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8 APPENDICES

APPENDIX I: LEGISLATION AND PLANNING POLICY

This report has been produced with reference to the following relevant wildlife and environmental legislation and planning policy.

LEGISLATION/PLANNING POLICY	LINK
The Conservation of Habitats and Species Regulations 2017 (as amended)	https://www.legislation.gov.uk/uksi/2017/1012/contents/made
The Wildlife and Countryside Act (W&CA) 1981 (as amended)	http://www.legislation.gov.uk/ukpga/1981/69/contents
Countryside and Rights of Way (CRoW) Act 2000	http://www.legislation.gov.uk/ukpga/2000/37/contents
Natural Environment and Rural Communities (NERC) Act 2006	http://www.legislation.gov.uk/ukpga/2006/16/contents
OCPM Circular 06/2005: Biodiversity and Geological Conservation	https://www.gov.uk/government/publications/biodiversity-and-geological-conservation-circular-06-2005
North Somerset Council Core Strategy	https://www.n-somerset.gov.uk/sites/default/files/2020-07/core%20strategy.pdf
Yatton Neighbourhood Plan for the Period 2017-2026	https://www.n-somerset.gov.uk/sites/default/files/2020-04/Yatton%20neighbourhood%20plan.pdf
UK Post 2010 Biodiversity Framework	http://jncc.defra.gov.uk/pdf/UK_Post2010_Bio-Fwork.pdf
National Planning Policy Framework	https://www.gov.uk/government/publications/national-planning-policy-framework--2

The most relevant legislation pertaining to each of the protected species described within this document is given in the table overleaf.

SPECIES	LEGISLATION	PROTECTION
Bats (all species)	Sch 5 of The Wildlife and Countryside Act 1981 (as amended) Conservation of Habitats and Species Regulations 2017 (as amended)	It is an offence to: • Intentionally or deliberately take, kill or injure a bat; • Damage, destroy or obstruct access to bat roosts; • Deliberately disturb bats.
Hazel Dormouse	Sch 5 of The Wildlife and Countryside Act 1981 (as amended) Conservation of Habitats and Species Regulations 2017 (as amended)	It is an offence to: • Intentionally or deliberately take, kill or injure; • Damage, destroy or obstruct access to any structure or place used for shelter or protection; • Disturb an animal occupying such a structure or place.
Great Crested Newt	Sch 5 of The Wildlife and Countryside Act 1981 (as amended) Conservation of Habitats and Species Regulations 2017 (as amended)	It is an offence to: • Intentionally or deliberately take, kill or injure; • Damage, destroy or obstruct access to any structure or place used for shelter or protection; • Disturb an animal occupying such a structure or place.
Reptiles[*]	Sch 5 of The Wildlife and Countryside Act 1981 (as amended)	Part of sub-section 9(1) and all of sub-section 9(5) apply; • Prohibits the intentional killing and injuring of reptile species.
Badgers	The Protection of Badgers Act 1992	It is an offence to: • intentionally or recklessly damage, destroy or obstruct access to a sett; and • to disturb a Badger whilst it is occupying a sett.
Nesting birds (all species)	The Wildlife and Countryside Act 1981 (as amended)	It is an offence to: • Kill, injure, or take any wild bird; • Take, damage or destroy the nest of any wild bird while that nest is in use or being built; • Take or destroy an egg of any wild bird.

* Excludes Sand Lizard and Smooth Snake for which a higher level of protection is granted. These species were not considered here, as no suitable habitat was available for them and the Site falls outside of their recorded range.

Key

- g3c - other neutral grassland
- g4 - modified grassland
- u1b - developed land. Sealed surface
- u1b5 - buildings
- u1c - artificial unvegetated unsealed surface
- g3c-other neutral grassland
- h2a - hedgerow (priority habitat)
- u1e - built linear feature
- r1e - canal or ditch
- Trees

BURTON REID
ASSOCIATES

Smart System,Yatton

Smart Systems Limited

UK Habitat Classification Map

July 2021

BY FG | **DOC REF** BR0532 | **REV.** A

BURTON REID
ASSOCIATES

Project No:	BR0532	**Date:**	July 2021
Client:	Smart Systems	**Project:**	Phase 2B, Smart Systems, Yatton, North Somerset
Status:	Planning	**Figure:**	**APPENDIX II: PHASE 1 HABITAT MAP**

APPENDIX III: UK HABITAT CLASSIFICATION: SPECIES LISTS

* DAFOR scale of relative abundance: Dominant, Abundant, Frequent, Occasional or Rare. L=locally

g4 – Modified grassland

COMMON NAME	LATIN NAME	ABUNDANCE (DAFOR*)
Yorkshire Fog	*Holcus lanatus*	D
Perennial Rye-grass	*Lolium perenne*	A
Meadow Foxtail	*Alopecurus pratensis*	A
Cock's-foot	*Dactylis glomerata*	F
White Clover	*Trifolium repens*	F
Red Clover	*Trifolium pratense*	F
Creeping Buttercup	*Ranunculus repens*	F
Sweet Vernal-grass	*Anthoxanthum odoratum*	F
Blackthorn (suckers)	*Prunus spinosa*	O
Creeping Bent	*Agrostis stolonifera*	O
Tufted Vetch	*Vicia cracca*	O
Dandelion	*Taraxacum agg.*	O
Cut-leaved Crane's-bill	*Geranium dissectum*	O
Daisy	*Bellis perennis*	R
Sheep's Sorrel	*Rumex acetosella*	R
Curled Dock	*Rumex crispus*	R
Broad-leaved Dock	*Rumex obtusifolius*	R

