In Parliament – Session 2021 - 2022

HS2

High Speed Rail (Crewe – Manchester)

Background information and data

Ecology and biodiversity

BID EC-011-00001_Part 1

Ecological baseline data - bats - Part 1 of 2

M124

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Department for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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Tables

1 Introduction

1.1.1 This report presents a summary of the baseline data relating to bats.

1.1.2 Baseline data have been collected for the Proposed Scheme in relation to the following community areas (CA):

- Hough to Walley's Green (MA01);
- Wimboldsley to Lostock Gralam (MA02);
- Pickmere to Agden and Hulseheath (MA03);
- Broomedge to Glazebrook (MA04);
- Risley to Bamfurlong (MA05);
- Hulsenheath to Manchester Airport (MA06);
- Davenport Green to Ardwick (MA07); and
- Manchester Piccadilly Station (MA08).

1.1.3 This report should be read in conjunction with Map Series EC-05 and EC-06 in the Background Information and Data, Ecology Map Book.

1.1.4 The Environmental Statement[1] should be referred to for details of the ecology impact assessment.

[1] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement*. Available online at: https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-environmental-statement.

2 Bats

2.1 Methodology

2.1.1 Details of the standard methodology utilised for bat surveys are provided in the Technical Note – Ecology and Biodiversity – Ecological Field Survey Methods and Standards (FSMS) included in the Environmental Impact Assessment Scope and Methodology Report (SMR) (see Environmental Statement, Volume 5, Appendix CT-001-00001).

2.1.2 A desk study search was undertaken to identify bat records within 5km of the land required for construction of the Proposed Scheme. Records dated prior to 1 October 2009 were excluded from the desk study review in line with the methodology. Desk study records relating to bats were obtained from the following sources:

- Greater Manchester Record Centre[2];
- Merseyside Biobank[3];
- rECOrd[4,] Local Biological Records Centre for the Cheshire region;
- Staffordshire Biological Record Centre[5]; and
- National Trust Records[6].

2.1.3 Map Series EC-05 and EC-06 in the Background Information and Data, Ecology Map Book illustrates the bat roosts and activity mapping respectively. Map Series EC-05 illustrates the most important roost at any single building or tree. For example, if a building has an occasional common pipistrelle roost and a maternity soprano pipistrelle roost, the map symbology will only show the maternity roost. If a building has multiple occasional roosts the symbology will illustrate a multiple roost.

2.2 Deviations, constraints and limitations

2.2.1 Surveys have been confined to land to which access has been permitted during the survey period. Due to access restrictions, a full survey season has not been completed on a range of sites along the route.

[2] Greater Manchester Record Centre, *The Ecological Database for Greater Manchester.* Available online at: https://www.gmwildlife.org.uk/.

[3] Merseyside BioBank, Local Biodiversity Records centre for North Merseyside. Available online at: http://www.MerseysideBioBank.org.uk.

[4] rECOrd, *Local Biological Records Centre serving Cheshire.* Available online at: http://www.record-lrc.co.uk/.

[5] Staffordshire Ecological Record. Available online at: http://www.staffs-ecology.org.uk/.

[6] National Trust. Available online at: http://www.nationaltrust.org.uk.

Trees and woodlands

Constraints and limitations

2.2.2 Surveys of trees with regard to bats included ground-level inspections, climbed inspections and emergence/re-entry surveys, over the survey seasons of 2017, 2018, 2019 and 2020.

2.2.3 One constraint when undertaking these types of tree surveys was adverse weather, which included high winds, rain and cold temperatures. Adverse weather affects ground-level surveys by reducing visibility of features and impedes climbed inspections owing to health and safety concerns. These conditions are also unsuitable to conduct bat emergence surveys and, therefore, scheduled surveys were necessarily cancelled when conditions were adverse. This impeded completion of emergence surveys at sites across the land required for construction of the Proposed Scheme.

2.2.4 Surveys were also constrained by health and safety issues when trees were assessed as being unsafe to climb. To address this, ground assessments and emergence surveys were carried out to assess the potential of these trees to support roosting bats. Covid-19 restrictions were in place from March 2020, which resulted in some restrictions for surveys.

2.2.5 Some of the surveys were constrained by equipment failure, which resulted in the loss of recordings. These were re-scheduled, where possible, but are not deemed to be a cause of significant loss of data and therefore unlikely to affect the overall results.

2.2.6 Tree climbing surveys were carried out throughout the year. During winter months, whilst there was a reduced likelihood of encountering bats in accessible cavities, these surveys were continued in order to rule out, or downgrade, a proportion of the trees from high/medium to lower roost potential at an early date. Droppings collected from accessible cavities could also confirm roost presence.

2.2.7 Covid-19 restrictions were in place from March 2020, which resulted in some restrictions for surveys.

2.2.8 Access was not possible to all sites and accessibility to some sites was intermittent (e.g. as a result of restrictions arising from game shooting). For some features that required emergence surveys, this resulted in inconsistent and incomplete survey sets.

2.2.9 Some ground-level tree assessments are constrained when trees are in full leaf, when features can be obscured from ground level. Where leaf cover significantly obscured the ground-level view, grading of roost potential was raised, as a precaution, and triggered a climb-and-inspect survey.

2.2.10 Where the above constraints meant surveys could not be fully completed, assessments were conservative to account for the incomplete survey data.

Deviations

2.2.11 Due to the large number of trees requiring ground-level tree assessment, trees with negligible potential were not mapped.

Buildings and structures

Constraints and limitations

2.2.12 The main constraints to external and internal building inspections comprised lack of access to the site and/or declined access to building interiors and roof voids. Covid-19 restrictions were in place from March 2020 which resulted in some restrictions for surveys.

2.2.13 Access permission was not granted for a number of buildings and other structures on private land. In some instances, an initial assessment of potential to support roosting bats was undertaken based on external survey only. In other instances, access was granted or revoked partway through the season. Covid-19 restrictions were in place from March 2020 which resulted in some restrictions for surveys.

2.2.14 Where internal access was granted, surveys of several sites were constrained by health and safety concerns. These included sites with hazards, including structural safety and the potential presence of asbestos, biosecurity, or where access was not physically possible. In these situations, interior inspections were not undertaken.

2.2.15 During the 2018 survey season, maternity roosts may be under-recorded due to high temperatures in the early summer.

2.2.16 Where the above constraints meant surveys could not be fully completed, assessments were conservative (i.e. that bats may be present).

Deviations

2.2.17 Due to difficulties internally accessing buildings on private land, some surveys omitted the internal inspection and comprised only the external assessment followed by emergence/re-entry surveys. No internal inspections were undertaken from March 2020 due to Covid-19.

Activity surveys

Constraints and limitations

2.2.18 Access was not always available for all land parcels along each proposed transect route, meaning the full transect route could not be completed and alternatives of the proposed transect had to be undertaken.

2.2.19 During August 2018 transect survey DT08 in MA05, gun shots were fired on a neighbouring land parcel. This meant that the transect survey was cut short and the transect route altered to avoid this location in September 2018.

2.2.20 Due to constraints regarding equipment and access, it was not possible to start surveys until June 2018. Therefore, early season data for the pre-maternity period is incomplete/missing from the 2018 survey season. Bats were also recorded leaving maternity roosts earlier than usual in 2018, due to high temperatures in the early summer, meaning some roosts may have been abandoned early. Therefore, during this survey season, maternity roosts may be under-recorded. Surveys in 2019 were able to capture results both pre- and during the maternity period to mitigate this limitation.

2.2.21 Equipment malfunctions and theft during some surveys meant recordings were corrupted or missing and the data could not be used. This did not occur enough times to be significant; however, where it occurred, this has been recorded in the tables of data for activity surveys and static detector monitoring results.

2.2.22 Adverse weather conditions caused surveys to be cancelled or limited the amount/type of recorded bat activity. However, the less labour-intensive nature of activity surveys, compared with the survey regime for emergence surveys, allowed more flexibility in re-scheduling surveys when conditions were suitable. The constraint of adverse conditions on activity surveys was therefore relatively low.

2.2.23 Transects were not carried out through some woodlands, due to the health and safety concerns of having surveyors within woodland at night. To limit the impact of this, routes were identified around woodlands where possible.

2.2.24 Where the above constraints meant surveys could not be fully completed, assessments were conservative (i.e. that bats may be present).

Deviations

2.2.25 Deviation from the survey methodology occurred when access was retracted, meaning surveys could not be completed. Other transects were walked to cover months where data was not gathered. When access for the original transect route was withdrawn, it was necessary to amend the transect route and complete coverage in different months and years to maintain the 3km per 10km of route survey ratio.

Static detector surveys

Constraints and limitations

2.2.26 Static ultrasonic bat recorders (SM4BAT) were used for the majority of static detector surveys.

2.2.27 Equipment malfunctions and theft resulted in missing data from scheduled surveys. However, less than 1% of the surveys scheduled were affected and this limitation is not significant.

2.2.28 Limitations in using ultrasonic detectors due to the variable properties in bat echolocation calls, are acknowledged. Some bats, including brown long-eared bat (*Plecotus auritus*), have very directional, quiet calls and are only easily detectable when the bat detector is in close range and facing in the direction of the bat. This means, some calls may be under-recorded.

2.2.29 Data analysis has allowed for identification of detected calls to species level, with exception of calls for bats of the *Myotis* genus; as such, the presence and abundance of species within this genus is likely to be underestimated. Where it is not possible to differentiate species of pipistrelle bats, these records are provided as *Pipistrellus* species.

2.2.30 The use of 'auto-analyse software' (Kaleidoscope Pro) means that the number of passes of bats is likely to be under-recorded. This is because calls classified as 'noise' by the software were not subject to manual identification and may have been over-looked if the software falsely labelled them.

2.2.31 Due to land access constraints and equipment failure, it was not possible to successfully deploy static recorders at all locations each survey month. Conversely, detectors were left in some locations for longer periods (due to access restrictions on collection) which could have skewed data analysis. However, this is considered to have had an insignificant impact on the results.

2.2.32 The static detectors recorded similar species and levels of activity to that recorded on the walked transects. However, whereas transects record the sunset period, static detectors record the whole night of activity, collecting more data and appearing to record greater levels of activity, due to the additional time that they are recording.

Deviations

2.2.33 Where transects had to be moved during the survey season, due to revoked access permission, static detectors were also re-deployed to correlate to the alternative transects.

2.3 Baseline [MA01 – MA04]

Hough to Walley's Green (MA01)

2.3.1 Table 1 to Table 3 provide summaries of bat roosts identified in MA01 from field surveys. These tables should be read in conjunction with Background Information and Data, Ecology Map Book, Map Series EC-05. Collected survey information has been allocated an ecology survey code to provide a unique identification for use on mapping.

Overview of bat species status in the vicinity of MA01

2.3.2 In the vicinity of MA01, there are no statutory designated sites (within 10km) or non-statutory designated sites (within 5km) which support bats as features for their designations.

2.3.3 Habitats within MA01 suitable to support roosting, foraging and commuting bats include: the existing railway corridor, which is lined with vegetation; Local Wildlife Sites; agricultural land; Crewe Crematorium, which comprises areas of trees and grassland; and a small number of woodland blocks and field boundaries. There are also watercourses, such as Gresty Brook, and a number of culverted watercourses, such as Valley Brook, which are lined with woodland, scrub and grassland margins that offer commuting and foraging features. The majority of these habitats are present within and adjacent to the land required for the construction of the Proposed Scheme.

2.3.4 Field surveys and desk study recorded at least nine species of bats in MA01. The desk study identified Daubenton's (*Myotis daubentonii*) bat in the local area, within 500m of the land required for the construction of the Proposed Scheme. Nine species were identified from field surveys; in addition, some records of *Myotis* and *Pipistrellus* bats could not be identified to species level. The total bat assemblage is as follows:

- common pipistrelle (*Pipistrellus pipistrellus*);
- soprano pipistrelle (*Pipistrellus pygmaeus*);
- Nathusius' pipistrelle (*Pipistrellus nathusii*);
- *Pipistrellus* species;
- brown long-eared bat (*Plecotus auritus*);
- noctule (*Nyctalus noctula*);
- Leisler's bat (*Nyctalus leisleri*);
- serotine (*Eptesicus serotinus*);
- whiskered *(Myotis mystacinus)*/Brandt's bat (*Myotis brandtii*);
- Daubenton's bat *(Myotis daubentonii*); and
- *Myotis* species (*Myotis sp.*).

Roosting (trees)

2.3.5 A total of 137 trees were subject to an initial ground-based assessment, and subsequent further detailed climbed surveys, where appropriate in line with the methods described in the FSMS document.

2.3.6 Of the 137 trees that were initially assessed, the following results were obtained:

- two trees were identified as having high potential to support roosting bats;
- 92 trees were identified as having moderate potential to support roosting bats; and
- the remaining 43 trees were classified as having low or negligible potential to support roosting bats. These trees were subsequently scoped out of further survey.

2.3.7 Of the 94 trees assessed as having moderate or high potential to support roosting bats:

- a total of 66 were subject to further surveys in the form of a tree climbing inspection, during which no roosts were identified;
- 45 were reassessed as having low to negligible potential to support roosting bats and were scoped out of further surveys;
- 15 trees were subject to emergence surveys, during which no roosts were recorded; and
- three trees were subject to back-tracking surveys, during which two roosts were recorded.

2.3.8 Details of confirmed tree roosts in MA01 are provided in Table 1.

Table 1: Confirmed tree roosts within MA01

Ecology survey code	Location	OS grid reference	Tree species	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH588855-CH616525_L5490_BA5_F019_230818	Spring Farm, Minshull Vernon	SJ69405935	Oak	*Myotis* species (4)	23 August 2018, back tracking survey	Occasional	A maximum of four bats were observed emerging from the tree	MA01	15m west
CH588855-CH616525_L5490_BA5_F020_230818	Spring Farm, Minshull Vernon	SJ69405933	Oak	*Pipistrellus* species (2)	23 August 2018, back tracking survey	Occasional	A maximum of two bats were observed emerging from the tree	MA01	15m west

Roosting (buildings and structures)

2.3.9 A total of 74 buildings in this area were subject to initial inspections, resulting in the following:

- nine buildings were confirmed to support 13 roosts;
- three roosts were confirmed via internal inspections, and 10 roosts were identified from emergence and re-entry surveys;
- seven buildings had high potential to support bats;
- 13 buildings had moderate potential to support bats;
- 14 buildings had low potential to support bats; and
- 40 buildings had negligible potential to support bats.

2.3.10 Of the 34 buildings confirmed as having roosts, or assessed as having high, moderate or low potential to support bats:

- 19 buildings were subject to internal inspections, resulting in identification of three bat roosts;
- 12 buildings were subject to a total of 29 emergence and re-entry surveys, identifying a further 10 roosts;
- species have not been confirmed through DNA analysis at three roosts. Two roosts remain unknown; however, visual inspection of droppings found during the internal inspections identified one *Pipistrellus* species roost and one brown long-eared bat roost; and
- three of these roosts were over 100m from land required for the construction of the Proposed Scheme.

2.3.11 Details of confirmed roosts in buildings/structures in MA01 are provided in Table 2, with details of roosts over 100m from the land required for the construction of the Proposed Scheme provided in Table 3.

Table 2: Confirmed roosts in buildings and structures within MA01

Ecology Survey Code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH616525_CH657757_L6318_BS3_F002_270820	Moat House Farm, Middlewich Road, Minshull Vernon	SJ68436080	Barn	Brown long-eared bat (5)	23 August 2019, re-entry survey	Occasional	A red brick detached Victorian barn, built around the 18th century. The building has a pitched tile slate roof and ridge tiles along the roof. Ventilation bricks in the wall and wooden shutter doors, many with holes, as well as some wooden barn doors with holes in.	MA01	Adjacent to land required for the construction of the Proposed Scheme
CH616525_CH657757_L6318_BS3_F002_280819	Moat house Farm, Middlewich Road, Minshull Vernon	SJ68436080	Barn	Common pipistrelle (4)	28 August 2019, emergence survey	Occasional	A red brick detached Victorian barn. The building has a pitched tile slate roof and ridge tiles along the roof. Ventilation bricks in the wall and wooden shutter doors, many with holes, as well as some wooden barn doors with holes.	MA01	Adjacent to land required for the construction of the Proposed Scheme
CH606449-CH614402-U206182-U2624_L5335_BS3_F017_130820	Land west of Middlewich Road, Minshull Vernon, Crewe	SJ69066074	Residential	Common pipistrelle (1)	13 August 2020, emergence survey	Occasional	Brick-built farmhouse with attached brick garage. Approximately 70 years old. Appears to have been modified - some sections of the building appear older than others. The building is in good condition with a slate roof and lead flashing around a brick chimney.	MA01	15m west

Ecology Survey Code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH597265_L5956_BS2_F001_220218	Drury Lane, Warmingham, Crewe	SJ70085918	Barn	Brown long-eared bat (visual droppings ID)	22 February 2018, internal inspection	Occasional	L-shaped, red brick outhouse with tile roof, approximately 1930s-1950/60s.	MA01	25m south-east
CH597265_L5956_BS3_F001_270819	Drury Lane, Warmingham, Crewe	SJ70085918	Barn	Common pipistrelle (3)	27 August 2019, emergence survey	Occasional	L-shaped, red brick outhouse with tile roof, approximately 1930s-1950/60s.	MA01	25m south-east
CH453005-CH500466_L16137_BS2_F009_260619	Moss Lane, Warmingham	SJ70345898	Shed	Unknown (Not enough droppings to sample)	26 June 2019, internal inspection	Feeding Perch	Old (at least approx. 10 years) garden shed, with glass windows, rubber corrugated roof, sheltered porch on eastern end.	MA01	45m east
CH588855-CH616525_L5409_BS3_F012_120718	Nantwich Road, Wimboldsley	SJ69056186	Barn	Common pipistrelle (2)	12 July 2018, emergence survey	Occasional	Red brick barn building. Cement tiled pitched roof with ridge tiles. Post-1930s	MA01	60m east
CH588855-CH616525_L5409_BS3_F012_220920	Nantwich Road, Wimboldsley	SJ69056186	Barn	Brown Long-eared bat (6)	22 September 2020, re-entry survey	Occasional	Red brick barn building. Cement tiled pitched roof with ridge tiles. Post-1930s	MA01	60m east
CH372436-CH564499_CH616525_L15997_BS3_F001_140920	Middlewich Road, Walleys Green	SJ68376178	Barn	Soprano pipistrelle (1)	14 September 2020, emergence survey	Occasional	A two-storey red brick barn, built in the early 1900s, with a slate pitched and hipped roof. Barn currently used for storage purposes.	MA01	65m south-west

Ecology Survey Code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH372436-CH564499__L15997_BS3_F008_160920	Middlewich Road, Walleys Green	SJ68376175	Residential	Soprano pipistrelle (1)	16 September 2020, re-entry survey	Occasional	A large, two-storey brick semi-detached house, with two slate pitched roofs. Looks to be built in early 1900s. Building in good condition.	MA01	75m south-east

Table 3: Confirmed building roosts beyond 100m buffer in MA01

Ecology Survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH588855-CH616525_L5490_BS1_F001_141118	Moss Lane, Warmingham	SJ69265911	Barn	Unknown (Droppings not accessible to sample)	14 November 2018, internal inspection	Occasional	The building was originally built in 1919 but has since been refurbished. It is an old two-storey barn that has a double pitched, Welsh slate roof. The walls are constructed of brick.	MA01	120m west
CH519167_L16018_BS3_F014_170718	Kent's Lane, Crewe	SJ70275834	Shed	Common pipistrelle (3)	17 July 2018, emergence survey	Occasional	Brick-built shed with corrugated asbestos roofing sheets, positioned adjacent to house. Previously used as a workshop.	MA01	160m east

Ecology Survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH519167_L16018_BS3_F014_050918	Kent's Lane, Crewe	SJ70275834	Shed	Brown long-eared bat (4)	05 September 2018, re-entry survey	Occasional	Brick-built shed with corrugated asbestos roofing sheets, positioned adjacent to house. Previously used as a workshop.	MA01	160m east

Roosting (Woodlands)

2.3.12 This section applies to all trees subject to the woodland survey methodology. Three areas of woodland (comprising either single large woodland blocks or groups of similar woodlands) were included in these surveys.

2.3.13 The results of woodlands identified for survey, and the results of an initial ground-based assessment of trees and surrounding area, are summarised in Table 4. Trees with negligible potential for roosting bats were not recorded or mapped.

Table 4: Potential roosting resource within woodlands in MA01

Woodland	Number of trees with features of potential value to roosting bats			Overall suitability of woodland for bats*
	High Suitability	Moderate Suitability	Low Suitability	
Larch Wood and Burnt Covert	0	0	0	Moderate – connections to hedgerows and smaller woodlands nearby. Ponds within Larch Wood would provide foraging areas.
Woodlands north of Coppenhall	0	0	0	Low – Strip of woodland bordering residential area, with connectivity via tree lines and hedgerows. A number of ponds in surrounding habitat.
Woodland North of Minshull Vernon	0	6	5	Moderate – Thin strip of woodland following the River Weaver, with good connectivity to Wimboldsley Wood and Bottom Flash.

**based on the quality and quantity of the roost and feeding resource and ecological position of the wood*

2.3.14 Transects and static detector surveys were undertaken around each woodland, where access was available, to gain an understanding of the bat assemblage and levels of bat activity. The results of these surveys are included in the bat activity surveys section.

Bat activity surveys

2.3.15 At least eight species have been recorded during the range of bat activity surveys conducted in MA01:

- common pipistrelle;
- soprano pipistrelle;
- Nathusius' pipistrelle;
- *Pipistrellus* species;
- brown long-eared bat;
- noctule;
- Leisler's bat;
- serotine;
- whiskered/Brandt's bat; and

- *Myotis* species.

Table 5: Bat activity surveys conducted within MA01

Ecology survey code	Transect location	Numbers of surveys conducted	First survey date	Final survey date	CA	Map reference
AT04	North of Crewe	6	30 July 2018	24 September 2019	MA01	EC-06-505/506/506-L1
A0	Larch Wood	6	17 July 2018	14 May 2019	MA01	EC-06-506
A1	Park Hall Farm	7	24 July 2018	11 June 2019	MA01	EC-06-507a
A-1	Crewe	7	17 July 2018	11 June 2019	MA01	EC-06-505

Table 6: Bat activity transect survey results for Transect AT04

Ecology survey code	Transect location				Description of habitats covered by transect															
AT04	North of Crewe				Transect heads west from Willow View School, north of Crewe, following hedgerows along Kent's Lane, before crossing the railway line via Parkers Road, then follows the western side of the railway northward alongside scattered trees and hedgerow. After this, to the west of the railway, the transect follows treelined tracks that connect woodland fragments and small ponds, before ending at Minshull Hall.														
Visit number and date	**Weather conditions**				**Total species passes during transect survey**															
	Temp (oC)	**Cloud (0-8)**	**Rain (0-5)**	**Wind (0-12)**	**Pp**	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
Visit 1: Dusk: 30 July 2018	17	3	0	1	40	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dawn: 31 July 2018	15	8	0	1	33	8	0	0	0	0	0	0	0	0	1	0	0	3	0	0	0
August 2018 – Incomplete	N/A – Access refused																			
September 2018 – Incomplete	N/A – Access refused																			
Visit 3: Dusk: 10 October 2018	20	0	0	0	75	62	0	0	0	0	0	0	0	10	5	0	0	1	0	0	0
Visit 4: Dusk: 9 April 2019	9	2	0	3	6	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May 2019 – Incomplete	N/A – Access refused																			
Visit 5: Dusk: 26 June 2019	16	2	0	0	120	36	0	0	0	0	0	0	0	0	1	2	0	13	0	0	0
July 2019	N/A – Survey completed 2018																			
August 2019 – Incomplete	N/A – Access refused																			

Ecology survey code	Transect location				Description of habitats covered by transect															
Visit 6: Dusk: 24 September 2019	12	0	0	0	58	20	0	0	0	0	0	0	0	0	5	0	0	2	0	0	0

Pp – common pipistrelle, P py – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M.sp – Myotis species, Pa – brown long-eared bat, Bb – barbastelle, Nn – noctule, Nl – Leisler's bat, Es – serotine, Ny/Ep – Nyctalus/Eptesicus bat.

Cloud cover on a scale of 0 – 8 where: 0 = sky completely clear, 4 = sky half cloudy, 8 = sky completely cloudy.

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.

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.

2.3.16 Moderate to high levels of common pipistrelles and low to moderate levels of soprano pipistrelles were recorded, with peaks of 120 passes per night (ppn) and 62ppn, respectively. A peak of two ppn of brown long-eared bat was recorded in June 2019. Low to moderate numbers of *Myotis* species were recorded, with a peak of 10ppn of whiskered/Brandt's bat in October 2018. Additionally, low numbers of noctule were recorded, with a peak of 13ppn.

Table 7: Summary of static detector monitoring results for A0

Ecology survey code	Static location	OS grid reference	Description of habitats																
A0	Larch Wood	SJ69206009	Woodland edge of Larch wood, north of Crewe.																
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**																
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**	**Ny/ Es**
17 July 2018 – 24 July 2018	7		374	125	0	4	0	0	0	0	0	0	11	0	0	17	0	0	0	0
7 August 2018 – 14 August 2018	7		403	79	1	0	0	0	0	0	0	0	14	0	0	5	0	0	0	0
4 September 2018 – 11 September 2018	7		115	38	0	0	0	0	0	0	0	0	3	0	0	47	0	0	0	0
2 October 2018 – 10 October 2018	8		1,251	333	0	2	0	0	0	0	0	0	15	0	0	9	0	0	0	0
9 April 2019 – 16 April 2019	7		19	137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 May 2019 – 14 May 2019	6		1,061	174	1	0	0	0	0	0	0	0	196	1	0	4	0	0	0	0
June 2019 – Incomplete	N/A – Access refused																			

2.3.17 Notably high levels of common pipistrelle activity were recorded at the edge of Larch Wood, with a peak of 1,251ppn during October 2018. There were moderate to high numbers of passes of soprano pipistrelle, with a peak of 333ppn in October, and peaks of one ppn for Nathusius' pipistrelle, in both August 2018 and May 2019. Moderate numbers of *Myotis* species were recorded, with a notably high level of activity in May 2019, peak of 196ppn. Moderate to low activity was recorded for noctule, with a notable peak of 47ppn in September 2018. Additionally, one ppn of brown long-eared bat was recorded in May 2019.

Table 8: Summary of static detector monitoring results for A1

Ecology survey code	Static location	OS grid reference	Description of habitats															
A1	Park Hall Farm	SJ68876152	Edge of pond, east of West Coast Mainline, north of Crewe.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
24 July 2018 – 31 July 2018	6		38	15	0	0	0	0	0	0	0	0	18	0	0	0	0	0	0
7 August 2018 – 14 August 2018	7		23	30	0	0	0	0	0	0	0	0	10	0	0	18	0	0	0
11 September 2018 – 18 September 2018	7		1,358	714	1	1	0	0	0	0	0	0	36	0	0	7	1	0	0
16 October 2018 – 23 October 2018	6		538	90	0	0	0	0	0	0	0	0	554	0	0	0	0	0	0
17 April 2019 – 24 April 2019	7		16	59	0	1	0	0	0	0	0	0	5	2	0	4	0	0	0
28 May 2019 – 4 June 2019	7		182	909	1	1	0	0	0	0	0	0	435	2	0	11	0	0	0
4 June 2019 – 11 June 2019	7		15	45	0	0	0	0	0	0	0	0	40	2	0	18	0	1	0

2.3.18 High levels of common and soprano pipistrelle and *Myotis* species were recorded, with a notably high peaks of 1,358ppn in September 2018, 909ppn in May 2019 and 554ppn in October 2018, respectively. One ppn of Nathusius' pipistrelle was recorded in both May 2019 and September 2018. Moderate to high levels of noctule were record, with a peak of 18ppn in both June 2019 and August 2018. Moderate to high numbers of brown long-eared bat and low to moderate numbers of Leisler's bat and serotine were recorded, with peaks of two ppn, one ppn and one ppn, respectively.

