).	Under: 0 Over: 1 S.pip Total Bats: 1
21 Sep 16	Start: 04:59	Start: 11	Start: 3	Start: 0	Start: 1	NB	One C.pip was observed south of the surveyor and crossed over the A9 from the west to the east.	One C.pip crossed over the A9 at 06:10 (49 mins before sunrise).	Under: 0 Over: 1 C.pip Total Bats: 1
Sunrise: 06:59	End: 07:14	End: 9	End: 5	End: 0	End: 3	SB	No Crossings	No Crossings	No Crossings

Table 1.17: Crossing Location CP11 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP11 (TN564) NH 89676 14725									
Habitat Description: Corrugated steel underpass in livestock grazed field. Small watercourse adjacent and mature trees to the east with large area of woodland to the west.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
25 May 16	Start: 21:28	Start: 6	Start: 8	Start: 1	Start: 2	NB	One C.pip was seen crossing the A9 west to east.	One C.pip crossed over the A9 at 22:00 (12 mins after sunset).	Under: 0 Over: 1 C.pip Total Bats: 1
Sunset: 21:48	End: 23:48	End: 5	End: 8	End:	End:				





OS grid reference: Dalraddy to Slochd Crossing CP11 (TN564) NH 89676 14725									
Habitat Description: Corrugated steel underpass in livestock grazed field. Small watercourse adjacent and mature trees to the east with large area of woodland to the west.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
				1	0	SB	No Crossings	No Crossings	No Crossings
22 Jun 16 Sunrise: 04:19	Start: 02:19 End: 04:34	Start: 14 End: 13	Start: 8 End: 8	Start: 0 End: 0	Start: 1 End: 2	NB	A single bat was recorded during the survey; the S.pip crossed the A9 through the underpass from the west to the east.	One S.pip crossed under the A9 via the underpass at 02:57 (82 mins before sunrise).	Under: 1 S.pip Over: 0 Total Bats: 1
						SB	No Crossings	No Crossings	No Crossings
20 Jul 16 Sunset: 21:51	Start: 21:31 End: 23:51	Start: 16 End: 14	Start: 8 End: 8	Start: 0 End: 0	Start: 0 End: 0	NB	No Crossings	No Crossings	No Crossings
						SB	Three bats were recorded, with one U.pip crossing over the A9 from the east to the west. One Myotis sp. crossed the A9 through the underpass (only seen by the surveyor on the west side), while a second Myotis sp. flew into the underpass (east to west) and back out again (to east).	One U.pip crossed over the A9 at 21:52 (1 min after sunset), and two Myotis sp. crossed under the A9 via the underpass at 23:00 (69 mins after sunset) and at 23:32 (101 mins after sunset).	Under: 2 Myotis sp. Over: 1 U.pip Total Bats: 3
21 Jul 16 Sunrise: 03:08	Start: 02:53 End: 05:08	Start: 13 End: 11	Start: 8 End: 8	Start: 0 End: 0	Start: 0 End: 0	NB	One BLE bat flew through the underpass west to east (only seen by the surveyor on the east side).	One BLE crossed under the A9 via the underpass at 03:28 (20 mins after sunrise).	Under: 1 BLE Over: 0 Total Bats: 1
						SB	One Myotis sp. was seen flying from the east to the west through the underpass (and then back again) by the surveyor on the west side.	One Myotis sp. crossed under the A9 via the underpass at 03:20 (12 mins after sunrise).	Under: 1 Myotis sp. Over: 0 Total Bats: 1
09 Aug 16 Sunset: 21:10	Start: 20:50 End: 23:10	Start: 7 End: 6	Start: 1 End: 3	Start: 0 End: 0	Start: 1 End: 0	NB	No Crossings	No Crossings	No Crossings
						SB	No Crossings	No Crossings	No Crossings
21 Sep 16 Sunrise: 06:59	Start: 04:59 End: 07:14	Start: 11 End: 9	Start: 7 End: 5	Start: 0 End: 0	Start: 0 End: 3	NB	No Crossings	No Crossings	No Crossings
						SB	No Crossings	No Crossings	No Crossings





Table 1.18: Crossing Location CP13 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP13 (TN210) NH 90558 17014									
Habitat Description: Access road on either side of the A9 that passes through a large area of coniferous woodland to the west and open grassland to the east. There is a gap in the trees (trees are along the verges of the A9) of approximately 5m on either side of the A9.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
17 May 16	Start: 21:13	Start: 11	Start: 8	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunset 21:34	End: 23:34	End: 12	End: 8	End: 0	End: 1	SB	No Crossings	No Crossings	No Crossings
21 Jun 16	Start: 02:19	Start: 10	Start: 7	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunrise: 04:19	End: 04:34	End: 10	Start: 8	End: 0	End: 1	SB	One <i>C.pip</i> crossed the road from the east to the west.	One <i>C.pip</i> crossed over the A9 at 03:15 (64 mins before sunrise).	Under: 0 Over: 1 <i>C.pip</i> Total Bats: 1
12 Jul 16	Start: 21:43	Start: 11	Start: 8	Start: 0	Start: 1	NB	Three <i>C.pip</i> were seen crossing the A9 from the west to the east.	Three <i>C.pip</i> crossed over the A9 at 22:56 (50 mins after sunset), 23:22 (79 mins after sunset) and 23:30 (87 mins after sunset).	Under: 0 Over: 3 <i>C.pip</i> Total Bats: 3
Sunset: 22:03	End: 00:03	End: 11	End: 8	End: 0	End: 1	SB	Three <i>C.pip</i> were seen crossing the A9 from the east to the west.	Three <i>C.pip</i> crossed over the A9 at 23:04 (61 mins after sunset), 23:30 (87 mins after sunset) and 00:02 (119 mins after sunset).	Under: 0 Over: 3 <i>C.pip</i> Total Bats: 3
09 Aug 16	Start: 03:30	Start: 8	Start: 8	Start: 0	Start: 0	NB	No Crossings	No Crossings	No Crossings
Sunrise: 05:30	End: 05:45	End: 7	End: 8	End: 0	End: 1	SB	No Crossings	No Crossings	No Crossings
05 Sep 16	Start: 19:40	Start: 17	Start: 1	Start: 0	Start: 0	NB	One <i>S.pip</i> crossed over the A9 from the west to the east, north of the surveyors.	One <i>S.pip</i> crossed over the A9 at 20:45 (45 mins after sunset).	Under: 0 Over: 1 <i>S.pip</i> Total Bats: 1
Sunset: 20:00	End: 22:00	End: 16	End: 0	End: 0	End: 0	SB	No Crossings	No Crossings	No Crossings





Table 1.19: Crossing Location CP12 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP12 (TN228) NH 90082 15711									
Habitat Description: Access road on either side of the A9 that passes through large areas of coniferous woodland to the west and open grassland to the east. There is a gap in the trees (trees along the verges of the A9) of approximately 5m on either side of the A9.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
17 May 16 Sunset: 21:34	Start: 21:14 End: 23:34	Start: 12	Start: 8	Start: 0	Start: 1	NB	Two bats (<i>C.pip</i> and possible <i>Myotis</i> sp.) crossed the A9 from the west to the east.	Two bats crossed over the A9 at 21:39 (5 mins after sunset) and 23:05 (91 mins after sunset).	Under: 0 Over: 1 <i>C.pip</i> , 1 possible <i>Myotis</i> sp. Total Bats: 2
		End: 9	End: 8	End: 0	End: 0	SB	Four bats (one <i>Unk</i> and three <i>C.pip</i>) were observed crossing the road from the east to the west.	Four bats crossed over the A9 at 21:37 (3 mins after sunset), 22:14 (40 mins after sunset), 22:58 (84 mins after sunset) and 23:18 (104 mins after sunset).	Under: 0 Over: 3 <i>C.pip</i> , 1 <i>U.pip</i> Total Bats: 4
21 Jun 16 Sunrise: 04:19	Start: 02:19 End: 04:34	Start: 10	Start: 7	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
		End: 10	End: 8	End: 0	End: 1	SB	No Crossings	No Crossings	No Crossings
12 Jul 16 Sunset: 22:03	Start: 21:43 End: 00:03	Start: 12	Start: 7	Start: 0	Start: 1	NB	Two bats (<i>U.pip</i> and <i>S.pip</i>) crossed the A9 from the west to the east.	Two bats crossed over the A9 at 23:21 (78 mins after sunset) and at 00:03 (120 mins after sunset, the end of the survey).	Under: 0 Over: 1 <i>S.pip</i> , 1 <i>U.pip</i> Total Bats: 2
		End: 11	End: 7	End: 0	End: 1	SB	No Crossings	No Crossings	No Crossings
09 Aug 16 Sunrise: 05:30	Start: 03:30 End: 05:45	Start: 8	Start: 8	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
		End: 7	End: 8	End: 0	End: 1	SB	No Crossings	No Crossings	No Crossings
05 Sep 16 Sunset: 20:00	Start: 19:40 End: 22:00	Start: 17	Start: 1	Start: 0	Start: 0	NB	No Crossings	No Crossings	No Crossings
		End: 16	End: 0	End: 0	End: 0	SB	One <i>Unk</i> crossed the A9 from the east to the west just north of the crossing point.	One <i>Unk</i> crossed over the A9 at 21:00 (60 mins after sunset).	Under: 0 Over: 1 <i>Unk</i> Total Bats: 1





Table 1.20: Crossing Location CP14 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP14 (TN259) NH 91074 18745									
Habitat Description: Track and driveway from house leading to A9. On west is broadleaved woodland with conifer plantation beyond and on east is birch woodland and beyond that railway running parallel to A9.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
First survey scheduled for May was not conducted due to poor weather conditions (i.e. low temperatures). Therefore only one survey was conducted in May 2016.									
17 May 16 Sunrise: 04:51	Start: 02:33 End: 05:06	Start: 10	Start: 8	Start: 0	Start: 0	NB	Four bats (three <i>S.pip</i> and one <i>C.pip</i>) were seen to cross the A9 from the west to the east. One <i>S.pip</i> crossed at the crossing point and the other three bats crossed further south. All flew above the height of adjacent trees (at least 10m above the ground).	Four bats crossed over the A9 between 04:14 (37 mins before sunrise) and 04:21 (30 mins before sunrise).	Under: 0 Over: 1 <i>C.pip</i> , 3 <i>S.pip</i> Total Bats: 4
		End: 9	End: 8	End: 0	End: 1	SB			
06 Jun 16 Sunset: 22:06	Start: 21:45 End: 00:06	Start: 17	Start: 5	Start: 0	Start: 1	NB	One <i>C.pip</i> crossed the A9 from the west to the east. A <i>Myotis</i> sp. bat potentially crossed the road as both surveyors recorded it, but the direction was unknown	One <i>C.pip</i> crossed over the A9 at 23:25 (79 mins after sunset).	Under: 0 Over: 1 <i>C.pip</i> Total Bats: 1
		End: 12	End: 5	End: 0	End: 1	SB			
17 Jun 16 Sunrise 04:19	Start: 02:19 End: 04:34	Start: 9	Start: 8	Start: 1	Start: 2	NB	No Crossings	No Crossings	No Crossings
		End: 9	End: 8	End: 1	End: 2	SB			
05 Jul 16 Sunset: 22:01	Start: 21:51 End: 00:11	Start: 11	Start: 8	Start: 0	Start: 0	NB	One <i>S.pip</i> was confirmed crossing the A9 from the west to the east, south of the crossing point.	One <i>S.pip</i> crossed over the A9 at 22:17 (16 mins after sunset).	Under: 0 Over: 1 <i>S.pip</i> Total Bats: 1
		End: 9	End: 8	End: 0	End: 1	SB			
18 Jul 16 Sunset: 21:55	Start: 21:35 End: 23:55	Start: 17	Start: 2	Start: 0	Start: 0	NB	One <i>S.pip</i> was seen crossing the A9 from the west to the east (and then back, east to west).	One <i>S.pip</i> crossed over the A9 at 23:37 (92 mins after sunset).	Under: 0 Over: 1 <i>S.pip</i> Total Bats: 1
		End: 15	End: 5	End: 0	End: 0	SB			
10 Aug 16 Sunrise: 05:32	Start: 03:32 End: 05:47	Start: 2	Start: 0	Start: 0	Start: 0	NB	No Crossings	No Crossings	No Crossings
		End: 0	End: 0	End: 0	End: 0	SB			





OS grid reference: Dalraddy to Slochd Crossing CP14 (TN259) NH 91074 18745									
Habitat Description: Track and driveway from house leading to A9. On west is broadleaved woodland with conifer plantation beyond and on east is birch woodland and beyond that railway running parallel to A9.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
22 Aug 16 Sunset: 20:38	Start: 20:17 End: 22:38	Start: 14	Start: 6	Start: 0	Start: 3	NB	Two S.pip bats crossed the A9 from the west to the east.	Two S.pip crossed over the A9 at 21:14 (36 mins after sunset) and 21:26 (48 mins after sunset).	Under: 0 Over: 2 S.pip Total Bats: 2
		End: 11	End: 6	End: 0	End: 0	SB	Two S.pip bats crossed the A9 from the east to the west.	Two S.pip crossed over the A9 at 21:07 (29 mins after sunset) and 21:33 (55 mins after sunset).	Under: 0 Over: 2 S.pip Total Bats: 2
20 Sep 16 Sunset: 06:57	Start: 04:57 End: 07:12	Start: 8	Start: 7	Start: 0	Start: 0	NB	One S.pip crossed the A9 from the west to the east.	One S.pip crossed over the A9 at 06:09 (48 mins before sunrise).	Under: 0 Over: 1 S.pip Total Bats: 1
		End: 7	End: 3	End: 0	End: 0	SB	One S.pip and one C.pip were recorded during the survey. Both were seen crossing the A9 from the east to the west.	C.pip crossed over the A9 at 06:12 (45 mins before sunrise) and S.pip crossed at 06:35 (22 mins before sunrise).	Under: 0 Over: 1 S.pip, C.pip Total Bats: 2

Table 1.21: Crossing Location CP15 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP15 (TN260) NH 91029 19516									
Habitat Description: Track leading toward A9 through clearings in trees on both sides. Railway parallel to A9 at east.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = <i>Myotis</i> ; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
First survey scheduled for May was not conducted due to poor weather conditions (i.e. low temperatures). Therefore only one survey was conducted in May 2016.									
17 May 16 Sunrise: 04:51	Start: 02:52 End: 05:06	Start: 13	Start: 8	Start: 0	Start: 0	NB	No Crossings	No Crossings	No Crossings
		End: 10	End: 8	End: 0	End: 0	SB	One S.pip crossed from the east to the west above the height of the tree canopy.	One S.pip crossed over the A9 at 04:26 (25 mins before sunrise).	Under: 0 Over: 1 S.pip Total Bats: 1
06 Jun 16 Sunset: 22:06	Start: 21:46 End: 00:06	Start: 17	Start: 5	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
		End: 12	End: 5	End: 0	End: 1	SB	Two bats (one S.pip and one probable <i>Myotis</i> sp.) crossed the A9 from the east to the west.	Two bats crossed over the A9 at 22:55 (49 mins after sunset) and 23:19 (73 mins after sunset).	Under: 0 Over: 1 S.pip, 1 probable <i>Myotis</i> sp.





OS grid reference: Dalraddy to Slochd Crossing CP15 (TN260) NH 91029 19516									
Habitat Description: Track leading toward A9 through clearings in trees on both sides. Railway parallel to A9 at east.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
									Total Bats: 2
17 Jun 16 Sunrise: 04:19	Start: 02:19 End: 04:34	Start: 9 End: 9	Start: 8 End: 8	Start: 1 End: 1	Start: 2 End: 2	NB	No Crossings	No Crossings	No Crossings
						SB	No Crossings	No Crossings	No Crossings
05 Jul 16 Sunset: 22:11	Start: 21:51 End: 00:11	Start: 11 End: 9	Start: 8 End: 8	Start: 0 End: 0	Start: 1 End: 1	NB	One C.pip crossed the A9 from the west to the east.	One C.pip crossed over the A9 at 22:37.	Under: 0 Over: 1 C.pip Total Bats: 1
						SB	One potential Nyctalus sp. crossed the A9 from the east to the west (as seen by the surveyor on the west side).	One potential Nyctalus sp. crossed over the A9 at 23:29 83 mins after sunset).	Under: 0 Over: 1 potential Nyctalus sp. Total Bats: 1
18 Jul 16 Sunset: 21:55	Start: 21:35 End: 23:55	Start: 17 End: 15	Start: 2 End: 5	Start: 0 End: 0	Start: 0 End: 0	NB	Five bats (four C.pip and one S.pip) were seen crossing the A9 from the west to the east.	Five bats crossed over the A9 between 22:21 (26 mins after sunset) and 22:35 (40 mins after sunset).	Under: 0 Over: 4 C.pip, 1 S.pip Total Bats: 5
						SB	Seven bats (four C.pip, two S.pip and one BLE) were seen crossing the A9 from the east to the west.	Seven bats crossed over the A9 at 22:32 (37 mins after sunset) and between 22:47 (52 mins after sunset) and 23:38 (103 mins after sunset).	Under: 0 Over: 4 C.pip, 2 S.pip, 1 BLE Total Bats: 7
19 Jul 16 Sunrise: 04:49	Start: 02:49 End: 05:04	Start: 16 End: 15	Start: 8 End: 8	Start: 0 End: 0	Start: 4 End: 4	NB	One S.pip and three C.pip were seen crossing the A9 from the west to the east.	Four bats crossed over the A9 at 03:41 (68 mins before sunrise), 03:44 (two bats, 65 mins before sunrise) and 03:51 (58 mins before sunrise).	Under: 0 Over: 3 C.pip, 1 S.pip Total Bats: 4
						SB	One S.pip was seen crossing the A9 from SB to NB.	One S.pip crossed over the A9 at 03:51 (58 mins before sunrise).	Under: 0 Over: 1 S.pip Total Bats: 1
10 Aug 16 Sunrise: 05:32	Start: 03:32 End: 05:47	Start: 2 End: 0	Start: 0 End: 0	Start: 0 End: 0	Start: 0 End: 0	NB	No Crossings	No Crossings	No Crossings
						SB	No Crossings	No Crossings	No Crossings
22 Aug 16	Start: 20:17	Start: 14	Start: 6	Start: 0	Start: 3	NB	Two bats (two S.pip) were seen crossing the A9 from the west to the east.	Two S.pip crossed at 21:06 (28 mins after sunset) and 21:14 (36 mins after sunset).	Under: 0 Over: 2 S.pip





OS grid reference: Dalraddy to Slochd Crossing CP15 (TN260) NH 91029 19516									
Habitat Description: Track leading toward A9 through clearings in trees on both sides. Railway parallel to A9 at east.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
Sunset: 20:38	End: 22:38	End: 11	End: 6	End: 0	End: 0				Total Bats: 2
						SB	Two C.pip were observed crossing the A9 from the east to the west.	Two C.pip crossed over the A9 at 21:18 (40 mins after sunset) and 22:00 (82 mins after sunset).	Under: 0 Over: 2 C.pip Total Bats: 2
20 Sep 16	Start: 04:57	Start: 8	Start: 7	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunrise: 06:57	End: 07:12	End: 7	End: 3	End: 0	End: 1	SB	No Crossings	No Crossings	No Crossings

Table 1.22: Crossing Location CP16 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP16 (TN261) NH 90910 20125									
Habitat Description: No track or flight corridor on east (south bound) side.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
First survey scheduled for May was not conducted due to poor weather conditions (i.e. low temperatures). Therefore only one survey was conducted in May 2016.									
16 May 16	Start: 21:12	Start: 11	Start: 8	Start: 0	Start: 0	NB	No Crossings	No Crossings	No Crossings
Sunset: 21:32	End: 23:32	End: 9	End: 8	End: 0	End: 1				
07 Jun 16	Start: 02:26	Start: 9	Start: 8	Start: 0	Start: 0	NB	No Crossings	No Crossings	No Crossings
Sunrise: 04:26	End: 04:41	End: 10	End: 8	End: 0	End: 2				
20 Jun 16	Start: 21:55	Start: 13	Start: 7	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunset: 22:15	End: 00:15	End: 10	End: 8	End: 0	End: 1				
04 Jul 16	Start: 21:51	Start: 11	Start: 8	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunset: 22:11	End: 00:11	End: 10	End: 8	End: 0	End: 1				
05 Jul 16	Start: 02:29	Start: 7	Start: 8	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunrise: 04:29	End: 04:44	End: 7	End: 8	End: 0	End: 1				
20 Jul 16	Start: 02:51	Start: 18	Start: 8	Start: 0	Start: 0	NB	No Crossings	No Crossings	No Crossings





OS grid reference: Dalraddy to Slochd Crossing CP16 (TN261) NH 90910 20125									
Habitat Description: No track or flight corridor on east (south bound) side.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
Sunrise: 04:51	End: 04:47	End: 17	End: 8	End: 5	End: 0				