g3c – Other neutral grassland

COMMON NAME	LATIN NAME	ABUNDANCE (DAFOR*)
Yorkshire Fog	*Holcus lanatus*	D
Perennial Rye-grass	*Lolium perenne*	A
Meadow Barley	*Hordeum secalinum*	A
Meadow Foxtail	*Alopecurus pratensis*	A
Creeping Buttercup	*Ranunculus repens*	F
Red Clover	*Trifolium pratense*	F
White Clover	*Trifolium repens*	F
Crested Dog's-tail	*Cynosurus cristatus*	F
Creeping Bent	*Agrostis stolonifera*	F
Sheep's Sorrel	*Rumex acetosella*	F
Common Vetch	*Vicia sativa subsp. segetalis*	F

Meadow Buttercup	*Ranunculus acris*	O
Meadow Vetchling	*Lathyrus pratensis*	O
Blackthorn (suckers)	*Prunus spinosa*	O
Common Knapweed	*Centaurea nigra*	O
Cut-leaved Crane's-bill	*Geranium dissectum*	O
Germander Speedwell	*Veronica chamaedrys*	R
Daisy	*Bellis perennis*	R
Creeping Cinquefoil	*Potentilla reptans*	R
Selfheal	*Prunella vulgaris*	R
Bird's-foot Trefoil	*Lotus corniculatus*	LA

g3c, 16 – Other neutral grassland; tall herb (edge of bare ground)

COMMON NAME	LATIN NAME	ABUNDANCE (DAFOR*)
Cock's-foot	*Dactylis glomerata*	D
False Oat-grass	*Arrhenatherum elatius*	F
Meadow Foxtail	*Alopecurus pratensis*	F
Perennial Rye-grass	*Lolium perenne*	F
Yorkshire Fog	*Holcus lanatus*	F
Creeping Bent	*Agrostis stolonifera*	F
Common Nettle	*Urtica dioica*	F
Blackthorn	*Prunus spinosa*	O
Creeping Thistle	*Cirsium arvense*	O
Broad-leaved Dock	*Rumex obtusifolius*	O
Common Reed	*Phragmites australis*	O
Dandelion	*Taraxacum agg.*	O
Meadow Buttercup	*Ranunculus acris*	O
Red Clover	*Trifolium pratense*	O
Curled Dock	*Rumex crispus*	O
Swine-cress	*Coronopus squamatus*	R
Hawthorn	*Crataegus monogyna*	R
Small-flowered Crane's-bill	*Geranium pusillum*	R
Hybrid Crack Willow	*Salix x fragilis*	R
Ivy	*Hedera helix*	R
Scented Mayweed	*Matricaria recutita*	R

g3c, 16 – Other neutral grassland; tall herb (around electricity pylon)

COMMON NAME	LATIN NAME	ABUNDANCE (DAFOR*)
Bramble	*Rubus fruticosus agg.*	A
Common Nettle	*Urtica dioica*	A
Cock's-foot	*Dactylis glomerata*	A
Yorkshire Fog	*Holcus lanatus*	A
False Oat-grass	*Arrhenatherum elatius*	A
Hemlock Water-dropwort	*Oenanthe crocata*	A
Sheep's Sorrel	*Rumex acetosella*	O
Ivy	*Hedera helix*	O
Elder	*Sambucus nigra*	R

h2a – Hedgerow (priority habitat) Field A

COMMON NAME	LATIN NAME	ABUNDANCE (DAFOR*)
Blackthorn	*Prunus spinosa*	D
Bramble	*Rubus fruticosus agg.*	A
Hemlock Water-Dropwort	*Oenanthe crocata*	A
Goat Willow	*Salix caprea*	LA
False Oat-grass	*Arrhenatherum elatius*	LA
Common Reed	*Phragmites australis*	F
Hawthorn	*Crataegus monogyna*	F
Hedge Bindweed	*Calystegia sepium*	F
Creeping Thistle	*Cirsium arvense*	O
Cleavers	*Galium aparine*	O
Tufted Vetch	*Vicia cracca*	O
Common Nettle	*Urtica dioica*	R
Hogweed	*Heracleum sphondylium*	R
Dog-rose	*Rosa canina*	R
Meadow Vetchling	*Lathyrus pratensis*	R
White Clover	*Trifolium repens*	R
Ash	*Fraxinus excelsior*	R
Elder	*Sambucus nigra*	R
Scented Mayweed	*Matricaria recutita*	R
Hybrid Crack Willow	*Salix x fragilis*	R

h2a – Hedgerow (priority habitat) Field B, NW hedgerow

COMMON NAME	LATIN NAME	ABUNDANCE (DAFOR*)
Blackthorn	*Prunus spinosa*	D
Bramble	*Rubus fruticosus agg.*	O
Common Nettle	*Urtica dioica*	O
Hawthorn	*Crataegus monogyna*	O
Dog-rose	*Rosa canina*	O
Sheep's Sorrel	*Rumex acetosella*	R
Cleavers	*Galium aparine*	R
Hybrid Crack Willow	*Salix x fragilis*	R

