

## EMAD - SITE VISIT REPORT

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### 1) SCHEME DETAILS

<b>Scheme Name:</b> A46 NB SB Sixhills Geotech – Water Erosion	<b>Scheme No.:</b> 569243
████████████████████	<b>Design only?</b>
<b>Construction Start Date:</b> 25/11/2019 Topo survey, drainage survey and Ground Investigation	<b>Working Hours:</b> TBC

**Site location:** An area on the NB and SB carriageway (Drawing: HE569243-KIER-VDS-A46\_Z-DR-CD-0500\_03). This area features a high frequency of defects that relate to defective drainage undercutting the embankment toe and eroding into the earthwork slope.

**Scheme purpose:** The purpose of this scheme is to:

- Establish the drainage extents and influence on defects
- Develop an understanding of the local geology, geomorphology, hydrology and hydrogeology in context with the surrounding area
- Identify any environmental constraints that may need to be considered in the development of a scheme
- Identify the requirement for any surveys that may be required within the defective section of the network
- Design remedial works and stabilise the drainage and earthworks.

It is believed that the defects on either side of the carriageway originated from defective and insufficient drainage. A culvert carries a stream, with a constant flow, from the SB to the NB side of the carriageway but the culvert has been installed at 90 degrees to the earthwork and subsequently diverting water directly onto the earthwork and eroding the slope through periods of increased flow. As a result, the remedial actions proposed at this stage include possible re-aligning the culvert, installed renewed drainage, potentially a lined ditch should culvert re-alignment not be possible and slope repair to remediate the eroded sections.

Boreholes (2 no.) will reach 150mm in diameter in order to develop a ~100mm core and be 8m deep.

**Construction activities to be executed (On site only):** Site walkover survey (Environmental and Topographical),

**Construction activities to be executed (Off site only):** None.

### 2a) SITE VEGETATION

Broad Habitat Types	Present?	DAFOR	Impacted?	Notes* Further Surveys Required?
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Broadleaved Woodland	Yes	O	No	<p>Linear extents of broadleaved plantation woodland (for example, adjacent to the A6006-A46 on-slip) and rear lines of trees occur along the verge adjacent to the water-course, before grading into regenerating woody scrub and tall ruderal and rear species poor hedgerows.</p> <p>It is not proposed that established trees will need to be removed (dbh &gt;75mm). Only vegetation clearance with branch pruning is required to permit surveys and ground investigations.</p>
Continuous and Scattered Scrub	Yes	A	Yes	<p>Vegetation clearance from the previous ditch works has resulted in dense thickets of regenerating dogwood, blackthorn and cherry on NB and SB verges (<i>Plates 1 &amp; 2</i>). These form a continuous extent with inaccessible bramble briar and tall ruderal vegetation also present. Localised removal of ground vegetation is planned but this will regenerate readily and not require reinstatement.</p>
Species-poor intact hedgerow with / without trees	Yes	F	No	<p>Mature lengths of species-poor hedgerows dominated by hawthorn with occasional ash standards run the entire length of the NB and SB carriageways. Hedges are flanked by the highways ditch and a post and rail fence (which is, on occasion, in a state of disrepair).</p> <p>No excavation is required within 1.2m of the base of hedgerows, which are likely in third party ownership, forming a stock proof fence for surrounding agricultural land. No ecological impacts anticipated.</p>
Mature Trees	Yes	O	Yes pruning only	<p>Occasional semi-mature trees are present on the soft estate and have branches that overhang into proposed vegetation clearance areas. Trees previously classified as possessing Bat Roost Potential (BRP) on the NB boundary (dwg ref: HE561405-KIER-EGN_A46_Z DR_LE_3000_03) for the A46 Hobby Horse to Widmerpool Scheme will not be impacted (T73, 74 &amp; 75) as they are located away from boreholes.</p> <p>In addition, it is unlikely that excavations will impinge within the Root Protection Areas of trees as BH01 (SK 64529 22139) and BH02 (SK 64558 22122) as boreholes are located close to the crest of the embankment due to there being limited accommodation at the toe of the embankment for access (dwg ref: HE569243-</p>