Table 1.23: Crossing Location CP17 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP17 (TN262) NH 90783 20662									
Habitat Description: Track leading to A9 through coniferous plantation on both east and west of the carriageway. Gap approximately 5m wide.									
Date Sunset. Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
First survey scheduled for May was not conducted due to poor weather conditions (i.e. low temperatures). Therefore only one survey was conducted in May 2016.									
16 May 16	Start: 21:12 End: 23:32	Start: 11 End: 9	Start: 8 End: 8	Start: 0 End: 0	Start: 0 End: 0	NB	Two C.pip crossed the A9 from the west to the east.	Two C.pip crossed over the A9 at 21:46 (14 mins after sunset) and 23:19 (107 mins after sunset).	Under: 0 Over: 2 C.pip Total Bats: 2
						SB	No Crossings	No Crossings	No Crossings
07 Jun 16	Start: 02:26 End: 04:41	Start: 9 End: 10	Start: 8 End: 8	Start: 0 End: 0	Start: 1 End: 1	NB	No Crossings	No Crossings	No Crossings
						SB	No Crossings	No Crossings	No Crossings
20 Jun 16	Start: 21:55 End: 00:15	Start: 13 End: 10	Start: 7 End: 8	Start: 0 End: 0	Start: 1 End: 1	NB	Two bats (one C.pip, one S.pip) were seen crossing the A9 from the west to the east.	Two bats crossed over the A9 at 23:06 (51 mins after sunset) and 23:23 (68 mins after sunset).	Under: 0 Over: 1 C.pip, 1 S.pip Total Bats: 2
						SB	No Crossings	No Crossings	No Crossings
04 Jul 16	Start: 21:51 End: 00:11	Start: 11 End: 10	Start: 8 End: 8	Start: 0 End: 0	Start: 1 End: 1	NB	Two S.pip were seen crossing the A9 from the west to the east.	The two S.pip crossed over the A9 at 23:16 (65 mins after sunset) and 23:18 (67 mins after sunset).	Under: 0 Over: 2 S.pip Total Bats: 2
						SB	No Crossings	No Crossings	No Crossings
05 Jul 16	Start: 02:29 End: 04:44	Start: 7 End: 7	Start: 8 End: 8	Start: 0 End: 0	Start: 1 End: 1	NB	No Crossings	No Crossings	No Crossings
						SB	No Crossings	No Crossings	No Crossings
20 Jul 16	Start: 02:51	Start:	Start:	Start:	Start:	NB	No Crossings	No Crossings	No Crossings





OS grid reference: Dalraddy to Slochd Crossing CP17 (TN262) NH 90783 20662									
Habitat Description: Track leading to A9 through coniferous plantation on both east and west of the carriageway. Gap approximately 5m wide.									
Date Sunset. Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road ⁴
		Temp (°C)	Cloud (0 – 8) ⁵	Rain (0 – 5) ⁶	Wind (0 – 12) ⁷				
Sunrise: 04:51	End: 04:35* (*survey ended early due to weather)	18 End: 17	8 End: 8	0 End: 5	0 End: 0	SB	No Crossings	No Crossings	No Crossings
10 Aug 16	Start: 20:48	Start: 12	Start: 8	Start: 3	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunset: 21:08	End: 23:08	End: 10	End: 8	End: 2	End: 1	SB	No Crossings	No Crossings	No Crossings
20 Sep 16	Start: 18:59	Start: 14	Start: 1	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunset: 19:19	End: 21:19	End: 13	End: 0	End: 0	End: 1	SB	No Crossings	No Crossings	No Crossings

Table 1.24: Crossing Location CP22 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP22 (TN132) NH 86469 10010									
Habitat Description: Underpass – cattle creep with pasture both sides. Survey undertaken with a static detector.									
Date Sunset/ Sunrise time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ⁹	Rain (0 – 5) ¹⁰	Wind (0 – 12) ¹¹				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
25 May 16	Start: 02:36	Start: 6	Start: 8	Start: 0	Start: 1	Anabat placed in the centre of the culvert.	One C.pip was recorded within feature.	One C.pip crossed under the A9 via the underpass at 03:43 (53 mins before sunrise). Not confirmed crossing.	Under: 1 C.pip Over: 0
Sunrise: 04:36	End: 04:51	End: 5	End: 8	End: 0	End: 1				Total Bats: 1
21 Jun 16	Start: 22:00	Start: 12	Start: 7	Start: 2	Start: 1	Anabat placed in the centre of the culvert.	No Crossings	No Crossings	No Crossings
Sunset: 22:15	End: 00:15	End: 13	End: 7	End: 0	End: 2				
22 Jul 16	Start: 02:55	Start: 16	Start: 7	Start: 0	Start: 1	No bats recorded	No Crossings	No Crossings	No Crossings
Sunrise: 04:55	End: 05:10	End: 16	End: 5	End: 0	End: 0				

⁹ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

¹⁰ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

¹¹ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP22 (TN132) NH 86469 10010									
Habitat Description: Underpass – cattle creep with pasture both sides. Survey undertaken with a static detector.									
Date Sunset/ Sunrise time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ⁹	Rain (0 – 5) ¹⁰	Wind (0 – 12) ¹¹				
23 Aug 16 Sunset: 22:33	Start: 20:18 End: 22:33	Start: 16 End: 13	Start: 8 End: 8	Start: 1 End: 0	Start: 0 End: 0	No bats recorded	No Crossings	No Crossings	No Crossings
22 Sep 16 Sunrise: 07:01	Start: 05:01 End: 07:16	Start: 13 End: 8	Start: 8 End: 8	Start: 0 End: 0	Start: 0 End: 0	No bats recorded	No Crossings	No Crossings	No Crossings

Table 1.25: Crossing Location CP30 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP30 (TN136) NH 87629 10311									
Habitat Description: Underpass – cattle creep with pasture both sides.									
Date Sunset/ Sunrise time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ¹²	Rain (0 – 5) ¹³	Wind (0 – 12) ¹⁴				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
27 May 16 Sunrise: 04:33	Start: 02:33 End: 04:48	Start: 7 End: 6	Start: 7 End: 8	Start: 0 End: 0	Start: 0 End: 1	NB SB	No Crossings Two C.pip and 3 S.pip observed crossing over the A9 south to north.	No Crossings Two C.pip and 3 S.pip observed crossing over the A9 between 03:48 (45 mins before sunrise) and 04:08 (25 mins before sunrise).	No Crossings Under: 0 Over: 2 C.pip, 3 S.pip Total Bats:5
23 Jun 16 Sunset: 22:15	Start: 22:00 End: 00:15	Start: 14 End: 13	Start: 6 End: 5	Start: 0 End: 0	Start: 0 End: 0	NB SB	Bats identified feeding outside the cattle creep then foraging inside repeatedly. One S. pip was identified crossing underneath the A9 north to south. Two C. pip and one S. pip were identified crossing over the A9 north to south. Bats identified feeding outside the cattle creep then foraging inside repeatedly. Bats were also observed commuting along SB the treeline that runs parallel with the A9 from both directions. Five S.pip and one C.pip observed crossing under the A9 south to north. Additionally three S.pip were recorded crossing over the	Activity started at 22:49 (34 mins after sunset) and continued until 23:38 (83 mins after sunset). One S. pip was identified crossing underneath the A9 at 23:02 (47 mins after sunset). Two C. pip and one S. pip were identified crossing over the A9 between 23:16 (61 mins after sunset) and 23:38 (83 mins after sunset). Activity started at 22:34 (19 mins after sunset) and continued until 23:54 (99 mins after sunset). Five S.pip and one C.pip observed crossing under the A9 between 22:40 (35 mins after sunset) and 23:26 (71 mins after sunset). Additionally three S.pip were recorded crossing over the A9	Under: 1 S.pip Over: 2 C.pip, 1 S.pip Total Bats: 4 Under: 5 S.pip, 1 C.pip Over: 3

¹² Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

¹³ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

¹⁴ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP30 (TN136) NH 87629 10311									
Habitat Description: Underpass – cattle creep with pasture both sides.									
Date Sunset/ Sunrise time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ¹²	Rain (0 – 5) ¹³	Wind (0 – 12) ¹⁴				
							A9 south to north.	between 22:47 (32 mins after sunset) and 23:09 (54 mins after sunset).	S.pip Total Bats: 9
22 Jul 16 Sunrise: 04:55	Start: 02:55 End: 05:10	Start: 16 End: 16	Start: 7 End: 5	Start: 0 End: 0	Start: 1 End: 0	NB	No Crossings	No Crossings	No Crossings
						SB	One C.pip observed crossing over the A9 south to north after foraging over culvert.	One C.pip crossed over the A9 at 04:00 (55 mins before sunrise). Activity finished at 04:07 (48 mins before sunrise).	Under: 0 Over: 1 C.pip Total Bats: 1
23 Aug 16 Sunset: 20:33	Start: 20:18 End: 22:33	Start: 16 End: 13	Start: 8 End: 8	Start: 1 End: 0	Start: 0 End: 0	NB	One C.pip and one S.pip were observed crossing over the A9 from south to north.	One C.pip crossed over the A9 at 21:35 (62 mins after sunset) and one S.pip crossed at 21:14 (41 mins after sunset). Activity started at 21:13 (55 mins after sunset) and continued until 22:06 (93 mins after sunset).	Under: 0 Over: 1 C.pip, 1 S.pip Total Bats: 2
						SB	Two C.pip observed crossing over the A9 south to north.	One C.pip crossed over the A9 at 21:13 (40 mins after sunset) and one C.pip crossed at 21:44 (71 mins after sunset). Activity started at 20:59 (26 mins after sunset) and continued to the end of survey.	Under: 0 Over: 2 C.pip Total Bats: 2
22 Sep 16 Sunrise: 07:01	Start: 05:01 End: 07:16	Start: 13 End: 8	Start: 8 End: 8	Start: 0 End: 0	Start: 0 End: 0	NB	No Crossings	No Crossings	No Crossings
						SB	No Crossings	No Crossings	No Crossings





Table 1.26: Crossing Location CP23 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP23 (TN152) NH 86634 10126									
Habitat Description: Underpass – watercourse culvert with pasture both sides									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ¹⁵	Rain (0 – 5) ¹⁶	Wind (0 – 12) ¹⁷				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = <i>Myotis</i> ; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
Sunrise survey on 26 Aug 16 not undertaken due to access issues on arrival. Lamping noted in immediate area. No opportunity to reschedule in August, additional survey undertaken at on 1 Sep 16.									
25 May 16	Start: 02:36	Start: 8	Start: 8	Start: 0	Start: 1	NB	No crossings	No crossings	No crossings
Sunrise: 04:36	End: 04:51	End: 6	End: 8	End: 0	End: 1	SB	Two C.pip were observed commuting over the A9 (south to north).	One C.pip observed crossing over A9 at 03:52 (44 mins before sunrise) and another C.pip crossed at 04:06 (30mins before sunrise). Activity finished at 04:06 (30 mins before sunrise).	Under: 0 Over: 2 C.pip Total Bats: 2
21 Jun 16	Start: 22:00	Start: 12	Start: 6	Start: 0	Start: 0	NB	No Crossings	No Crossings	No Crossings
Sunset 22:15	End: 00:15	End: 13	End: 7	End: 0	End: 1	SB	Three C.pip were observed commuting north to south over the A9.	Three C.pip were observed at 22:34 crossing over the A9 (19 mins after sunset). Activity started at 22:31 (16 mins after sunset) and continued until 23:39 (84 mins after sunset).	Under: 0 Over: 3 C.pip Total Bats: 3
27 Jul 16	Start: 21:20	Start: 13	Start: 4	Start: 0	Start: 2	NB	No Crossings	No Crossings	No Crossings
Sunset: 21:38	End: 23:38	End: 13	End: 6	End: 0	End: 2	SB	No Crossings	No Crossings	No Crossings
01 Sep 16	Start: 19:56	Start: 13	Start: 8	Start: 0	Start: 0	NB	Five S. pip recorded crossing over the A9 north to south.	Five S.pip observed crossing over A9 between 20:33 (22 mins after sunset) and 21:08 (57 mins after sunset). Activity started at 20:37 (26 mins after sunset) and continued to the end of the survey.	Under: 0 Over: 5 S.pip Total Bats: 5
Sunset: 20:11	End: 22:11	End: 13	End: 8	End: 2	End: 0	SB	No Crossings	No Crossings	No Crossings
02 Sep 16	Start: 04:20	Start: 13	Start: 8	Start: 1	Start: 0	NB	No Crossings	No Crossings	No Crossings
Sunrise: 06:20	End: 06:35	End: 11	End: 5	End: 0	End: 0	SB	No Crossings	No Crossings	No Crossings

¹⁵ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

¹⁶ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

¹⁷ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





Table 1.27: Crossing Location CP21 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP21 (TN172) NH 83729 25391									
Habitat Description: watercourse culvert passing under A9 cycle path and railway. Heath both sides of feature.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ¹⁸	Rain (0 – 5) ¹⁹	Wind (0 – 12) ²⁰				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
25 May 16 Sunset: 21:51	Start: 21:35 End: 23:51	Start: 10 End: 6	Start: 8 End: 8	Start: 0-1 End: 0-1	Start: 2 End: 2	NB SB	No Crossings	No Crossings	No Crossings
21 Jul 16 Sunrise: 04:54	Start: 02:54 End: 05:09	Start: 16 End: 16	Start: 7 End: 8	Start: 0 End: 0	Start: 1 End: 1	NB SB	No Crossings No Crossings	No Crossings No Crossings	No Crossings No Crossings
19 Sep 16 Sunset: 19:20	Start: 19:07 End: 21:23	Start: 10 End: 9	Start: 1 End: 2	Start: 0 End: 0	Start: 1 End: 0	NB SB	One C.pip observed crossing over the A9 north to south.	One C.pip crossed over the A9 at 20:23 (63 mins after sunset). Activity started at 20:11 (51 mins after sunset) and continued to the end of the survey.	Under: 0 Over: 1 C.pip Total Bats: 1
							Thirteen C.pip were observed crossing over the A9 from south to north and one south east to north west.	Fourteen C.pips were observed crossing between 19:53 and 21:00 (between 33 mins and 100 mins after sunset). Activity started at 19:53 (33 mins after sunset) and continued to the end of the survey.	Under: 0 Over: 14 C.pip Total Bats: 14

¹⁸ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

¹⁹ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

²⁰ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





Table 1.28: Crossing Location CP18 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP18 (TN336) NH 84047 24954									
Habitat Description: watercourse culvert under A9. Heath both sides of feature.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ²¹	Rain (0 – 5) ²²	Wind (0 – 12) ²³				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
26 May 16	Start: 02:35	Start: 7	Start: 8	Start: 0-1	Start: 2	NB	No Crossings	No Crossings	No Crossings
Sunrise 04:35	End: 04:50	End: 7	End: 8	End: 0-1	End: 2	SB	No Crossings	No Crossings	No Crossings
20 Jul 16	Start: 21:36	Start: 18	Start: 7	Start: 0	Start: 1-2	NB	No Crossings	No Crossings	No Crossings
Sunset: 21:51	End: 23:51	End: 14	End: 7	End: 0	End: 2	SB	No Crossings	No Crossings	No Crossings
29 Sep 16	Start: 05:17	Start: 7	Start: 0	Start: 0	Start: 6	NB	No Crossings	No Crossings	No Crossings
Sunrise: 07:17	End: 07:33	End: 6	End: 6	End: 1	End: 7	SB	No Crossings	No Crossings	No Crossings

Table 1.29: Crossing Location CP02 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP02 (TN 270) NH 86861 10178									
Habitat Description: Overpass – Tree lined access track either side of the A9. Pasture habitat on both sides.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ²⁴	Rain (0 – 5) ²⁵	Wind (0 – 12) ²⁶				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
23 May 16	Start: 21:29	Start: 11	Start: 8	Start: 0	Start: 1	NB	Bats were observed commuting over the crossing point in both directions at a max height of approximately 10m above the road. Both C.pip and S.pip were identified crossing north to south.	The first C.pip was observed crossing the A9 at 22:07 (23 mins after sunset) and first S.pip at 22:17 (33 mins. The last crossing was observed at 22:59 (75 mins after sunset). Activity started at 21:38 (six mins before sunset) and continued to the end of the survey.	Under: 0 Over: 16 C.pip & 4 S.pip, 8 U.pip
Sunset: 21:44	End: 23:44	End: 9	End: 6	End: 0	End: 0				Total Bats: 28
						SB	Mainly C.pip observed crossing south to north at the crossing point with four crossing approximately 20-50m east of crossing point.	The first bat was observed crossing at 21:43 (one min before sunset) and last bat crossed at 23:18 (96mins after sunset).	Under: 0 Over: 21 C.pip, 5 S.pip, 5 U.pip

21 Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

22 Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

23 Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

24 Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

25 Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

26 Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP02 (TN 270) NH 86861 10178									
Habitat Description: Overpass – Tree lined access track either side of the A9. Pasture habitat on both sides.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ²⁴	Rain (0 – 5) ²⁵	Wind (0 – 12) ²⁶				
									Total Bats: 28
21 Jun 16 Sunrise: 04:18	Start: 02:18 End: 04:33	Start: 11 End: 10	Start: 8 End: 8	Start: 0 End: 0	Start: 0 End: 0	NB	Mainly C.pip were observed crossing the A9 north to south with 33 recorded, along with four S.pip, one U.pip and three unknown bats. Bats were observed crossing from both sides of the A9 continually up until sunrise.	The first bat observed crossing was a C.pip at 02:20 (118 mins before sunrise) and the last bat crossed at 04:10 (eight mins before sunrise) which was unknown species. Activity finished at 04:10 (eight mins before sunrise).	Under: 0 Over: 4 S.pip, 33 C.pip, 1 U.pip, 3 Unk Total Bats: 41
						SB	C.pip were observed crossing the A9 south to north as well as two unknown bats.	First bat observed crossing at 02:38 (100 mins before sunrise) and the last bat crossed at 04:10 (eight mins before sunrise) Activity finished at 04:02 (16 mins before sunrise).	Under: 0 Over: 33 C.pip, 2 Unk Total Bats: 35
18 Jul 16 Sunset: 21:54	Start: 21:39 End: 23:54	Start: 20 End: 15	Start: 5 End: 7	Start: 0 End: 0	Start: 0 End: 0	NB	Six C.pip and two S.pip were observed crossing north to south over the A9. Majority of crossing bats during the survey crossed 5m above the ground between the gate posts travelling from north to south.	The first C.pip crossed at 22:33 (39 mins after sunset) followed by the first S.pip at 22:34 (40 mins after sunset). The last bat was observed crossing at 23:43 (109 min after sunset). Activity started at 22:33 (39 mins after sunset) and continued to the end of the survey.	Under: 0 Over: 6 C.pip, 2 S.pip, Total Bats: 8
						SB	Sixteen C.pip, four S.pip and one unknown bat were recorded crossing south to north over the A9. Bats were observed crossing the A9 early during the survey.	The first bat observed crossing was two S.pip at 21:53 (one min after sunset). The first C.pip crossed at 21:56 and last bat crossed at 22:30 (36 mins after sunset). Activity started at 21:53 (one min before sunset) and continued to the end of the survey.	Under: 0 Over: 16 C.pip, 4 S.pip, 1 Unk Total Bats: 21
19 Jul 16 Sunrise: 04:50	Start: 02:50 End: 05:05	Start: 14 End: 14	Start: 8 End: 8	Start: 0 End: 0	Start: 2 End: 2	NB	Thirty six C.pip and one S.pip crossed north to south over the A9. Continuous observations of crossing the A9.	The first bat crossed was a C.pip at 03:41 (69 mins before sunrise) and the last bat observed crossing at 04:26 (24 mins before sunrise). Activity finished at 04:26 (24 mins before sunrise)	Under: 0 Over: 36 C.pip, 1 S.pip Total Bats: 37
						SB	Seven C.pip and one S.pip crossed over the A9 south to north. Regular crossings during the survey by C.pip flying from south to north.	The first bats was observed crossing at 02:50 (120 mins before sunrise) which were one S.pip and one C.pip, The last bat was observed crossing at 04:33 (17 mins before sunrise). Activity finished at 04:33 (17 mins before sunrise).	Under: 0 Over: 7 C.pip, 1 S.pip Total Bats: 8
25 Aug 16 Sunset: 20:26	Start: 20:11 End: 22:26	Start: 16 End: 13	Start: 2 End: 3	Start: 0 End: 0	Start: 1 End: 0	NB	One S.pip crossed from north to south over the A9.	One S.pip was observed crossing at 21:32 (66 mins after sunset). Activity started at 21:10 (44 mins after sunset) and continued to the end of the survey.	Under: 0 Over: 1 S.pip Total Bats: 1
						SB	Eight C.pip and one S.pip crossed over the A9 from south to north.	Eight C.pip crossed the A9 between 20:59 (33 mins after sunset) and 21:49 (83 mins after sunset). One S.pip crossed at 21:10 (44 mins after sunset)	Under: 0 Over: 8 C.pip, 1 Spip





