

M3

junction 9 improvement scheme

Preliminary Environmental Information Report

Appendix 8.2 – Baseline Reports (Part 3 of 5)

May 2021



Key
 Survey Area
 Maximum Extent of Works



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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						PROJECT:		SCALE @ A3:	CHECKED:	APPROVED:
						M3 Junction 9		7,000	LR	AH
						TITLE:		FILE:	DRAWN:	DATE:
						Site Location Plan		Site Plan	BW	January 2018
REV	DATE	BY	DESCRIPTION	CHK	APP	PROJECT No:	DRAWING No:	REV:		
						70016638	2-1	A		
DRAWING STATUS: FINAL						© WSP Group plc				

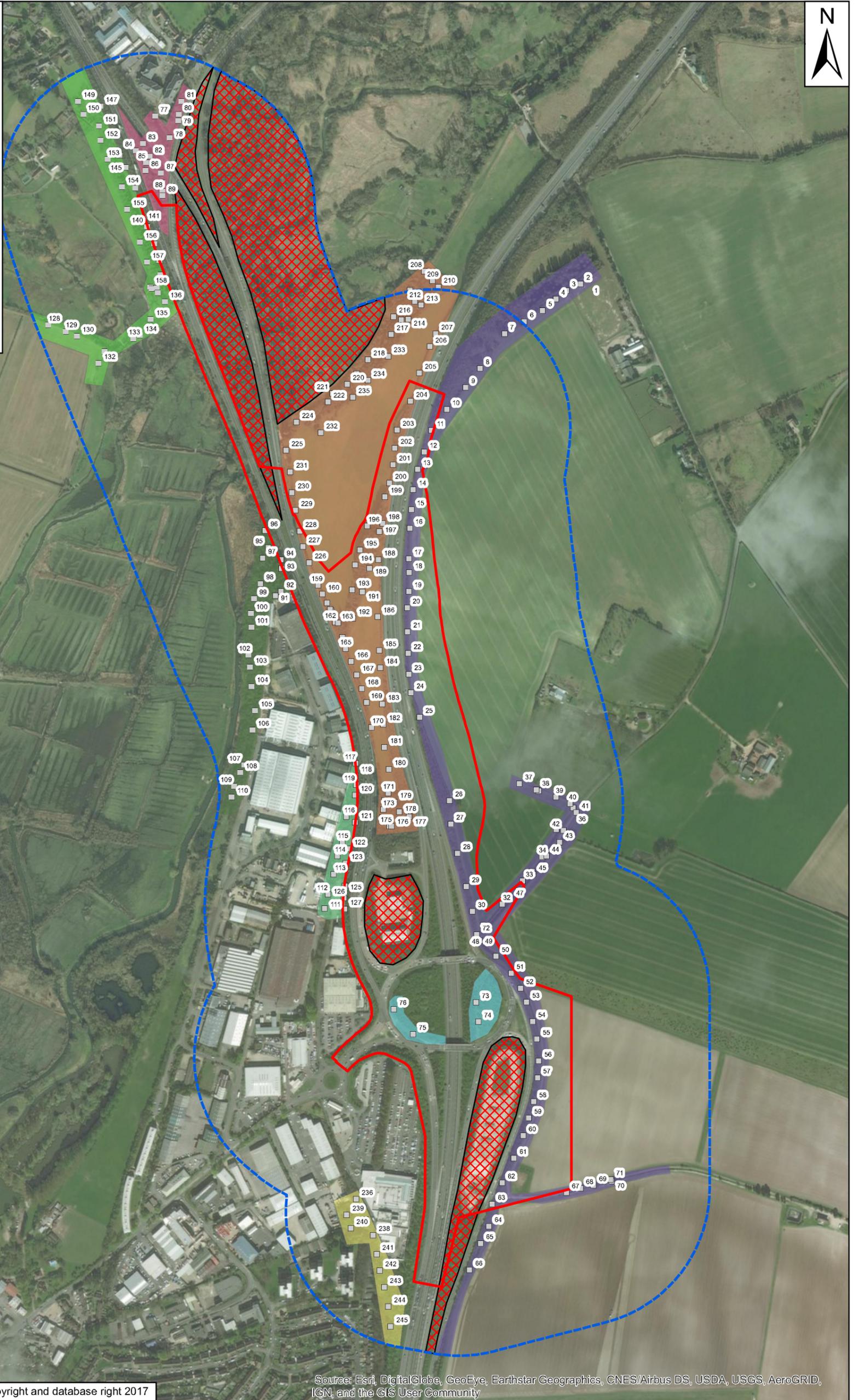
FIGURE 3-1 – DORMOUSE SURVEY AREA

Key

- Maximum Extent of Works
- Survey Area
- No Access
- Dormouse Tubes

Land Parcel

- Land North of the A34/A33
- Land East of the M3
- Easton Down Farm
- Winnall Industrial Estate
- Woodland East of the Itchen
- M3J9 Roundabout
- Pudding Lane Farm
- Land South of Tesco



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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					PROJECT:		SCALE @ A3:	CHECKED:	APPROVED:
					M3 JUNCTION 9		7,000	LR	AH
					TITLE:		FILE:	DRAWN:	DATE:
					DORMOUSE TUBE LOCATIONS		Dormouse Tubes	BW	January 2018
DRAWING STATUS: FINAL					PROJECT No:	DRAWING No:	REV:		
					70016638	3-1	A		
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FIGURE 4-1 – DORMOUSE SURVEY RESULTS

Key

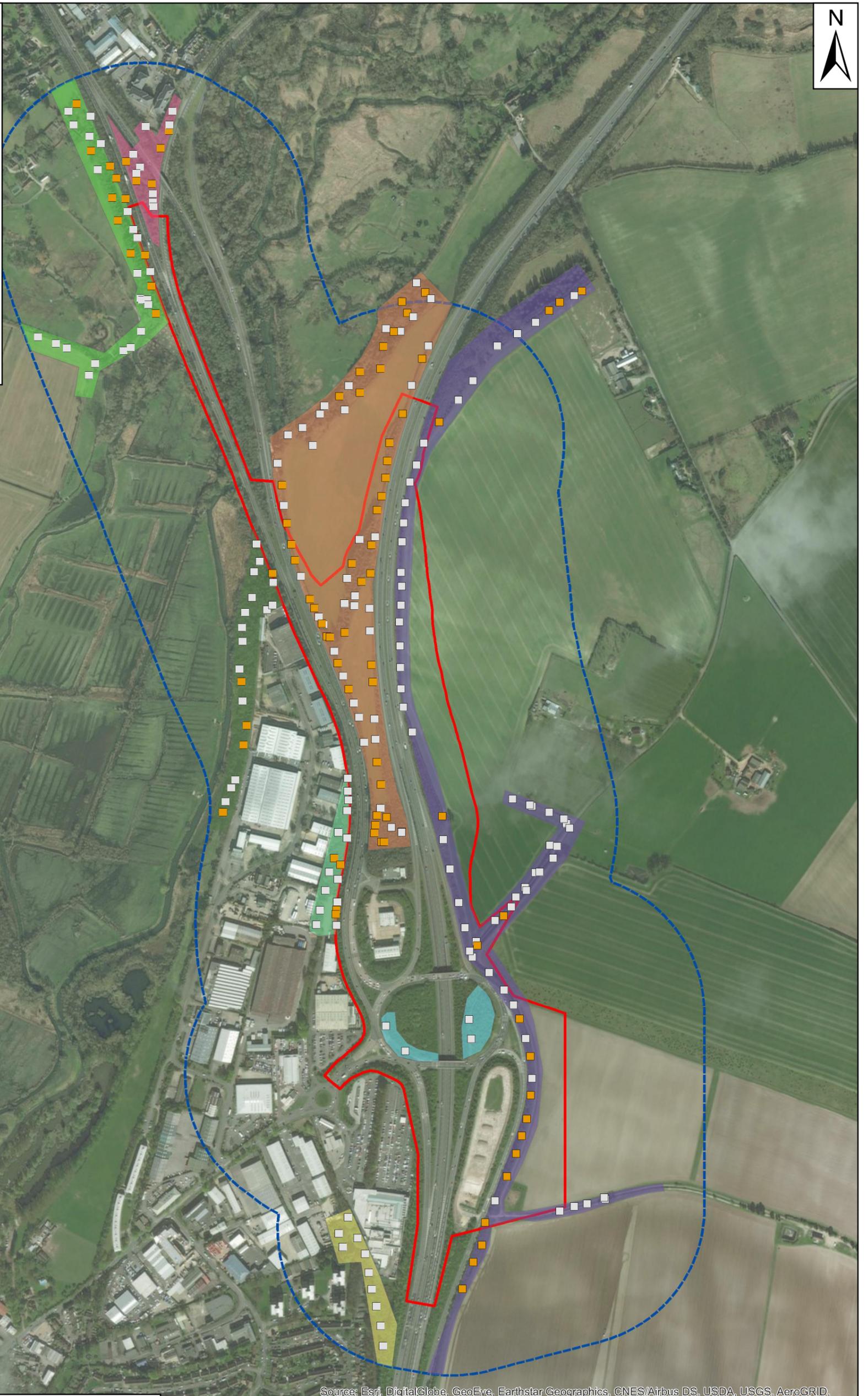
- Survey Area
- Maximum Extent of Works

Dormouse Result

- Absent
- Present

Land Parcel

- Land North of the A34/A33
- Land East of the M3
- Easton Down Farm
- Winnall Industrial Estate
- Woodland East of the Itchen
- M3J9 Roundabout
- Pudding Lane Farm
- Land South of Tesco



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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

					PROJECT:		SCALE @ A3:	CHECKED:	APPROVED:
					M3 JUNCTION 9		7,000	LR	AH
					TITLE:		FILE:	DRAWN:	DATE:
					DORMOUSE SURVEY RESULTS		DM Results	BW	January 2018
REV	DATE	BY	DESCRIPTION	CHK	APP	PROJECT No:	DRAWING No:	REV:	
						70016638	4-1	A	
DRAWING STATUS: FINAL					© WSP Group plc				

Appendix A

SURVEY RESULTS

Table 1 - Dormouse Survey Results

DORMOUSE SURVEY RESULTS								
TUBE NUMBER	TUBE LOCATION	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
1	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A
2	Land east of the M3	-	-	-	N/A	N/A	-	N/A
3	Land east of the M3	-	-	1 Active Adult Dormouse	N/A	N/A	Dormouse Nest	N/A
4	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A
5	Land east of the M3	-	-	-	N/A	N/A	-	N/A
6	Land east of the M3	-	-	-	N/A	N/A	-	N/A
7	Land east of the M3	-	-	-	N/A	N/A	-	N/A
8	Land east of the M3	-	-	-	N/A	N/A	-	N/A
9	Land east of the M3	-	-	-	N/A	N/A	-	N/A
10	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A
11	Land east of the M3	-	-	-	N/A	N/A	-	N/A
12	Land east of the M3	-	-	-	N/A	N/A	-	N/A
13	Land east of the M3	-	-	-	N/A	N/A	-	N/A
14	Land east of the M3	-	-	-	N/A	N/A	-	N/A
15	Land east of the M3	-	-	-	N/A	N/A	-	N/A
16	Land east of the M3	-	-	-	N/A	N/A	-	N/A
17	Land east of the M3	-	-	-	N/A	N/A	-	N/A
18	Land east of the M3	-	-	-	N/A	N/A	-	N/A
19	Land east of the M3	-	-	-	N/A	N/A	-	N/A
20	Land east of the M3	-	-	-	N/A	N/A	-	N/A
21	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A

DORMOUSE SURVEY RESULTS								
TUBE NUMBER	TUBE LOCATION	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
22	Land east of the M3	-	-	-	N/A	N/A	-	N/A
23	Land east of the M3	-	-	-	N/A	N/A	-	N/A
24	Land east of the M3	-	-	-	N/A	N/A	-	N/A
25	Land east of the M3	-	-	-	N/A	N/A	-	N/A
26	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A
27	Land east of the M3	-	-	-	N/A	N/A	-	N/A
28	Land east of the M3	-	-	-	N/A	N/A	-	N/A
29	Land east of the M3	-	-	-	N/A	N/A	-	N/A
30	Land east of the M3	-	-	-	N/A	N/A	-	N/A
31	Land east of the M3	-	-	-	N/A	N/A	-	N/A
32	Land east of the M3	-	-	-	N/A	N/A	-	N/A
33	Land east of the M3	-	-	-	N/A	N/A	-	N/A
34	Land east of the M3	-	-	-	N/A	N/A	-	N/A
35	Land east of the M3	-	-	-	N/A	N/A	-	N/A
36	Land east of the M3	-	-	-	N/A	N/A	-	N/A
37	Land east of the M3	-	-	-	N/A	N/A	-	N/A
38	Land east of the M3	-	-	-	N/A	N/A	-	N/A
39	Land east of the M3	-	-	-	N/A	N/A	-	N/A
40	Land east of the M3	-	-	-	N/A	N/A	-	N/A
41	Land east of the M3	-	-	-	N/A	N/A	-	N/A
42	Land east of the M3	-	-	-	N/A	N/A	-	N/A
43	Land east of the M3	-	-	-	N/A	N/A	-	N/A

DORMOUSE SURVEY RESULTS								
TUBE NUMBER	TUBE LOCATION	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
44	Land east of the M3	-	-	-	N/A	N/A	-	N/A
45	Land east of the M3	-	-	-	N/A	N/A	-	N/A
46	Land east of the M3	-	-	-	N/A	N/A	-	N/A
47	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A
48	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A
49	Land east of the M3	-	-	-	N/A	N/A	-	N/A
50	Land east of the M3	-	-	-	N/A	N/A	-	N/A
51	Land east of the M3	-	-	-	N/A	N/A	-	N/A
52	Land east of the M3	-	-	-	N/A	N/A	-	N/A
53	Land east of the M3	-	-	1 Active Juvenile Dormouse	N/A	N/A	Dormouse Nest	N/A
54	Land east of the M3	-	-	-	N/A	N/A	-	N/A
55	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A
56	Land east of the M3	-	-	-	N/A	N/A	-	N/A
57	Land east of the M3	Dormouse Nest	Dormouse Nest	Dormouse Nest	N/A	N/A	Dormouse Nest	N/A
58	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A
59	Land east of the M3	Dormouse Nest	Dormouse Nest	Dormouse Nest	N/A	N/A	Dormouse Nest	N/A
60	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A
61	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A
62	Land east of the M3	-	-	-	N/A	N/A	-	N/A
63	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A
64	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A

DORMOUSE SURVEY RESULTS								
TUBE NUMBER	TUBE LOCATION	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
65	Land east of the M3	-	-	-	N/A	N/A	Dormouse Nest	N/A
66	Land east of the M3	-	-	-	N/A	N/A	-	N/A
67	Land east of the M3	-	-	-	N/A	N/A	-	N/A
68	Land east of the M3	-	-	-	N/A	N/A	-	N/A
69	Land east of the M3	-	-	-	N/A	N/A	-	N/A
70	Land east of the M3	-	-	-	N/A	N/A	-	N/A
71	Land east of the M3	-	-	-	N/A	N/A	-	N/A
72	Land east of the M3	-	-	-	N/A	N/A	-	N/A
73	M3 Junction 9 Roundabout	-	-	-	-	-	-	N/A
74	M3 Junction 9 Roundabout	-	-	-	-	-	-	N/A
75	M3 Junction 9 Roundabout	-	-	-	-	-	-	N/A
76	M3 Junction 9 Roundabout	-	-	-	-	-	-	N/A
77	Land North of the A34/A33	-	-	-	-	-	-	N/A
78	Land North of the A34/A33	-	-	-	1 Active Adult Male Dormouse	Dormouse Nest	Dormouse Nest	N/A
79	Land North of the A34/A33	-	-	-	-	-	Dormouse Nest	N/A
80	Land North of the A34/A33	-	-	-	-	-	-	N/A
81	Land North of the A34/A33	-	-	-	-	-	-	N/A

DORMOUSE SURVEY RESULTS								
TUBE NUMBER	TUBE LOCATION	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
82	Land North of the A34/A33	-	-	-	-	-	-	N/A
83	Land North of the A34/A33	-	-	-	-	-	-	N/A
84	Land North of the A34/A33	-	-	-	Dormouse Nest	Dormouse Nest	Dormouse Nest	N/A
85	Land North of the A34/A33	-	-	-	-	-	-	N/A
86	Land North of the A34/A33	-	-	-	-	1 Active Adult Females with pinkies	Dormouse Nest	N/A
87	Land North of the A34/A33	-	-	-	-	-	Dormouse Nest	N/A
90	Land North of the A34/A33	-	-	-	-	-	-	N/A
88	Land North of the A34/A33	-	-	-	-	-	-	N/A
89	Land North of the A34/A33	-	-	-	-	-	-	N/A
91	Itchen Woodland	-	-	-	-	-	-	N/A
92	Itchen Woodland	-	-	-	-	-	-	N/A
93	Itchen Woodland	-	-	-	-	-	-	N/A
94	Itchen Woodland	-	-	-	-	-	Dormouse Nest	N/A
95	Itchen Woodland	-	-	-	-	-	-	N/A
96	Itchen Woodland	-	-	-	-	-	-	N/A
97	Itchen Woodland	-	-	-	-	-	-	N/A
98	Itchen Woodland	-	-	-	-	-	-	N/A
99	Itchen Woodland	-	-	-	-	-	-	N/A

DORMOUSE SURVEY RESULTS								
TUBE NUMBER	TUBE LOCATION	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
100	Itchen Woodland	-	-	-	-	-	-	N/A
101	Itchen Woodland	-	-	-	-	-	-	N/A
102	Itchen Woodland	-	-	-	-	-	-	N/A
103	Itchen Woodland	-	-	-	-	3 Active Dormice – 2 Adults, 1 Juvenile	Dormouse Nest	N/A
104	Itchen Woodland	-	-	-	-	-	-	N/A
105	Itchen Woodland	-	-	-	-	2 Active Dormice – 2 Male Juveniles	1 Torpid Adult Dormouse	N/A
106	Itchen Woodland	-	-	-	-	Dormouse Nest	Dormouse Nest	N/A
107	Itchen Woodland	-	-	-	-	-	-	N/A
108	Itchen Woodland	-	-	-	-	-	-	N/A
109	Itchen Woodland	-	-	-	-	-	-	N/A
110	Itchen Woodland	-	-	Dormouse Nest	Dormouse Nest	Dormouse Nest	Dormouse Nest	N/A
111	Winnall Industrial Estate	-	-	-	-	N/A	-	N/A
112	Winnall Industrial Estate	-	-	-	-	N/A	-	N/A
113	Winnall Industrial Estate	-	-	-	-	N/A	-	N/A
114	Winnall Industrial Estate	-	-	-	-	N/A	-	N/A
115	Winnall Industrial Estate	-	-	-	-	N/A	Dormouse Nest	N/A
116	Winnall Industrial Estate	-	-	-	-	N/A	-	N/A
117	Winnall Industrial Estate	-	-	-	-	N/A	-	N/A

DORMOUSE SURVEY RESULTS								
TUBE NUMBER	TUBE LOCATION	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
118	Winnall Industrial Estate	-	-	-	-	N/A	-	N/A
119	Winnall Industrial Estate	-	-	-	-	N/A	-	N/A
120	Winnall Industrial Estate	-	-	-	-	N/A	-	N/A
121	Winnall Industrial Estate	-	-	-	-	N/A	-	N/A
122	Winnall Industrial Estate	-	-	-	-	N/A	Dormouse Nest	N/A
123	Winnall Industrial Estate	-	-	-	-	N/A	-	N/A
124	Winnall Industrial Estate	-	-	-	-	N/A	-	N/A
125	Winnall Industrial Estate	-	-	-	-	N/A	Dormouse Nest	N/A
126	Winnall Industrial Estate	-	-	-	1 Active Juvenile Dormouse	N/A	Dormouse Nest	N/A
127	Winnall Industrial Estate	-	-	-	-	N/A	-	N/A
128	Pudding Lane Farm	-	-	-	-	-	-	N/A
129	Pudding Lane Farm	-	-	-	-	-	-	N/A
130	Pudding Lane Farm	-	-	-	-	-	-	N/A
131	Pudding Lane Farm	-	-	-	-	-	-	N/A
132	Pudding Lane Farm	-	-	-	-	-	-	N/A
133	Pudding Lane Farm	-	-	-	-	-	-	N/A
134	Pudding Lane Farm	-	-	-	-	-	-	N/A
135	Pudding Lane Farm	-	-	-	-	-	-	N/A

DORMOUSE SURVEY RESULTS								
TUBE NUMBER	TUBE LOCATION	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
137	Pudding Lane Farm	-	-	-	-	-	Dormouse Nest	N/A
136	Pudding Lane Farm	-	-	-	-	-	Dormouse Nest	N/A
138	Pudding Lane Farm	-	-	-	-	-	-	N/A
139	Pudding Lane Farm	-	-	-	-	-	Dormouse Nest	N/A
140	Pudding Lane Farm	-	-	-	-	-	-	N/A
141	Pudding Lane Farm	-	-	-	-	-	<i>Apodemus</i> sp. nest	N/A
142	Pudding Lane Farm	-	-	-	-	-	-	N/A
143	Pudding Lane Farm	-	-	1 Active Adult female dormouse - post lactation	Dormouse Nest	Dormouse Nest	Dormouse Nest	N/A
144	Pudding Lane Farm	-	-	-	-	-	Dormouse Nest	N/A
145	Pudding Lane Farm	-	-	Brown leaves, some bark, little structure.	Dormouse Nest	Dormouse Nest	Dormouse Nest	N/A
146	Pudding Lane Farm	-	-	-	-	-	-	N/A
147	Pudding Lane Farm	-	-	-	-	-	-	N/A
148	Pudding Lane Farm	-	-	-	-	-	Slug covered nest	N/A
149	Pudding Lane Farm	-	-	-	-	-	-	N/A
150	Pudding Lane Farm	-	-	-	-	-	-	N/A
151	Pudding Lane Farm	-	-	-	-	-	-	N/A
152	Pudding Lane Farm	-	-	-	-	-	Dormouse Nest	N/A
153	Pudding Lane Farm	-	-	-	-	-	-	N/A
154	Pudding Lane Farm	-	-	-	-	-	Dormouse Nest	N/A

DORMOUSE SURVEY RESULTS								
TUBE NUMBER	TUBE LOCATION	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
155	Pudding Lane Farm	-	-	-	-	-	2 Active Adult Dormice	N/A
156	Pudding Lane Farm	-	-	-	-	-	1 Torpid Adult Dormouse	N/A
157	Pudding Lane Farm	-	-	-	-	-	-	N/A
158	Pudding Lane Farm	-	-	-	-	-	-	N/A
159	Easton Down	-	-	-	N/A	N/A	Dormouse Nest	N/A
160	Easton Down	-	-	-	N/A	N/A	Dormouse Nest	N/A
161	Easton Down	-	-	-	N/A	N/A	Dormouse Nest	N/A
162	Easton Down	-	-	-	N/A	N/A	Dormouse Nest	N/A
163	Easton Down	-	-	-	N/A	N/A	Dormouse Nest	N/A
164	Easton Down	-	-	-	N/A	N/A	-	N/A
165	Easton Down	-	Dormouse Nest	1 Dead Eyes Open Dormouse	N/A	N/A	1 Adult <i>Apodemus</i> sp.	N/A
166	Easton Down	-	-	-	N/A	N/A	-	N/A
167	Easton Down	-	Dormouse Nest	Dormouse Nest	N/A	N/A	Dormouse Nest	N/A
168	Easton Down	-	-	-	N/A	N/A	-	N/A
169	Easton Down	-	-	-	N/A	N/A	-	N/A
170	Easton Down	-	-	-	N/A	N/A	-	N/A
171	Easton Down	-	-	-	N/A	N/A	-	N/A
172	Easton Down	-	-	-	N/A	N/A	Dormouse nest taken over by <i>Apodemus</i> sp.	N/A
173	Easton Down	-	-	-	N/A	N/A	1 Active Adult Dormouse	N/A

DORMOUSE SURVEY RESULTS								
TUBE NUMBER	TUBE LOCATION	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
174	Easton Down	-	-	-	N/A	N/A	Dormouse Nest	N/A
175	Easton Down	-	-	1 Active Adult Dormouse	N/A	N/A	Dormouse Nest	N/A
176	Easton Down	-	-	-	N/A	N/A	Dormouse Nest	N/A
177	Easton Down	-	-	-	N/A	N/A	-	N/A
178	Easton Down	-	-	-	N/A	N/A	-	N/A
179	Easton Down	-	-	-	N/A	N/A	Dormouse Nest	N/A
180	Easton Down	-	-	-	N/A	N/A	1 Torpid Adult Dormouse	N/A
181	Easton Down	-	-	-	N/A	N/A	Dormouse Nest	N/A
182	Easton Down	-	-	-	N/A	N/A	-	N/A
183	Easton Down	-	-	-	N/A	N/A	-	N/A
184	Easton Down	-	-	-	N/A	N/A	Dormouse Nest	N/A
185	Easton Down	-	1 Active Adult Dormouse	Dormouse Nest	N/A	N/A	Dormouse Nest	N/A
186	Easton Down	-	-	-	N/A	N/A	-	N/A
187	Easton Down	-	-	-	N/A	N/A	-	N/A
188	Easton Down	1 Active Female Adult Dormouse	<i>Apodemus</i> sp. taken over nest	<i>Apodemus</i> sp. nest	N/A	N/A	Dormouse Nest	N/A
189	Easton Down	-	-	-	N/A	N/A	Dormouse Nest	N/A
190	Easton Down	-	-	-	N/A	N/A	N/A	-
191	Easton Down	-	-	-	N/A	N/A	N/A	-
192	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
193	Easton Down	-	-	-	N/A	N/A	N/A	-

DORMOUSE SURVEY RESULTS								
TUBE NUMBER	TUBE LOCATION	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
194	Easton Down	-	-	-	N/A	N/A	N/A	-
195	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
196	Easton Down	-	-	-	N/A	N/A	N/A	-
197	Easton Down	-	-	-	N/A	N/A	N/A	Torpid Adult Dormouse
198	Easton Down	-	-	-	N/A	N/A	N/A	-
199	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
200	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
201	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
202	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
203	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
204	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
205	Easton Down	-	-	-	N/A	N/A	N/A	-
206	Easton Down	-	-	-	N/A	N/A	N/A	-
207	Easton Down	-	-	-	N/A	N/A	N/A	-
208	Easton Down	-	-	-	N/A	N/A	N/A	-
209	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
210	Easton Down	-	-	-	N/A	N/A	N/A	-
211	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
212	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
213	Easton Down	-	-	-	N/A	N/A	N/A	-
214	Easton Down	-	-	-	N/A	N/A	N/A	-

DORMOUSE SURVEY RESULTS								
TUBE NUMBER	TUBE LOCATION	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
215	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
216	Easton Down	-	-	-	N/A	N/A	N/A	-
217	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
218	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
219	Easton Down	-	-	-	N/A	N/A	N/A	-
220	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
221	Easton Down	-	-	-	N/A	N/A	N/A	-
222	Easton Down	-	-	-	N/A	N/A	N/A	-
223	Easton Down	-	-	-	N/A	N/A	N/A	-
224	Easton Down	-	-	-	N/A	N/A	N/A	-
225	Easton Down	-	-	-	N/A	N/A	N/A	-
226	Easton Down	-	-	-	N/A	N/A	N/A	-
227	Easton Down	Dormouse Nest	Dormouse Nest	Dormouse Nest	N/A	N/A	N/A	Dormouse Nest
228	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
229	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
230	Easton Down	-	-	-	N/A	N/A	N/A	-
231	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
232	Easton Down	-	-	-	N/A	N/A	N/A	-
233	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
234	Easton Down	-	-	-	N/A	N/A	N/A	Dormouse Nest
235	Easton Down	-	-	-	N/A	N/A	N/A	-
236	South of Tesco	-	-	-	-	-	-	N/A

DORMOUSE SURVEY RESULTS								
TUBE NUMBER	TUBE LOCATION	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
237	South of Tesco	-	-	-	-	-	-	N/A
238	South of Tesco	-	-	-	-	-	-	N/A
239	South of Tesco	-	-	-	-	-	-	N/A
240	South of Tesco	-	-	-	-	-	-	N/A
241	South of Tesco	-	-	-	-	-	-	N/A
242	South of Tesco	-	-	-	-	-	-	N/A
243	South of Tesco	-	-	-	-	-	-	N/A
244	South of Tesco	-	-	-	-	-	-	N/A
245	South of Tesco	-	-	-	-	-	-	N/A

Appendix B

PHOTOGRAPHS

Table 2 - Dormouse Evidence

PHOTO NUMBER	PHOTO DESCRIPTION	PHOTO
1	<i>Dormouse nest with woven chamber</i>	 A photograph showing a person's hand holding a nest made of woven straw and dried leaves. The nest is attached to a light-colored wooden block. A black electronic device is visible in the background.
2	<i>Dormouse nest with woven chamber and brown leaves</i>	 A photograph showing a person's hands holding a nest made of woven straw and brown leaves. The nest is attached to a wooden block. A metal container is visible in the background.
3	<i>Dormouse nest with brown leaves</i>	 A photograph showing a person's hand holding a nest made of woven straw and brown leaves. The nest is attached to a wooden block. The background shows green foliage.