Table 9: Summary of static detector monitoring results for A-1

Ecology survey code	Static location	OS grid reference	Description of habitats															
A-1	Crewe	SJ69925850	In hedgerow adjacent east of trainline, north of Crewe.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
17 July 2018 – 24 July 2018	6		494	1,035	0	0	0	0	0	0	0	0	29	0	0	0	0	0	0
7 August 2018 – 14 August 2018	6		49	49	0	0	0	0	0	0	0	0	18	0	0	13	0	0	0
4 September 2018 –12 September 2018	7		707	511	0	3	0	0	0	0	0	0	45	0	0	3	0	0	0
2 October 2018 – 10 October 2018	7		29	16	0	0	0	0	0	0	0	0	7	0	0	4	0	0	0
9 April 2019 – 16 April 2019	7		6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 May 2019 – 14 May 2019	6		180	61	3	0	0	0	0	0	0	0	1	0	0	4	0	0	0
4 June 2019 – 11 June 2019	7		1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2.3.19 Low to moderate levels of soprano pipistrelle activity were recorded, with higher levels of activity in September 2018 and a notable peak of 1,035ppn in July 2018. Moderate to high levels of common pipistrelle were recorded, with notably higher activity levels in September 2018 and a peak of 707ppn. Low to moderate numbers of *Myotis* species and noctule were recorded, with peak counts of 45ppn in September 2018 and 13ppn in August 2018.

Discussion

Bat assemblage

2.3.20 Data from field surveys and desk study records, summarised below, provide the basis for identifying bat assemblages associated with habitat within and adjoining the land required for construction of the Proposed Scheme in Hough to Walley's Green area (MA01). These assemblages, described in Environmental Statement Volume 2, Community Area report: Hough to Walley's Green (MA01), Section 7, are present in the following locations:

- between Coppenhall Moss and Walley's Green; and
- within the area east of Hough.

2.3.21 Field surveys undertaken for HS2 Phase 2a, recorded the presence of common pipistrelle, soprano pipistrelle and brown long-eared bat. This included five brown long-eared bat night roosts/feeding perches in buildings east of Hough located between 85m and 110m from land required for the construction of the Proposed Scheme, and a non-breeding tree summer roost for a *Pipistrellus* species, 95m from land required for the construction of the Proposed Scheme.

2.3.22 Field surveys carried out in 2018-2020, in MA01, confirmed the presence of nine bat species along the route, including rarer species: whiskered/Brandt's bat, Leisler's bat, serotine and Nathusius' pipistrelle. Daubenton's bat was not recorded during field survey but was identified from desk study records.

2.3.23 *Myotis* species and common and widespread species, including common and soprano pipistrelle, were recorded to have predominantly moderate levels of activity, with occasional high activity peaks, recorded across static monitoring and walked transect surveys, in some months. Surveys identified two roosts in trees for one *Myotis* species and one pipistrelle sp. and nine buildings with 13 roosts, five for common pipistrelle, two for soprano pipistrelle, four for brown long eared bats and two unknown species.

2.3.24 Activity surveys in MA01 recorded peak counts of 1,358ppn of common pipistrelle, in September 2018, on a static detector located with trees surrounding a pond in Park Hall Farm, and 1,035ppn of soprano pipistrelle, in July 2018, on a static detector located south of Larch Wood.

2.3.25 A peak of one pass of Nathusius' pipistrelle was recorded on static detectors across MA01.

2.3.26 Brown long-eared bats were recorded very rarely during activity surveys. Three occasional brown long-eared bat roosts were recorded, within 160m of the land required for the construction of the Proposed Scheme.

2.3.27 Overall, noctule were recorded in low to moderate numbers on all the walked transect and static detector surveys through MA01, suggesting they are widespread in the area. High numbers were recorded in the months of May and June, on statics within the north and south of the community area.

2.3.28 *Myotis* species were recorded in low to moderate numbers on all the transects and statics, with high numbers recorded in the months of May and June on statics within the north and south of the community area.

Roosts

2.3.29 There are no desk-study records of bat roosts within 500m of the land required for the construction of the Proposed Scheme, in MA01.

2.3.30 Occasional roosts of *Pipistrellus* species and *Myotis* species were recorded in trees 15m from the land required for the construction of the Proposed Scheme in Minshull Vernon.

2.3.31 Four occasional common pipistrelle roosts were recorded in four structures, the closest being 15m from the land required for the construction of the Proposed Scheme, with a peak of four bats identified, roosting within a barn off Middlewich Road, Minshull Vernon.

2.3.32 Two soprano pipistrelle occasional roosts were also identified during emergence surveys on a residential building and barn off Middlewich Road, in Walley's Green.

2.3.33 Four occasional brown long-eared bat roosts were recorded in four structures, one of these roosts were identified from droppings. One was adjacent to the land required for the constructions of the Proposed Scheme; the other three, outside but within 160m. A peak of six bats was identified, roosting within a barn off Nantwich Road, Wimboldsley.

2.3.34 Two roosts were identified from droppings. The species utilising these roosts are unknown, due to either droppings not being accessible for closer inspection / collect a sample, or lack of enough suitable droppings to sample.

Foraging habitat

2.3.35 The landscape in the south of MA01 predominantly comprises urban habitats, such as buildings and roads in Crewe, where the land required for the construction of the Proposed Scheme is largely in tunnel. To the north of Crewe, the landscape predominantly comprises agricultural fields and improved grasslands, with hedgerows and tree lined roads. There are few watercourses throughout the area. The West Coast Mainline runs north from Crewe to Liverpool, in parallel to the land required for the construction of the Proposed Scheme.

2.3.36 The walked transect recorded high levels of common pipistrelle and soprano pipistrelle foraging activity in the months of May, June, September and October. Static detectors across

the area recorded similar levels of activity during these months. Additionally, higher levels of brown long-eared bat, *Myotis* species and noctule were recorded in the months of May and June, from both static and transect surveys. Based on consistently high numbers of bats recorded by static detectors through the active season, Larch Wood is thought to be a key foraging area.

Commuting habitat

2.3.37 The railway corridor, hedgerow and tree lined roads will provide good connectivity throughout the MA01 area.

2.3.38 Walked transect surveys identified commuting routes, throughout the survey season, along hedgerows and field boundaries heading north-west from Spring Plantation. Most activity was noted around Larch Wood. Differences in levels of bat activity across the season were found across all static detectors within MA01.

Wimboldsley to Lostock Gralam (MA02)

2.3.39 Table 10 to Table 12 provide summaries of bat roosts identified in MA02 from field surveys. These tables should be read in conjunction with Background Information and Data, Ecology Map Book, Map Series EC-05. Survey information collected has been allocated an ecology survey code to provide a unique identification for use on mapping.

Overview of bat species status in the vicinity of MA02

2.3.40 In the vicinity of MA02, there are no statutory designated sites (within 10km) or non-statutory designated sites (within 5km) which support bats as features for their designations.

2.3.41 Habitats within MA02 suitable to support roosting, foraging and commuting bats include: several woodland blocks; four main watercourses (River Dane, Peover Eye, Trent and Merseyside Canal, Shropshire Union Canal); several smaller watercourses, such as Wade Brook; water bodies and associated vegetation; and agricultural fields with trees and hedgerows. The majority of these habitats are located within and adjacent to the land required for the construction of the Proposed Scheme.

2.3.42 Field surveys and desk study records recorded at least 10 species of bats in MA02. All 10 species were identified from field surveys. The total bat assemblage is as follows:

- common pipistrelle;
- soprano pipistrelle;
- Nathusius' pipistrelle;
- *Pipistrellus* species;
- brown long-eared bat;
- noctule;
- Leisler's bat;

- serotine;
- whiskered / Brandt's bat;
- Natterer's bat;
- Daubenton's bat; and
- *Myotis* species.

Roosting (trees)

2.3.43 A total of 841 trees were subject to an initial ground-based assessment and subsequent further detailed climbed surveys where appropriate in line with the methods described in the FSMS document.

2.3.44 Of the 841 trees that were initially assessed, the following results were obtained:

- 91 trees identified as having high potential to support roosting bats;
- 472 trees identified as having moderate potential to support roosting bats; and
- the remaining 278 trees were classified as having low or negligible potential to support roosting bats. These trees were subsequently scoped out of further survey.

2.3.45 Of the 563 trees assessed as having moderate or high potential to support roosting bats:

- a total of 147 were subject to further surveys in the form of a tree climbing inspection, during which no roosts were identified;
- 57 were reassessed as having low to negligible potential to support roosting bats and were scoped out of further surveys;
- 21 trees were subject to emergence surveys, during which four roosts were recorded;
- no trees were subject to back-tracking surveys; and
- one additional roost was identified within a tree adjacent to a building during a building emergence survey (not included in the numbers above).

2.3.46 Details of confirmed tree roosts in MA02 are provided in Table 10.

Table 10: Confirmed tree roosts within MA02

Ecology survey code	Location	OS grid reference	Tree species	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH574826_U207316_L5257_BS3_F011_110918	Clivegreen Lane, Winsford	SJ68086410	Oak	Unknown (1)	11 September 2018, emergence survey	Occasional	One bat seen emerging from tree, flying south-west, observed from south-east corner of building, no sound recorded.	MA02	55m west
CH446575-CH512447-_L5292_BT3_F002_040820_SL02	Park Farm, Middlewich	SJ6862765402	Ash	Soprano pipistrelle (1)	4 August 2020, emergence survey	Occasional	Likely emerged from main limb of tree but exact location not clear.	MA02	100m east
CH446766_L5171_BT3_N/A_310718	Whatcroft Hall Lane, Whatcroft	SJ68556961	Scots Pine	Soprano pipistrelle (1)	31 July 2018, emergence survey	Occasional	Additional roost recorded in non-target tree during a BS3 survey.	MA02	150m east
CH446766_L5171_BT3_F008_310718	Whatcroft Hall Lane, Whatcroft	SJ68546961	Sycamore	Common pipistrelle (1)	31 July 2018, emergence survey	Occasional	Emerged from a hole approximately 6m from the ground on the south side of the tree.	MA02	150m east
CH42738-CH446766_L4974_BT3_F011_080818	Manor Lane, Whatcroft	SJ68127000	Oak	Common pipistrelle (2)	8 August 2018, emergence survey	Occasional	Emergence from upper branches of English oak. Located approximately 15m up on NE side of tree.	MA02	160m west

Roosting (buildings and structures)

2.3.47 A total of 150 buildings in this area were subject to initial inspections, resulting in the following:

- 23 buildings were confirmed to support 28 roosts;
- six roosts were confirmed via internal inspections, and 23 roosts were identified from emergence and re-entry surveys;
- 20 buildings had high potential to support bats;
- 51 buildings had moderate potential to support bats;
- 32 buildings had low potential to support bats; and
- 47 buildings had negligible potential to support bats.

2.3.48 Of the 103 buildings confirmed as having roosts, or assessed as having high, moderate or low potential to support bats:

- 52 buildings were subject to internal inspections, resulting in identification of six bat roosts;
- 34 buildings were subject to a total of 77 emergence surveys, identifying a further 22 roosts; and
- species have not been confirmed through DNA analysis at five roosts, but visual inspection of the droppings and a dead bat found during the internal inspection has identified two *Pipistrellus* species roosts and three brown long-eared bat roost. One Brandt's bat roost was confirmed through DNA analysis.

2.3.49 Details of confirmed roosts in buildings/structures in MA02 are provided in Table 11. Details of roosts over 100m from the land required for the construction of the Proposed Scheme are provided in Table 12.

Table 11: Confirmed roosts in buildings and structures within MA02

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH400830_L17732_BS3_F001_100918	Cooke's Lane, Rudheath	SJ69067329	Residential	Common pipistrelle (2)	10 September 2018, emergence survey	Occasional	Residential red brick building, with a pitched and hipped clay tile roof c.1960/70.	MA02	Within
CH359470_L4708_BS3_F023_180718	Middlewich Road, Middlewich	SJ68476658	Residential	Brown long-eared bat (3)	18 July 2018, emergence survey	Occasional	Vacant residential property with adjoining garage. The house is turn of last century brick, with render on external walls, brick arched tiles on roof and some hanging tiles on south and northern aspect. Approximately 120 years old.	MA02	Within
CH359470_L4708_BS3_F023_160818	Middlewich Road, Middlewich	SJ68476658	Residential	Soprano pipistrelle (6)	16 August 2018, emergence survey	Occasional	Vacant residential property with adjoining garage. The house is turn of last century brick, with render on external walls, brick arched tiles on roof and some hanging tiles on south and northern aspect. Approximately 120 years old.	MA02	Within
CH505004-CH623648_L4863_BS3_F007_140818	King Street, Broken Cross	SJ68757248	Residential	Common pipistrelle (2)	14 August 2018, emergence survey	Occasional	Three-storey residential red brick house with white render and pebble dash and extension to the east.	MA02	Within
CH614901_L5388_BS3_F018_130918	Northwich Road, Bostock	SJ68486708	Residential	Soprano pipistrelle (3)	13 September 2018,	Occasional	Residential property, two-storeys with a roof void. Pitched roof. Slate roofing tiles.	MA02	Within

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
					emergence survey		Built ~1800. Brick building with wooden soffit and barge boards. Property owners confirmed that bats are present in their roof void.		
CH614901_L5388_BS2_F018_211118	Northwich Road, Bostock	SJ68486708	Residential	Brown long-eared bat (visual droppings ID)	21 November 2018, internal inspection	Occasional	Residential property, two-storeys with a roof void. Pitched roof. Slate roofing tiles. Built ~1800. Brick building with wooden soffit and barge boards. Property owners confirmed that bats are present in their roof void.	MA02	Within
CH120256_L5391_BS3_F004_010818	Davenham Road, Northwich	SJ68487119	Barn	Soprano pipistrelle (7)	1 August 2018, emergence survey	Occasional	Red brick barn, with pitched roof used for agricultural storage.	MA02	Within
CH120256_L5391_BS3_F004_010818	Davenham Road, Northwich	SJ68487119	Barn	*Myotis* species (4)	1 August 2018, emergence survey	Occasional	Red brick barn, with pitched roof used for agricultural storage.	MA02	Within
CH120256_L5391_BS3_F008_240718	Davenham Road, Northwich	SJ68507121	Barn	Soprano pipistrelle (7)	24 July 2018, emergence survey	Occasional	Disused red brick outbuilding with slate roof and slate ridge tiles. Two gable ends (E and W). Wooden barge boards present and is open at the eaves, no box soffit present.	MA02	Within

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH120256_L5391_BS3_F014_040718	Davenham Road, Northwich	SJ68467124	Residential	Soprano pipistrelle (12)	4 July 2018, emergence survey	Possible Maternity	Two-storey unoccupied farm building with red brick construction. Slate roof and ridge tiles with lead flashing.	MA02	Within
CH120256_L5391_BS3_F014_190718	Davenham Road, Northwich	SJ68467124	Residential	*Myotis* species (8)	19 July 2018, re-entry survey	Occasional	Two-storey unoccupied farm building with red brick construction. Slate roof and ridge tiles with lead flashing.	MA02	Within
CH120256_L5391_BS3_F012_110718	Davenham Road, Northwich	SJ68457121	Barn	Soprano pipistrelle (1)	11 July 2018, emergence survey	Occasional	Disused outbuilding with red brick walls and slate and ridge tiles. Wooden barge boards present. Moss covered tiles.	MA02	Within
CH333308-CH357796_L17834_BS2_F001_161018	Davenham Road, Northwich	SJ68617151	Residential	*Pipistrellus* species (visual droppings ID)	16 October 2018, internal inspection	Occasional	Red brick, semi-detached, cottage with double pitched, slate tile roof. Small conservatory to the west. Renovated 1990.	MA02	10m north-east
CH499496_CH561720_CH634300_U203323_L5787_BS3_F002_060819	Linnards Lane, Northwich	SJ70217594	Shed	Soprano Pipistrelle (1)	6 August 2019, re-entry survey	Occasional	Disused chicken coop with felted pitched roof and a bat box positioned on the southern aspect. Approximately 20 years old.	MA02	15m north
CH399141-CH399144-CH672512-U208281_L1	Middlewich Road, Middlewich	SJ68626665	Residential	Pipistrellus species (unconfirmed) (2)	2 September 2020, emergence survey	Occasional	Large residential building, approximately 100 years old. Rendered exterior walls with terracotta roofing tiles and	MA02	15m south

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
5833_BS3_F001_020920							uPVC roofing over the adjoining pool house.		
CH333308-CH358470_L17767_BS3_F001_060819	Davenham Road, Northwich	SJ68617153	Residential	Soprano pipistrelle (2)	6 August 2019, emergence survey	Occasional	Red brick, semi-detached, redeveloped cottage with pitched, slate tile roof. Adjoining double garage (1990s).	MA02	20m east
CH499496_L5787_BS3_F001_280819	Linnards Lane, Northwich	SJ70217595	Barn	Soprano Pipistrelle (1)	28 August 2019, emergence survey	Occasional	20-year-old warehouse with pitched corrugated asbestos roof. Lower section of walls are brick and upper section are corrugated metal. Warehouse, roll up door on eastern aspect of building.	MA02	20m north
CH249792_L15810_BS2_F006_210218	Birch Lane, Middlewich	SJ68866659	Residential	*Pipistrellus* species (visual droppings ID)	21 February 2018, internal inspection	Occasional	Two-storey brick building with a pitched and hipped roof with slate roofing tiles. Wooden soffit boards. Property currently vacant.	MA02	2m east
CH446766-CH614893_L4900_BS2_F017_211118	Northwich Road, Stanthorne	SJ68256728	Barn	Brown long-eared bat (visual droppings ID)	21 November 2018, internal inspection	Feeding Perch	Two-storey barn structure predominantly used to store hay and cattle fodder. Irregular shaped (almost like a backward C). Brick-built, with ventilation features on the second floor. Double skinned wall, so cavity is present. Roof is pitched and tiled with gable ends, plastic lining between	MA02	30m north

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
							the tiles and woodwork and in good condition apart from a few lifted tiles. Appears to be less than 100 years old.		
CH588394_L4804_BS3_F007_230818	Clive Green Lane, Winsford	SJ67816451	Bridge	*Myotis* species (2)	23 August 2018, emergence survey	Occasional	Concrete bridge adjacent to the old Victorian metal bridge. Age unknown.	MA02	60m north
CH2718146-CH512447_L5292_BS3_F028_190718	Clive Green Lane, Winsford	SJ68356526	Barn	Common pipistrelle (3)	19 July 2018, emergence survey	Occasional	Old English style brick barn with a tiled roof. Missing bricks in a pattern (typical of barns from that era). Circular roof doors.	MA02	60m west
CH2718146-CH512447_L5292_BS2_F028_200218	Clive Green Lane, Winsford	SJ68356526	Barn	Brown Long-eared bat (Dead bat and visual dropping ID)	20 February 2018, internal inspection	Occasional	Old English style brick barn with a tiled roof. Missing bricks in a pattern (typical of barns from that era). Circular roof doors.	MA 02	60m west
CH574826-U207316_L5257_BS3_F011_140820	Clive Green Lane, Winsford	SJ68066410	Barn	Common pipistrelle (2)	14 August 2020, re-entry survey	Occasional	Brick-built barn, roughly 150 years old. Two-storeys, pitched, slate roof with decorative ridge tiles. Wooden doors and broken windows present. Plastic guttering.	MA02	70m west
CH446766-CH614893_L5405_BS3_F048_110718	Northwich Road, Stanthorne	SJ68096741	Barn	Soprano pipistrelle (7)	11 July 2018, re-entry survey	Occasional	Large barn like building of red brick with a slate roof and ridge tiles, and wooden beams and window frames.	MA02	90m north

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
							Ventilation holes are present. The structure is pre 1900 but has been renovated.		
CH446766-CH614893_L5405_BS3_F048_110718	Northwich Road, Stanthorne	SJ68096741	Barn	Common pipistrelle (5)	11 July 2018, re-entry survey	Occasional	Large barn like building, which appears to have been renovated and old / new bricks can be seen. The structure is red brick with a slate roof and wooden window frames. Ventilation holes are present. The structure is pre 1900 but has been renovated. The structure has wooden beams. Slate roof and ridge tiles.	MA02	90m north

Table 12: Confirmed building roosts beyond 100m buffer in MA02

Ecology Survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) from the Proposed Scheme
CH365006-CH366652-CH514558_L5395_BS2_F005_040719	Croxton Lane, Stanthorne	SJ69526753	Barn	Brandt's bat (from eDNA)	4 July 2019, internal inspection	Occasional	Large, red brick, L-shaped barn with pitched slate tile roof. Many windows and airbricks around the building.	MA02	115m south-east

Ecology Survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) from the Proposed Scheme
CH446766_L5497_BS3_F003_100718,	Whatcroft Lane, Middlewich	SJ68126989	Barn	Common pipistrelle (14)	10 July 2018, emergence survey	Possible Maternity	Traditional U-shaped, brick-built, two-storey barn/granary, with courtyard area to the west. Parts of the structure likely to date back as early as the 1700s, along with sections that have been extended and added on to the original building.	MA02	180m west
CH650502_L5476_BS3_F011_160818	Chapel Lane, Middlewich	SJ69406278	Barn	Soprano pipistrelle (1)	16 August 2018, emergence survey	Occasional	Single-storey brick-built building with a pitched roof. Roof covered with corrugated asbestos sheeting and asbestos ridge tiles. Used as a storage shed/out-house. Building approximately 150 years old and in a poor state of repair.	MA02	340m east

Roosting (woodlands)

2.3.50 This section applies to all trees subject to the woodland survey methodology. Fifteen areas of woodland (comprising either single large woodland blocks or groups of smaller woodlands) were included in these surveys.

2.3.51 The results of woodlands identified for survey and the results of an initial ground-based assessments of trees and surrounding area are summarised in Table 13. Trees with negligible potential for roosting bats were not recorded or mapped.

Table 13: Potential roosting resource within woodlands in MA02

Woodland	Number of trees with features of potential value to roosting bats			Overall suitability of woodland for bats*
	High Suitability	Moderate Suitability	Low Suitability	
Rookery and Small Rookery Wood and Wimboldsley Wood	0	9	3	High – Large woodland with good connectivity with wider landscape and foraging habitat, located adjacent to the River Weaver, Shropshire Union Canal and Top Flash Lake.
Stove Room Wood	1	6	5	Low – Area is not well connected, however woodland is approximately 500m from Wimboldsley Wood.
Woods east of Yew Tree farm	0	0	0	Moderate – Small woodland located either side of the Shropshire Union Canal Middlewich Branch.
The Willowbeds	0	0	0	Moderate – Good habitat with connection to larger woodland.
Oak wood, Oak clump, Hill Wood, Bulls Wood	9	53	11	High – Large area of connected woodlands. Connectivity to suitable habitat, including the River Dane.
Unnamed woodland located south-east of Whatcroft Hall	0	5	2	Moderate – Small woodland with pond. Connectivity to small woodlands nearby and the Trent and Mersey Canal via hedgerows. One confirmed roost identified within 100m of the scheme, in portion of woodland outside the land required for the construction of the Proposed Scheme.
Marshall's Gorse	1	4	5	Moderate – Connectivity along the Trent and Merseyside canal. Lots of ponds/lakes nearby.
Unnamed woodland located south-west of Billinge Green.	1	6	0	Moderate – Suitable habitat within land parcel, around Lake. Good connectivity along field boundaries. Four trees with bat roosting potential are outside 100m buffer.
Lostock Picnic area	Unknown	Unknown	Unknown	Low – Sparse woodland adjacent to main road. Connected to field boundaries and

Woodland	Number of trees with features of potential value to roosting bats			Overall suitability of woodland for bats*
	High Suitability	Moderate Suitability	Low Suitability	
				located east of Waste Lime Beds but overall limited connectivity.
Square Wood	Unknown	Unknown	Unknown	Low – Small woodland adjacent to Plumley Limebeds SSSI but limited foraging habitat and connectivity with the wider environment for bats.
Plumley Lime Beds Site of Special Scientific Interest (SSSI)	0	0	0	Moderate – Suitable habitat within SSSI and good connectivity along hedgerows to Winnington Wood. Potential features for hibernation within the woodland. However, the woodland contains semi-mature and immature trees and is largely unmanaged.
Long Wood	3	26	19	Moderate – Good connectivity to Plumley Limebeds SSSI and Winnington Wood.
Winnington Wood, Peas Wood and Mill Wood.	23	41	50	High – Large woodland and strip of woodland. Peover Eye runs through Winnington Wood and Peas Wood. Connectivity to Plumley Limebeds SSSI and other smaller woodlands.
Small woodland to the west of Middlewich	1	5	0	Moderate – Small woodland with Shropshire Union Canal running through the middle. Surrounded by arable fields with relatively poor connectivity by hedgerows to surrounding habitat.
Small woodland to the south-east of Rudheath	0	1	0	Low – Thin strip of woodland surrounding a distribution centre with Trent and Mersey Canal running along western edge. Roads to north and east of wood likely to prevent commuting.

**based on the quality and quantity of the roost and feeding resource and ecological position of the wood*

2.3.52 Transects and static detector surveys were undertaken around each woodland, where access was available, to gain an understanding of the bat assemblage and levels of bat activity. The results of these surveys are included in the bat activity surveys section.

Bat activity surveys

2.3.53 At least 10 species have been recorded during the range of bat activity surveys conducted in MA02:

- common pipistrelle;
- soprano pipistrelle;
- Nathusius' pipistrelle;
- *Pipistrellus* species;

- brown long-eared bat;
- noctule;
- Leisler's bat;
- serotine;
- whiskered/Brandt's bat;
- Natterer's bat;
- Daubenton's bat; and
- *Myotis* species.

Table 14: Bat activity surveys conducted within MA02

Ecology survey code	Transect location	Numbers of surveys conducted	First survey date	Final survey date	CA	Map reference
AT01	South-east of Northwich	8	28 June 2018	29 July 2020	MA02	EC-06-513
BT01a	East of Lostock Gralam	8	22 May 2018	1 April 2019	MA02	EC-06-515
AT02a	South-east of Northwich	9	24 July 2018	7 September 2020	MA02	EC-06-511/512
AT02b	Near Bostock Road	6	12 July 2018	15 August 2019	MA02	EC-06-511
AT03	South-west of Middlewich	8	26 July 2018	23 October 2019	MA02	EC-06-508/509/509-L1
A5	Nantwich Road, Stanthorne	5	25 June 2018	14 May 2019	MA02	EC-06-508/509
A6	Clivegreen Lane, Stanthorne	6	24 July 2018	27 August 2019	MA02	EC-06-509
A8	Clivegreen Lane, Stanthorne	7	24 July 2018	23 September 2019	MA02	EC-06-509
A9	Stanthorne Hall Farm	4	24 July 2018	14 May 2019	MA02	EC-06-510
A10	A533 Bostock Road	3	4 September 2018	14 May 2019	MA02	EC-06-3510
A11	A533 Bostock Road	3	17 July 2018	21 May 2019	MA02	EC-06-510/511
A12	Oakwood, Bostock	1	15 May 2019	21 May 2019	MA02	EC-06-511
A13	Davenham, Bostock Green	5	10 July 2018	21 May 2019	MA02	EC-06-511

Ecology survey code	Transect location	Numbers of surveys conducted	First survey date	Final survey date	CA	Map reference
A14	Davenham, Bostock Green	5	10 July 2018	21 May 2019	MA02	EC-06-512
A14a	Whatcroft Lane, Davenham	5	10 July 2018	21 May 2019	MA02	EC-06-512
A15	Whatcroft Lane, Davenham	6	24 July 2018	21 May 2019	MA02	EC-06-512
A16	Oakwood Marina, Davenham	3	17 July 2018	24 April 2019	MA02	EC-06-512
B1	Davenham Road, Davenham	7	24 July 2018	18 June 2019	MA02	EC-06-513
B2	Marshall's Gorse, Byley	7	17 July 2018	18 June 2019	MA02	EC-06-513
B3	King Street, Rudheath	2	3 August 2020	5 October 2020	MA02	EC-06-513
B4	Pennys Lane, Rudheath	2	3 August 2020	5 October 2020	MA02	EC-06-514
B5	A556 Shurlach Road	1	28 September 2020	5 October 2020	MA02	EC-06-514
B8	A556 Shurlach Road	3	3 August 2020	2 November 2020	MA02	EC-06-515
B9	Long Wood, Plumley	1	1 May 2019	8 May 2019	MA02	EC-06-515
B10	Chester Road, Pickmere	6	18 July 2018	8 May 2019	MA02	EC-06-516a
B11	Linnards Lane, Plumley	4	15 August 2018	10 July 2019	MA02	EC-06-516a

Table 15: Bat activity transect survey results for Transect AT01

Ecology survey code	Transect location				Description of habitats covered by transect															
AT01	South-east of Northwich				Moves south from industrial warehouse, traversing scattered trees and hedgerows while following the A530 (King Street). Transect follows boundary hedgerows in a loop through Higgins Lane Farm, before heading south. Transect then follows the Trent and Mersey Canal and passes a woodland-surrounded pond, until cutting east along Whatcroft Hall Lane.														
Visit number and date	**Weather conditions**				**Total species passes during transect survey**															
	Temp (oC)	**Cloud (0-8)**	**Rain (0-5)**	**Wind (0-12)**	**Pp**	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
Visit 1: Dusk: 28 June 2018	22	0	0	0	24	57	0	0	0	23	0	0	0	0	16	1	0	27	0	0	0
Visit 2: Dawn 31 July 2018	15	1	0	1	36	105	0	0	0	2	0	0	0	5	14	1	0	19	1	0	0
Visit 3: Dusk: 6 August 2018	20	4	0	0	118	202	0	1	0	29	0	0	0	10	34	4	0	5	1	0	0
Visit 4: Dawn: 7 August 2018	18	4	0	0	42	70	0	0	0	4	0	0	0	0	61	9	0	83	13	0	0
Visit 5: Dawn: 27 September 2018	14	7	0	0	24	15	0	3	0	2	0	0	0	2	1	2	0	3	0	0	0
October 2018 – Incomplete	N/A – No survey possible																				
April 2019 – Incomplete	N/A – Data corrupt																				
Visit 6: Dusk: 22 May 2019	14	3	0	0	76	142	0	0	0	0	0	0	0	0	40	0	0	37	0	0	0
Visit 7: Dusk: 28 October 2019	8	3	0	0	6	42	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0

Ecology survey code	Transect location				Description of habitats covered by transect															
Visit 8: Dusk: 29 July 2020	16	8	0	0	32	72	0	4	0	0	0	0	0	0	124	2	0	11	2	0	0

Pp – common pipistrelle, P py – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M.sp – Myotis species, Pa – brown long-eared bat, Bb – barbastelle, Nn – noctule, Nl – Leisler's bat, Es – serotine, Ny/Ep – Nyctalus/Eptesicus bat.