				KIER_HGT_A46_SIXHILLS_DR_CE_0600_01).
Improved grassland	Yes	O	No	Improved grassland bands are species poor and occur as narrow bands along highway edges adjacent to filter drain media, and also within the central reservation. Habitat is of low ecological value and the disturbed habitat provides limited resources for protected and other notable species. Edge vegetation in more open micro-climates includes tansy, silverweed, knapweed and coarse grasses. No ecological impacts anticipated.
Tall Herb/Ruderal	Yes	F	Yes	Forming a mosaic with scattered scrub, willowherb and common nettle grade into the ditch sides ( <i>Plate 12</i> ). Localised removal of ground vegetation is planned but these areas will regenerate readily.
Marsh/Swamp/ Wet Grassland/Marginal	No	n/a	n/a	Not present on or adjacent to work areas. No impacts anticipated.
Watercourses / Ponds	Yes adjacent	O	No	<p>There are a number of water bodies adjacent to the Scheme extent located on third party land:</p> <ul style="list-style-type: none"> <li>• WB1 (<i>Plate 3</i>): On SB side, SK 64744 22361, 210m from works. Field pond, turbid, stocked with fish and devoid of macrophyte cover. Open aspect with soft rush on margins. Fenced off from permanent pasture field.</li> <li>• WB2 (<i>Plate 4</i>): On SB side, SK 64631 22386, 165m from works. Pond located close to A6006 Junction in broadleaved woodland plantation. Highly turbid, no macrophytes and likely fish populations. Margins shaded and covered with extensive bramble thicket.</li> <li>• WB3 (<i>Plate 5</i>): On SB side, SK 64697 22308, 135m from works. Large fish pond stocked with carp (15-20lbs). Partial shade to western end, with island. Kingfisher present.</li> <li>• WB4 (<i>Plate 7</i>): On SB side, SK 64593 22190, 20m from works verge. Swollen by heavy rainfall, bulrush reedbed present, turbid. Common darter present. Arable context.</li> <li>• WB5 (<i>Plate 8</i>): On SB side, SK 64591 21659, 380m from works. Landscaped pond with island in the golf course. Water lily and <i>Potamogeton spp</i> emergent vegetation, with reedbed component. Fringing willow and hawthorn. Moorhen present.</li> </ul>

				<ul style="list-style-type: none"> <li>• WB6 (<i>Plate 6</i>): On NB side, SK 64455 22344, 125m from works. Heavily shaded, turbid pond with no macrophytes and extensively poached by cattle in the more shallow margins.</li> <li>• WB7 (<i>Plate 11</i>): On the NB side, SK 64400 22101, 110m from works. Poached shallower pond with no macrophytes and turbid water. Highly disturbed with hawthorn. Horse field location.</li> <li>• WB8 (<i>Plate 10</i>): On the NB junction, SK 64575 22884, 620m from works. Small, later successional pond near slip-road. Eutrophic with continuous cover of yellow flag iris and bulrush. Heavily shaded and holding water.</li> </ul> <p>The small culvert inlet and outlet are found at the toe of the SB and NB embankments:</p> <ul style="list-style-type: none"> <li>• WB9 (<i>Plates 9, 13 &amp; 14</i>): Slow flowing and shallow mesotrophic water-course running under the A46 in a SE to NW direction (SK 64571 22109). Vegetated channel populated with common reed, bittersweet, meadowsweet, creeping thistle, common hogweed, broad leaved dock, hogweed and willowherb.</li> </ul> <p>Shallow wet ditch holding runoff from arable fields present 23m north near water-course at SK 64576 22130.</p> <p>See Section 3a (GCN).</p>
Ephemeral/Short Perennial or Disturbed Ground	No	n/a	n/a	Not present on or adjacent to work areas. No impacts anticipated.
Bare Ground	Yes	R	No	Central reservation on occasion comprise tarmacked hardstanding with no ecological value.  No ecological impacts anticipated.