PHOTO NUMBER	PHOTO DESCRIPTION	PHOTO
4	<i>Dormouse nest with bird feathers, clematis and peeled bark</i>	
5	<i>Dormouse nest with peeled bark</i>	
6	<i>Adult dormouse</i>	

PHOTO NUMBER	PHOTO DESCRIPTION	PHOTO
7	<i>Tube 110 with peeled bark dormouse nest</i>	 A close-up photograph showing a person's hand holding a cardboard tube labeled '110'. The tube is attached to a tree trunk with a black strap. Inside the tube, a nest of twigs and dried leaves is visible. The background shows a dense thicket of branches.
8	<i>Tube 3 with dormouse exiting the tube.</i>	 A photograph showing a black tube attached to a tree trunk in a dense thicket of green leaves. A small, dark-colored dormouse is visible exiting the tube. The surrounding foliage is lush and green.

Appendix C

INDICATIVE SPECIES FOR COMPENSATORY PLANTING

Table 3 - Indicative Species List of species suitable for dormice

COMMON NAME	LATIN NAME
Field maple	<i>Acer campestre</i>
Sycamore	<i>Acer pseudoplatanus</i>
Birch	<i>Betula pendula</i>
Hornbeam	<i>Carpinus betulus</i>
Sweet chestnut	<i>Castanea sativa</i>
Dogwood	<i>Cornus sanguinea</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Broom	<i>Cytisus scoparius</i>
Spindle	<i>Euonymus europaeus</i>
Holly	<i>Ilex aquifolium</i>
Wild privet	<i>Ligustrum vulgare</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Domestic apple	<i>Malus domestica</i>
Crab apple	<i>Malus sylvestris</i>
Wild cherry	<i>Prunus avium</i>
Bird cherry	<i>Prunus padus</i>
Blackthorn	<i>Prunus spinosa</i>
Pedunculate oak	<i>Quercus robur</i>
Field rose	<i>Rosa arvensis</i>
Dog rose	<i>Rosa canina</i>
Bramble	<i>Rubus fruticosus</i>
Goat willow	<i>Salix caprea</i>
Grey willow	<i>Salix cinerea</i>
Wayfaring tree	<i>Viburnum lantana</i>

**APPENDIX B8-9
WATER VOLE
SURVEY REPORT**

M3

Junction 9 Improvement Scheme

PCF Stage 3 - Water Vole Survey Report

M3 JUNCTION 9 IMPROVEMENT SCHEME

PCF STAGE 3 - WATER VOLE SURVEY REPORT

Highways England

Second Issue

Project no: 70016638
Date: November 2017



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A P P E N D I X	B	WATER VOLE EVIDENCE
A P P E N D I X	C	INDICATIVE SPECIES LIST FOR RIPARIAN PLANTING

EXECUTIVE SUMMARY

M3 Junction 9 has been highlighted as requiring redevelopment in order to help reduce congestion. This will be achieved by improving the flow of traffic and three options are currently being considered for implementation.

The Proposed Works will cross the River Itchen which currently passes under the A34 and A33 at multiple locations north of Junction 9. WSP was commissioned by Highways England to undertake water vole surveys to detect the presence, or confirm the likely absence, of water voles within land adjacent to the junction. A Survey Area comprising land within 250m of the proposed works area was used. The survey was completed in line with current good practice guidance (Strachan et al, 2011 and Dean et al, 2016). All wetland habitats along the lengths of ditch and river within the Survey Area were visually inspected for evidence indicating the presence of water voles (latrines, burrows, feeding remains etc). Bankside habitat within 5m of the banktop was also included in the survey. Two surveys were undertaken, one in June 2017 and one in August 2017.

Water voles were confirmed to be present within the River Itchen and its associated channels west of the A34. The river channels west of the A34 are part of a wetland habitat that includes springs, flushes and wetland meadows managed by the Hampshire and Isle of Wight Wildlife Trust. The majority of these channels exhibit some water vole activity, although the abundance of activity greatly varies. The River Itchen also exhibits limited activity signs, east of the A34 and A33, though the suitability of these habitats is limited due to the presence of broadleaved woodland and management relating to angling.

Current indications are that the Proposed Works should not directly affect water vole on the basis that soft estate within 10m of occupied watercourses should not be directly affected. This conclusion should be revisited in Project Control Framework Stage 3. Should proposals emerge that may affect habitat close to occupied watercourses, outline recommendations for mitigation are provided in this report. In addition, recommendations are made for ecological enhancement measures which could be incorporated into the design, such as including native planting in existing and new channels, the restoration of channels that are currently unsuitable for water voles and the incorporation of suitable features in new drainage systems.

1 INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 Junction 9 of the M3 is a key transport interchange on the strategic road network which connects South Hampshire and the wider sub-region, with London via the M3 and the Midlands via the A34 (which also links to the principal east-west A303 corridor). A large volume of traffic currently uses the interchange (approximately 6,000 vehicles per hour during the peak periods), which acts as a bottleneck on the local and strategic highway network, causing significant delays. M3 Junction 9 has been proposed for redevelopment in order to help reduce congestion around this stretch of the road by improving the flow of traffic.

1.1.2 Three options have been taken forward to Project Control Framework (PCF) Stage 2 and assessed within this report, namely:

- Option 14: Northbound and Southbound A34 Free Flow Design
- Option 16B: Incremental Delivery – Northbound A34 Free Flow Link
- Option 16C: Incremental Delivery – Southbound A34 Free Flow Design

1.1.3 The works are hereafter referred to as the 'Proposed Works'. Further details of the Proposed Works are presented within the PCF Stage 2 Environmental Assessment Report (EAR) (HE551511-WSP-GEN-M3J9PCF2-RP-LE-00041). The anticipated maximum extent of the works is shown on Figure 8.1, and is hereafter referred to as 'the Site.' An ecological Survey Area has been defined comprising land within 250m of the Site.

1.2 ECOLOGICAL BACKGROUND

1.2.1 A desk study undertaken for the M3J9 PCF Stage 1 identified 357 water vole *Arvicola amphibious* records within a 2km search area of the works extent (WSP 2016).

1.2.2 An extended Phase 1 habitat survey was conducted during the spring of 2017 (WSP, 2017), which confirmed the presence of habitats suitable for water vole. These include river channels of the River Itchen and associated ditches and reedbeds. The River Itchen flows through the north of the Survey Area passing under the A34 and A33. The River Itchen has a number of tributaries and multiple channels, creating a complex stream network.

1.3 BRIEF AND OBJECTIVES

1.3.1 Highways England commissioned WSP UK Limited to:

- Complete a water vole survey in accordance with good practice guidance (Strachan *et al*, 2011) to establish whether water vole are present or likely absent from the Survey Area
- Provide a concise technical report setting out the survey methods used, reporting the survey results, and providing outline recommendations in relation to the project and water voles (with reference to legislation and planning policy relevant to this species)

1.3.2 The results of this survey, and subsequent recommendations, are included within this report.

2 METHODS

2.1 OVERVIEW

2.1.1 To establish whether water vole are present or likely absent, a survey was completed in line with current good practice guidance (Strachan *et al*, 2011). This survey comprised two survey visits to search for water vole field signs within the habitats present.

2.2 WATER VOLE SURVEY

2.2.1 Watercourses and waterbodies identified during the extended Phase 1 habitat survey within the Survey Area were included within the water vole presence and likely absence survey, where access was possible. The locations of the waterbodies surveyed are shown on Figure 8.2.

2.2.2 The survey comprised two visits to each surveyed watercourse within the appropriate season for water vole survey (late April to early October), each incorporating three elements:

- A walked survey of the entire length of the watercourses within the survey area to conduct a thorough visual inspection of the banks and immediate vicinity for water voles or their field signs (field signs include faeces, latrines, feeding remains, burrows, 'lawns', nests, footprints and runways in vegetation)
- The recording of habitat variables and features relevant to water voles (for example general habitat type, shore or bank substrate, bordering land use, vegetation, disturbance level, bank profile, water depth)
- The recording of any field signs or evidence relating to other relevant wildlife (for example otter *Lutra lutra*, mink *Neovison vison* or brown rat *Rattus novegicus*)

2.3 DATES OF SURVEY AND PERSONNEL

2.3.1 The water vole survey was led by an experienced consultant ecologist with extensive water vole survey experience. Surveys were completed on the following dates:

Table 2-1 Survey Dates and Weather Conditions

DATE	START TIME	WEATHER CONDITIONS SUMMARY
28 th & 29 th June 2017	08:00	Rain in the early morning before the first survey. Some light showers during the surveys. Low wind speeds throughout the both days with cloud cover 6/8.
30 th & 31 st August 2017	09:00	Warm days, with occasional cloud cover and one short rain shower on first day. Low winds throughout both days with cloud cover 5/8.

2.4 EVALUATION

2.4.1 The value of the Survey Area for water vole was preliminarily evaluated with reference to good practice guidance (CIEEM, 2016). This guidance recommends that valuation of site importance is made with reference to a geographical framework e.g. a site is of local, regional or national value. To inform the assessment in this report, the extent and quality of habitat present was considered in the context of the distribution and abundance of water vole locally and nationally.

2.5 NOTES AND LIMITATIONS

- 2.5.1 Light rain fell on the evening of 27th and early morning of 28th June. It is likely that some evidence of water vole activity was lost with this rainfall. However, the rainfall was considered not heavy enough to wash away all water vole signs. Water vole signs were recorded along a number of river sections despite this limitation.
- 2.5.2 Due to high water levels and light rainfall during the surveys, water vole latrines may have been recently washed away leaving only fresh faeces present at the time of survey. Many of the faeces piles recorded during the surveys are therefore considered latrines and have subsequently been recorded as such.
- 2.5.3 The majority of watercourses within the Survey Area could be accessed sufficiently to assess the habitat present, and search for signs of water vole presence. However, in some places the depth of the River Itchen channels and density of some reed beds meant that not all parts of the channels could be safely accessed. In these cases the survey was completed from the banks. It is probable that some burrow entrances and evidence of water vole activity will not have been visible from the bankside and therefore will not have been recorded. This is not considered a significant limitation to the survey objectives as water vole signs were recorded frequently along the channels. It is concluded that the entire length of the water course is occupied by water vole for the purpose of designing mitigation.
- 2.5.4 Drainage ditches associated with the A34 were not accessible for health and safety reasons during the water vole surveys (see Figure 8.2), and were not assessed within this report. The drainage ditches are considered unlikely to support water voles due to their shallow water depth, low engineered profiles and prevalence of over-shading vegetation. The ditches, however, could provide suitable foraging habitat for water vole. This limitation is not significant because the Proposed Works should not affect these habitats. Should proposals emerge that may affect these watercourses, it is advised that a water vole survey should be undertaken of these areas.

3 RESULTS AND EVALUATION

3.1 OVERVIEW

3.1.1 Water voles and their signs were recorded within the Survey Area. Evidence was particularly prominent within the Hampshire and Isle of Wight Wildlife Trust (HIWWT) Winnall Moors Nature Reserve west of the A33/A34, whilst occasional evidence was located in the north-east of the Survey Area.

3.2 RESULTS OF WATER VOLE SURVEY

3.2.1 The watercourses surveyed included: channels, forming the River Itchen system; and ditches, which included those associated with the water meadow habitats west of the road, in addition to some highways drainage ditches. For the purposes of reporting, each surveyed watercourse has been assigned a letter (A-V) as shown on Figure 8.3 and described within Appendix A.

3.2.2 The majority of the banks of the River Itchen channels were shallow and densely vegetated, whilst the channels themselves were deep and open. Bankside vegetation most often consisted of common reed *Phragmites australis* and sedge species *Carex sp.* with intermittent grass and herb species. The majority of the bank profiles are considered sub-optimal for water vole burrows due to their low gradients. Feeding opportunities for water vole are high among the majority of the channels due to the abundance of food plants.

3.2.3 Many of the channel banks observe some vegetation maintenance for angling, as well as being grazed by cattle in some cases. In areas where angling or grazing was prominent water vole evidence was limited. This is likely because of lower availability of foraging resources. Management for angling was particularly prominent to the east of the A33/A34 with grazing noted west of the road.

3.2.4 Significantly fewer signs of water vole were observed to the east of the A33/A34. This is likely to be due to the higher cover of woodland, creating shading and a lower cover of emergent aquatic vegetation (which water vole rely upon for food). In addition, most of the banks in this area are reinforced and not conducive to burrowing, and there is a greater degree of habitat management.

3.2.5 With respect to the ditches within the Survey Area, in general these did not hold sufficient water to be suitable for water voles although do provide foraging opportunities.

3.2.6 A total of seven channels were identified as having occasional to abundant activity signs (J, K, N, P, T, U and V). Details of water vole evidence recorded are summarised in Table 3-1 below, with detailed descriptions included in Appendix B. The results are also displayed on Figure 8.3.

3.2.7 Evidence of otter was identified under the bridges of the A34 and A33 along ledges. Small mammal evidence was also identified along the river channels surveyed. These included sightings, droppings and feeding remains of field vole *Microtus agrestis* and shrews *Sorex sp.*

Table 3-1 Summary of Water Vole Evidence at each section

Water course section	Habitat Suitability	ABUNDANCE OF WATER VOLE EVIDENCE				
		Latrines	Feeding stations	Tunnel entrances/ burrows	Paths and runs	Sightings/ sounds
A	Moderate	No Evidence Found				
B	Moderate	-	-	Scarce	-	-
C	Moderate	No Evidence Found				
D	Moderate	No Evidence Found				
E	Moderate	No Evidence Found				
F	Moderate	No Evidence Found				
G	Low	No Evidence Found				
H	Moderate	No Evidence Found				
I	Low	No Evidence Found				
J	High	Scarce	Occasional	-	Occasional	-
K	High	Occasional	Occasional	Scarce	Occasional	-
L	Low	No Evidence Found				
M	Low	No Evidence Found				
N	High	Abundant	Abundant	Scarce	Abundant	Frequent/scarce
O	Moderate	No Evidence Found				
P	High	Occasional	Occasional	-	Occasional	-
Q	Low	No Evidence Found				
R	Moderate	No Evidence Found				
S	Moderate	No Evidence Found				
T	High	Occasional	Occasional	Scarce	Abundant	-
U	High	Occasional	Occasional	-	Occasional	-
V	High	Abundant	Abundant	Scarce	Abundant	-

3.3 EVALUATION OF THE SITE FOR WATER VOLE

3.3.1 Water voles are a widespread species but are of conservation concern having undergone significant population decline and local extinctions (Strachan et al, 2011). Hampshire in general and the River Itchen in particular, support strong populations, as evidenced by the desk study (WSP, 2016) which noted 367 records within a 2km radius of the Survey Area. Therefore, in the context of a strong local population, the population within the Survey Area is considered to be of importance at above the Local level.

4 IMPLICATIONS FOR DEVELOPMENT

4.1 OVERVIEW

4.1.1 Water voles are protected from killing and injury under UK legislation. In addition, planning policy affords further protection within the planning system, as described below. Dependent on the nature of detailed designs, it may be necessary to adopt appropriate avoidance or mitigation measures as part of the Proposed Works as outlined in Section 6.

4.2 LEGAL COMPLIANCE

4.2.1 Water vole are fully protected under The Wildlife and Countryside Act (1981) (as amended), meaning: it is an offence to kill, injure or take this species; damage or destroy places of rest or shelter; or disturb this species whilst occupying a place of rest of shelter.

4.2.2 The water vole is also listed as a Species of Principal Importance (SPI) for the Conservation of Biodiversity in England, in accordance with Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Under Section 40 of the NERC Act (2006) public bodies (including local planning authorities) have a duty to have regard for the conservation of SPI when carrying out their functions, including determining planning applications.

4.3 PLANNING POLICY COMPLIANCE

4.3.1 As the project qualifies as a Nationally Significant Infrastructure Project (NSIP), it must adhere to the National Policy Statement (NPS) for National Networks (Department for Transport, 2014). This states *inter alia* that the principles and objectives of the government's 2012 Natural Environment White Paper (NEWP) and Biodiversity 2020 strategy should be adhered to. These promote moving progressively from net biodiversity loss to net gain by supporting healthy, well-functioning ecosystems and establishing more coherent ecological networks that are more resilient to current and future pressures. The NPS also states that the likely significant effects on the following should be clearly set out:

- Internationally, nationally and locally designated sites of ecological conservation importance
- Protected species and habitats
- Other species identified as being of principal importance for the conservation of biodiversity
- Ecosystems

4.3.2 At the national level, the National Planning Policy Framework (NPPF, 2012) forms the basis for planning system decisions with respect to conserving and enhancing the natural environment, including water vole. The ODPM circular 06/2005 also provides supplementary guidance, including confirmation that '*the presence of a protected species is a material consideration when a planning authority is considering a development proposal*'.

4.3.3 The NPPF sets out, amongst other points, how at an overview level the '*planning system should contribute to and enhance the national and local environment by:*

- *...recognising the wider benefits of ecosystem services; and*
- *minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures...*

4.3.4 A list of principles which local planning authorities should follow when determining planning applications is included in the NPPF, and includes the following:

- *'- if significant harm resulting from a development cannot be avoided...adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *- ...opportunities to incorporate biodiversity in and around developments should be encouraged.'*

4.3.5 At a local level, Winchester City Council and the South Downs National Park have adopted the Winchester District Local Plan Part 1 (Adopted 2013). Chapter 9 is entitled 'High Quality Environment' with policy CP16 entitled Biodiversity. This states 'The Local Planning Authority will support development which maintains, protects and enhances biodiversity across the District, delivering a net gain in biodiversity, and has regard to the following:

- Protecting sites of international, European, and national importance, and local nature conservation sites, from inappropriate development.
- Supporting habitats that are important to maintain the integrity of European sites.
- New development will be required to show how biodiversity can be retained, protected and enhanced through its design and implementation, for example by designing for wildlife, delivering BAP targets and enhancing Biodiversity Opportunity Areas.
- New development will be required to avoid adverse impacts, or if unavoidable ensure that impacts are appropriately mitigated, with compensation measures used only as a last resort.
- Development proposals will only be supported if the benefits of the development clearly outweigh the harm to the habitat and/or species.
- Maintaining a District wide network of local wildlife sites and corridors to support the integrity of the biodiversity network, prevent fragmentation, and enable biodiversity to respond and adapt to the impacts of climate change.
- Supporting and contributing to the targets set out in the District's Biodiversity Action Plan (BAP) for priority habitats and species.
- Planning proposals that have the potential to affect priority habitats and/or species or sites of geological importance will be required to take account of evidence and relevant assessments or surveys.'

4.3.6 Water vole is recognised as a priority species within the Hampshire Biodiversity Action Plan (BAP). Mitigation, compensation and enhancement measures are recommended in Section 6 to enable the Proposed Works to be compliant with the above legislation and planning policy.

5 RECOMMENDATIONS

5.1 OVERVIEW

- 5.1.1 The Proposed Works will likely require works near to the River Itchen watercourse which is occupied by water voles. However, a review of the design drawings indicates that direct impacts to watercourses are unlikely to occur, and therefore it should be possible to avoid impacts to water vole altogether. However, should proposals emerge that affect soft estate within approximately 10m of watercourses, it would be necessary to give consideration as to whether water vole could be affected.

5.2 AVOIDANCE AND MITIGATION MEASURES

DESIGN MITIGATION MEASURES

- 5.2.1 As the Proposed Works do not currently include watercourse crossing points, no specific design mitigation recommendations are made. However, should proposals emerge to affect bridge and culvert structures over watercourses that support water vole, the following recommendations are made:

- They should be designed to maximise permeability to water voles, with a preference for bridges rather than pipes or small culverts
- The height of the structure above the water should be maximised
- Where possible, an area of water course bank should also run through the structure.

- 5.2.2 In addition, recommendations for ecological enhancement measures are made within Section 5.3 below, which may be of relevance to drainage design.

CONSTRUCTION AVOIDANCE MEASURES

- 5.2.3 If possible, construction methods should be devised to ensure that soft estate within 10m of watercourses is avoided. This should include avoiding the storage of materials and operation of machinery from within this area. Present indications are that this should be possible for all design options, although this conclusion will need to be revisited as detailed proposals emerge in PCF Stage 3.

- 5.2.4 If proposals emerge that affect soft estate within 10m of watercourses, it may be necessary to implement mitigation measures outlined below.

CONSTRUCTION MITIGATION MEASURES

- 5.2.5 Where it is not possible to avoid works within 10m of a watercourse it will be necessary to design and implement a mitigation strategy to avoid an offence under the Wildlife and Countryside Act 1981 (as amended). Where effects are limited to areas of bankside habitat totalling less than 50m, it is likely to be appropriate to displace water voles from the works area (as opposed to translocation where greater extents of habitat are affected) in order to avoid the disturbance or harm of individuals water voles.

- 5.2.6 To displace animals from the works area the following will be required:

- Displacement will need to occur in spring (i.e. between 15th February and 15th April) during warm conditions (i.e. >5°C). If spring clearance is not possible, it may be possible to agree an autumn habitat clearance programme with Natural England¹.
- All vegetation will need to be removed from the displacement area, to include bankside, bank top (to a minimum of 3m back) and in-channel vegetation with arisings removed.
- The area will need to be left for a minimum of five days and re-surveyed to check for the presence of water voles (such as latrines, feeding remains and pathways).
- If water voles remain present, or there is uncertainty as to whether burrows remain occupied or not, a destructive search would need to be completed to excavate burrows (using hand tools where possible) and remove suitable habitat for water voles. The destructive search would need to be completed under an ecological watching brief.

5.2.7 During the construction stage, the cleared area must remain unsuitable for water voles. This could be achieved by regularly managing any vegetation regrowth and/or laying matting or other material to prevent regrowth. It is likely that matting or similar will be preferable to also function to prevent sediment run-off towards watercourses where bare substrate is exposed to rainfall.

5.2.8 Furthermore, in order to carry out work under a Natural England licence, it is necessary to include an element of ecological enhancement, such as measures included within Section 5.3 below.

5.3 ECOLOGICAL ENHANCEMENT MEASURES

5.3.1 Biodiversity gain in association with development is encouraged by planning policy including NPPF (2012) and NNNPS (2014). In accordance with this policy it is recommended the following opportunities for enhancing the Site for water vole should be considered:

- The planting of native wetland plants, reeds, grasses, rushes and sedges along new channels, drainage ditches and attenuation ponds; for which a list of suitable native species is included in Appendix C. If created, these features should have sections of steep bank (for burrowing) and marginal vegetation to provide fodder and cover. The new features should be incorporated into the drainage design for the Proposed Works, and seek to maintain and extend the network of drainage channels providing suitable habitat for water voles.
- The removal of areas of dense woody vegetation on existing watercourses, to allow increased light to reach watercourses and thereby enable an increase in in-stream and marginal wetland plants.
- The restoration of water channels; with deepening or alteration of bank profile where appropriate to maximise their suitability for water voles. This could be through ensuring a sufficient depth of water remains present throughout the year or providing a suitable bank profile and substrate for burrowing. The removal of reeds from choked channels (and subsequent management) should be considered to provide open water and growth opportunity for other macrophytes and emergent aquatic vegetation.
- The implementation of long term management to enhance existing watercourses east of the A34. The suitability for water voles can be enhanced within this area through implementing opportunities discussed above, thus resulting in a gain of suitable water vole habitat.

¹ Spring displacement is favoured because water vole population density is at its lowest. During autumn, population density will be significantly higher and water voles, which are territorial animals, may be more reluctant to move to adjacent habitats. Unlike spring clearance (which can be undertaken by a registered individual operating under the class licencing system), autumn clearance would require a licence application to be made to Natural England.

6 CONCLUSION

6.1.1

The water vole survey confirmed the presence of water vole in association with the River Itchen and its channels. Current indications are that the Proposed Works should not affect water vole although this conclusion should be kept under review. Consideration should be given to including ecological enhancement measures within the Proposed Works.