OS grid reference: Dalraddy to Slochd Crossing CP02 (TN 270) NH 86861 10178									
Habitat Description: Overpass – Tree lined access track either side of the A9. Pasture habitat on both sides.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ²⁴	Rain (0 – 5) ²⁵	Wind (0 – 12) ²⁶				
									Total Bats: 9
21 Sep 16 Sunset: 19:15	Start: 19:00 End: 21:15	Start: 14 End: 13	Start: 8 End: 8	Start: 0 End: 0	Start: 0 End: 1	NB	Two C.pip, two S.pip and one U.pip recorded crossing over the A9 were observed from north to south.	Five bats observed crossing between 19:37 (22 mins after sunset) and 20:54 (99 mins after sunset). Activity started at 19:37 (22 mins after sunset) and continued until 20:54 (99 mins after sunset).	Under: 0 Over: 2 C.pip, 2 S.pip, 1 U.pip Total Bats: 5
						SB	Two C.pip, one S.pip and one Unk were observed crossing the A9 from south to north.	The first bats crossed at 19:39 (24 mins after sunset) and the last bat crossed at 21:11 (116 mins after sunset). Activity started at 19:27 (12 mins after sunset) and continued until 21:14 (119 mins after sunset).	Under: 0 Over: 2 C.pip, 1 S.pip, 1 Unk Total Bats: 4

Table 1.30: Crossing Location CP19 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP19 (TN 272a) NH 86853 10180									
Habitat Description: Underpass – access track culvert under A9 with pasture either side.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ²⁷	Rain (0 – 5) ²⁸	Wind (0 – 12) ²⁹				
<i>C.pip = common pipistrelle; S.pip = soprano pipistrelle; U.pip = unknown pipistrelle; Myt = Myotis; BLE = brown long-eared; Unk = unknown bat species</i>									
24 May 16 Sunrise 04:37	Start: 02:37 End: 04:52	Start: 11 End: 6	Start: 6 End: 5	Start: 0 End: 0	Start: 0 End: 1	NB	One C.pip crossed over the A9 (c. 10m above) parallel with the culvert.	Bat observed crossing at 04:03 (34 mins before sunrise). Activity started 02:53 (104 mins before sunrise) and finished at 04:03 (34 mins before sunrise).	Under: 0 Over: 1 C.pip Total Bats: 1
						SB	One C.pip crossed from south to north.	One C.pip crossed over the A9 at 03:29 (68 mins before sunrise).	Under: 0 Over: 1 C.pip Total Bats: 1
20 Jun 16 Sunset 22:15	Start: 22:00 End: 00:15	Start: 11 End:	Start: 8 End: 7	Start: 0 End:	Start: 1 End: 0	NB	Several C.pip were observed crossing under and over the feature during the survey period commuting from north to south.	Bats crossed between 22:52 (37 mins after sunset) and 23:05 (50 mins after sunset). Activity started at 22:38 (23 mins after sunset) and continued to the end of the survey.	Under: 5 C.pip Over: 3 C.pip Total Bats: 8

²⁷ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

²⁸ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

²⁹ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP19 (TN 272a) NH 86853 10180									
Habitat Description: Underpass – access track culvert under A9 with pasture either side.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ²⁷	Rain (0 – 5) ²⁸	Wind (0 – 12) ²⁹				
		11		0		SB	C.pip were observed using the culvert to commute through and crossing over the A9 at the crossing point location travelling south to north.	Bats crossed over and under the A9 between 22:19 (4 mins after sunset) and 23:20 (65 mins after sunset). Activity started at 22:25 (10 mins after sunset) and continued to the end of the survey.	Under: 8 C.pip Over: 7 C.pip Total Bats: 15
21 Jul 16	Start: 21:34 End: 23:49	Start: 17 End: 16	Start: 2 End: 7	Start: 0 End: 0	Start: 0 End: 0	NB	No Crossings	No Crossings	No Crossings
Sunset: 21:49						SB	Two C.pip were observed crossing under the A9 from south to north through the culvert during the survey.	The first C.pip was observed crossing at 22:29 (40 mins after sunset) followed by the second at 22:31 (42 mins after sunset). Activity started at 22:06 (17 mins after sunset) and continued to the end of the survey.	Under: 2 C.pip Over: 0 Total Bats: 2
22 Aug 16	Start: 20:16 End: 22:31	Start: 13 End: 11	Start: 3 End: 2	Start: 0 End: 0	Start: 1 End: 1	NB	One S.pip observed crossing over the A9 from north to south.	The S.pip was observed crossing over the A9 at 21:13 (42 mins after sunset). Activity started at 21:05 (34 mins after sunset) and continued to the end of the survey.	Under: 0 Over: 1 S.pip Total Bats: 1
Sunset: 20:31						SB	No Crossings	No Crossings	No Crossings
23 Aug 16	Start: 04:02 End: 06:17	Start: 8 End: 10	Start: 5 End: 6	Start: 0 End: 1	Start: 0 End: 0	NB	One C.pip and one S.pip observed crossing under the feature from north to south. One S.pip crossing over the feature from north to south.	Bats were observed crossing between 04:29 (93 mins before sunrise) and 04:41 (81 mins before sunrise). Activity finished at 05:01 (61 mins before sunrise).	Under: 1 C.pip, 1 S.pip Over: 1 S.pip Total Bats: 3
Sunrise: 06:02						SB	One S.pip was observed crossing over the feature from south to north.	One S.pip crossed at 05:07 (55 mins before sunrise). Activity finished at 05:30 (32 mins before sunrise).	Under: 0 Over: S.pip 1 Total Bats: 1
20 Sept 16	Start: 04:57 End: 07:12	Start: 7 End: 9	Start: 8 End: 4	Start: 0 End: 0	Start: 0 End: 0	NB	No Crossings	No Crossings	No Crossings
Sunrise: 06:57						SB	No Crossings	No Crossings	No Crossings





Table 1.31: Crossing Location CP20 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP20 (TN272b) NH 86853 10180									
Habitat Description: Underpass - watercourse culvert passing under the A9 with pasture either side.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ³⁰	Rain (0 – 5) ³¹	Wind (0 – 12) ³²				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
24 May 16 Sunset 21:46	Start: 21:31 End: 23:46	Start: 8 End: 6	Start: 8 End: 8	Start: 0 End: 0	Start: 2 End: 0	NB	One C.pip and one S.pip were observed crossing the A9 over the culvert from north to south.	One C.pip crossed at 22:12 (26 mins after sunset). One S.pip crossed 22:13 (27 mins after sunset). Activity started at 21:48 (14 mins after sunset) and continued until 23:30 (104 mins after sunset).	Under: 0 Over: 1 C.pip, 1 S.pip Total Bats: 2
						SB	Two C.pip crossed the A9 over the culvert c.5m above the road from south to north.	The first C.pip crossed at 22:02 (16 mins after sunset) followed by the second at 22:08 (22 mins after sunset). Activity started at 21:46 (12 mins after sunset) and continued until 23:40 (114 mins after sunset).	Under: 0 Over: 2 C.pip Total Bats: 2
22 Jun 16 Sunrise 04:19	Start: 02:19 End: 04:34	Start: 13 End: 13	Start: 8 End: 8	Start: 1 End: 1	Start: 3 End: 1	NB	No Crossings	No Crossings	No Crossings
						SB	No Crossings	No Crossings	No Crossings
19 Jul 16 Sunset: 21:52	Start: 21:37 End: 23:52	Start: 20 End: 17	Start: 1 End: 4	Start: 0 End: 0	Start: 0 End: 0	NB	No Crossings	No Crossings	No Crossings
						SB	Three crossings during the survey were directly over the feature. The other two were 10m to the east. All crossings identified were from south to north.	Bats were recorded crossing over the A9 between 22:18 (26 mins after sunset) and 22:57 (65 mins after sunset). Activity started at 22:11 (19 mins after sunset) and continued until 23:30 (98 mins after sunset).	Under: 0 Over: 5 C.pip Total Bats: 5
25 Aug 16 Sunrise: 06:06	Start: 04:06 End: 06:21	Start: 8 End: 8	Start: 7 End: 8	Start: 0 End: 0	Start: 0 End: 0	NB	One S.pip crossed the feature from north to south.	One S.pip recorded crossing 05:27 (39 mins before sunrise). Activity finished at 05:32 (34 mins before sunrise).	Under: 0 Over: 1 S.pip Total Bats: 1
						SB	One S.pip observed crossing over the A9 south to north.	S.pip crossed over the A9 at 05:39 (27 mins before sunrise). Activity finished at 05:44 (22 mins before sunrise)	Under: 0 Over: 1 S.pip Total Bats: 1
20 Sep 16	Start: 19:03	Start: 11	Start: 3	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings

³⁰ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

³¹ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

³² Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP20 (TN272b) NH 86853 10180									
Habitat Description: Underpass - watercourse culvert passing under the A9 with pasture either side.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ³⁰	Rain (0 – 5) ³¹	Wind (0 – 12) ³²				
Sunset: 19:18	End: 21:18	End: 9	End: 0	End: 0	End: 0	SB	No Crossings	No Crossings	No Crossings
21 Sep 16	Start: 04:59	Start: 10	Start: 7	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunrise: 06:59	End: 07:14	End: 11	End: 5	End: 0	End: 2	SB	No Crossings	No Crossings	No Crossings

Table 1.32: Crossing Location CP03 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP03 (TN 279) NH 88358 10619									
Habitat Description: Underpass – watercourse culvert with pasture either side of the A9.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ³³	Rain (0 – 5) ³⁴	Wind (0 – 12) ³⁵				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
05 May 16	Start: 20:53	Start: 8	Start: 1	Start: 0	Start: 1	NB	Two <i>S.pip</i> crossed the A9 over the culvert and one <i>C.pip</i> crossed through the culvert north to south.	Two <i>S.pip</i> crossed over the A9 at 21:38 (30 mins after sunset) and <i>C.pip</i> crossed through at 23:03 (115 mins after sunset).	Under: 1 <i>C.pip</i> Over: 2 <i>S.pip</i> Total Bats: 3
Sunset: 21:08	End: 23:08	End: 7	End: 1	End: 0	End: 1	SB	Three <i>S.pip</i> crossed the A9 over the culvert c.5m above the road from south to north	Three <i>S.pip</i> crossed over the A9 at 21:41 (33 mins after sunset) and 21:52 (44 mins after sunset).	Under: 0 Over: 3 <i>S.pip</i> Total Bats: 3
26 May 16	Start: 02:34	Start: 7	Start: 8	Start: 1	Start: 1	NB	One <i>C.pip</i> crossed the A9 over the culvert c.5m above the road from north to south	The one <i>C.pip</i> crossed over the A9 at 04:20 (14 mins before sunrise).	Under: 0 Over: 1 <i>C.pip</i> Total Bats: 1
Sunrise: 04:34	End: 04:49	End: 7	End: 8	End: 1	End: 0	SB	One <i>C.pip</i> crossed the A9 over the culvert c.5m above the road from south to north	The one <i>C.pip</i> crossed over the A9 at 04:21 (13 mins before sunrise).	Under: 0 Over: 1 <i>C.pip</i> Total Bats: 1
17 Jun 16	Start: 02:18	Start: 8	Start: 8	Start: 1	Start: 0	NB	No Crossings	No Crossings	No Crossings

³³ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

³⁴ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

³⁵ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP03 (TN 279) NH 88358 10619									
Habitat Description: Underpass – watercourse culvert with pasture either side of the A9.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ³³	Rain (0 – 5) ³⁴	Wind (0 – 12) ³⁵				
Sunrise: 04:18	End: 04:33	End: 8	End: 8	End: 1	End: 0	SB	No Crossings	No Crossings	No Crossings
22 Jun 16 Sunset: 22:15	Start: 22:00 End: 00:15	Start: 13 End: 11	Start: 6 End: 7	Start: 0 End: 0	Start: 1 End: 0	NB	Four S.pip were observed flying through the culvert from south to north and one U.pip observed flying over the A9.	Bats were recorded crossing the A9 between 22:52 (37 mins after sunset) and 00:01 (106 mins after sunset). Activity started at 22:51 (36 mins after sunset) and continued until 00:07 (115 mins after sunset).	Under: 4 S.pip Over: 1 U.pip Total Bats: 5
						SB	Six S.pip were observed crossing through and one over the culvert from south to north.	Bats crossed through the culvert between 22:53 (38 mins after sunset) and 23:52 (97 mins after sunset). One S.pip crossed over the A9 at 23:57 (102 mins after sunset). Activity started at 22:52 (37 mins after sunset) and continued until 00:07 (112 mins after sunset).	Under: 6 S.pip Over: 1 S.pip Total Bats: 7
14 Jul 16 Sunset: 22:02	Start: 21:47 End: 00:02	Start: 16 End: 10	Start: 8 End: 8	Start: 0 End: 0	Start: 1 Start: 1	NB	Bats recorded feeding within the culvert with seven recorded crossing from north to south through the culvert. One S.pip recorded crossing over the A9 north to south.	Bats were recorded crossing the A9 between 22:31 (29 mins after sunset) and 23:56 (114 mins after sunset). Activity started at 22:31 (29 mins after sunset) and continued until 23:56 (114 mins after sunset).	Under: 6 S.pip, 1 C.pip Over: 1 S.pip Total Bats: 8
						SB	Ten S.pip and one C.pip crossed through the culvert from south to north. Two S.pip crossed over the A9 south to north.	Bats were recorded crossing the A9 between 22:25 (23 mins after sunset) and 23:50 (108 mins after sunset). Activity started at 22:11 (nine mins after sunset) and continued until the end of the survey.	Under: 10 S.pip, 1 C.pip Over: 2 S.pip Total Bats: 13
21 Jul 16 Sunrise: 04:54	Start: 02:54 End: 05:09	Start: 13 End: 12	Start: 8 End: 8	Start: 0 End: 0	Start: 2 End: 1	NB	Five S.pip recorded were foraging inside or in front of the culvert then crossing north to south.	Bats were recorded going through the culvert between 03:45 (69 mins before sunrise) and 04:01 (53 mins before sunrise). Activity finished at 04:01 (53 mins before sunrise)	Under: 5 S.pip Over: 0 Total Bats: 5
						SB	Two S.pip and one C.pip were recorded crossing over the A9 from south to north by S.pip. One S.pip crossed through culvert.	Bats were observed crossing between 03:29 (85 mins before sunrise) and 04:01 (53 mins before sunrise). Activity finished at 04:01 (53 mins before sunrise)	Under: 1 S.pip Over: 2 S.pip, 1 C.pip Total Bats: 4
19 Aug 16 Sunrise: 05:51	Start: 03:51 End: 06:06	Start: 7 End: 5	Start: 2 End: 1	Start: 0 End: 0	Start: 0 End: 0	NB	No Crossings	No Crossings	No Crossings
						SB	No Crossings	No Crossings	No Crossings
24 Aug 16 Sunset: 20:28	Start: 20:13 End: 22:28	Start: 15 End: 11	Start: 4 End: 3	Start: 0 End: 0	Start: 0 End: 0	NB	Three S.pip crossed from north to south through the culvert after foraging inside the culvert. One S.pip crossed over the A9 north to south.	Bats were recorded crossing between 21:01 (33 mins after sunset) and 21:24 (56 mins after sunset). Activity started at 21:01 (33 mins after sunset) and continued until 21:55 (87 mins after sunset).	Under: 3 S.pip Over: 1 S.pip Total Bats: 4
						SB	One S.pip and one Unk bat crossed from south to north through the culvert. One S.pip crossed over the A9 south to north.	Bats recorded crossing between 21:11 (43 mins after sunset) and 21:53 (85 mins after sunset). Activity started at 20:53 (25 mins after sunset) and continued until 22:55 (87 mins after sunset).	Under: 1 S.pip, 1 Unk Over: 1 S.pip Total Bats: 3
15 Sep 16	Start: 19:20	Start: 18	Start: 7	Start: 0	Start: 1	NB	Two S.pip were recorded crossing under	Bats were recorded crossing between 19:59 (24	Under: 2 S.pip





OS grid reference: Dalraddy to Slochd Crossing CP03 (TN 279) NH 88358 10619									
Habitat Description: Underpass – watercourse culvert with pasture either side of the A9.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ³³	Rain (0 – 5) ³⁴	Wind (0 – 12) ³⁵				
Sunset: 19:35	End: 21:35	End: 17	End: 6	End: 0	End: 0		the A9 through the culvert. The other four bats crossed over the A9 north to south.	mins after sunset) and 21:22 (107 mins after sunset) Activity started at 19:59 (24 mins after sunset) and continued until 21:22 (107 mins after sunset).	Over: 1 S.pip, 1 C.pip, 2 Unk Total Bats: 6
						SB	S.pip were observed crossing over the culvert at between 15m to 20m height (above road) from south to north. One S.pip observed crossing through the culvert.	Bats recorded crossing between 20:33 (58 mins after sunset) and 21:18 (103 mins after sunset). Activity started at 20:01 (26 mins after sunset) and continued until 21:34 (119 mins after sunset).	Under: 1 S.pip Over: 11 S.pip Total Bats: 12
23 Sep 16	Start: 05:04	Start: 6	Start: 1	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunrise: 07:04	End: 07:19	End: 5	End: 2	End: 0	End: 0	SB	One S.pip crossed over the A9 south to north at 5m above road.	One S. observed crossing at 06:40 (24 mins before sunrise). Activity finished at 06:40 (24 mins before sunrise)	Under: 0 Over: 1 S.pip Total Bats: 1

Table 1.33: Crossing Location CP07 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP07 (TN305) NH 89078 12392									
Habitat Description: Tree lined access track either side of the A9 (potential crossing feature). Mixed broadleaved woodland on the northbound side and the town of Aviemore on the southbound side.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ³⁶	Rain (0 – 5) ³⁷	Wind (0 – 12) ³⁸				
<i>C.pip = common pipistrelle; S.pip = soprano pipistrelle; U.pip = unknown pipistrelle; Myt = Myotis; BLE = brown long-eared; Unk = unknown bat species</i>									
06 May 16	Start: 03:15	Start: 5	Start: 5	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings
Sunrise: 05:15	End: 05:30	End: 7	End: 6	End: 0	End: 1	SB			
25 May 16 Sunset: 21:48	Start: 21:33 End: 23:48	Start: 8 End: 7	Start: 8 End: 8	Start: 0 End: 0	Start: 1 End: 0	NB	One C.pip crossing over the A9 at 6m above road level from west to east.	C.pip recorded crossing at 22:07 (19 mins after sunset). Activity started at 22:06 (18 mins after sunset) and continued until 23:31 (108 mins after sunset).	Under: 0 Over: 1 C.pip Total Bats: 1
						SB	Two C.pip crossed over the feature from east to west.	First C.pip crossed at 22:06 (18 mins after sunset) with second crossing at 22:55 (67 mins after sunset). Activity started at 22:03 (18 mins after sunset) and continued until 22:55 (67 mins after sunset).	Under: 0 Over: 2 C.pip Total Bats: 2
16 Jun 16 Sunset 22:18	Start: 22:03 End: 00:18	Start: 9 End: 8	Start: 8 End: 8	Start: 2 End: 1	Start: 1 End: 0	NB	One S.pip crossed the feature from west to east.	One S.pip crossed over the A9 at 23:20 (62 mins after sunset). Activity started at 22:35 (17 mins after sunset) and continued until 23:31 (73 mins after sunset).	Under: 0 Over: 1 S.pip