\*Use JNCC Phase 1 Habitat Survey Habitat Criteria

## 2b) SITE VEGETATION

Does the Scheme involve soil stripping / excavations / complete vegetation loss?	Yes – tech surveys requires two 7m deep boreholes at the crest of the embankment. Well established trees do not need to be removed (dbh >75mm). Vegetation clearance with branch trimming required to leave cleared ground for surveys and ground investigation (full clearance will be required for construction phase). Extent has been partially cleared in recent months, which has since overgrown with brambles.
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Species observed on site:

*Woody plants*

Hawthorn	<i>Crataegus monogyna</i>	Ash	<i>Fraxinus excelsior</i>
Elder	<i>Sambucus nigra</i>	Blackthorn	<i>Prunus spinosa</i>
Hazel	<i>Corylus avellana</i>	Goat willow	<i>Salix caprea</i>
Silver birch	<i>Betula pendula</i>	Dogwood	<i>Cornus sanguinea</i>
Cherry	<i>Prunus sp.</i>	Dog rose	<i>Rosa canina</i>
Beech	<i>Fagus sylvatica</i>	Field maple	<i>Acer campestre</i>
Sycamore	<i>Acer pseudoplatanus</i>	Crack willow	<i>Salix fragilis</i>

*Forbs*

Tansy	<i>Tanacetum vulgare</i>	Ragwort	<i>Senecio jacobaea</i>
Wood avens	<i>Geum urbanum</i>	Hedge woundwort	<i>Stachys sylvatica</i>
Ivy	<i>Hedera helix</i>	Common nettle	<i>Urtica dioica</i>
Bramble	<i>Rubus fruticosus agg.</i>	Common reed	<i>Phragmites australis</i>
Hogweed	<i>Heracleum sphondylium</i>	Bittersweet	<i>Solanum dulcamara</i>
Silverweed	<i>Potentilla anserina</i>	Creeping cinquefoil	<i>Potentilla reptans</i>
Soft rush	<i>Juncus effusus</i>	Meadowsweet	<i>Filipendula ulmaria</i>
Willowherb	<i>Epilobium spp</i>	Broad leaved dock	<i>Rumex obtusifolius</i>
Water mint	<i>Menta aquatica</i>	Creeping thistle	<i>Cirsium arvense</i>
Pondweed	<i>Potamogeton spp</i>	Knapweed	<i>Centaurea nigra</i>
Coltsfoot	<i>Tussilago farfara</i>	Yellow flag iris	<i>Iris pseudacorus</i>

*Grasses*

Perennial rye grass	<i>Lolium perenne</i>	Cocksfoot	<i>Dactylis glomerata</i>
False oat grass	<i>Arrhenatherum elatius</i>	Annual meadow grass	<i>Poa annua</i>
Smooth meadow grass	<i>Poa pratensis</i>	Fescue	<i>Festuca spp</i>
Wavy hair grass	<i>Deschampsia flexuosa</i>	Yorkshire fog	<i>Holcus lanatus</i>

### 3a) PROTECTED AND INVASIVE SPECIES

NBN Atlas search was undertaken alongside EnvIS and the following species have been recorded within 1km radius of the scheme extent. MAGIC was also consulted for additional species, habitats and statutory designated sites.

Species	Records? Distance & Date	Suitable Habitat on Site?	Signs on Site?	Risk of Impacts*	Notes & Recommendations
Great Crested Newt (GCN)**	EnvIS (2007) 620m; NBN- Atlas & FPCR (2017b) 780m, 790m, 740m. 890m.	Yes	No	Low (SB)  Low – negligible (NB)	Pond located near Hades Lane near A46 sliproad noted as confirmed breeding site in 2007 (EnvIS). 38 records including SK651215, SK652216 and SK652217 (all SB) from Natural England License returns database (2017). An additional NB record was present from 1983 at SK637217 (NBN-Atlas).