7 REFERENCES

7.1 PROJECT REFERENCES

- WSP (2016) M3J9 Desk Study
- WSP (2017) M3J9 Phase 1 Habitat Survey

7.2 TECHNICAL REFERENCES

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- Department for Communities and Local Government (2012), *National Planning Policy Framework*. Department for Communities and Local Government, London.
- Department for Transport (2014), National Policy Statement for National Networks. Department for Transport, London.
- Hampshire Biodiversity Partnership (2000) Biodiversity Action Plan for Hampshire: Volume 2
- Her Majesty's Stationary Office (HMSO) (1981). *Wildlife and Countryside Act* (as amended by the Countryside and Rights of Way Act 2000)
- HMSO (2005) *Biodiversity and Geological Conservation – Statutory Obligations and Their Impact Within the Planning System*. Office of the Deputy Prime Minister (ODPM) Circular 06/2005 HMSO, Norwich.
- HMSO (2006) *Natural Environment and Rural Communities Act*.
- CIEEM (2016) *Guidelines for Ecological Impact Assessment in the United Kingdom*. CIEEM.
- Strachan, R, Moorhouse T and Gelling M (2011) *Water Vole Conservation Handbook, third edition*. The Wildlife Conservation Research Unit, University of Oxford.
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8

FIGURES

8.1 FIGURE 8.1 – SITE LOCATION PLAN

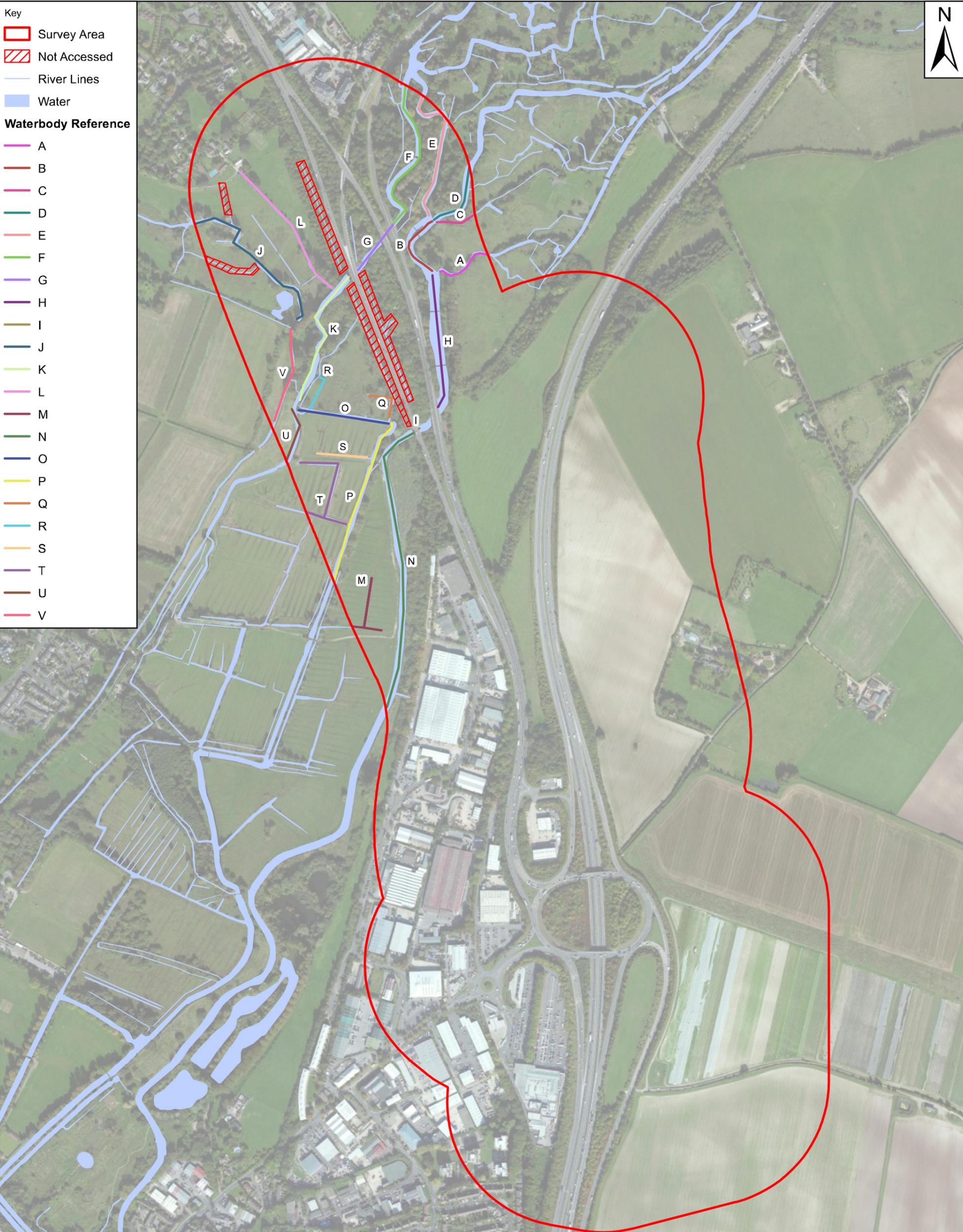
8.2 **FIGURE 8.2 WATER VOLE SURVEY AREA**

Key

- Survey Area
- Not Accessed
- River Lines
- Water

Waterbody Reference

- A
- B
- C
- D
- E
- F
- G
- H
- I
- J
- K
- L
- M
- N
- O
- P
- Q
- R
- S
- T
- U
- V



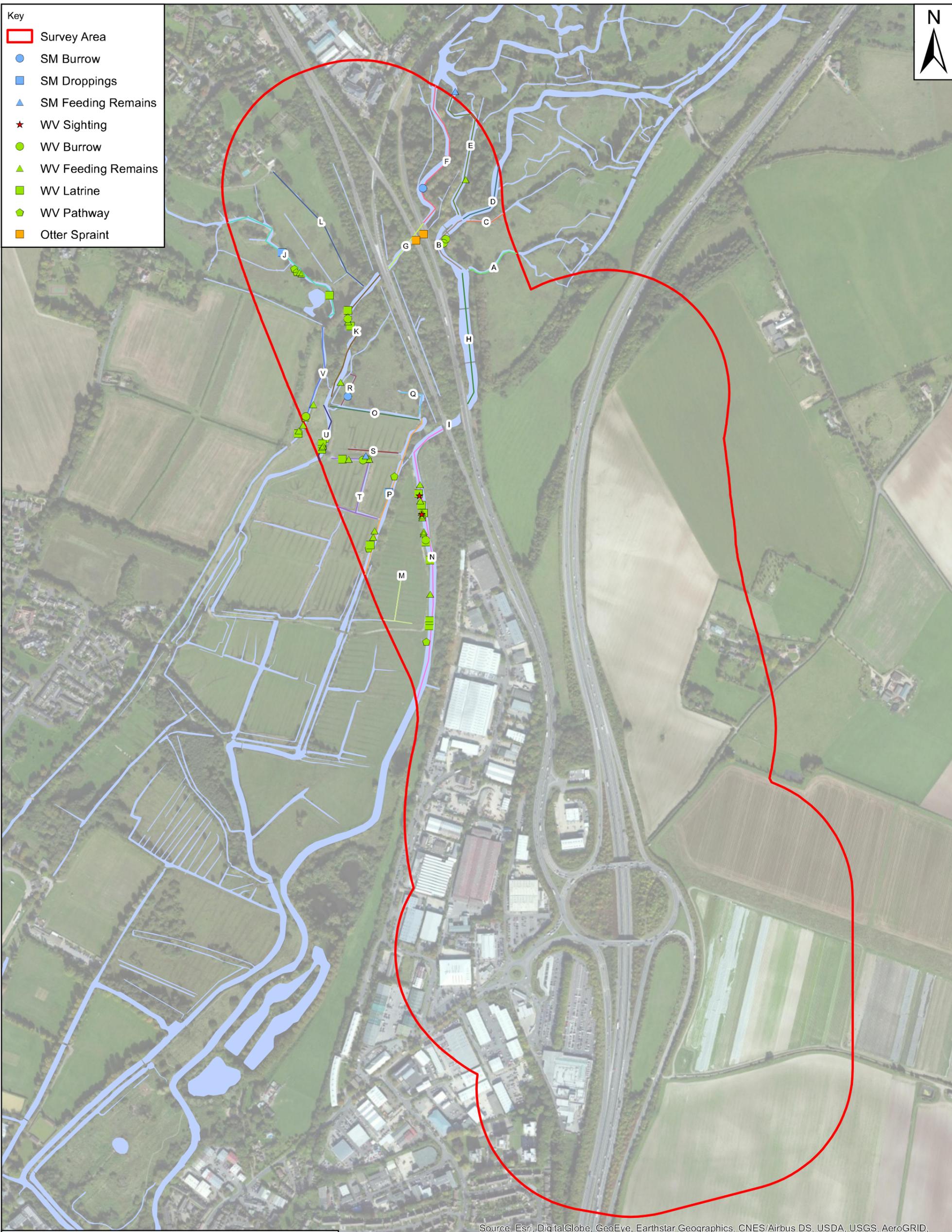
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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					PROJECT:		SCALE @ A3:	CHECKED:	APPROVED:										
					M3 Junction 9		7,000	LR											
					TITLE:		FILE:	DRAWN:	DATE:										
					Figure 8.2 Water Vole Survey Area		WV Survey	BW	September 2017										
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>BY</th> <th>DESCRIPTION</th> <th>CHK</th> <th>APP</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>					REV	DATE	BY	DESCRIPTION	CHK	APP							PROJECT No:	DRAWING No:	REV:
					REV	DATE	BY	DESCRIPTION	CHK	APP									
DRAWING STATUS: FINAL					70016638	2	A	© WSP Group plc											

8.3 **FIGURE 8.3 WATER VOLE SURVEY RESULTS**

- Key
- Survey Area
 - SM Burrow
 - SM Droppings
 - ▲ SM Feeding Remains
 - ★ WV Sighting
 - WV Burrow
 - ▲ WV Feeding Remains
 - WV Latrine
 - ◆ WV Pathway
 - Otter Spraint



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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

		PROJECT: M3 Junction 9	SCALE @ A3: 7,000	CHECKED: LR	APPROVED:												
			FILE: WV Results	DRAWN: BW	DATE: September 2017												
		TITLE: Figure 8.3 Water Vole Survey Results	PROJECT No: 70016638	DRAWING No: 3	REV: A												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>BY</th> <th>DESCRIPTION</th> <th>CHK</th> <th>APP</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		REV	DATE	BY	DESCRIPTION	CHK	APP									© WSP Group plc	
REV	DATE	BY	DESCRIPTION	CHK	APP												
DRAWING STATUS: FINAL																	

Appendix A

WATER BODY DESCRIPTIONS

Table A1 Water body Descriptions

REF	HABITAT	BANK MATERIAL	BORDERING LAND USE	VEGETATION ²								BANK PROFILE			WATER SPEED	WATER DEPTH	WIDTH	DESCRIPTION	WATER VOLE SUITABILITY	
				Bankside trees	Bushes	Herbs	Submerged Weeds	Reeds/ sedges	Tall grass	Short grass	Flat (<10°)	Shallow (<45°)	Sleep (>45°)	Vertical						
A	Running Water	Earth	Permanent/ temporary grass. Grazed with bank fenced.	O	A	O	A	A	F				✓			1-2m	<0.5-1m	Slow	Shallow, narrow, tributary to the River Itchen. North bank has been grazed and poached quite heavily with the south bank entirely vegetated with trees and bushes. The channel is relatively open with some shading from nearby bushes. Emergent vegetation present along the north bank and floating vegetation is present in the east.	Moderate
B	Running Water	Earth/ Reinforced	Permanent/ temporary grass. Mixed broadleaved woodland. Regularly mowed bankside angling paths.	O	O	R	F	F	A				✓			10-20m	<0.5-2m	Rapid	Main channel of the River Itchen flowing through broadleaved woodland. The banks are flat along much of the channel with vertical reinforced sections. The channel is wide, deep and over shaded. Maintained angling pathways are located with side of the channel along with scattered bridged crossings. Sedge <i>Carex sp.</i> reed and herb species along banks regularly cut back for angling.	Moderate
C	Running Water	Earth	Permanent/ temporary grass. Mixed broadleaved woodland. Both banks fenced.	A				A	O			✓				1m	<0.5m	Slow	Shallow, narrow, over shaded channel flowing into the Itchen. Flowing through dense wet willow <i>Salix sp.</i> and reed <i>Phragmites australis</i> . The banks are flat on either side.	Moderate
D	Running Water	Earth/ Reinforced	Permanent/ temporary grass. Mixed broadleaved woodland. Regularly mowed bankside angling paths.	A	O	F	F	F	F			✓				10-20m	<0.5-2m	Rapid	Tributary to the River Itchen, flowing through broadleaved woodland. Fenced on south bank with dense willow and reed. Angling pathway maintained on north bank. Soft reinforcement within some of the banks. Sedge, reed and herbs along banks regularly cut back for angling.	Moderate
E	Running Water	Earth/ Reinforced	Permanent/ temporary grass. Mixed broadleaved woodland. Regularly mowed bankside angling paths.	R	A	A	F	F	A			✓				5-20m	<0.5-2m	Rapid	Tributary to the River Itchen, flowing through broadleaved woodland. Angling pathway maintained on both banks. Soft reinforcement within some of the banks. Sedge, reed and herbs along banks regularly cut back for angling. Some undercutting of the bank	Moderate

² The DAFOR scale has been used to estimate the frequency and cover of the different plant types as follows: Dominant (D) - >75% cover, Abundant (A) – 51-75% cover, Frequent (F) – 26-50% cover, Occasional (O) – 11-25% cover, Rare (R) – 1-10% cover.

REF	HABITAT	BANK MATERIAL	BORDERING LAND USE	VEGETATION ²									BANK PROFILE				WATER DEPTH	WIDTH	DESCRIPTION	WATER VOLE SUITABILITY
				Bankside trees	Bushes	Herbs	Submerged Weeds	Reeds/ sedges	Tall grass	Short grass	Flat (<10°)	Shallow (<45°)	Steep (>45°)	Vertical	WATER SPEED					
F	Running Water	Earth/Silt/ Reinforced	Permanent/ temporary grass. Mixed broadleaved woodland. Regularly mowed bankside angling paths.	O	F	F	O	A	✓	✓	✓							present on north bend where reinforcement has occurred.	Moderate	
G	Running Water	Earth/Stones/ Canalized/ Reinforced	Mixed broadleaved woodland. Road bridges.	D	F	O			✓	✓	✓						Short section of the Ithen following on from F flowing under the A33 & A34 roads. Two concrete bridges are present with installed otter ledges. Flow is considerably faster within this section. Earth and stone banks with a mixture of shallow to steep banks.	Low		
H	Running Water	Earth/ Reinforced	Permanent/ temporary grass. Mixed broadleaved woodland. Regularly mowed bankside angling paths.	R	O	F	A	F	✓	✓	✓						Main channel of the River Ithen. Wide, deep, not very shaded. Reed and sedge prevalent along east bank. Angling pathways regularly maintained on either side. Concrete reinforcement on west bank closest to A34.	Moderate		
I	Running Water	Earth/Stones/ Canalized/ Reinforced	Mixed broadleaved woodland. Road bridges.	D	F	F	O		✓								Similar to G, flowing underneath the A34 north and south bound carriageways. Heavily wooded on either bank. Gravel bars located within the channel.	Low		
J	Running Water	Earth	Permanent/ temporary grass. Grazed and cut for angling.	R	O	R	A	F	✓	✓	✓						Narrow, deep and slow channel. The south bank of this channel whilst the north bank is shallow. South bank is maintained for angling, north bank reed and sedge abundant. The banks get steeper as the channel flows south. Noticeable change from reed to sedge from north to south.	High		
K	Running Water	Earth	Permanent/ temporary grass. Mixed broadleaved woodland. Regularly mowed bankside angling paths.	O	R	R	F	A	✓	✓	✓						Continuation from section G. Deep and wide channel, bordered by woodland on the west and reedbed on the east. Shallow earth banks with dense sedge and reed. West bank is maintained for angling 50m after the bridge.	High		
L	Ditch	Earth	Permanent/ temporary grass. Grazed by cattle and fenced on one side	F	F		O	F	✓	✓	✓						Wet drainage ditch between two grazed fields. Very shallow (<10cm) in depth and lined with trees and bushes. Dries out at its northern end. Reed and yellow iris /iris psuedacorus located in wetter areas.	Low		

REF	HABITAT	BANK MATERIAL	BORDERING LAND USE	VEGETATION ²										BANK PROFILE			WATER DEPTH	WIDTH	DESCRIPTION	WATER VOLE SUITABILITY
				Bankside trees	Bushes	Herbs	Submerged Weeds	Reeds/ sedges	Tall grass	Short grass	Flat (<10°)	Shallow (<45°)	Steep (>45°)	Vertical	WATER SPEED					
M	Ditch	Earth/ Poached	Permanent/ temporary grass. Grazed by cattle.			A	D	A		✓						✓	<0.5m	1m	Wet flushes within marshy grassland. Very shallow channel choked with vegetation. Heavily poached by cattle.	Low
N	Running Water	Earth/Gravel	Permanent/ temporary grass. Grazed by cattle. Angling pathways	F	F	F	A	A	O	A	✓						<0.5m – 2m	10-20m	Main channel of the River Ichen. Wide, deep and fast flowing channel. Very large, dense reed bed to the east of the channel with will further south. West bank is maintained for angling, with a sedge and reed dominant. Gravel river bed. Banks are shallow with plenty of food sources. West bank was not accessed due to reed bed.	High
O	Running Water	Earth/ Poached	Permanent/ temporary grass. Grazed by cattle.	R			O	D			✓						0.5-1m	2-5m	Narrow, fast flowing open channel lined with reed. Poaching on the north bank. The banks are relatively flat and with some shallower sections.	Moderate
P	Running Water	Earth/ Poached	Permanent/ temporary grass. Grazed by cattle. Banks maintained for angling.	R	A	A	A	D	F	F	✓						<0.5-2m	2-10m	Very thick reed chokes the channel in the north and opens out in the south. West bank is mown for angling, however 2m strip of herb, sedge and reed is maintained. East bank is dense with reed. Very flat banks towards the south.	High
Q	Running Water/Pond	Earth/ Poached	Permanent/ temporary grass. Mixed broadleaved woodland. Grazed by cattle.	F			A		F		✓						<0.5-1m1	1-5m	Wooded pond with sluiced southern point, trickling into P. Very shaded and flat banks with some submerged vegetation. Channel extends west of the pond into the cattle grazed field. This channel is sluggish and choked with sedge and tall grasses.	Low
R	Running Water	Earth/ Poached	Permanent/ temporary grass. Mixed broadleaved woodland. Grazed by cattle. Fenced on both banks.	A	F	F	F	A			✓						<0.5-1m	1-2m	Narrow, shallow channel with reed bed to the west and grazed field to east. The channel has flat banks on either side. The channel begins flowing through woodland and into section O. A dry ditch extends north of R from the A34 highways ditch.	Moderate
S	Ditch	Earth	Permanent/ temporary grass. Reed bed.	R			D				✓						<0.5-1m	1m	Flush within marshy grassland flowing into section P. Dense reeds on either side of the flat banks. Completely shaded channel, which gradually deepens from west to east.	Moderate
T	Running Water	Earth	Permanent/ temporary grass. Reed bed.		F	R	A	F	F		✓						<0.5m	1-2m	Narrow, shallow and rapid channel with some reed and sedge along northern stretch. The channel is open. Some large sedge tussocks located along the northern section flowing west to east. Southern section banks are densely covered in reed. The channel remains open and fast flowing.	High

REF	HABITAT	BANK MATERIAL	BORDERING LAND USE	VEGETATION ²									WATER SPEED	WATER DEPTH	WIDTH	DESCRIPTION	WATER VOLE SUITABILITY					
				Bankside trees	Bushes	Herbs	Submerged Weeds	Reeds/ sedges	Tall grass	Short grass	Flat (<10°)	Shallow (<45°)						Steep (>45°)	Vertical			
U	Running Water	Earth/ Poached	Permanent/ temporary grass. Grazed by cattle. Banks maintained for angling.			F	A	A	F					✓				2-5m	0.5-2m	Rapid	Fast flowing and deep channel extending south from K. No longer wooded, but cattle grazing and angling pathways either side. Some poaching identified on west bank. The banks are shallow with 2-3m of vegetation including sedge and reed.	High
V	Running Water	Earth/ Poached	Permanent/ temporary grass. Grazed by cattle.			R	F	D	A					✓				1-5m	<0.5m	Sluggish	Narrow, slow flowing, open channel flowing through grazed fields. Heavily poached either side. Predominately reed on the bank sides, with very flat bank on east. The bank is steeper on the west, however more heavily poached.	High

Table A2 Waterbody Photos

WATERBODY REFERENCE	PHOTO
A	N/A
B	N/A
C	N/A
D	
E	
F	 
G	

WATERBODY REFERENCE	PHOTO	
H		
I		
J		
K		
L	N/A	
M	N/A	
N		

WATERBODY REFERENCE	PHOTO	
O		
P		
Q	N/A	
R		
S		
T	N/A	
U		

WATERBODY REFERENCE	PHOTO
V	N/A

Appendix B

WATER VOLE EVIDENCE

Table B1 Waterbody Photos

WATER COURSE	SURVEY DATE	DESCRIPTION OF EVIDENCE PRESENT	PHOTO
A	28/06/17	Mammal path through sedge and marginal vegetation. No droppings or slide present.	
B	28/06/17	Two burrows located on the east bank approximately 7-8cm in diameter. One burrow is under and filled with water, whilst the other has some collapsing.	
C	30/08/17	Burrow described above located again – further collapsing occurred since Survey 1.	
D		No evidence found	
E	30/07/17	Runs within the vegetation, two small feeding stations identified. Droppings present are not from water vole, likely bank vole.	

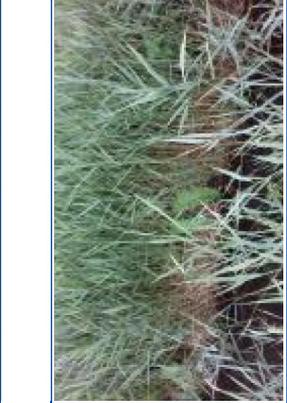
WATER COURSE	SURVEY DATE	DESCRIPTION OF EVIDENCE PRESENT	PHOTO
F	28/06/17	Burrow located 2m from the water's edge within the mowed pathway. It is approximately 4-5cm wide the lower limit to water vole burrows. The burrow leads straight to the water, however no entrance was located.	
G	28/06/17	Otter spraints located under the bridges of the A34 & A33. Four spraints located under the A33 bridge along an otter ledge (668). Five spraints located under the A34 (667) these being fresher than those aforementioned.	
H	30/07/17	Otter spraints identified as before, no fresh spraints on Survey 2.	
I		No evidence found	
		No evidence found	

WATER COURSE	SURVEY DATE	DESCRIPTION OF EVIDENCE PRESENT	PHOTO
J	28/06/17	<p>Small mammal runs located through the bankside vegetation, likely to be used by water voles and other small mammals. Droppings of small mammals located within sedge, unlikely to be water vole.</p> <p>Water vole feeding remains located at feeding stations within the west bank.</p> <p>Vegetation remains include reed and Yorkshire fog cut to 10cm pieces with 45° ends.</p>	
K	28/06/17	<p>Feeding remains identified on the east and west banks of the stream with prominent pathways intermittent.</p> <p>Water vole burrow located in the east west bank of section K. Droppings and well used pathways also identified within the immediate vicinity.</p>	

WATER COURSE	SURVEY DATE	DESCRIPTION OF EVIDENCE PRESENT	PHOTO
	30/07/17	Water vole feeding stations and runs identified on the north bank of the river corner. Latrines identified within close proximity to the feeding remains. Fresh water vole droppings identified on an in stream log (K5).	
L		No evidence found	
M		No evidence found	
N	29/06/17	<p>A high density of water vole activity signs were identified all along the west bank of section N.</p> <p>Two water voles were sighted within the reed and sedge bank.</p> <p>A floating platform is located within the section, with water vole droppings identified on the platform. Water vole runs and feeding platforms are located along section N in high density.</p> <p>Water vole droppings are also located amongst the feeding remains and along the pathways.</p> <p>No burrows were identified on the west bank, however the east bank was not accessed due to water depth and dense reed bed.</p> <p>Map reference 687 is a potential otter slide. It is wide enough for otter use, however it does not exhibit other characteristics associated with otter.</p>	

WATER COURSE	SURVEY DATE	DESCRIPTION OF EVIDENCE PRESENT	PHOTO
			
	31/07/17	<p>As in Survey 1, a high density of water vole activity signs identified along the west bank of the channel.</p> <p>Seven feeding stations were identified with associated latrines in close proximity.</p> <p>Fresh water vole droppings present within the latrines. Fresh water vole droppings also present on the floating platform.</p> <p>Water vole burrow identified at N6, with entrance higher on the bank and tunnel leading westwards.</p> <p>Prominent runs were identified all along the west bank of the channel.</p>	

WATER COURSE	SURVEY DATE	DESCRIPTION OF EVIDENCE PRESENT	PHOTO
O			
		No evidence found	
P	29/06/17	Small mammal droppings identified.	
	31/08/17	<p>Water vole feeding stations identified along the west bank of the channel, with vegetation cuttings of over 10cm in length.</p> <p>One water vole latrine was identified with fresh droppings in close proximity to a large feeding station.</p> <p>Water vole runs are present along the bank connecting feeding stations together.</p>	

WATER COURSE	SURVEY DATE	DESCRIPTION OF EVIDENCE PRESENT	PHOTO
Q		No evidence found	
R	29/06/17	Potential small mammal runs identified on west bank leading to the water's edge. These were not directly accessed.	
S		No evidence found	

WATER COURSE	SURVEY DATE	DESCRIPTION OF EVIDENCE PRESENT	PHOTO
T	29/06/17	<p>Water vole and field vole feeding stations, prominent runs and water vole droppings identified on the north and south sides of the channel. Feeding remains include reed, sedge and horsetail.</p> <p>Water vole burrow identified within the tussock of sedge, the entrance approximately 10cm in diameter.</p>	
	31/08/17	Feeding remains present on both banks, however small cuttings indicate likely bank vole presence.	

WATER COURSE	SURVEY DATE	DESCRIPTION OF EVIDENCE PRESENT	PHOTO
U	29/06/17	<p>Water vole and small mammal droppings located on the west bank of the channel. Feeding remains of water vole and small mammals present. Numerous water vole feeding stations identified along the length of section U.</p>	
	31/08/17	<p>Water vole pathway identified leading to a feeding station and latrine.</p>	
	29/06/17	<p>Feeding remains and pathways of water vole present. Feeding remains approximately 10cm in length consisting primarily of reed.</p>	
V	31/08/17	<p>A number of water vole activity signs identified along the channel, up to the wooded section. Water vole feeding stations located along the channel connected by runways. One latrine identified in close proximity a large feeding station. One water vole burrow identified at 320.</p>	
	29/06/17	<p>Feeding remains and pathways of water vole present. Feeding remains approximately 10cm in length consisting primarily of reed.</p>	

WATER COURSE	SURVEY DATE	DESCRIPTION OF EVIDENCE PRESENT	PHOTO
			

Appendix C

INDICATIVE SPECIES LIST FOR RIPARIAN PLANTING

Table C1 Indicative Species List for Riparian Planting ³

COMMON NAME	LATIN NAME
Reeds/Grasses	
Reed canary grass	<i>Phalaris arundinacea</i>
Common reed	<i>Phragmites australis</i>
Reed sweet grass	<i>Glyceria maxima</i>
Meadow grasses	<i>Poa trivialis, P. pratensis</i>
Cocksfoot	<i>Dactylis glomerata</i>
Sweet grasses	<i>Glyceria fluitans, G. notata</i>
False oat-grass	<i>Arrhenatherum elatius</i>
Tufted hair-grass	<i>Deschampsia caespitosa</i>
Sweet vernal-grass	<i>Anthoxanthum odoratum</i>
Yorkshire fog	<i>Holcus lanatus</i>
Creeping soft grass	<i>H. mollis</i>
Creeping bent	<i>Agrostis stolonifera</i>
Timothy	<i>Phleum pratense</i>
Marsh foxtail	<i>Alopecurus geniculatus</i>
Meadow foxtail	<i>A. pratensis</i>
Purple moor-grass	<i>Molinia caerulea</i>
Rushes	
Hard rush	<i>Juncus inflexus</i>
Soft rush	<i>J. effusus</i>
Conglomerated rush	<i>J. conglomeratus</i>
Sharp-flowered rush	<i>J. acutiflorus</i>
Jointed rush	<i>J. articulatus</i>
Sedges	
Greater tussock sedge	<i>Carex paniculata</i>
False fox-sedge	<i>C. otrubae Podp.</i>
Hairy sedge	<i>C. hirta</i>
Bottle sedge	<i>C. rostrata</i>
Pendulous sedge	<i>C. pendula</i>
Black sedge	<i>C. nigra</i>
Greater pond-sedge	<i>C. riparia</i>
Water Plants	
Branched bur-reed	<i>Sparganium erectum</i>
Unbranched bur-reed	<i>S. emersum</i>
Common water-plantain	<i>Alisma plantago-aquatica</i>
Flowering rush	<i>Butomus umbellatus</i>
Broad-leaved pondweed	<i>Potamogeton natans</i>
Hornwort	<i>Ceratophyllum demersum</i>
Yellow flag iris	<i>Iris pseudacorus</i>
Bogbean	<i>Menyanthes trifoliata</i>
Pond lilies	<i>Nymphaeodes peltata, Nuphar lutea, Nymphaea alba</i>
Bulrush	<i>Schoenoplectus lacustris</i>

³ (Based on Strachan *et al*, 2011)

COMMON NAME	LATIN NAME
Water crowfoots	<i>Ranunculus peltatus, R. aquatilis, R. penicillatus,</i>
Watercress	<i>Nasturtium officinale</i>
Wetland / Riparian edge plants	
Bistort	<i>Polygonum amphibium</i>
Marsh marigold	<i>Caltha palustris</i>
Celery-leaved buttercup	<i>Ranunculus sceleratus</i>
Lesser spearwort	<i>R. flammula</i>
Greater spearwort	<i>R. lingua</i>
Cuckoo flower	<i>Cardamine pratensis</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Water avens	<i>Geum rivale</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Fools watercress	<i>Apium nodiforum</i>
Angelica	<i>Angelica sylvestris</i>
Marsh bedstraw	<i>Galium palustre</i>
Water forget-me-not	<i>Myosotis scorpioides</i>
Water mint	<i>Mentha aquatica</i>
Brooklime	<i>Veronica beccabunga</i>
Marsh valerian	<i>Valeriana officinalis</i>
Marsh sowthistle	<i>Sonchus palustris</i>
Water figwort	<i>Scrophularia auriculata</i>
Gypsywort	<i>Lycopus europaeus</i>

**APPENDIX B8-10
BREEDING BIRD
COMMUNITY
WALKOVER SURVEY
REPORT**

M3

Junction 9 Improvement Scheme

Breeding Bird Community Walkover Survey Report

M3 JUNCTION 9 IMPROVEMENT SCHEME

BREEDING BIRD COMMUNITY WALKOVER SURVEY REPORT

Highways England

Second Issue

Project no: 70016638
Date: November 2017



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ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
Remarks	Final for comment	P02		
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Project number	70016638	70016638		
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EXECUTIVE SUMMARY

M3 Junction 9 has been highlighted as requiring redevelopment in order to help reduce congestion. This will be achieved by improving the flow of traffic, and three options are currently being considered for implementation.