³⁶ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

³⁷ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

³⁸ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP07 (TN305) NH 89078 12392									
Habitat Description: Tree lined access track either side of the A9 (potential crossing feature). Mixed broadleaved woodland on the northbound side and the town of Aviemore on the southbound side.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ³⁶	Rain (0 – 5) ³⁷	Wind (0 – 12) ³⁸				
									Total Bats: 1
						SB	Three S.pip and two U.pip observed crossing over the A9 from west to east.	Bats recorded crossing between 22:34 (16 mins after sunset) and 23:21 (63 mins after sunset). Activity started at 22:34 (16 mins after sunset) and continued until 22:55 (37 mins after sunset).	Under: 0 Over: 3 S.pip, 2 U.pip Total Bats: 5
23 Jun 16	Start: 02:19 End: 04:34	Start: 11 End: 9	Start: 7 End: 5	Start: 0 End: 0	Start: 0 End: 0	NB	One C.pip crossed over the feature from west to east.	One C.pip observed crossing at 03:19 (60 mins before sunrise). Activity finished at 03:28 (51 mins before sunrise).	Under: 0 Over: 1 C.pip Total Bats: 1
						SB	Two C.pip crossed the feature from north east to south west.	Bats observed crossing at 02:40 (99 mins before sunrise) and 03:05 (74 mins before sunrise). Activity finished at 03:19 (60 mins before sunrise)	Under: 0 Over: 2 C.pip Total Bats: 2
15 Jul 16	Start: 02:43 End: 04:58	Start: 14 End: 10	Start: 8 End: 8	Start: 0 End: 1	Start: 1 End: 1	NB	No Crossings	No Crossings	No Crossings
						SB	No Crossings	No Crossings	No Crossings
20 Jul 16	Start: 21:36 End: 23:51	Start: 16 End: 14	Start: 7 End: 8	Start: 0 End: 0	Start: 2 End: 2	NB	No Crossings	No Crossings	No Crossings
						SB	Two C.pip observed crossing the A9 from east to west.	Bats observed crossing at 22:17 (26 mins after sunset) and 22:55 (64 mins after sunset). Activity started at 22:17 (26 mins after sunset) and continued until 23:47 (116 mins after sunset).	Under: 0 Over: 2 C.pip Total Bats: 2
18 Aug 16	Start: 20:36 End: 22:51	Start: 15 End: 13	Start: 1 End: 0	Start: 0 End: 1	Start: 1 End: 0	NB	One C.pip was observed crossing the A9 from west to east.	Bat observed crossing at 22:45 (114 mins after sunset). Activity started at 21:25 (34 mins after sunset) and continued until 22:49.	Under: 0 Over: 1 C.pip Total Bats: 1
						SB	Three C.pip and 1 <i>Myotis</i> sp. were recorded crossing the A9 from east to west.	Bats observed crossing between 21:35 (44 mins after sunset) and 22:55 (64 mins after sunset). Activity started at 21:18 (27 mins after sunset) and continued until 22:43.	Under: 0 Over: 3 C.pip, 1 <i>Myotis</i> sp. Total Bats: 4
24 Aug 16	Start: 04:04 End: 06:19	Start: 13 End: 11	Start: 8 End: 6	Start: 0 End: 0	Start: 1 End: 0	NB	One S.pip were recorded crossing the A9 at the feature from west to east.	One S.pip was observed crossing at 04:44 (80 mins before sunrise). Activity finished at 05:05 (59 mins before sunrise).	Under: 0 Over: 1 S.pip Total Bats: 1
						SB	Three C.pip, one S.pip and one U.pip were observed crossing the A9 from east to west.	Bats observed crossing between 04:08 (116 mins before sunrise) and 05:18 (46 mins before sunrise). Activity finished at 05:28 (37 mins before sunrise).	Under: 0 Over: 3 C.pip, 1 S.pip, 1 U.pip Total Bats: 5
16 Sep 16	Start: 04:50	Start: 11	Start: 8	Start: 1	Start: 0	NB	Two C.pip was observed crossing the A9 from west to east.	Bats observed crossing 06:37 (13 mins before sunrise). Activity finished at 06:40 (10	Under: 0 Over: 2 C.pip





OS grid reference: Dalraddy to Slochd Crossing CP07 (TN305) NH 89078 12392										
Habitat Description: Tree lined access track either side of the A9 (potential crossing feature). Mixed broadleaved woodland on the northbound side and the town of Aviemore on the southbound side.										
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road	
		Temp (°C)	Cloud (0 – 8) ³⁶	Rain (0 – 5) ³⁷	Wind (0 – 12) ³⁸					
Sunrise: 06:50	End: 07:05	End: 11	End: 8	End: 0	End: 2			mins before sunrise).	Total Bats: 2	
						SB	Two C.pip observed crossing the A9 from east to west.	Bats observed crossing at 05:55 (55 mins before sunrise) and 05:57 (53 mins before sunrise). Activity finished at 06:40 (10 mins before sunrise).	Under: 0 Over: 2 C.pip Total Bats: 2	
22 Sep 16	Start: 18:58	Start: 11	Start: 7	Start: 0	Start: 1	NB	No Crossings	No Crossings	No Crossings	
Sunset: 19:12	End: 21:12	End: 10	End: 4	End: 0	End: 0	SB	Seven C.pip and one Unk bats observed crossing from east to west over the feature.	Bats observed crossing between 19:54 (41 mins after sunset) and 21:00 (107 mins after sunset). Activity started at 19:54 (41 mins after sunset) and continued until 20:38 (41 mins after sunset).	Under: 0 Over: 7 C.pip, 1 Unk Total Bats: 8	

Table 1.34: Crossing Location CP01 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP01 (TN436) NH 85648 09540										
Habitat Description: Underpass - watercourse culvert with coniferous plantation either side of the feature.										
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road	
		Temp (°C)	Cloud (0 – 8) ³⁹	Rain (0 – 5) ⁴⁰	Wind (0 – 12) ⁴¹					
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species										
26 May 16	Start: 21:35	Start: 10	Start: 5	Start: 0	Start: 0	NB	Four C.pip crossed the A9 over the culvert from north west to south east.	Bats observed crossing between 22:33 (43 mins after sunset) and 22:54 (64 mins after sunset). Activity started at 22:25 (35 mins after sunset) and continued until 23:30 (100 mins after sunset).	Under: 0 Over: 4 C.pip Total Bats: 4	
Sunset: 21:50	End: 23:50	End: 7	End: 7	End: 0	End: 0	SB	One S.pip crossed the A9 over the culvert from south east to north west.	Bat observed crossing at 22:25 (35 mins after sunset).	Under: 0 Over: 1 S.pip Total Bats: 1	
24 Jun 16	Start: 02:20	Start: 13	Start: 7	Start: 0	Start: 0	NB	One S.pip crossed over the A9 from north west to south east	One S.pip crossed over the A9 at 04:05 (15 mins before sunrise).	Under: 0 Over: 1 S.pip Total Bats: 1	
Sunrise: 04:20	End: 04:35	End: 12	End: 7	End: 1	End: 0	SB	No Crossings	No Crossings	No Crossings	
31 Aug 16	Start: 19:58	Start:	Start:	Start:	Start:	NB	No Crossings	No Crossings	No Crossings	

39 Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

40 Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

41 Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP01 (TN436) NH 85648 09540									
Habitat Description: Underpass - watercourse culvert with coniferous plantation either side of the feature.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on Behaviour	Comments on Timings (e.g. mins before/after sunset/sunrise)	Bats Crossing the Road
		Temp (°C)	Cloud (0 – 8) ³⁹	Rain (0 – 5) ⁴⁰	Wind (0 – 12) ⁴¹				
Sunrise: 20:13	End: 22:13	16 End: 15	8 End: 8	1 End: 0	1 End: 1	SB	No Crossings	No Crossings	No Crossings

2017 Crossing Point Survey Results

Table 1.35: Crossing Location CP02 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP02 (TN270) NH 87147 10247									
Habitat Description: Tree lined access track either side of the A9. Pasture habitat on both sides.									
Date Sunset/Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁴²
		Temp (°C)	Cloud (0 –8) ⁴³	Rain (0 - 5) ⁴⁴	Wind (0 – 12) ⁴⁵				
<i>C.pip = common pipistrelle; S.pip = soprano pipistrelle; U.pip = unknown pipistrelle; Myt = Myotis; BLE = brown long-eared; Unk = unknown bat species</i>									
18 May 17 Sunset: 21:36	Start: 21:21 End: 23:36	Start: 9 End: 5	Start: 1 End: 1	Start: 0 End: 0	Start: 0-1 End: 0-1	NB SB	S.pip and C.pip crossed NB to SB at heights between 3m and 12m above the road. Most crossings were directly over or within 10m of the identified crossing feature S.pip and C.pip crossed at heights between 5 and 20m above the road within a maximum distance of 20m from the crossing feature.	Bats were observed crossing between 22:13 (37 mins after sunset) and 23:08 (92 mins after sunset). Activity started at 22:10 (34 mins after sunset) and continued to the end of survey. Bats observed crossing between 21:35 (1 min before sunset) and 23:28 (112 mins after sunset). Activity started at 21:35 (1 mins before sunset) and continued to the end of survey.	Over:15 C.pip, 2 S.pip, 1 BLE. Total Bats: 18 Over:10 C.pip, 2 S.pip. Total Bats: 12
26 May 17 Sunrise: 04:37	Start: 02:37 End: 04:52	Start: 11 End: 12	Start: 0 End: 0	Start: 0 End: 0	Start: 0 End: 0	NB SB	C.pip crossed NB to SB at heights between 4m and 8m within a maximum distance of 10m from the crossing feature. C.pip crossed SB to NB directly over the identified feature. Crossing heights observed between 8m and 12m above the road.	Bats observed crossing over the A9 between 03:24 (73 mins before sunrise) and 04:00 (37 mins before sunrise). Activity finished at 04:00 (37 mins before sunrise). Bats observed crossing over the A9 between 02:40 (117 mins before sunrise) and 04:03 (34 mins before sunrise). Activity finished at 04:03 (34 mins before sunrise).	Over: 21 C.pip. Total Bats: 21 Over: 5 C.pip, 1 U.pip. Total Bats: 6
15 June 17 Sunset: 22:14	Start: 21:59 End: 00:14	Start: 12 End: 11	Start: 7 End: 7	Start: 0 End: 0	Start: 1 End: 2	NB	Majority of S.pip and C.pip crossed NB to SB directly over the identified feature; two S.pip crossed 6m to the east. Crossing heights observed between 3m and 10m above the road.	Bats observed crossing over the A9 between 22:18 (4 mins after sunset) and 23:47 (93 mins after sunset). Activity started at 22:18 (4 mins after sunset) and continued to the end of survey.	Over: 8 C.pip, 7 S.pip, 1 U.pip. Total Bats: 16

⁴² Where a bat has been recorded by surveyors on either side of the carriageway and the timings indicate that this is the same bat, then this is counted as one crossing. Where a bat is recorded crossing the carriageway by one surveyor, but not seen on the other side of the carriageway this is recorded as one crossing as the bat may have crossed using a non-direct flight line.

⁴³ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁴⁴ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁴⁵ Wind speed score of 0-12 against Beaufort scale where 0 = Calm, 2 = Light breeze, 4 = Moderate breeze, 6 = Strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP02 (TN270) NH 87147 10247									
Habitat Description: Tree lined access track either side of the A9. Pasture habitat on both sides.									
Date Sunset/Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁴²
		Temp (°C)	Cloud (0 – 8) ⁴³	Rain (0 - 5) ⁴⁴	Wind (0 – 12) ⁴⁵				
						SB	Majority of S.pip and C.pip crossed SB to NB directly over the identified feature; two C.pip and one U.pip crossed the road 10m east of the feature and one C.pip crossed 10m to the west. Crossing heights observed between 3m and 15m above the road.	Bats observed crossing over the A9 between 22:05 (9 mins before sunset) and 00:14 (120 mins after sunset). Activity started at 22:05 (9 mins before sunset) and continued to the end of survey.	Over: 30 C.pip, 13 S.pip, 3 U.pip. Total Bats: 46
23 June 17 Sunrise: 04:20	Start: 02:20 End: 04:35	Start: 7 End: 12	Start: 8 End: 8	Start: 0 End: 0	Start: 2-3 End: 1-2	NB	Majority of S.pip and C.pip crossed NB to SB directly over the identified feature; one C.pip and one U.pip crossed 10m to the east. Crossing heights observed between between 3m and 6m above the road.	Bats observed crossing over the A9 between 02:41 (99 mins before sunrise) and 04:01 (19 mins before sunrise). Activity finished at 04:01 (19 mins before sunrise).	Over: 7 C.pip, 1 S.pip, 2 U.pip, 1 Unk. Total Bats: 11
						SB	S.pip and C.pip crossed SB to NB directly over the feature between 3m and 5m above the road.	Bats observed crossing over the A9 between 02:42 (98 mins before sunrise) and 03:32 (48 mins before sunrise). Activity finished at 03:32 (48 mins before sunrise).	Over: 11 C.pip, 1 S.pip. Total Bats: 12
11 July 17 Sunset: 22:05	Start: 21:50 End: 00:05	Start: 11 End: 9	Start: 8 End: 8	Start: 0 End: 0	Start: 0 End: 0	NB	Majority of crossings were directly over the feature at an average height of 4.5m. One C.pip crossed over the road 10m south of the feature and two U.pip crossed 2m and 8m north of the feature.	Bats observed crossing over the A9 between 22:14 (9 mins after sunset) and 23:58 (113 mins after sunset). Activity started at 22:14 (9 mins after sunset) and continued to the end of survey.	Over: 35 C.pip, 6 S.pip, 3 U.pip. Total Bats: 44
						SB	Majority of crossings were directly over the feature at an average height of 7m. 4 C.pip, 4 S.pip and 2 U.pip were observed crossing a maximum of 20m northbound of the feature.	Bats observed crossing over the A9 between 22:02 (3 mins before sunset) and 23:56 (111 mins after sunset). Activity started at 22:02 (3 mins before sunset) and continued to the end of survey.	Over: 31 C.pip, 13 S.pip, 7 U.pip. Total Bats: 51
20 July 17 Sunrise: 04:51	Start: 02:51 End: 05:06	Start: 15 End: 13	Start: 8 End: 8	Start: 2 End: 2	Start: 0 End: 0	NB	All crossings were directly over the feature crossing NB to SB.	Bats were observed crossing between 03:09 (102 mins before sunrise) and 04:17 (34 mins before sunrise). Activity finished at 04:17 (34 mins before sunrise).	Over: 3 C.pip, 2 U.pip. Total Bats: 5
						SB	C.pip observed crossing at heights between 8m and 15m above the road. Either directly over or 2m to 5m north and south of the feature.	Bats were observed crossing between 02:56 (116 mins before sunrise) and 04:30 (21 mins before sunrise). Activity finished at 04:46 (5 mins before sunrise).	Over: 12 C.pip. Total Bats: 12
9 August 17 Sunrise: 05:31	Start: 03:31 End: 05:46	Start: 10 End: 11	Start: 6 End: 8	Start: 0 End: 0	Start: 0 End: 0-1	NB	A total of fourteen pipistrelles were recorded as crossing NB to SB over the A9. Six of these crossed directly over the feature with six crossing north of the feature. A further two crossed south of the feature.	First crossing recorded at 03:45 (106 mins before sunrise) with the last crossing at 05:16 (15 mins before sunrise).	Over: 10 C.pip, 3 S.pip, 1 U.pip Total Bats: 14
						SB	A total of 18 crossings from SB to NB recorded. The majority (12) were directly over the feature with six north of the feature. The A9 was crossed from 4m to 20m above road.	First crossing recorded at 03:42 (49 mins before sunrise) with the last crossing at 05:14 (17 mins before sunrise).	Over: 10 C.pip, 5 S.pip, 2 U.pip, 1 Unk Total Bats: 18
16 August 17	Start: 20:41	Start: 14	Start: 7	Start: 0	Start: 2	NB	All four bats recorded as crossing the A9 at 4 to 6m directly above feature going NB to SB.	First crossing recorded at 21:31 (35 mins after sunset) with the last crossing activity at 21:51	Over: 2 C.pip, 2 U.pip





OS grid reference: Dalraddy to Slochd Crossing CP02 (TN270) NH 87147 10247									
Habitat Description: Tree lined access track either side of the A9. Pasture habitat on both sides.									
Date Sunset/Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁴²
		Temp (°C)	Cloud (0 –8) ⁴³	Rain (0 - 5) ⁴⁴	Wind (0 – 12) ⁴⁵				
Sunset: 20:56	End: 22:56	End: 15	End: 8	End: 1	End: 1			(55 mins after sunset).	Total Bats: 4
						SB	Four bats crossing from 4m to 9m directly above the feature. A single C.pip was seen crossing some 20m north of the feature at a height of 8m above feature.	First crossing was at 21:23 (17 mins after sunset) and final crossing recorded at 22:18 (82 mins after sunset).	Over: 4 C.pip, 1 U.pip Total Bats: 5

Table 1.36: Crossing Location CP03 (TN279) 4 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP03 (TN279) NH 88358 10619									
Habitat Description: Watercourse culvert with pasture either side of the A9.									
Date Sunset/Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 northbound (NB) southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁴⁶
		Temp (°C)	Cloud (0 –8) ⁴⁷	Rain (0 - 5) ⁴⁸	Wind (0 – 12) ⁴⁹				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
19 May 17	Start: 02:46 End: 05:01	Start: 3 End: 2	Start: 1 End: 0	Start: 0 End: 0	Start: 1 End: 0	NB	One C.pip crossed through the culvert from NB to SB.	C.pip recorded crossing through culvert at 03:54 (52 mins before sunrise).	Over: 0. Under: 1 C.pip. Total Bats: 1
						SB	No Crossings	No Crossings	No Crossings
23 May 17	Start: 21:27 End: 23:42	Start: 10 End: 6	Start: 7 End: 7	Start: 0 End: 0	Start: 2 End: 2	NB	One S.pip observed crossing NB to SB through the culvert.	One crossing recorded at 22:12 (30 mins after sunset).	Under: 1 S.pip. Over: 0. Total Bats: 1
						SB	One S.pip observed crossing directly over the culvert SB to NB at 1.5m above the road.	One S.pip recorded crossing at 21:59 (17 mins after sunset). Activity started at 21:55 (13 mins after sunset) and continued to the end of survey.	Under: 0. Over: 1 S.pip. Total Bats: 1
15 June 17	Start: 02:19 End: 04:34	Start: 13 End: 13	Start: 2 End: 5	Start: 0 End: 0	Start: 1 End: 3	NB	Four S.pip and one U.pip crossed over the culvert NB to SB between 2m and 3m above the road.	Bats observed crossing between 02:33 (106 mins before sunrise) and 03:21 (58 mins before sunrise). Activity finished at 03:21 (58 mins before sunrise).	Under: 0 Over: 4 S.pip, 1 U.pip. Total Bats: 5
						SB	Four S.pip crossed SB to NB through the culvert. Eight S.pip crossed SB to NB over the culvert between 2m and 8m above the road.	Bats observed crossing between 02:35 (104 before sunrise) and 03:35 (44 mins before sunrise). Activity finished at 03:35	Under: 4 S.pip. Over: 8 S.pip.

⁴⁶Where a bat has been recorded by surveyors on either side of the carriageway and the timings indicate that this is the same bat, then this is counted as one crossing. Where a bat is recorded crossing the carriageway by one surveyor, but not seen on the other side of the carriageway this is recorded as one crossing as the bat may have crossed using a non-direct flight line.

⁴⁷ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁴⁸ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁴⁹ Wind speed score of 0-12 against Beaufort scale where 0 = Calm, 2 = Light breeze, 4 = Moderate breeze, 6 = Strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP03 (TN279) NH 88358 10619									
Habitat Description: Watercourse culvert with pasture either side of the A9.									
Date Sunset/Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 northbound (NB) southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁴⁶
		Temp (°C)	Cloud (0 – 8) ⁴⁷	Rain (0 - 5) ⁴⁸	Wind (0 – 12) ⁴⁹				
								(44 mins before sunrise).	Total Bats: 12
22 June 17	Start: 21:59	Start: 5	Start: 8	Start: 1	Start: 2	NB	Six S.pip crossed NB to SB through the culvert.	Bats observed crossing between 22:42 (28 mins after sunset) and 23:46 (92 mins after sunset). Activity started at 22:42 (28 mins after sunset) and continued to the end of the survey.	Under: 6 S.pip. Over: 0. Total Bats: 6
Sunset: 22:14	End: 00:14	End: 11	End: 8	End: 1	End: 2	SB	Nine S.pip and three U.pip crossed SB to NB through the culvert. Two S.pip and one U.pip crossed SB to NB over the culvert at 2m above the road.	Bats observed crossing over the road between 22:41 (27 mins after sunset) and 22:47 (33 mins after sunset). Bats observed crossing through the culvert between 22:48 (34 mins after sunset) and 23:54 (100 mins after sunset). Activity started at 22:41 (27 mins after sunset) and finished at 23:54 (100 mins after sunset).	Under: 9 S.pip, 3 U.pip. Over: 2 S.pip, 1 U.pip. Total Bats: 15
14 July 17	Start: 02:41	Start: 11	Start: 6	Start: 0	Start: 0	NB	One S.pip crossing over the A9 crossed 5m above the road. Two S.pip crossed through the culvert.	Bats observed crossing between 03:47 (54 mins before sunrise) and 04:13 (28 mins before sunrise). Activity finished at 04:13 (28 mins before sunrise).	Under: 2 S.pip. Over: 1 S.pip. Total Bats: 3
Sunset: 04:41	End: 04:56	End: 10	End: 7	End: 0	End: 0-1	SB	Two S.pip and one U.pip crossed through culvert under the A9.	Bats observed crossing between 03:24 (77 mins before sunrise) and 03:57 (44 mins before sunrise). Activity finished at 03:57 (44 mins before sunrise).	Under: 2 S.pip 1 U.pip Over: 0 Total Bats: 3
18 July 17	Start: 21:42	Start: 19	Start: 0	Start: 0	Start: 0	NB	All bat crossings were under the A9, through the culvert travelling NB to SB.	Bats observed crossing between 22:15 (18mins after sunset) and 23:40 (103 mins after sunset).	Under: 11 S.pip, 2 C.pip, 1 U.pip. Over: 0. Total Bats: 14
Sunset 21:57	End: 23:57	End: 13	End: 1	End: 0	End: 0	SB	Nine S.pip observed crossing south of the feature a maximum of 4m away. One C.pip crossed over the A9 3.5m away from the feature to the north. Other bats crossed over 5m from feature. Three S.pip crossed through the culvert SB to NB.	Bats observed crossing between 22:29 (32 mins after sunset) and 23:32 (95 mins after sunset).	Under: 3 S.pip. Over: 11 S.pip, 2 C.pip, 1 U.pip. Total Bats: 17
9 August 17	Start: 20:58	Start: 13	Start: 4	Start: 0	Start: 1	NB	A single crossing over (at 5m) the A9 was recorded with 3 crossings through the culvert. All bats in culvert crossings foraged in culvert for 10-20 mins prior to completing crossing.	First crossing recorded at 21:33 (20 mins after sunset) with the last crossing recorded at 22:41 (88 mins after sunset).	Under: 3 S.pip Over: 1 S.pip Total Bats: 4
Sunset 21:13	End: 23:13	End: 9	End: 2	End: 0	End: 1	SB	A total of two S.pip crossings recorded – one through culvert and one over A9 at 3m above road and 10m south of feature.	Bat observed crossing over A9 at 21:56 (43 mins after sunset) and one recorded crossing through the culvert at 22:31 (78 mins after sunset).	Under: 1 S.pip Over: 1 S.pip Total Bats: 2
17 August 17	Start: 03:47	Start: 12	Start: 1	Start: 0	Start: 1	NB	No Crossings.	No Crossings	No Crossings
						SB	No Crossings	No Crossings	No Crossings