					<p>The parcel of agricultural land adjacent to the SB carriageway is under consideration for a proposed garden village at Six Hills Golf Course by developers Gladman Developments. Accordingly, ecological survey reports<sup>1</sup> <sup>2</sup> evidenced that WB1, WB2, WB3, WB4 and WB5 were surveyed for presence/absence and did not support GCN in April and May 2017. Additional records for smooth newt were recorded in WB5.</p> <p>Habitat Suitability Index assessments were carried out on ponds in accordance with Oldham <i>et al.</i> (2000):</p> <ol style="list-style-type: none"> <li>1. WB1: HSI=0.56, 'below average'. Likely stocked with fish.</li> <li>2. WB2: HSI=0.67, 'average'.</li> <li>3. WB3: HSI=0.44, 'poor'. Fishing lake stocked with coarse fish.</li> <li>4. WB4: HSI=0.64, 'average'.</li> <li>5. WB5: HSI=0.69, 'average'.</li> <li>6. WB6: HSI=0.57, 'below average'.</li> <li>7. WB7: HSI=0.57, 'below average'.</li> <li>8. WB8: HSI=0.67, 'average'.</li> </ol> <p><u>See recommendations.</u></p>
Reptiles**	Leicestershire & Rutland Environmental Records Centre (2014), 1km	No	No	Negligible	Grass snake record reported north of Paddy's Lane at SK62L. Given the paucity of records, the disturbed nature of the verge, the envisaged construction date and localised extent of vegetation clearance works, it is not thought likely that reptiles would be impacted by works.
Nesting Birds	23 species including several Sch.1 within 1km (NBN-Atlas); 58 and 61 breeding and over-wintering species for land development parcel (FPCR, 2017a).	No	Yes	Negligible	A total of 23 species have been recorded within 1km of works (NBN-Atlas). In addition, at the time of the survey, the WCA 1981 Sch.1 listed kingfisher was spotted on the bankside of the fishing pond WB3. Other historical records of Sch.1 species include fieldfare and redwing, and these species are likely associated with nearby farmland and also recorded by FPCR (2017a), who reported 58 species on their breeding bird survey and 61 over-wintering species.

<sup>1</sup> FPCR (2017a) Six Hills Garden Village, Leicestershire – Ecological Appraisal. Gladman Developments Ltd.

<sup>2</sup> FPCR (2017b) Land North of Six Hills Lane, Melton Mowbray: Appendix C: Great Crested Newt Report and Outline Mitigation Strategy. Gladman Developments Ltd.

					No trees will be felled but works to proceed with some formative pruning. This will not take place in the bird nesting season (Mar-Aug inclusive). Any vegetation clearance in the bird nesting season would conversely require a nesting bird check by an ecologist immediately prior to, or within 24 hours of, vegetation cutting.
Badger	National Mammal Atlas Project (2015); EnvIS (2008); 550m	Yes	No	Negligible	3 no. records of badger at SK6421 and SK6422 (NBN-Atlas) all within 1km. Badger roadkill at Six Hills junction, approx. 1km from works. Verge inspected and no visible signs of badger activity could be found and no known setts within 30m. Some areas of scrub could not be accessed. Some established mammal paths running parallel to hedge in permanent pasture of nearby farmland. No impacts anticipated.
Bats	Leics and Rutland Environmental Records Centre (2009, 2010); Noctule, soprano and common pipistrelle, brown long eared at 1km (FPCR 2017a)	No	No	Negligible	47 no. records of common pipistrelle, 16 no. of noctule and 5 no. of soprano pipistrelle reported for SK62L in 2010 (NBN-Atlas). Common pipistrelle, noctule, soprano pipistrelle and brown long-eared also recorded in surveys by FPCR (2017a), but away from the verge on agricultural land.  No mature trees are present within work areas and minor pruning of the overhanging branches of semi-mature trees may be required. The vegetation trimming works will not sever connectivity along the scheme extent. Hibernation begins in November, and bats will remain torpid for longer. It is unlikely therefore that bats will be active when the work is planned to be carried out. No impacts anticipated.
Otter / Water Vole	Water vole (NBN-Atlas SK62L in 2000; 700m. Otter (EnvIS)	No adjacent	No	Negligible	The vegetated channel of the water-course and the riparian corridor were checked for field signs of water vole and otter but none were found. FPCR (2017a) reported a water vole record from 2000 on the Kingston Brook (NB side). Additional record of otters on EnvIS (Appendix 1).
White-Clawed Crayfish	No records returned from search.	No	No	Negligible	Water-course largely unsuitable for this species. No impacts anticipated.
Dormice	No records returned from search.	No	No	Negligible	No suitable habitat within or adjacent to work areas. No impacts anticipated.