To gather baseline information about the importance of the land adjacent to the junction and the potential works footprint for birds, a survey was completed in June and July 2017. This comprised a habitat assessment and survey focussing on birds, and covering the proposed work area and land to 250m away (the Survey Area). Surveys covered this area using two transects.

The work has established that the Survey Area supports a breeding bird community including Red or Amber listed Species of Conservation Concern (Eaton *et al.*, 2015), and Species of Principal Importance as listed in Section 41 of the Natural Environment and Rural Communities Act 2006, as well as more common species. The species of conservation concern include at least two declining farmland Species of Principal Importance, skylark and yellowhammer, which due to the intensively farmed nature of the arable habitats, and sightings, are likely to be present in small numbers. Two Schedule 1 species, Cetti's warbler and kingfisher, and a variety of other species of conservation concern were noted along the River Itchen corridor. The Itchen is likely to support a more notable bird community than the remainder of the Survey Area.

Once the final design is identified, a further bird survey should be carried out in the breeding season, comprising (as a minimum) three visits, one each in April, May and June. Surveyors will approach habitat that could be used by breeding birds within and surrounding the works area, and land to 50m. Depending on the final design, the presence of breeding waders on Winnall Moors (a nearby nature reserve, managed by the Hampshire Wildlife Trust) may need to be established, either through appropriately timed surveys or liaison with the Wildlife Trust. Species specific surveys, such as for lesser spotted woodpecker *Dendrocopos minor*, are recommended where the Proposed Works will impact specific habitat types. Species specific surveys will be dependent on the final route selected.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Junction 9 of the M3 is a key transport interchange on the strategic road network which connects South Hampshire and the wider sub-region, with London via the M3 and the Midlands via the A34 (which also links to the principal east-west A303 corridor). A large volume of traffic currently uses the interchange (approximately 6,000 vehicles per hour during the peak periods), which acts as a bottleneck on the local and strategic highway network, causing significant delays. M3 Junction 9 has been proposed for redevelopment in order to help reduce congestion around this stretch of the road by improving the flow of traffic.

1.1.2 Three options have been taken forward to Project Control Framework (PCF) Stage 2 and assessed within this report, namely:

- Option 14: Northbound and Southbound A34 Free Flow Design;
- Option 16B: Incremental Delivery – Northbound A34 Free Flow Link;
- Option 16C: Incremental Delivery – Southbound A34 Free Flow Design.

1.1.3 The works are hereafter referred to as the 'Proposed Works'. Further details of the Proposed Works are presented within the PCF Stage 2 EAR (HE551511-WSP-GEN-M3J9PCF2-RP-LE-00041). The anticipated maximum extent of the works is shown on **Figure 1.1**, and is hereafter referred to as 'the Site.'

1.2 ECOLOGICAL BACKGROUND

1.2.1 An ecological desk study was produced by WSP in 2016. A large number of bird species records were obtained occurring within grid squares within a 2km radius of the Site. These included notable and strictly protected species such as kingfisher *Alcedo atthis* and bittern *Botaurus stellaris*.

1.2.2 The Phase 1 habitat survey carried out by WSP in spring 2017 confirmed the presence of habitats with potential to support notable bird species and communities.

1.3 AIMS AND OBJECTIVES

1.3.1 The aims of this report are to:

- Set out the methods and results of walkover bird surveys undertaken in June and July 2017;
- Provide an initial appraisal, based on habitats and the species recorded, of the likely conservation value of the breeding bird assemblage present; and
- Identify whether further surveys would be likely to significantly strengthen the baseline for assessment.

1.4 LEGISLATIVE AND POLICY FRAMEWORK

HABITAT REGULATIONS 2010 (AS AMENDED)

1.4.1 Under the amendments to the Habitat Regulations (16th August 2012) Regulation 9A(2) & (3) state that local authorities 'must take such steps in the exercise of their functions as they consider appropriate to contribute to...the preservation, maintenance and re-establishment of a sufficient

diversity and area of habitat for wild birds in the UK including by means of the upkeep, management and creation of such habitat...'. The legislation continues to state that economic and recreation requirements must be taken into consideration in considering which measures are appropriate.

WILDLIFE AND COUNTRYSIDE ACT 1981 (AS AMENDED)

- 1.4.2 Under the Wildlife and Countryside Act 1981 (as amended) all wild birds are protected from killing and injury, and their nests and eggs protected from taking, damage and destruction whilst in use. Therefore, recommendations to avoid contravention of this legislation are included within Section 6.
- 1.4.3 Additional protection is extended to species listed under Schedule 1 of the Act, meaning it is also an offence to disturb these species at or near the nest, or whilst they have dependent young.

NATURAL ENVIRONMENT AND RURAL COMMUNITIES (NERC) ACT 2006

- 1.4.4 The NERC Act 2006 reinforces the duty upon all public authorities, including planning authorities, to have regard for the conservation of biodiversity when discharging their duties. The Act refines the definition of biodiversity conservation, stating that it includes restoring or enhancing a population or habitat. Section 41 of the NERC Act requires the Secretary of State to list habitats and species of principal importance (HPIs and SPIs) for the conservation of biodiversity in England. The habitats and species listed in accordance with Section 41 largely replicate those listed on the UK Biodiversity Action Plan (BAP) which occur in England (however there are exceptions).

1.5 PLANNING POLICY

NATIONAL POLICY STATEMENT FOR NATIONAL NETWORKS

- 1.5.1 As the project qualifies as a Nationally Significant Infrastructure Project (NSIP), it must adhere to the National Policy Statement (NPS) for National Networks (Department for Transport 2014). This states *inter alia* that the principals and objectives of the government's *2012 Natural Environment White Paper (NEWP)* and *Biodiversity 2020 strategy* should be adhered to. These promote moving progressively from net biodiversity loss to net gain by supporting healthy, well-functioning ecosystems and establishing more coherent ecological networks that are more resilient to current and future pressures. The NPS also states that the likely significant effects on internationally, nationally and locally designated sites of ecological conservation importance, on protected species and on habitats, on other species identified as being of principal importance for the conservation of biodiversity and that potential impacts on ecosystems should be clearly set out.

NATIONAL PLANNING POLICY FRAMEWORK

- 1.5.2 At a national context planning policy is driven by the National Planning Policy Framework (NPPF) (2012). The NPPF sets out, amongst other points, how at an overview level the *'planning system should contribute to and enhance the national and local environment by:*
- *...recognising the wider benefits of ecosystem services;*
 - *minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures...'*

- 1.5.3 The NPPF states that this should be achieved through local planning development frameworks and gives recommendations for criteria based policies which recognise the hierarchy of designated sites which range from internationally important habitat, to sites of importance at a local level and ensure

that protection is *'commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks.'*

1.5.4 A list of principles which local planning authorities should follow when determining planning applications is included in the NPPF which includes the following:

- *'if significant harm resulting from a development cannot be avoided...adequately mitigated, or, as last resort, compensated for, then planning permission should be refused;*
- *...opportunities to incorporate biodiversity in and around developments should be encouraged;*
- *planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland...unless the need for, and benefits of, the development in that location clearly outweigh the loss...'*

1.5.5 Although the NPPF revoked Planning Policy Statement 9 (PPS9), the ODPM circular 06/2005 originally prepared to accompany PPS9 remains current. This states that *'the presence of a protected species is a material consideration when a planning authority is considering a development proposal* and also includes confirmation that *'potential effects of a development, on habitats or species listed as priorities in the UK Biodiversity Action Plan (BAP)...are capable of being a material consideration in the...making of planning decisions.'* The circular advises that local authorities should consult Natural England before granting planning permission if the proposals could adversely affect a protected species, this definition of a protected species includes birds.

LOCAL PLANNING POLICY

1.5.6 At a local level, Winchester City Council and the South Downs National Park have adopted the Winchester District Local Plan Part 1 (Adopted 2013). Chapter 9 is entitled 'High Quality Environment' with policy CP16 entitled *Biodiversity*. This states *'The Local Planning Authority will support development which maintains, protects and enhances biodiversity across the District, delivering a net gain in biodiversity, and has regard to the following:*

- *Protecting sites of international, European, and national importance, and local nature conservation sites, from inappropriate development. Supporting habitats that are important to maintain the integrity of European sites.*
- *New development will be required to show how biodiversity can be retained, protected and enhanced through its design and implementation, for example by designing for wildlife, delivering BAP targets and enhancing Biodiversity Opportunity Areas.*
- *New development will be required to avoid adverse impacts, or if unavoidable ensure that impacts are appropriately mitigated, with compensation measures used only as a last resort.*
- *Development proposals will only be supported if the benefits of the development clearly outweigh the harm to the habitat and/or species.*
- *Maintaining a District wide network of local wildlife sites and corridors to support the integrity of the biodiversity network, prevent fragmentation, and enable biodiversity to respond and adapt to the impacts of climate change.*
- *Supporting and contributing to the targets set out in the District's Biodiversity Action Plan (BAP) for priority habitats and species.*
- *Planning proposals that have the potential to affect priority habitats and/or species or sites of geological importance will be required to take account of evidence and relevant assessments or surveys.'*

2 METHODOLOGY

2.1 WALKOVER SURVEY

2.1.1 The survey involved walking two transects selected to sample habitats within the ‘Survey Area’, defined to cover the maximum extent of works and land 250m around it (see **Figures 2.1 and 2.1**).

2.1.2 The survey followed a method based on the British Trust for Ornithology’s (BTO’s) Common Bird Census (CBC), as summarised by Bibby et al. (2000). Transects were walked at a slow and steady pace, and frequent stops were made to look and listen for singing and calling birds, particularly where the transects passed close to woodland (in order to allow time to record and pick out all species audible).

2.1.3 The activity of all birds detected was mapped using standard British Trust for Ornithology (BTO) annotation (two-letter species codes and activity symbols). In addition, notes were made on the habitats present. The combination of species recorded and an assessment of habitat type and quality have been used in this report to infer the likely composition of the breeding bird community.

2.2 DATES AND PERSONNEL

2.2.1 Two visits were carried out, both starting shortly after dawn, one on 6 June 2017 and the other on 3 July 2017. The weather conditions during the survey visits are detailed in **Table 2.1**.

Table 2.1 Survey dates and weather conditions

DATE	START TIME	WEATHER CONDITIONS SUMMARY
6 June 2017	6:00	Rain initially followed by progressive clearing of cloud cover. North-westerly light wind during much of the survey to 6/8.
3 July 2017	5:45	Dry throughout survey. No wind. Cloud cover 7/8.

2.2.2 The surveys were completed by an experienced field ornithologist able to identify all breeding bird species likely to be encountered both visually and aurally. The surveyor has undertaken breeding bird surveys across much of southern Britain, and is familiar with all regularly used survey techniques and standard BTO coding. He has over 12 years of consultancy experience and has undertaken breeding bird survey work to inform the planning applications for large residential developments, wind farms and infrastructure projects.

2.3 NOTES AND LIMITATIONS

2.3.1 The rain that affected the June survey visit may have suppressed territorial behaviour, particularly territorial song. However, as the work commissioned involved initial characterisation of the breeding bird community based on both species and habitat appraisal, this is not a significant constraint.

3

RESULTS AND INTERPRETATION

3.1 HABITATS

3.1.1

The Survey Area supports a range of broad habitat types and these can be seen on **Figure 2.1**. Notable locations are also shown on this figure which can be cross-referenced with the text below. Habitats and discrete areas within the context of the Survey Area include:

- Intensively managed arable. This is the dominant habitat in the east of the Survey Area. A variety of autumn sown cereals (see Note 1 on Figure 2.1), peas (Note 2) and potatoes (Note 3) were present at the time of the surveys.
- Hedgerows. Those bordering or close to the M3 are generally heavily managed and narrow. The hedgerows on Easton Lane (Note 4) are more structurally diverse and have dimensions of approximately 2 m height by 2 m width. The ground flora in this location has a range of grasses and herbs.
- Recently established grassland and woodland belt. This runs east to west (see Note 5), is approximately 35 m wide and 500 m in length (and extends outside the survey area). The sward is tussocky and grass-dominated.
- Mixed woodland. Present in the northern part of the Survey Area (see Note 6), and of plantation origin, with both native deciduous trees and non-native spruces and a varied edge featuring berry-bearing shrubs.
- The River Itchen corridor between the A34 and the M3. A mosaic of habitats including semi-natural broad-leaved woodland and flood plain meadows (see Note 7) bordered by two (grazed) improved grassland fields (see Note 8) that are separated by poor quality plantation woodland.
- The River Itchen corridor west of the A34. Reed bed adjacent to the river (Note 9 on Figure 2), periodically flooded meadows under low intensity grazing (Note 10 on Figure 2) and hay meadows (Note 11 on Figure 2) within the Winnal Moors nature reserve. The nature reserve is managed by the Hampshire Wildlife Trust. A system of reed-fringed drains is present on adjacent land. These habitats have supported a breeding bird community including lapwing *Vanellus vanellus* redshank *Tringa totanus* and snipe *Gallinago gallinago*, for which the nature reserve is noted as being (in part) managed.
- The A34/M3 Junction and verges. A mosaic of scrub, woodland and grassland. Much of the woodland is of plantation woodland (Note 12). Scrubby edge habitats are bordered by grassland which supports varied flora including seed-bearing weeds.
- Hard standing. Industrial and commercial units and roads dominate the south-eastern part of the Survey Area.

3.2 SPECIES RECORDED

3.2.1

Two species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) were noted within the Survey Area during the surveys: kingfisher *Alcedo atthis* and Cetti's warbler *Cettia cetti*. These species are afforded protection against disturbance when breeding (in addition to the general protection afforded by the Act to all wild birds from persecution, and the reckless and deliberate destruction of active nests).

3.2.2

A number of species which feature on the Red or Amber lists of Conservation Concern (Eaton *et al.* 2015) and SPI for the Conservation of Biodiversity in England (with regard to the provisions of the NERC Act 2006) were also recorded. These are predominantly species that have undergone

declines or range contractions due to factors including agricultural intensification and changes in land use. **Table 3-1** lists these species and their conservation status.

Table 3.1 Species of Conservation Concern and SPIs recorded in 2017

SPECIES	SCIENTIFIC NAME	BIRDS OF CONSERVATION CONCERN RED OR AMBER LIST	SPI
Bullfinch	<i>Pyrrhula pyrrhula</i>	A	Y
Dunnock	<i>Prunella modularis</i>	A	Y
Grey wagtail	<i>Motacilla cinerea</i>	R	
Herring gull	<i>Larus argentatus</i>	R	Y
Kingfisher	<i>Alcedo atthis</i>	A	
Linnet	<i>Linaria cannabina</i>	R	Y
Mallard	<i>Anas platyrhynchos</i>	A	
Mistle thrush	<i>Turdus viscivorus</i>	R	
Reed bunting	<i>Emberiza schoeniclus</i>	A	Y
Song thrush	<i>Turdus philomelos</i>	R	Y
Skylark	<i>Alauda arvensis</i>	R	Y
Swift	<i>Apus apus</i>	A	
Yellowhammer	<i>Emberiza citrinella</i>	R	Y

3.2.3 A number of species which are not listed as Red or Amber or SPIs were also recorded. A full list is included in **Appendix A**.

INTERPRETATION

3.2.4 The records of kingfisher and Cetti's warbler were both from the River Itchen corridor west of the A34 (Note 9 on **Figure 2.1**). Habitats in this area are suitable for breeding Cetti's warbler, as they include reed bed and seasonally inundated scrub. It is unclear from the survey work whether kingfishers are likely to breed close to where the bird was recorded, or if the individual was commuting along the River Itchen. Both species are 'moderately common residents' in the county (Hampshire Ornithological Society, 2011). Other species noted in this area included a family party of grey wagtails, song thrush and reed bunting, all of which are of conservation concern or SPIs, and which could potentially breed in areas of habitat close to where they were recorded. Mallard were also noted on the Itchen.

3.2.5 The understorey structure and presence of deadwood in the woodland plots in the northern part of the Survey Area (see Note 6) may be of local importance to the bird community associated with the Itchen corridor.

3.2.6 The remaining SPIs and species of conservation concern were mainly associated with farmland habitats. These included yellowhammer, linnet and skylark.

- Yellowhammer was noted in small numbers, particularly around the hedgerows on Easton Lane (Note 4 on **Figure 2.1**), around the recently planted plantation woodland and rough grassland strip (Note 5) and along hedgerows at Long Walk immediately to the east of the Survey Area.
- Small numbers of skylark were recorded in the arable field in the south-eastern corner of the Survey Area (Note 1 on **Figure 2.1**) and to the north of Easton Lane (Note 2 on **Figure 2.1**).
- Linnet and bullfinch were both noted during one of the two visits and were seen on the hedgerow adjoining Easton Lane.

3.2.7 It is likely, based on the records of skylark and yellowhammer (which included singing birds in the case of the former and repeat sightings in the same discrete area in the case of the latter), that both species breed within the Survey Area. Both species are typically double or triple-brooded, and therefore likely to be in breeding habitat at the time of the work.

- 3.2.8 Dunnock was recorded in a variety of habitats across the Survey Area, including scrub in proximity to the River Itchen and around built development in the south-eastern part of the Survey Area. Song thrush was also noted in several locations within the Survey Area.
- 3.2.9 Herring gulls and a swift were seen in flight over the Survey Area. There was no indication of breeding of either species within it.
- 3.2.10 A range of common species with wide-ranging habitat preferences were noted during the work. These included blackbird *Turdus merula*, wren *Troglodytes troglodytes*, and robin *Erithacus europaeus*.
- 3.2.11 Overall, the work established the bird community is comprised of a mixture of common and widespread species, some of which are of conservation concern. The exceptions to this are the River Itchen corridor, which appears to support a varied bird community, and the hedgerow along Easton Lane, which appears to be the most important feature in the context of the arable farmland that dominates the Survey Area.
- 3.2.12 There are limitations to what can be concluded at this stage. The likely breeding status of some species of conservation concern (such as linnets and bullfinches) remains unclear. For other species, such as skylark and yellowhammer, only broad estimates of the number of territories present can be made. Spring survey work would provide greater certainty with regard to the current status of breeding waders in the Winnal Moors area and for some species of conservation concern which could potentially occur locally (including lesser spotted woodpecker *Dryobates minor*). Species specific surveys are recommended in cases where the Proposed Works will impact such habitats. These surveys will be dependent on the final route selected.

4 CONCLUSIONS AND RECOMMENDATIONS

- 4.1.1 The survey work completed in June and July 2017 has involved representative sampling of the Survey Area using two transects.
- 4.1.2 This work has established that the Survey Area supports a breeding bird community that is likely to include at least two declining farmland SPIs, skylark and yellowhammer. Due to the intensively farmed nature of the arable habitats, and the limited number of registrations of these species, it is likely that only small populations are present within the Survey Area. However, further (spring) surveys would be necessary to confirm this.
- 4.1.3 Two Schedule 1 species, Cetti's warbler and kingfisher, and a variety of other species of conservation concern were noted along the River Itchen corridor. The Itchen is likely to support a more notable bird community than the remainder of the Survey Area, and consideration will need to be given to the completion of additional surveys if there is a likelihood of impacts on this community. In particular, the continued presence of breeding waders on Winnal Moors could be established through appropriately timed surveys or liaison with Hampshire Wildlife Trust.
- 4.1.4 When the preferred route option is selected it is recommended that a more detailed survey be undertaken of the areas identified to be impacted upon by the final scheme. To do this, three visits in April, May and June will be undertaken, during which the surveyors will cover all suitable habitats within the final survey area to within 50m. Species specific surveys, such as for lesser spotted woodpecker *Dendrocopos minor*, are recommended dependent on the final route selected.

5

REFERENCES

5.1 PROJECT REFERENCES

- WSP (2016) M3 Junction 9 Improvement PCF Stage 1. Ecological Desk Study
- WSP (2017) M3 Junction 9 Improvement PCF Stage 2. Phase 1 Habitat Survey

5.2 TECHNICAL REFERENCES

- Bibby C.J, Burgess N.D, Hill D.A, & Mustoe S.H. (2000). Bird Census Techniques. Second Edition. Elsevier Ltd.
- Eaton, M.A., Aebischer, N.J., Brown, A.F., Hearn, R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D., & Gregory, R.D. (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *British Birds* 108: 708-746.
- Hampshire Ornithological Society (2011). *Hampshire Bird Report 2010*.

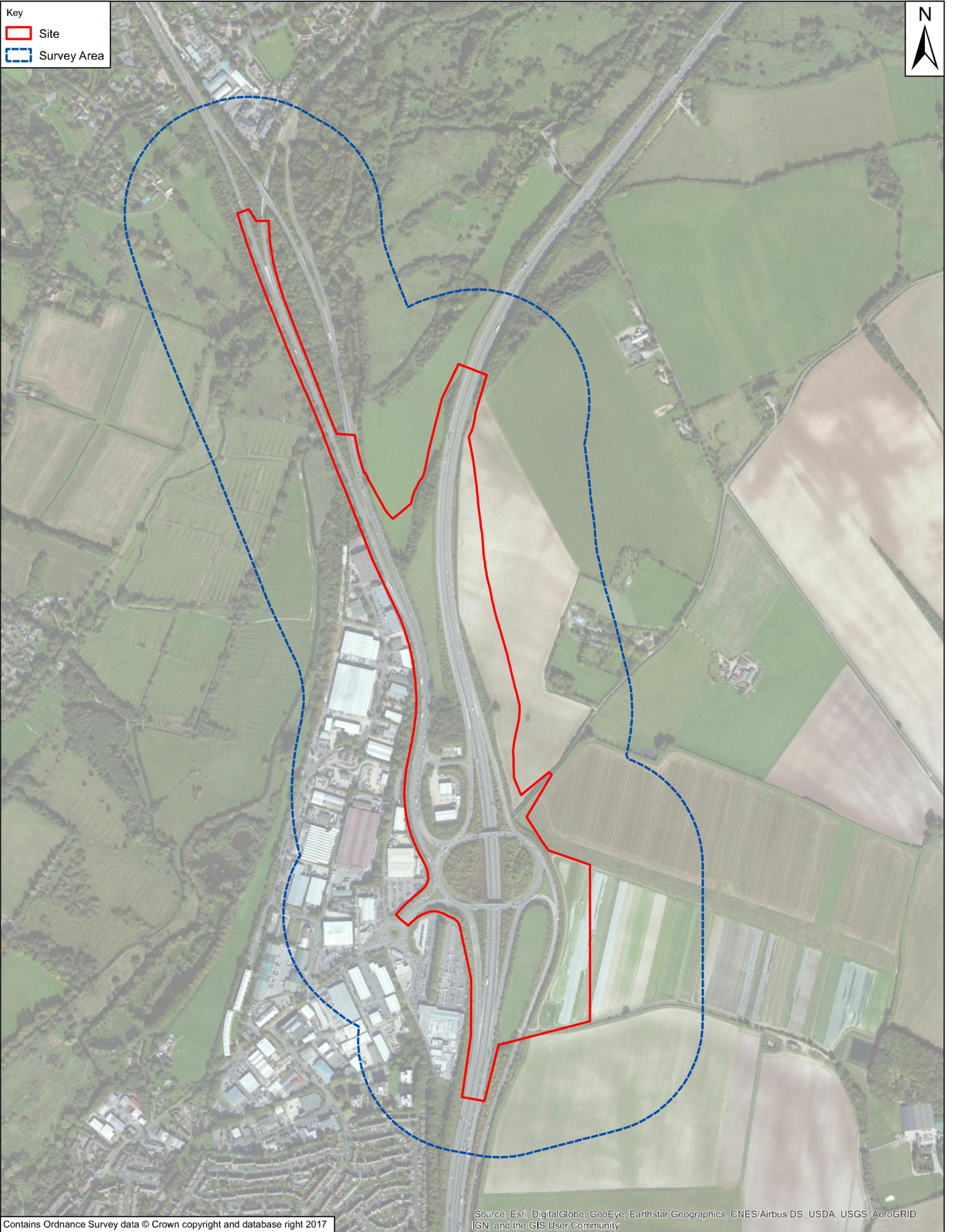
FIGURES

FIGURE 1.1 SITE LOCATION PLAN

Key

 Site

 Survey Area



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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

REV	DATE	BY	DESCRIPTION	CHK	APP
DRAWING STATUS:					
DRAWING STATUS					




PROJECT:
M3 Junction 9

TITLE:
Site Location Plan

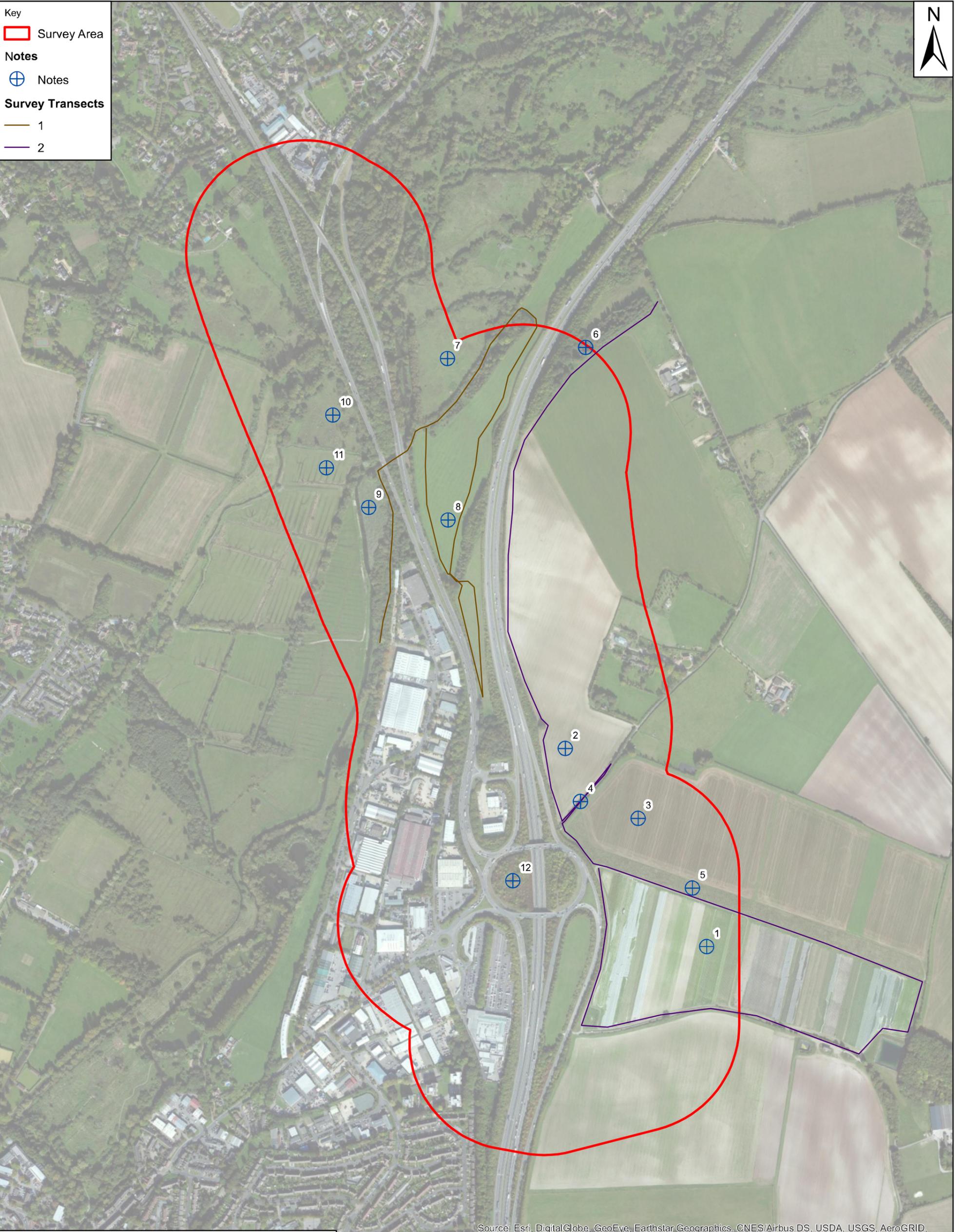
SCALE @ A3: 7,568	CHECKED: LR	APPROVED: HS
FILE: A3 Template	DRAWN: BW	DATE: August 2017
PROJECT No: 70015218	DRAWING No: 1.1	REV:
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FIGURE 2.1 BREEDING BIRD SURVEY RESULTS