OS grid reference: Dalraddy to Slochd Crossing CP03 (TN279) NH 88358 10619									
Habitat Description: Watercourse culvert with pasture either side of the A9.									
Date Sunset/Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 northbound (NB) southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁴⁶
		Temp (°C)	Cloud (0 – 8) ⁴⁷	Rain (0 - 5) ⁴⁸	Wind (0 – 12) ⁴⁹				
Sunrise 05:47	End: 06:02	End: 11	End: 1	End: 0	End: 1				

Table 1.37: Crossing Location CP06 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP06 (TN297) NH 89140 12020									
Habitat Description: Corrugated metal culvert with footpath running under the A9. Craigellachie NNR on the northbound side of the A9 and a strip of coniferous woodland on the southbound side of the A9.									
Date Sunset/Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁵⁰
		Temp (°C)	Cloud (0 – 8) ⁵¹	Rain (0 - 5) ⁵²	Wind (0 – 12) ⁵³				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = <i>Myotis</i> ; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
16 May 2017	Start:21:17	Start:12	Start:1	Start:0	Start:0-2	NB	Three <i>C.pip</i> crossed NB to SB directly over the culvert between 2m and 10m above the road. One <i>S.pip</i> crossed NB to SB through the culvert.	Bats observed crossing over between 22:02 (30 mins after sunset) and 22:25 (53 mins after sunset). Bat observed crossing through the culvert at 22:02 (30 mins after sunset). Activity started at 22:00 (28 mins after sunset) and finished at 23:16 (104 mins after sunset).	Over: 3 <i>C.pip</i> . Under: 1 <i>S.pip</i> . Total Bats: 4
Sunset: 21:32	End: 23:32	End:8	End:0	End:0	End:0	SB	One <i>C.pip</i> , three <i>S.pip</i> , one <i>U.pip</i> and one <i>Unk</i> bat crossed SB to NB over the culvert between 5m and 10m above the road. Two <i>C.pip</i> and one <i>S.pip</i> crossed SB to NB through the culvert.	Bats observed crossing over the A9 between 21:30 (2 mins before sunrise) and 23:23 (111 mins after sunset). Bats observed crossing through the culvert between 22:09 (37 mins after sunset) and 22:32 (60 mins after sunset). Activity started at 21:30 (2 mins before sunset) and finished at 23:23 (111 mins after sunset).	Over: 1 <i>C.pip</i> , 3 <i>S.pip</i> , 1 <i>U.pip</i> , 1 <i>Unk</i> . Under: 2 <i>C.pip</i> , 1 <i>S.pip</i> . Total Bats: 9
24 May 2017	Start: 02:40	Start: 11	Start: 3	Start: 0	Start: 0	NB	Three <i>C.pip</i> , one <i>S.pip</i> and one <i>U.pip</i> crossed NB to SB through the culvert. One <i>Unk</i> .bat and two <i>U.pip</i> crossed NB to SB within 10m over the culvert at between 3m and 10m above the road.	Bats observed crossing through the culvert between 03:07 (93 mins before sunrise) and 04:03 (37 mins before sunrise). Bats crossed over the A9 between 04:06 (34 mins before sunrise) and 04:21 (19 mins before sunrise). Activity started at 03:07 (93 mins before sunrise) and finished at 04:21 (19 mins before sunrise).	Under: 3 <i>C.pip</i> , 1 <i>S.pip</i> , 1 <i>U.pip</i> . Over: 1 <i>U.pip</i> , 2 <i>Unk</i> . Total Bats: 8
Sunrise: 04:40	End: 04:55	End: 9	End: 6	End: 0	End: 0	SB	One <i>C.pip</i> crossed SB to NB through the culvert. One <i>U.pip</i> crossed SB to NB directly over the culvert at 4m above the road.	<i>C.pip</i> crossed through the culvert at 03:44 (56 mins before sunrise) and <i>U.pip</i> crossed over at 03:50 (50 mins before sunrise). Activity finished at 04:19 (21 mins before sunrise).	Under: 1 <i>C.pip</i> . Over: 1 <i>U.pip</i> . Total Bats: 2
14 June 2017	Start: 02:18	Start: 11	Start: 8	Start: 0	Start: 1	NB	One <i>S.pip</i> and one <i>U.pip</i> crossed NB to SB directly over the culvert between 2m and 8m above the road.	Bats observed crossing over the A9 between 02:28 (110 mins before sunrise) and 04:18 (sunrise).	Under: 0 Over 1 <i>S.pip</i> , 1 <i>U.pip</i> . Total Bats: 2
Sunrise: 04:18	End: 04:33	End: 11	End: 7	End: 0	End: 1				

⁵⁰ Where a bat has been recorded by surveyors on either side of the carriageway and the timings indicate that this is the same bat, then this is counted as one crossing. Where a bat is recorded crossing the carriageway by one surveyor, but not seen on the other side of the carriageway this is recorded as one crossing as the bat may have crossed using a non-direct flight line.

⁵¹ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁵² Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁵³ Wind speed score of 0-12 against Beaufort scale where 0 = Calm, 2 = Light breeze, 4 = Moderate breeze, 6 = Strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP06 (TN297) NH 89140 12020									
Habitat Description: Corrugated metal culvert with footpath running under the A9. Craigellachie NNR on the northbound side of the A9 and a strip of coniferous woodland on the southbound side of the A9.									
Date Sunset/Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁵⁰
		Temp (°C)	Cloud (0 –8) ⁵¹	Rain (0 - 5) ⁵²	Wind (0 – 12) ⁵³				
						SB	One S.pip, one C.pip and three U.pip crossed SB to NB directly over the culvert between 2m and 8m above the road.	Bats observed crossing over the A9 between 03:31 (47 mins before sunrise) and 03:56 (22 mins before sunrise).	Under: 0 Over: 1 S.pip, 1 C.pip, 3 U.pip. Total Bats: 5
20 June 2017	Start: 21:58 End: 00:13	Start: 14 End: 11	Start: 0 End: 0	Start: 0 End: 0	Start: 0 End: 0	NB	Three S.pip, one C.pip and one U.pip crossed NB to SB directly over the culvert between 2m and 3m above the road. Three C.pip were observed crossing NB to SB through the culvert.	Bats observed crossing between 22:28 (15 mins after sunset) and 00:06 (113 mins after sunset).	Under: 3 C.pip, Over: 1 C.pip, 3 S.pip, 1 U.pip. Total Bats: 8
						SB	One S.pip, one C.pip and one U.pip crossed SB to NB over the culvert between 4m and 5m above the road. Two C.pip crossed SB to NB through the culvert.	Bats observed crossing between 22:30 (17 mins after sunset) and 23:15 (62 mins after sunset).	Under: 2 C.pip, Over: 1 C.pip, 1 S.pip, 1 U.pip. Total Bats: 5
13 July 2017	Start: 21:48 End: 00:03	Start: 12 End: 11	Start: 8 End: 8	Start: 0 End: 0	Start: 1 End: 0	NB	Majority of crossings were directly above the feature at a maximum height of 5m. Four S.pip observed crossing 5m south of the feature. Two C.pip and two S.pip were observed crossing through the culvert.	Bats observed crossing the A9 between 22:02 (1 min before sunset) and 23:48 (105 mins after sunset). Activity started at 22:02 (1 mins before sunset) and continued to the end of the survey.	Under: 2 C.pip, 2 S.pip. Over 12 S.pip, 6 C.pip. Total Bats: 22
						SB	C.pip and S.pip were observed crossing over the road at a maximum height of 5m. One S.pip was observed crossing 20m southbound of the feature. Four S.pip observed crossing through the culvert.	Bats observed crossing at A9 between 21:54 (9 mins before sunset) and 23:50 (107 mins after sunset). Activity started at 21:54 (9 mins before sunset) and continued to the end of the survey.	Under: 5 S.pip Over: 5 S.pip, 1 C.pip 1, U.pip. Total Bats: 12
19 July 2017	Start: 02:50 End: 05:05	Start: 15 End: 12	Start: 1 End: 2	Start: 0 End: 0	Start: 0 End: 0	NB	Majority of C.pip and S.pip crossings above the road were recorded at a maximum of 5m above the road. Three C.pip and one S.pip observed crossing 8m south of the feature.	Bats observed crossing over the A9 between 03:02 (108 mins before sunrise) and 04:18 (32 mins before sunrise). One C.pip observed crossing through the culvert at 04:13 (37 mins before sunrise). Activity finished at 04:18 (32 mins before sunrise).	Under: 1 C.pip. Over: 6 C.pip, 1 S.pip, 4 U.pip. Total Bats: 12
						SB	One S.pip and one Unk bat crossed 4m north of the feature. The <i>Myotis sp.</i> crossed directly over the feature.	Bats observed crossing over the A9 between 03:06 (104 mins before sunset) and 03:52 (58 mins before sunrise). Activity finished at 03:52 (58 mins before sunrise).	Under: 0. Over: 1 S.pip, 1 Myotis, 1 Unk. Total Bats: 3
10 August 17	Start: 03:33 End: 05:48	Start: 9 End: 10	Start: 7 End: 8	Start: 0 End: 0	Start: 2 End: 1	NB	Five bats recorded as crossing, all above the A9 and directly over feature with the five seen to cross at 6m above road.	Bats observed crossing over the A9 between 04:05 (88 mins before sunrise) and 05:13 (20mins before sunrise). First activity recorded at 04:05 (88 mins before sunrise). Last activity at 05:13 (20 mins before sunrise).	Under: 0 Over: 1 C.pip, 4 S.pip Total Bats: 5





OS grid reference: Dalraddy to Slochd Crossing CP06 (TN297) NH 89140 12020									
Habitat Description: Corrugated metal culvert with footpath running under the A9. Craigellachie NNR on the northbound side of the A9 and a strip of coniferous woodland on the southbound side of the A9.									
Date Sunset/Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁵⁰
		Temp (°C)	Cloud (0 –8) ⁵¹	Rain (0 - 5) ⁵²	Wind (0 – 12) ⁵³				
						SB	A single U.pip was recorded flying 3m above the A9 crossing directly above the feature.	U.pip crossed over A9 at 04:42 (51 mins before sunrise). First activity recorded at 03:35 (118 mins before sunrise) with last activity at 05:05 (28 mins before sunrise).	Under: 0 Over: 1 U.pip Total Bats: 1
14 August 17	Start: 20:46 End: 23:01	Start: 13 End: 14	Start: 8 End: 8	Start: 0 End: 0	Start: 0 End: 0	NB	A total of three crossings observed – two directly above the feature at 4-5m over the A9 and a single <i>Myotis</i> sp. recorded flying through the culvert.	U.pip crossed over A9 at 21:33 (32 mins after sunset) and C.pip over at 21:44 (43 mins after sunset). <i>Myotis</i> sp. crossed through the culvert at 21:40 (39 mins after sunset). First recorded activity at 21:33 (32 mins after sunset). Last activity 21:44 (43 mins after sunset).	Under: 1 Myotis Over: 1 C.pip, 1 U.pip Total Bats: 3
						SB	A total of four C.pip crossing – one through the culvert and three over (from 3-10m above the A9) one of which crossed 10m north of the feature.	Bats observed crossing over the A9 between 21:25 (24 mins after sunset) and 21:40 (39 mins after sunset). C.pip recorded crossing through culvert at 21:35 (34 mins after sunset). Activity behind surveyor started at 21:25 (24 mins after sunset). Last activity 21:40 (39 mins after sunset).	Under: 1 C.pip Over: 3 C.pip Total Bats: 4





Table 1.38: Crossing Location CP25 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP25 NH 89359 22866									
Habitat Description: Track leading across the A9 from Carrbridge to Dalrachney Beag. Northbound on either side of the road are areas of coniferous plantation and to the south areas of pasture.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 northbound (NB) southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁵⁴
		Temp (°C)	Cloud (0 –8) ⁵⁵	Rain (0 - 5) ⁵⁶	Wind (0 – 12) ⁵⁷				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = <i>Myotis</i> ; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
17 May 17 Sunset: 21:34	Start: 21:19 End: 23:34	Start: 11 End: 9	Start: 8 End: 3	Start: 2 End: 0	Start: 0 End: 0	NB	Two C.pip and one BLE crossed NB to SB directly over the feature at between 3m and 5m above the road.	Bats observed crossing over the A9 between 22:02 (28 mins after sunset) and 23:29 (110 mins after sunset). Activity started at 22:02 (28 mins after sunset) and finished at 23:24 (110 mins after sunset).	Under: 0 Over: 2 C.pip, 1 BLE.
						SB	Three C.pip crossed SB to NB directly over the feature 5m above the road.		Bats were observed crossing between 22:01 (27 mins after sunset) and 23:27 (113 mins after sunset). Activity started at 21:58 (24 mins after sunset) and finished at 23:29 (115 mins after sunset).
23 May 17 Sunrise: 04:42	Start: 02:42 End: 04:57	Start: 2.5 End: 4	Start: 0 End: 4	Start: 0 End: 0	Start: 0 End: 0	NB	One Unk. bat crossed NB to SB 10m west of the feature, 3m above the road surface.	Bat observed crossing over A9 at 03:51 (51 mins before sunrise).	Under: 0 Over: 1 Unk.
						SB	No Crossings		No Crossings
13 June 2017 Sunrise: 04:18	Start: 02:18 End: 04:33	Start: 8.5 End: 10	Start: 7 End: 4	Start: 0 End: 0	Start: 1 End: 1	NB	24 C.pip observed crossing NB to SB over the feature between 3m and 8m above the road.	Bats were observed crossing between 03:30 (48 mins before sunrise) and 04:06 (12 mins before sunrise). Activity finished at 04:06 (12 mins before sunrise).	Under: 0 Over: 24 C.pip.
						SB	C.pip and S.pip observed crossing SB to NB over the feature between 3m and 20m above the road.		Bats observed crossing between 03:08 (70 mins before sunrise) and 03:43 (35 mins before sunrise). Activity finished at 03:43 (35 mins before sunrise).
19 June 2017 Sunset: 22:20	Start: 22:05 End: 00:20	Start: 12 End: 10	Start: 2 End: 1	Start: 0 End: 0	Start: 1 End: 1	NB	Two C.pip, three S.pip and one Unk observed crossing NB to SB directly over the feature at 3m to 4m above the road. Three C.pip were observed crossing NB to SB 10m south of the feature 3m above the road.	Bats observed crossing between 22:43 (23 mins after sunset) and 00:15 (115 mins after sunset). Activity started at 22:43 (23 mins after sunset) and finished at 23:32 (72 mins after sunset).	Under: 0 Over: 5 C.pip, 3 S.pip, 1 Unk.
						SB	Two C.pip, four S.pip, two U.pip and 1 Unk observed crossing SB to NB 10m from the feature; all other crossings were within 5m of the feature.		Bats observed crossing between 22:45 (25 mins after sunset) and 23:50 (90 mins after sunset). Activity started at 22:43 (23 mins after sunset) and finished at 23:50 (90 mins after sunset).
									Total Bats: 17

⁵⁴ Where a bat has been recorded by surveyors on either side of the carriageway and the timings indicate that this is the same bat, then this is counted as one crossing. Where a bat is recorded crossing the carriageway by one surveyor, but not seen on the other side of the carriageway this is recorded as one crossing as the bat may have crossed using a non-direct flight line.

⁵⁵ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁵⁶ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁵⁷ Wind speed score of 0-12 against Beaufort scale where 0 = Calm, 2 = Light breeze, 4 = Moderate breeze, 6 = Strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP25 NH 89359 22866									
Habitat Description: Track leading across the A9 from Carrbridge to Dalrachney Beag. Northbound on either side of the road are areas of coniferous plantation and to the south areas of pasture.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 northbound (NB) southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁵⁴
		Temp (°C)	Cloud (0 - 8) ⁵⁵	Rain (0 - 5) ⁵⁶	Wind (0 - 12) ⁵⁷				
10 July 2017 Sunset: 22:06	Start: 21:51 End: 00:06	Start: 9 End: 9	Start: 8 End: 8	Start: 3 End: 3	Start: 1 End: 1	NB	Majority of crossings are directly over the feature. Two Unk bats observed crossing 20m and 30m southbound of the feature.	Bats were observed crossing over the A9 between 22:33 (27 mins after sunset) and 23:19 (73 mins after sunset). Activity started at 22:33 (27 mins after sunset) and finished at 23.58 (112 mins after sunset).	Under: 0 Over: 2 C.pip, 3 Unk. Total Bats 5
						SB	Majority of records crossed between 3m and 10m the feature. Two C.pip and one S.pip were observed crossing directly over the position.	Bats observed crossing over the A9 between 22:13 (7 mins after sunset) and 23:07 (61 mins after sunset). Activity started at 22:13 (7 mins after sunset) and finished at 23.58 (112 mins after sunset).	Under: 0 Over: 8 C.pip, 2 S.pip, 2 U.pip, 1 Unk. Total Bats: 13
18 July 2017 Sunrise: 04:47	Start: 02:47 End: 05:02	Start: 8 End: 7	Start: 0 End: 2	Start: 0 End: 0	Start: 1 End: 0	NB	One record during the survey of one U.pip crossing over the A9 4m above the road 8m south of the feature.	The one U.pip crossed over the A9 at 03:46 (61 mins before sunrise).	Under: 0 Over: 1 Upip. Total Bats: 1
						SB	No Crossings	No Crossings	No Crossings
8 August 17 Sunrise: 05:28	Start: 03:28 End: 05:43	Start: 9 End: 7	Start: 5 End: 6	Start: 0 End: 0	Start: 0-1 End: 0-1	NB	Four crossings south of the feature with one crossing directly over feature. All crossings between 2-4m above A9.	Bats bserved crossing between 04:34 (54 mins before sunrise) and 04:51 (37 mins before sunrise). First activity at 03:34 (114 mins before sunrise) with last activity at 04:51 (37 mins before sunrise).	Under: 0 Over: 2 C.pip, 1 S.pip, 1 U.pip, 1 Unk Total Bats: 5
						SB	One C.pip and one S.pip crossed directly over the feature at 4m above the road travelling SB to NB.	C.pip observed crossing over at 04:19 (69 mins before sunrise) and S.pip observed at 04:28 (60 mins before sunrise). First activity at 04:19 (69 mins before sunrise) with last activity at 04:28 (60 mins before sunrise).	Under: 0 Over: 1 C.pip, 1 S.pip Total Bats: 2
15 August 17 Sunset: 20:59	Start: 20:44 End: 22:59	Start: 13 End: 11	Start: 2 End: 2	Start: 0 End: 0	Start: 1 End: 1	NB	Two crossings of C.pip bats over the A9, 4 and 6m above road directly above feature.	Activity started at 22:30 (106 mins after sunset) and finished at 22:54 (115 mins after sunset).	Under: 0 Over: 2 C.pip Total Bats: 2
						SB	A total of 11 bats recorded crossing SB to NB, with 10 C.pip crossing low over feature (2-3m). A single Myotis sp.was recorded crossing higher (at 8m).	Bats observed crossing between 21:19 (20 mins after sunset) and 22:09 (70 mins after sunset). Activity started at 21:19 (20 mins after sunset) and finished at 22:09 (70 mins after sunset).	Under: 0 Over: 10 C.pip, 1 Myotis Total Bats: 11





Table 1.39: Crossing Location CP26 - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP26 (24) NH 85915 23853									
Habitat Description: Track leading across the A9 with coniferous plantation northbound and open heath southbound.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 Northbound (NB) Southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁵⁸
		Temp (°C)	Cloud (0 –8) ⁵⁹	Rain (0 - 5) ⁶⁰	Wind (0 – 12) ⁶¹				
<i>C.pip = common pipistrelle; S.pip = soprano pipistrelle; U.pip = unknown pipistrelle; Myt = Myotis; BLE = brown long-eared; Unk = unknown bat species</i>									
18 May 17	Start: 02:47	Start: 3	Start: 2	Start: 0	Start: 0-1	NB	No Crossings	No Crossings	No Crossings
Sunrise: 04:47	End: 05:03	End: 6	End: 4	End: 0	End: 0-1	SB	No Crossings	No Crossings	No Crossings
12 June 17	Start: 21:57	Start: 9.5	Start:	Start: 0	Start: 1	NB	One S.pip crossed NB to SB over the feature 8m above the road.	The one S.pip crossed over the A9 at 22:44 (32 mins after sunset).	Under: 0 Over: 1 S.pip. Total Bats: 1
Sunset: 22:12	End:00:12	End:9	End:6	End: 0	End: 1	SB	No Crossings	No Crossings	No Crossings
11 July 17	Start: 02:36	Start: 8	Start: 8	Start: 0	Start: 1	NB	One C.pip crossed NB to SB over the feature 4m above the road .and 4 m northbound of the feature.	C.pip crossed over the A9 at 02:51 (105 mins after sunset).	Under: 0 Over: 1 C.pip. Total Bats: 1
Sunrise: 04:36	End:04:51	End: 6	End: 8	End: 0	End: 0	SB	No Crossings	No Crossings	No Crossings
7 August 17	Start: 21:03	Start: 10	Start: 2	Start: 0	Start: 0	NB	Single S.pip crossed A9 20m south of feature and 4m above A9.	The one S.pip crossed the A9 at 21:58 (40 mins after sunset).	Under: 0 Over: 1 S.pip Total Bats: 1
Sunset 21:18	End: 23:18	End: 7	End: 3	End: 0	End: 0	SB	No Crossings	No Crossings	No Crossings

Table 1.40: Crossing Location CP27 Control - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP27 (25) NH 86221 09834									
Habitat Description: Conifer plantation on either side of the A9 with pasture behind it. Used as a control.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 northbound (NB) southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁶²
		Temp (°C)	Cloud (0 –8) ⁶³	Rain (0 - 5) ⁶⁴	Wind (0 – 12) ⁶⁵				
<i>C.pip = common pipistrelle; S.pip = soprano pipistrelle; U.pip = unknown pipistrelle; Myt = Myotis; BLE = brown long-eared; Unk = unknown bat species</i>									
17 May 17	Start: 02:49	Start: 4	Start: 0	Start: 0	Start: 0	NB	No Crossings	No Crossings	No Crossings

⁵⁸ Where a bat has been recorded by surveyors on either side of the carriageway and the timings indicate that this is the same bat, then this is counted as one crossing. Where a bat is recorded crossing the carriageway by one surveyor, but not seen on the other side of the carriageway this is recorded as one crossing as the bat may have crossed using a non-direct flight line.