Other Mammals	Brown hare (NBN-Atlas, 2009 at SK62L);	Yes	No	Negligible	Brown hare spotted on the field survey on peripheral agricultural land between WB3 and WB4 (250m). This species is associated with cultivated land. No impacts anticipated.
Invasive Species	-	Yes	No	Negligible	Site inspection revealed no invasive plant species. Contractors to be vigilant.

\*Negligible/Low/Moderate/High

\*\*If yes complete section 3b

3b) GCN/Reptile habitat			
Type	Distance of Records from Works	Water Features?	Hibernation Features?
GCN	Data from FPCR suggests GCN breeding ponds are located >500m from Scheme (SB side).	Yes – seven ponds <250m, but many contain fish	Yes
Reptiles	Terrestrial habitat – deadwood refugia. Grass snake record <1km.	Yes – small culverted brook	Yes

4) DESIGNATED SITES				
Are there records of designated sites within 1km?				Yes
Statutory or Non-Statutory?				Statutory
Are there hydrological connections to designated sites?				No
Designation	Distance	Reason for Designation	Risk of Impacts*	Notes
SSSI	900m	Twenty Acre Piece SSSI: acidic clay grassland, scrub and secondary woodland.	Negligible	Geographically separated but within 1km. NE consultation (main scheme).

\*Negligible/Low/Moderate/High

5) WATERCOURSES							
Culverted Brook							
Watercourse Location	Width	Depth	Flow Rate	Flow Direction	Bed Material/s	Bank Material/s	Turbidity
SK 64571 22109	1.2m	<0.5m	Sluggish	SE to NW	Silt	Earth	Medium; some sedimentation
In-Stream Veg		Marginal Veg		Bankside Veg/Scrub/Trees		Signs of Pollution?	

## 5) WATERCOURSES

Culverted Brook

Watercourse Location	Width	Depth	Flow Rate	Flow Direction	Bed Material/s	Bank Material/s	Turbidity
Yes - common reed, bittersweet, reed sweet grass, fools water cress		Extensive agricultural weeds including hogweed, creeping thistle		Hawthorn, willow		Yes	
<b>Outfalls</b>				<b>Notes</b>			
Culvert passes under road							

## 6) DRAINAGE FEATURES

Type	Present?	Notes
Gullies	No	
Outfalls	No	
Ditch – mostly dry	Yes	Highways drains dry on inspection.
Ditch – mostly wet	Yes	23m north fed by agricultural drains.

## 7) STRUCTURES – No structures present within scheme footprint – culvert is piped

Structure Name/Location	Type*	Over Water?	Impacted?	Bat Roost Potential	Notes*

## 8) TREES AND STABILITY:

<b>TPOs or Conservation Areas within the Scheme?</b>				None specified by Melton Borough Council			
<b>If Y provide details</b>				n/a			
Tree/Hedge Location	Species	Hazards / Stability Impacts?	RPZ Req?	Arb Inspect / F33 Req?	Initial BRP - F22 Req?	Further surveys?	bat
n/a							

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### 9) EXISTING SIGNS OF POLLUTION / FLY-TIPPING / LITTER / ASBESTOS

Location	Type	Quantity	Within Water?	Distance from Water	Close to Outfall?	Notes
Litter pick from previous scheme has meant litter not extensively observed.						

### 10) ENVIRONMENTAL IMPACTS

Type	Risk of Impacts*	Temp/Perm	Site Notes
Noise	Negligible to Low	Temporary	Environmental Health Organisation (EHO) should be informed where scheme will raise base line noise levels for residential areas. Already a high level of noise from traffic along A46. Small-scale works is unlikely to generate noise levels significantly greater than that already experienced.
Light	Negligible to Low	Temporary	Small-scale works unlikely may require high levels of lighting depending on timings of works.
Air Quality	Negligible to Low	Temporary	Already a high volume of cars, LGVs and HGVs using the A46 and nearby urban areas.
Landscape/Visual	Negligible to Low	Permanent	Minimal removal of vegetation required. See site clearance drawings.