h2a – Hedgerow (priority habitat) Field B, SE/E hedgerow

COMMON NAME	LATIN NAME	ABUNDANCE (DAFOR*)
Goat Willow	*Salix caprea*	A
Hawthorn	*Crataegus monogyna*	A
Blackthorn	*Prunus spinosa*	A
Common Nettle	*Urtica dioica*	A
Common Reed	*Phragmites australis*	A
Hogweed	*Heracleum sphondylium*	O
False Oat-grass	*Arrhenatherum elatius*	O
Bramble	*Rubus fruticosus agg.*	O
Tufted Vetch	*Vicia cracca*	O
Hemlock Water-dropwort	*Oenanthe crocata*	O
Creeping Thistle	*Cirsium arvense*	O
Hedge Bindweed	*Calystegia sepium*	O
Ground-ivy	*Glechoma hederacea*	R
Ivy	*Hedera helix*	R
Dog-rose	*Rosa canina*	R
Black Bryony	*Tamus communis*	R
Rosebay Willowherb	*Chamerion angustifolium*	R

u1c, 17 – Artificial unvegetated, unsealed surface; ruderal/ephemeral

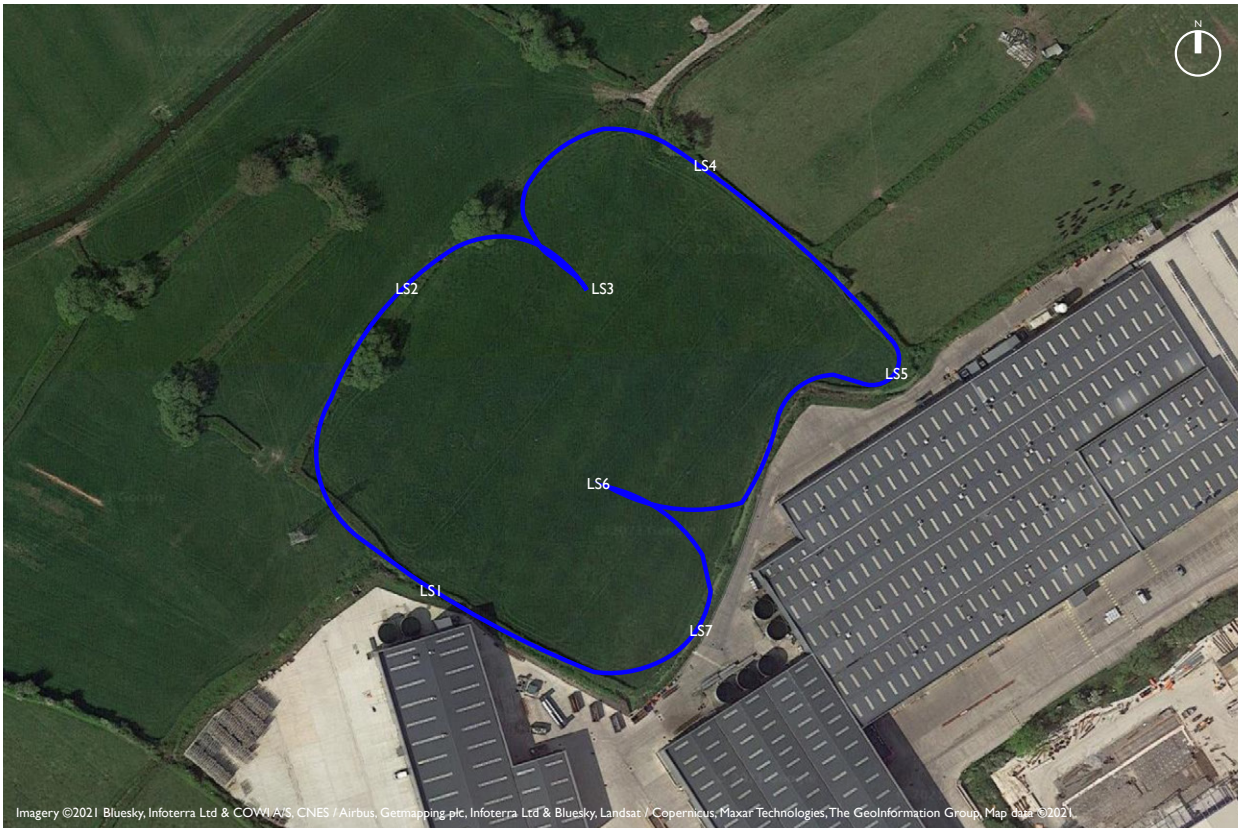
COMMON NAME	LATIN NAME	ABUNDANCE (DAFOR*)
Hedge Bindweed	*Calystegia sepium*	O
Creeping Buttercup	*Ranunculus repens*	O
White Clover	*Trifolium repens*	O
Annual Meadow-grass	*Poa annua*	O
Creeping Bent	*Agrostis stolonifera*	O
Dog-rose	*Rosa canina*	O
Bramble	*Rubus fruticosus agg.*	O
Common Nettle	*Urtica dioica*	O
Dandelion	*Taraxacum agg.*	O
Hogweed	*Heracleum sphondylium*	O
Scented Mayweed	*Matricaria recutita*	R
Bristly Oxtongue	*Picris echioides*	R
Swine-cress	*Coronopus squamatus*	R
Broad-leaved Dock	*Rumex obtusifolius*	R

APPENDIX IV BAT ACTIVITY SURVEYS (MANUAL TRANSECTS)

Methodology

As per the recommended survey effort for moderate suitability bat habitat (BCT, 2016), the following transect surveys were undertaken at the site to assess the value of the site for bat species.