⁵⁹ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁶⁰ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁶¹ Wind speed score of 0-12 against Beaufort scale where 0 = Calm, 2 = Light breeze, 4 = Moderate breeze, 6 = Strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

⁶² Where a bat has been recorded by surveyors on either side of the carriageway and the timings indicate that this is the same bat, then this is counted as one crossing. Where a bat is recorded crossing the carriageway by one surveyor, but not seen on the other side of the carriageway this is recorded as one crossing as the bat may have crossed using a non-direct flight line.

⁶³ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁶⁴ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁶⁵ Wind speed score of 0-12 against Beaufort scale where 0 = Calm, 2 = Light breeze, 4 = Moderate breeze, 6 = Strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP27 (25) NH 86221 09834									
Habitat Description: Conifer plantation on either side of the A9 with pasture behind it. Used as a control.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 northbound (NB) southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁶²
		Temp (°C)	Cloud (0 – 8) ⁶³	Rain (0 - 5) ⁶⁴	Wind (0 – 12) ⁶⁵				
Sunrise: 04:49	End: 05:04	End: 2	End: 1	End: 0	End: 1	SB	No Crossings	No Crossings	No Crossings
14 June 17	Start: 21:57	Start: 15	Start: 6	Start: 0	Start: 3	NB	No Crossings	No Crossings	No Crossings
Sunset: 22:12	End: 00:12	End: 13	End: 4	End: 0	End: 1	SB	One C.pip, one S.pip and one U.pip observed crossing SB to NB within 5m of the feature 10m above the road.	Bats observed crossing between 23:25 (73 mins after sunset) and 23:30 (78 mins after sunset).	Under: 0 Over: 1 C.pip, 1 S.pip, 1 U.pip. Total Bats: 3
12 July 17	Start: 02:38	Start: 8	Start: 6	Start: 0	Start: 1	NB	No Crossings	No crossings	No Crossings.
Sunrise: 04:38	End: 04:53	End: 7	End: 4	End: 0	End: 0	SB	No crossings	No crossings	No Crossings.
8 August 17	Start: 21:00	Start: 12	Start: 6	Start: 0	Start: 1-2	NB	No Crossings.	No Crossings.	No Crossings.
Sunset: 21:15	End: 23:15	End: 13	End: 8	End: 0	End: 1-2	SB	A single crossing of a S.pip 15m above road and 15m north of feature seen SB to NB.	The one S.pip crossed over the A9 at 22:29 (74 mins after sunset).	Under: 0 Over: 1 S.pip Total Bats: 1

Table 1.41: Crossing Location CP28 Control - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP28 (26) NH 90851 17456									
Habitat Description: Pasture either side of the A9 with a small area of scrub on the northbound side. Used as a control. (*Rain ceased soon after start of survey)									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 northbound (NB) southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁶⁶
		Temp (°C)	Cloud (0 – 8) ⁶⁷	Rain (0 - 5) ⁶⁸	Wind (0 – 12) ⁶⁹				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
22 May 17	Start:21:26	Start: 11	Start: 8	Start: 4*	Start: 0	NB	One C.pip crossed NB to SB at 4m above the road and 10m away from the control survey point.	Bat crossed at 22:32 (51 mins after sunset).	Under: 0 Over: 1 C.pip. Total Bats: 1
Sunset: 21:41	End: 23:41	End: 9	End: 0	End: 0	End: 0	SB	One U.pip crossed SB to NB at 4m straight over control survey point.	One U.pip crossed over the A9 at 22:37 (56 mins after sunset).	Under: 0 Over: 1 U.pip. Total Bats: 1

⁶⁶ Where a bat has been recorded by surveyors on either side of the carriageway and the timings indicate that this is the same bat, then this is counted as one crossing. Where a bat is recorded crossing the carriageway by one surveyor, but not seen on the other side of the carriageway this is recorded as one crossing as the bat may have crossed using a non-direct flight line.

⁶⁷ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁶⁸ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁶⁹ Wind speed score of 0-12 against Beaufort scale where 0 = Calm, 2 = Light breeze, 4 = Moderate breeze, 6 = Strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP28 (26) NH 90851 17456									
Habitat Description: Pasture either side of the A9 with a small area of scrub on the northbound side. Used as a control. (*Rain ceased soon after start of survey)									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 northbound (NB) southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁶⁶
		Temp (°C)	Cloud (0 – 8) ⁶⁷	Rain (0 – 5) ⁶⁸	Wind (0 – 12) ⁶⁹				
20 June 17 Sunrise: 04:20	Start:02:20	Start:5	Start:1	Start:0	Start:0	NB	No Crossings	No Crossings	No Crossings
	End:04:35	End:3	End:1	End:0	End:0	SB	No Crossings	No Crossings	No Crossings
17 July 17 Sunset: 21:58	Start:21:40	Start:15	Start:0	Start:0	Start:0-1	NB	One C.pip observed crossing over the A9 4m above the road.	One C.pip crossed over the A9 at 23:41 (103 mins after sunset)	Under: 0 Over: 1 C.pip.
	End:23:58	End:11	End:0	End:0	End:0-1	SB	One C.pip observed crossing over the A9 10m above the road at control survey point.	One C.pip crossed at 23:38 (100 mins after sunset).	Under: 0 Over: 1 C.pip.
16 August 17 Sunrise: 05:42	Start: 03:42	Start: 10	Start: 7	Start: 0	Start: 1	NB	A single crossing of a C.pip 8m above A9 and 5m north of control survey point travelling NB to SB.	The one C.pip crossed over the A9 at 04:18 (84 mins before sunrise).	Under: 0 Over: 1 C.pip
	End: 05:58	End: 10	End: 7	End: 0	End: 1	SB	One C.pip and one Unk bat crossed low (2m) at control survey point travelling SB to NB.	Unk bat crossed at 04:45 (57 mins before sunrise) and C.pip crossed at 04:50 (52 mins before sunrise). Last activity at 04:50 (52 mins before sunrise).	Under: 0 Over: 1 Cpip, 1 Unk
									Total Bats: 2

Table 1.42: Crossing Location CP29 Control - Survey Results

OS grid reference: Dalraddy to Slochd Crossing CP29 (27) NH 89252 13601									
Habitat Description: Young Birch woodland either side of the A9 with a small culvert 100m away. Site used as a control.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 northbound (NB) southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁷⁰
		Temp (°C)	Cloud (0 – 8) ⁷¹	Rain (0 – 5) ⁷²	Wind (0 – 12) ⁷³				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = Myotis; <i>BLE</i> = brown long-eared; <i>Unk</i> = unknown bat species									
25 May 2017 Sunset: 21:46	Start: 21:31	Start: 17	Start:1	Start:0	Start:0	NB	No Crossings	No Crossings	No Crossings
	End: 23:46	End: 15	End:1	End:0	End:0	SB	21 C.pip, S.pip and U.pip crossed SB to NB at heights between 3m and 12m above the road and within 10m north and south of the control survey point.	Bats observed crossing over the A9 between 21:58 (12 mins after sunset) and 22:31 (45 mins after sunset). Activity started at 21:58 (12 mins after	Under: 0 Over: 19 C.pip, 1 S.pip, 1 U.pip.

⁷⁰ Where a bat has been recorded by surveyors on either side of the carriageway and the timings indicate that this is the same bat, then this is counted as one crossing. Where a bat is recorded crossing the carriageway by one surveyor, but not seen on the other side of the carriageway this is recorded as one crossing as the bat may have crossed using a non-direct flight line.

⁷¹ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁷² Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁷³ Wind speed score of 0-12 against Beaufort scale where 0 = Calm, 2 = Light breeze, 4 = Moderate breeze, 6 = Strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference: Dalraddy to Slochd Crossing CP29 (27) NH 89252 13601									
Habitat Description: Young Birch woodland either side of the A9 with a small culvert 100m away. Site used as a control.									
Date Sunset/ Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 northbound (NB) southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after sunset/sunrise)	Bat Crossing the Road ⁷⁰
		Temp (°C)	Cloud (0 – 8) ⁷¹	Rain (0 – 5) ⁷²	Wind (0 – 12) ⁷³				
								sunset) and finished at 22:31 (45 mins after sunset).	Total: 21
21 June 2017 Sunrise: 04:20	Start: 02:20 End: 04:35	Start: 5 End: 5	Start: 1 End: 6	Start:0 End: 0	Start: 2 End: 1	NB	Two C.pip crossed NB to SB straight over control survey point 4m and 5m above the road.	Bats observed crossing over the A at 03:35 (45 mins before sunrise) and 04:00 (20 mins before sunrise).	Under: 0 Over: 2 C.pip, Total: 2
						SB	One C.pip observed crossing SB to NB 25m south of the control survey point 3m above the road.	The one C.pip crossed over the A9 at 03:07 (73 mins before sunrise).	Under: 0 Over: 1 C.pip. Total: 1
19 July 2017 Sunset: 21:55	Start: 21:40 End: 23:55	Start: 16 End: 15	Start: 8 End: 8	Start:0 End: 0	Start: 0-1 End: 0-1	NB	Two C.pip crossed directly at the control point at 8m and 10 m. One Unk observed crossing 2 m south of position 12m above the road.	Bats observed crossing over the A9 at 21:40 (15 mins before sunset), 22:54 (59 mins after sunset) and 23:16 (81 mins after sunset). Activity started at 21:40 (15 mins before sunset) and finished at 23:16 (81 mins after sunset).	Under: 0 Over: 2 C.pip, 1 Unk. Total: 3
						SB	All bats observed crossing at between 4m and 6 m above the road. Two U.pip were observed crossing directly over control survey point. Three C.pip and one Unk bat were observed crossing 4m northbound of the survey position. Two C.pip were observed crossing 2m and 8m south of the survey position.	Bats observed crossing over the A9 between 21:42 (13 mins before sunset) and 23:31 (96 mins after sunset). Activity started at 21:42 (13 mins before sunset) and finished at 23:31 (96 mins after sunset).	Under: 0 Over: 6 C.pip, 2 U.pip, 1 Unk. Total: 9
15 August 17 Sunrise: 05:43	Start: 03:43 End: 05:57	Start: 13 End: 12	Start: 8 End: 7	Start: 1 End: 0	Start: 0 End: 0	NB	Four C.pip and 5 U.pip crossed from the NB side. Five of these crossed north control survey point (from 3-5m north) with the remaining four crossing directly at the control point. All crossings were between 10-15m above the A9.	Bats observed crossing between 04:12 (91 mins before sunrise) and 05:28 (15 mins before sunrise). First activity recorded at 04:12 (91 mins before sunrise). Last activity at 05:28 (15 mins before sunrise).	Under: 0 Over: 4 C.pip, 5 Upip. Total Bats: 9
						SB	A single crossing was recorded of a C.pip at 15m directly at the control survey point from SB to NB.	The one C.pip crossed over the A9 at 04:53 (50 mins before sunrise).	Under: 0 Over: 1 C.pip Total Bats: 1





Table 1.43: Crossing Location CP08 – Survey Results

OS grid reference and chainage: Dalraddy to Slochd Crossing CP08 (TN310) NH 89282 13687									
Habitat Description: Small underpass with a tree lined pedestrian path into the surrounding woodland.									
Date Sunset/Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 northbound (NB) southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after dusk/dawn)	Bat Crossing the Road ^[1]
		Temp (°C)	Cloud (0 – 8) ⁷⁴	Rain (0 - 5) ⁷⁵	Wind (0 – 12) ⁷⁶				
<i>C.pip</i> = common pipistrelle; <i>S.pip</i> = soprano pipistrelle; <i>U.pip</i> = unknown pipistrelle; <i>Myt</i> = <i>Myotis</i> ; <i>Nyc</i> = <i>Nyctalus species</i> ; <i>Unk</i> = unknown bat species									
21 June 17 Sunset 22:15	Start: 22:00 End: 00:15	Start:16 End:16	Start:6 End:7	Start:1 End: 0	Start:3 End:1	N/B	Six pip species (four <i>C.pip</i> , one <i>S.pip</i> and one <i>U.pip</i>) crossed NB to SB at heights between 4m and 7m above the road. Most crossings were directly over or within 7m of the identified crossing feature with one 12m from feature.	Bats were observed crossing between 22:17 (2 mins after sunset) and 23:49 (94 mins after sunset) and continued to the end of survey.	Under: 0 Over: 4 <i>C.pip</i> , 1 <i>S.pip</i> , 1 <i>U.pip</i> . Total Bats: 6
						S/B	Seventeen pip species (ten <i>C.pip</i> , 2 <i>S.pip</i> and 5 <i>U.pip</i>) crossed SB to NB at heights between 3m and 10m above the road. Only 5 crossings were within 10m of identified crossing feature. The rest ranged from 15m to 35m from feature.		
27 June 17 Sunrise 04:21	Start: 02:20 End: 04:36	Start:8 End:8	Start:8 End:8	Start:0 End:0	Start:1 End:1	N/B	Two <i>S.pip</i> crossed NB to SB at height of 5m and 1.5m above the road. This crossing was directly over the identified crossing feature.	S.pip bats observed crossing at 03:03 (78 mins before sunrise) and 03:18 (63 mins before sunrise). Activity finished at 03:43 (38 minutes before sunrise)	Under: 0 Over: 2 <i>S.pip</i> . Total Bats: 2
						S/B	<i>U.pip</i> and unknown bat crossed SB to NB at heights of 8m and 10m above the road. These crossings were over 10m from the identified crossing feature.		
14 July 17 Sunset 04:41	Start: 02:41 End: 04:56	Start: 10 End: 10	Start: 5 End: 5	Start: 0 End: 0	Start: 1 End: 1	N/B	No Crossings	No Crossings	No Crossing
						S/B	One <i>Myt</i> crossed SB to NB at 2m. This crossing was c. 5 m from the identified crossing feature.		
26 July 17 Sunrise 21:40	Start: 21:25 End: 23:40	Start: 13 End: 10	Start: 3 End: 2	Start: 0 End: 0	Start: 2 End: 2	N/B	One <i>S.pip</i> recorded crossing over the A9 NB to SB.	Bat observed crossing 22:56 (76 mins after sunset). Activity started at 21:47 (7 minutes after sunset) and continued to 22:54.	Under: 0 Over: 1 <i>S.pip</i> Total Bats: 1
						S/B	Pip species, predominantly <i>C.pip</i> , crossed SB to NB at heights between 5m and 12m above the road. All of the crossings were 10m from the identified crossing feature.		
10 August 17 Sunset 21:10	Start: 20:55 End: 23:10	Start: 14 End: 11	Start: 2 End: 2	Start: 0 End: 0	Start: 3 End: 3	N/B	No Crossings	No Crossings	No Crossings
						S/B	Two <i>C.pip</i> crossed SB to NB at heights between 6m and 8m above the road. One <i>U.pip</i> crossed at 6m above the road SB to NB. All of the crossings were between 6m and 12m from the identified crossing feature.		

^[1] Where a bat has been recorded by surveyors on either side of the carriageway and the timings indicate that this is the same bat, then this is counted as one crossing. Where a bat is recorded crossing the carriageway by one surveyor, but not seen on the other side of the carriageway this is recorded as one crossing as the bat may have crossed using a non-direct flight line.

⁷⁴ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁷⁵ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁷⁶ Wind speed score of 0-12 against Beaufort scale where 0 = Calm, 2 = Light breeze, 4 = Moderate breeze, 6 = Strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.





OS grid reference and chainage: Dalraddy to Slochd Crossing CP08 (TN310) NH 89282 13687									
Habitat Description: Small underpass with a tree lined pedestrian path into the surrounding woodland.									
Date Sunset/Sunrise Time (24hr clock)	Start and End Times (24hr clock)	Weather Conditions				Location either side of A9 northbound (NB) southbound (SB)	Comments on behaviour	Comments on timings (e.g. mins before/after dusk/dawn)	Bat Crossing the Road ¹¹
		Temp (°C)	Cloud (0 –8) ⁷⁴	Rain (0 - 5) ⁷⁵	Wind (0 – 12) ⁷⁶				
24 August 17 Sunrise 06:00	Start: 04:00 End: 06:15	Start: 11 End: 10	Start: 0 End: 1	Start: 0 End: 0	Start: 1 End: 0	N/B	One C.pip seen crossing NB to SB above the road at height 10m. This crossing was 3m from identified crossing feature. One unknown bat crossed NB to SB.	Bats observed crossing over the A9 at 05:31 (29mins before sunrise) and 05:35 (25 mins before sunrise). Activity finished at 05:31 (29 minutes before sunrise)	Under: 0 Over: 1 C.pip, 1 Unk Total Bats: 2
						S/B	No Crossings.	No Crossings.	No Crossings.
8 September 17 Sunrise 06:31	Start: 04:31 End: 06:46	Start: 10 End: 10	Start: 8 End: 8	Start: 0-1 End: 0	Start: 0 End: 1	N/B	No Crossings.	No Crossings.	No Crossings.
						S/B	One C.pip bat seen going SB to NB across the road at a height of 10m. This crossing was 25m south of the identified crossing feature.	Bat observed crossing over the A9 at 06:02 (29 mins before sunrise). Activity finished at 06:02 (29 minutes before sunrise)	Under: 0 Over: 1 C.pip Total Bats: 1
21 September 17 Sunrise 19:18	Start: 18:48 End: 21:18	Start: 10 End: 8	Start: 4 End: 4	Start: 0 End: 0	Start: 0 End: 1	N/B	No Crossings.	No Crossings.	No Crossings.
						S/B	Two bats (one Unk and one Nyc) observed crossing from SB to NB at heights of 5m and 10m. These crossings were both 10m from identified crossing feature.	Bats observed crossing over the A9 at 19:37 (19mins after sunset) and 19:53 (35 mins after sunset). Activity started at 19:37 (19 minutes after sunset) and continued to 20:30.	Under: 0 Over: 1 Unk, 1 Nyc. Total Bats: 2

1.4 Transect Survey Results

1.4.1 Transect survey results for each of the proposed Aviemore, Granish and Blackmount junction areas are provided below. Tables below include information on the first bat recorded during surveys and summaries of behaviour, with notable peaks of activity (i.e. aggregations of activity and their timing) also provided.