Cloud cover on a scale of 0 – 8 where: 0 = sky completely clear, 4 = sky half cloudy, 8 = sky completely cloudy.

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.

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.

2.3.54 Moderate to high levels of common and soprano pipistrelles were recorded at this location with peaks of 118ppn and a notable peak of 202ppn, respectively, in August 2018. Additionally, high numbers of *Myotis* species, brown long-eared bat and noctule were also recorded, with peaks of 124ppn, nine ppn and 83ppn, in July 2020 and two in August 2018, respectively. Overall, low levels of Leisler's bat were also recorded, with a peak of 13 ppn in August 2018.

Table 16: Bat activity transect survey results for Transect BT01a

Ecology survey code	Transect location				Description of habitats covered by transect															
BT01a	East of Lostock Gralam,				Transect follows along the edge of Plumley Limebeds SSSI woodland toward Peover Eye watercourse west of Plumley, following Chester Road (A556) before looping into Winnington Wood and crossing back over Chester Road around the edge of Long Wood to finish.															
Visit number and date	**Weather conditions**				**Total species passes during transect survey**															
	Temp (oC)	**Cloud (0-8)**	**Rain (0-5)**	**Wind (0-12)**	**Pp**	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
Visit 1: Dusk: 22 May 2018	18	0	0	0	18	132	0	0	0	1	0	0	0	8	19	1	0	17	3	0	0
Visit 2: Dusk: 19 June 2018	19	8	0	3	11	90	0	3	0	12	0	0	0	0	16	4	0	32	0	0	0
Visit 3: Dusk: 10 July 2018	18	0	0	0	10	96	0	2	0	1	0	0	0	0	15	1	0	0	1	0	0
Visit 4: Dusk: 6 August 2018	20	2	0	1	17	89	0	5	0	0	0	0	0	40	45	7	0	2	1	0	0
Visit 5: Dawn: 7 August 2018	16	7	0	0	6	98	0	2	0	1	0	0	0	5	10	1	0	1	0	0	0
Visit 6: Dusk: 3 September 2018	15	3	0	3	8	128	0	2	0	0	1	0	0	9	6	4	0	0	0	0	0
Visit 7: Dusk: 16 October 2018	15	6	0	4	9	107	0	8	0	10	0	0	0	9	15	4	0	1	2	0	0
Visit 8: Dusk: 1 April 2019	10	5	0	1	1	126	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0

2.3.55 Moderate to high numbers of soprano pipistrelle and high numbers of brown long-eared bat were recorded, during all walked transects at this location, with a peak of 132ppn, in May 2018, for soprano pipistrelle and seven ppn, in August 2018, for brown long-eared bat. High numbers of *Myotis* species were recorded, with a peak of 45ppn in August 2018. Moderate numbers of common pipistrelle were recorded, with a peak of 18ppn in May 2018. Overall, high numbers of noctule and moderate numbers of Leisler's bat were recorded across the walked transects, with 32ppn in June 2018 and three ppn in May 2018, respectively.

Table 17: Bat activity transect survey results for Transect AT02a

Ecology survey code	Transect location				Description of habitats covered by transect															
AT02a	South-east of Northwich.				Follows the Trent and Mersey Canal south from Whatcroft, passing interspersed trees, woodland strips and arable fields. The transect cuts east along field hedgerows and small woodland fragments interspersed with small ponds to the west of the West Coast Mainline. The transect then crosses an arable field and follows hedgerows once again before returning to the canal.														
Visit number and date	**Weather conditions**				**Total species passes during transect survey**															
	Temp (oC)	**Cloud (0-8)**	**Rain (0-5)**	**Wind (0-12)**	**Pp**	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
Visit 1: Dusk: 24 July 2018	19	2	0	0	41	162	0	1	0	0	0	0	0	0	22	10	0	12	0	0	0
Visit 2: Dawn: 25 July 2018	13	1	0	0	7	29	0	0	0	0	0	0	0	2	6	0	0	0	0	0	0
Visit 3: Dusk: 30 August 2018	13	2	0	1	19	33	0	9	0	4	0	0	0	1	8	0	0	2	0	0	0
Visit 4: Dawn: 13 September 2018	10	8	0	2	8	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk: 4 October 2018	17	4	0	2	20	56	0	0	0	20	1	0	0	0	17	0	0	1	0	0	0
Visit 6: Dawn: 25 April 2019	9 (subop timal)	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: Dusk: 23 May 2019	14	1	0	0	57	134	0	0	0	0	0	0	0	0	42	0	0	7	0	0	0
Visit 8: Dawn: 25 June 2019	17	6	0	1	73	155	0	0	0	0	0	0	0	0	53	0	0	4	0	0	0

Ecology survey code	Transect location				Description of habitats covered by transect																
Visit 9: Dusk: 7 September 2020	17	8	0	1	20	71	0	1	0	0	0	0	0	0	13	1	0	6	0	0	0

2.3.56 High numbers of soprano pipistrelle, and generally moderate to high levels of common pipistrelle, were recorded, with peaks of 162ppn and 73ppn in July 2018 and June 2019, respectively. High levels of *Myotis* species were also recorded, with a peak of 53 ppn in June 2018, and 20 ppn for Daubenton's bat, in October 2018. Overall, noctule were recorded in low to moderate numbers, with a peak of 12ppn in July 2018, and brown long-eared bats were recorded in low numbers, with peak of 10ppn in July 2018.

Table 18: Bat activity transect survey results for Transect AT02b

Ecology survey code	Transect location				Description of habitats covered by transect															
AT02b	Near Bostock Road.				Transect tracks through Oak Wood from Bostock Road before following lake edge. Transect then follows the woodland edges of Hill Wood and Bull's Wood before running alongside the River Dane. The Transect then heads north along the edges of Oak Clump and Fiddle Clump before tracking through Oak Wood once again.															
Visit number and date	**Weather conditions**				**Total species passes during transect survey**															
	Temp (oC)	**Cloud (0-8)**	**Rain (0-5)**	**Wind (0-12)**	**Pp**	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
Visit 1: Dawn: 12 July 2018	16	4	0	2	7	53	0	0	0	1	0	0	0	1	4	1	0	19	1	0	0
August 2018 – Incomplete	N/A – Access refused																				
September 2018 – Incomplete	N/A – Access refused																				
October 2018 – Incomplete	N/A – Access refused																				
Visit 2: Dusk: 25 April 2019	11	2	0	1	112	208	0	1	0	0	0	0	0	0	35	0	0	1	0	0	0
Visit 3: Dusk: 23 May 2019	15	2	0	2	24	74	0	0	0	0	0	0	0	0	29	0	0	9	0	0	0
Visit 4: Dusk: 25 June 2019	15	8	1	1	2	54	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0
July 2019	N/A – Survey completed 2018																				
Visit 5: Dusk: 13 August 2019	20	3	0	1	48	172	0	14	0	0	0	0	0	0	15	2	0	13	0	0	0

Ecology survey code	Transect location				Description of habitats covered by transect															
Visit 6: Dawn: 15 August 2019	17	5	1	2	288	116	0	3	0	0	0	0	0	0	0	0	0	0	0	0
September 2019 – Incomplete	N/A – Access refused																			
October 2019 – Incomplete	N/A – Access pending																			

2.3.57 High levels of common pipistrelle and soprano pipistrelle were recorded, with notable peaks of 288ppn and 208ppn in August 2019 and April 2019, respectively. High numbers of noctule were recorded, with a peak of 19ppn in July 2018. Moderate to high levels of *Myotis* species were recorded, with a peak of 35ppn in April 2019. Peaks of two ppn of brown long-eared bat and one ppn of a Leisler's bat were also recorded.

Table 19: Bat activity transect survey results for Transect AT03

Ecology survey code	Transect location				Description of habitats covered by transect															
AT03	South-west of Middlewich.				Transect moves south from Shropshire Union Canal following boundary hedgerows passing alongside arable and grazing pasture fields. Transect crosses Clivegreen Lane and continues to follow boundary hedgerows adjacent to arable fields until re-joining the Shropshire Union Canal.															
Visit number and date	**Weather conditions**				**Total species passes during transect survey**															
	Temp (oC)	**Cloud (0-8)**	**Rain (0-5)**	**Wind (0-12)**	**Pp**	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**M m**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
Visit 1: Dusk: 26 July 2018	21	2	0	1	100	155	0	0	0	1	0	0	0	1	13	1	0	9	1	0	0
Visit 2: Dawn: 27 July 2018	15	0	0	0	1	26	0	0	0	0	5	0	0	5	23	1	0	0	0	0	0
August 2018 – Incomplete	N/A – No survey possible																				
Visit 3: Dusk: 6 September 2018	14	2	0	2	54	57	0	0	0	2	0	0	0	0	4	0	0	1	1	0	0
October 2018 – Incomplete	N/A – No survey possible																				
Visit 4: Dusk: 25 April 2019	7 (suboptimal)	2	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk: 28 May 2019	10	1	0	0	174	248	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0
Visit 6: Dusk: 26 June 2019	14	1	0	0	40	45	0	0	0	0	0	0	0	0	7	0	0	13	0	0	0
July 2019	N/A – Survey completed 2018																				

Ecology survey code	Transect location				Description of habitats covered by transect																
Visit 7: Dusk: 21 August 2019	20	8	0	0	8	30	0	0	0	0	0	0	0	0	2	0	0	4	0	1	0
September 2019	N/A – Survey completed 2018																				
Visit 8: Dusk: 23 October 2019	11	0	0	0	10	21	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

2.3.58 High levels of common and soprano pipistrelle were recorded, with peaks of 174 pnn and 48 ppn, respectively, in May 2019. Activity levels were high in two of the eight months when surveys were carried out, lower in other months. Moderate levels of both *Myotis* species and noctule were recorded, with peak numbers of 23 ppn and 13 ppn in July 2018 and June 2019, respectively. Peaks of one Leisler's bat were recorded in both July and September 2018, and a peak of one brown long-eared bat was recorded during dusk and dawn transects in July 2018, along with a peak of one serotine recorded in August 2019.

Table 20: Summary of static detector monitoring results for A5

Ecology survey code	Static location	OS grid reference	Description of habitats															
A5	Nantwich Road, Stanthorne	SJ68526397	Edge of Stove Room Wood, west of Nantwich Road, north of Wimboldsley.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
25 June 2018 – 29 June 2018	5		20	11	1	0	0	0	0	0	0	0	14	0	0	5	1	0	0
24 July 2018 – 31 July 2018	7		541	369	0	0	0	0	0	0	0	0	49	0	0	26	0	0	0
August 2018 – Incomplete	N/A – Access refused																		
26 September 2018 – 2 October 2018	6		2,223	761	6	1	0	0	0	0	0	0	62	2	0	4	2	1	0
10 October 2018 – 17 October 2018	7		1,298	2,305	0	3	0	0	0	0	0	0	40	43	0	17	1	1	0
April 2019 – Incomplete	N/A – Access refused																		
8 May 2019 – 14 May 2019	6		173	87	3	0	0	0	0	0	0	0	9	1	0	6	1	0	0
June 2019	N/A – Survey completed 2018																		
July 2019	N/A – Survey completed 2018																		

Ecology survey code	Static location	OS grid reference	Description of habitats																
August 2019 – Incomplete	N/A – Access refused																		

2.3.59 Notably high levels of common and soprano pipistrelle activity were recorded, with peak counts of 2,223ppn in September 2018 and 2,305ppn in October 2018, respectively. A peak of six ppn of Nathusius' pipistrelle was recorded in September 2018. High levels of *Myotis* species were recorded, with a peak of 62ppn in September 2018. High numbers of noctule and low to moderate levels of Leisler's bat were recorded across the surveys, with peaks of 26ppn in July 2018 and two ppn in September 2018, respectively. Brown long-eared bats were recorded in high numbers, with a peak of 43ppn in October 2018. Peaks of one ppn of a serotine were recorded in both September and October 2018.

Table 21: Summary of static detector monitoring results for A6

Ecology survey code	Static location	OS grid reference	Description of habitats															
A6	Clivegreen Lane, Stanthorne	SJ68536495	Field boundary adjacent to Clivegreen Lane, north of Wimboldsley.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
24 July 2018 – 31 July 2018	7		168	109	0	0	0	0	0	0	0	0	15	0	0	17	0	0	0
August 2018 – Incomplete	N/A – Access refused																		
4 September 2018 – 11 September 2018	7		995	677	21	1	0	0	0	0	0	0	15	3	0	9	0	0	0
10 October 2018 – 16 October 2018	8		28	17	1	0	0	0	0	0	0	0	7	0	0	4	0	0	0
9 April 2019 – 16 April 2019	7		3	8	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0
May 2019 – Incomplete	N/A – Access refused																		
4 June 2019 – 11 June 2019	7		137	74	3	3	0	0	0	0	0	0	6	0	0	38	0	0	0
July 2019 – Incomplete	N/A – Survey completed 2018																		

Ecology survey code	Static location	OS grid reference	Description of habitats																
20 August 2019 – 27 August 2019		7	287	795	0	1	0	0	0	0	0	0	50	3	0	19	0	0	0

2.3.60 Notably high levels of common and soprano pipistrelle activity were recorded, with peak counts of 995ppn in September 2018 and 795ppn in September 2019, respectively. A notable peak count of 21ppn of Nathusius' pipistrelle was recorded in September 2018, with low numbers overall recorded across the other surveys. Moderate to high numbers of *Myotis* species were recorded, with notably higher activity level in August 2019 and a peak of 50ppn. High levels of noctule activity were recorded, with a peak of 38ppn in June 2019. Peaks of three ppn of brown long-eared bat were recorded in both September 2018 and August 2019.

Table 22: Summary of static detector monitoring results for A8

Ecology survey code	Static location	OS grid reference	Description of habitats															
A8	Clivegreen Lane, Stanthorne	SJ68486554	Immediately adjacent to Shropshire Union Canal, south of Yewtree Farm, east of Winsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**M m**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
24 July 2018 – 31 July 2018	7		458	934	0	0	0	9	0	0	0	0	130	0	0	120	0	0	0
14 August 2018 – 28 August 2018	6		323	1,694	0	1	0	0	0	0	0	0	200	0	0	36	1	0	0
September 2018 – Incomplete	N/A – No survey possible																		
2 October 2018 – 10 October 2018	7		271	974	2	1	0	0	0	0	0	0	306	0	0	474	6	0	0
9 April 2019 – 16 April 2019	7		39	341	0	0	0	0	0	0	0	0	156	0	0	0	0	0	0
8 May 2019 – 14 May 2019	6		326	1,049	2	0	0	0	0	0	0	0	9	1	0	1	0	0	0
27 June 2019 – 2 July 2019	5		717	1,087	2	0	0	0	0	0	0	0	41	2	0	331	0	0	0
July 2019	N/A – Survey completed 2018																		
August 2019	N/A – Survey completed 2018																		

Ecology survey code	Static location	OS grid reference	Description of habitats																
16 September 2019 – 23 September 2019		7	930	541	3	0	0	0	0	0	0	0	125	0	0	529	17	1	0

2.3.61 Notably high levels of common and soprano pipistrelle were recorded across all survey months, with peak counts of 930ppn in September 2019 and 1,694ppn in August 2018, respectively. A peak count of three ppn of Nathusius' pipistrelle was also recorded in September 2019. Notably high numbers of *Myotis* species and noctule were recorded, with peaks of 306ppn in October 2018 and 529ppn in September 2019, respectively. Leisler's bat was also recorded in low numbers, with a peak of 17ppn in September 2019. A peak of one ppn of serotine was recorded in September 2019, with a peak of two ppn of brown long-eared bat in June 2019.

Table 23: Summary of static detector monitoring results for A9

Ecology survey code	Static location	OS grid reference	Description of habitats															
A9	Stanthorne Hall Farm	SJ68456662	Northern edge of Stanthorne Grange, adjacent to Middlewich Road, west of Middlewich.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
24 July 2018 – 31 July 2018	7		375	232	2	1	0	0	0	0	0	0	18	1	0	34	4	0	0
August 2018 – Incomplete	Data corrupted																		
4 September 2018 – 11 September 2018	7		1,293	648	2	3	0	0	0	0	0	0	44	0	0	10	6	0	0
October 2018 – Incomplete	N/A – Access refused																		
9 April 2019 – 16 April 2019	7		26	128	0	0	0	0	0	0	0	0	1	2	0	2	0	0	0
8 May 2019 – 14 May 2019	6		242	107	1	0	0	0	0	0	0	0	5	0	0	3	0	0	0
June 2019 – Incomplete	N/A – Access refused																		
July 2019	N/A – Survey completed 2018																		
August 2019 – Incomplete	N/A – Access refused																		
September 2019	N/A – Survey completed 2018																		

Ecology survey code	Static location	OS grid reference	Description of habitats
October 2019 – Incomplete	N/A – No survey possible		

2.3.62 Notably high levels of common pipistrelle activity were recorded, with a peak count of 1,293ppn in September 2018. High levels of soprano activity, with a peak of 648ppn in September 2018, and low to moderate levels of Nathusius' pipistrelle activity, with two ppn in both July and September 2018, were recorded. Overall, moderate levels of *Myotis* species, noctule and Leisler's bat activity were also recorded, with peak counts of 44ppn, 34ppn, and six ppn, respectively. A peak of two ppn of a brown long-eared bat was recorded in July 2018. Only four surveys were undertaken in this area, but emergence surveys carried out at buildings to the south also contribute to data on bat activity.

Table 24: Summary of static detector monitoring results for A10

Ecology survey code	Static location	OS grid reference	Description of habitats															
A10	A533 Bostock Road	SJ67956713	Edge of woodland, west of A533, North of Winsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**M m**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
July 2018 – Incomplete	N/A – Access refused																	
August 2018 – Incomplete	N/A – Access refused																	
4 September 2018 – 11 September 2018	7		7	14	0	0	0	0	0	0	0	0	6	2	0	7	1	0	0
2 October 2018 – 10 October 2018	8		76	82	0	9	0	0	0	0	0	0	12	0	0	5	1	0	0
April 2019 – Incomplete	N/A – Access refused																	
8 May 2019 – 14 May 2019	6		209	93	0	0	0	0	0	0	0	0	8	2	0	7	0	0	0
June 2019 – Incomplete	N/A – Access refused																	
July 2019 – Incomplete	N/A – Access refused																	
August 2019 – Incomplete	Data corrupted																	

2.3.63 Moderate numbers of common and soprano pipistrelle were recorded, with peak counts of 209ppn and 93ppn, respectively, in May 2019. Low to moderate numbers of *Myotis* species were recorded, with a peak count of 12ppn in October 2018. Moderate to high numbers of *Nyctalus* species were recorded, including peaks of seven ppn of noctule in both May 2019 and September 2018. One ppn of Leisler's bat was recorded in both September and October 2018. Moderate to high numbers of brown long-eared bats were recorded, with peaks of two ppn in both September 2019 and May 2019. Only three static activity surveys were undertaken for this area, which were carried out to ascertain the importance of The Willowbeds woodland. Based on the data and location of the area, it is considered that the results are representative of the activity in this area.

Table 25: Summary of static detector monitoring results for A11

Ecology survey code	Static location	OS grid reference	Description of habitats															
A11	A533 Bostock Road	SJ68376733	Edge of woodland, east of Bank Farm, north of Winsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
17 July 2018 – 24 July 2018	7		113	127	0	0	0	0	0	0	0	0	37	0	0	40	0	0	0
August 2018 – Incomplete	N/A – Access refused																		
September 2018 – Incomplete	Data corrupted																		
2 October 2018 – 10 October 2018	8		314	542	1	37	0	0	0	0	0	0	100	11	0	5	3	0	0
April 2019 – Incomplete	N/A – Access refused																		
15 May 2019 – 21 May 2019	6		539	892	1	0	0	0	0	0	0	0	1,039	25	0	20	0	1	0
June 2019 – Incomplete	N/A – Access refused																		
July 2019	N/A – Survey completed 2018																		
August 2019 – Incomplete	N/A – Access refused																		
September 2019 – Incomplete	N/A – Access refused																		

2.3.64 Notably high levels of common pipistrelle and soprano pipistrelle activity were recorded over the three months when access was granted, with peak counts of 539ppn and 892ppn, respectively, in May 2019. One ppn of Nathusius' pipistrelle was also recorded in both May and October 2018. Very high numbers of *Myotis* species and brown long-eared bat were also recorded, with notably higher levels of activity in May 2019 of 1,039ppn and 25ppn, respectively. High levels of noctule activity were recorded, with a peak of 40ppn in July 2018, and three ppn of Leisler's bat was recorded in October 2018. A single pass of a serotine was recorded in May 2019. Only three surveys were carried out in this location, but emergence surveys were carried out at the nearby farm buildings to the west, which provided additional data on the bat activity, and high levels of activity were recorded during the survey in this area. A roost was found on each of these surveys. The transect that was carried out in this area also had high levels of activity. This mosaic of woodlands appears to be of importance for bats.

Table 26: Summary of static detector monitoring results for A12

Ecology survey code	Static location	OS grid reference	Description of habitats															
A12	Oak Wood, Bostock	SJ68326803	Edge of Bull's Wood, north of Winsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
June 2018 – Incomplete	N/A – Access refused																	
July 2018 – Incomplete	Data corrupted																	
August 2018 – Incomplete	N/A – Access refused																	
September 2018 – Incomplete	N/A – Access refused																	
October 2018 – Incomplete	N/A – Access refused																	
April 2019 – Incomplete	N/A – Access refused																	
15 May 2019 – 21 May 2019	6		183	626	5	1	0	0	0	0	0	0	63	1	0	34	0	0	0
June 2019 – Incomplete	N/A – Access refused																	
July 2019 – Incomplete	N/A – Access refused																	
August 2019 – Incomplete	N/A – Access refused																	

Ecology survey code	Static location	OS grid reference	Description of habitats															
September 2019 - Incomplete	N/A – No survey possible																	
October 2019 - Incomplete	N/A – No survey possible																	

2.3.65 It was only possible to collect data in May 2018, primarily due to refused access. During the one week in which data was gathered, very high levels of activity of common pipistrelle and soprano pipistrelle were recorded, with peak counts of 183ppn and 626ppn, respectively. A peak of five ppn of Nathusius' pipistrelle was also recorded. High numbers of *Myotis* species and noctule were recorded, with notable peaks of 63ppn and 34ppn, respectively. A single pass of a brown long-eared bat was also recorded.

Table 27: Summary of static detector monitoring results for A13

Ecology survey code	Static location	OS grid reference	Description of habitats															
A13	Davenham, Bostock Green	SJ68316885	Woodland edge, east of River Dane, north of Winsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
10 July 2018 – 17 July 2018	7		135	293	0	1	0	0	0	0	0	0	31	0	0	21	0	0	0
7 August 2018 – 14 August 2018	7		376	941	0	184	0	0	0	0	0	0	97	4	0	20	1	0	0
4 September 2018 – 11 September 2018	7		42	318	2	9	0	0	0	0	0	0	203	0	0	8	1	0	0
October 2018 – Incomplete	N/A – Access refused																		
17 April 2019 – 24 April 2019	7		298	870	1	2	0	0	0	0	0	0	495	0	0	1	0	0	0
15 May 2019 – 21 May 2019	6		187	1,411	2	0	0	0	0	0	0	0	919	1	0	14	0	0	0
June 2019 – Incomplete	N/A – Access refused																		
July 2019	N/A – Survey completed 2018																		
August 2019	N/A – Survey completed 2018																		

Ecology survey code	Static location	OS grid reference	Description of habitats																	
September 2019	N/A – Survey completed 2018																			
October 2019 – Incomplete	N/A – No survey possible																			

2.3.66 Notably high levels of common pipistrelle and soprano pipistrelle were recorded, with peak counts of 376ppn in August 2018 and 1,411ppn in May 2019, respectively. Peaks of two ppn of Nathusius' pipistrelle were recorded in both May 2019 and September 2018. Notably high numbers of *Myotis* species were recorded, with a peak count of 919ppn recorded in May 2019. Moderate to high levels of noctule activity were recorded, with a peak of 21ppn in July 2018. A high number of brown long-eared bat, with a peak count of four ppn in August 2018, and a low number of Leisler's bats, with one ppn in both August and September 2018, were recorded. The Trent and Mersey Canal appears to be important foraging / commuting corridor for bats.

Table 28: Summary of static detector monitoring results for A14

Ecology survey code	Static location	OS grid reference	Description of habitats															
A14	Davenham, Bostock Green	SJ68376936	Woodland edge adjacent to drain, east of River Dane, north of Winsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
10 July 2018 – 17 July 2018	7		264	426	0	1	0	0	0	0	0	0	18	0	0	55	0	0	0
7 August 2018 – 14 August 2018	7		85	124	0	0	0	0	0	0	0	0	33	3	0	4	0	0	0
4 September 2018 – 11 September 2018	7		46	116	2	0	0	0	0	0	0	0	32	4	0	8	1	0	0
October 2018 – Incomplete	N/A – Access refused																		
17 April 2019 – 24 April 2019	7		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 May 2019 – 21 May 2019	6		429	95	0	0	0	0	0	0	0	0	66	1	0	3	0	0	0
June 2019 – Incomplete	N/A – Access refused																		
July 2019	N/A – Survey completed 2018																		
August 2019	N/A – Survey completed 2018																		

Background Information and Data

Ecology and biodiversity

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Ecology survey code	Static location	OS grid reference	Description of habitats															
September 2019	N/A – Survey completed 2018																	
October 2019 – Incomplete	N/A – No survey possible																	

2.3.67 Notably high levels of common and soprano pipistrelle activity were recorded, with peak counts of 429ppn in May 2019 and 426ppn in July 2018, respectively. Two passes of a Nathusius' pipistrelle were recorded in September 2018. Notably high levels of *Myotis* species activity were recorded, with a peak of 66ppn in May 2019. Moderate levels of noctule activity were recorded, with notably higher activity levels in July 2018. A single pass of a Leisler's bat was recorded in September 2018. A peak count of four ppn of brown long-eared bat was recorded in September 2018.