Figure 3: Transect route and listening stops



- One bat activity transect survey visit per month (April to October) in appropriate weather conditions. One of the visits comprised a dusk and pre-dawn visit within one 24hr period.

During the bat activity transect surveys surveyors walked a predefined route around the Site, recording bat activity along the way. Listening stops were selected at points of interest around the Site to gather additional information. Dusk surveys commenced at sunset and continued for 2 hours after sunset. The transect route and location of listening stops is displayed in Figure X below.

Surveyors used EM3+ bat detectors. All calls were recorded and bats identified to species level (where possible) in the field and later using bat call analysis software (Kaleidoscope Viewer and Analook). Flight lines and commuting routes were recorded onto base maps in the field.

Table 4: Date, time and prevailing weather conditions of bat transect surveys

DATE	TIME	WEATHER*	
15/04/2021 (PM)	20.07 – 22.10 (Sunset: 22.07)	Temp: 9°C Cloud cover: 1/8	Wind: 0-1 Rain: None
13/05/2021 (PM)	20.52 – 22.52 (Sunset: 20.52)	Temp: 12°C Cloud cover: 8/8	Wind: 1-2 Rain: None
23/06/2021 (PM)	21.15 – 23.32 (Sunset: 21.32)	Temp: 14°C Cloud cover: 6/8	Wind: 0-1 Rain: None

*Cloud cover given in Oktas (/8), wind speed given as per Beaufort Scale.

Constraints

The transect route was designed to monitor activity along all hedgerows on site and within the centre of the field. The removal of the hedgerow and rhyne introduces an inconsistency within the data between the first transect survey and the following surveys.

Results

The results from the surveys are summarized in tables x and x below. In summary, Common Pipistrelle was the most frequently recorded bat species, and Soprano Pipistrelle were recorded on two occasions. The highest number of bat passes were recorded in June. Bats were most frequently recorded at locations 1, 2 and 4, along the hedgerows to the W and N of the Application Site, with the highest number recorded at location 1.

Table 5: Number of bat passes by species and month

SPECIES	APRIL	MAY	JUNE
Common Pipistrelle	1	2	11
Soprano Pipistrelle		2	

Table 6: Number of bat passes by species and listening stop location

SPECIES	LOC 1	LOC2	LOC3	LOC4	LOC5	LOC6	LOC7
Common Pipistrelle	8	3	0	2			1
Soprano Pipistrelle			1				1

APPENDIX V: BAT ACTIVITY SURVEYS (AUTOMATED DETECTORS)

Methodology

As per the recommended survey effort for moderate suitability bat habitat (BCT, 2016), the following automated surveys were undertaken at the site to assess the value of the site for bat species:

- Five nights of recording at two separate locations per month (April to October) using automated bat detectors.

Two automated detectors were deployed at separate locations each month for a minimum period of five nights recording. Recordings were scheduled from 30 minutes prior to sunset until 30 minutes after sunrise. Locations of automated detectors for each month are displayed in Figure 3 below. Dates of deployments for automated bat detectors at the Site are displayed in below.