Key
 Survey Area

Notes
 Notes

Survey Transects
 1
 2



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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: DRAWING STATUS




PROJECT: M3 Junction 9

TITLE: Breeding Bird Survey Results

SCALE @ A3: 8,000	CHECKED: LR	APPROVED: PJ
FILE: A3 Template	DRAWN: BW	DATE: August 2017
PROJECT No: 70015218	DRAWING No: 2.1	REV:
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Appendix A

SPECIES RECORDING WITHIN SURVEY AREA

SPECIES		WCA 1981	NERC Act 2006	BoCC		
Common Name	Latin Name	Schedule 1	Section 41	Red List	Amber List	UKBPA
Blackbird	<i>Turdus merula</i>					
Blackcap	<i>Sylvia atricapilla</i>					
Bullfinch	<i>Pyrrhula pyrrhula</i>		Y		Y	
Carrion crow	<i>Corvus corone</i>					
Chaffinch	<i>Fringilla coelebs</i>					
Chiffchaff	<i>Phylloscopus collybita</i>					
Common buzzard	<i>Buteo buteo</i>					
Dunnock	<i>Prunella modularis</i>		Y		Y	
Greenfinch	<i>Carduelis chloris</i>					
Grey wagtail	<i>Motacilla cinerea</i>			Y		
Goldcrest	<i>Regulus regulus</i>					
Goldfinch	<i>Carduelis carduelis</i>					
Herring gull	<i>Larus argentatus</i>		Y	Y		
Kingfisher	<i>Alcedo atthis</i>	Y			Y	
Linnet	<i>Linaria cannabina</i>		Y	Y		
Magpie	<i>Pica pica</i>					
Mallard	<i>Anas platyrhynchos</i>				Y	
Mistle thrush	<i>Turdus viscivorus</i>			Y		
Pheasant	<i>Phasianus colchicus</i>					
Reed bunting	<i>Emberiza schoeniclus</i>		Y		Y	
Robin	<i>Erithacus europaeus</i>					
Song thrush	<i>Turdus philomelos</i>		Y	Y		
Skylark	<i>Alauda arvensis</i>		Y	Y		
Swift	<i>Apus apus</i>				Y	
Yellowhammer	<i>Emberiza citrinella</i>		Y	Y		
Whitethroat	<i>Sylvia communis</i>					
Woodpigeon	<i>Columba palumbus</i>					
Wren	<i>Troglodytes troglodytes</i>					

**APPENDIX B8-11
REPTILE SURVEY
REPORT**

M3

Junction 9 Improvement Scheme

Reptile Survey Report

M3 JUNCTION 9 IMPROVEMENT SCHEME

REPTILE SURVEY REPORT

Highways England

Second Issue

Project no: 70016638
Date: November 2017



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A P P E N D I C E S

A P P E N D I X A - R A W S U R V E Y D A T A

EXECUTIVE SUMMARY

M3 Junction 9 has been highlighted as requiring redevelopment in order to help reduce congestion. This will be achieved by improving the flow of traffic, and three options are currently being considered for implementation (the 'Proposed Works').

In order to assess the potential ecological constraints and impacts of the Proposed Works, a suite of ecological surveys are being undertaken. A 'Survey Area' was defined that encompassed the three options' maximum extent of works ('the Site') plus a 250m buffer. Following a desk based assessment undertaken in 2016 which identified local records of reptiles, an extended Phase 1 habitat survey was completed in 2017 which confirmed the presence of suitable reptile habitat within the Survey Area. Reptile surveys were carried out in line with industry guidance, dividing the Survey Area into seven parcels, between May and September 2017.

Two species of reptiles were identified within the Survey Area; slow worm and common lizard in varying populations, including an 'exceptional' population of slow worm in one Parcel (M3 Northbound), and a 'good' population of common lizard in two others (East of M3 and Easton Down). One Parcel, the Winnall Roundabout, was shown to be devoid of reptiles. Overall the reptile populations within the Survey Area are considered to be of Local level importance.

Slow worm and common lizard receive partial protection under Schedule 5 of The Wildlife and Countryside Act (1981). All species of reptile are also listed as a Species of Principal Importance (SPI) for the Conservation of Biodiversity in England in accordance with Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Under Section 40 of the NERC Act (2006) public bodies, including local planning authorities have a duty to have regard for Species of Principal Importance (SPI) when carrying out their functions, including determining planning applications. Reptiles, as protected species, must also be considered in development under national and local planning policy.

It is recommended that avoidance of reptile habitat should be considered during the design process, and it is likely that mitigation and enhancement measures will be required. As the preferred route option has not been selected and detailed design has not progressed, this report provides outline recommendations for mitigation. These are dependent on the level of impact, with on-site translocation required in the instance of significant habitat loss and/or isolation of a population. It also provides recommendations regarding enhancement for inclusion within design proposals, for ongoing management, and measures to ecologically 'future proof' the Proposed Works.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Junction 9 of the M3 is a key transport interchange on the strategic road network which connects South Hampshire and the wider sub-region, with London via the M3 and the Midlands via the A34 (which also links to the principal east-west A303 corridor). A large volume of traffic currently uses the interchange (approximately 6,000 vehicles per hour during the peak periods), which acts as a bottleneck on the local and strategic highway network, causing significant delays. M3 Junction 9 has been proposed for redevelopment in order to help reduce congestion around this stretch of the road by improving the flow of traffic.

1.1.2 Three options have been taken forward to Project Control Framework (PCF) Stage 2 and assessed within the Environmental Assessment Report (EAR), namely:

- Option 14: Northbound and Southbound Free Flow Design
- Option 16B: Incremental Delivery – Northbound A34 Free Flow Link
- Option 16C: Incremental Delivery – Southbound A34 Free Flow Design.

1.1.3 Further details of the Proposed Works are presented within the PCF Stage 2 EAR (HE551511-WSP-GEN-M3J9PCF2-RP-LE-00041). The anticipated maximum extent of the works for all options is shown on Figure 1-1, and is hereafter referred to as 'the Site.'

1.1.4 For the purposes of ecological assessment, in order to consider indirect effects on adjacent/nearby receptors, a Survey Area of 250m around the Site was defined.

1.2 ECOLOGICAL BACKGROUND

1.2.1 An ecological desk study was carried out with respect to the Proposed Works by WSP in 2016 to gain an ecological background of the surrounding area using a 2km search radius. The desk study found that there are records of two species of reptiles within a 2km radius of Junction 9 of the M3, slow worm *Anguis fragilis* and common lizard *Zootoca vivipara*, located 899m and 835m away respectively. A Phase 1 habitat survey completed in spring 2017 identified suitable habitats for common reptile species across the Survey Area (WSP, 2017).

1.2.2 The Survey Area, which is traversed by several roads, includes a range of habitats. East of the M3, the landscape is dominated by arable land, with associated hedgerows and parcels of broadleaved woodland. The central area between the three major roads (A34/A33 & M3) also contains a variety of habitats including grazed semi-improved pastures and several semi-natural and plantation broadleaved woodlands. The majority of woodland is located within the highways boundary. The River Itchen passes through the north and west of the Survey Area flowing in a south-westerly direction and is characterised by a number of interconnected channels with associated wetland and flood meadow grasslands.

1.3 BRIEF AND OBJECTIVES

1.3.1 Highways England commissioned WSP UK Ltd to complete a reptile survey in accordance with good practice guidance Design Manual for Roads and Bridges (DMRB) (1997), Froglife (1999) and Gent and Gibson (1998) to:

- Establish whether reptiles were present or likely absent from the Survey Area
- Determine, if present, which species are present and the distribution of these species

- If present, evaluate the value of the Survey Area for reptiles and make recommendations as to how proposals should account for reptiles in relation to legislation, planning and biodiversity policy.

1.3.2 The results of this survey, and subsequent recommendations, are included within this report.

2 METHODOLOGY

2.1 OVERVIEW

2.1.1 Due to the large size of the Survey Area, and the presence of several effective barriers to movement for reptiles (the M3, the River Itchen), the Survey Area was split into seven 'Parcels' for the purposes of the reptile survey:

- Easton Down Farm
- Arable East of M3
- M3 Northbound Verge
- M3 Roundabout
- M3 Southbound Verge
- Pudding Lane Farm
- Winnall Moors Hampshire and Isle of Wight Wildlife Trust (HIWWT).

2.1.2 The seven parcels and respective results are shown at Figure 2-1 and 2-2.

2.1.3 The reptile survey to determine presence/likely absence of reptile species from the Survey Area comprised two main elements; the checking of artificial refugia and visual observation of habitats and natural refugia present. This survey comprised seven survey visits of each Parcel between 26 June 2017 and 26 September 2017.

2.1.4 The reptile survey in each Parcel to determine presence/likely absence was completed in line with guidance within the Herpetofauna Workers' Manual (1998) and the methodology within Froglife's Reptile Survey Advice Sheet 10 (1999), as well as the DMRB, Volume 10, Section 4, Part 7 Nature Conservation Advice in Relation to Reptiles and Roads (2005).

2.2 REPTILE PRESENCE/LIKELY ABSENCE SURVEY

2.2.1 The survey comprised seven survey visits of each Parcel, each incorporating two elements:

- Survey of artificial refugia
- Visual observation of habitats and natural refugia present.

2.2.2 A total of 320 refugia¹ were installed within suitable habitat for reptiles, divided between each Parcel, on the 30 and 31 May 2017. These were allowed to bed down for 28 days prior to the beginning of the survey visits.

¹ Artificial refugia are used to assist with the detection of reptiles within suitable habitat. The materials warm up and retain heat, and therefore are attractive to basking reptiles. The settling in period allows favourable conditions i.e. suitable humidity and temperature gradient to develop and for reptiles present within the habitat to become aware of the refugia.

2.2.3 A mixture of materials sized approximately 0.5m x 0.5m or 0.5m x 1m were used as artificial refugia. These included bitumen felt, corrugated metal and corrugated bitumen (with the exception of areas adjacent to the roads, see below). Refugia were sited in suitable basking spots, close to cover, within habitat parcels identified to provide suitable conditions for reptiles during an initial site walkover.

2.2.4 Within the Parcel sections which flanked roads, all refugia comprised bitumen felt sized approximately 0.5m x 0.5m or 0.5m x 1m which were pegged to the ground at one corner in order to prevent them blowing into the oncoming traffic. Rigid sheets of bitumen or metal were not used as these are more likely to become airborne, should wind-speed / direction permit and would then pose a potential safety risk to road users.

2.2.5 Suitable reptile habitat totalled approximately 14.2 hectares over all parcels (see Figure 2-1); by using 320 refugia the density exceeded the minimum density as recommended by good practice guidance (Froglife, 1999) in all Parcels. This guidance states the number of refugia used 'will depend on many factors, such as likelihood of disturbance, size of site and what the survey is attempting to achieve' and recommends a minimum of 5-10 refugia per hectare for 'general survey purposes'. Details on the refugia density in each Parcel is shown in Table 2-1 below.

Table 2-1 Reptile Survey Parcels

PARCEL	AREA OF SUITABLE REPTILE HABITAT ² , HECTARES	NO. OF REFUGIA	REFUGIA DENSITY / HECTARE	DESCRIPTION OF HABITATS
Easton Down Farm	1.9	31	16	Areas of grassland that occur in mosaic with scrub to the east of the A34/A33; an area of coarse unmanaged grassland on Easton Down in a fenced off area; and areas of taller grassland in the southern periphery of the pasture.
Arable East of M3	4.7	140	30	Area of land under intense management for crops, with some suitable grassland at the field margins.
M3 Northbound Verge	0.5	30	60	Road verge including cuttings/embankments vegetated with coarse semi-improved calcareous grassland in mosaic with scattered scrub.
M3 Roundabout	0.5	32	31	Comprising coarse semi-improved grassland present on Winnall Roundabout (located above the M3 carriageway) in addition to areas of grassland on the verge of the M3 beneath the roundabout. These habitats are isolated from surrounding habitats by roads.

² Estimated approximate total area, see Section 2.5 for further details

PARCEL	AREA OF SUITABLE REPTILE HABITAT ² , HECTARES	NO. OF REFUGIA	REFUGIA DENSITY / HECTARE	DESCRIPTION OF HABITATS
M3 Southbound Verge	0.9	26	29	Road verge including cuttings/embankments vegetated with coarse semi-improved calcareous grassland in mosaic with scattered scrub.
Pudding Lane Farm	2.9	35	12	A range of habitats present including an arable field with a grassy margin to the west, marshy grassland with associated ditches and water courses in the central areas and areas of pasture with less managed areas to the margins in the west.
Winnall Moors HIWWT	2.3	26	11	An area of marshy grassland with a dense network of wet ditches.

2.2.6

Although the Froglife guidance forms the current, recognised, good survey practice, it should be noted that it is not specifically designed for use in demonstrating absence of reptiles from a development site, rather the focus is on identifying key reptile sites and increasing recording of reptiles. In contrast, the DMRB recommends a refugia density of '*no fewer than 10 per hectare, with greater concentrations around key habitat features.....in some areas it will be appropriate to deploy an equivalent density of up to 50 artificial refuges per hectare*'. The DMRB also advises one refugium every 10m ought to be used for survey of linear habitat on existing road networks. A compromise between the contrasting guidelines has been sought, with professional interpretation applied to tailor the survey design to the habitats present within the Survey Area. Sufficient refugia were deployed to determine presence or likely absence from the various parcels of suitable habitat within the Survey Area, with a greater density of refugia than recommended within Froglife guidance used in order to increase confidence in results, should likely absence be concluded, and to ensure compliance with the densities described within the DMRB. The location of each refugium was recorded and is shown on Figure 2-1.

2.2.7

Reptiles are ectothermic animals, deriving their body heat from the external environment. Therefore, the timing of the survey visits was dictated by weather conditions. All surveys were completed within the appropriate season (March to October) and within the appropriate ambient air temperature range (10-18°C). As far as possible, surveys were undertaken on sunny days with low cloud cover and little wind to maximise the probability of recording reptiles, should they be present; where ambient air temperatures were towards the upper end of the temperature range, days of higher cloud cover were targeted.

2.3 DATES OF SURVEY AND PERSONNEL

2.3.1 The reptile survey was designed and overseen by a senior ecologist who is an Associate Member of the Chartered Institute of Ecology and Environmental Management (CIEEM) with over six years' experience. Survey visits were also undertaken by an experienced consultant ecologist with three years' experience of ecological survey, including extensive reptile survey experience.

2.3.2 Surveys of each Parcel were completed on the dates shown in Table 2-2 below.

Table 2-2: Survey Dates by Parcel

SURVEY NO.	M3 SOUTH VERGE	M3 NORTH VERGE	M3 R'BOUT	ARABLE EAST OF M3	EASTON DOWN FARM	PUDDING LANE FARM	WINNALL MOORS HIWWT
1	26/06/17	26/06/17	26/06/17	30/06/17	30/06/17	30/06/17	29/06/17
2	05/07/17	05/07/17	05/07/17	06/07/17	05/07/17	05/07/17	06/06/17
3	19/07/17	19/07/17	19/07/17	20/07/17	19/07/17	19/07/17	24/07/17
4	23/08/17	23/08/17	23/08/17	29/08/17	23/08/17	23/08/17	31/08/17
5	06/09/17	06/09/17	06/09/17	07/09/17	06/09/17	06/09/17	07/09/17
6	14/09/17	14/09/17	14/09/17	15/09/17	14/09/17	14/09/17	15/09/17
7	22/09/17	22/09/17	22/09/17	26/09/17	22/09/17	28/09/17	28/09/17

2.4 EVALUATION

- 2.4.1 The value of the Site for reptiles was evaluated using the CIEEM Guidelines for Ecological Impact Assessment (CIEEM, 2016). This guidance recommends that valuation of site importance is made with reference to a geographical framework, e.g. a site is of local, regional, national value. To inform the assessment in this report the number of species recorded and peak counts of adults were considered in the context of the distribution and abundance of each species locally and nationally, the quality of habitat present and the abundance of such species on other sites.
- 2.4.2 Froglife guidance (1999) was used to inform the population size class estimates. However, due to certain limitations of the guidance, which does not include consideration of variables such as site size, whether both visual observation and refugia survey contribute to peak counts and individual reptile species ecology, professional judgement has been applied to avoid misinterpretation of data.

2.5 NOTES AND LIMITATIONS

- 2.5.1 The DMRB guidelines suggest that surveys should be confined to the months of April - mid/late May and mid/late August – mid/late September. As shown in Table 1, three surveys of each Parcel were undertaken in June/July, outside of these dates. However, given that surveys were undertaken across a wide spread of dates and generally in optimal weather conditions, this is not considered to be a significant limitation.
- 2.5.2 Ten of the 49 survey visits, (20%) were undertaken wholly or partially in conditions exceeding the recommended temperature limit (>18°C). This was largely due to access difficulties, including Traffic Management restrictions and requirements to pre-arrange visits to the Winnall Moors HIWWT nature reserve. This may have reduced the chance of finding reptiles in these surveys and this limitation is taken into account when assessing the results. In particular, although no reptiles were recorded within the Winnall Moors HIWWT Parcel, it is not possible to conclude absence. Nevertheless this is not significant at a project level as this Parcel is likely to remain unaffected by the Proposed Works.
- 2.5.3 Survey effort was focused on those areas of reptile suitable habitat located within or close to the Site (*i.e.* those areas which may be directly affected by the Proposed Works). Beyond these areas it was not practical to survey all habitat within the Survey Area with the potential to support reptiles. Instead, a sampling approach was used to focus on those areas with potential to support significant reptile populations and that were well connected to the Site.
- 2.5.4 The verge of the A34 northbound carriageway contains suitable habitat within the Site. However, these areas were not subject to survey as it is not possible to access these verges without closing a lane of the road, which was not possible in daylight hours. Reptile surveys cannot be undertaken at night as the animals would be less likely to use the refugia which they utilise for warming. As such it is advised that the verge in this area should be assumed to support a reptile population as a precaution, and detailed mitigation proposals should take account of this limitation.
- 2.5.5 No snakes were recorded in any of the surveys. Despite this, and despite a lack of records in the local area, due to the low population densities that widespread snake species (grass snake *Natrix natrix* and adder *Vipera berus*) are generally found at, it is possible that these species could occur within the Survey Area. Mitigation recommendations account for this possibility.

2.5.6

Where surveys were carried out in areas of pasture or meadow (*i.e.* Easton Down Farm, Winnall Moors HIWWT and Pudding Lane Farm), only the margins were surveyed, providing areas of taller vegetation were present. The suitability of these habitats for supporting reptiles will vary dependent upon management. For example, prior to cutting, central areas of meadows will provide refuge and foraging opportunities for reptiles. However, it was not considered to be practical to survey these as management such as cutting and grazing would pose a hazard to animals utilising these areas, could harm cattle and would be inconvenient to land owners. Given the ephemeral nature of taller vegetation in these areas, this is not considered to be a significant limitation. However, it should be noted that reptiles could occur in these areas and that cessation of management could lead to increased habitat availability.

3

RESULTS AND EVALUATIONS

3.1 OVERVIEW

- 3.1.1 A total of two species of reptile were recorded during the presence/likely absence surveys; slow worm and common lizard. Reptiles were found to be absent in the M3 Roundabout Parcel.
- 3.1.2 As detailed in the limitations section, absence of reptiles could not be concluded for Winnall Moors HIWWT Parcel, and nor could the absence of snakes from the Survey Area be concluded.

3.2 RESULTS OF REPTILE SURVEY

- 3.2.1 No reptiles or evidence of reptiles was recorded within the M3 Roundabout Parcel and as such they can be considered absent from this area due to its isolation. The M3 Roundabout is isolated by several lanes of road on all sides, and is unlikely to be colonised by reptiles in the future.
- 3.2.2 No reptiles were recorded within the Winnall Moors HIWWT Parcel. However, due to the limitation inflicted by the temperature during some surveys (see Notes and Limitations section), as well as the presence of reptiles in adjacent parcels, it is concluded that reptiles may occasionally be present within the Wildlife Trust land, albeit at low numbers.
- 3.2.3 Slow worm was recorded within all five other parcels, with a peak count of 29 adults recorded in the M3 Northbound Verge Parcel, constituting an 'Exceptional' population based on the Froglife guidance (1999) (>20 adults at peak count). 'Good' populations (5-20 adults at peak count) of slow worm were recorded in the M3 Southbound Verge, Arable East of M3 and Easton Down Farm Parcels, whilst a 'Low' population (<5 adults at peak count) was recorded within the Pudding Lane Farm Parcel.
- 3.2.4 Common Lizard was recorded in three parcels; a 'Good' population in the Arable East of M3 Parcel, and 'Low' populations in the M3 North and Easton Down Farm Parcels, based on the Froglife guidance (1999) (5-20 adults at peak count).
- 3.2.5 As shown at Figure 2-2, reptiles were distributed throughout the Survey Area, with the exception of the Winnall Moors HIWWT and the M3 Roundabout Parcels. They were recorded to the east and west of the M3 and the A34, as well as in between.
- 3.2.6 The results of the reptile presence/likely absence surveys are summarised in Table 3-1 below, and presented on Figure 2-2, with raw data included in Appendix A.
- 3.2.7 Weather conditions during surveys ranged between 10°C and 22°C in temperature, with cloud cover of between 0 and 8 oktas (unit for cloud cover ranging from 0 and 8); full details are also included in Appendix A.

Table 3-1: Summary of Survey Results

SURVEY VISIT	M3 SOUTH VERGE		M3 NORTH VERGE		M3 R'BOUT		EAST OF M3		EASTON DOWN FM		PUDDING LANE FM		WINNALL MOOR HIWWT	
	Common Lizard	Slow Worm	Common Lizard	Slow Worm	Common Lizard	Slow Worm	Common Lizard	Slow Worm	Common Lizard	Slow Worm	Common Lizard	Slow Worm	Common Lizard	Slow Worm
1	0	1	0	0	0	0	7	9	0	1	0	2	0	0
2	0	0	0	3	0	0	5	2	0	0	0	0	0	0
3	0	0	0	5	0	0	3	3	0	2	0	1	0	0
4	0	9	1	29	0	0	0	9	0	18	0	0	0	0
5	0	4	0	19	0	0	7	8	3	14	0	1	0	0
6	0	0	3	11	0	0	1	1	0	7	0	0	0	0
7	0	0	0	12	0	0	11	3	1	4	0	1	0	0
Peak Adult Count	0	9	3	29	0	0	11	9	3	18	0	2	0	0
Pop. Size Class³	-	G	L	E	-	-	G	G	L	G	-	L	-	-

³ L = Low, G = Good, E = Exceptional (Froglife, 1999)

3.3 EVALUATION OF THE SITE FOR REPTILES

- 3.3.1 Taking into account the factors recommended by the CIEEM EclA Guidelines (2016), an assessment of the importance of the Survey Area for reptiles has been made. This has considered the legislative and policy framework applicable to the Survey Area (see Legislative and Policy Framework section below), the habitat status of the Survey Area and the results of the survey in context with the surrounding landscape.
- 3.3.2 Slow worm and common lizard are partially protected under the Wildlife and Countryside Act 1981 (as amended), from killing and injury.
- 3.3.3 Two 'good' populations of lizard and an 'exceptional' population of slow worm were recorded utilising the Survey Area, and it is likely that these species also breed therein. Slow worm and common lizard are the most abundant UK reptile species, and are not Hampshire Biodiversity Action Plan species.
- 3.3.4 Overall therefore, the combined populations of reptiles utilising the Survey Area are considered to be of importance at a local scale.

4 IMPLICATIONS FOR DEVELOPMENT

4.1 LEGISLATIVE AND POLICY FRAMEWORK

LEGISLATION

- 4.1.1 Native, widespread reptile species (common or viviparous lizard, adder, grass snake and slow worm) are partially protected under Schedule 5 of The Wildlife and Countryside Act (1981), under part of Section 9(1) and all of Section 9(5). As such it is an offence to:
- 'Intentionally or recklessly kill or injure' an individual of these species; or
 - Sell, offer or expose for sale, or [have in] possession or transport for the purpose of sale, any live or dead [individual] or any part of, or anything derived from' an individual of these species.
- 4.1.2 All species of reptile are also listed as a Species of Principal Importance (SPI) for the Conservation of Biodiversity in England in accordance with Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Under Section 40 of the NERC Act (2006) public bodies, including local planning authorities have a duty to have regard for SPI when carrying out their functions, including determining planning applications.

RELEVANT PLANNING POLICY

- 4.1.3 As the project qualifies as a Nationally Significant Infrastructure Project (NSIP), it must adhere to the National Policy Statement (NPS) for National Networks (Department for Transport 2014). This states *inter alia* that the principals and objectives of the government's 2012 *Natural Environment White Paper (NEWP)* and *Biodiversity 2020 strategy* should be adhered to. These promote moving progressively from net biodiversity loss to net gain by supporting healthy, well-functioning ecosystems and establishing more coherent ecological networks that are more resilient to current and future pressures. The NPS also states that the likely significant effects on internationally, nationally and locally designated sites of ecological conservation importance, on protected species and on habitats, on other species identified as being of principal importance for the conservation of biodiversity and that potential impacts on ecosystems should be clearly set out.
- 4.1.4 At the national level the National Planning Policy Framework (NPPF) (2012) forms the basis for planning system decisions with respect to conserving and enhancing the natural environment, including reptile species. The Office of the Deputy Prime Minister circular 06/2005 also provides supplementary guidance, including confirmation that '*the presence of a protected species is a material consideration when a planning authority is considering a development proposal*'.
- 4.1.5 The NPPF sets out, amongst other points, how at an overview level the '*planning system should contribute to and enhance the national and local environment by:*
- ...recognising the wider benefits of ecosystem services; and
 - *minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures...*
- 4.1.6 A list of principles which local planning authorities should follow when determining planning applications is included in the NPPF, and includes the following:

- *'- if significant harm resulting from a development cannot be avoided...adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *- ...opportunities to incorporate biodiversity in and around developments should be encouraged;*
- *- planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland...unless the need for, and benefits of, the development in that location clearly outweigh the loss...'*

4.1.7

At a local level, Winchester City Council and the South Downs National Park have adopted the Winchester District Local Plan Part 1 (Adopted 2013). Chapter 9 is entitled 'High Quality Environment' with policy CP16 entitled *Biodiversity*. This states *'The Local Planning Authority will support development which maintains, protects and enhances biodiversity across the District, delivering a net gain in biodiversity, and has regard to the following:*

- *Protecting sites of international, European, and national importance, and local nature conservation sites, from inappropriate development.*
- *Supporting habitats that are important to maintain the integrity of European sites.*
- *New development will be required to show how biodiversity can be retained, protected and enhanced through its design and implementation, for example by designing for wildlife, delivering BAP targets and enhancing Biodiversity Opportunity Areas.*
- *New development will be required to avoid adverse impacts, or if unavoidable ensure that impacts are appropriately mitigated, with compensation measures used only as a last resort.*
- *Development proposals will only be supported if the benefits of the development clearly outweigh the harm to the habitat and/or species.*
- *Maintaining a District wide network of local wildlife sites and corridors to support the integrity of the biodiversity network, prevent fragmentation, and enable biodiversity to respond and adapt to the impacts of climate change.*
- *Supporting and contributing to the targets set out in the District's Biodiversity Action Plan (BAP) for priority habitats and species.*
- *Planning proposals that have the potential to affect priority habitats and/or species or sites of geological importance will be required to take account of evidence and relevant assessments or surveys.*

4.1.8

The Biodiversity Action Plan for Hampshire (2000) lists only two reptiles as Priority Species for the county, namely smooth snake and sand lizard.