Table 29: Summary of static detector monitoring results for A14a

Ecology survey code	Static location	OS grid reference	Description of habitats															
A14a	Whatcroft Lane, Davenham	SJ68456968	Within woodland, east of Whatcroft Hall, south of Northwich.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
June 2018 – Incomplete	Data corrupted																	
10 July 2018 – 17 July 2018	7		81	127	0	1	0	0	0	0	0	0	44	0	0	19	0	0	0
7 August 2018 – 14 August 2018	7		294	150	9	0	0	0	0	0	0	0	16	1	0	19	3	1	0
4 September 2018 – 11 September 2018	7		870	1,513	1	0	0	0	0	0	0	0	62	3	0	11	2	0	0
October 2018 – Incomplete	Data corrupted																	
17 April 2019 – 24 April 2019	7		779	781	6	0	0	0	0	0	0	0	11	5	0	8	0	0	0
15 May 2019 – 21 May 2019	6		44	142	0	1	0	0	0	0	0	0	72	1	0	3	0	0	0
June 2019 – Incomplete	N/A – Access refused																	
July 2019	N/A – Survey completed 2018																	
August 2019	N/A – Survey completed 2018																	
September 2019	N/A – Survey completed 2018																	

Ecology survey code	Static location	OS grid reference	Description of habitats															
October 2019 – Incomplete	N/A – No survey possible																	

2.3.68 Notably high numbers of common and soprano pipistrelle and *Myotis* species were recorded, with peak counts of 870ppn and 1,513ppn in September 2018 and 72ppn in May 2019, respectively. A peak count of nine ppn of Nathusius' pipistrelle was recorded in August 2018. High levels of *Nyctalus* species were recorded, with peaks of 19ppn of noctule in both July and August 2018, and three ppn of Leisler's bat in August 2018. A single pass of a serotine was also recorded in August 2018, and moderate to high levels of brown long-eared bat, with a peak of five ppn in April 2019.

Table 30: Summary of static detector monitoring results for A15

Ecology survey code	Static location	OS grid reference	Description of habitats															
A15	Whatcroft Lane, Davenham	SJ68347014	Edge of woodland immediately adjacent to Puddinglake Brook, south of Northwich.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
24 July 2018 – 31 July 2018	7		664	170	0	0	0	0	0	0	0	0	66	0	0	38	0	0	0
7 August 2018 – 14 August 2018	7		855	252	4	1	0	0	0	0	0	0	21	1	0	14	1	0	0
26 September 2018 – 2 October 2018	7		1,326	380	0	0	0	0	0	0	0	0	20	0	0	2	0	0	0
10 October 2018 – 17 October 2018	7		589	881	0	1	0	0	0	0	0	0	37	3	0	4	0	0	0
17 April 2019 – 24 April 2019	7		710	189	2	2	0	0	0	0	0	0	21	7	0	7	0	0	0
15 May 2019 – 21 May 2019	6		410	115	0	0	0	0	0	0	0	0	22	8	0	0	0	0	0
June 2019 – Incomplete	N/A – Access refused																		

2.3.69 Notably high numbers of common and soprano pipistrelle were recorded, with peak counts of 1,326ppn in September 2018 and 881ppn in October 2018, respectively. A peak of four ppn of Nathusius' pipistrelle was recorded in August 2018. Notably high levels of *Myotis* species were recorded, with peak of 66ppn recorded in July 2018. Notably high numbers of noctule were recorded, with a peak of 38ppn in July 2018, and a single pass of Leisler's bat, recorded in August 2018. High levels of brown long-eared bat activity were recorded, with a peak of eight ppn in May 2019.

Table 31: Summary of static detector monitoring results for A16

Ecology survey code	Static location	OS grid reference	Description of habitats															
A16	Oakwood Marina, Davenham	SJ68437068	Hedgerow between trainline and Trent and Mersey Canal, south of Northwich.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**M m**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
17 July 2018 – 24 July 2018	7		606	716	0	3	0	0	0	0	0	0	111	1	0	289	0	0	0
August 2018 – Incomplete	N/A – Access refused																		
September 2018 – Incomplete	N/A – Access refused																		
2 October 2018 – 10 October 2018	8		699	1,716	12	1	0	0	0	0	0	0	153	3	0	14	4	0	0
17 April 2019 – 24 April 2019	7		345	249	38	4	0	0	0	0	0	0	4	1	0	308	9	0	0
May 2019 – Incomplete	N/A – Access refused																		
June 2019 – Incomplete	N/A – Access refused																		
July 2019	N/A – Survey completed 2018																		
August 2019 – Incomplete	N/A – Access refused																		

Ecology survey code	Static location	OS grid reference	Description of habitats																
September 2019 – Incomplete	N/A – Access refused																		

2.3.70 It was only possible to undertake surveys from July 2018 to April 2019, as access was denied after this date; however, the data collected gives a good indication of the level of activity in this area despite the lack of surveys. Notably high numbers of common and soprano pipistrelle were recorded, with peak counts of 699ppn and 1,716ppn, respectively in October 2018. Notable peaks of 38ppn of Nathusius' pipistrelle and 153ppn of *Myotis* species were also recorded in October 2018. Notably high levels of noctule, with a peak of 308ppn in April 2019, and high levels of Leisler's bat, with a peak count of nine ppn in April 2019, were recorded. A peak of three ppn of brown long-eared bat was recorded in October 2018.

Table 32: Summary of static detector monitoring results for B1

Ecology survey code	Static location	OS grid reference	Description of habitats															
B1	Davenham Road, Davenham	SJ68537146	Hedgerow adjacent to Davenham Road, south of Northwich.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
24 July 2018 – 31 July 2018	7		280	391	7	0	0	0	0	0	0	0	14	3	0	21	3	0	0
7 August 2018 – 14 August 2018	7		221	282	1	0	0	0	0	0	0	0	8	0	0	25	1	0	0
26 September 2018 – 2 October 2018	6		479	374	0	0	0	0	0	0	0	0	41	1	0	11	0	0	0
10 October 2018 – 17 October 2018	7		59	109	3	1	0	0	0	0	0	0	9	3	0	7	0	0	0
17 April 2019 – 24 April 2019	7		323	183	7	1	0	0	0	0	0	0	21	5	0	20	0	0	0
15 May 2019 – 21 May 2019	6		15	54	0	0	0	0	0	0	0	0	3	1	0	7	0	0	0
12 June 2019 – 18 June 2019	7		47	23	1	1	0	0	0	0	0	0	2	3	0	48	1	0	0

2.3.71 Notably high levels of common and soprano pipistrelle activity were recorded, with peak counts of 479ppn in September 2018 and 391ppn in July 2018, respectively. Low to moderate levels of Nathusius' pipistrelle activity was recorded, with a peak of seven ppn in both April 2019 and July 2018. Overall, moderate levels of *Myotis* species activity were recorded, with a peak of 41ppn in September 2018. Moderate to high levels of brown long-eared bat and notably high levels of noctule, were recorded, with peak of five ppn and 48ppn, respectively. A peak of three ppn of Leisler's bat was recorded in July 2018.

Table 33: Summary of static detector monitoring results for B2

Ecology survey code	Static location	OS grid reference	Description of habitats															
B2	Marshall's Gorse, Byley	SJ68657181	Hedgerow adjacent to Marshall's Gorse, south of Northwich.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
17 July 2018 – 24 July 2018	7		83	56	1	0	0	0	0	0	0	0	46	0	0	53	0	0	0
7 August 2018 – 14 August 2018	7		311	319	0	0	0	0	0	0	0	0	37	2	0	46	1	0	0
26 September 2018 – 2 October 2018	6		366	189	0	0	0	0	0	0	0	0	23	1	0	16	0	0	0
10 October 2018 – 17 October 2018	7		774	320	0	2	0	0	0	0	0	0	166	4	0	14	1	1	0
17 April 2019 – 24 April 2019	7		44	44	1	0	0	0	0	0	0	0	2	1	0	8	0	0	0
15 May 2019 – 21 May 2019	6		179	210	2	0	0	0	0	0	0	0	107	5	0	25	0	0	0
12 June 2019 – 18 June 2019	6		209	205	1	0	0	0	0	0	0	0	178	21	0	50	2	0	0

2.3.72 Notably high numbers of common and soprano pipistrelle were recorded, with peak counts in October 2018 of 774ppn and 320ppn, respectively. Two passes of a Nathusius' pipistrelle were recorded in May 2019. Notably high numbers of *Myotis* species were recorded, with a peak of 178ppn in June 2019. Notably high numbers of noctule were recorded, with a peak of 53ppn in July 2018. Moderate to high numbers of brown long-eared bats were recorded, with a peak count of 21ppn in June 2019. Low to moderate numbers of Leisler's bats were recorded, with a peak count of two ppn in June 2019.

Table 34: Summary of static detector monitoring results for B3

Ecology survey code	Static location	OS grid reference	Description of habitats															
B3	King Street, Rudheath	SJ68717215	A line of hedgerow and trees located to the east of the A530 (King Street).															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
3 August 2020 – 10 August 2020	7		163	47	0	0	0	0	0	0	0	0	13	2	0	60	0	0	1
28 September 2020 – 5 October 2020	7		392	77	1	1	0	0	0	0	0	0	9	1	0	25	0	0	2

2.3.73 Due to access limitations, survey in this static survey area started in 2020. Notably high numbers of common pipistrelle and noctule were recorded, with peak counts in August 2020 of 392ppn and 60ppn, respectively. Moderate numbers of soprano pipistrelle were recorded, with 77ppn in September 2020. Low numbers of *Myotis* species were recorded, with a peak of 13ppn in August 2020 and low numbers of brown long-eared bat and *Nyctalus/Eptesicus* bats each with two ppn both in September 2020. One pass of a Nathusius' pipistrelle was recorded in September 2020.

Table 35: Summary of static detector monitoring results for B4

Ecology survey code	Static location	OS grid reference	Description of habitats															
B4	Pennys Lane, Rudheath	SJ68877271	A line of hedgerow and trees located to the south of the B5082 (Pennys Lane).															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
3 August 2020 – 10 August 2020	7		311	17	0	0	0	0	0	0	0	0	13	0	0	117	1	0	5
28 September 2020 – 5 October 2020	7		71	29	0	0	0	0	0	0	0	0	52	1	0	3	0	0	1

2.3.74 Due to access limitations, survey in this static survey area started in 2020. Notably high numbers of common pipistrelle and noctule were recorded, with peak counts in August 2020 of 311ppn and 117ppn, respectively. Moderate numbers of *Myotis* species were recorded, with 52ppn in September 2020. Low numbers of soprano pipistrelle and *Nyctalus/Eptesicus* bat were recorded, with a peak count of 29ppn in September 2020 and five ppn in August 2020, respectively. One pass of a brown long-eared bat in September 2020, and one pass of a Leislers' bat in August 2020, were recorded.

Table 36: Summary of static detector monitoring results for B5

Ecology survey code	Static location	OS grid reference	Description of habitats															
B5	A556 Shurlach Road	SJ69057320	A line of hedgerow and scrub located west of the A556 Shurlach Road.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
28 September 2020 – 5 October 2020	7		69	98	0	0	0	0	0	0	0	0	24	2	0	1	0	0	0

2.3.75 Due to access limitations, survey in this static survey area started in 2020. Moderate to high numbers of common and soprano pipistrelle were recorded, with peak counts in September 2020 of 69ppn and 98ppn, respectively. Moderate to high numbers of *Myotis* species were recorded, with a peak of 24ppn in September 2020. Low numbers of brown long-eared bats were recorded, with a peak of two ppn in September 2020. A single pass by a noctule was recoded in September 2020.

Table 37: Summary of static detector monitoring results for B8

Ecology survey code	Static location	OS grid reference	Description of habitats															
B8	A556 Shurlach Road	SJ69707473	Scrub and broadleaved woodland habitat located west of the A556 Shurlach Road, at the edge of a residential estate.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
3 August 2020 - 10 August 2020	7		84	68	0	0	0	0	0	0	0	0	3	0	0	34	0	0	1
28 September 2020 – 5 October 2020	7		169	28	0	1	0	0	0	0	0	0	0	1	0	9	0	0	0
26 October 2020 – 2 November 2020	7		35	25	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0

2.3.76 Due to access limitations, survey in this static survey area started in 2020. High numbers of common pipistrelle were recorded, with a peak count of 169ppn in October 2020. Moderate numbers of soprano pipistrelle and notably high numbers of noctule were recorded, with peaks of 68ppn and 34 ppn, respectively, in August 2020. Low numbers of *Myotis* species were recorded, with a peak of three ppn in August 2020. Single passes of brown long-eared bat and *Nyctalus/Eptesicus* bats were recorded in September 2020 and August 2020, respectively.

Table 38: Summary of static detector monitoring results for B9

Ecology survey code	Static Location	OS grid reference	Description of habitats															
B9	Long Wood, Plumley	SJ69907497	Edge of Long Wood, east of A556 Chester Road, east of Northwich.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
July 2018 – Incomplete	N/A – Access refused																	
August 2018 – Incomplete	N/A – Access refused																	
September 2018 – Incomplete	N/A – Access refused																	
October 2018 – Incomplete	N/A – Access refused																	
April 2019 – Incomplete	N/A – Access refused																	
1 May 2019 – 8 May 2019	7		906	327	0	1	0	0	0	0	0	0	32	0	0	29	0	0	0
June 2019 – Incomplete	Data corrupted																	
July 2019 – Incomplete	N/A – Access refused																	
August 2019 – Incomplete	N/A – Access refused																	
September 2019 – Incomplete	N/A – Access refused																	

Ecology survey code	Static Location	OS grid reference	Description of habitats
October 2019 – Incomplete	N/A – Access refused		

2.3.77 May 2019 is the only month during which data was collected, predominantly due to refused access. Notably high levels of common pipistrelle and soprano pipistrelle activity were recorded, with peak counts of 906ppn and 327ppn, respectively. Moderate to high numbers of *Myotis* species and notably high numbers of noctule were recorded, with peaks of 32ppn and 60ppn, respectively. This area was covered by transect BT01a and, together, the results provide an indication of the level of activity in this area.

Table 39: Summary of static detector monitoring results for B10

Ecology survey code	Static location	OS grid reference	Description of habitats														
B10	Chester Road, Pickmere	SJ70177550	Within Winnington Wood, adjacent to A556 Chester Road, east of Northwich.														
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**														
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
18 July 2018 – 25 July 2018	7		225	790	0	10	0	0	0	0	0	0	273	15	0	36	2	6	0
15 August 2018 – 22 August 2018	7		131	796	0	18	0	0	0	0	0	0	126	1	0	35	2	5	0
19 September 2018 – 26 September 2018	7		106	1,179	0	22	0	0	0	0	0	0	137	2	0	1	0	0	0
17 October 2018 – 24 October 2018	7		144	378	0	0	0	0	0	0	0	0	44	0	0	1	0	0	0
9 April 2019 – 16 April 2019	7		29	389	0	9	0	0	0	0	0	0	5	2	0	1	0	1	0
1 May 2019 – 8 May 2019	7		17	414	0	2	0	0	0	0	0	0	60	0	0	4	1	0	0
June 2019 – Incomplete	Data corrupted																		

2.3.78 Notably high levels of common and high levels soprano bat activity were recorded, with peak counts of 225ppn and 1,179ppn, respectively. Notably high numbers of *Myotis* species were recorded, with a peak of 273ppn in July 2018 and notably lower numbers in April 2019, with five ppn. Overall, moderate numbers of noctule were recorded, with a notable peak of 36ppn in July 2018. Moderate numbers of brown long-eared bat were recorded, with a notably high peak of 15ppn in July 2018. Low to moderate numbers of Leisler's bat were also recorded, with peaks of two ppn in both July and August 2018. A peak of six ppn of serotine was recorded in July 2018.

Table 40: Summary of static detector monitoring results for B11

Ecology survey code	Static location	OS grid reference	Description of habitats															
B11	Linnards Lane, Plumley	SJ70337598	Edge of woodland adjacent to Smoker Brook, east of Northwich.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
July 2018 – Incomplete	Data corrupted																	
15 August 2018 – 22 August 2018	7		45	293	1	34	0	0	0	0	0	0	306	4	0	6	0	1	0
September 2018 – Incomplete	N/A – Access refused																	
October 2018 – Incomplete	N/A – Access refused																	
9 April 2019 – 16 April 2019	7		27	176	8	0	0	0	0	0	0	0	47	0	0	0	0	0	0
1 May 2019 – 8 May 2019	7		133	971	0	42	0	0	0	0	0	0	257	1	0	1	1	0	0
June 2019 – Incomplete	N/A – Access refused																	
3 July 2019 – 10 July 2019	7		259	1,020	0	7	0	0	0	0	0	0	222	4	0	12	0	1	0
August 2019 – Incomplete	N/A – Access refused																	
September 2019 – Incomplete	N/A – Access refused																	

Ecology survey code	Static location	OS grid reference	Description of habitats
October 2019 – Incomplete	N/A – Access refused		

2.3.79 Notably high levels of common and soprano bat activity were recorded, with peak counts of 259ppn and 1,020ppn, respectively. Low to moderate levels of Nathusius' pipistrelle was recorded, with a notable peak in April 2019 of eight ppn. Notably high levels of *Myotis* species activity were recorded, with a peak of 306ppn in August 2018, and notably lower numbers recorded in April 2019, with 47ppn. Moderate to high levels of noctule were recorded, with a peak of 12ppn in July 2019. Peaks of four ppn of brown long-eared bat, and one ppn of serotine, were recorded in both August 2018 and July 2019. Additionally, one ppn of a Leisler's bat was recorded in May 2019.

Discussion

Bat assemblage

2.3.80 Data from field surveys and desk study records are summarised below and provide the basis for identifying bat assemblages associated with habitat in and adjoining the land required for construction of the Proposed Scheme in Wimboldsley to Lostock Gralam (MA02). These assemblages, described in Chapter 7 of the ES, are present in the following locations:

- between Wimboldsley and Stanthorne;
- between Stanthorne and Rudheath;
- between Broken Cross and Lostock Gralam; and
- between east and north-east of Lostock Gralam.

2.3.81 Field surveys carried out in 2018, 2019 and 2020 confirmed the presence of at least 10 bat species along the route, including rarer species: Leisler's bat, serotine, whiskered/Brandt's bat, Natterer's bat, Daubenton's bat and Nathusius' pipistrelle.

2.3.82 Common and widespread species, including common pipistrelle and soprano pipistrelle bats, were the most recorded, with notably high levels of activity across MA02.

2.3.83 Common and soprano pipistrelle were the most frequently recorded species during activity surveys in MA02, with notable peak counts of 2,223ppn of common pipistrelle and 2,305ppn of soprano pipistrelle, both from a single static detector located south of Stove Room Wood in September and October 2018, respectively. Two possible maternity roosts for pipistrelle bats were identified within MA02. One soprano pipistrelle roost, with a peak of 12 bats, was identified within the land required for the construction of the Proposed Scheme, at Davenham Road. One common pipistrelle roost, with a peak count of 14 bats, was located 180m from the land required for the construction of the Proposed Scheme.

2.3.84 Nathusius' pipistrelle was recorded, in moderate to high numbers for the species, on a number of static detectors, but none on walked transects. A peak of 38ppn was recorded on the static detector located on the Trent and Mersey Canal, in April 2019.

2.3.85 Brown long-eared bats were recorded across all static monitoring and walked transect surveys, in moderate to high numbers for the species, with a peak of 25ppn recorded on a static detector adjacent to the A533 in May 2019. An occasional building roost and feeding

perch was also identified, with a peak of three bats, near to this detector. This could indicate a larger, more significant roost is close by, but not yet identified. Records of their presence on the majority of surveys suggests that they are widespread throughout the area.

2.3.86 Noctule were recorded in moderate to high numbers on the majority of walked transects and static monitoring surveys, suggesting they are widespread in the area. Higher levels were recorded along the Shropshire Union Canal, in September 2019, with a notable peak of 528ppn. No roosts were identified.

2.3.87 Leisler's bat and serotine were found infrequently, and no roosts were identified. The peak of 17ppn was identified along the Shropshire Union Canal in September 2019, which indicates this is an important corridor for these species.

2.3.88 *Myotis* species were recorded on all the transects and static detectors, with a notable peak of 1,039ppn recorded on a static detector along a strip of trees, south of Oak Wood and Bull's Wood, in May 2019. Three occasional roosts of *Myotis* species were recorded, within 100m, and one Brandt's bat roost (confirmed by eDNA) beyond 100m, of the land required for the construction of the Proposed Scheme within MA02.

2.3.89 The lack of access may have resulted in activity and potential roosts in some areas going unrecorded; the key areas where access was not available during the survey seasons included: land around Lostock Green, which is suspected to be a key commuting route connecting Plumley Limebeds SSSI; and the water bodies and watercourses that surround Billinge Green, both of which are key foraging habitats within MA02. A low number of activity surveys were undertaken at Stanthorne Grange, but a high level of bat activity was noted on these surveys and subsequent roost surveys identified roosts in the vicinity.

2.3.90 Three out of the eight required activity surveys were undertaken in The Willowbeds woodland to ascertain the level of bat activity in this area and its importance for foraging and commuting bats. Based on the level of activity recorded during the surveys there was a moderate to high level of activity.

Roosts

2.3.91 The desk-study records identified a whiskered bat roost, within 500m of the land required for the construction of the Proposed Scheme in MA02.

2.3.92 Two occasional soprano pipistrelle roosts were identified in trees within 160m from the land required for the construction of the Proposed Scheme in Middlewich.

2.3.93 Two occasional roosts of common pipistrelle roosts were identified in trees within 160m from the land required for the construction of the Proposed Scheme in Whatcroft, with a peak of two bats identified roosting.

2.3.94 One roosting bat was recorded in a tree along Clive Green Lane, Winsford; however, the species is unknown, as no call was detected or recorded at the time of survey.

2.3.95 A total of 28 roosts were identified in 23 buildings and structures in the area, with two possible maternity roosts identified. A farm off Davenham Road supports six roosts over four buildings, within the land required for the construction of the Proposed Scheme. These are: soprano pipistrelle, with a possible maternity roost and a peak of 12 bats observed in a residential building; and *Myotis* species, with a peak of eight bats observed in a barn. These were recorded during building emergence and re-entry surveys.

2.3.96 A common pipistrelle possible maternity roost was recorded, with a peak of 14 bats, in a barn off Whatcroft Lane, Middlewich, which is outside of the land required for the construction of the Proposed Scheme.

2.3.97 Soprano pipistrelle and common pipistrelle occasional roosts were recorded in a barn off Northwich Road, in Stanthorne, with a peak of seven soprano and five common pipistrelle bats. The barn is located 90m from the land required for the construction of the Proposed Scheme.

2.3.98 A *Myotis* species roost, with a peak of two bats, was recorded under a railway bridge along the Shropshire union canal, 60m away from the land required for the construction of the Proposed Scheme. A Brandt's bat occasional roost was identified from internal inspection, through DNA analysis of droppings, in a barn off Croxton Lane, in Stanthorne, 115m from the land required for construction of the Proposed Scheme.

2.3.99 One brown long-eared bat roost was recorded, with a peak of three bats identified in a residential building off Middlewich Road, in Middlewich, within the land required for the construction of the Proposed Scheme area. Two brown long-eared bat roosts in two separate buildings were recorded with a peak of one bat in each roost within a residential property and a barn in Northwich Road within the land required for the construction of the Proposed Scheme. A dead bat was found within a barn in Clive Green Lane, Winsford approximately 60m west. A brown long-eared feeding perch was also identified in a barn on Northwich Road, Stanthorne approximately 30m north of the land required for the construction of the Proposed Scheme.

Foraging habitat

2.3.100 The landscape in this area largely comprises agricultural fields, improved and semi-improved grassland, broadleaved woodlands, with hedgerows and tree lined roads. There are also a number of watercourses and water bodies across MA02 that likely provide foraging habitat for bats.

2.3.101 The walked transects and static detector surveys along the Trent and Mersey Canal / River Dane recorded high levels of a number of species of bats, including: common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, brown long-eared bat, noctule, Leisler's bat and *Myotis* species, and a moderate numbers of serotine. There are a number of roosts of soprano pipistrelle and *Myotis* species recorded in the area. This location is likely to be a key foraging route for bats.

2.3.102 The walked transects and static detectors noted high levels of foraging activity near Plumley Limebeds SSSI, Winnington Wood, Peas Wood, Mill Wood and Peover Eye watercourse by soprano pipistrelle, *Myotis* species, noctule, Leisler's bats, serotine and brown long-eared bats. This would indicate that these habitats are a key foraging resource, due to the abundance and diversity of bats they support.

2.3.103 Static detectors and walked transects along Oak Wood and Bull's Wood, which is west of the River Dane and the Trent and Mersey Canal, recorded high activity levels of *Myotis* species, noctule, Leisler's bats, brown long-eared bats, moderate to high activity levels of common and soprano pipistrelles, and a high peak of Nathusius' pipistrelles, on the River Dane in May 2019. This indicates that these woodland blocks and the River Dane are a key foraging resource due to the abundance and diversity of bats they support.

2.3.104 At Shropshire Union Canal Middlewich Branch high levels of activity were recorded by a number of species, including common and soprano pipistrelle, *Myotis* species, Leisler's bat and noctule. Nathusius' pipistrelle, brown long-eared bat and serotine were also recorded in moderate to high numbers, for each species. Therefore, it is considered that the Shropshire Union Canal Middlewich Branch is a key foraging resource for a high number and diversity of bats species.

2.3.105 Very high numbers of common and soprano pipistrelle passes were recorded adjacent to Stove Room Wood in September 2018 and October 2018, respectively. The woodland is relatively small, compared to other woodlands in the area, but is connected to the wider landscape by tree-lined roads and field boundaries. Based on the number of bat passes recorded by both the transect and static detector surveys, it is likely that a roost is present within the woodland, and that the vegetated corridors that lead from the woodland are key foraging and/or commuting corridors.

Commuting habitat

2.3.106 The hedgerow network and number of watercourses through the area, such as the River Dane, Shropshire Union Canal Middlewich Branch and the Trent and Mersey Canal, are well established, and there is good connectivity to woodland blocks and water bodies for foraging activity. North to south movement is likely to impeded by the A54 and A533, which create barriers to movement due to physical barriers of the roads, and associated lighting.

2.3.107 The Shropshire Union Canal Middlewich Branch is an important corridor for bats, linking to Wimboldsey Woods and smaller unnamed woodlands, and with good connectivity to the hedgerows network throughout the area. Static detectors and walked transect surveys recorded high levels of activity of a number of different species along the canal, therefore it is assumed this is a key commuting corridor to wider habitats across the southern section of MA02.

2.3.108 On walked transect surveys, commuting bats were observed using hedgerows, tree-lines along field margins, railway lines and bankside vegetation along the Trent and Mersey Canal / River Dane, to navigate to foraging habitats across the northern part of MA02. This is

consistent with recordings from static detector data, with similar peaks in monthly data observed in a number of species across a number of static detector locations along the Trent and Mersey Canal. It is therefore considered these watercourses are key commuting corridors within MA02.

2.3.109 The hedgerows and tree lined roads, such as Davenham Road and King Street, recorded moderate levels of commuting activity and are considered key commuting habitats.

2.3.110 Winnington Wood and Peover Eye are considered key commuting corridors, due to the high numbers of soprano pipistrelle, *Myotis* species, noctule, Leisler's bat and brown long-eared bats recorded throughout the survey period.

Pickmere to Agden and Hulseheath (MA03)

2.3.111 Table 41 and Table 42 provide summaries of bat roosts identified in MA03 from field surveys. These tables should be read in conjunction with Background Information and Data, Ecology Map Book, Map Series EC-05. Survey information collected has been allocated an ecology survey code to provide a unique identification for use on mapping.

Overview of bat species status in the vicinity of MA03

2.3.112 There are no statutory designated sites (within 10km) or non-statutory designated sites (within 5km) of MA03 which include bats as features for their designations.

2.3.113 Habitats within MA03 suitable to support roosting, foraging and commuting bats include predominantly agricultural land, comprising arable and improved grassland fields with associated field margins and boundaries such as hedgerows and trees. A number of small watercourses such as Waterless Brook, as well as numerous small areas of woodland, also provide suitable habitat. There are also larger blocks of woodland and woodland belts adjacent to the land required for the construction of the Proposed Scheme which will provide a greater value of habitat for bat, such as Round Wood, Smoker Wood, Leonard's Wood and Mere Wood.

2.3.114 Field surveys and desk study records recorded at least 10 species of bats in MA03. All species were identified from field surveys. The total bat assemblage is as follows:

- common pipistrelle;
- soprano pipistrelle;
- Nathusius' pipistrelle;
- *Pipistrellus* species;
- brown long-eared bat;
- noctule;
- Leisler's bat;
- serotine;
- whiskered/Brandt's bat;

- Natterer's bat;
- Daubenton's bat; and
- *Myotis* species.

Roosting (trees)

2.3.115 A total of 625 trees were subject to an initial ground-based assessment and subsequent further detailed climbed surveys, where appropriate in line with the methods described in the FSMS document.