Figure 4: Locations of automated detectors

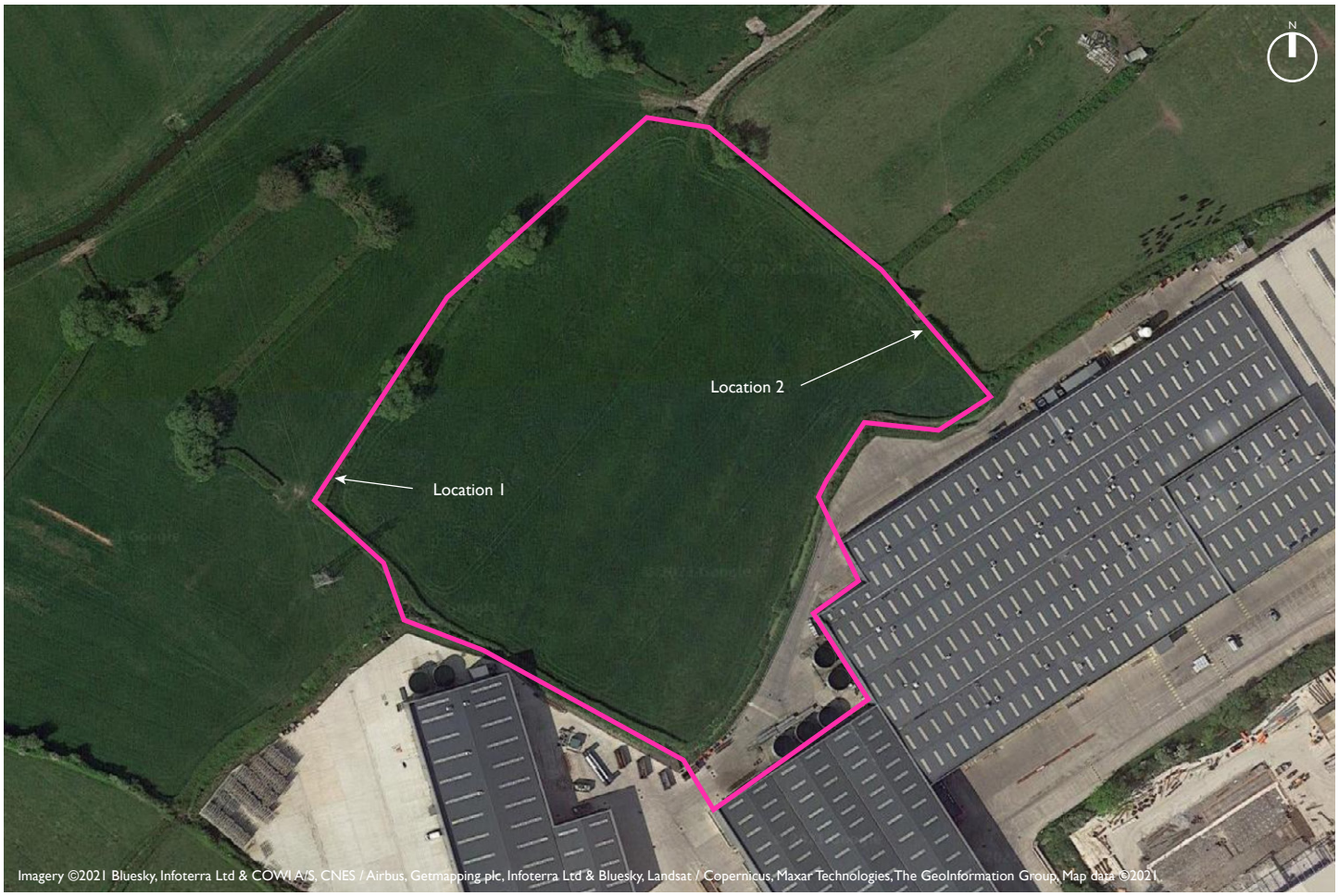


Table 7: Automated bat detector survey dates and prevailing conditions

MONTH	DATE FROM / TO	PREVAILING WEATHER DURING REDORDING PERIOD
April	08/04/2021 – 15/04/2021	Dry, night-time temperatures between 0°C and 8°C
May	04/05/2021 – 11/05/2021	Largely dry, night-time temperatures between 2°C and 13°C
June	16/06/2021 – 23/06/2021	Some rain on most nights, night-time temperatures between 10°C and 18°C

Recordings were subsequently converted to Zero Crossing format using Kaleidoscope software and analysed using Analook to determine species and activity levels over time.

Constraints

The automated detector had to be repositioned after the removal of the hedgerow and rhyne on the SE boundary of the field. This introduced an inconsistency between the data in April and that in May and June.

Results

The data has been summarized in tables x and x below. In summary, Common pipistrelle accounted for the vast majority of bat passes (94.28%). Bat passes were more frequent in the location further away from the industrial site (77% of passes).

Table 8: Percentage of bat passes by month, location and species

	Myo-sp	N-noc	N-sp	Plec-sp	P-pip	P-pyg	R-fer	Total
April	**0.00**	**9.52**	**0.00**	**0.00**	**90.48**	**0.00**	**0.00**	**100**
Loc 1	0.00	10.61	0.00	0.00	89.39	0.00	0.00	100
Loc 2	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100
May	**1.69**	**11.02**	**5.08**	**0.00**	**81.36**	**0.00**	**0.85**	**100**
Loc 1	3.33	1.67	10.00	0.00	83.33	0.00	1.67	100
Loc 2	0.00	20.69	0.00	0.00	79.31	0.00	0.00	100
June	**0.05**	**3.55**	**0.05**	**0.05**	**95.27**	**0.95**	**0.09**	100
Loc 1	0.06	4.45	0.06	0.06	95.12	0.12	0.12	100
Loc 2	0.00	0.42	0.00	0.00	95.78	3.80	0.00	100
Total	0.13	4.29	0.29	0.04	94.28	0.84	0.13	100

Table 9: Number of bat passes by month, location and species

	Myo-sp	N-noc	N-sp	Plec-sp	P-pip	P-pyg	R-fer	Total
April		**14**			**133**			**147**
Loc 1		14			118			132
Loc 2					15			**15**
May	**2**	**13**	**6**		**96**		**1**	**118**
Loc 1	2	1	6		50		1	60
Loc 2		12			46			**58**
June	**1**	**75**	**1**	**1**	**2014**	**20**	**2**	**2114**
Loc 1	1	73	1	1	1560	2	2	1640
Loc 2		2			454	18		474
Grand Total	3	102	7	1	2243	20	**3**	2379

*Bat species abbreviations: Myo-sp *Myotis species,* N-noc *Nyctalus noctula* Noctule, N-sp *Nyctalus leislerii* Leisler's bat, Plec-sp *Plecotus species* Long-eared bat, P-pip *Pipistrellus pipistrellus* Common Pipistrelle, P-pyg *Pipistrellus pygmaeus* Soprano Pipistrelle, R-fer *Rhinolophus ferrumequinum* Greater Horseshoe bat.

APPENDIX VI: BIRD SURVEYS

Methodology

Winter bird surveys were undertaken at the Application Site based on the Common Birds Census (CBC) methodology (Marchant et al., 1990). The survey area was walked slowly so that each part of the Site was approached to within 20m. All bird registrations (either seen or heard) were noted on survey maps, along with details of any activity or behaviour which may be indicative of breeding.