Table 1.44: Bat Roosts – Transect 1 Survey Results

Transect 1 location: J1 Northbound A		Start ⁷⁷ : NH 87699 10431 End: NH 87945 10454		Habitat Description: Transect crosses areas of improved grassland and mixed woodland habitats												
Date	Sunrise (SR) Sunset (SS)	Start time End Time	Weather Condition				Total Species passes during transect survey					Time of first bat	Total Passes	Summary of Behaviour where pass visually observed	Notable peaks in bat activity and timing	
			Temp °C	Cloud (0-8)	Rain (0-5)	Wind (0-12)	C. Pip	S. Pip	U. Pip	Myt	BLE					Unk
15-May-17	SS 21:25	21:09	15	7	0	2	11	4	1				21:59	16	No visual on most, those seen were foraging around trees	6 passes 22:25-22:35
		23:34	14	7	0	0										
20-Jun-17	SR 04:19	02:19	8	0	0	0	10	4				1	02:21	15	No visual on most, those seen were foraging around trees	5 passes 02:43-02:53 5 passes 03:08-03:24
		04:34	8	0	0	0										
11-Jul-17	SS 22:05	21:45	11	8	0	0	11	14	1			1	22:18	27	Bats observed were using the woodland edges to commute and forage along. After 23:30 no visual was obtained on any bats.	4 passes 22:18-22:28 9 passes 23:19-23:30 8 passes 23:55-00:04

⁷⁷ Direction of transect routes were alternated clockwise and counter-clockwise on a monthly rotation.





Transect 1 location: J1 Northbound A			Start ⁷⁷ : NH 87699 10431 End: NH 87945 10454				Habitat Description: Transect crosses areas of improved grassland and mixed woodland habitats										
Date	Sunrise (SR) Sunset (SS)	Start time End Time	Weather Condition				Total Species passes during transect survey						Time of first bat	Total Passes	Summary of Behaviour where pass visually observed	Notable peaks in bat activity and timing	
			Temp ©	Cloud (0-8)	Rain (0-5)	Wind (0-12)	C. Pip	S. Pip	U. Pip	Myt	BLE	Unk					
		00:12	9	8	0	3											
15-Aug-17	SR 05:42	03:45	12	8	1	0	6	3					04:14	9	No visual on any of the bats.	3 passes 04:48-04:57 4 passes 05:01-05:08	
		05:57	12	4	0	0-2											
04-Sep-17	SS 20:04	19:44	15	3	0	1	6	3	5				20:25	14	Only one common pipistrelle was seen, foraging along the tree line between points 4 and 5.	3 passes 20:57-21:07 3 passes 21:21-21:28 3 passes 22:01-22:04	
		22:04	12	3	0	0											

Table 1.45: Bat Roosts – Transect 2 Survey Results

Transect 2 location: J1 Southbound A			Start ⁷⁸ : NH 87859 10028 End: NH 87859 10028				Habitat Description: Transect crosses areas of improved grassland and mixed woodland habitats									
Date	Sunrise (SR) Sunset (SS)	Start time End Time	Weather Condition				Total Species passes during transect survey						Time of first bat	Total Passes	Summary of Behaviour where pass visually observed	Notable peaks in bat activity and timing
			Temp ©	Cloud (0-8)	Rain (0-5)	Wind (0-12)	C. Pip	S. Pip	U. Pip	Myt	BLE	Unk				
16 May 2017	SR 04:54	02:50	14	6	0	4	4	1	2				03:16	7	Commuting and foraging along edge of tree lines	4 passes 04:08-04:21
		05:09	14	6	0	4										
19 June 2017	SS 22:15	21:55	12	0	0	0	5	9	7				22:35	21	The majority of bats that were seen were commuting and foraging along the trees at the edge of the A9.	3 passes at 22:59 9 passes 23:03-23:20 3 passes 23:50-23:58
		00:15	9	0	0	0										
19 July 2017	SR 04:49	02:49	13	0	0	2	1	7					02:52	8	Bat activity was low during the transect, and none of the bats were seen.	4 passes 03:15-03:18
		05:04	9	3	0	1										
15 August 2017	SS 20:56	20:36	14	6	0	2	11	14	6				21:15	33	Where bats were seen, they were using the linear tree lines to commute, and foraging in the underpass and over the water body.	5 passes 21:15-21:22 24 passes 21:42-22:22
		22:56	11	6	0	1										
6 September 2017	SS 19:58	19:38	13	7	0	1	8	6	2				20:14	16	Bats were seen within the first 40 minutes after sunset, after that they were only heard. Those seen were foraging in woodland, and one was observed commuting NE away from the A9 (at point 2).	3 passes 20:25-20:33 4 passes 20:53-21:07 4 passes 21:16-21:23
		21:58	11	7	0	1										

⁷⁸ Direction of transect routes were alternated clockwise and counter-clockwise on a monthly rotation.





Table 1.46: Bat Roosts – Transect 3 Survey Results

Transect 3 location: J1 Northbound B (Aviemore South Junction)			Start ⁷⁹ : NH 87745 10341 End: NH 87810 10376				Habitat Description: Transect crosses areas of improved grassland and mixed woodland habitats									
Date	Sunrise (SR) Sunset (SS)	Start time End Time	Weather Condition				Total Species passes during transect survey						Time of first bat	Total Passes	Summary of Behaviour where pass visually observed	Notable peaks in bat activity and timing
			Temp ©	Cloud (0-8)	Rain (0-5)	Wind (0-12)	C. Pip	S. Pip	U. Pip	Myt	BLE	Unk				
01 June 2017	SS 21:59	21:39	12	8	1	2	10	4	3				22:38	17	Where bats were seen, they were observed foraging along tree lines. The majority of bat passes were not seen.	6 passes 22:38-22:57 6 passes 23:29-23:44 4 passes 23:53-00:01
		00:07	11	8	2	2										
28 June 2017	SR 04:22	02:22	9	8	0	0	1	3	5				02:22	9	Where bats were seen, they were observed foraging along tree lines. The majority of bat passes were not seen.	2 passes 02:22-02:23 3 passes 02:41-02:46 2 passes 03:42-03:49
		04:37	10	8	0	0										
17 July 2017	SS 21:56	21:36	14	0	0	0	11	9	3			1	22:26	24	Where bats were seen, they were observed foraging along tree lines. Some bats were not seen due to the adjacent tree cover.	8 passes 22:26-22:48 9 passes 23:09-23:26
		00:02	13	0	0	1										
14 August 2017	SS 20:59	20:39	13	6	0	0	6	1	2				21:39	11	No visual was obtained of any of the bats recorded.	4 passes 21:45-21:55 2 passes 22:22-22:23
		22:59	14	6	0	0										
05 September 2017	SR 06:24	04:24	12	8	0	1	11	1	4				04:54	16	The bats observed were foraging using linear features such as the track to the farmhouse.	3 passes 05:05-05:10 3 passes 05:29-05:31 5 passes 05:39-05:50
		06:40	12	8	0	1										

Table 1.47: Bat Roosts – Transect 5 Survey Results

Transect 5 location: J2 Northbound (Granish Junction)			Start ⁸⁰ : NH 89811 15098 End: NH 89928 15341				Habitat Description: Transect crosses areas of broadleaved and coniferous plantation, water courses and a track									
Date	Sunrise (SR) Sunset (SS)	Start time End Time	Weather Condition				Total Species passes during transect survey						Time of first bat	Total Passes	Summary of Behaviour where pass visually observed	Notable peaks in bat activity and timing
			Temp ©	Cloud (0-8)	Rain (0-5)	Wind (0-12)	C. Pip	S. Pip	U. Pip	Myt	BLE	Unk				
02 June 2017	SR 04:27	02:28	11	8	0	2	3	1		2			02:48	6	Only one bat was seen, at 03:38, flying east along a tree line.	4 passes 02:48-03:02 2 passes 03:35-03:38
		04:38	10	8	0	0										
27 June 2017	SS 22:15	22:00	12	8	0	1	6			1		1	22:48	8	The only bats seen were observed foraging around the treeline.	4 passes 22:48-22:59 2 passes 22:58-22:59
		00:15	11	8	0	1										
18 July 2017	SR 04:47	02:47	10	0	0	1	3	2					02:53	5	Only two of the bats (both common pipistrelle) were seen, at 03:50 and 03:54; both flew north.	2 passes 03:27-03:33 2 passes 03:50-03:54
		05:02	9	3	0	0										

⁷⁹ Direction of transect routes were alternated clockwise and counter-clockwise on a monthly rotation.

⁸⁰ Direction of transect routes were alternated clockwise and counter-clockwise on a monthly rotation.





Transect 5 location: J2 Northbound (Granish Junction)			Start ⁸⁰ : NH 89811 15098 End: NH 89928 15341				Habitat Description: Transect crosses areas of broadleaved and coniferous plantation, water courses and a track									
Date	Sunrise (SR) Sunset (SS)	Start time End Time	Weather Condition				Total Species passes during transect survey						Time of first bat	Total Passes	Summary of Behaviour where pass visually observed	Notable peaks in bat activity and timing
			Temp °C	Cloud (0-8)	Rain (0-5)	Wind (0-12)	C. Pip	S. Pip	U. Pip	Myt	BLE	Unk				
14 August 2017	SS 20:59	20:39	15	4	0	1	5					1	21:43	6	No visual was seen of any of the bats except for a common pipistrelle at 21:53 which was foraging north of the surveyors. No bats were recorded after 21:53 (just under one hour after sunset).	6 passes 21:43-21:53
		23:04	14	6	0	0										
6 September 2017	SR 06:28	04:28	9	8	0	3		1	1				05:29	2	The soprano pipistrelle was seen (at 05:57) to fly south along the track, foraging. The other bat was not seen.	No notable peaks
		06:58	10	4	0	1										

Table 1.48: Bat Roosts – Transect 6 Survey Results

Transect 6 location: J2 Southbound (Granish Junction)			Start ⁸¹ : NH 89983 15256 End: NH 90171 15170				Habitat Description: Transect crosses areas of semi-improved grassland and mixed woodland and passes near water bodies and burns									
Date	Sunrise (SR) Sunset (SS)	Start time End Time	Weather Condition				Total Species passes during transect survey						Time of first bat	Total Passes	Summary of Behaviour where pass visually observed	Notable peaks in bat activity and timing
			Temp °C	Cloud (0-8)	Rain (0-5)	Wind (0-12)	C. Pip	S. Pip	U. Pip	Myt	BLE	Unk				
15 May 2017	SS 21:25	21:09	15	8	0	0	6	5		1			21:37	12	Bats commuting at start, no visual on bats seen later in survey	3 passes 21:37-21:43 3 passes 22:19-22:24
		23:37	14	8	1	0										
20 June 2017	SR 04:19	02:19	6	5	0	0				1			02:28	1	No visual of the <i>Myotis</i> bat	No notable peaks
		04:34	4	1	0	1										
11 July 2017	SS 22:05	21:45	11	7	0	1	8	3		1		2	21:57	13	At 22:39 one common pipistrelle was seen to fly north to south, it crossed the A9 and flew into the woodland; the only other pass seen was a common pipistrelle which flew south along the A9.	4 passes 22:49-22:57 2 passes 23:13-23:15 3 passes 23:55-00:01
		00:05	9	8	0	3										
15 August 2017	SS 20:57	20:37	13	4	0	2	4	3				1	21:10	8	No visual of any of the bats recorded.	3 passes 21:49-22:02 3 passes 22:38-22:48
		23:14	11	6	0	0										
5 September 2017	SR 06:24	04:26	12	0	8	1	1		1	2			05:02	4	One <i>Myotis</i> species of bat was seen to fly from the west then north at point 8, and a common pipistrelle was observed flying overhead away from the A9 at point 9.	2 passes 05:44-05:51
		06:40	12	0	8	1										

⁸¹ Direction of transect routes were alternated clockwise and counter-clockwise on a monthly rotation.





Table 1.49: Bat Roosts – Transect 7 Survey Results

Transect 7 location: J3 Southbound (Blackmount Junction)			Start ⁸² : NH 88256 24092 End: NH 88256 24092				Habitat Description: Transect crosses areas of open ground, roads and coniferous plantation									
Date	Sunrise (SR) Sunset (SS)	Start time End Time	Weather Condition				Total Species passes during transect survey						Time of first bat	Total Passes	Summary of Behaviour where pass visually observed	Notable peaks in bat activity and timing
			Temp ©	Cloud (0-8)	Rain (0-5)	Wind (0-12)	C. Pip	S. Pip	U. Pip	Myt	BLE	Unk				
15 May 2017	SS 21:25	21:14	15	8	0	0		1					22:24	1	Not seen.	No notable peaks
		23:41	14	8	1	1										
12 July 2017	SR 04:38	02:38	10	7	0	1									The earliest three passes were heard not seen. The unknown species was seen foraging above the road, and one of the soprano pipistrelles was seen to fly east along the track between the B road and the A9.	2 passes 03:00-03:02 2 passes 03:30-03:35
		04:53	8	4	0	1	1	2		1		03:00	5			
6 September 2017	SR 06:27	04:28	9	4	0	0		5					05:03	5	No visual was obtained of any of the bats.	5 passes 05:03-05:08
		06:43	10	4	0	1										

1.5 Static Detector Results

1.5.1 Six static detectors were deployed along the bottom of the rock face. The static detector survey results from the main recording period of May to September 2017 are summarised in Table 1.50 and Table 1.51. Results from additional recording during October and November 2017 are discussed alongside Tables 1.58 and 1.59.

Table 1.50: Slochd Rock Face (Static Detector) Monthly Activity in 2017 (May to September)

Month	Static	Recording Time	Number of registrations						Total registrations
			C.pip	S.pip	U.pip	Myt	BLE	Unk	
May	Point 1	56:58:00	132	2	1	8	0		143
	Point 2	56:58:00	77	3		7	0		87
	Point 3	56:58:00	65	2		20	0	1	88
	Point 4	56:58:00	175	7		7	0		189
	Point 5	56:58:00	411	4		17	0		432
	Point 6	56:58:00	73	4		9	0	2	88
		Total		933	22	1	68	0	3
June	Point 1	41:50:00	38	1			0		39
	Point 2	41:50:00	63	2		1	0		66
	Point 3	41:50:00	324	24	26	2	0	1	377
	Point 4	41:50:00	27	3	1	4	0		35
	Point 5	41:50:00	45	1	3	5	0		54
	Point 6	41:50:00	45	1	1	1	0		48
		Total		542	32	31	13		1
July	Point 1	82:15:00	174	5		8	0		187
	Point 2	82:15:00	494	41	4	8	0		547

⁸² Direction of transect routes were alternated clockwise and counter-clockwise on a monthly rotation.





Month	Static	Recording Time	Number of registrations						Total registrations
			C.pip	S.pip	U.pip	Myt	BLE	Unk	
	Point 3	82:15:00	421	32	3	22	0	1	479
	Point 4	82:15:00	974	40	3	35	0		1052
	Point 5	82:15:00	1320	68	34	30	0	4	1456
	Point 6	82:15:00	541	72	5		0	1	619
		Total		3924	258	49	103	0	6
August	Point 1	67:40:00	142	8	1	1	0	2	154
	Point 2	67:40:00	189	25	1	7	0	2	224
	Point 3	67:40:00	142	23		12	0	2	179
	Point 4	67:40:00	325	26	10	34	0	1	396
	Point 5	67:40:00	1570	52	23	49	0	6	1700
	Point 6	67:40:00	335	18	4	19	0	3	379
		Total		2703	152	39	122	0	16
September	Point 1	101:20:00	35	6	1	6	0	1	49
	Point 2	101:20:00	155	21	2	16	0		194
	Point 3	101:20:00	95	22		97	0	1	215
	Point 4	101:20:00	168	16	2	57	0	1	244
	Point 5	101:20:00	209	8	11	55	0	7	290
	Point 6	101:20:00	106	5	4	7	0	8	130
		Total		768	78	20	238	0	18
Total			8870	542	140	544	0	44	10140

C.pip = common pipistrelle; S.pip = soprano pipistrelle; U.pip = unknown pipistrelle; Myt = *Myotis*; BLE = brown long-eared; Unk = unknown bat species.

Table 1.51: Slochd Rock Face (Static Detector) Total Passive Monitoring Survey Results (May to September 2017)

Static	Recording Time	Number of registrations ⁸³						Total registrations
		C.pip	S.pip	U.pip	Myt	BLE	Unk	
Point 1	350:05:00	521	22	3	23	0	3	572
Point 2	350:05:00	978	92	7	39	0	2	1118
Point 3	350:05:00	1047	103	29	153	0	6	1338
Point 4	350:05:00	1669	92	16	137	0	2	1916
Point 5	350:05:00	3555	133	71	156	0	17	3932
Point 6	350:05:00	1100	100	14	36	0	14	1264
	Total	8870	542	140	544	0	44	10140

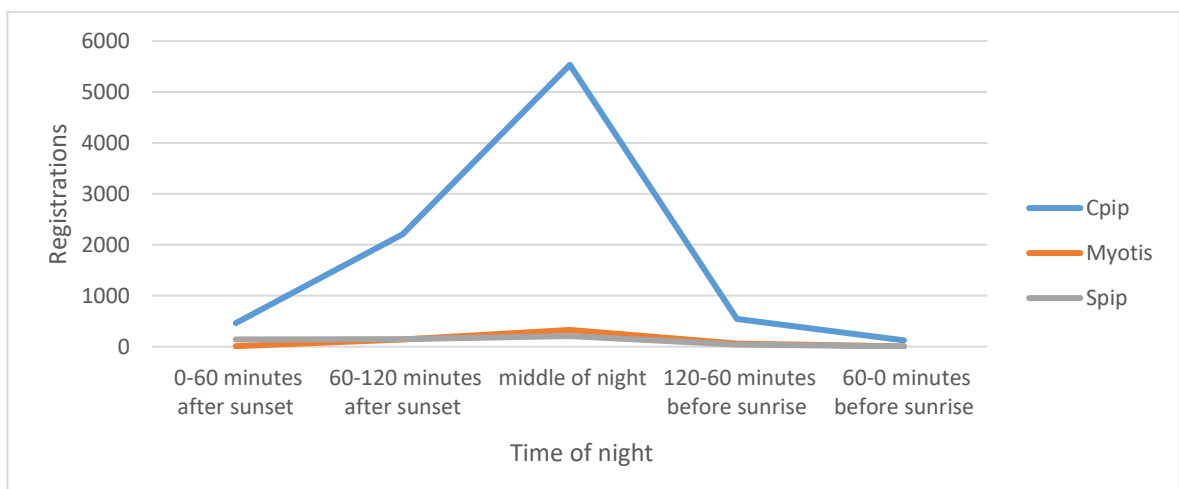
C.pip = common pipistrelle; S.pip = soprano pipistrelle; U.pip = unknown pipistrelle; Myt = *Myotis*; BLE = brown long-eared; Unk = unknown bat species.

⁸³ i.e. species presence within a 15 second (s) [max.] file. Multiple passes/calls/pulses of the same species within a (maximum) 15 s file counts as a single registration - two species within the same 15 s file are counted as two registrations.



1.5.2 Chart 1 below shows all registrations presented across the main recording period (May-Sep 2017) against time relevant to sunrise/sunset for all static locations combined. Further break down is provided for each static location in Charts 2 to 4. The data show obvious registrations peaks within the middle parts of the night indicating higher activity outwith roost emergence/return times; therefore the activity appears more likely to be related to foraging/commuting behaviour rather than roosting. It should be noted that the 'middle of night' period is not an equal temporal period across the different months/dates of recording (for example more records could be expected from the middle of night period in September rather than June given the greater hours of darkness) and concomitantly the middle of night period (generally) comprises more hours than post-dusk and pre-dawn hour block periods used.

Chart 1: Species registrations recorded against time of night (all records, all points, May – September 2017)



1.5.3 Further time of night analysis is presented within Charts 2-4. Chart 2 shows all 109 registration records recorded within the 0-30 minute period after sunset for all points and all months (no registrations were recorded prior to sunset). Chart 3 shows all 7 registration records recorded within the 30-0 minute period before sunrise for all points and all months (no registrations were recorded after sunrise). Chart 4 shows all 9 *Myotis* registrations recorded within the 0-60 minute period after sunset for all points and all months. If regularly used roosts were present within the near vicinity of the static detector points (i.e. along Slochd rock face) it could be expected that a higher incidence of registrations would have been recorded within the 30 minute periods after sunset and before sunrise (increased to 60 minutes for *Myotis* species after sunset to account for later evening emergence times (Harris & Yalden 2008⁸⁴). However, given that unidentified bats, common pipistrelle, soprano pipistrelle and *Myotis* have all been recorded within peak roost emergence times, it is considered that all these species/taxa could be roosting (in limited numbers) within suitable features provided by Slochd rock face.

⁸⁴ Harris, S & Yalden, D. (2008). Mammals of the British Isles: Handbook 4th Edition. The Mammal Society.