2.3.116 Of the 625 trees that were initially assessed, the following results were obtained:

- 46 trees identified as having high potential to support roosting bats;
- 360 trees identified as having moderate potential to support roosting bats; and
- the remaining 219 trees were classified as having low or negligible potential to support roosting bats. These trees were subsequently scoped out of further survey.

2.3.117 Of the 406 trees assessed as having high or moderate potential to support roosting bats:

- a total of 188 were subject to further surveys in the form of a tree climbing inspection during which three roosts were identified;
- 93 were reassessed as having low to negligible potential to support roosting bats and were scoped out of further surveys;
- 54 trees were subject to emergence surveys during which two roosts was recorded. One of these roosts was recorded within a tree during a building emergence survey through incidental observation; and
- 28 trees were subject to back-tracking surveys, comprising five back-tracking surveys in MA03 at two sites, which identified a further three roosts.

2.3.118 Details of confirmed tree roosts in MA03 are provided in Table 41.

Table 41: Confirmed tree roosts within MA03

Ecology survey code	Location	OS grid reference	Tree species	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH129916_L17691_BS3_F001_150819	Pickmere Lane, Knutsford	SJ70707848	Conifer	Common pipistrelle (1)	15 August 2018, emergence survey	Occasional	Emergence from top of conifer tree.	MA03	Within
CH517829_L6291_BA5_F017_280818	Hoo Green Lane, Mere	SJ71478235	Oak	Soprano pipistrelle (1)	28 August 2018, back tracking survey	Occasional	Bat flew towards tree with no further calls recorded. Unclear as to what feature the bat entered therefore, assumed possible return to roost.	MA03	Within
CH517829_L6291_BA5_F042_290818	Hoo Green Lane, Mere	SJ71268132	Oak	Soprano pipistrelle (1)	29 August 2018, back tracking survey	Occasional	Possible emergence from the tree along hedgerow.	MA03	Within
CH517829_L6291_BA5_F015	Hoo Green Lane, Mere	SJ71268132	Oak	Soprano pipistrelle (1)	29 August 2018, back tracking survey	Occasional	Possible emergence from the tree along hedgerow.	MA03	Within
CH448367_L5290_BT2_F008_041018	Chapel Lane, Millington	SJ72208418	Ash	Unknown (Not enough droppings to sample)	4 October 2018, tree climbing inspection	Occasional	Droppings found in dry cavity of tree.	MA03	Within
CH474608_L5468_BT2_F017_081118	Wrenshot Lane, High Legh	SJ71598354	Oak	Noctule (2)	8 November 2018, tree climbing inspection	Occasional	Two bats were in the deeper cavity but moved away from the light and deeper into the tree, out of range of the endoscope.	MA03	Within

Ecology survey code	Location	OS grid reference	Tree species	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH412137_L5203_BT3_F005_170919	Boothbank Lane, Millington	SJ72308512	Oak	Common pipistrelle (2)	17 September 2019, emergence survey	Occasional	Common pipistrelle observed roosting during BT2 survey and observed emerging from the tree during BS3 surveys.	MA03	Within
CH547023_L5466_BT2_F015_120918	Hoo Green Lane, Mere	SJ71498270	Oak	*Pipistrellus* species (1)	12 September 2018, tree climbing inspection	Occasional	Pipistrelle sp. present in callus role of a tear out of branch cavity.	MA03	Within

Roosting (buildings and structures)

2.3.119 A total of 243 buildings in this area were subject to initial inspections, resulting in the following:

- 34 buildings were confirmed to support 54 roosts;
- seven roosts were confirmed via internal and external inspections and 47 roosts were identified from emergence and re-entry surveys;
- ten buildings had high potential to support bats;
- 60 buildings had moderate potential to support bats;
- 48 buildings had low potential to support bats; and
- 125 buildings had negligible potential.

2.3.120 Of the 118 buildings confirmed as having roosts, or assessed as having high, moderate or low potential to support bats:

- 58 buildings were subject to internal inspections resulting in identification of seven bat roosts;
- 39 buildings were subject to a total of 93 emergence surveys identifying a further 47 roosts; and
- species have been confirmed through DNA analysis at seven roosts, with identification of the droppings found during internal inspections identified as five brown long-eared bat and two whiskered bat roosts.

2.3.121 Details of confirmed roosts in buildings/structures in MA03 are provided in Table 42.

Table 42: Confirmed roosts in buildings and structures within MA03

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH129916_L17691_BS3_F001_150818	Pickmere Lane, Knutsford	SJ70727849	Residential	Common pipistrelle (3)	15 August 2018, emergence survey	Occasional	A two-storey pitched roof house and single-storey garage with pitched roof.	MA03	Within
CH500560_L20237_BS3_F001_220818	Bowden View Lane, Mere	SJ71688308	Residential	Common pipistrelle (2)	22 August 2018, emergence survey	Occasional	Modern two-storey red brick building with a pitched, slate tile roof and one-storey side extension.	MA03	Within
CH272040_L21112_BS3_F001_190918	Lymm Road, Lymm	SJ71538634	Residential	Soprano pipistrelle (2)	19 September 2018, re-entry survey	Occasional	The house is approximately 20 years old, has a hipped slate roof with dormer windows and wood cladding to the east side and a one-storey annex to the west side.	MA03	Within
CH272040_L21112_BS3_F001_190918	Lymm Road, Lymm	SJ71538634	Residential	Common pipistrelle (3)	19 September 2018, re-entry Survey	Occasional	The house is approximately 20 years old, has a hipped slate roof with dormer windows and wood cladding to the east side and a one-storey annex to the west side.	MA03	Within
CH272040-U204123_L21112_BS3_F001_140819	Lymm Road, Lymm	SJ71538634	Residential	*Myotis* species (3)	14 August 2019, emergence survey	Occasional	The house is approximately 20 years old, has a hipped slate roof with dormer windows and wood cladding to the east side and a one-	MA03	Within

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
							storey annex to the west side.		
CH230711_L4489_BS3_F001_180718	Bowden View Lane, High Legh	SJ71638287	Residential	Soprano pipistrelle (3)	18 July 2018, emergence survey	Occasional	Residential multi-level concrete render building, with 3 slate tile pitched roofs and 2 flat roofs, approximately 20th century.	MA03	Within
CH230711_L4489_BS3_F001_180718	Bowden View Lane, High Legh	SJ71638287	Residential	*Myotis* species (1)	18 July 2018, re-entry survey	Occasional	Residential multi-level concrete render building, with 3 slate tile pitched roofs and 2 flat roofs, approximately 20th century.	MA03	Within
CH561651_L5128_BS2_F005_270819	Flittogate Lane, Plumley	SJ70737819	Barn	Brown long-eared bat (from droppings)	27 August 2019, internal inspection	Occasional	Red brick structure with pitched slate tile roof and multiple airbricks.	MA03	Within
U203281_L8126_BS2_F002_310719	Boothbank Lane, High Legh	SJ71818487	Residential	Whiskered bat (from droppings)	31 July 2019, internal inspection	Occasional	Two-storey, Brick-built, Victorian era house, with single-storey rear extension. Pitched roof with chimney at one end.	MA03	Within
CH486745_L5790_BS3_F004_050918	Chapel Lane, Millington	SJ72218395	Garage and accommodation	Soprano pipistrelle (6)	5 September 2018, re-entry survey	Occasional	Modern, brick-built, triple car garage with accommodation above. Pitched roof with ridge tiles, gable ends and boxed soffits. 3 large skylight windows.	MA03	0m north

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH486745_CH547081_U204091_L5790_BS3_F004_080819	Chapel Lane, Millington	SJ72218395	Garage and accommodation	*Myotis* species (1)	8 August 2019, emergence survey	Occasional	Modern, brick-built, triple car garage with accommodation above. Pitched roof with ridge tiles, gable ends and boxed soffits. Three large skylight windows.	MA03	0m north
CH474608-CH474899_L21140_BS3_F001_170718	Mere Court Hotel, Warrington Road, High Legh	SJ71428302	Residential	*Myotis* species (1)	17 July 2018, re-entry survey	Occasional	Detached two-storey building with rendered brick walls and a pitched tiled roof with gable ends. Formerly a residential property but now used as offices.	MA03	0m north
CH474608-CH474899_L21140_BS3_F001_300718	Mere Court Hotel, Warrington Road, High Legh	SJ71428302	Residential	Common pipistrelle (1)	30 July 2018, emergence survey	Occasional	Detached two-storey building with rendered brick walls and a pitched tiled roof with gable ends. Formerly a residential property but now used as offices.	MA03	0m north
CH474608-CH474899_L21140_BS3_F001_300718	Mere Court Hotel, Warrington Road, High Legh	SJ71428302	Residential	Soprano pipistrelle (1)	30 July 2018, emergence survey	Occasional	Detached two-storey building with rendered brick walls and a pitched tiled roof with gable ends. Formerly a residential property but now used as offices.	MA03	0m north
CH517829_L6291_BS3_F007_300818	Hoogreen Lane, Knutsford	SJ71008105	Barn	*Myotis* species (1)	30 August 2018, emergence survey	Occasional	Single-storey brick building with a corrugated metal roof. Current use unknown.	MA03	0m south

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH517829_L6291_BS3_F004_300818	Hoogreen Lane, Knutsford	SJ70978108	Residential	Common pipistrelle (2)	30 August 2018, emergence survey	Occasional	Two-storey farmhouse constructed with brick and a pitched slate tiled roof. Possibly approximately 1800s.	MA03	0m south
CH517829_L6291_BS3_F004_250918	Hoogreen Lane, Knutsford	SJ70978108	Residential	Soprano pipistrelle (2)	25 September 2018, emergence survey	Occasional	Two-storey farmhouse constructed with brick and a pitched slate tiled roof. Possibly approximately 1800s.	MA03	0m south
CH474608-CH474899_L21140_BS3_F004_100718	Mere Court Hotel, Warrington Road, High Legh	SJ71508308	Residential	Soprano pipistrelle (5)	10 July 2018, emergence survey	Occasional	Detached one, two and three-storey hotel building with a hipped, pitched tiled or flat roofs. Includes original building with modern extensions to the western side.	MA03	0m west
CH486745-CH547081-U204091_L5790_BS3_F002_220819	Chapel Lane, Millington	SJ72188392	Residential	Soprano pipistrelle (5)	22 August 2019, re-entry survey	Occasional	Approximately 20th century building. Converted barn. Composed of brick with a pitched slate roof.	MA03	10m east
CH486745-CH547081-U204091_L5790_BS3_F002_220819	Chapel Lane, Millington	SJ721808392	Residential	Brown long-eared bat (5)	22 August 2019, re-entry survey	Possible Maternity	Approximately 20th century building. Converted barn. Composed of brick with a pitched slate roof.	MA03	10m east

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH486745-CH547081-U204091_L5790_BS3_F002_220819	Chapel Lane, Millington	SJ72188392	Residential	Common pipistrelle (1)	22 August 2019, re-entry survey	Occasional	Approximately 20th century building. Converted barn. Composed of brick with a pitched slate roof.	MA03	10m east
CH486745-CH547081_L5790_BS3_F003_050918	Chapel Lane, Millington	SJ72198394	Residential	Soprano pipistrelle (1)	5 September 2018, re-entry survey	Occasional	Approximately 20th century, brick-built farmhouse. Paint removed and recently pointed. Modern extension using old materials. Complex roof structure with hipped, pitched and gable end. Boxed soffits.	MA03	10m east
CH486745-CH547081_L5790_BS3_F003_050918	Chapel Lane, Millington	SJ72198394	Residential	Common pipistrelle (1)	5 September 2018, re-entry survey	Occasional	Approximately 20th century, brick-built farmhouse. Paint removed and recently pointed. Modern extension using old materials. Complex roof structure with hipped, pitched and gable end. Boxed soffits.	MA03	10m east
CH262900-CH411071_L5788_BS3_F003_150818	Peacock Lane, High Legh, Knutsford	SJ71548438	Residential	Common pipistrelle (3)	15 August 2018, re-entry survey	Occasional	Recently renovated residential building. Constructed of red brick with white rendering and slate tiles and ridge tiles. It has a chimney, box soffits, barge boards, skylights and Ventilation bricks.	MA03	10m north

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH474608-CH474899_L21140_BS3_F002_170718	Mere Court Hotel, Warrington Road, High Legh	SJ71438304	Residential	Common pipistrelle (2)	17 July 2018, re-entry survey	Occasional	Detached two-storey building with four wings, pitched and hipped roofs. Used as offices and conference facilities.	MA03	10m north
CH474608-CH474899_L21140_BS3_F002_170718	Mere Court Hotel, Warrington Road, High Legh	SJ71438304	Residential	*Myotis* species (2)	17 July 2018, re-entry survey	Occasional	Detached two-storey building with four wings, pitched and hipped roofs. Used as offices and conference facilities.	MA03	10m north
CH486745_CH547081_L5790_BS3_F001_220819	Chapel Lane, Millington	SJ72188390	Garage	Soprano pipistrelle (1)	22 August 2019, re-entry survey	Occasional	Approximately 21st century building. Modern car garage. Composed of brick with a multi-hipped slate roof.	MA03	10m north
CH123938_L20937_BS3_F001_240918	Chapel Lane, Millington	SJ72348377	Garage	Soprano pipistrelle (1)	24 September 2018, emergence survey	Occasional	A two-storey garage, red brick building with a slate tile roof with ridge tiles. The building is open at the eaves and has gables ends.	MA03	10m south
CH440609-CH637011-U200274_L5858_BS3_F015_170919	Agden Lane, High Legh	SJ71508552	Residential	Soprano pipistrelle (1)	17 September 2019, emergence survey	Occasional	Two-storey, red brick, detached, residential building with a single-storey front extension and pitched, tiled roof. Approximately 1960/1970s.	MA03	10m south
U200981-U202637_L6	A50 Warrington Road, High Legh	SJ71338305	Barn	Soprano pipistrelle (3)	12 September 2018,	Occasional	Barn within Yew Tree Farm complex. Two-storey detached brick barn with a pitched slate roof and a one-	MA03	10m south

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
103_BS3_F003_120918					emergence survey		storey open fronted metal extension to the west. Dated 1907 (noted from a plaque on the northern elevation).		
CH548895_L4736_BS3_F003_040918	Peacock Lane, High Legh	SJ72068399	Residential	Soprano pipistrelle (1)	4 September 2018, re-entry survey	Occasional	A two-storey residential building constructed of red brick with white render and clay ties and ridge tiles. In addition, it has one chimney and air vents are present.	MA03	10m south
U200897-U200908_L6244_BS3_F001_240718	Winter-bottom Lane, High Legh	SJ71198195	Barn	Soprano pipistrelle (21)	24 July 2018, re-entry survey	Possible maternity	Multi-storey barn (1800s) consisting of single-storey and two-storey sections, with a pitched and hipped roof with slate tiles.	MA03	10m west
U200897-U200908_L6244_BS3_F001_240718	Winter-bottom Lane, High Legh	SJ71198195	Barn	Common pipistrelle (3)	24 July 2018, re-entry survey	Occasional	Multi-storey barn (1800s) consisting of single-storey and two-storey sections, with a pitched and hipped roof with slate tiles.	MA03	10m west
U200897-U200908_L6244_BS3_F001_240718	Winter-bottom Lane, High Legh	SJ71198195	Barn	Brown long-eared bat (12)	24 July 2018, re-entry survey	Possible Maternity	Multi-storey barn (1800s) consisting of single-storey and two-storey sections, with a pitched and hipped roof with slate tiles.	MA03	10m west
U202360-U202535_L6244_BS2_F004_300719	Winterbottom Lane, High Legh	SJ71208192	Residential	Brown long-eared bat (from droppings)	30 July 2019, internal inspection	Occasional	Two-storey farmhouse, Brick-built with a pitched slate tiled roof. Farmhouse	MA03	10m west

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
							built in the 1800's in good condition.		
CH275490_L5859_BS3_F001_110718	Chapel Lane, Mere	SJ72218392	Residential	*Myotis* species (12)	11 July 2018, re-entry survey	Possible Maternity	Large two-storey residential building approximately 200 years old, with white pebble dash render. Varied roof structures with slate and ridge tiles. Wooden windows throughout building.	MA03	15m east
CH131342_CH258462_CH434587L5232_BS3_F002_240718	Hollowood Lane, Tabley	SJ70868036	Residential	*Myotis* species (2)	24 July 2018, re-entry survey	Occasional	Red brick building with slate tiles in a pitched roof with no windows.	MA03	15m north
CH131342_CH258462_CH434587_L5232_BS3_F002_130819	Hollowood Lane, Tabley	SJ70868036	Residential	Common pipistrelle (10)	13 August 2019, emergence survey	Possible Maternity	Red brick building with slate tiles in a pitched roof with no windows.	MA03	15m north
CH131342_CH258462_CH434587_L5232_BS3_F002_130819	Hollowood Lane, Tabley	SJ70868036	Residential	Brown long-eared bat (1)	13 August 2019, emergence survey	Occasional	Red brick building with slate tiles in a pitched roof with no windows.	MA03	15m north
CH601656_L5054_BS3_F001_220818	Moss Lane, High Legh	SJ71608494	Residential	Soprano pipistrelle (2)	22 August 2018, re-entry survey	Occasional	Two-storey, L-shaped, detached brick house with pitched roof built around 2000.	MA03	15m south-west

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH601656_L5054_BS3_F001_050918	Moss Lane, High Legh	SJ71608494	Residential	*Myotis* species (1)	5 September 2018, emergence survey	Occasional	Two-storey, L-shaped, detached brick house with pitched roof built around 2000.	MA03	15m south-west
CH601656_L5054_BS3_F001_030919	Moss Lane, High Legh	SJ71608494	Residential	Common pipistrelle (3)	3 September 2019, re-entry survey	Occasional	Two-storey, L-shaped, detached brick house with pitched roof built around 2000.	MA03	15m south-west
CH242138-L21019_BS2_F001_250919	Agden Lane, Agden	SJ71538548	Residential	Brown long-eared bat (from droppings)	25 September 2019, internal inspection	Occasional	Three-storey, render and brick detached mansion, approximately 80 years old. Stone around window fits, pitched roof, slate roof tiles.	MA03	30m east
CH412137-CH672607_L5203_BS2_F002_290819	Booth Bank Lane, Millington	SJ72318522	Barn	Brown long-eared bat (from droppings)	29 August 2019, internal inspection	Occasional	Red brick barn with pitched slate tile roof. Approximately 1800s.	MA03	30m east
CH412137-CH672607_L5203_BS2_F001_290819	Booth Bank Lane, Millington	SJ72338519	Residential	Whiskered bat (from droppings)	29 August 2019, internal inspection	Occasional	1860 Manor farmhouse red brick with double pitched slate roof with four gable ends to main structure and a single chimney with two connected extensions.	MA03	30m east
CH429142-CH440173-U202562_L5902_BS2_F001_210819	School Lane, Pickmere	SJ70287839	Residential	Brown long-eared bat (from droppings)	21 August 2019, internal inspection	Occasional	Old two-storey cottage with open gable, slate roof and an open porch/walkway that is slate roofed and wooden	MA03	30m east

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
							boxed underneath. 200+ years old.		
CH123938_L20937_BS3_F002_240918	Chapel Lane, Millington	SJ72328377	Residential	Soprano pipistrelle (3)	24 September 2018, emergence survey	Occasional	A brick constructed cottage, which is open at the eaves. Slate roof, and gable ends, as well as a chimney, with lead flashing.	MA03	30m south
U200981-U202637_L6103_BS3_F002_310718	A50 Warrington Road, High Legh	SJ71318303	Barn	Common pipistrelle (1)	31 July 2018, emergence survey	Occasional	Barn within Yew Tree Farm complex. Two-storey semi-detached brick barn with a pitched slate/stone tiled roof and a one-storey ridged metal extension to the south.	MA03	30m south
CH434587_L5232_BS3_F001_090718	Hollowood Lane, Tabley	SJ70858038	Residential	Soprano pipistrelle (1)	9 July 2018, emergence survey	Occasional	Three-storey residential building. It is constructed of red brick with numerous gables, pitched roofs and two chimneys.	MA03	50m west
CH434587_L5232_BS3_F001_240718	Hollowood Lane, Tabley	SJ70858038	Residential	Common pipistrelle (3)	24 July 2018, re-entry survey	Occasional	Three-storey residential building. It is constructed of red brick with numerous gables, pitched roofs and two chimneys.	MA03	50m west
CH434587_L5232_BS3_F001_240718	Hollowood Lane, Tabley	SJ70858038	Residential	*Myotis* species (2)	24 July 2018, re-entry survey	Occasional	Three-storey residential building. It is constructed of red brick with numerous gables, pitched roofs and two chimneys.	MA03	50m west

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH440609-CH637011-U200274_L5858_BS3_F010_070818	Agden Lane, High Legh	SJ71468541	Garage	Soprano pipistrelle (2)	7 August 2018, emergence survey	Occasional	18th century single-storey brick building, walls covered in render, with pitched felt tile roof.	MA03	50m west
CH240426-CH273764_L5299_BS3_F011_030918	Lymm Road, High Legh	SJ71858646	Residential	Soprano pipistrelle (2)	3 September 2018, emergence survey	Occasional	Residential farm building approximately 1865. Two-storey, red brick building with slate roof tiles and ridge tiles.	MA03	60m east
CH240426-CH273764_L5299_BS3_F011_030918	Lymm Road, High Legh	SJ71858646	Residential	Common pipistrelle (2)	3 September 2018, emergence survey	Occasional	Residential farm building approximately 1865. Two-storey, red brick building with slate roof tiles and ridge tiles.	MA03	60m east

Roosting (woodlands)

2.3.122 This section applies to all trees subject to the surveying woodlands methodology. 10 areas of woodland (comprising either single large woodland blocks or groups of smaller woodlands).

2.3.123 The results of woodlands identified for survey and the results of initial ground-based assessments of trees and surrounding area are summarised in Table 43. Trees with negligible potential for roosting bats were not recorded or mapped.

Table 43: Potential roosting resource within woodlands in MA03

Woodland	Number of trees with features of potential value to roosting bats			Overall suitability of woodland for bats*
	High Suitability	Moderate Suitability	Low Suitability	
Leonard's Wood and Smoker Wood	12	33	20	High – strip of woodland with Smoker Brook running through the middle. Good connectivity to Peas Wood and Winnington Wood.
Dogkennel Wood, Rinks Wood, Round wood, School Wood, Island Wood, Crow Wood, Royd Wood	Unknown	Unknown	Unknown	High – Waterless Brook runs through Dogkennel Wood, Rinks Wood, Round Wood and School Wood providing good connectivity. The woodlands are located within the Near Tabley Estate.
Tableypipe Wood	Unknown	Unknown	Unknown	Low – suitable woodland habitat, with brook running through. Recently disturbed and reduced due to A556 road construction.
Unnamed woodland south-east of Hollowood Farm	0	14	2	Low – small woodland with two ponds located within the woodland. Hedgerows offer connectivity; however, the woodland is adjacent to the M6.
Unnamed woodland west of Belt Wood near Mere	0	5	3	Moderate – Small woodland with two small water bodies and good connectivity to Belt Wood.
Belt Wood	5	10	7	Moderate – large woodland with connectivity along hedgerows and brooks.
Unnamed wood north-east of Woodside Farm	0	9	12	Low – connectivity via tree lines and hedgerows. Suitable foraging habitat within High Legh Park Golf Course south-west of the woodland.
Strip of woodland east of Agden Brook farm	0	9	0	Moderate - small strip of woodland with a pond located within it, providing suitable foraging habitat. Agden Brook runs through the woodland.
Bongs Wood and Bongs Rough and Hey Rose Golf course	0	0	0	Moderate – Woodland within golf course with good connectivity to surrounding habitat via hedgerows and Arley Brook.

Woodland	Number of trees with features of potential value to roosting bats			Overall suitability of woodland for bats*
	High Suitability	Moderate Suitability	Low Suitability	
				Various small water bodies across golf course.
Park Covert	0	0	0	Moderate – Woodland within golf course providing good foraging habitat with a number of small water bodies. Connectivity to surrounding habitat and High Legh park via hedgerows.

**based on the quality and quantity of the roost and feeding resource and ecological position of the wood.*

2.3.124 Transects and static detector surveys were undertaken around each woodland where access was available in order to gain an understanding of the bat assemblage and levels of bat activity. The results of these surveys are included in the bat activity surveys section.

Bat activity surveys

2.3.125 At least 10 species have been recorded during the range of bat activity surveys conducted in MA03:

- common pipistrelle;
- soprano pipistrelle;
- Nathusius' pipistrelle;
- *Pipistrellus* species;
- brown long-eared bat;
- noctule;
- Leisler's bat;
- serotine;
- whiskered / Brandt's bat;
- Natterer's bat;
- Daubenton's bat; and
- *Myotis* species.

Table 44: Bat activity surveys conducted within MA03

Ecology survey code	Transect location	Numbers of surveys conducted	First survey date	Final survey date	CA	Map reference
BT01b	Pickmere	1	23 April 2019	23 April 2019	MA03	EC-06-516b/517
BT02	Near Tatton	8	23 May 2018	2 October 2019	MA03	EC-06-519/520
BT04	West of Knutsford	4	5 September 2018	8 August 2019	MA03	EC-06-517

Ecology survey code	Transect location	Numbers of surveys conducted	First survey date	Final survey date	CA	Map reference
BT05	South-east of Warrington	7	8 August 2018	8 July 2019	MA03	EC-06-521 R/522/522 R1
B12	Milley Lane, Pickmere	3	9 April 2019	2 November 2020	MA03	EC-06-517
B13	Pickmere	4	4 July 2018	13 August 2019	MA03	EC-06-517
B14	Pickmere	6	4 July 2018	8 May 2019	MA03	EC-06-517
B15	Arley Brook, Pickmere	1	26 October	2 November 2020	MA03	EC-06-518
B16	Hayrose Golf Club	4	11 July 2018	10 October 2018	MA03	EC-06-518
B17	Hayrose Farm	2	4 July 2018	7 August 2018	MA03	EC-06-518
B18	Hollowood Farm	3	1 August 2018	10 July 2019	MA03	EC-06-519
B19	M6, Tabley	4	1 August 2018	16 October 2019	MA03	EC-06-519
B20	Mere CP	6	4 July 2018	8 May 2019	MA03	EC-06-519
B21	Mere CP	6	4 July 2018	7 May 2019	MA03	EC-06-520
B22	Mere CP	5	4 July 2018	7 May 2019	MA03	EC-06-520
B23	Mere	4	11 July 2018	17 October 2018	MA03	EC-06-521
B24	High Legh	6	11 July 2018	14 May 2019	MA03	EC-06-521
B25	Chapel Lane, Millington	4	16 April 2019	16 October 2019	MA03	EC-06-536a
B26	High Legh	6	11 July 2018	13 August 2019	MA03	EC-06-522
B27	High Legh	5	8 August 2019	14 May 2019	MA03	EC-06-522
B28	Agden CP	4	12 September 2018	10 July 2019	MA03	EC-06-522
B29	Agden CP	1	18 July 2018	25 July 2018	MA03	EC-06-523a

Table 45: Bat activity transect survey results for Transect BT01b

Ecology survey code	Transect location				Description of habitats covered by transect															
BT01b	Pickmere				Immediately north of M6 near Tatton. Transect begins along edge of Leonard's Wood, moving along edge of Smoker Wood and then following hedgerows through arable fields before re-joining Leonard's Wood where the transect ends.															
Visit number and date	**Weather conditions**				**Total species passes during transect survey**															
	Temp (oC)	**Cloud (0-8)**	**Rain (0-5)**	**Wind (0-12)**	**Pp**	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
May 2018 – Incomplete	N/A – Access refused																			
June 2018 – Incomplete	N/A – Access refused																			
July 2018 – Incomplete	N/A – Access refused																			
August 2018 – Incomplete	N/A – Access refused																			
September 2018 – Incomplete	N/A – Access refused																			
October 2018 – Incomplete	N/A – Access refused																			
Visit 1: Dusk: 23 April 2019	17	7	0	1	45	217	0	2	0	0	0	0	0	0	15	1	0	4	0	0	0
May 2019 – Incomplete	N/A – Access refused																			
June 2019 – Incomplete	N/A – Access refused																			
July 2019 – Incomplete	N/A – Access refused																			

Ecology survey code	Transect location	Description of habitats covered by transect																
August 2019 – Incomplete	N/A – Access refused																	
September 2019 – Incomplete	N/A – Access refused																	
October 2019 – Incomplete	N/A – Access refused																	

Pp – common pipistrelle, P py – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered / Brandt's bat, M.sp – Myotis species, Pa – brown long-eared bat, Bb – barbastelle, Nn – noctule, Nl – Leisler's bat, Es – serotine, Ny/Ep – Nyctalus/Eptesicus bat.