5 RECOMMENDATIONS

5.1 AVOIDANCE AND MITIGATION MEASURES

- 5.1.1 In the first instance it is recommended that, where possible, habitat known to support reptiles is retained within the Proposed Works designs. Although the habitat of widespread reptile species is not directly protected by law, habitat removal or alteration has potential to cause death or injury to individual reptiles which should be avoided to ensure legal compliance (see Section 4).
- 5.1.2 Three route options are being considered for the M3 J9 improvements, and as the project is still at the Route Selection stage, the precise amount of habitat which will be lost is unknown.
- 5.1.3 Where it is not possible to avoid effects upon reptiles, it will be necessary to provide mitigation measures to avoid killing and/or injury of individual animals, and avoid detrimental effects upon the local populations.
- 5.1.4 Precise mitigation methods will depend on the final design, and should reflect the anticipated impacts. Some examples are provide in Table 5-1. The precise mitigation strategy for reptiles should be finalised prior to works commencing, and it may be appropriate to consult with stakeholders such as the local planning authority. Any removal of reptile habitat should be accompanied by the provision of replacement habitat to ensure that reptile populations can persist in the long-term. Further details are provided within Section 5.2.

Table 5-1: Mitigation Recommendations by Impact Level (example only)

IMPACT IN PARCEL	SUGGESTED MITIGATION
Significant habitat loss and/or likely isolation of reptile population	Translocation & Destructive Search
Low levels of habitat loss in most populated Parcel	Destructive Search
Low levels of habitat loss in least populated Parcels	Habitat Manipulation

- 5.1.5 Details on the steps involved in the mitigation methods recommended, should they be required, are provided below.

TRANSLOCATION

- Identification of a suitable receptor habitat: This should be of equivalent or greater size and habitat quality to the area of suitable reptile habitat to be lost, and not contain an existing reptile population; or alternatively sufficient enhancements should be possible to ensure additional individuals can be supported within the habitat area available. It is likely that all Parcels will contain sufficient area of retained, suitable habitat to allow any translocated individuals to be retained on-site.
- The receptor areas should be enhanced to form suitable reptile habitat, through seeding as grassland and planting of hedgerow or patches of scrub to provide shelter. Permanent artificial refugia such as log piles should also be created within the receptor site to provide shelter for translocated reptiles and suitable habitat for hibernation.
- Trapping and translocation of reptiles from areas to be affected by the Proposed Works once receptor habitat has been prepared. This must be completed in advance of works and during the season in which reptiles are active, but should be completed before there is a risk of individuals being less active or entering hibernation if weather conditions are cooler (i.e. March to September). The perimeter of the works area adjacent to suitable habitat should be

fenced with reptile exclusion fencing⁴, and all suitable reptile habitat where reptiles have been recorded should be 'trapped out'. The trapping should comprise deployment of a high density of artificial refugia (i.e. 50 per hectare) which are then checked daily by a surveyor trained to capture any reptiles present and translocate them to the designated receptor habitat. It is likely exclusion would take a minimum of 60 suitable⁵ days (HGBI, 1998).

- Completion of the translocation and maintenance of the exclusion area: Once five suitable days have passed in which no reptiles have been captured during suitable weather conditions, the translocation can be considered complete, after which a destructive search should be undertaken prior to works.

DESTRUCTIVE SEARCH

- 5.1.6 These methods should only be used during the reptile active season when it is considered there is low potential for reptiles to be encountered (i.e. following trapping and translocation of reptiles or where very minimal areas of suitable habitat are due to be affected).

Tool Box Talk

- 5.1.7 The ecologist will give a tool box talk to the vegetation clearance contractors; this will include:

- A brief introduction to the widespread reptile species which potentially may be discovered on the Site
- Working methods to be employed, and permitted equipment types (e.g. hand tools).

Vegetation Clearance

- 5.1.8 Vegetation clearance must be completed using hand tools (these can include mechanised hand tools such as brush cutters or chainsaws). Clearance must move towards retained habitat on or adjacent to the Site (where not all habitat is due to be removed and connecting habitat is available). The steps listed below must be completed:

- Hand search by ecologist for reptiles within vegetation to be cleared
- Clearance of vegetation to 200mm above ground level using hand tools
- Re-inspection of vegetation by ecologist
- Clearance to ground level (or as close as is practicable)
- Any active reptiles found must be captured by the suitably qualified ecologist and placed into a soft cloth bag before being moved to the receptor site or adjacent suitable habitat lying outside the working area. To reduce the chances of predation, any captured animals must be placed under suitable natural or artificial refugia.

⁴ Also referred to as 'temporary amphibian fencing' (TAF) which serves the same purpose for amphibian translocations.

⁵ Days on which weather conditions are suitable for surveying reptiles, between 10 and 18°C, with sunny spells.

Soil Stripping

- 5.1.9 Once the vegetation has been reduced to ground level (or as close as is practicable) land within the Proposed Works area should be soil-stripped under an ecological watching brief. Some reptiles, particularly slow-worm, burrow down into the topsoil and risk being killed or injured. Soil stripping should entail use of a 360 degree tracked excavator (7 tonne or similar) using a small toothed bucket to carefully scrape back the remaining vegetation and 150mm of topsoil. The topsoil and any debris must be spread on to the ground to allow the ecologist to search for any remaining reptiles, in the unlikely event that animals are present.

HABITAT MANIPULATION

- 5.1.10 In instances where very small impacts are anticipated, or there is a low risk of encountering reptiles, habitat manipulation without ecological supervision may be sufficient. This involves directional clearance of suitable habitat in a two-stage strim as per the destructive search, from the 'inside' footprint of the works towards areas of suitable habitat.
- 5.1.11 If no suitable habitat is present adjacent, it should be created in line with the enhancement measures detailed below.
- 5.1.12 If a reptile is encountered during any habitat manipulation, works should immediately cease and an ecologist be contacted for advice.

5.2 ECOLOGICAL ENHANCEMENT MEASURES

- 5.2.1 The NPPF, The Winchester District Local Plan Policy CP16 and the DMRB all require or recommend ecological enhancement measures to be designed into new development schemes. Therefore, it is recommended that enhancement measures are incorporated into the proposals which seek to achieve net gain in habitat available to reptiles on-site, and enhance habitat connectivity within the landscape.
- 5.2.2 The detailed enhancement programme must be based on the final design proposals. However it is advised that the following measures should be considered for inclusion within the Proposed Works.
- Allowing the development of broad hedgerow margins adjacent to retained hedgerows, with some scrub cover extending out into the grassland, creating interface habitat which is of particular value to reptiles.
 - Development of a low intensity, 'reptile friendly' cutting regime along road verges, retained and created hedgerows and other interface scrub habitats, allowing long grass to provide cover for reptile species during summer months.
 - Ensuring created habitats within the Proposed Works are connected to high quality habitat areas outside the Site such as the woodland and scrub mosaic to the north, thus allowing for the potential colonisation by reptiles in the future of these areas, and enhancing habitat connectivity in the local area.
 - Installation of log piles or rock piles to serve as refugia, and installation of larger such structures to act as hibernacula.
 - The provision of one / more 'egg laying heaps' for grass snakes. These are primarily piles of rotting vegetation in which grass snakes lay their eggs (usually in the early summer) and which provide protection from predation, as well as a constant temperature in which the eggs can develop. Additional vegetative material should be added each year to ensure the long term maintenance of high quality habitat. Although grass snake were not recorded within the Survey Area, the presence of suitable habitat (standing/running water, marshy grassland, marginal vegetation) may encourage them to colonise in future. Thus, including enhancements for grass snake can serve to 'future proof' the Proposed Works.

- It is recommended that this is set out in a habitat management plan, which includes a commitment to monitoring the reptile population present.

6 CONCLUSION

- 6.1.1 WSP has undertaken a presence/likely absence survey for reptile over seven Parcels within the Survey Area, all of which contain a variety of habitats suitable for active and/or hibernating reptiles.
- 6.1.2 Common lizard and slow worm are considered to be present in six of the seven Parcels, with the exclusion of the M3 Roundabout section which is isolated by roads. The density of reptiles varied across the Survey Area between low and exceptional peak counts as defined by Froglife (1999). The highest numbers found were in the M3 North, East of M3 and Easton Down Parcels.
- 6.1.3 Slow worm and common lizard receive legislative protection from killing and injury under the Wildlife and Countryside Act 1981 (as amended); they are also afforded population level protection under national and local policy.
- 6.1.4 As such mitigation and enhancement measures have been recommended to minimise the risk of killing/injuring reptiles. Translocation, destructive search and/or habitat manipulation should be considered based on the level of impact arising from the final scheme design. Further, enhancements have been recommended to maintain a favourable population status and 'future-proof' the Site for future population increases.

7

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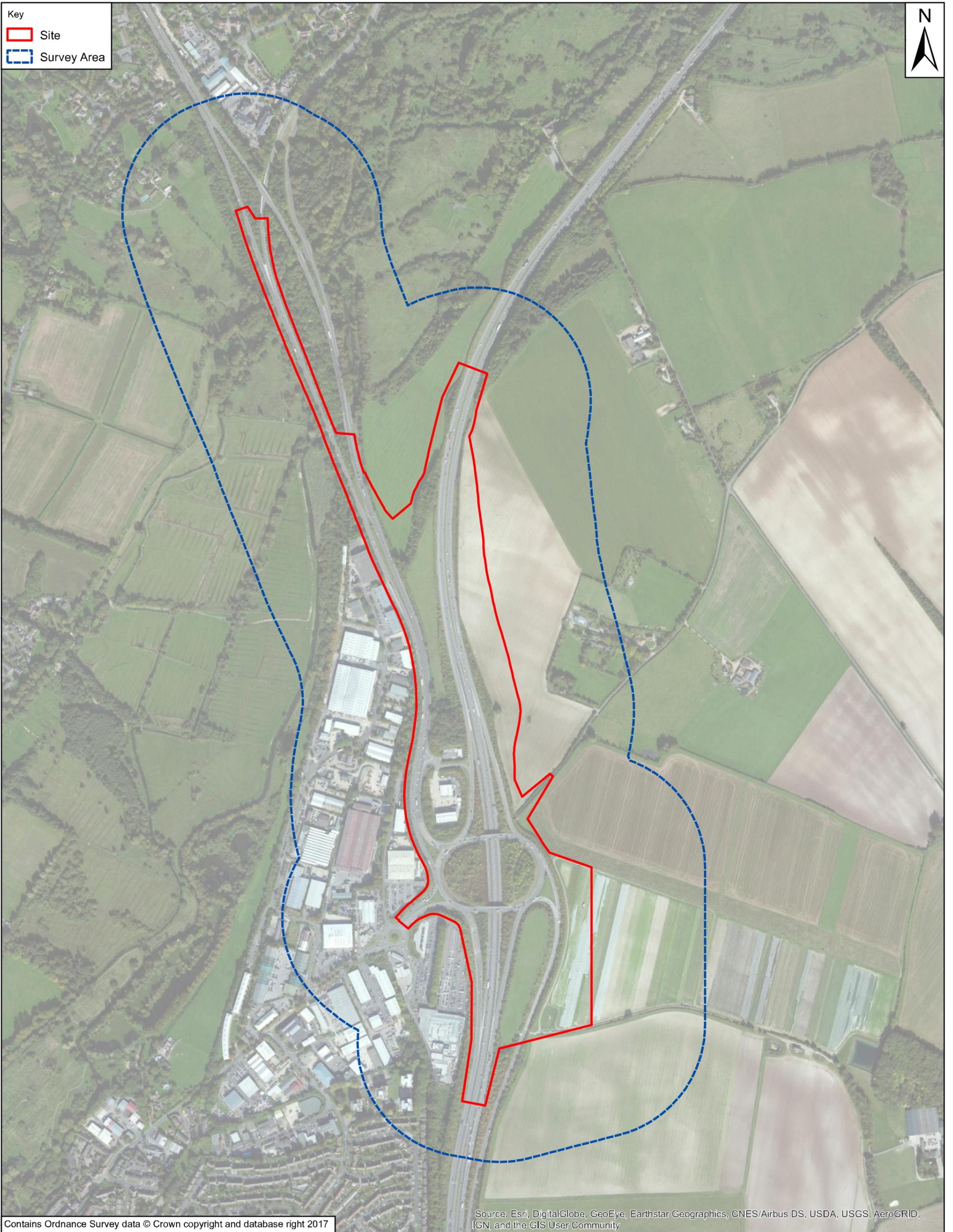
FIGURES

FIGURE 1-1 SITE LOCATION PLAN

Key

 Site

 Survey Area



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Contains Ordnance Survey data © Crown copyright and database right 2017

REV	DATE	BY	DESCRIPTION	CHK	APP
DRAWING STATUS: DRAWING STATUS					





PROJECT:	M3 Junction 9
TITLE:	Site Location Plan

SCALE @ A3:	7,500	CHECKED:	LR	APPROVED:	HS
FILE:	A3 Template	DRAWN:	BW	DATE:	August 2017
PROJECT No:	70016638	DRAWING No:	1	REV:	A
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FIGURE 2-1 REPTILE SURVEY AREA

Key

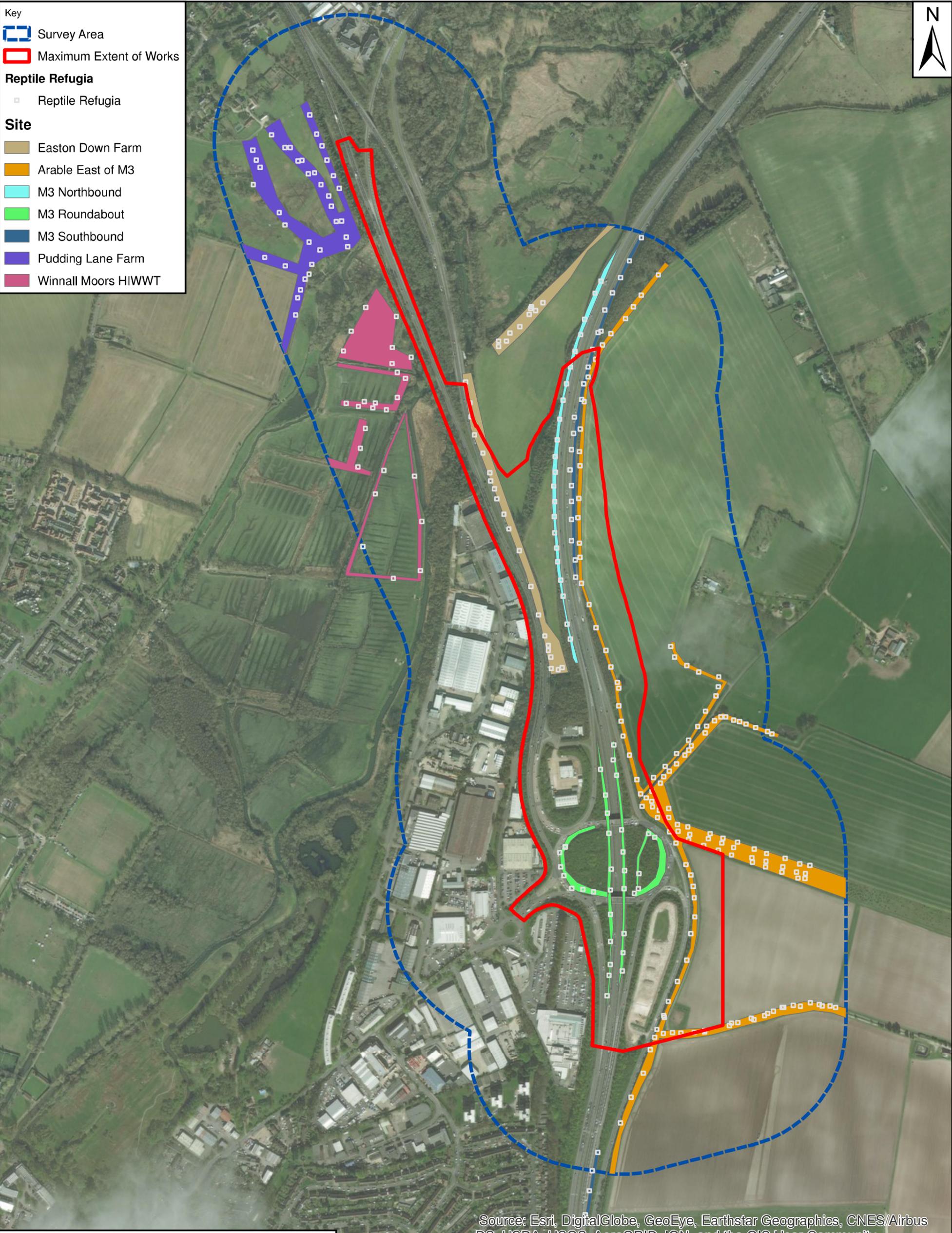
-  Survey Area
-  Maximum Extent of Works

Reptile Refugia

-  Reptile Refugia

Site

-  Easton Down Farm
-  Arable East of M3
-  M3 Northbound
-  M3 Roundabout
-  M3 Southbound
-  Pudding Lane Farm
-  Winnall Moors HIWWT



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: FINAL

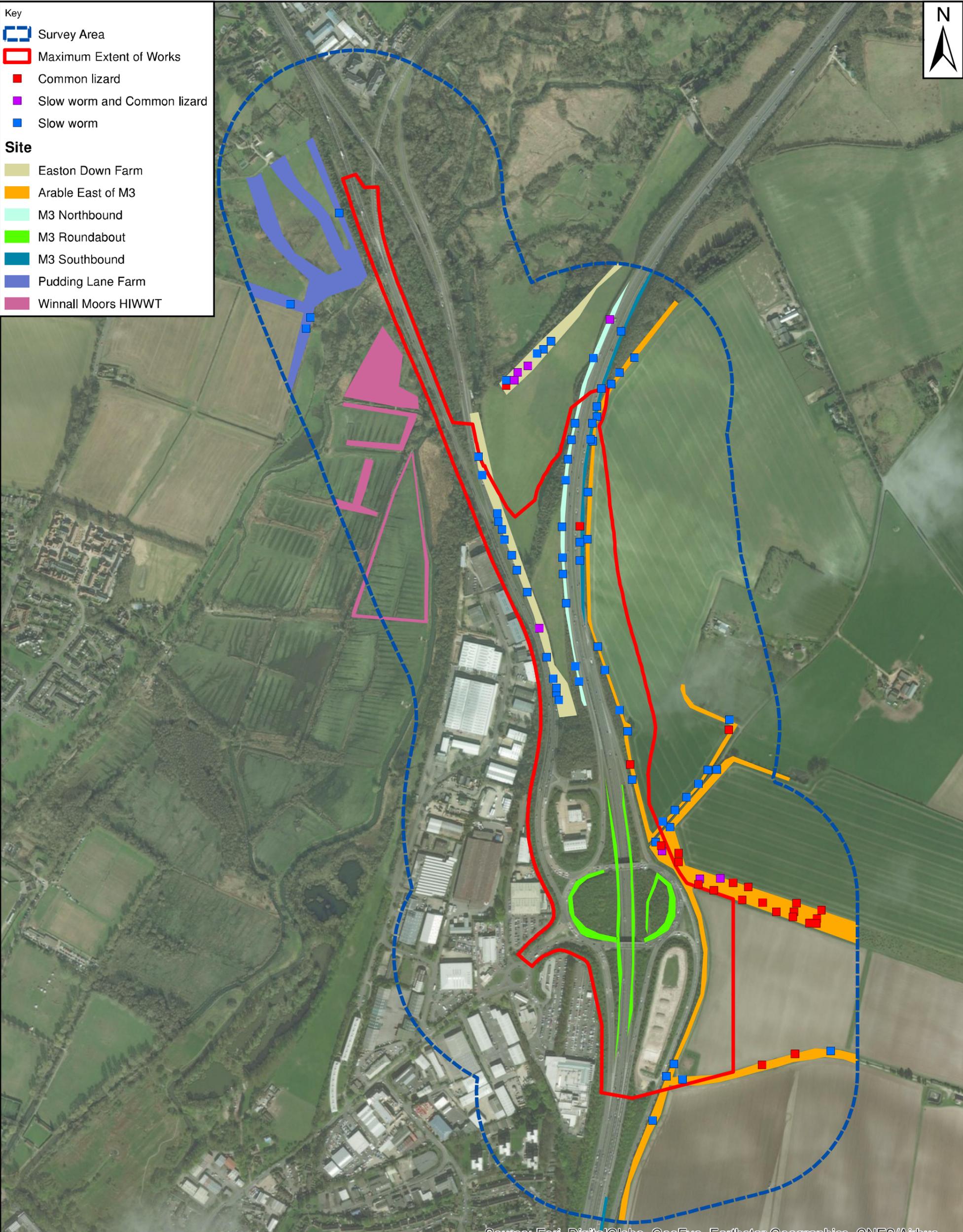



PROJECT:	M3 Junction 9
TITLE:	Reptile Survey Area

SCALE @ A3:	9,900	CHECKED:	LR	APPROVED:	AH
FILE:	A3 Template	DRAWN:	BW	DATE:	November 2017
PROJECT No:	70016638	DRAWING No:	2-1	REV:	A
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FIGURE 2-2 REPTILE SURVEY RESULTS

- Key**
-  Survey Area
 -  Maximum Extent of Works
 -  Common lizard
 -  Slow worm and Common lizard
 -  Slow worm
- Site**
-  Easton Down Farm
 -  Arable East of M3
 -  M3 Northbound
 -  M3 Roundabout
 -  M3 Southbound
 -  Pudding Lane Farm
 -  Winnall Moors HIWWT



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: DRAWING STATUS




PROJECT:	M3 Junction 9
TITLE:	Reptile Survey Results

SCALE @ A3:	9,930	CHECKED:	LR	APPROVED:	AH
FILE:	Reptile Results	DRAWN:	BW	DATE:	October 2017
PROJECT No:	70016638	DRAWING No:	2-2	REV:	A
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Appendix A

RAW SURVEY DATA

**APPENDIX B8-12
GREAT CRESTED
NEWT SURVEY
REPORT**

M3

Junction 9 Improvement Scheme

Great Crested Newt Survey Report

M3 JUNCTION 9 IMPROVEMENT SCHEME

GREAT CRESTED NEWT SURVEY REPORT

Highways England

Second Issue

Project no: 70016638
Date: November 2017



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QUALITY MANAGEMENT

ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
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A P P E N D I X C	LABORATORY RESULTS

EXECUTIVE SUMMARY

M3 Junction 9 has been highlighted as requiring redevelopment in order to help reduce congestion. This will be achieved by improving the flow of traffic, and three options are currently being considered for implementation.

An ecological desk study was carried out with respect to the Proposed Works by WSP in 2016. This found that there are no records of great crested newt *Triturus cristatus* within a 2km radius of Junction 9 of the M3, but that several waterbodies occur within a 500m radius of the Proposed Works area.

In order to gather further information regarding the presence or likely absence of great crested newts from the Survey Area, Habitat Suitability Index and environmental DNA sampling were undertaken within a 500m Survey Area around the Proposed Works.

A total of ten waterbodies were subject to Habitat Suitability Index survey including a fishery, attenuation ponds, ditches and other watercourses associated with the River Itchen, which traverses the Survey Area. Concurrent with the Habitat Suitability Index survey, water samples were collected in line with standard methods (Biggs *at al.*, 2014) from eight of the waterbodies for laboratory testing for great crested newt environmental DNA. All of the samples tested negative for great crested newt environmental DNA.

Based on the results of these surveys and the absence of records from the local area, great crested newt is considered to be likely absent from the Survey Area.

Common toad *Bufo bufo* and common frog *Rana temporaria* were incidentally recorded in the north-eastern part of the Survey Area. Common toad is considered to be of some conservation importance, reflected by its status as a Species of Principal Importance for the conservation of biodiversity.

Recommendations are made within the report for avoidance, mitigation and enhancement with respect to common amphibians. The following outline some of the key recommendations:

- Avoid existing waterbodies where possible to retain amphibian habitat and prevent accidental harm.
- Improvements to existing waterbodies to enhance their quality as amphibian habitat.
- Creation of new waterbodies within the Survey Area to benefit not only amphibian but invertebrate and aquatic flora species.
- Creation or enhancement of suitable terrestrial habitat as part of the wider landscaping scheme.
- Creation of winter hibernacula or permanent refugia within terrestrial habitat surrounding waterbodies to raise the carrying capacity of the terrestrial habitat.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Junction 9 of the M3 is a key transport interchange on the strategic road network which connects South Hampshire and the wider sub-region, with London via the M3 and the Midlands via the A34 (which also links to the principal east-west A303 corridor). A large volume of traffic currently uses the interchange (approximately 6,000 vehicles per hour during the peak periods), which acts as a bottleneck on the local and strategic highway network, causing significant delays. M3 Junction 9 has been proposed for redevelopment in order to help reduce congestion around this stretch of the road by improving the flow of traffic.

1.1.2 Three options have been taken forward to Project Control Framework (PCF) Stage 2 and assessed within the Environmental Assessment Report (EAR), namely:

- Option 14: Northbound and Southbound Free Flow Design;
- Option 16B: Incremental Delivery – Northbound A34 Free Flow Link;
- Option 16C: Incremental Delivery – Southbound A34 Free Flow Design.

The works are hereafter referred to as the 'Proposed Works'. Further details of the Proposed Works are presented within the PCF Stage 2 EAR (HE551511-WSP-GEN-M3J9PCF2-RP-LE-00041). The anticipated maximum extent of the works for all options is shown on **Figure 1.1**, and is hereafter referred to as 'the Site.'

1.2 ECOLOGICAL BACKGROUND

- 1.2.1 An ecological desk study was carried out with respect to the Proposed Works by WSP in 2016 to gain an ecological background of the surrounding area using a 2km search radius. The desk study found that there are no records of great crested newt *Triturus cristatus* within a 2km radius of Junction 9 of the M3. Several waterbodies occur within a 500m radius of the Proposed Works area, the recommended search area for conducting great crested newt surveys (Natural England 2015).
- 1.2.2 A broad suite of baseline ecological surveys have been undertaken by WSP during 2017, including a Phase 1 habitat survey of a Survey Area comprising a 250m radius around the Proposed Works area.
- 1.2.3 The Survey Area, which is traversed by several roads, includes a range of habitats. East of the M3, the landscape is dominated by arable land, with associated hedgerows and parcels of broadleaved woodland. The central area between the three major roads (A34/A33 & M3) also contains a variety of habitats including grazed semi-improved pastures and several semi-natural and plantation broadleaved woodlands. The majority of woodland is located within the highways boundary. The River Itchen passes through the north and west of the Survey Area flowing in a south-westerly direction and is characterised by a number of interconnected channels with associated wetland and flood meadow grasslands.
- 1.2.4 The River Itchen forms a complex network of channels through land managed by the Hampshire and Isle of Wight Wildlife Trust (HIWWT). Many of the channels are deep and fast flowing. However, static and sluggish ditches are also present where they are formed by natural springs and flushes. A number of channels have sluiced control gates, creating wet ditches adjacent to grazed grassland. Trout fisheries are located within the Survey Area, with many of the rivers and tributaries providing angling opportunities.
- 1.2.5 Based upon review of aerial imagery, *Ordnance Survey* mapping, and on observations made during the Phase 1 habitat survey, a total of 12 waterbodies were identified for further assessment for the presence or absence of great crested newts *Triturus cristatus*.