Four separate survey visits were undertaken between December 2020 and March 2021 during the post-dawn period when birds are most active. details the dates and times of the field survey visits, along with weather conditions encountered during the survey.

Table 10: Date, time and prevailing weather conditions for winter bird surveys

SURVEY NO.	DATE	TIME	WEATHER
1	17/12/2020	14.15 – 15.40	Temperature 11°C; Cloud 4/8 Oktas; Wind 3-4 F; No rain
2	22/01/2021	08.07 – 11.00	Temperature 2.4°C; Cloud 1/8 Oktas; Wind 1F; No rain
3	17/02/2021	09.15 – 10.05	Temperature 11-13°C; Cloud 3/8 Oktas; Wind 1-2 F; No rain
4	01/03/2021	09.00 – 10.00	Temperature 5°C; Cloud 7/8 Oktas; Wind 1F; No rain

For the purposes of this assessment, 'notable' species are defined as those that appear on one or more of the following:

- Schedule 1 of the Wildlife & Countryside Act 1981 (as amended);
- Section 41 of the Natural Environment and Rural Communities Act 2006;
- Red or amber list of Birds of Conservation Concern 4.

Constraints

No significant constraints were encountered during the survey effort.

Results

The number of bird species present on the Application Site was limited. However, a large number of bird species were recorded within the wider landscape surrounding the Application Site, in particular species associated with farmland and wet pastures. Table 11 provides the results of all birds species recorded within the Application Site. Table 12 provides a summary of the bird species and numbers recorded within the wider landscape. Figure 4 provides a map of the area surveyed.

Table 11: Summary of birds recorded within Application Site across all surveys

COMMON NAME	SCIENTIFIC NAME	DESIGNATIONS^	NO RECORDED
Goldfinch	*Carduelis carduelis*	BoCC Green	3
Carrion Crow	*Corvus corone*	BoCC Green	2
Meadow Pipit	*Anthus pratensis*	BoCC Amber	15
Song Thrush	*Turdus philomelos*	BoCC Red; S41	2
Magpie	*Pica pica*	BoCC Green	1
Blue Tit	*Cyanistes caeruleus*	BoCC Green	3
Blackbird	*Turdus merula*	BoCC Green	3
Great Tit	*Parus major*	BoCC Green	1
Wren	*Troglodytes troglodytes*	BoCC Green	3
Pied Wagtail	*Motacilla alba*	BoCC Green	2
Robin	*Erithacus rubecula*	BoCC Green	2
Dunnock	*Prunella modularis*	BoCC Amber; S41	1

Table 12: Summary of bird survey results

COMMON NAME	SCIENTIFIC NAME	DESIGNATIONS^	NO. RECORDED PER VISIT			
			1	2	3	4
Goldfinch	*Carduelis carduelis*	BoCC Green	17+	2	6	4
Chaffinch	*Fringilla coelebs*	BoCC Green	0	0	3	2
Carrion Crow	*Corvus corone*	BoCC Green	4	2	1	2
Meadow Pipit	*Anthus pratensis*	BoCC Amber	6	20	1	9
Song Thrush	*Turdus philomelos*	BoCC Red; S41	2	2	2	3
Magpie	*Pica pica*	BoCC Green	1	1	2	1
Blue Tit	*Cyanistes caeruleus*	BoCC Green	8	13	7	13
Blackbird	*Turdus merula*	BoCC Green	2	6	4	4
Great Tit	*Parus major*	BoCC Green	0	6	4	3
Wren	*Troglodytes troglodytes*	BoCC Green	0	6	4	2
Pied Wagtail	*Motacilla alba*	BoCC Green	3	1	2	11
Robin	*Erithacus rubecula*	BoCC Green	2	12	6	2
Dunnock	*Prunella modularis*	BoCC Amber; S41	0	3	4	1
Woodpigeon	*Columba palumbus*	BoCC Green	1	4	7	3

Redwing	*Turdus iliacus*	BoCC Red; Sch1	1	11	8	9
Buzzard	*Buteo buteo*	BoCC Green	0	0	0	1
Fieldfare	*Turdus pilaris*	BoCC Red; Sch1	2	1	~5	~42
Herring Gull	*Larus argentatus*	BoCC Red; S41	10	3	6	5
House Sparrow	*Passer domesticus*	BoCC Red; S41	24+	0	2+	0
Brent Goose	*Branta bernicla*	BoCC Amber; S41	~10	0	0	0
Mute Swan	*Cygnus olor*	BoCC Amber	4	0	0	0
Long-tailed Tit	*Aegithalos caudatus*	BoCC Green	0	10	15+	0
Rook	*Corvus frugilegus*	BoCC Green	0	1	0	0
Grey Heron	*Ardea cinerea*	BoCC Green	0	1	0	1
Green Sandpiper	*Tringa ochropus*	BoCC Amber; Sch1	0	2	0	2
Great Spotted Woodpecker	*Dendrocopos major*	BoCC Green	0	1	0	0
Starling	*Sturnus vulgaris*	BoCC Red; S41	0	10 + ~300	~320	~45
Long-eared Owl	*Asio otus*	BoCC Green	0	1	1	2
Stonechat	*Saxicola torquatus*	BoCC Green	0	2	0	0
Kingfisher	*Alcedo atthis*	BoCC Amber; Sch1	0	1	0	1
Skylark	*Alauda arvensis*	BoCC Red; S41	0	0	2	0
Cormorant	*Phalacrocorax carbo*	BoCC Green	0	0	1	0
Stock Dove	*Columba oenas*	BoCC Amber	0	0	2	0
Lesser Black-backed Gull	*Larus fuscus*	BoCC Amber	0	0	0	2
Mallard	*Anas platyrhynchos*	BoCC Amber	0	0	0	2