Cloud cover on a scale of 0 – 8 where: 0 = sky completely clear, 4 = sky half cloudy, 8 = sky completely cloudy.

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.

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.

2.3.126 Only one survey was carried out for this location due to refused access. Moderate to high levels of common pipistrelle and high levels of soprano pipistrelle were recorded, with peaks of 45ppn and 217ppn, respectively. Moderate to high levels of *Myotis* species were also recorded, with a peak of 15ppn in April 2019. Low to moderate levels of noctule were recorded, with a peak of four ppn in April 2019. A peak of one ppn of brown long-eared bat was also recorded in April 2019.

Table 46: Bat activity transect survey results for Transect BT02

Ecology survey code	Transect location				Description of habitats covered by transect															
BT02	Near Tatton.				Immediately north of M6 near Tatton. Follows Winterbottom Lane west of Mere, moving into hedgerows circling grazing pasture fields before continuing along Winterbottom Lane. Transect follows hedgerows until cutting through Belt Wood and back out towards Hoo Green Lane where it ends at the A50.															
Visit number and date	**Weather conditions**				**Total species passes during transect survey**															
	Temp (oC)	**Cloud (0-8)**	**Rain (0-5)**	**Wind (0-12)**	**Pp**	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
Visit 1: Dusk: 23 May 2018	17	0	0	1	19	58	0	1	0	1	0	0	0	0	4	2	0	0	0	0	0
June 2018 – Incomplete	N/A – No survey possible																				
Visit 2: Dusk: 11 July 2018	19	1	0	0	15	32	0	1	0	2	1	0	0	11	7	8	0	22	8	1	0
Visit 3: Dusk: 7 August 2018	19	7	0	1	34	61	0	0	0	0	0	0	0	6	6	7	0	2	0	0	0
Visit 4: Dawn: 8 August 2018	12	2	0	0	10	26	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0
Visit 5: Dusk: 4 September 2018	16	4	0	2	21	32	0	2	0	0	0	0	0	14	13	0	0	3	1	0	0
October 2018 – Incomplete	N/A – Access refused																				
Visit 6: Dusk: 23 April 2019	16	7	0	1	35	26	0	1	0	0	0	0	0	0	1	2	0	0	0	0	0
May 2019	N/A – Survey completed 2018																				

Ecology survey code	Transect location				Description of habitats covered by transect															
Visit 7: Dusk: 25 June 2019	15	7	0	1	20	71	0	0	0	0	0	0	0	0	57	0	0	1	0	1	0
July 2019	N/A – Survey completed 2018																				
August 2019	N/A – Survey completed 2018																				
September 2019	N/A – Survey completed 2018																				
Visit 8: Dusk: 2 October 2019	11	0	0	0	4	51	0	4	0	0	0	0	0	0	7	1	0	2	0	0	0

2.3.127 Low to moderate levels of common pipistrelle and noctule were recorded, with a peak of 35ppn in April 2019 and 22ppn in July 2018, respectively. Moderate levels of soprano pipistrelle were recorded, with a peak of 71ppn in June 2019. Moderate to high levels of *Myotis* species were also recorded, with a peak of 57ppn in June 2019. A peak of eight ppn of Leisler's bat and brown long-eared bat were also recorded in July 2018. Moderate to high levels of whiskered / Brandt's bat activity were recorded, with a notable peak count of 14ppn in September 2018.

Table 47: Bat activity transect survey results for Transect BT04

Ecology survey code	Transect location				Description of habitats covered by transect															
BT04	West of Knutsford.				Surrounding Pickmere Lane. The transect begins on a track off of Green Lane east of Pickmere, following the track and passing scattered trees until reaching Flittogate Lane. The transect passes Flittogate Farm through arable fields where it joins and follows treelines ending at the corner of Green Lane.															
Visit number and date	**Weather conditions**				**Total species passes during transect survey**															
	Temp (oC)	**Cloud (0-8)**	**Rain (0-5)**	**Wind (0-12)**	**Pp**	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
August 2018 – Incomplete	N/A – Access refused																			
Visit 1: Dusk: 5 September 2018	14	1	0	2	5	37	0	20	0	1	0	0	0	1	2	2	0	1	0	0	0
October 2018 – Incomplete																					
April 2019 – Incomplete	N/A – Access refused																			
Visit 2: Dusk: 22 May 2019	12	3	0	1	6	34	0	0	0	0	0	0	0	0	6	5	0	0	0	0	0
June 2019 – Incomplete	N/A – Access refused																			
July 2019 – Incomplete	N/A – Access refused																			
Visit 3: Dusk: 7 August 2019	17	1	0	0	14	99	0	0	0	0	0	0	0	0	15	1	0	4	0	0	0
Visit 4: Dawn: 8 August 2019	13	1	0	1	11	36	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0
September 2019	N/A – Survey completed 2018																			

Ecology survey code	Transect location	Description of habitats covered by transect
October 2019 – Incomplete	N/A – Access refused	

2.3.128 Low to moderate levels of soprano pipistrelle were recorded, with a peak count of 99ppn in August 2019. Low to moderate numbers of common pipistrelle, *Myotis* species and noctule were also recorded, with peak counts of 14ppn, 15ppn and four ppn, respectively. Five passes of brown long-eared bat were recorded in May 2019.

Table 48: Bat activity transect survey results for Transect BT05

Ecology survey code	Transect location				Description of habitats covered by transect															
BT05	South-east of Warrington.				Near the HS2 railway fork to Wigan/Manchester lines. Transect follows the arable field boundary hedgerows in Agden, north of the M56, before following scattered scrub along the M56 and looping around Agden Hall Farm where it ends. The southern section follows a strip of woodland south from Boothbank Lane eventually following Millington clough where it ends at Chapel Lane.															
Visit number and date	**Weather conditions**				**Total species passes during transect survey**															
	Temp (oC)	**Cloud (0-8)**	**Rain (0-5)**	**Wind (0-12)**	**Pp**	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
Visit 1: Dusk: 8 August 2018	12	3	0	1	15	23	0	10	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dawn: 9 August 2018	11	7	0	1	3	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
Visit 3: Dawn: 6 September 2018	14	6	0	2	5	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dusk: 16 October 2018	13	5	0	3	35	45	0	2	0	1	0	0	0	1	2	0	0	20	13	0
April 2019 – Incomplete	N/A – No survey possible																			
Visit 5: Dusk: 21 May 2019	10	2	0	0	25	44	0	0	0	0	0	0	0	0	20	1	0	2	0	0
Visit 6: Dusk: 26 June 2019	15	4	0	2	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ecology survey code	Transect location				Description of habitats covered by transect																
Visit 7: Dusk: 8 July 2019	17	8	0	0	29	67	0	1	0	0	2	0	0	2	1	1	0	4	0	0	0

2.3.129 Low to moderate levels of activity were recorded for both common and soprano pipistrelle, with a peak of 35ppn in October 2018 and 67ppn in July 2019, respectively. Low levels of *Myotis* species were recorded across the area, with a peak of 20ppn recorded in May 2019. Noctule were seen to occur at low to moderate levels with a peak of 20ppn in October 2018. Low to moderate levels of Leislers' bat were recorded, with a notable peak of 13ppn in October 2018. Low levels of brown long-eared bat activity were also observed, with peaks of one ppn in May and July 2019.

Table 49: Summary of static detector monitoring results for B12

Ecology survey code	Static location	OS grid reference	Description of habitats															
B12	Milley Lane, Pickmere	SJ70527680	Within trees on the edge of a pond, south of Providence Farm, West Knutsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
July 2018 – Incomplete	N/A – Access refused																	
August 2018 – Incomplete	N/A – Access refused																	
September 2018 – Incomplete	N/A – Access refused																	
October 2018 – Incomplete	N/A – Access refused																	
9 April 2019 – 16 April 2019	7		0	3	0	0	0	0	0	0	0	0	4	1	0	2	1	0	0
1 May 2019 – 8 May 2019	7		18	36	0	0	0	0	0	0	0	0	26	0	0	6	0	0	0
June 2019 – Incomplete	N/A – Access refused																	
July 2019 – Incomplete	N/A – Access refused																	
August 2019 – Incomplete	N/A – Access refused																	
September 2019 – Incomplete	N/A – Access refused																	

Ecology survey code	Static location	OS grid reference	Description of habitats																
26 October 2020 – 2 November 2020		7	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2.3.130 Surveys were only completed for April and May 2019 as access was refused for all other months. All species recorded had peak counts in May 2019 except for brown long-eared bat and Leisler's bat, which both had a single peak of one ppn in April. Low to moderate levels of common and soprano pipistrelle and noctule were recorded, with peaks of 18ppn, 36ppn and six ppn, respectively. Moderate to high levels of activity were recorded for *Myotis* species with a peak count of 26ppn.

Table 50: Summary of static detector monitoring results for B13

Ecology survey code	Static location	OS grid reference	Description of habitats															
B13	Pickmere	SJ70657767	Hedgerow adjacent to track, east of Roses Farm, west of Knutsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
4 July 2018 – 11 July 2018	7		60	294	1	2	0	0	0	0	0	0	22	0	0	125	0	0	0
August 2018 – Incomplete	N/A – Access refused																		
5 September 2018 – 12 September 2018	7		647	1,090	0	2	0	0	0	0	0	0	239	1	0	13	0	0	0
3 October 2018 – 10 October 2018	7		30	106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
April 2019 – Incomplete	N/A – Access refused																		
May 2019 – Incomplete	N/A – Access refused																		
June 2019 – Incomplete	N/A – Access refused																		
7 August 2019 – 13 August 2019	7		207	153	0	6	0	0	0	0	0	0	32	24	0	12	0	1	0

2.3.131 High levels of common pipistrelle and *Myotis* species and high levels of soprano pipistrelle activity were recorded, with notably higher levels of activity in September 2018 with peak counts of 647ppn, 239ppn and 1,090ppn, respectively. A peak count of one ppn was recorded for Nathusius' pipistrelle in July 2018. Moderate to high levels of noctule was recorded, with a notable peak count of 125ppn in July 2018. A notable peak of 24ppn of brown long-eared bat and one ppn of a serotine was recorded in August 2019.

Table 51: Summary of static detector monitoring results for B14

Ecology survey code	Static location	OS grid reference	Description of habitats															
B14	Pickmere	SJ70747845	Hedgerow adjacent to Pickmere Lane, west of Knutsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
4 July 2018 – 11 July 2018	7		111	221	0	1	0	0	0	0	0	0	324	0	0	48	0	0	0
1 August 2018 – 7 August 2018	7		139	321	0	0	0	0	0	0	0	0	238	0	0	20	0	0	0
5 September 2018 – 12 September 2018	7		253	294	0	5	0	0	0	0	0	0	327	0	0	10	0	0	0
3 October 2018 – 10 October 2018	7		57	82	2	0	0	0	0	0	0	0	6	0	0	3	0	0	0
9 April 2019 – 16 April 2019	7		2	17	0	0	0	0	0	0	0	0	1	2	0	1	0	0	0
1 May 2019 – 8 May 2019	7		92	389	0	2	0	0	0	0	0	0	214	0	0	16	0	0	0
June 2019 – Incomplete	N/A – Access refused																		

2.3.132 Notably high levels of common pipistrelle and high levels of soprano pipistrelle activity were recorded, with peaks of 253ppn in September 2018 and 389ppn in May 2019, respectively. A peak count of two ppn of Nathusius' pipistrelle was recorded in October 2018. Notably high numbers of *Myotis* species were recorded, with a peak of 327ppn in September 2018. Noctule was the only *Nyctalus* species recorded, in notably high numbers with a peak count of 48ppn in July 2018. A peak of two ppn of brown long-eared bat was recorded in April 2019.

Table 52: Summary of static detector monitoring results for B15

Ecology survey code	Static location	OS grid reference	Description of habitats															
B15	Arley Brook, Pickmere	SJ70727862	Treeline edge along southern bank of Arley Brook, west of Pickmere Lane, west of Knutsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
26 October 2020 – 2 November 2020	7		15	515	0	2	0	0	0	0	0	0	84	1	0	2	0	0	1

2.3.133 Only one survey was carried out for this location due to refused access. Notably high levels of soprano pipistrelle and *Myotis* species activity were recorded, with peaks of 515ppn and 84ppn in October 2020, respectively.

Table 53: Summary of static detector monitoring results for B16

Ecology survey code	Static location	OS grid reference	Description of habitats															
B16	Heyrose Golf Club	SJ70767915	Hedgerow on edge of Heyrose Golf Club, west of Knutsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
11 July 2018 – 18 July 2018	7		21	40	0	1	0	0	0	0	0	0	23	0	0	66	0	0	0
1 August 2018 – 7 August 2018	7		30	82	0	0	0	0	0	0	0	0	33	1	0	83	0	0	0
5 September 2018 – 12 September 2018	7		2	32	0	1	0	0	0	0	0	0	134	0	0	4	0	0	0
3 October 2018 – 10 October 2018	7		12	164	0	0	0	0	0	0	0	0	114	0	0	3	0	0	0
April 2019 – Incomplete	N/A – Access refused																		
May 2019 – Incomplete	N/A – Access refused																		
June 2019 – Incomplete	N/A – Access refused																		

2.3.134 Low to moderate levels of common pipistrelle and moderate levels of soprano pipistrelle activity were recorded, with peaks of 30ppn in August 2018 and 164ppn in October 2016, respectively. Notably high numbers of noctule were recorded, with a peak count of 83ppn in August 2018 and one ppn of a brown long-eared bat was recorded in the same month. Notably high levels of *Myotis* species were recorded, with a peak count of 134ppn in September.

Table 54: Summary of static detector monitoring results for B17

Ecology survey code	Static location	OS grid reference	Description of habitats															
B17	Heyrose Farm	SJ70867972	Hedgerow on edge of arable field, north of Heyrose farm, west of Knutsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**M m**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
4 July 2018 – 10 July 2018	7		14	693	0	4	0	0	0	0	0	0	26	0	0	38	0	0	0
1 August 2018 – 7 August 2018	7		40	175	0	2	0	0	0	0	0	0	47	0	0	27	1	0	0
September 2018 – Incomplete	N/A – Access refused																		
October 2018 – Incomplete	N/A – Access refused																		
April 2019 – Incomplete	N/A – Access refused																		
May 2019 – Incomplete	N/A – Access refused																		
June 2019 – Incomplete	N/A – Access refused																		
July 2019	N/A – Survey completed 2018																		
August 2019	N/A – Survey completed 2018																		
September 2019 – Incomplete	N/A – Access refused																		

Ecology survey code	Static location	OS grid reference	Description of habitats
October 2019 – Incomplete	N/A – Access refused		

2.3.135 It was only possible to carry out surveys in July and August 2018, as access was refused in all other months in which surveys were scheduled. Notably high levels of soprano pipistrelle were recorded, with a peak count of 693ppn in July 2018 and low to moderate levels of common pipistrelle with a peak of 40ppn recorded in August 2018. Notably high levels of noctule activity and moderate to high levels of *Myotis* species activity were recorded, with peaks of 38ppn and 47ppn, respectively. A one ppn peak of Leisler's bat was recorded in August 2018 and no occurrences of brown long-eared bats were recorded.

Table 55: Summary of static detector monitoring results for B18

Ecology survey code	Static location	OS grid reference	Description of habitats															
B18	Hollowood Farm	SJ70938019	Adjacent to road immediately south of Hollowood Farm, west of Knutsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
July 2018 – Incomplete	N/A – Access refused																	
1 August 2018 – 7 August 2018	7		84	163	0	2	0	0	0	0	0	0	50	2	0	33	0	0	0
5 September 2018 – 12 September 2018	7		529	540	1	63	0	0	0	0	0	0	1,604	12	0	42	1	0	0
October 2018 – Incomplete	N/A – Access refused																	
April 2019 – Incomplete	N/A – Access refused																	
May 2019 – Incomplete	N/A – Access refused																	
June 2019 – Incomplete	N/A – Access refused																	
3 July 2019 – 10 July 2019	7		289	294	0	0	0	0	0	0	0	0	18	10	0	7	0	0	0
August 2019	N/A – Survey completed 2018																	

Ecology survey code	Static location	OS grid reference	Description of habitats															
September 2019	N/A – Survey completed 2018																	

2.3.136 Access was refused for three of the months that surveys were scheduled for this survey location. This limits the data available during the early part of the season, and therefore also interpretation of bat activity during the maternity period. Notably high levels of common and soprano pipistrelle were recorded, with peaks of 529ppn and 540ppn, respectively, in September 2018. Additionally, one ppn of a Nathusius' pipistrelle and a peak of 63ppn unidentified *Pipistrellus* species were recorded in September 2018. Notably high levels of *Myotis* species were recorded, with notably higher levels of activity in September 2018 with a peak of 1,604ppn. Notably high levels of noctule were recorded, with a peak of 42ppn in September 2018. Additionally, peak counts of brown long-eared bat and Leisler's bats occurred in September 2018 with notable peaks of 12ppn and one ppn, respectively.

Table 56: Summary of static detector monitoring results for B19

Ecology survey code	Static location	OS grid reference	Description of habitats															
B19	M6, Tabley	SJ71018054	Hedgerow immediately adjacent to M6, north of Hollowood Farm, west of Knutsford.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
July 2018 – Incomplete	N/A – Access refused																	
1 August 2018 – 7 August 2018	7		21	29	0	2	0	0	0	0	0	0	25	5	0	8	2	2	0
5 September 2018 – 12 September 2018	7		0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
October 2018 – Incomplete	N/A – Access refused																	
April 2019 – Incomplete	N/A – Access refused																	
May 2019 – Incomplete	N/A – Access refused																	
June 2019 – Incomplete	N/A – No survey possible																	
3 July 2019 – 10 July 2019	7		15	8	0	0	0	0	0	0	0	0	45	1	0	3	0	1	0
August 2019	N/A – Survey completed 2018																	
September 2019	N/A – Survey completed 2018																	

Ecology survey code	Static location	OS grid reference	Description of habitats																
9 October 2019 – 16 October 2019		7	1	2	0	0	0	0	0	0	0	0	0	6	0	0	2	1	0	0

2.3.137 Access was refused for four of the months that surveys were scheduled for this survey location and surveys were cancelled in June 2019. This limits the data available during the season, and therefore also interpretation of bat activity during the maternity period. Low to moderate levels of common pipistrelle and soprano pipistrelle were recorded, with peaks of 21ppn and 29ppn, respectively, in August 2018. Moderate to high levels of *Myotis* species were recorded, with a peak count of 45ppn in July 2019. Moderate to high levels of Leisler's bat and serotine and moderate to high levels of noctule activity were all recorded in August 2018 with a peak count of eight ppn, two ppn and two ppn, respectively. High levels of brown long-eared bats were recorded in August 2018 with a peak count of five ppn.

Table 57: Summary of static detector monitoring results for B20

Ecology survey code	Static location	OS grid reference	Description of habitats															
B20	Mere CP	SJ71128115	Hedgerow in corner of arable field, east of Winterbottom Farm, south of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
4 July 2018 – 11 July 2018	7		21	132	1	0	0	0	0	0	0	0	15	0	0	13	2	0	0
1 August 2018 – 8 August 2018	7		142	224	0	1	0	0	0	0	0	0	47	0	0	12	0	0	0
5 September 2018 – 12 September 2018	7		320	184	0	0	0	0	0	0	0	0	5	0	0	12	0	0	0
3 October 2018 – 10 October 2018	7		668	351	0	2	0	0	0	0	0	0	217	1	0	2	1	0	0
9 April 2019 – 16 April 2019	7		47	32	0	0	0	0	0	0	0	0	5	3	0	1	0	1	0
1 May 2019 – 8 May 2019	7		96	60	0	0	0	0	0	0	0	0	11	1	0	4	0	0	0
June 2019 – Incomplete	N/A – Access refused																		

2.3.138 Notably high levels of common pipistrelle and high levels of soprano pipistrelle activity were recorded, with peak counts of 668ppn and 351ppn, respectively, recorded in October 2018. One ppn of a Nathusius' pipistrelle was recorded in July 2018. Notably high levels of activity of *Myotis* species were recorded, with a notably high level of activity in October 2018, with a peak count of 217ppn. Moderate to high levels of noctule activity were recorded, with a peak count of 13ppn in July 2018. A peak count of three ppn of brown long-eared bat, two ppn of Leisler's bat and one ppn of a serotine was recorded.

Table 58: Summary of static detector monitoring results for B21

Ecology survey code	Static location	OS grid reference	Description of habitats															
B21	Mere CP	SJ71128115	Hedgerow in corner of arable field, south of Daisybank Farm, south of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
4 July 2018 – 11 July 2018	7		660	146	0	0	0	0	0	0	0	0	152	0	0	16	1	0	0
1 August 2018 – 7 August 2018	7		985	112	0	9	0	0	0	0	0	0	135	2	0	41	0	0	0
5 September 2018 – 12 September 2018	7		246	284	0	0	0	0	0	0	0	0	6	0	0	21	0	0	0
3 October 2018 – 10 October 2018	7		506	453	1	2	0	0	0	0	0	0	440	7	0	17	0	0	0
9 April 2019 – 16 April 2019	7		47	32	0	0	0	0	0	0	0	0	5	3	0	1	0	1	0
1 May 2019 – 7 May 2019	7		135	79	0	1	0	0	0	0	0	0	83	16	0	2	0	0	0
June 2019 – Incomplete	N/A – Access refused																		

2.3.139 Notably high levels of common pipistrelle and soprano pipistrelle activity were recorded, with peak counts of 985ppn in August 2018 and a notable peak of 453ppn in October 2018, respectively. One ppn of a Nathusius' pipistrelle was also recorded in October 2018. Notably high levels of *Myotis* species activity were recorded, with a notably high level of activity in October 2018, with a peak count of 440ppn. Notably high levels of brown long-eared bats with a peak count of 16ppn indicating high levels of activity in July 2018. Notably high levels of noctule activity were recorded, with a peak count of 41ppn. One ppn of a Leisler and a serotine were recorded in July 2018 and April 2019, respectively.

Table 59: Summary of static detector monitoring results for B22

Ecology survey code	Static location	OS grid reference	Description of habitats															
B22	Mere CP	SJ71368210	Hedgerow east of Goodiersgreen Farm, south of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
4 July 2018 – 10 July 2018	7		20	961	0	0	0	0	0	0	0	0	18	0	0	14	0	0	0
1 August 2018 – 7 August 2018	7		78	220	0	0	0	0	0	0	0	0	51	1	0	25	0	0	0
5 September 2018 – 11 September 2018	7		13	29	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0
3 October 2018 – 9 October 2018	7		12	41	0	0	0	0	0	0	0	0	8	1	0	4	0	0	0
April 2019 – Incomplete	Data corrupted																		
1 May 2019 – 7 May 2019	7		33	43	0	1	0	0	0	0	0	0	8	0	0	4	0	0	0
June 2019 – Incomplete	N/A – Access refused																		

2.3.140 Low to moderate levels of common pipistrelle activity were recorded, with a peak of 78ppn in August 2018. Predominantly low to moderate levels of soprano pipistrelle activity were recorded except in August 2018 and the peak count in July 2018, where a notable peak of 961ppn was recorded. Overall, moderate to high levels of *Myotis* species activity was recorded, with a peak count of 51ppn and high levels of noctule activity were recorded in August 2018 with a notable peak of 25ppn. Additionally, a peak count of one ppn of brown long-eared bat was recorded in August and October 2018.

Table 60: Summary of static detector monitoring results for B23

Ecology survey code	Static location	OS grid reference	Description of habitats															
B23	Mere	SJ71538293	Hedgerow in corner of arable field, east of Yew Tree Farm, south of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
11 July 2018 – 18 July 2018	7		78	96	0	1	0	0	0	0	0	0	73	4	0	26	0	0	0
8 August 2018 – 15 August 2018	7		68	425	0	0	0	0	0	0	0	0	76	0	0	23	0	0	0
12 September 2018 – 19 September 2018	7		662	1,077	0	0	0	0	0	0	0	0	2	0	0	15	0	0	0
10 October 2018 – 17 October 2018	7		95	58	1	2	0	0	0	0	0	0	12	0	0	2	0	0	0
April 2019 – Incomplete	N/A – Access refused																		
May 2019 – Incomplete	N/A – Access refused																		
June 2019 – Incomplete	N/A – Access refused																		

2.3.141 There was no access granted for three months of surveys. Notably high levels of common pipistrelle and soprano pipistrelle activity were recorded, with notably higher levels of activity in September 2018 of 662ppn and 1,077ppn, respectively. One ppn of a Nathusius' pipistrelle was recorded in October 2018. Notably high levels of *Myotis* species activity were recorded in July and August 2018 with peaks of 73ppn and 76ppn, respectively. Notably high levels of noctule activity were recorded, with a peak of 26ppn. Only four ppn of brown long-eared bat were recorded, in July 2018.

Table 61: Summary of static detector monitoring results for B24

Ecology survey code	Static location	OS grid reference	Description of habitats															
B24	High Legh	SJ71708372	Hedgerow adjacent to drain north of Wrenshot House, south of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
11 July 2018 – 18 July 2018	7		671	71	0	1	0	0	0	0	0	0	40	0	0	32	0	0	0
8 August 2018 – 15 August 2018	7		164	149	0	1	0	0	0	0	0	0	34	0	0	31	1	0	0
12 September 2018 – 18 September 2018	7		543	172	4	1	0	0	0	0	0	0	47	1	0	46	0	0	0
10 October 2018 – 17 October 2018	7		114	73	1	1	0	0	0	0	0	0	151	0	0	11	0	0	0
24 April 2019 – 30 April 2019	7		348	423	1	2	0	0	0	0	0	0	18	2	0	1	0	0	0
8 May 2019 – 14 May 2019	7		229	93	0	2	0	0	0	0	0	0	240	2	0	6	0	0	0
June 2019 – Incomplete	Data corrupted																		

2.3.142 Notably high levels of common pipistrelle and moderate to high levels of soprano pipistrelle activity were recorded, with peaks of 671ppn in July 2018 and 423ppn in September 2018, respectively. Four ppn of a Nathusius' pipistrelle was also recorded in September 2018. Both *Myotis* species and noctule were recorded in notably high numbers on each survey with peak counts of 240ppn and 46ppn, respectively. A peak of two ppn of brown long-eared bat were recorded in April and May 2019 and a peak of one ppn of a Leisler's bat was recorded in August 2018.

Table 62: Summary of static detector monitoring results for B25

Ecology survey code	Static location	OS grid reference	Description of habitats															
B25	Chapel Lane, Millington	SJ72198420	Hedgerow south of Moss House Farm, east of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
July 2018 – Incomplete	N/A – Access refused																	
August 2018 – Incomplete	N/A – Access refused																	
September 2018 – Incomplete	N/A – Access refused																	
October 2018 – Incomplete	N/A – Access refused																	
16 April 2019 – 24 April 2019	8		376	654	0	1	0	0	0	0	0	0	391	1	0	1	1	0	0
8 May 2019 – 15 May 2019	7		96	92	0	0	0	0	0	0	0	0	24	3	0	3	0	0	0
June 2019 – Incomplete	N/A – Access refused																	
July 2019 – Incomplete	N/A – Access refused																	
7 August 2019 – 14 August 2019	7		85	92	0	0	0	0	0	0	0	0	32	0	0	6	1	0	0

Ecology survey code	Static location	OS grid reference	Description of habitats																
September 2019 – Incomplete	N/A – Access refused																		
9 October 2019 – 16 October 2019		7	1,019	28	0	0	0	0	0	0	0	0	13	1	0	1	0	0	0

2.3.143 Moderate to high levels of common pipistrelle and soprano pipistrelle activity were recorded, with notable peaks of 1,019ppn and 654ppn, respectively in October 2019 and April 2019. Moderate to high levels of *Myotis* species activity were recorded, with notably higher levels of activity in April 2019 with a notable peak count of 391ppn. Overall, low to moderate levels of noctule activity were recorded, with a peak count of six ppn, respectively. Three ppn of brown long-eared bat were recorded in May 2019 and one ppn of a Leisler's bat was recorded in April and August 2018.