1.3 BRIEF AND OBJECTIVES

- 1.3.1 Highways England commissioned WSP to:
- Complete a Habitat Suitability Index (HSI) assessment of waterbodies within 500m of the Proposed Works extent to assess their suitability as aquatic habitat for great crested newts and determine if further survey was required;
 - Complete environmental DNA (eDNA) sampling of up to eight waterbodies identified as having suitable habitat for great crested newts; and
 - Where present, evaluate the value of the Survey Area for great crested newts and make recommendations as to how proposals should account for great crested newts in relation to relevant legislation and planning policy.
- 1.3.2 The results of this survey, and subsequent recommendations, are included within this report.

1.4 LEGISLATIVE AND POLICY FRAMEWORK

GREAT CRESTED NEWTS

- 1.4.1 Great crested newts are afforded a high level of protection under the Conservation of Habitats and Species Regulations 2010 (as amended) (the 'Habitat Regulations'). The legislation means that it is an offence to:

- deliberately capture, injure or kill a wild great crested newt;
- deliberately disturb wild great crested newts; *'disturbance of animals includes in particular any disturbance which is likely:*
 - (a) *to impair their ability —*
 - (i) *to survive, to breed or reproduce, or to rear or nurture their young; or*
 - (ii) *in the case of animals of a hibernating or migratory species, to hibernate or migrate; or*
 - (b) *to affect significantly the local distribution or abundance of the species to which they belong.'*
- damage or destroy a breeding site or resting place used by this species.

1.4.2 Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of animals when using places of shelter and obstruction of access to places of shelter.

1.4.3 The great crested newt is also listed as a Species of Principal Importance (SPI) for the Conservation of Biodiversity in England in accordance with Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Under Section 40 of the NERC Act (2006) public bodies (including local planning authorities) have a duty to have regard for the conservation of SPI when carrying out their functions, including determining planning applications.

OTHER AMPHIBIANS

1.4.4 Whilst the smooth *Lissotriton vulgaris* and palmate newt *Lissotriton helveticus* are protected from sale and trade, these species are not afforded the high level of protection given to the great crested newt.

1.4.5 The common toad is also listed as a SPI in accordance with Section 41 of the NERC Act 2006. Therefore, as for great crested newts, public bodies, including local planning authorities, have a duty to have regard for the conservation of this species when carrying out their functions.

RELEVANT PLANNING POLICY

1.4.6 As the project qualifies as a Nationally Significant Infrastructure Project (NSIP), it must adhere to the National Policy Statement (NPS) for National Networks (Department for Transport 2014). This states *inter alia* that the principals and objectives of the government's 2012 *Natural Environment White Paper (NEWP)* and *Biodiversity 2020 strategy* should be adhered to. These promote moving progressively from net biodiversity loss to net gain by supporting healthy, well-functioning ecosystems and establishing more coherent ecological networks that are more resilient to current and future pressures. The NPS also states that the likely significant effects on internationally, nationally and locally designated sites of ecological conservation importance, on protected species and on habitats, on other species identified as being of principal importance for the conservation of biodiversity and that potential impacts on ecosystems should be clearly set out.

1.4.7 At the national level the National Planning Policy Framework (NPPF) (2012) forms the basis for planning system decisions with respect to conserving and enhancing the natural environment, including great crested newts. The Office of the Deputy Prime Minister circular 06/2005 also provides supplementary guidance, including confirmation that *'the presence of a protected species is a material consideration when a planning authority is considering a development proposal'*.

1.4.8 The NPPF sets out, amongst other points, how at an overview level the *'planning system should contribute to and enhance the national and local environment by:*

- *...recognising the wider benefits of ecosystem services; and*

- *minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures...*

1.4.9 A list of principles which local planning authorities should follow when determining planning applications is included in the NPPF, and includes the following:

- *'- if significant harm resulting from a development cannot be avoided...adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *- ...opportunities to incorporate biodiversity in and around developments should be encouraged;*
- *- planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland...unless the need for, and benefits of, the development in that location clearly outweigh the loss...'*

1.4.10 At a local level, Winchester City Council and the South Downs National Park have adopted the Winchester District Local Plan Part 1 (Adopted 2013). Chapter 9 is entitled 'High Quality Environment' with policy CP16 entitled *Biodiversity*. This states *'The Local Planning Authority will support development which maintains, protects and enhances biodiversity across the District, delivering a net gain in biodiversity, and has regard to the following:*

- *protecting sites of international, European, and national importance, and local nature conservation sites, from inappropriate development. supporting habitats that are important to maintain the integrity of European sites.*
- *new development will be required to show how biodiversity can be retained, protected and enhanced through its design and implementation, for example by designing for wildlife, delivering BAP targets and enhancing Biodiversity Opportunity Areas.*
- *new development will be required to avoid adverse impacts, or if unavoidable ensure that impacts are appropriately mitigated, with compensation measures used only as a last resort.*
- *Development proposals will only be supported if the benefits of the development clearly outweigh the harm to the habitat and/or species.*
- *maintaining a District wide network of local wildlife sites and corridors to support the integrity of the biodiversity network, prevent fragmentation, and enable biodiversity to respond and adapt to the impacts of climate change.*
- *supporting and contributing to the targets set out in the District's Biodiversity Action Plan (BAP) for priority habitats and species.*
- *Planning proposals that have the potential to affect priority habitats and/or species or sites of geological importance will be required to take account of evidence and relevant assessments or surveys.*

1.4.11 The great crested newt is recognised as a priority species within the Hampshire Biodiversity Action Plan (BAP).

2 METHODOLOGY

2.1 HABITAT SUITABILITY INDEX ASSESSMENT

2.1.1 Waterbodies within the 500m radius of the Proposed Works area were assessed for their suitability to support great crested newts using the standard Habitat Suitability Index (HSI) assessment method (ARG UK, 2010, based on Oldham *et al.* (2000)). A total of 12 waterbodies were identified based upon review of aerial imagery and Ordnance Survey mapping and from observations made during the Phase 1 habitat survey (see **Figure 1.1**). It should be noted that access was not achieved to two of the waterbodies and that some ephemerally wet ditches and areas of flood meadow within the River Itchen flood meadows were excluded (see Section 3.4).

2.1.2 Waterbodies were assessed and scored on ten key variables which are known to influence breeding populations of great crested newts, in accordance with standard methods (ARG UK, 2010). These variables are:

- Geographic location;
- Waterbody area;
- Waterbody permanence;
- Water quality;
- Waterbody shading;
- Impact of waterfowl;
- Fish stocks;
- Number of waterbodies within 1km;
- Terrestrial habitat around the waterbody; and
- Macrophyte cover of the waterbody.

2.1.3 Scores for each of the above variables were used to calculate an overall HSI value for each waterbody. This was then cross referenced with the guidelines (ARG, 2010) to assign the pond to one of five categories, poor, below average, average, good or excellent.

2.2 ENVIRONMENTAL DNA SAMPLING

2.2.1 Sampling of eDNA was undertaken concurrently with the HSI survey. Professional judgement gained from previous experience and knowledge of great crested newt ecology, was exercised in selecting waterbodies appropriate for sampling with samples collected from all but two of the waterbodies (see Section 3.4).

2.2.2 The surveys were undertaken following survey techniques described in Biggs *et al.* (2014):

- A single visit to each target waterbody was made between mid-April and June, during the newt breeding season.
- Twenty sub-samples of water were taken from each waterbody using sterile sampling equipment provided by the laboratory (*Fera Science Ltd*).
- The locations of the 20 sub-samples were spaced as evenly as possible around the waterbody margin, and where possible targeted areas of vegetation which could be used as egg laying substrate and open water areas which newts could use for displaying.

- The sub-samples were mixed and pipetted into six sample tubes containing an alcohol and pH buff solution.
- The samples were sent to *Fera* for laboratory testing using real time PCR to amplify part of the cytochrome 1 gene found in mitochondrial DNA.
- The water samples from each waterbody were assigned a positive or negative result as well as a score between 0 and 12 representing the number of positive replicates from a series of 12.

2.2.3 A positive eDNA result concludes that GCN DNA was present in the water sample, whilst a negative result concludes that the presence of great crested newts is considered unlikely within that waterbody. Negative eDNA results cannot conclusively say that a great crested newts are not present within the waterbody, rather that DNA from the species was not detected.

2.3 DATES OF SURVEY AND PERSONNEL

2.3.1 The HSI and eDNA surveys were undertaken on 6th June 2017 by experienced ecologists who surveyors have undergone training on the use of the eDNA technique to survey for great crested newts provided by Jeremy Biggs from the Freshwater Habitats Trust, who devised the official survey protocol.

2.4 NOTES AND LIMITATIONS

2.4.1 Access permission was not gained to two of the waterbodies (Waterbodies 2 and 12). Waterbody 2 could not be directly observed from adjacent land holdings and is located approximately 410m from the Proposed Works area. Waterbody 12 was observed from adjacent landholding and comprises a fishing lake, a land use that makes it extremely unlikely that it would be used by great crested newts. It is located approximately 350m from the Proposed Works area with a large area of industrial buildings situated between the waterbody and the Proposed Works area. In the unlikely event that great crested newts did utilise these habitats, given their separating distance they would be unlikely to be significantly affected by the Proposed Works¹.

2.4.2 Access to the entire perimeter of the Waterbodies 1 and 4 was not possible due to dense vegetation or steep slopes. Where access was not possible, observations and samples were taken from safe and suitable locations. Given the comparatively small size of these waterbodies, this is unlikely to have significantly affected the findings of the eDNA analysis as representative samples were obtained.

2.4.3 The flood meadow habitats in the north west of the Survey Area contain a network of ditches that are generally dominated by dense emergent vegetation including common reed *Phragmites australis*. These are understood to be at least partially spring fed and generally only ephemerally contain standing water. Overall they represent low suitability great crested newt habitat, lacking the open water habitat this species typically requires for courtship display. A representative sample of these ditches was assessed, comprising those ditches that contained the most water. The majority of this area forms part of Winnal Moors, a nature reserve managed by the HIWWT.

¹ Research (Cresswell & Whitworth, 2004) indicates that great crested newts are unlikely to occur in significant numbers as distances greater than 100m from breeding ponds

- 2.4.4 Within the flood meadow area, Waterbodies 7, 9 and 11 comprises ditches and Waterbodies 8 and 10 comprise pools that have some hydrological connectivity to a main channel of the River Itchen. At the time of survey no discernible flow was observed from these waterbodies, which all tested negative for great crested newt eDNA. However, it is likely that on occasion (such as following heavy rainfall), water would flow from these waterbodies into the River Itchen, with the associated risk that great crested newt eDNA present could be flushed away. Overall, this limitation is not considered to have affected the overall conclusion of this report that great crested newts are likely to be absent from the Survey Area for the following reasons: all other waterbodies tested negative; no records of great crested newts are found within a 2km radius; these waterbodies occur within a longstanding Wildlife Trust reserve that is actively managed and where it is reasonable to assume great crested newts would be recorded if present; and significant barriers to amphibian movement isolate these waterbodies, namely main channels of the River Itchen and the A34/A33 roads. This conclusion is also explored in Section 4.4.
- 2.4.5 Waterbody 10 was not assessed using eDNA sampling. This limitation is not considered to have affected the conclusion of this survey as it scored poor in the HSI survey and waterbodies in proximity provided negative results for GCN eDNA. It is therefore considered unlikely that GCN would be present.
- 2.4.6 Waterbodies 5 and 6 represent linear attenuation waterbodies located in an area of habitat that is isolated by several major barriers to amphibian movement including the River Itchen to the north and major roads to the east and west (see **Figure 1.1**). As Waterbody 6 contained only a small amount of water, a decision was made to sample only Waterbody 5, which contained a greater volume of water.

3 RESULTS AND EVALUATIONS

3.1 HABITAT SUITABILITY ASSESSMENT (HSI)

3.1.1 The HSI scores (**Table 3.1**) indicate that four waterbodies are considered good, two average, one below average and three poor quality habitat (see **Figure 3.1**). In general, waterbodies with average or good HSI scores are more likely to support great crested newts than those with below average or poor scores. Whilst HSI gives an indication of habitat quality, the assessment is not sufficiently precise to allow the conclusion that any particular waterbodies with a good score will support newts, or that any waterbodies with a poor score will not do so.

Table 3.1: Summary of HSI Results

WATERBODY REF.	GRID REFERENCE	PROXIMITY TO WORKS	HSI SCORE	HSI CATEGORY
1	SU 490317	130m west	0.78	Good
2	SU 486320	440m north west	N/A	No access
3	SU 487320	425m north west	0.31	Poor
4	SU 491320	130m north	0.46	Poor
5	SU 492316	10m east	0.72	Good
6	SU493317	40m west	0.59	Below Average
7	SU492314	90m west	0.63	Average
8	SU492315	10m west	0.73	Good
9	SU490312	190m west	0.70	Average
10	SU490307	420m west	0.50	Poor
11	SU490310	410m west	0.73	Good
12	SU491305	370m west	N/A	No access

3.2 ENVIRONMENTAL DNA

3.2.1 Eight waterbodies were subject to eDNA sampling (see **Figure 3.2**). Waterbodies 6 and 10 were not sampled using eDNA methods, see Section 2.4 for details. The results of the laboratory analysis identified that none of the waterbodies included in the analysis contained great crested newt DNA. No DNA was detected within the water samples as shown in Table 3.2 and the Fera results in Appendix C. No inhibition or degradation was identified in any of the samples.

Table 3.2: eDNA Sampling Results

WATERBODY REF.	FERA REFERENCE	GCN DETECTION	GCN SCORE	INHIBITION	DEGRADATION
1	S17-006354	Negative	0	No	No
3	S17-006353	Negative	0	No	No
4	S17-006347	Negative	0	No	No
5	S17-006348	Negative	0	No	No
7	S17-006349	Negative	0	No	No
8	S17-006351	Negative	0	No	No
9	S17-006352	Negative	0	No	No
11	S17-006350	Negative	0	No	No

3.3 INCIDENTAL RECORDS

- 3.3.1 Common toad *Bufo bufo* and common frog *Rana temporaria* were incidentally recorded on numerous occasions in association with the flood meadow habitats in the northwest of the Survey Area.

3.4 EVALUATION

- 3.4.1 The results of the eDNA sampling indicate great crested newts are likely absent from the Survey Area. This conclusion is supported by the absence of records of great crested newt from at least a 2km radius of the Proposed Works area. This may be related to the prevalence of chalk bedrock in the surrounding area, resulting in a relative scarcity of surface water. The 2003 Hampshire Biodiversity Action Plan stated that known breeding populations of great crested newt in Hampshire were concentrated on the south coast and eastern border, with populations also thought to be strong in the north of the county. Conversely, areas of chalk bedrock in Hampshire occur within the central and western extents. Overall it is concluded that there is sufficient evidence to conclude that great crested newts are likely to be absent from the Survey Area.

4 RECOMMENDATIONS

- 4.1.1 The survey results indicate that great crested newt are likely absent from the Survey Area, therefore there are no known legal or planning constraints in relation to this species. However, the relevant legislation and planning policy listed in Section 2.4 sets out protection of the common amphibian species that are likely present within the Survey Area and planning policy states that all development should consider opportunities for biodiversity enhancements. Our recommendations below are aimed at delivering this.

4.2 AVOIDANCE AND MITIGATION MEASURES

GREAT CRESTED NEWT & OTHER AMPHIBIANS

- 4.2.1 As no great crested newt DNA was detected within waterbodies within the Survey Area great crested newts are considered likely absent at the time of survey. Considering this, the majority of waterbodies surveyed were of average or good quality and therefore would provide suitable habitat to amphibians in general.
- 4.2.2 In the first instance, habitat considered suitable for great crested newt and other common amphibians should be avoided. Designs should avoid direct and indirect effects on waterbodies and drainage ditches including: destruction or degradation; siltation; and pollution. Drainage during the construction and operational phases should be designed to avoid pollution events when in close proximity to waterbodies.
- 4.2.3 Where habitat loss cannot be avoided, this habitat should be compensated for. It is considered unlikely that the large waterbodies will be impacted by the Proposed Works. However, drainage ditches associated with the A34 and A33 are likely to be affected. New drainage ditches and swales should be designed to provide suitable habitat for common amphibians, which should include marginal planting, bank profiling, provision of refugia and hibernacula and the creation of suitable terrestrial habitat.
- 4.2.4 The Proposed Works will result in the terrestrial habitats being affected which could support common amphibians. The following precautionary habitat clearance methods are recommended to be implemented to minimise the likelihood of common amphibians being incidentally harmed during site clearance works:
- Habitat clearance should be timed to avoid the sensitive hibernation season (indicatively October-February inclusive, but weather dependent). If this is not possible caution should be taken to ensure that potential hibernacula are not disturbed until hibernation ends. Hibernacula could include mammal burrows or objects under which amphibians could be hibernating including logs or amongst the roots of trees and shrubs. All hibernacula should be dismantled outside the hibernation period under ecological supervision.
 - Where tall herbaceous vegetation (including that occurring on the edge of scrub and woodland areas) is cleared outside of the period in which amphibians are likely to be hibernating, it should be undertaken in two stages over at least two consecutive days in order to progressively render habitat unsuitable for amphibians. An initial cut should be made to approximately 150mm. The second cut should reduce vegetation as close as possible down to ground level. Vegetation clearance should proceed in a directional manner in or to displace animals which may be present into areas of retained habitat. The habitat should then be maintained in an unsuitable condition for reptiles, such as by regular cutting of vegetation or by removal of topsoil.

4.3 ECOLOGICAL ENHANCEMENT MEASURES

4.3.1 National and local planning policy requires ecological enhancement measures to be designed into new development schemes. It is recommended that enhancement measures are incorporated into the proposals which seek to achieve net gain in habitat available to amphibians on site, and ensure habitat connectivity with adjacent land.

4.3.2 The following measures are recommended:

- Improvements to existing waterbodies could be made to enhance their quality as amphibian habitat. Ponds identified as having poor to average quality in the HSI could be enhanced through marginal and submerged planting, reformation of steep banks to improve amphibian access and creation of suitable terrestrial habitat.
- Creation of new waterbodies within the Survey Area to benefit not only amphibian but invertebrate and aquatic flora species. Attenuation ponds, swales and drainage ditches should be designed into the Proposed Works to create new habitat for these taxa. These new waterbodies should be located within a sufficiently large catchment or have sufficient swales running along slope contours and ditches created in order to direct enough water into the pond. To benefit amphibians new ponds should be designed to include varying depths, gentle slopes, native aquatic marginal and emergent planting and terrestrial refugia.
- Creation or enhancement of suitable terrestrial habitat as part of the wider landscaping scheme, to include retention or creation of hedgerows, woodland and grassland subject to low management.
- Creation of winter hibernacula or permanent refugia within terrestrial habitat surrounding waterbodies to encourage amphibians to remain closer to the ponds, reducing the need for movement across roads and other habitats where they are at risk.

5 CONCLUSION

5.1.1

Ten waterbodies within a 500m radius of the Proposed Works were subject to HSI survey, eight of which were subject to eDNA analysis. None of the waterbodies tested positive for great crested newts, and based on this evidence and a lack of records from the surrounding area, this species is considered to be likely absent from the Survey Area. The waterbodies do provide suitable habitat for common amphibians with common toad and frog incidentally recorded. Accordingly, recommendations are made for avoidance and mitigation measures to minimise potential impacts to common amphibians (with receive no specific legal protection). In addition, recommendations are made for ecological enhancement measures which if incorporated into the Proposed Works should benefit local amphibian populations.

6

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FIGURES

FIGURE 1.1 SITE LOCATION PLAN

Key

- Extent of Proposed Works
- 500m Radius of Proposed Works
- Waterbodies
- Waterbodies (Linear)



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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					PROJECT:		SCALE @ A3:	CHECKED:	APPROVED:											
					M3 Junction 9		9,500	LR	ET											
					TITLE:		FILE:	DRAWN:	DATE:											
					Site Location Plan		A3 Template	BW	August 2017											
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FIGURE 3.1 HSI RESULTS

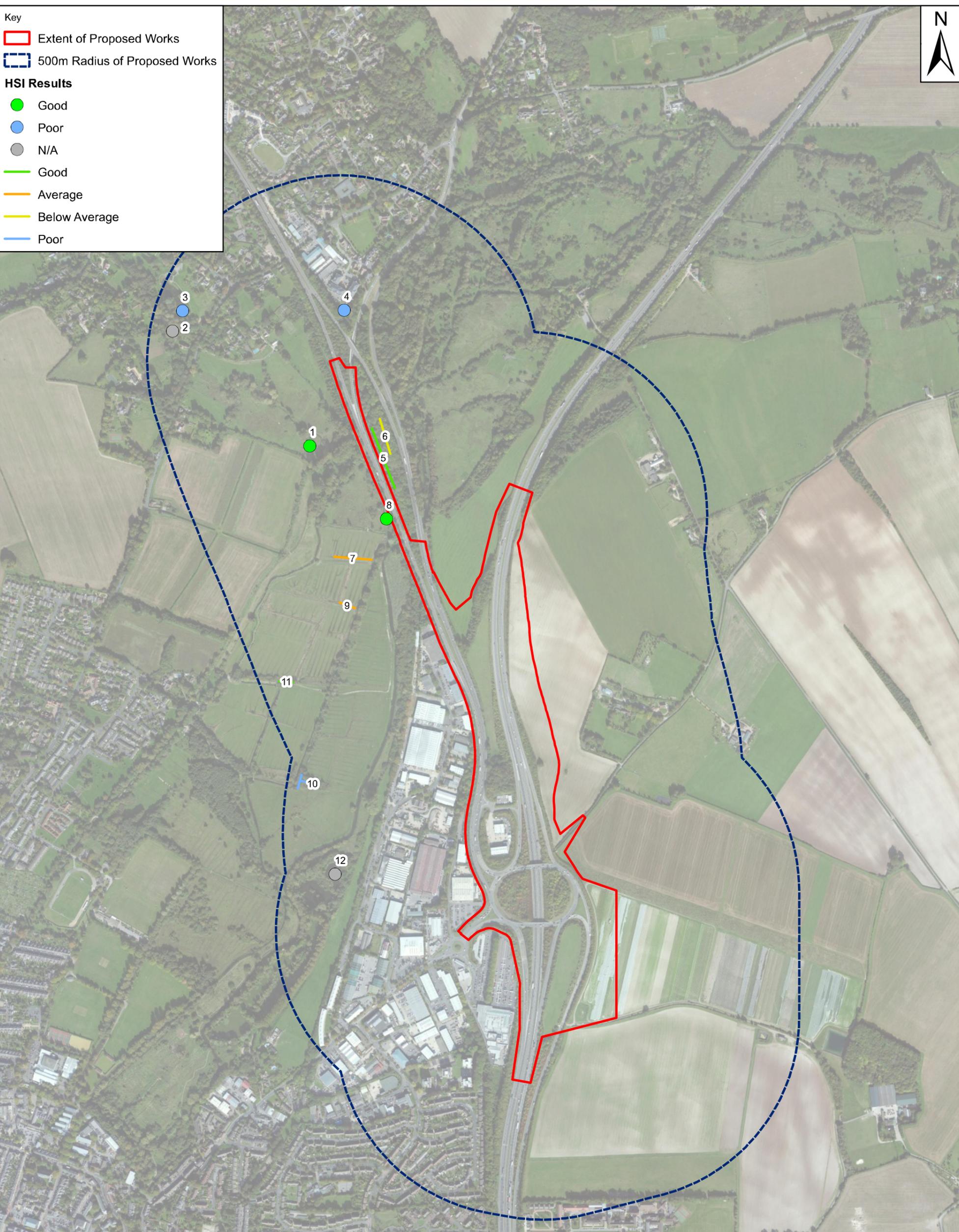
Key

- Extent of Proposed Works
- 500m Radius of Proposed Works

HSI Results

- Good
- Poor
- N/A

- Good
- Average
- Below Average
- Poor



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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					GCN HSI Results		A3 Template	BW	August 2017
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DRAWING STATUS: First Issue						70016638	3.1	A	
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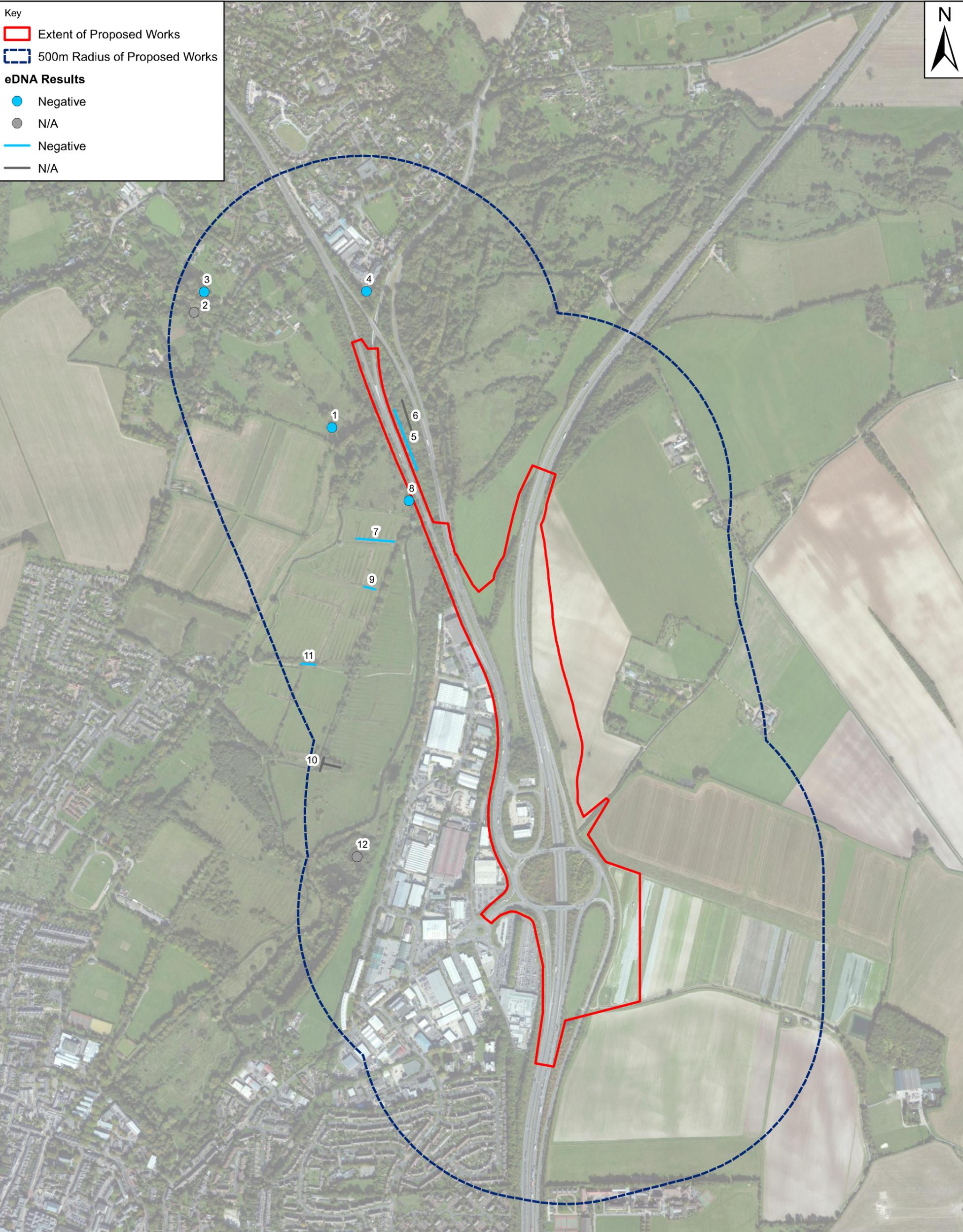
FIGURE 3.2 EDNA RESULTS

Key

- Extent of Proposed Works
- 500m Radius of Proposed Works

eDNA Results

- Negative
- N/A
- Negative
- N/A



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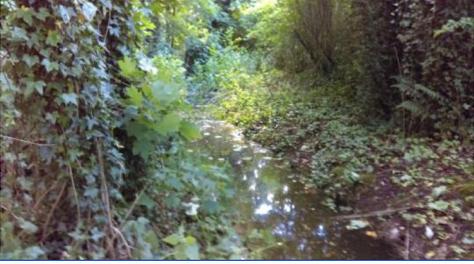
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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					GCN eDNA Results		A3 Template	BW	August 2017
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						70016638	3.2	A	
DRAWING STATUS: First Issue					© WSP Group plc				

Appendix A

WATERBODY DESCRIPTIONS

Table A.1 : Waterbody descriptions

Water body Ref.	Photograph	Description / Comment
1		Waterbody created by cutting off River Itchen. The resultant pool is isolated from the River Itchen and no discernible flow was observed. Extensive emergent vegetation and pond weed present. Well-developed margins and clear water. Frog tadpoles visible. Access to entire waterbody perimeter was not possible due to dense vegetation.
2	-	Not Accessed
3		Large trout fishery. Incidental waterfowl included swans, mallards and coots. Sluice gate at either end fed by the River Itchen. Good water quality with emergent vegetation including water mint, pond weed, sedges and iris. Amenity grassland surrounding the lake for fishery purposes.
4		Waterbody surface covered in duckweed. Fully shaded pond surrounded by broadleaved woodland. Signs indicate deep water, however shallow at time of survey. Likely dries at some points of the year. Possible attenuation pond although no outlet seen. No emergent vegetation. Limitations to access on one side of the pond.
5		Linear attenuation feature approximately 175m in length running along the A34 north bound. Some emergent vegetation present. Duck weed covers the majority of the waterbody. Fairly steep banked either side.