* Sch1: listed on Schedule 1 of The Wildlife and Countryside Act (1981)

S41: listed on Section 41 of the NERC Act (2006) as a species of principal importance

BoCC: Birds of Conservation Concern 4 (Eaton et al., 2015) – green, amber or red listed

Figure 5: Areas surveyed during winter bird surveys.

Figure 6: Breeding bird survey area

APPENDIX VII: GREAT CRESTED NEWT EDNA SURVEYS

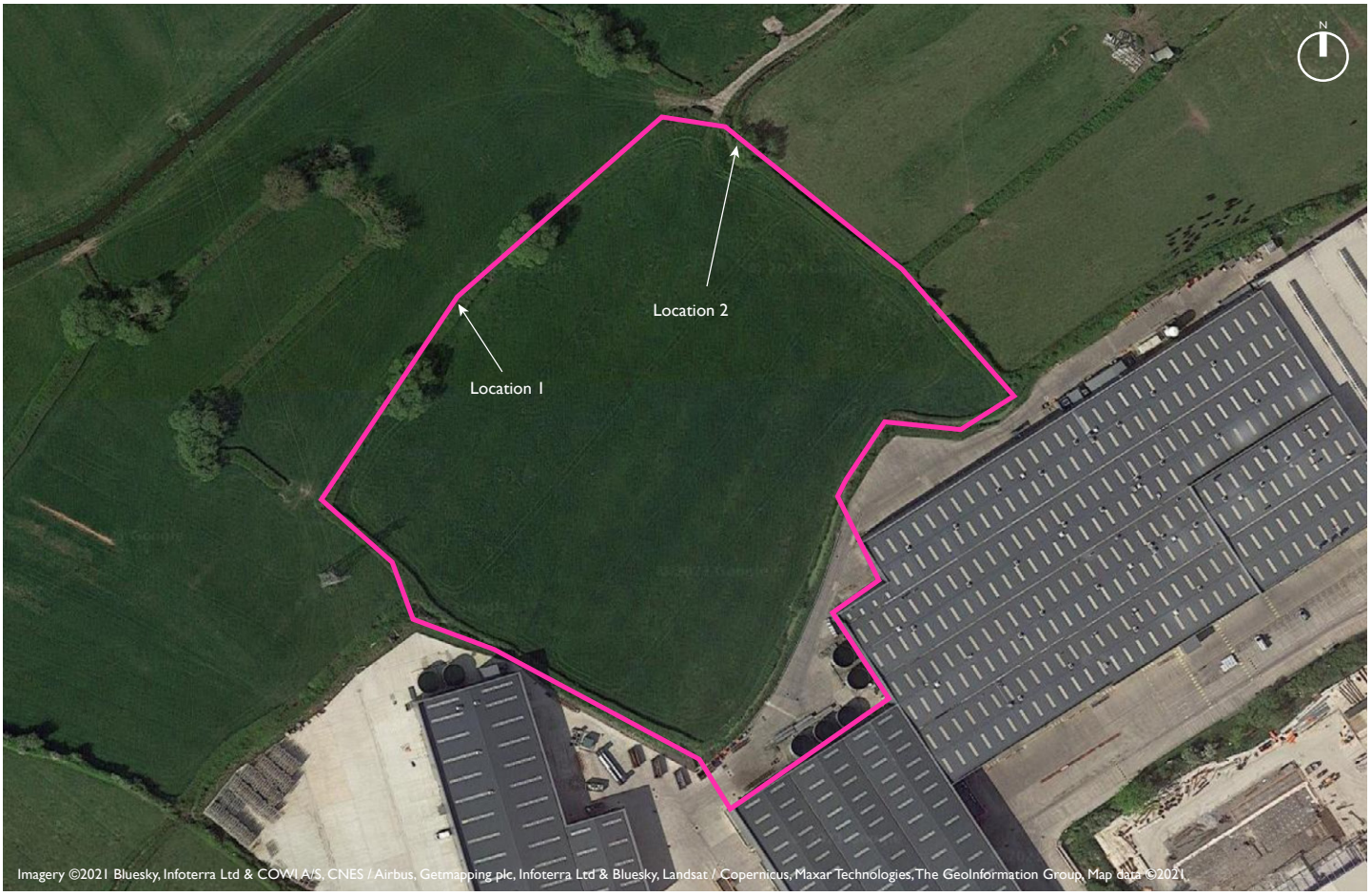
Methodology

Two locations within the surrounding rhynes (refer to Figure X) which offered some suitability for Great Crested Newt (GCN) breeding were sampled for environmental GCN environmental DNA (eDNA) on 15 April 2021. Each location was visited and sampled by licenced surveyors in accordance with the methods outlined in the technical report that accompanies Defra's research project into eDNA (Biggs et al, 2014). Water sampling was undertaken by a Natural England great crested newt survey licence holder. Samples were subsequently analysed by Applied Geonomics Ltd laboratories using quantitative polymerase chain-reaction testing.