\*Negligible/Low/Moderate/High (estimate from scope of works and site visit)

11) BIOSECURITY	
Are there confirmed or suspected cases of ash dieback within 10km?	Yes
First confirmed in 2015, no signs on the site visit.	
Is there a GCN breeding pond within 250m?	Unknown
Will a watercourse with signal crayfish records within 1km be entered?	No
Recommended Control Measures: Standard best practice applies for biosecurity measures. Contractors should be vigilant – any locations of any infected trees that are subsequently found must be communicated at the earliest possible opportunity to the Principal Contractor. The Principal Contractor must then feed these findings into a site-specific Risk Assessments to the satisfaction of the overseeing organization’s Environment Asset Team.	

12) LOCAL RESIDENTS / BUSINESSES	
Are there residential / commercial properties within 50m?	No

### 13) SUMMARY OF CONSTRAINTS / RECOMMENDATIONS

Constraint	Risk Impact* Of	Recommendations	Seasonal Limitations**
Great crested newts	Low (SB) Low-negligible (NB)	<p>The works programme is proposed at a time of year when GCN will be on land as part of their terrestrial life stage. Additionally, works are proposed in November when GCN and other amphibians are likely to be in a torpid state, and therefore less mobile.</p> <p>Excavations for boreholes will break ground on NB and SB verges adjacent to potential GCN habitat. Location of BH01 and BH02 are near the verge and therefore in suboptimal areas for terrestrial GCN. Given paucity of records despite recent surveys, it is considered reasonably unlikely that GCN would be encountered during the works in these areas and therefore a precautionary approach is appropriate and a Toolbox Talk should be undertaken. In the unlikely event that a GCN is discovered on site, Contractor must stop work and contact Kier Environment Team or HE Asset Team for further advice.</p> <p>No unnecessary ground disturbance within site, including tracking runs/ access routes by heavy machinery, parking and storage of plant - where possible the plant must remain on the hardstanding of the carriage way.</p>	 <p>Fig 3 General timing and level of great crested newt activities over a calendar year (Froglife, 2001)</p> <p>Ideally works within 250m of a suitable breeding pond should be completed within April to May, when GCN are likely to be in their aquatic life stage, away from the works area.</p>

\*Negligible/Low/Moderate/High

\*\*e.g. nesting birds March-September inclusive

<b>14) SUMMARY OF FURTHER ACTIONS / SURVEYS / WATCHING BRIEFS / CONSULTATION</b>		
<b>Type*</b>	<b>Season / Timing</b>	<b>Notifications Required</b>
Tool Box talk covering GCN required.	Prior to work commencement	PC to arrange
Add 250m buffers from WB3, WB4 and WB8 to Environmental Constraint dwgs	Design stage	Kier to undertake

\*e.g. bat emergence & re-entry/bat endoscope check/tree inspection/watching brief for reptiles/consultation with EA/tree stability watching brief/avoidance of works

<b>15) OPTIMAL TIMING OF WORKS (DESIGN ONLY SCHEMES)</b>	
<b>Optimal Timing</b>	<b>To Avoid Risk of Impacts to</b>
April and May	GCN

<b>16) ADDITIONAL INFORMATION</b>	
<b>Type (circle)</b>	<b>Link to Folder or File (leave blank if N/A)</b>
<b>Photos</b>	See Photographic Plates.
<b>Target Notes</b>	n/a
<b>Annotated Drawings/Maps</b>	Refer to Appendix.
<b>Forms</b>	

17) SURVEY LIMITATIONS	
Type	Notes
Expiry*	By their very nature, ecological surveys can only assess a site or particular species at a set point in time, thus providing a snapshot of the environment and not a definitive evaluation. Every effort has been taken to provide an accurate assessment of the habitats or species surveyed. However, presence and population sizes of species can change over time and therefore the accuracy of this report will be affected by time and seasonality constraints.
Accessibility / Visibility	
Seasonal	Seasonal constraints applied.
Other	
General	This assessment is based on desk and field investigations at the time of survey only. Many protected species are mobile/transient, volant and may move into/out of the area within a short space of time; vegetation and habitats are also likely to change seasonally and/or as a result of other environmental changes.