Water
body
Ref.

Photograph

Description / Comment

6



Located east of waterbody 5, approximately 100m in length. The ditch has no open water with heavy shading from broadleaved deciduous woodland. The ditch appears also to be a shallow drainage ditch associated with the highways. High duckweed cover was evident along much of the ditch.

7



Spring fed ditch linking to the River Itchen, approximately 100m in length. No flow was observed within the ditch. The waterbody is dominated by reed. Occasional pools of water present which have good water quality with some patches of duck weed present. Intermittent pools were observed where the reed was less dense. Whilst no discernible flow was observed, the ditch is connected at the eastern end to the main channel of the River Itchen.

8



Small pool connected to ditches to the west and south. A sluice gate is located to the south through which a small amount of water drains into the adjacent Itchen. Small fish are present within the waterbody. Reed is abundant on the north margins, with occasional emergent water mint. Approximately 20-30cm at its deepest. Duckweed was identified in some patches. Mostly shaded by willow trees. The north end of the waterbody was not accessible due to dense reeds.

Water body Ref.	Photograph	Description / Comment
9		<p>Waterbody comprising a ditch of approximately 45m in length that is connected to the River Itchen by a sluice gate at the eastern end. The ditch displayed no flow, and is spring fed. The ditch is approximately 30cm deep. Reed dominates the ditch margin with occasional sedge.</p>
10		<p>Waterbody comprising a shaded pool within a wet woodland that is connected to ditches and ultimately the main channel of the River Itchen. Duckweed was present in areas.</p>
11		<p>Waterbody comprising a ditch lined with willow approximately 40m in length, connected to the main channel of the River Itchen. Duckweed cover was high where the ditch met a headwall. Sedge and reed are prominent along the margins. The ditch is approximately 30cm deep and is surrounded by marshy grassland. Access to the north bank was not possible due to dense vegetation.</p>
12	-	Fishing lake, not accessed.

Appendix B

HSI CALCULATIONS

Table B.1 : HSI Calculations

Pond Ref.	S1: Geographic location	S2: Waterbody area	S3: Waterbody permanence	S4: Water quality	S5: % Shade (1m from bank)	S6: Impact of waterfowl	S7: Fish stocks	S8: Number of waterbodies <1km	S9: Terrestrial habitat	S10: Macrophyte cover (%cover)	HSI SCORE	HSI CATEGORY
1	1	0.92	0.9	1	1	0.67	0.67	0.65	1	0.35	0.781	Good
2	Not accessed											
3	1	0.6	0.9	1	1	0.01	0.01	0.65	0.67	0.3	0.31	Poor
4	1	0.2	0.5	0.67	0.2	1	1	0.1	1	0.3	0.46	Poor
5	1	0.95	0.5	0.67	0.8	1	1	0.45	1	0.35	0.72	Good
6	1	0.6	0.5	0.67	0.2	1	1	0.45	1	0.3	0.59	Below Average
7	1	0.4	0.5	1	0.2	1	0.67	0.65	0.67	0.9	0.63	Average
8	1	0.7	1	1	0.4	0.67	0.33	0.65	1	0.8	0.71	Good
9	1	0.6	1	1	0.2	0.67	0.67	0.65	0.67	0.9	0.68	Average
10	1	0.85	1	1	0.4	0.67	0.01	0.65	1	0.6	0.50	Poor
11	1	0.98	0.9	1	0.4	0.67	0.67	0.65	0.67	0.6	0.73	Good
12	Not accessed											

Appendix C

LABORATORY RESULTS

DNA Analysis Report - Commercial in Confidence



Customer: WSP UK Limited
Address: Mountbatten House, Basing View
Basingstoke
Hampshire
RG21 4HJ
Contact: Bradley Williams
Email:
Tel:
Report date: 21-Jun-2017
Order Number: GCN17-0560
Samples: Pond Water
Analysis requested: Detection of Great Crested Newt eDNA from pond water.

Thank you for submitting your samples for analysis with the Fera eDNA testing service. The details of the analysis are as follows:

Method:

The method detects pond occupancy from great crested newts (GCN) using traces of DNA shed into the pond environment (eDNA). The detection of GCN eDNA is carried out using real time PCR to amplify part of the cytochrome 1 gene found in mitochondrial DNA. The method followed is detailed in Biggs J., et al, (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.

The limits of this method are as follows: 1) the results are based on analyses of the samples supplied by the client and as received by the laboratory, 2) any variation between the characteristics of this sample and a batch will depend on the sampling procedure used. 3) the method is qualitative and therefore the levels given in the score are for information only, they do not constitute the quantification of GCN DNA against a calibration curve, 4) a 'not detected' result does not exclude presence at levels below the limit of detection.

The results are defined as follows:

- Positive:** DNA from the species was detected.
eDNA Score: Number of positive replicates from a series of twelve.
Negative: DNA from the species was not detected; in the case of negative samples the DNA extract is further tested for PCR inhibitors and degradation of the sample.
Inconclusive: Controls indicate degradation or inhibition of the sample, therefore the lack of detection of GCN DNA is not conclusive evidence for determining the absence of the species in the sample provided.

DNA Analysis Report - Commercial in Confidence



CustomerReference	Fera Reference	GCN Detection	GCN Score	Inhibition	Degradation
-	S17-006347	Negative	0	No	No
-	S17-006348	Negative	0	No	No
-	S17-006349	Negative	0	No	No
-	S17-006350	Negative	0	No	No
-	S17-006351	Negative	0	No	No
-	S17-006352	Negative	0	No	No
-	S17-006353	Negative	0	No	No
-	S17-006354	Negative	0	No	No

The results indicate that eDNA for great crested newts was not detected in any of the samples submitted. Analysis was conducted in the presence of the following controls: 1) Extraction blank, 2) appropriate positive and negative PCR controls for each of the TaqMan assays (GCN, Inhibition, and Degradation). All controls performed as expected.

This test procedure was developed using research funded by the Department of Environment, Food and Rural Affairs, and was performed under the conditions of licensing arrangements with Applied Biosystems and patent rights owned by F. Hoffman-La Roche Ltd.

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**APPENDIX B8-13
TERRESTRIAL
ENTOMOLOGICAL
WALKOVER SURVEY
REPORT**

M3

Junction 9 Improvement Scheme

Terrestrial Entomological Walkover Survey Report

M3 JUNCTION 9 IMPROVEMENT SCHEME

TERRESTRIAL ENTOMOLOGICAL WALKOVER SURVEY REPORT

Highways England

Second Issue

Project no: 70016638

Date: August 2017



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EXECUTIVE SUMMARY

M3 Junction 9 has been proposed for redevelopment in order to help reduce congestion by improving the flow of traffic. Three options for this scheme are currently being investigated.

In order to carry out an evaluation of the potential conservation value of the Survey Area for invertebrate assemblages, an appraisal of the Survey Area (defined as the area to be affected by works and an additional 100 m buffer) was visited by an entomologist. The likely key habitats and features present in the Survey Area were assessed based on the diversity of the structure of the vegetation present and floristic diversity. Much of the Survey Area includes habitats unsuitable to support important invertebrate assemblages. This walkover did, however, identify several areas which are of high potential for important invertebrate assemblages including: two wet meadows to the west of the A34; two areas of dry grassland associated with woodland; and scrub margins and the verges of a lane (Easton Lane).

To obtain a more robust baseline of information and to be able to carry out an appropriate assessment of the likely impacts of the scheme, further surveys have been recommended for high potential areas likely to be impacted by the Proposed Works, with reference to best practice guidance (Drake *et al* 2007), where available.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Junction 9 of the M3 is a key transport interchange on the strategic road network which connects South Hampshire and the wider sub-region, with London via the M3 and the Midlands via the A34 (which also links to the principal east-west A303 corridor). M3 Junction 9 has been proposed for redevelopment in order to help reduce congestion around this stretch of the road by improving the flow of traffic.

1.1.2 The works are hereafter referred to as 'the Proposed Works'. Further details of the Proposed Works are presented within the PCF Stage 2 Environmental Study Report (ESR). The anticipated maximum extent of the works is shown on Figure 1, and is hereafter referred to as 'the Site'.

1.2 ECOLOGICAL BACKGROUND

1.2.1 An ecological desk study was undertaken with respect to the Proposed Works by WSP in 2016. 167 notable invertebrate species records were obtained from within a 2km radius of the Site, the vast majority of which were of butterflies and moths (Lepidoptera). Three records were obtained from grid squares that overlap with the Site: small heath butterfly *Coenonympha pamphilus*, silver wash fritillary butterfly *Argynnis paphia* and stag beetle *Lucanus cervus*.

1.2.2 A Phase 1 habitat survey was carried out by WSP during 2017, which confirmed the presence of habitats of potential value to notable invertebrate species and communities within the Site

1.3 AIMS AND OBJECTIVES

1.3.1 The aims of this report are to:

- Set out the methods and findings of an entomological walkover of the Survey Area (defined as all habitats within 100m of the Site).
- Provide an evaluation of the potential conservation value of the Survey Area for invertebrate assemblages, including an appraisal of key habitats/features likely to be of greatest invertebrate value.
- If appropriate, identify the need for further targeted surveys with reference to best practice guidance, where available.

2 METHODOLOGY

2.1 WALKOVER SURVEY

2.1.1 The walkover Survey Area comprised the footprint of all works and land within a 100m radius of this, where access was available, hereafter referred to as the 'Survey Area'. Habitats within the Survey Area were categorised as 'low' or 'high' potential for important invertebrate assemblages, dependent on the presence of features which might be of particular value for invertebrates, or which might limit invertebrate interest. High potential habitats are those with the potential to support noteworthy invertebrate assemblages and are therefore recommended for further targeted invertebrate surveys should they be either directly or indirectly affected by the development proposals. Owing to the lack of any defined or set methodology for invertebrate habitat quality assessment, the survey relied on the professional judgement of the surveyors and their experience of working on similar projects.

2.1.2 The categories given to the different habitat parcels are intended to represent the relative interest of the different areas within the Survey Area, rather than to indicate their quality on a National or Regional scale. However, the categories are to some extent habitat-specific (grassland is graded relative to other grassland, not to ancient woodland) and useful categorisation cannot be made without some consideration to the wider context.

DATES AND PERSONNEL

2.1.3 The walkover survey was completed on the 25 June 2017 by Dr Jim Fairclough MCIEEM of BSG Ecology, with assistance from John Baker MCIEEM also of BSG Ecology. Jim is a Principal Ecologist with extensive experience in carrying out invertebrate surveys, has completed a PhD looking at invertebrate communities associated with dung in 2004, and provides training on invertebrate survey techniques and identification.

LIMITATIONS

2.1.4 No areas of habitats immediately adjacent to the A34 or M3 carriageways were accessed during this survey. However, based on the findings of the Phase 1 habitat survey (for which roadside access was obtained), sufficient baseline information is available to make robust conclusions regarding the value of those habitats to invertebrates. Other than this, no limitations to the above survey were encountered.

3 RESULTS AND DISCUSSION

3.1 GENERAL

3.1.1 Across the Survey Area there are a range of different habitats and features of potential importance to invertebrates. Below, the habitats and areas present within the Survey Area are categorised into 'low' and 'high' potential for important invertebrate assemblages. Target Notes (TNs) and areas of high potential for invertebrates are shown on Figure 2.

3.2 HIGH POTENTIAL FOR IMPORTANT INVERTEBRATE ASSEMBLAGES

3.2.1 The Winnal Moors water meadows associated with the River Itchen are present in the north-western part of the Survey Area. These are designated as part of the River Itchen Site of Special Scientific Interest (SSSI) with the main channels of the river designated as a Special Area of Conservation (SAC). The land within the Survey Area comprises water meadows which are periodically inundated. At the time of the survey, these were dry, though water was present in the drains which demarcate their margins.

3.2.2 The sward in the meadow in Area 1 (see Figure 2) is tall (up to 80cm) with occasional areas of trampled ground as a result of it being grazed by a small number of cattle which had recently been moved to the meadow as part of the management of the site. This has created a more diverse sward structure. The vegetation recorded included: reed canary grass *Phalaris arundinacea* (the dominant grass species), yellow iris *Iris pseudacorus*, lesser pond sedge *Carex acutiformis*, hard rush *Juncus inflexus*, broad-leaved dock *Rumex obtusifolius*, curled dock *Rumex crispus*, woody nightshade *Solanum dulcamara*, common comfrey *Symphytum officinale*, common ragwort *Senecio jacobaea*, common nettle *Urtica dioica*, marsh thistle *Cirsium palustre*, red fescue *Festuca rubra*, amphibious bistort *Persicaria amphibia*, water mint *Mentha aquatica*, wild angelica *Angelica sylvestris*, marsh-bedstraw *Galium palustre* and tussock sedge *Carex paniculata*.

3.2.3 This meadow was bordered by woodland dominated by willow on the northern side and scattered willows (mainly goat willow *Salix caprea*) and alder *Alnus glutinosa* (TN1) were also present. On the north-eastern side of this meadow is a bank which slopes down from the verge of the A34. This supported a diverse sward structure with species such as hemp-agrimony *Eupatorium cannabinum*, common reed *Phragmites australis* and common nettle. Area 2 (see Figure 2) is of a similar composition and structure but no grazing was noted. The drain on the southern and western edge of Area 1 (TN2 and 3) supports a range of species of a similar composition to the meadow itself but grazing was excluded from the banks of the drain. The area between Area 1 and 2 supports a mix of wet meadow as described for Areas 1 and 2 and woodland.

3.2.4 A hay meadow is also present immediately to the south of Area 1 (TN4). This had recently been cut at the time of the survey, but it may support a wider diversity of herbs and graminoids (grasses and grass like species) than was immediately apparent. This should also, therefore, be included in the habitats of high potential as a precautionary measure. However, should further surveys be needed for Area 1, the need for surveys in this area (the hay meadow) will be determined based on the floristic diversity and structure of the sward present.

3.2.5 Overall, the habitats of the water meadows are likely to be of importance to invertebrates owing to: the varied structural diversity (grassland, scrub and trees); species diversity of herbs; relatively sheltered aspect afforded by trees and wooded belts; and seasonally inundated ground, which can support a range of specialist invertebrates (notably beetles and flies; Coleoptera and Diptera respectively).

- 3.2.6 The habitats enclosed by the roundabout of Junction 9 include some dense plantation woodland habitats with a dense scrub layer. The species include ash *Fraxinus excelsior*, hawthorn *Crataegus monogyna* and dogwood *Cornus sanguinea*. Although these offer limited diversity in terms of species composition, the structural diversity and shelter they provide heightens the interest to invertebrates of the adjacent open areas, especially at the ecotone between the woodland and open areas. These open areas adjacent to the road verges support grassland which, in places, is herb-rich. This includes Areas 3 and 4 (see Figure 2).
- 3.2.7 Area 3 includes an underpass on its western side and the banks created to accommodate this provide a range of aspects. The vegetation structure is fairly diverse and ranges from a long sward (50cm) down to much shorter swards, which either arise from drier conditions or management (mowing). The grasses recorded include false oat-grass *Arrhenatherum elatius*. This species made up about 40% of the sward. However, a number of other species were also present either as part of the taller sward or forming lower swards. These included: goldenrod *Solidago virgaurea*, early goldenrod *Solidago gigantea*, perforate St. John's-wort *Hypericum perforatum*, agrimony *Agrimonia eupatoria*, yarrow *Achillea millefolium*, goat's-beard *Tragopogon pratensis*, wild teasel *Dipsacus fullonum*, red clover *Trifolium pratense*, musk-mallow *Malva moschata*, wetland thistle *Carduus crispus*, hogweed *Hareclum sphondylium*, bristly oxtongue *Helminthotheca echioides*, upright hedge parsley *Torilis japonica*, hemp-agrimony *Eupatorium cannabinum*, tufted vetch *Vicia cracca*, wild carrot *Daucus carota*, wild marjoram *Origanum vulgare*, wild basil *Cinopodium vulgare*, fairy flax *Linum catharticum*, oxeye daisy *Leucanthemum vulgare*, common bird's-foot-trefoil *Lotus corniculatus* and toadflax *Linaria vulgare*. Such a diversity of plants, with species (including the aforementioned shrubs) that flower through much of the growing season is likely to support a varied invertebrate fauna, either feeding off the foliage (phytophagous species) or visiting the flowers to collect nectar or pollen. The southern aspects of some of these areas, the shorter sward height and the sheltered position (in some places) will benefit warmth-loving (thermophilous) species, such as solitary bees and wasps (Hymenoptera: Aculeata).
- 3.2.8 Area 4 (see Figure 2) was less diverse in terms of structure, being dominated by a short sward with some patches of bare ground. Several anthills were noted as developing in this area. The species list was similar to that of Area 3 with further species including: bladder campion *Silene vulgaris*, white clover *Trifolium repens*, common centaury *Centarium erythraea*, hedge bedstraw *Galium mollugo*, common knapweed *Centaurea nigra*, evening primrose *Oenothera biennis*, goat's-rue *Galega officinalis*, common fleabane *Pulicaria dysenterica* and ploughman's-spikenard *Inula conyzae*.
- 3.2.9 To the east of the Junction (shown as Area 5 on Figure 2), Easton Lane runs south-west to north-east and is lined on both sides with mature hedgerows. These support species such as blackthorn *Prunus spinosa*, hawthorn, dog rose *Rosa canina* agg. and bramble *Rubus fruticosus* agg.. The blackthorn was suckering into the verges in places. These verges also support grassy margins, with false oat-grass as well a number of herb species, including common nettle, common knapweed, agrimony, hogweed, hedge bedstraw, black horehound *Ballota nigra*, field scabious *Knautia arvensis*, mugwort *Artemisia vulgaris* and wild onion *Allium vineale*. The structure, shelter and nectar and pollen sources afforded by the hedgerows along this lane makes it a linear sun trap that will benefit (amongst other groups) thermophilous (warmth-loving) species, spiders (Araneae), grasshoppers and crickets (Orthoptera), and butterflies and moths (Lepidoptera).

3.3 LOW POTENTIAL FOR IMPORTANT INVERTEBRATE ASSEMBLAGES

- 3.3.1 Certain areas within the River Itchen SSSI and Winnal Moors reserve were assessed as having low potential to support significant invertebrate assemblages. This included the drier meadows in the northern part of the Survey area (TN 5). For example, the area between the Itchen and the A34 (TN 6) is dominated by common reed with a fairly uniform structure.

- 3.3.2 Two large meadows (TN7) are present in the central part of the Survey Area, immediately to the north of the junction. These were grazed by cattle and managed relatively intensively, though the sward did show some diversity in terms of herb species the structure offered is very limited.
- 3.3.3 An area of grassland (TN8), with recently planted woodland, is present to the south of Easton Lane in the Survey Area. This appears to be recently unmanaged, and as such the structure of the sward is relatively uniform. The herb species recorded were limited, but included ploughman's spikenard, colt's-foot *Tussilago farfara*, teasel, mugwort, common fleabane and wild carrot. Therefore this habitat has been categorised as being of low potential although it may develop into a more diverse area in time.
- 3.3.4 The majority of the remainder of the Survey Area comprises intensively managed arable farmland with narrow field margins. This agricultural landscape offers very limited sheltering and foraging opportunities for invertebrates and is therefore regarded as low potential for invertebrates. Other habitats include the infrastructure associated with a supermarket (parking areas and the store itself) and industrial areas.

4 RECOMMENDATIONS

4.1.1 The information gathered has allowed habitats to be categorised as either low or high potential. All areas assessed as being of low potential will not need further targeted surveys.

4.1.2 It is recommended that those categorised as having high potential should be subject to further surveys if they are to be impacted directly or indirectly by the development proposal, with the exact methods tailored to suit the likely species composition of the assemblage. The recommendations presented in the Table 4-1 below are in line with current best practice guidance (Drake *et al.*, 2007).

Table 4-1 Further surveys (if required)

AREA	HABITAT	METHOD	TIMING	SURVEY FOCUS
1 & 2 (and adjacent hay meadow - TN4)	Wet meadow and hay meadow	Sweep netting / beating	Minimum of two surveys covering spring and summer	Pitfall traps will be deployed on up to two occasions in late spring and summer for a period of 10 – 14 days on each occasion. The surveys will focus on Coleoptera, Hemiptera and Orthoptera (grasshoppers & crickets)
3	Grassland and scrub/ woodland edge	Minimum of two surveys covering spring and summer	Minimum of two surveys covering spring and summer	Pitfall traps will be deployed on up to two occasions in late spring and summer for a period of 10 – 14 days on each occasion. The surveys will focus on Coleoptera, Hemiptera and aculeate Hymenoptera (bees, ants and wasps)
4	Grassland and scrub/ woodland edge	Sweep netting / beating Pitfall traps Pan traps	Minimum of two surveys covering spring and summer	Pitfall traps will be deployed on up to two occasions in late spring and summer for a period of 10 – 14 days on each occasion. The surveys will focus on Coleoptera, Hemiptera and aculeate Hymenoptera.
5	Hedgerow and lane verges	Sweep netting / beating Pitfall traps Pan traps	Minimum of two surveys covering spring and summer	Pitfall traps will be deployed on up to two occasions in late spring and summer for a period of 10 – 14 days on each occasion.

AREA	HABITAT	METHOD	TIMING	SURVEY FOCUS
				The surveys will focus on Coleoptera, Hemiptera, Orthoptera and aculeate Hymenoptera.

5 CONCLUSIONS

- 5.1.1 Whilst the majority of the Survey Area comprises intensively managed arable farmland largely unsuitable for notable invertebrate assemblages, there are several parts of the Survey Area that have the potential to support species and assemblages of conservation importance. These areas comprise wet meadow and grassland associated with scrub, woodland and hedgerows.
- 5.1.2 Areas 1 and 2 currently lie outside the proposed working footprint, and therefore further surveys, are not likely to be necessary unless the development proposals change. However, the north-eastern margin of Area 1 supports habitats associated with existing drainage ditches which are likely to be of high potential for invertebrates. Therefore should impacts to the banks of the A34 be impacted upon, further surveys will be required.
- 5.1.3 The further surveys recommended for Areas 3, 4 and 5 (where these areas are affected by the Proposed Works) and will inform the likely impacts of the scheme on the invertebrate assemblages present. These are likely to require at least two visits to covering both spring (typically early April to mid-June) and summer (typically late June to early September).

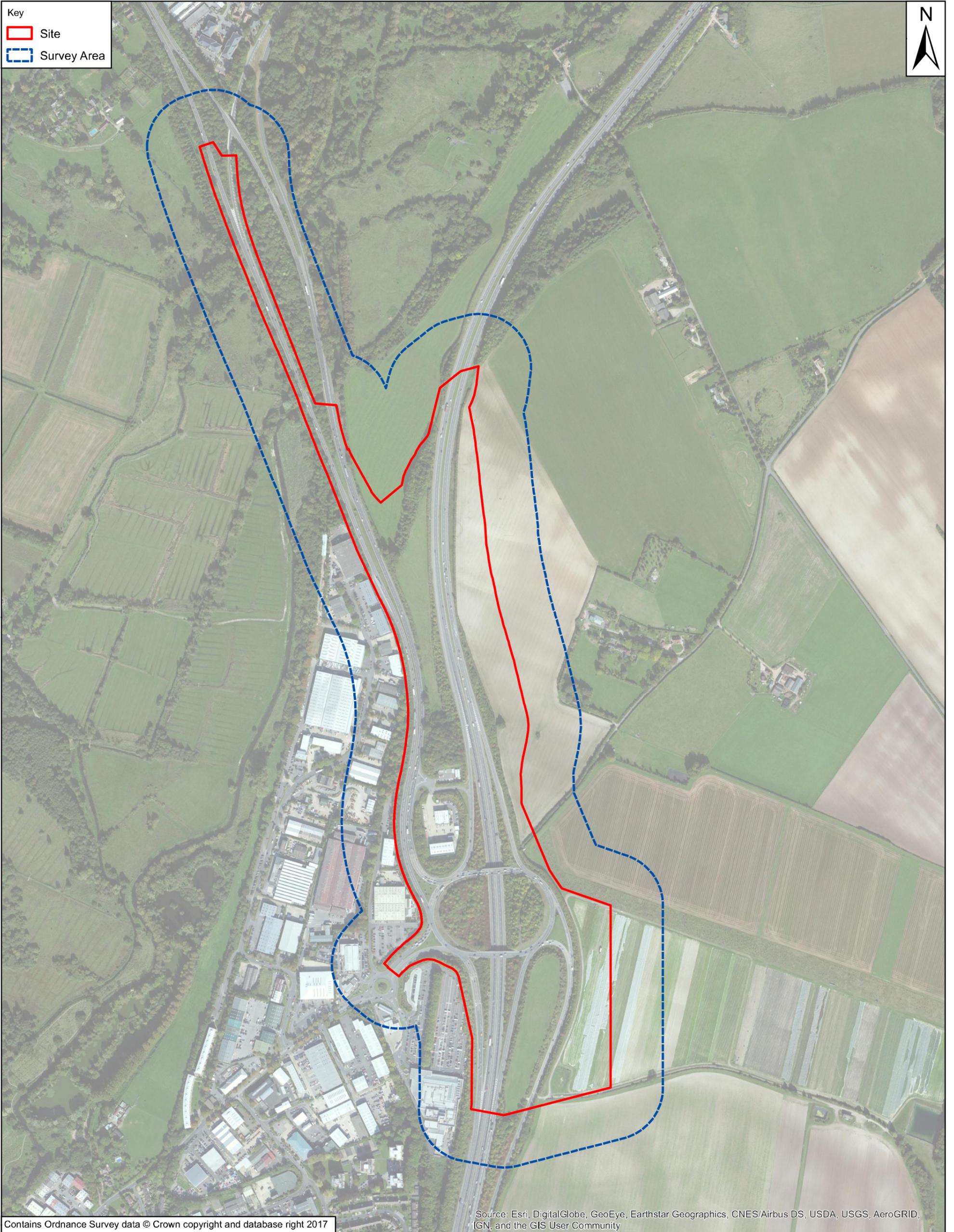
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Key

 Site

 Survey Area



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PROJECT: M3 Junction 9

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