Table 63: Summary of static detector monitoring results for B26

Ecology survey code	Static location	OS grid reference	Description of habitats															
B26	High Legh	SJ71758432	Hedgerow immediately adjacent to Peacock Lane, east of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
11 July 2018 – 18 July 2018	7		241	425	0	2	0	0	0	0	0	0	248	1	0	41	1	0	0
August 2018 – Incomplete	Data corrupted																		
12 September 2018 – 19 September 2018	7		2,077	966	5	3	0	0	0	0	0	0	443	7	0	25	1	0	0
10 October 2018 – 17 October 2018	7		381	161	1	39	0	0	0	0	0	0	67	2	0	3	0	0	0
16 April 2019 – 24 April 2019	8		832	130	1	34	0	0	0	0	0	0	100	4	0	2	1	0	0
8 May 2019 – 15 May 2019	7		167	289	0	4	0	0	0	0	0	0	38	0	0	3	2	0	0
12 June 2019 – 19 June 2019	Data corrupted																		
July 2019	N/A – Survey completed 2018																		
7 August 2019 – 13 August 2019	7		883	560	39	4	0	0	0	0	0	0	716	6	0	6	1	0	0

2.3.144 Notably high levels of common pipistrelle, soprano pipistrelle and *Myotis* species activity were recorded, with a notably higher level of peak count of 2,077ppn and 966ppn in September 2018 and 716pp in August 2019, respectively. Moderate to high levels of Nathusius' pipistrelle activity was recorded overall, with a notably higher activity level in October 2018 with a peak count of 39ppn. High levels of brown long-eared bat and noctule were recorded, with peak counts of seven ppn in September 2018 and notable peaks of 41ppn in July 2018. A peak count of two ppn of Leisler's bat was recorded in May 2019.

Table 64: Summary of static detector monitoring results for B27

Ecology survey code	Static location	OS grid reference	Description of habitats															
B27	High Legh	SJ71738496	Hedgerow immediately adjacent to Agden Lane, south of M56, east of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
July 2018 – Incomplete	N/A – Access refused																	
8 August 2018 – 15 August 2018	7		945	433	0	7	0	0	0	0	0	0	186	2	0	5	0	0	0
12 September 2018 – 19 September 2018	7		1,183	279	7	20	0	0	0	0	0	0	1422	1	0	59	1	0	0
10 October 2018 – 17 October 2018	7		381	161	1	39	0	0	0	0	0	0	67	2	0	3	0	0	0
16 April 2019 – 24 April 2019	8		384	115	1	18	0	0	0	0	0	0	9	0	0	1	0	0	0
8 May 2019 – 14 May 2019	7		71	81	0	1	0	0	0	0	0	0	61	0	0	3	1	0	0
June 2019 – Incomplete	Data corrupted																	
July 2019 – Incomplete	N/A – Access refused																	

2.3.145 Notably high levels of common pipistrelle activity were recorded, with a peak of 1,183ppn in September 2018 and moderate to high levels of soprano pipistrelle activity with a peak of 433ppn in August 2018. A peak of seven ppn of Nathusius' pipistrelle was also recorded in September 2018. Notably high levels of *Myotis* species activity were recorded, with a notable peak of 1422ppn in September 2018. Low to moderate levels of noctule activity were recorded, with a notable peak of 59ppn in September 2018. A peak of two ppn of brown long-eared bat was recorded in August and October 2019 and a peak of one ppn of a Leisler's bat was also recorded in October 2019.

Table 65: Summary of static detector monitoring results for B28

Ecology survey code	Static location	OS grid reference	Description of habitats															
B28	Agden CP	SJ71718532	Edge of arable field, immediately adjacent to the M56, east of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
July 2018 – Incomplete	N/A – Access refused																	
August 2018 – Incomplete	N/A – Access refused																	
12 September 2018 – 19 September 2018	7		673	105	7	2	0	0	0	0	0	1	10	7	0	260	4	0	0
10 October 2018 – 17 October 2018	7		10	5	0	0	0	0	0	0	0	0	1	0	0	3	0	0	0
April 2019 – Incomplete	N/A – Access refused																	
8 May 2019 – 15 May 2019	7		28	8	1	0	0	0	0	0	0	0	5	0	0	4	1	0	0
June 2019 – Incomplete	N/A – Access refused																	
3 July 2019 – 10 July 2019	7		210	45	0	1	0	0	0	0	0	0	50	1	0	6	0	1	0
August 2019 – Incomplete	Data corrupted																	

2.3.146 Overall, moderate to high levels of common pipistrelle activity and low to moderate levels of soprano pipistrelle activity were recorded, with a notable peak of 673ppn and a peak of 105ppn, respectively in September 2018. Additionally, in September 2018 a peak of seven ppn of Nathusius' pipistrelle and brown long-eared bats was recorded. Low to moderate numbers of *Myotis* species and noctule were recorded, with notably higher peak counts of 50ppn and a notable peak of 260ppn, respectively. A peak count of four ppn of Leisler's bat was also recorded in September 2018.

Table 66: Summary of static detector monitoring results for B29

Ecology survey code	Static location	OS grid reference	Description of habitats															
B29	Agden CP	SJ71508635	Grassland south of Hollybank House, east of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/Es**
18 July 2018 – 25 July 2018	7		111	100	0	0	0	0	0	0	0	0	24	0	0	69	14	0	0
August 2018 – Incomplete	N/A – Access refused																		
September 2018 – Incomplete	N/A – Access refused																		
October 2018 – Incomplete	N/A – Access refused																		
April 2019 –Incomplete	N/A – No survey possible																		
May 2019 – Incomplete	N/A – No survey possible																		
June 2019 – Incomplete	N/A – No survey possible																		
August 2019 – Incomplete	N/A – No survey possible																		
September 2019 – Incomplete	N/A – No survey possible																		
October 2019 – Incomplete	N/A – No survey possible																		

2.3.147 One survey was undertaken and recorded low quality habitat for bats in this location, access was also refused after the initial survey. Further surveys were cancelled due lack of access granted. July 2018 was the only month that static surveys were completed for this area. Moderate to high levels of common and soprano pipistrelle activity were recorded, with peak counts of 11ppn and 100ppn, respectively. Moderate to high levels of *Myotis* species activity were recorded, with a peak of 24ppn. Notably high levels of noctule activity and Leisler's bat activity were recorded, with a peak count of 69pn and 14ppn, respectively.

Discussion

Bat assemblage

2.3.148 Data from field surveys and desk study records are summarised below and provide the basis for identifying bat assemblages associated with habitats in and adjoining the land required for construction of the Proposed Scheme in Pickmere to Agden and Hulseheath area (MA03). These assemblages are described in the Environmental Statement Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03), Section 7 of the ES and are present in the following locations:

- bat assemblage between Smoker Brook and the M6;
- bat assemblage bounded by the M6, the M56 and the A556 within the Pickmere to Agden and Hulseheath area and the Hulseheath to Manchester Airport area (MA06); and
- bat assemblage between the M56, the River Bollin and the Bridgewater Canal within the Pickmere to Agden and Husleheath area and the Broomedge to Glazebrook area (MA04).

2.3.149 No additional bat species to those recorded during field survey were identified from desk study records.

2.3.150 Field surveys carried out in 2018, 2019 and 2020 confirmed the presence of at least 10 bat species along the route, including rarer species: Leisler's bat, serotine, whiskered/Brandt's bat, Natterer's bat, Daubenton's bat and Nathusius' pipistrelle.

2.3.151 Common and widespread species including common pipistrelle and soprano pipistrelle were the most recorded, with moderate to high levels of activity on walked transect and static detector surveys.

2.3.152 Common and soprano pipistrelle were the most frequently recorded species during activity surveys in MA03, with notable peak counts of 2,077ppn of common pipistrelle and 1,090ppn of soprano pipistrelle, both recorded in September 2018 on static detectors along Peacock Lane to the north of MA03 and an access track off Pickmere Lane to the south of MA03. A common pipistrelle roost and soprano pipistrelle possible maternity roost were recorded, with respective peaks of 10 and 21 bats recorded to use the roosts.

2.3.153 Brown long-eared bats were recorded, with moderate to high levels of activity on the majority of all static monitoring and walked transect surveys across MA03. A notable peak count of 24ppn was recorded along an access track off Pickmere Lane. High level of activity was recorded on walked transects and static detectors around Belt Wood, which is believed to be attributed to a possible maternity roost of 12 bats, located on Winterbottom Lane, west of the Belt Wood.

2.3.154 Moderate overall levels of noctule were recorded along all walked transects and static monitoring surveys across MA03, suggesting they are widespread in the area. A notable peak of 260ppn was recorded along the north side of the cutting of the M56 in September 2018.

An occasional noctule roost of a maximum of two bats was recorded in a tree within the land required for the construction of the Proposed Scheme.

2.3.155 *Myotis* species were recorded on all walked transects and static monitoring surveys with a notable peak of 1,604ppn located along Hollowood Lane. Two *Myotis* species occasional roosts were identified in two buildings off Hollowood Lane. Eleven *Myotis* species occasional roosts were identified within MA03 in total, including two confirmed whiskered bat occasional roosts that were identified through DNA analysis of droppings.

2.3.156 Leisler's bat and serotine were recorded sporadically across the activity surveys but in moderate to high levels for the species.

2.3.157 Nathusius' pipistrelle was recorded in higher numbers around Lymm. This bat species is associated with water and there could be maternity colonies in the vicinity of some of the water bodies on the Tatton Estate to the east and the Dunham Massey Estate to the north.

2.3.158 The lack of access may have resulted in some roosts going unrecorded. There was limited access to areas between the M6 and B5391, which included a number of structures within suitable habitat. Activity levels may also be under-recorded for walked transects surveys around Leonards' Wood and Smoker Wood and Heyrose Golf course, due to no access across 2018 and 2019 survey seasons.

Roosts

2.3.159 The desk-study records identified two potential maternity roosts of brown long-eared bats, one in Millington and one in High Legh There was also an occasional brown long-eared bat roost in Tabley and an occasional pipistrelle spp. roost in Mere.

2.3.160 Roosts of common pipistrelle, soprano pipistrelle and noctule were identified in trees. Two trees were recorded in Millington, one containing unknown bat species and one with common pipistrelle with a peak of two bats observed roosting. Three soprano pipistrelle roosts and a *Pipistrellus* species roost were recorded in three oak trees with each tree containing one roost, in the land adjacent to Hoo Green Lane, in Mere. An oak tree on land off Wrenshot Lane, in High Legh was aerially inspected and two noctules were found to be roosting within the tree. All the roosts were of common species and classified as occasional roosts consisting of small numbers of bats.

2.3.161 A total of 54 building roosts were identified in 34 buildings and structures in the area. Five possible maternity roosts were identified across MA03, all within 100m of the land required for the construction of the Proposed Scheme. This includes a common pipistrelle roost in a residential building of Hollowood Lane, in Tabley with a peak of 10 bats; and a soprano pipistrelle roost with a peak of 21 bats and a brown long-eared bat roost with a peak of 12 bats, both in the same barn building off Winterbottom Lane, in High Legh.

2.3.162 The majority of the roosts recorded were found to have common pipistrelle and soprano pipistrelle present and were occasional roosts. This included 14 roosts of common pipistrelle

and 18 roosts of soprano pipistrelle, with peaks of three common and six soprano pipistrelle bats within 100m of the land required for the construction of the Proposed Scheme.

2.3.163 Eleven *Myotis* species occasional roosts were recorded, with one found in a residential building off Lymm Road, in Lymm having a peak of three bats. Two of the 11 roosts were identified as whiskered bats through the DNA analysis of droppings found within residential buildings. All these roosts are located within 100m of the land required for the construction of the Proposed Scheme.

2.3.164 Eight brown long-eared bat occasional roosts were recorded, with one containing three bats found in a residential building off Lymm Road, in Lymm.

Foraging habitat

2.3.165 The landscape in this area comprises largely agricultural fields of improved grasslands and arable land with associated tree lines and hedgerows, with some occasional broadleaved woodlands and tree lined roads. There are a number of minor watercourses and small water bodies which would provide further foraging habitats.

2.3.166 The highest levels of activity during the walked transect surveys were recorded during walked transects around Belt Wood near Tatton, with similar levels recorded on the static detectors within the area. Moderate to high levels of common pipistrelle, soprano pipistrelle and noctule; with high levels of *Myotis* species and brown long-eared bats and moderate levels of Leisler's bat and serotine recorded. Two possible maternity roosts and five occasional were identified off Winterbottom Lane and Hoo Green Lane, to the west of Belt Wood. Therefore, it is assumed that Belt Wood provides foraging habitat for these roosts within MA03.

2.3.167 Low levels of infrequent foraging activity were recorded on the three other walked transects; however, this may be due to under-recording of these areas due to limited access across MA03 during the survey seasons. One survey was completed in April 2019 around Leonard's Wood and Smoker Wood, when moderate levels of foraging activity were recorded. Static monitoring surveys in this area display similar levels in activity across the season, with moderate to high levels of common pipistrelle, soprano pipistrelle and brown long-eared bats recorded, along with high levels of *Myotis* species recorded. Therefore, it should be assumed that Leonards' Wood and Smoker Wood are key foraging habitats for bats to the south of MA03. High numbers of activity were noted in July, September and October 2018.

2.3.168 The areas to the west of Belt Wood to the south of Lymm was a mosaic of habitats and appears to be an area of good foraging habitat for bats. The statics within this area recorded a wide range of bats in high numbers. This is likely to be due to the rural nature of the area with established hedgerows, field ponds and woodland and a lack of major roads with associated lighting.

Commuting habitat

2.3.169 The hedgerow network and tree lined fields and roads throughout this area are well established, with good connections to some of the larger woodlands such as Belt Wood and Round Wood. Overall, the levels of commuting activity were low to moderate, but some key corridors were made apparent through high numbers and species diversity of bats recorded at a number of static locations across MA03.

2.3.170 High levels of *Myotis* species activity, with a peak of 1,604ppn, were recorded along Hollowood Lane. This is likely due to *Myotis* species roosts recorded at Hollowood Farm. Common and soprano pipistrelles were recorded to have moderate to high levels of activity overall, despite a possible maternity roost of common pipistrelle being present in Hollowood Farm. Therefore, it is considered that for bats roosting within Hollowood Farm, Hollowood Lane is likely to be a key commuting corridor to wider suitable foraging habitats. Activity surveys were limited in this area during the survey season due to access being refused.

2.3.171 High numbers of soprano pipistrelle with a peak of 1,090ppn; brown long-eared bat with a peak of 24ppn; and noctule with a peak of 125ppn, were recorded on a static detector along an access track just off Pickmere Lane. The access track is tree lined on both sides and provides a commuting corridor through an otherwise open landscape to the south of MA03. Commuting behaviours were recorded along the access track throughout the survey season during walked transect surveys. Therefore, it is considered that this is a key commuting corridor for a number of bats, providing connectivity to foraging habitats such as Dogkennel Wood, Leonard's Wood and Smoker Wood.

2.3.172 A very high number of bats were recorded on a static at the intersection of Peacock Lane and Back Lane. This including peaks of 2,077ppn of common pipistrelle, 966ppn of soprano pipistrelle and 716ppn of *Myotis* species. Additionally, a peak of 39ppn of Nathusius' pipistrelle, seven ppn of brown long-eared bat, 41ppn of noctule and two ppn of Leisler's bat were also recorded. Two possible maternity roosts and five occasional roosts were identified at Moss House Farm (within MA06), which is located just off Back Lane and Thowler Lane; therefore, it is considered likely that Peacock Lane is a key commuting corridor for bats to head west away from the roost. This would also classify as an important foraging corridor for a number of species of bats, as it is a sheltered, unlit corridor linking woodland to the east of Moss House Farm and a number of small water bodies that are located north and south of Peacock Lane.

2.3.173 In September 2018, very high numbers of common pipistrelle with a peak of 1,183ppn and *Myotis* species with a peak of 1,422ppn were recorded along Agden Lane, which is located north-west of Thowler Lane. As mentioned above, a number of *Myotis* species and common pipistrelle roosts were recorded off Thowler Lane (within MA06), therefore the high number of bat passes is likely to represent a key commuting corridor for bats roosting within the wider area. This could also present a crossing point of the M56 via the bridge on Agden Lane heading north-westwards into MA04.

2.3.174 It is likely that bats are using the rural hedgerow connections and water courses in the area south of the M56 to commute from the larger water bodies of The Mere and Rostherne Mere to the surrounding habitats. The large water bodies are likely to be important for species such as Daubenton's bat and Nathusius' pipistrelle, which are particularly reliant on water bodies.

Broomedge to Glazebrook (MA04)

2.3.175 Table 67 and Table 68 provide summaries of bat roosts identified in MA04 from field surveys. These tables should be read in conjunction with Background Information and Data, Ecology Map Book, Map Series EC-05. Survey information collected has been allocated an ecology survey code to provide a unique identification for use on mapping.

Overview of bat species status in the vicinity of MA04

2.3.176 There are no statutory designated sites (within 10km) or non-statutory designated sites (within 5km) of MA04 which support bats as features for their designations.

2.3.177 Habitats within MA04 suitable to support roosting, foraging and commuting bats include several areas of broad-leaved woodland, a number of watercourses (including the Manchester Ship Canal and River Bollin) and several smaller streams, water bodies, grassland and hedgerows. The majority of these habitats are located within and adjacent to the land required for the construction of the Proposed Scheme.

2.3.178 Field surveys and desk study records recorded at least 10 species of bats in MA04. All 10 species were identified from field surveys. The desk study identified no further species of bats above those recorded in the field. The total bat assemblage is as follows:

- common pipistrelle;
- soprano pipistrelle;
- *Pipistrellus* species;
- Nathusius' pipistrelle;
- brown long-eared bat;
- noctule;
- Leisler's bat;
- serotine;
- whiskered bat /Brandt's bat;
- Daubenton's bat;
- Natterer's bat; and
- *Myotis* species.

Roosting (trees)

2.3.179 A total of 375 trees were subject to an initial ground-based assessment and subsequent further detailed climbed surveys where appropriate in line with the methods described in the FSMS document.

2.3.180 Of the 375 trees that were initially assessed, the following results were obtained:

- 44 trees identified as having high potential to support roosting bats;
- 197 trees identified as having moderate potential to support roosting bats; and
- the remaining 134 trees were classified as having low or negligible potential to support roosting bats. These trees were subsequently scoped out of further survey.

2.3.181 Of the 241 trees assessed as having moderate or high potential to support roosting bats:

- a total of 41 were subject to further surveys in the form of a tree climbing inspection during which no roosts were identified;
- 12 trees were reassessed as having low to negligible potential to support roosting bats and were scoped out of further surveys; and
- 13 trees were subject to emergence surveys during which one roost was recorded.
- no trees were subject to back-tracking surveys.

2.3.182 Details of confirmed tree roosts in MA04 are provided in Table 67.

Table 67: Confirmed tree roosts within MA04

Ecology survey code	Location	OS grid reference	Tree species	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
GM451813_L5374_BT3_F001_080818	Fox Covert, Lymm	SJ70668842	Willow	Soprano pipistrelle (2)	08 August 2018, emergence survey	Occasional	Two bats emerged from a feature in the centre of the tree.	MA04	Within land that has been identified for the purpose of habitat creation or enhancement as part of the Proposed Scheme.

Roosting (buildings and structures)

2.3.183 A total of 128 buildings in this area were subject to initial inspections, resulting in the following:

- 10 buildings were confirmed to support 13 roosts;
- Two roosts were confirmed via internal inspections and 11 roosts were identified from emergence and re-entry surveys;
- six buildings had high potential to support bats;
- 27 buildings had moderate potential to support bats;
- 29 buildings had low potential to support bats; and
- 66 buildings had negligible potential to support bats.

2.3.184 Of the 72 buildings confirmed as having roosts, or assessed as having high, moderate or low potential to support bats:

- 32 buildings were subject to internal inspections resulting in identification of two bat roosts;
- 18 buildings were subject to a total of 37 emergence surveys identifying a further 11 roosts; and
- species have not been confirmed through DNA analysis at two roosts, but visual inspection of the droppings found during an internal inspection identified a *Pipistrellus* species bat roost.

2.3.185 Details of confirmed roosts in buildings/structures in MA04 are provided in Table 68.

Table 68: Confirmed roosts in buildings and structures within MA04

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
GM852664_L5831_BS3_F003_090818	Saracen's Head, Paddock Lane, Mossbrow	SJ70638932	Public house	Soprano pipistrelle (1)	9 August 2018, re-entry survey	Occasional	A two-storey brick-built building approximately 30 years old with multiple pitch slate and clay tile roofs. Soffit boxes and barge boards are fitted on the west, north and east aspects of the roof and single-storey section to the north-east aspect of the building. Four chimneys were noted on the east side of the building. Currently a public house and restaurant.	MA04	5m north
CH93597_L19911_BS3_F001_130820	Wet Gate Lane, Lymm	SJ71138793	Residential	Soprano pipistrelle (1)	13 August 2020, emergence survey	Occasional	Two-storey brick residential building, with a slate tile roof. Fascia and soffits are located around the building. The building is approximately 100 years old.	MA04	Within
CH569904_L21210_BS3_F002_050918	Hollingreave Farm, Hollins Green	SJ68969180	Residential	Common pipistrelle (1)	5 September 2018, emergence survey	Occasional	A two-storey, L-shaped building with a flat roof extension at the south elevation and a standalone flat roof garage. Approximate age of house is 50 years and garage 15 years.	MA04	Adjacent to land required for the construction of the Proposed Scheme
CH569904_L21210_BS3_F004_050918	Hollingreave Farm, Hollins Green	SJ68949181	Barn	Brown long-eared bat (1)	5 September 2018,	Occasional	A red brick-built farm outbuilding with pitched roof covered with slates.	MA04	Within

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
					emergence survey		Approximate age of house is 50 years.		
GM809101-MAN119953_L5966_BS3_F003_130819	Moss Brow Farm, Paddock Lane, Warburton	SJ70888924	Barn	Soprano pipistrelle (3)	13 August 2019, re-entry survey	Occasional	A red brick building with a pitched slate roof, currently used as a farm shop. Possibly built 1950s.	MA04	20m east
GM265922_L5918_BS3_F004_140818	Overton Farm, Paddock Lane, Warburton	SJ70318937	Barn	Common pipistrelle (1)	14 August 2018, emergence survey	Occasional	Two-storey brick building more than 50 years old with slate tiled pitched roof and old wooden beam supports detail on outside of building. .	MA04	15m south
GM265922_L5918_BS3_F001_140818	Overton Farm, Paddock Lane, Warburton	SJ70298941	Barn	Common pipistrelle (1)	14 August 2018, emergence survey	Occasional	Two-storey house, Brick-built, newly pointed in places, with two chimneys and a slate tiled pitched roof. Small single brick attachment on south aspect, slate tiled and tight with lead flashing.	MA04	15m south
GM809101-MAN119953_L5966_BS3_F004_230818	Moss Brow Farm, Paddock Lane, Warburton	SJ70898921	Barn	Unknown (single dropping found)	23 August 2018, Internal inspection	Feeding Perch	Old brick barn (100+ years) with metal corrugated lean-to, currently used for storage.	MA04	20m south
MAN119953_L5966_BS3_F003_240718	Moss Brow Farm, Paddock Lane, Warburton	SJ70888924	Barn	Common pipistrelle (22)	24 July 2018, emergence survey	Possible Maternity	A red brick building with a pitched slate roof, currently used as a farm shop. Possibly built 1950s	MA04	20m east

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
CH250245-CH94931_L5380_BS3_F002_150818	Heatley Farm, Wet Gate Lane, Lymm	SJ71268780	Barn	Common pipistrelle (2)	15 August 2018, emergence survey	Occasional	An L shaped barn with a pitched slate roof, approximately 50 years old. The east west section of the barn is two-storeys high while the north south section of the barn is only single-storey.	MA04	25m east
CH250245-CH94931_L5380_BS3_F002_220920	Heatley Farm, Wet Gate Lane, Lymm	SJ71268780	Barn	Soprano pipistrelle (1)	22 September 2020, emergence survey	Occasional	An L shaped barn with a pitched slate roof. The east west section of the barn is two-storeys high while the north south section of the barn is only single-storey. Approximate age +50 yrs.	MA04	25m east
CH250245-CH94931_L5380_BS3_F002_150818	Heatley Farm, Wet Gate Lane, Lymm	SJ71268780	Barn	*Myotis* species (1)	15 August 2018, emergence survey	Occasional	An L shaped barn with a pitched slate roof, approximately 50 years old. The east west section of the barn is two-storeys high while the north south section of the barn is only single-storey.	MA04	25m east
GM674137_L20929_BS2_F001_130819	Warburton Lane, Warburton	SJ70988942	Residential	*Pipistrellus* species (Visual droppings ID)	13 August 2019, internal inspection	Occasional	A two-storey brick house with a hipped slate roof, approximately 90 years old. The building has a single-storey conservatory extension on the northern wall with a hipped slate roof. There is also a single-storey brick extension on the western wall with a sloping slate roof. The walls of the main house building, and the	MA04	30m east

Ecology survey code	Location	OS grid reference	Building / structure type	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description	CA	Approximate distance (m) and orientation from the Proposed Scheme
							extensions are mostly rendered. There is a small porch on the eastern wall with a hipped slate roof. The main house was built in the 1930s.		

Roosting (woodlands)

2.3.186 This section applies to all trees subject to the surveying woodlands methodology. Five areas of woodland, comprising either single large woodland blocks or groups of smaller woodlands, were identified to be surveyed in accordance with the methodology for surveying woodland.

2.3.187 The results of woodlands identified for survey and the results of initial ground-based assessments of trees and surrounding area are summarised in Table 69. Trees with negligible potential for roosting bats were not recorded or mapped.

Table 69: Potential roosting resource within woodlands in MA04

Woodland	Number of trees with features of potential value to roosting bats			Overall suitability of woodland for bats*
	High Suitability	Moderate Suitability	Low Suitability	
Glazebrook disused campsite	1	6	1	Moderate – Connectivity to wider habitats. Good mosaic of habitats on the site.
Coroners Wood	9	32	27	High – Group of mature woodlands with good connectivity to the Manchester Ship Canal.
Fox Covert Wood	8	53	22	Moderate – Good connectivity with the River Bollin which has good connectivity with the wider landscape.
Unnamed woodland west of Mossbrow	0	1	5	Low - Small woodland with connectivity to the surrounding habitat via tree lines and hedgerows. Surrounded by arable fields with a number of ponds nearby.
Unnamed woodland north of Mossbrow	2	2	6	Low - Small woodland very close to Coroners Wood which has very good connectivity to the River Mersey and surrounding habitat.

**based on the quality and quantity of the roost and feeding resource and ecological position of the wood*

2.3.188 Transects and static detector surveys were undertaken around each woodland where access was available in order to gain an understanding of the bat assemblage and levels of bat activity. The results of these surveys are included in the bat activity surveys section.

Bat activity surveys

2.3.189 At least 10 species have been recorded during the range of bat activity surveys conducted in MA04:

- common pipistrelle;
- soprano pipistrelle;
- Nathusius' pipistrelle;
- *Pipistrellus* species;

- brown long-eared bat;
- noctule;
- Leisler's bat;
- serotine;
- whiskered / Brandt's bat;
- Natterer's bat;
- Daubenton's bat; and
- *Myotis* species.