\*usually 1 year from date of issue

### Other Notes - Suggested Text for inclusion within Environmental Alert Form

A site visit was carried out by Kier Environment Team on 30<sup>th</sup> September 2019. Provided Required Actions are followed, no significant impact is expected. Should the scope of works change, the impacts will need to be re-assessed and the recommendations may change.

#### Designated Sites

There is one statutory designated SSSI at 900m to the south of the Scheme extent. No impacts are anticipated due to the distance of the site from the scheme extent, the lack of hydrological connections and the small-scale nature of the work.

#### Protected Species

Site habitat suitability was assessed for the following species:

**Great crested newts:** Pond located near Hades Lane near A46 sliproad noted as confirmed breeding site in 2007 (EnvIS). 38 records including SK651215, SK652216 and SK652217 (all SB) from Natural England License returns database (2017). An additional NB record was present from 1983 at SK637217 (NBN-Atlas). The parcel of agricultural land adjacent to the SB carriageway is under consideration for a proposed garden village at Six Hills Golf Course by developers Gladman Developments. Accordingly, ecological survey reports by FPCR (2017a, 2017b) evidenced that WB1, WB2, WB3, WB4 and WB5 were surveyed for presence/absence and did not find GCN in April and May 2017. Additional records for smooth newt were recorded in WB5.

Habitat Suitability Index assessments were carried out on ponds in accordance with Oldham et al. (2000): WB1: HSI=0.56, 'below average'. Likely stocked with fish; WB2: HSI=0.67, 'average'; WB3: HSI=0.44, 'poor'. Fishing lake stocked with coarse fish; WB4: HSI=0.64, 'average'; WB5: HSI=0.69, 'average'; WB6: HSI=0.57, 'below average'; WB7: HSI=0.57, 'below average'; WB8: HSI=0.67, 'average'.

**Common reptile species:** Grass snake record reported north of Paddy's Lane at SK62L. Given the paucity of records, the envisaged construction date and localised extent of vegetation clearance works, it is not thought likely that reptiles would be within the work areas or immediately adjacent at the time of works. No impacts anticipated.

**Breeding birds:** A total of 23 species have been recorded within 1km of works (NBN-Atlas). In addition, at the time of the survey the WCA 1981 Sch.1 listed kingfisher was spotted on the bankside of the fishing pond WB3. Other historical records of Sch.1 species include fieldfare and redwing, and these species are likely associated with nearby farmland and also recorded by FPCR (2017b), who reported 58 species on their breeding bird survey and 61 over-wintering species. No trees will be felled but works to proceed with some formative pruning. This will not take place in the bird nesting season (Mar-Aug inclusive). Any vegetation clearance in the bird nesting season would conversely require a nesting bird check by an ecologist immediately prior to, or within 24 hours of, vegetation cutting.

**Badgers:** 3 no. records of badger at SK6421 and SK6422 (NBN-Atlas) all within 1km. Badger roadkill at Six Hills junction, approx. 1km from works. Verge inspected and no visible signs of badger activity could be found and no known setts within 30m. Some areas of scrub could not be accessed. Some established mammal paths running parallel to hedge in permanent pasture of nearby farmland. No impacts anticipated.

**Bats:** 47 no. records of common pipistrelle, 16 no. of noctule and 5 no. of soprano pipistrelle reported for SK62L in 2010 (NBN-Atlas). Common pipistrelle, noctule, soprano pipistrelle and brown long-eared also recorded in surveys by FPCR (2017b), but away from the verge on agricultural land. No mature trees are present within work areas and minor pruning of the overhanging branches of semi-mature trees may be required. The vegetation trimming works will not sever connectivity along the scheme extent. Hibernation begins in November, and bats will remain torpid for longer. It is unlikely therefore that bats will be active when the work is planned to be carried out. No impacts anticipated.