Chart 2: Species registrations recorded against minutes after sunset (all records, all points, May – September 2017)

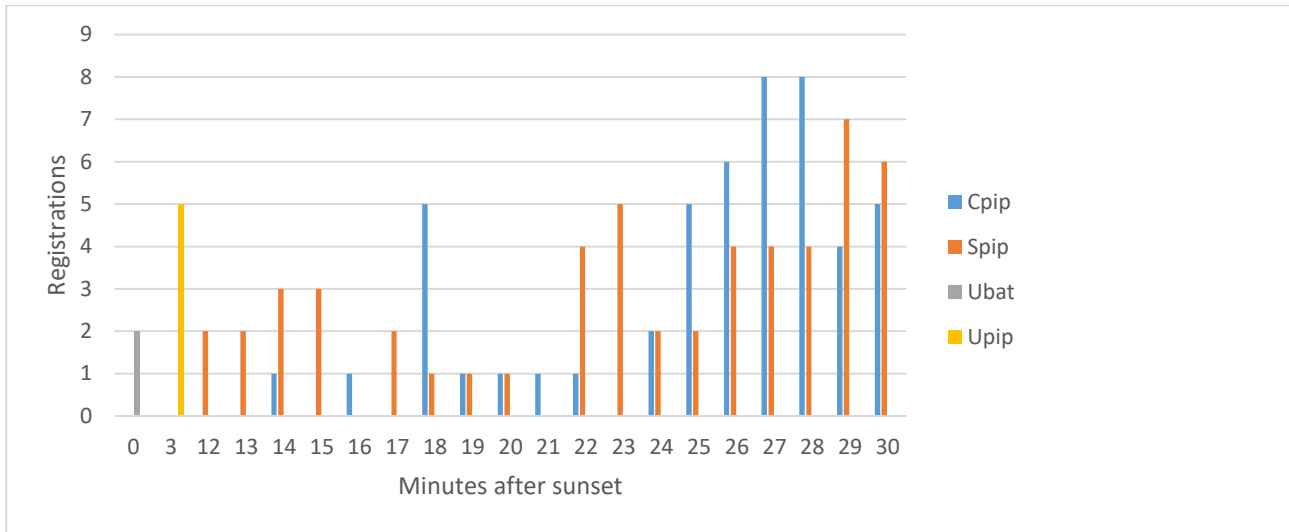


Chart 3: Species registrations recorded against minutes before sunrise (all records, all points, May – September 2017)

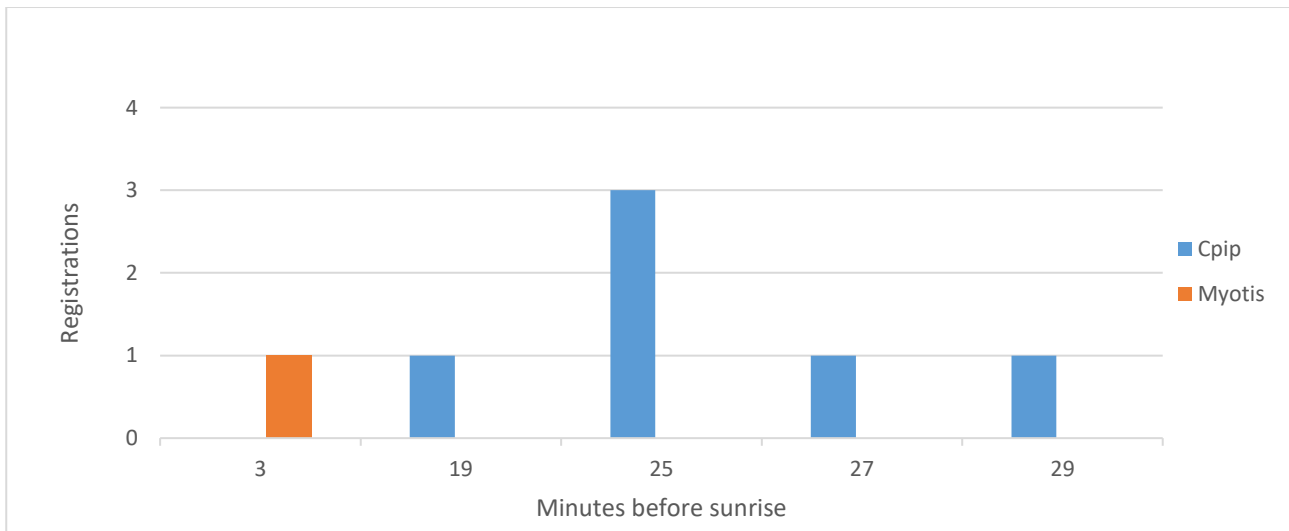
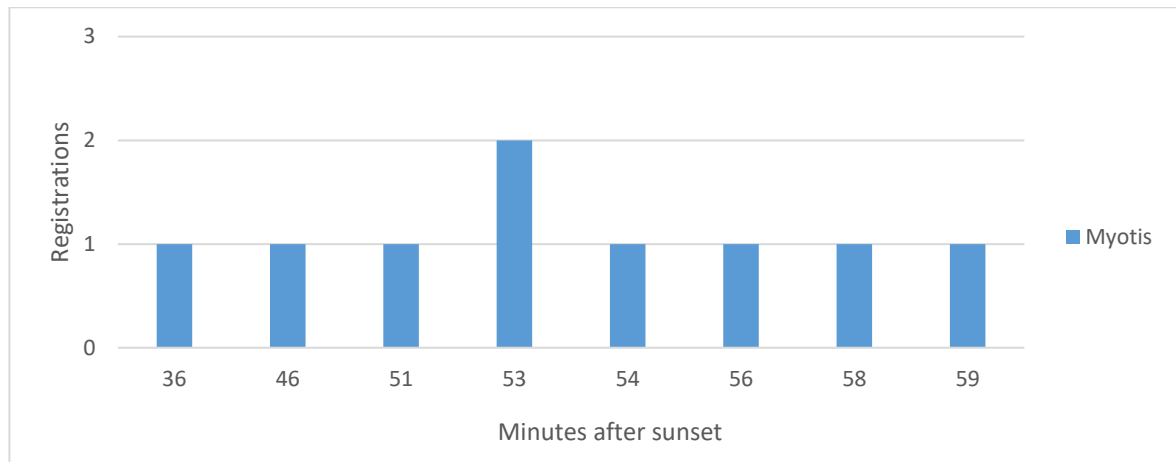


Chart 4: Myotis registrations recorded against minutes after sunset (all records, all points, May – September 2017)



1.5.4

As recording periods differed between months, averages of species' registrations per point and per month are required for further comparative analysis. This is displayed in Table 1.52 to Table 1.54. Table 1.54 presents the average registrations per species (unknown bat species and pipistrelles not identified to species are omitted) per night for each point and each month of recording. Chart 5 provides graphical representation of these data. Table 1.53 presents the average registrations per species (unknown bat species and pipistrelles not identified to species are omitted) per night for all points combined and each month of recording. Chart 6 provides graphical representation of these data.

Table 1.52: Registrations per point per month

	Common pipistrelle	Soprano pipistrelle	Myotis sp.
Point 1			
May	132	2	8
June	38	1	
July	174	5	8
August	142	8	1
September	35	6	6
Point 2			
May	77	3	7
June	63	2	1
July	494	41	8
August	189	25	7
September	155	21	16
Point 3			
May	65	2	20
June	324	24	2
July	421	32	22
August	142	23	12
September	95	22	97

	Common pipistrelle	Soprano pipistrelle	Myotis sp.
Point 4			
May	175	7	7
June	27	3	4
July	974	40	35
August	325	26	34
September	168	16	57
Point 5			
May	411	4	17
June	45	1	5
July	1320	68	30
August	1570	52	49
September	209	8	55
Point 6			
May	73	4	9
June	45	1	1
July	541	72	
August	335	18	19
September	10	5	7

Table 1.53: Averaged species' registrations per night recording

Point/Month	Common pipistrelle average/ night	Soprano pipistrelle average/ night	Myotis sp. average/ night
Point 1			
May	18.86	0.29	1.14
June	6.33	0.17	0.00
July	15.82	0.45	0.73
August	20.29	1.14	0.14
September	4.38	0.75	0.75
Point 2			
May	11.00	0.43	1.00
June	10.50	0.33	0.17
July	44.91	3.73	0.73
August	27.00	3.57	1.00
September	19.38	2.63	2.00
Point 3			
May	9.29	0.29	2.86
June	54.00	4.00	0.33
July	38.27	2.91	2.00
August	20.29	3.29	1.71

Point/Month	Common pipistrelle average/ night	Soprano pipistrelle average/ night	Myotis sp. average/ night
September	11.88	2.75	12.13
Point 4			
May	25.00	1.00	1.00
June	4.50	0.50	0.67
July	88.55	3.64	3.18
August	46.43	3.71	4.86
September	21.00	2.00	7.13
Point 5			
May	58.71	0.57	2.43
June	7.50	0.17	0.83
July	120.00	6.18	2.73
August	224.29	7.43	7.00
September	26.13	1.00	6.88
Point 6			
May	10.43	0.57	1.29
June	7.50	0.17	0.17
July	49.18	6.55	0.00
August	47.86	2.57	2.71
September	13.25	0.63	0.88

Chart 5: Averaged species' registrations per night recording

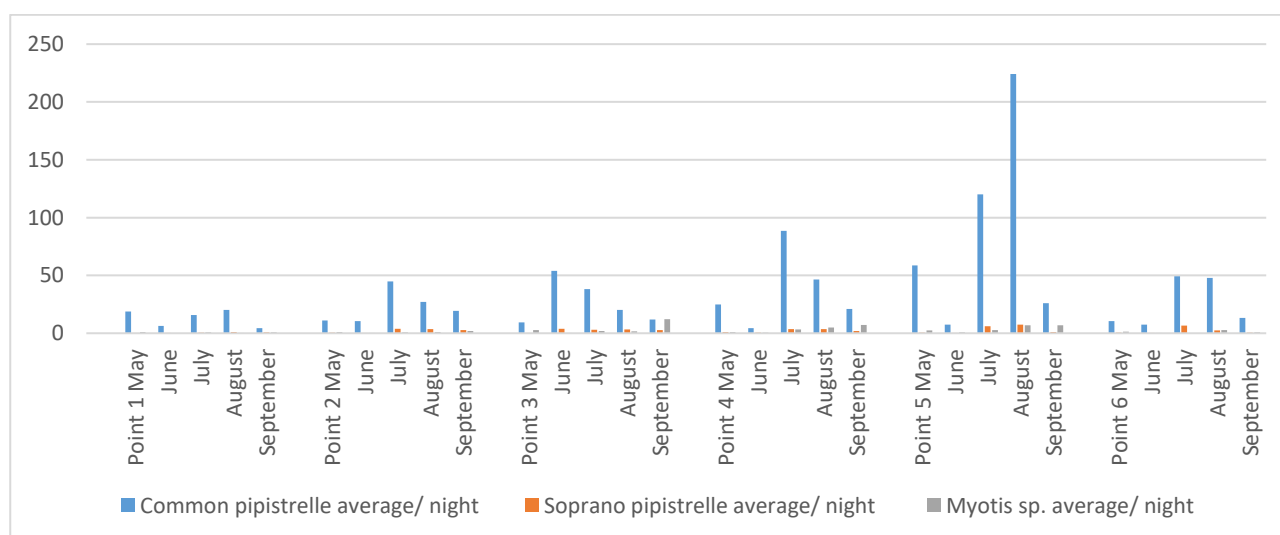
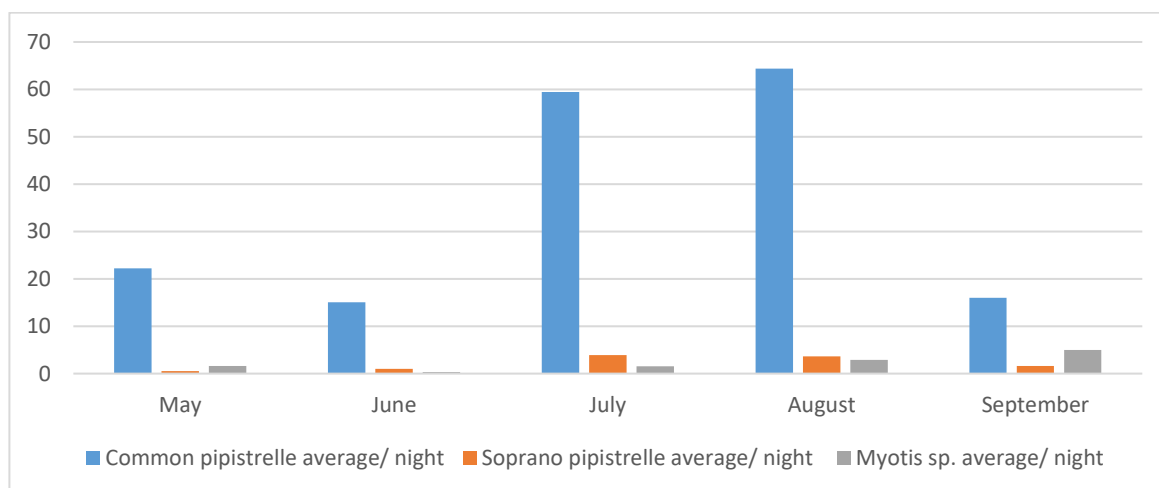


Table 1.54: Averaged species' registrations per night recording (all points combined)

Month	Common pipistrelle average/ night	Soprano pipistrelle average/ night	Myotis sp. average/ night
May	22.21	0.52	1.62
June	15.06	0.97	0.36

Month	Common pipistrelle average/ night	Soprano pipistrelle average/ night	Myotis sp. average/ night
July	59.45	3.91	1.56
August	64.36	3.62	2.9
September	16	1.63	4.96

Chart 6: Averaged species' registrations per night recording (all points combined)



1.5.5 Tables 1.53 and 1.54 and Charts 5 & 6 show obvious increases in common pipistrelle and soprano pipistrelle activity (averaged registrations) during July and August, particularly at static detector Point 5. *Myotis* activity increases through late summer and into September.

1.5.6 In order to further interrogate the static detector data, a nightly analysis of common pipistrelle recorded at Point 5 during August is presented below in Table 1.55. Data from Point 5 during August recorded the highest activity levels of common pipistrelle at 224.29 average registrations per night of recording.

Table 1.55: First and last bat recordings for Static detector 5 in August 2017

Date	Sunrise/Sunset	Time last common pipistrelle recording before sunrise	Time first common pipistrelle recording after sunset
09 August 2017	0529 / 2110	~	2142 (32 minutes after sunset)
10 August 2017	0531 / 2108	0439 (52 minutes before sunrise)	2150 (42 minutes after sunset)
11 August 2017	0533 / 2105	0226 (187 minutes before sunrise)	2200 (55 minutes after sunset)
12 August 2017	0535 / 2103	0504 (31 minutes before sunrise)	2155 (52 minutes after sunset)
13 August 2017	0537 / 2100	0337 (120 minutes before sunrise)	2127 (27 minutes after sunset)
13 August 2017	0539 / 2058	0418 (81 minutes before sunrise)	2201 (63 minutes after sunset)
15 August 2017	0541 / 2056	0507 (34 minutes before sunrise)	2154 (58 minutes after sunset)
16 August 2017	0544 / 2053	0431 (73 minutes before sunrise)	~

Date	Sunrise/Sunset	Time last common pipistrelle recording before sunrise	Time first common pipistrelle recording after sunset
		sunrise)	

- 1.5.7 Data from Table 1.55 indicates the first common pipistrelle recordings after sunset range from 27 minutes to 63 minutes and that the last common pipistrelle recordings before sunrise range from 31 minutes to 187 minutes. It is considered that use of the immediate area as a common pipistrelle roost site is possible but is not supported through the first/last recording analysis.
- 1.5.8 Registrations/minute analysis for common pipistrelle during July and August has been completed (not presented here). It is considered that these data indicate that the encounter of multiple bats (common pipistrelle) at any one time is likely: given the proximity of detectors (x6 units spaced along c. 350m length) it could be expected that more than one detector would record registrations at the same time (within the same minute) should multiple bats be present within the vicinity of the rock face. Over 10 registrations within one minute (0 to 59 seconds) occurred on 25 occasions during July (notably no incidences of over 10 registrations/minute were recorded during August). The two highest incidences, both 13 registrations/minute on 13 (0114) and 17 July (2351), showed records from all static detectors on 13 July and all but Point 1 on 17 July. It is considered highly likely that multiple bats were present in the Slochd rock face area at the same times on these dates; all incidences of over 10 registrations/minute (from all detectors) are considered as likely to be from more than one bat (common pipistrelle).
- 1.5.9 An activity level comparative analysis is provided below, based on an activity database collated by HEL, as detailed in an unpublished paper by Dowse, Daisley and Parry. This paper has been peer reviewed by Neil Middleton (Echoes Ecology), Jonathan Fairbairn (FDM Ecology) and Paul Lintott (Exeter University). The database assigns activity levels into broad categories (high, typical and low) using an interquartile range approach. This database contains bat survey data collected from 301 locations across 10 x 100km grid squares across Scotland. Within the dataset typical activity levels for different bat species can be derived in relation to broad habitat type and for all habitats. By comparing a site's activity with the range of activity rates recorded in the dataset it is possible to begin to provide context for an evaluation of nature conservation importance and an assessment of impacts.
- 1.5.10 Table 1.56 provides a summary of the activity recorded at the rock face across of surveys, showing the average registrations per night across all points for all months (May – September 2017). Table 1.57 shows the typical activity levels from the HEL data base according to species and habitat type.

Table 1.56: Slochd rock face activity levels (average registrations/night)

Species	Registrations/night (all points, all months)
Common pipistrelle	37.91
Soprano pipistrelle	2.32
Myotis	2.33

Table 1.57: Typical activity levels (registrations/night) according to species and habitat class (from HEL dataset)

Species	Activity range for moorland	Activity range for all habitats (including broadleaved woodland, riparian, etc.)
Common pipistrelle	0.46 – 3.81	1.84 – 27.69
Soprano pipistrelle	0.25 – 6.03	2.44 – 21.95
Myotis	0.09 – 0.60	0.14 – 1.07

- 1.5.11 An activity range for moorland is presented for the comparison at the rock face (refer Table 1.57) although it should be noted that no clear comparable habitat type is present within the HEL data base (the Slochd rock face habitat area is considered quite unique being composed of exposed cliff and talus, juniper scrub and heath, also adjacent to a linear feature, the A9 corridor). An activity range for all habitat types is therefore also presented for comparison.
- 1.5.12 In terms of activity across a season and compared against all habitat data, common pipistrelle and *Myotis* fall within the high activity band for both moorland and all habitats; soprano pipistrelle fall within the typical activity band for moorland and low activity band for all habitats.
- 1.5.13 In summary the static detector surveys at the rock face identified high levels of common pipistrelle and *Myotis* activity and the inspection surveys located one bat roost, a Natterer's bat dropping (confirmed through DNA analysis) being recovered from the upper cave at the north-western end of the rock face. It should be reiterated that rope access inspection was considered unsafe at one location (a prominent overhang) that also corresponds with the location of static detector point 5 where the highest level of common pipistrelle activity was identified. It is considered possible that a common pipistrelle roost could be present within the overhang although this is not supported by analysis of the activity recorded by the static detector.
- 1.5.14 Additional recording was undertaken during late October 2017 and November 2017: (26 October to 21 November). Detectors were left beyond normal recording periods when powered by single 12V external batteries and all went to flat battery mode, although at varying times; resulting in differing recording times/periods. In addition, the detector at Point 5 failed to record for more than one night during October (third party interference). Results are summarised in Table 1.58.

Table 1.58: Slochd rock face (static detector) total passive monitoring survey results (October & November 2017)

Static	Recording Time	Number of registrations ⁸⁵						Total registrations
		C.pip	S.pip	U.pip	Myt.	BLE	Unk.	
Point 1	384:18	7	2	4	3	0	0	16
Point 2	379.57	9	3	1	5	0	1	19
Point 3	325.31	8	0	0	20	0	1	29
Point 4	385.24	0	0	21	8	0	1	30
Point 5	174.01	18	0	0	4	0	0	22
Point 6	359.06	16	0	3	1	0	0	20

⁸⁵ i.e. species presence within a 15 second (s) [max.] file. Multiple passes/calls/pulses of the same species within a (maximum) 15 s file counts as a single registration - two species within the same 15 s file are counted as two registrations.



Static	Recording Time	Number of registrations ⁸⁵						Total registrations
		C.pip	S.pip	U.pip	Myt.	BLE	Unk.	
	Total	58	5	29	41	0	3	136

1.5.15 Table 1.58 shows far fewer registrations recorded during October and November 2017 than May to September 2017 (refer Table 1.50); this is also presented for comparison in Table 1.59 as registrations per minute (total registrations divided by recording time in minutes). This can most likely be explained by seasonal change in bat behaviour and a lower incidence of activity as bats move to hibernacula. Bat registrations were recorded throughout the October and November recording period, with the latest registration (soprano pipistrelle) recorded on 19 November. Similar to data from earlier in the year, common pipistrelle and *Myotis* were more frequently recorded during October and November 2017 than other species. It is considered possible that low numbers of common pipistrelle and *Myotis* could be roosting within features at Slochd rock face; likewise, given the low incidence of registrations recorded it is considered that significant roosts were not present at this time of year.

Table 1.59: Total registrations per minute

Static	May – September 2017	October & November 2017
Point 1	0.0272	0.0007
Point 2	0.0532	0.0008
Point 3	0.0637	0.0015
Point 4	0.0912	0.0013
Point 5	0.1872	0.0021
Point 6	0.0602	0.0009