Results

Both locations tested for great crested newt eDNA gave a negative result indicating great crested newts are absent from these rhynes.

Figure 7 – GCN eDNA survey locations



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RESULTS

KIT REFERENCE	CLIENT REF	GCN QPCR REPLICATES	INHIBITION DETECTED	DEGRADATION DETECTED
GCNK1012	Pond 1	0/12	1/3	NO
GCNK1013	Pond 2	0/12	1/3	NO

Note: Potential inhibition were detected in both samples. DNA extract for each sample was diluted prior to analysis, as per Defra WC1067 protocols.

Reagent controls for eDNA and inhibition assays performed as expected.

CONCLUSIONS

The results of the tests for great crested newt (*Triturus cristatus*) eDNA in the corresponding samples are provided below:

KIT REFERENCE	CLIENT REF	GCN eDNA DETECTED
GCNK1012	Pond 1	NO
GCNK1013	Pond 2	NO

REFRENCES

Biggs, J., N. Ewald, A. Valentini, C. Gaboriaud, R. A. Griffiths, J. Foster, et al. 2014. Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust, Oxford, U.K.

Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F 2014. Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA. Freshwater Habitats Trust, Oxford.

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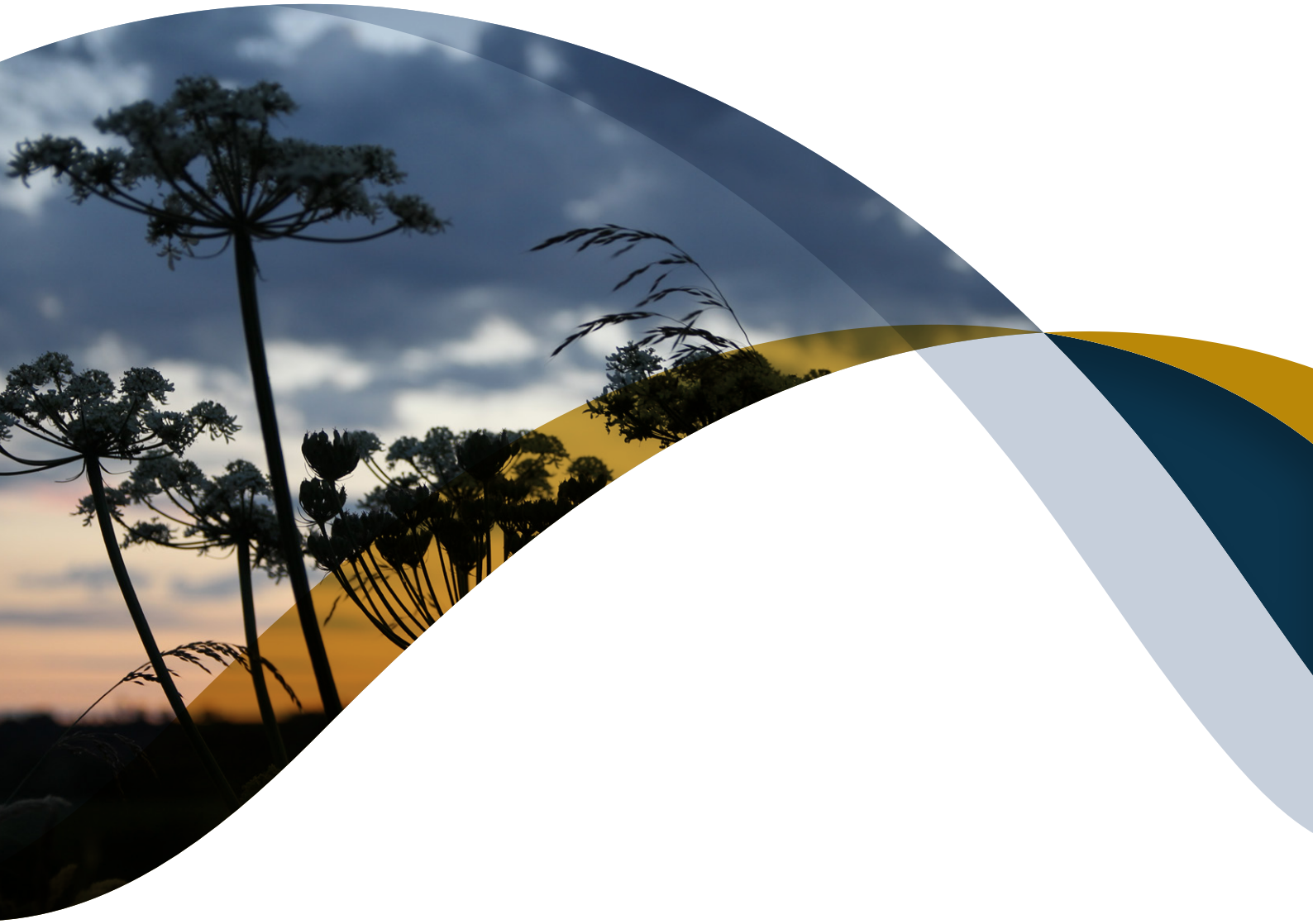

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