Table 70: Bat activity surveys conducted within MA04

Ecology survey code	Transect location	Numbers of surveys conducted	First survey date	Final survey date	CA	Map reference
DT01	Between Warrington and Manchester	7	6 August 2018	18 July 2019	MA04	EC-06-525/526/526-R1
DT06	Between Altrincham and Warrington	8	26 June 2018	2 September 2020	MA04	EC-06-524/524-R1/525
DT09	Between Warrington and Manchester	7	26 July 2018	17 June 2019	MA04	EC-06-526/527a/527a
D1	Bridgewater Canal	7	3 July 2018	7 June 2019	MA04	EC-06-523b
D2	River Bollin, Lymm	5	3 July 2018	9 June 2019	MA04	EC-06-524
D3	Fox Covert	4	16 July 2018	8 June 2019	MA04	EC-06-524
D4	Warburton CP	5	16 July 2018	13 August 2019	MA04	EC-06-525
D5	Warburton CP	5	23 July 2018	10 September 2019	MA04	EC-06-525
D6	Warburton CP	2	26 September 2018	29 October 2018	MA04	EC-06-525
D8	Manchester Ship Canal	5	28 June 2018	29 October 2019	MA04	EC-06-526
D9	Hollins Green	7	17 July 2018	13 August 2019	MA04	EC-06-526
D10	Dam Head Lane	5	27 June 2018	8 April 2019	MA04	EC-06-527
D43	River Bollin, Heatley	4	27 July 2020	7 October 2020	MA04	EC-06-524

Table 71: Bat activity transect survey results for Transect DT01

Ecology survey code	Transect location				Description of habitats covered by transect															
DT01	Between Warrington and Manchester.				Southern side of Manchester Ship Canal between Warrington and Manchester. Transect follows scattered trees and grazing pasture fields alongside the Manchester ship canal east of Partington where it enters a small woodland at its northern extent before returning alongside Red Brook within Coroners Wood, re-joining the beginning section along the Manchester ship canal.															
Visit number and date	**Weather conditions**				**Total species passes during transect survey**															
	Temp (oC)	**Cloud (0-8)**	**Rain (0-5)**	**Wind (0-12)**	**Pp**	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
July 2019 – Incomplete	Data corrupted																			
Visit 1: Dusk: 6 August 2018	22	2	0	0	13	39	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Visit 2: Dawn: 7 August 2018	16	8	0	0	14	30	0	0	0	1	0	0	0	0	0	0	0	3	0	0
Visit 3: Dusk: 6 September 2018	10	4	0	2	11	67	0	0	0	0	0	0	0	3	0	0	0	2	0	0
Visit 4: Dusk: 1 October 2018	14	8	0	3	3	8	0	0	0	0	0	0	0	0	4	0	0	0	0	0
Visit 5: Dusk: 17 April 2019	10	6	0	2	41	107	0	0	0	0	0	0	1	0	0	0	0	0	0	0
May 2019 – Incomplete	N/A – Access refused																			
Visit 6: Dusk: 25 June 2019	15	6	0	0	9	51	0	5	0	0	0	0	1	0	0	0	0	0	0	0
Visit 7: Dusk: 18 July 2019	17	2	0	1	20	78	0	0	0	0	0	0	0	7	1	1	0	1	0	0

Pp - common pipistrelle, P py – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M.sp – Myotis species, Pa – brown long-eared bat, Bb – barbastelle, Nn – noctule, Nl – Leisler's bat, Es – serotine, Ny/Ep – Nyctalus/Eptesicus bat.

Cloud cover on a scale of 0 – 8 where: 0 = sky completely clear, 4 = sky half cloudy, 8 = sky completely cloudy.

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.

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.

2.3.190 Low to moderate levels of common pipistrelle activity and moderate to high levels of soprano pipistrelle activity were recorded at this location with peaks in April 2019 of 41ppn and 107ppn, respectively. All other species were recorded sporadically in low to moderate numbers. A high peak of seven ppn of whiskered/Brandt's bat was however recorded during these surveys.

Table 72: Bat activity transect survey results for Transect DT06

Ecology survey code	Transect location				Description of habitats covered by transect															
DT06	Between Altrincham and Warrington.				Transect begins on Spring Lane, east of Lymm, and follows hedgerows north along Wet Gate Lane before crossing the River Bollin to follow a section of disused railway. The transect then follows hedgerows along arable fields and grazing pastures leading to a woodland fragment before ending at Bent Lane (A6144).															
Visit number and date	**Weather conditions**				**Total species passes during transect survey**															
	Temp (oC)	**Cloud (0-8)**	**Rain (0-5)**	**Wind (0-12)**	**Pp**	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mb r**	**Mm/ Mbr**	**M.sp**	**Pa**	**B b**	**Nn**	**Nl**	**Es**	**Ny / Es**
Visit 1: Dusk: 26 June 2018	23	1	0	0	20	100	0	0	0	2	0	0	0	0	0	0	0	4	0	0	0
Visit 2: Dusk: 23 July 2018	25	8	0	0	46	114	0	0	0	3	3	0	0	0	1	1	0	28	3	0	0
Visit 3: Dusk: 16 August 2018	17	5	1	1	21	69	0	0	0	0	1	0	0	0	0	0	0	6	0	0	0
Visit 4: Dawn: 17 August 2018	14	3	0	0	0	12	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0
September 2018	N/A – No survey possible																				
Visit 5: Dusk: 10 October 2018	20	8	0	0	43	141	0	0	0	0	0	0	0	0	3	7	0	0	0	0	0
April 2019 – Incomplete	N/A – Access refused																				
May 2019 – Incomplete	N/A – Access refused																				
June 2019	N/A – Survey completed 2018																				
July 2019	N/A – Survey completed 2018																				
August 2019	N/A – Survey completed 2018																				

Ecology survey code	Transect location				Description of habitats covered by transect																
Visit 6: Dusk: 3 September 2019	17	6	1	2	1	15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: Dusk: 27 July 2020	14	0	1	1	11	41	0	1	0	0	0	0	0	0	16	0	0	3	0	0	0
Visit 8: Dusk: 2 September 2020	17	5	0	2	92	207	0	10	0	0	0	0	0	0	15	0	0	24	0	0	0

2.3.191 Moderate to high levels of common and soprano pipistrelle activity were recorded at this location with peaks in September 2020 of 92ppn and 207ppn, respectively. Low numbers of *Myotis* species were recorded, with a peak of 16ppn in July 2020. Overall, low to moderate levels of noctule activity were recorded, with a peak of 28ppn noted in July 2018 and low levels recorded in other months. Leisler's bat was recorded in July 2018 only, with three ppn. Low levels of brown long-eared bat activity were recorded apart from a peak of seven ppn in October 2018.

Table 73: Bat activity transect survey results for Transect DT09

Ecology survey code	Transect location				Description of habitats covered by transect															
DT09	Between Warrington and Manchester.				Northern side of Manchester Ship Canal between Warrington and Manchester. Transect starts from Manchester Road, south of Glazebrook and travels through Hollinfare Cemetery, along hedgerows through arable fields until reaching a woodland around Glazebrook Country Club. The transect follows the edge of the woodland around Glazebrook Country Club and joins Dam Head Lane, following treelines before ending at residential area down Bank Street.															
Visit number and date	**Weather conditions**				**Total species passes during transect survey**															
	Temp (oC)	**Cloud (0-8)**	**Rain (0-5)**	**Wind (0-12)**	**Pp**	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
Visit 1: Dusk: 26 July 2018	22	5	0	3	42	18	0	0	0	1	0	0	0	0	0	0	0	0	4	0	0
Visit 2: Dawn: 27 July 2018	17	1	0	1	29	8	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 3: Dusk: 21 August 2018	20	1	0	0	15	7	0	0	0	1	0	0	0	0	1	0	0	7	0	0	0
Visit 4: Dawn: 20 September 2018	15	8	0	1	3	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk: 17 October 2018	13	2	0	2	9	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: Dusk: 17 April 2019	15	1	0	2	21	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May 2019 – Incomplete	N/A – Access refused																				
Visit 7: Dusk: 17 June 2019	14	1	0	1	21	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2.3.192 Low to moderate levels of common and soprano pipistrelle activity were recorded at this location with peaks of 42ppn and 58ppn, respectively. Low numbers of *Myotis* species were recorded, with a peak of one ppn of Daubenton's bat in July and August 2018. Low levels of *Nyctalus* activity were recorded, with a peak of noctule recorded in August 2018 of seven ppn and a peak of four ppn of Leisler's bat recorded in July 2018.

Table 74: Summary of static detector monitoring results for D1

Ecology survey code	Static location	OS grid reference	Description of habitats															
D1	Bridgewater Canal	SJ71468681	Hedgerow immediately adjacent to Bridgewater Canal, west of Agden Bridge Farm, east of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
3 July 2018 – 10 July 2018	7		923	1,034	0	1	0	4	0	0	0	0	73	1	0	423	0	0	0
7 August 2018 – 14 August 2018	7		856	1,290	0	0	0	0	0	0	0	0	18	0	0	25	0	0	0
4 September 2018 – 11 September 2018	7		904	1,251	0	0	0	28	0	0	0	0	133	0	0	116	2	0	0
2 October 2018 – 9 October 2018	7		1,407	460	1	0	0	0	0	0	0	0	105	0	0	181	0	0	0
2 April 2019 – 8 April 2019	7		35	240	0	5	0	2	0	0	0	0	6	0	0	4	0	0	0
7 May 2019 – 14 May 2019	7		1,000	667	0	43	0	0	0	0	0	0	12	0	0	13	2	0	0
3 June 2019 – 7 June 2019	5		625	0	0	3	0	1	0	0	0	0	1	0	0	0	0	0	0

2.3.193 High levels of common and soprano pipistrelle activity were recorded along the hedgerow adjacent to Bridgewater Canal with peaks of 1,407ppn in October 2018 and 1,290ppn in August 2018, respectively. Additionally, one ppn of a Nathusius' bat was recorded in October 2018. Overall, moderate to high levels of *Myotis* species activity were recorded, with a peak count of 133ppn recorded in September 2018. High numbers of noctule were recorded, with a notable peak of 423ppn in July 2018. A peak count of one ppn of a brown long-eared bat in July 2018 and two ppn of Leisler's bat were recorded in May 2019 and September 2018, with no record in any other month.

Table 75: Summary of static detector monitoring results for D2

Ecology survey code	Static location	OS grid reference	Description of habitats															
D2	River Bollin, Lymm	SJ71028815	Scattered trees immediately adjacent to River Bollin, west of Wet Gate Farm, east of Lymm.															
Date (night monitoring commenced to night monitoring ceased)		**Number of nights detector deployed**	**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
3 July 2018 – 10 July 2018		7	524	1,061	0	0	0	0	0	0	0	0	7	1	0	52	0	0	0
14 August 2018 – 21 August 2018		7	584	1,302	0	0	0	1	0	0	0	0	2	0	0	1	0	0	0
10 September 2018 – 17 September 2018		7	998	1	0	0	0	0	0	0	0	0	0	0	0	347	0	0	0
8 October 2018 – 15 October 2018		7	685	241	0	0	0	0	0	0	0	0	8	0	0	14	0	0	0
April 2019 – Incomplete		N/A – Access refused																	
May 2019 – Incomplete		N/A – Access refused																	
3 June 2019 – 9 June 2019		7	356	939	0	140	0	0	0	0	0	0	5	0	0	3	0	0	0

2.3.194 High levels of common and soprano pipistrelle activity were recorded, with a peak count of 998ppn in September 2018 and 1,302ppn in August 2018. Low to moderate levels of *Myotis* species activity were recorded, with a peak of eight ppn in October 2018. Of the five surveys that were carried out, two surveys recorded high numbers of noctule with a peak of 347ppn in September. The level of noctule activity recorded during other months was lower. A peak of one ppn of a brown long-eared bat was recorded in July 2018.

Table 76: Summary of static detector monitoring results for D3

Ecology survey code	Static location	OS grid reference	Description of habitats															
D3	Fox Covert	SJ70928871	Hedgerow on edge of arable field adjacent to Fox Covert woodland, south of Mossbrow, north of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
16 July 2018 – 23 July 2018	7		598	208	0	0	0	0	0	0	0	0	16	0	0	57	1	0	0
August 2018 – Incomplete	N/A – Access refused																		
18 September 2018 – 25 September 2018	7		839	1,517	1	0	0	1	0	0	0	0	18	0	0	0	0	0	0
16 October 2018 – 23 October 2018	7		126	598	0	0	0	0	0	0	0	0	86	0	0	0	0	0	0
April 2019 – Incomplete	N/A – Access refused																		
May 2019 – Incomplete	N/A – Access refused																		
3 June 2019 – 8 June 2019	6		1,053	135	0	57	0	4	0	0	0	0	9	0	0	4	0	0	0
July 2019	N/A – Survey completed 2018																		

Ecology survey code	Static location	OS grid reference	Description of habitats
August 2019 – Incomplete	Data corrupted		

2.3.195 Access was not available for three months out of the eight months of surveys. Notably high levels of common and soprano pipistrelle activity were recorded, with peak counts of 1,053ppn recorded in June 2019 and 1,517ppn in September 2018. Moderate to high numbers of *Myotis* species were recorded, with a peak count of 86ppn in October 2018. A peak count of four ppn of Daubenton's bat was recorded in June 2019. Low to moderate levels of noctule were recorded, with a peak of 57ppn in July 2018. Low numbers of Leisler's bats were recorded in July 2018 with a peak count of one ppn.

Table 77: Summary of static detector monitoring results for D4

Ecology survey code	Static location	OS grid reference	Description of habitats															
D4	Warburton CP	SJ70738929	Hedgerow immediately adjacent to Bent Lane, south of Rose Farm, north of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
16 July 2018 – 23 July 2018	7		68	247	0	14	0	0	0	0	0	0	18	2	0	9	0	0	0
August 2018 – Incomplete	N/A – Access refused																		
18 September 2018 – 25 September 2018	7		42	49	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
16 October 2018 – 22 October 2018	6		136	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
April 2019 – Incomplete	N/A – Access refused																		
May 2019 – Incomplete	N/A – Access refused																		
3 June 2019 – 10 June 2019	7		389	543	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0
July 2019	N/A – Survey completed 2018																		

Ecology survey code	Static location	OS grid reference	Description of habitats																
6 August 2019 – 13 August 2019		7	62	132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2.3.196 Moderate to high levels of common and soprano pipistrelle activity were recorded, with notably high levels of activity in June 2019 with peaks of 389ppn and 543ppn, respectively. Low levels of *Myotis* species were recorded, with a peak count of 18ppn in July 2018. Low levels of noctule and brown long-eared bat activity were additionally recorded in July 2018 with a peak of nine ppn and two ppn, respectively.

Table 78: Summary of static detector monitoring results for D5

Ecology survey code	Static location	OS grid reference	Description of habitats															
D5	Warburton CP	SJ70708955	Hedgerow east of Paddocklane Farm, north of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
23 July 2018 – 1 August 2018	8		450	398	0	0	0	0	0	0	0	0	42	1	0	18	0	0	0
1 August 2018 – 8 August 2018	7		33	121	0	0	0	0	0	0	0	0	7	0	0	6	0	0	0
September 2018 – Incomplete	N/A – Access refused																		
2 October 2018 – 9 October 2018	7		145	111	0	0	0	0	0	0	0	0	71	1	0	1	0	0	0
April 2019 – Incomplete	N/A – Access refused																		
May 2019 – Incomplete	N/A – Access refused																		
3 June 2019 – 10 June 2019	7		125	163	0	4	0	1	0	0	2	0	10	0	0	4	0	0	0
July 2019	N/A – Survey completed 2018																		
August 2019	N/A – Survey completed 2018																		

Ecology survey code	Static location	OS grid reference	Description of habitats																
4 September 2019 – 10 September 2019		7	290	87	0	6	0	0	0	0	0	0	74	1	0	5	0	0	0

2.3.197 Moderate to high levels of common and soprano pipistrelle activity were recorded, with a notable peak count of 450ppn and 398ppn in July 2018. Overall, moderate to high levels of *Myotis* species and noctule activity was recorded, with a peak count of 74ppn in September 2019 and 18ppn in July 2018, respectively. One ppn of a brown long-eared bat was recorded in July 2018, September 2019 and October 2018, respectively.

Table 79: Summary of static detector monitoring results for D6

Ecology survey code	Static location	OS grid reference	Description of habitats															
D6	Warburton CP	SJ70648971	Hedgerow adjacent to pond, west of Jack Hey Gate Farm, north of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
July 2018 – Incomplete	N/A – Access refused																	
August 2018 – Incomplete	N/A – Access refused																	
26 September 2018 – 3 October 2018	7		381	320	0	0	0	0	0	0	0	0	18	0	0	0	0	0	0
22 October 2018 – 29 October 2018	7		5	39	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
April 2019 – Incomplete	N/A – Access refused																	
May 2019 – Incomplete	N/A – Access refused																	
June 2019 – Incomplete	Data corrupted																	
July 2019 – Incomplete	Data corrupted																	

Ecology survey code	Static location	OS grid reference	Description of habitats
August 2019 – Incomplete	N/A – Access refused		

2.3.198 Only two months of survey data are available due to lack of access and corrupted data. Overall, moderate levels of common pipistrelle and moderate to high levels of soprano pipistrelle were recorded, with peaks of 381ppn and 320ppn, respectively, in September 2018. Overall, moderate to low levels of *Myotis* species activity were also recorded in September 2018 with a peak count of 18ppn. One ppn from an unidentified *Pipistrellus* species was recorded in October 2018. No other species were recorded.

Table 80: Summary of static detector monitoring results for D8

Ecology survey code	Static location	OS grid reference	Description of habitats															
D8	Manchester Ship Canal	SJ70089083	Corner of woodland adjacent to track, north of the Manchester Ship Canal, north of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
28 June 2018 – 2 July 2018	5		46	9	0	0	0	0	0	0	0	0	8	3	0	2	0	0	0
17 July 2018 – 24 July 2018	7		20	73	0	0	0	0	0	0	0	0	2	0	0	8	0	0	0
7 August 2018 – 15 August 2018	8		273	784	0	0	0	0	0	0	0	0	6	1	0	5	0	0	0
26 September 2018 – 3 October 2018	7		10	26	0	0	0	0	0	0	0	0	6	0	0	1	0	0	0
22 October 2018 – 29 October 2018	7		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
April 2019 – Incomplete	N/A – Access refused																		
May 2019 – Incomplete	N/A – Access refused																		

2.3.199 Low to moderate levels of common pipistrelle and soprano pipistrelle activity were recorded across the majority of surveys except for high levels for both species in August 2018, with peak counts of 273ppn and 784ppn. Additionally, low to moderate levels of *Myotis* species, low levels of brown long-eared bat and low to moderate levels of noctule activity were recorded, with peak counts of eight ppn, three ppn and eight ppn, respectively.

Table 81: Summary of static detector monitoring results for D9

Ecology survey code	Static location	OS grid reference	Description of habitats															
D9	Hollins Green	SJ69779137	Hedgerow south of Mount Pleasant Farm, north of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
17 July 2018 – 24 July 2018	7		284	85	0	0	0	0	0	0	0	0	3	0	0	9	0	0	0
August 2018	N/A – Access refused																		
4 September 2018 –11 September 2018	7		39	33	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
25 October 2018 – 1 November 2018	7		8	8	0	8	0	0	0	0	0	0	5	0	0	0	0	0	0
3 April 2019 – 9 April 2019	6		9	6	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
15 May 2019 – 22 May 2019	7		34	15	0	2	0	1	0	0	0	0	1	0	0	1	1	0	0
4 June 2019 – 10 June 2019	7		31	13	0	6	0	0	0	0	0	0	1	0	0	0	0	0	0
July 2019	N/A – Survey completed 2018																		

Ecology survey code	Static location	OS grid reference	Description of habitats																
6 August 2019 – 13 August 2019		7	672	162	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0

2.3.200 Low to moderate levels of common and soprano pipistrelle activity were recorded in this location with notably high levels of activity in August 2018 with peaks of 672ppn and 162ppn, respectively. Low levels of *Myotis* species and noctule activity were recorded, with peaks of five ppn in October 2018 and nine ppn in July 2018, respectively. One ppn, each, of Daubenton's bat and Leisler's bat were recorded in May 2019.

Table 82: Summary of static detector monitoring results for D10

Ecology survey code	Static location	OS grid reference	Description of habitats															
D10	Dam Head Lane	SJ69069222	Line of trees immediately south of Rose Cottage, adjacent to Dam Head Lane, north of Lymm.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
27 June 2018 – 2 July 2018	6		55	160	0	1	0	0	0	0	0	0	2	0	0	3	0	0	0
17 July 2018 – 24 July 2018	7		444	55	0	0	0	0	0	0	0	0	3	2	0	13	0	0	0
August 2018 – Incomplete	N/A – Access refused																		
4 September 2018 – 11 September 2018	7		12	9	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
22 October 2018 – 28 October 2018	6		3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 April 2019 – 8 April 2019	7		27	6	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
May 2019 – Incomplete	N/A – Access refused																		
June 2019	N/A – Survey completed 2018																		

Ecology survey code	Static location	OS grid reference	Description of habitats															
July 2019	N/A – Survey completed 2018																	
August 2019 – Incomplete	N/A – Access refused																	

2.3.201 Low to moderate levels of common and soprano pipistrelle activity were recorded in this location with a high level of activity in July 2018 and notable peaks of 444ppn and 160ppn, respectively, in June 2018. Additionally, low levels of *Myotis* species and noctule activity were recorded, with a peak of three ppn in July and September 2018 and 13ppn in July 2018. Two ppn of a brown long-eared bat were also recorded in July 2018.

Table 83: Summary of static detector monitoring results for D43

Ecology survey code	Static location	OS grid reference	Description of habitats															
D43	River Bollin, Heatley	SJ70538847	An area of scattered trees along the River Bollin in proximity to Fox Covert Wood.															
Date (night monitoring commenced to night monitoring ceased)	**Number of nights detector deployed**		**Species peak night count during monthly monitoring**															
			Pp	**Ppy**	**Pn**	**P.sp**	**Mb**	**Md**	**Mn**	**Mm**	**Mbr**	**Mm/ Mbr**	**M.sp**	**Pa**	**Bb**	**Nn**	**Nl**	**Es**	**Ny/ Es**
27 July 2020 – 1 August 2020	5		102	842	0	16	0	0	0	0	0	0	15	4	0	21	0	1	0
1 August 2020 – 10 August 2020	7		109	1,255	0	14	0	0	0	0	0	0	12	1	0	9	0	0	0
23 September – 30 September 2020	8		22	32	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0
1 October 2020 – 7 October 2020	6		71	29	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0

2.3.202 Very high levels of soprano pipistrelle activity were recorded in this location with a peak of 1,255ppn recorded in August 2020. Moderate levels of common pipistrelle activity were recorded, with a peak of 109ppn in August 2020. Additionally, low levels of *Myotis* species, brown long-eared bat and noctule activity were recorded, with a peak of 15ppn, 21ppn and four ppn, respectively, in July 2020. A single pass from a serotine was recorded in July 2020.

Discussion

Bat assemblage

2.3.203 Data from field surveys and desk study records are summarised below and provide the basis for identifying bat assemblages associated with habitat in and adjoining the land required for construction of the Proposed Scheme in the Broomedge to Glazebrook area (MA04). These assemblages are described in Volume 2, Community Area report: Broomedge to Glazebrook (MA04), Section 7 and are present in the following locations:

- between the M56 within the Pickmere to Agden and Hulseheath area (MA03) and the River Bollin and Bridgewater Canal within the Broomedge to Glazebrook area;
- Coroners Wood and Manchester Ship Canal; and
- associated with Holcroft Moss within the Broomedge to Glazebrook area to the M62 within the Risley to Bamfurlong area (MA05).

2.3.204 No additional bat species to those recorded during field survey were identified from desk study records.

2.3.205 Field surveys carried out in 2018, 2019 and 2020 confirmed the presence of at least 10 bat species along the route, including rarer species: whiskered/Brandt's bat, Daubenton's bat, Natterer's bat, Leisler's bat, serotine and Nathusius' pipistrelle.

2.3.206 Common and widespread species, including common pipistrelle and soprano pipistrelle were the most abundant, with moderate levels of activity recorded. However, a few activity months and static detector locations observed increased levels of activity.

2.3.207 Common and soprano pipistrelle were the most frequently recorded species during activity surveys in MA04, with static detectors recording peak counts of 1,407ppn of common pipistrelle recorded along the Bridgewater Canal in October 2018, and 1,517ppn of soprano pipistrelle on the north-eastern corner of Fox Covert in September 2018, respectively.

2.3.208 *Pipistrellus* species were the most common confirmed roosts found. There were five common pipistrelle bat roosts (one a possible maternity with 22 bats; the remaining four were occasional roosts), five occasional soprano pipistrelle bat roosts and a *Pipistrellus* species occasional roost.

2.3.209 Brown long-eared bats were recorded sporadically across static detectors and walked transects across the activity season in moderate to high numbers for the species, when recorded, with a peak of seven ppn in October 2018 along Fox Covert walked transect. One

occasional brown long-eared bat roost was recorded in a barn within the land required for the construction of the Proposed Scheme.

2.3.210 Noctule were recorded in moderate numbers on the majority of static detectors and walked transect surveys, with peaks recorded on a number of static detector locations with a notable peak of 423ppn recorded. This suggests that there may be an unidentified roost in the area.

2.3.211 *Myotis* species were recorded on all the transects and static detector surveys in low to moderate numbers, with occasional higher peaks recorded on certain static detectors and months, and a notable peak of 133ppn. One occasional *Myotis* species roost was recorded in a barn 25m away from the required land for the construction of the Proposed Scheme.

2.3.212 The lack of access may have resulted in under-recording of activity across the area and some roosts being unrecorded. Areas where access was not available during the survey season included land south of the Manchester Ship Canal, near to Warburton where transect routes and static monitoring could not be completed. Static data was collected north of the Manchester Ship Canal at D8 over five nights of survey which allowed this feature to be assessed. Additionally, transect surveys around Fox Covert and the River Bollin could not be completed in full across the season due to access restrictions.

Roosts

2.3.213 The desk study records identified a roost approximately 318m west of the land required for the construction of the Proposed Scheme in St Werburghs Old Church, Warburton, of brown long-eared bat and common pipistrelle.

2.3.214 A single willow tree was found to have a soprano pipistrelle occasional roost with a peak of two bats observed. The tree is located within the land required for the construction of the Proposed Scheme area.

2.3.215 A total of 13 roosts were identified within 10 structures within MA04. One possible maternity roost was identified within 20m from the scheme. This was a common pipistrelle roost within a barn off Paddock Lane, in Warburton with a peak count of 22 bats observed to be roosting.

2.3.216 The majority of the roosts recorded were found to have common pipistrelle and soprano pipistrelle present and were occasional roosts. This included four common pipistrelle, five soprano pipistrelle and one *Pipistrellus* species roosts were also noted across MA04, with a peak of three bats observed.

2.3.217 A single brown long-eared bat was recorded roosting in a barn off Dam Lane, in Hollins Green.

2.3.218 A single *Myotis* species was recorded roosting in a barn off Wet Gate Lane, in Lymm. Both these roosts were found within 25m from the land required for the construction of the Proposed Scheme.

Foraging habitat

2.3.219 The landscape in this area comprises largely agricultural fields with improved grasslands, broadleaved woodlands, hedgerows and tree lined roads. Watercourses and water bodies, along with vegetated railway routes provide potential foraging habitat.

2.3.220 The walked transects noted low to moderate foraging activity adjacent to the Manchester Ship Canal, Coroners Wood and Red Brook. Occasional foraging alongside the Manchester Ship Canal and Red Brook was recorded for noctule and *Myotis* species, which includes Daubenton's bat.

2.3.221 The walked transect around Fox Covert woodland and the River Bollin included a portion of the Trans Pennine trail and was used frequently by foraging bats. Moderate to high levels of soprano pipistrelle and moderate levels of common pipistrelle were recorded foraging along the disused railway, around Fox Covert and along the River Bollin. Additionally, moderate levels of *Myotis* species, including Daubenton's bat and Natterer's bat, as well as moderate to high levels of noctule, brown long-eared bats and Leisler's bats were recorded. These results were consistent with static detectors positioned in Fox covert and along the River Bollin. Due to the assemblage, habitats and number of bats, it is assumed this is a key foraging area.

2.3.222 High levels of activity of common and soprano pipistrelle were recorded adjacent to the Bridgewater Canal by the static detector surveys throughout the activity season. It is likely they are using the canal for foraging. Additionally, high numbers of noctule *Myotis* species were recorded from July-October 2018 in the same location.

Commuting habitat

2.3.223 The overall commuting activity was moderate with few key areas identified. The hedgerow network throughout this area is well established with good connections to some of the larger woodlands in the area that are beyond the land required for the construction of the Proposed Scheme, such as Spud Wood and Rixton Clay Pits. Additionally, the River Bollin, the Trans Pennine trail and live railway routes and the Bridgewater Canal are likely to be used as commuting corridors. There are also tree-lined fields, watercourses and roads, which together create an extensive network for commuting bats.

2.3.224 Moderate levels of commuting bats were recorded on Wet Gate Lane and Spring Lane during the transect, suggesting that the bats are using these roads to commute north from the Bridgewater Canal to the River Bollin and the disused railway. Static detectors positioned along the Bridgewater Canal and the River Bollin recorded higher levels of activity in this area of MA04 compared to other areas of MA04, therefore it is assumed that these watercourses are key commuting corridors for bats.

2.3.225 Low levels of commuting bats were recorded using the hedgerows and bankside vegetation along the Manchester Ship Canal and Red Brook.

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