**Water vole and otter.** The vegetated channel of the water-course and the riparian corridor were checked for field signs of water vole and otter but none were found. FPCR (2017b) reported a water vole record from 2000 on the Kingston Brook (NB side). Water-course largely unsuitable for this species. No impacts anticipated.

**White clawed crayfish and dormouse:** No suitable habitat within or adjacent to work areas. No impacts anticipated.

**Mammalian species:** Brown hare spotted on the field survey on peripheral agricultural land between WB3 and WB4. No impacts anticipated.

**Invasive species:** Site inspection revealed no invasive plant species. Contractors to be vigilant.

## Required Actions

### General

- If required, any task lighting used should be hooded and directed away from the soft estate. If any nocturnal animals such as badger encountered during night works, works should stop, and the animal allowed to move away from / through the work area safely.
- Tool Box talk: covering all risks to be given as onsite induction process and to include great crested newts.
- Report any sightings of protected species to Highways England Environment / Assets Team to update their records.
- The soft estate will not be used for parking or storage of machinery at any time due to the potential impacts upon protected species or tree roots via compaction.
- Standard best practice measures for pollution prevention should be adopted to prevent contamination of all linked waterbodies in proximity to the works, which could have adverse impacts on the quality of habitat for protected species.
- Removal of trees >150mm dbh is not permitted unless through express permission of HE Asset. It is not envisaged that boreholes (2 no.) would impact RPA's of surrounding trees and therefore damage roots so an arboricultural watching brief is not required as agreed with HE Environmental Asset (C. O'Connor, personal communication, 4 October).

### Specific

**Great-crested newts (NB & SB):**



## Photographic Plates



*Plate 1:* Tall ruderal and bramble briar scrub transitioning to ditchline and flanking species poor hedgerow on SB verge.



*Plate 2:* Transition of improved grassland by VRS to continuous scrub. Woodland cover adjacent to the culvert is visible in the distance on NB verge.



*Plate 3:* WB1 characterised by highly turbid water with likely fish stocking reported by landowner.



*Plate 4:* Shaded pool near the highways verge of WB2.



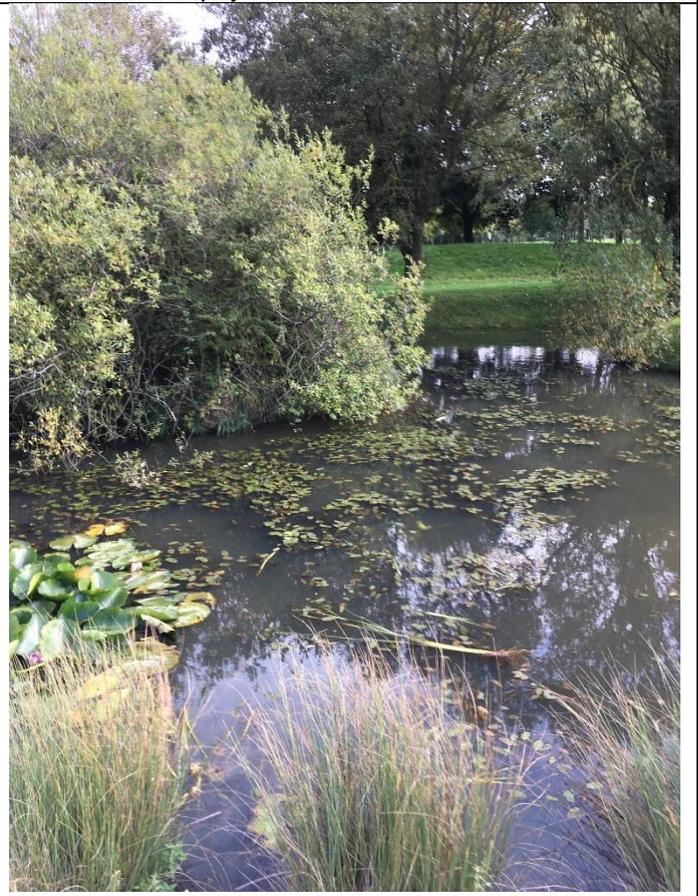
*Plate 5: Highly turbid WB3 stocked with large coarse fish.*



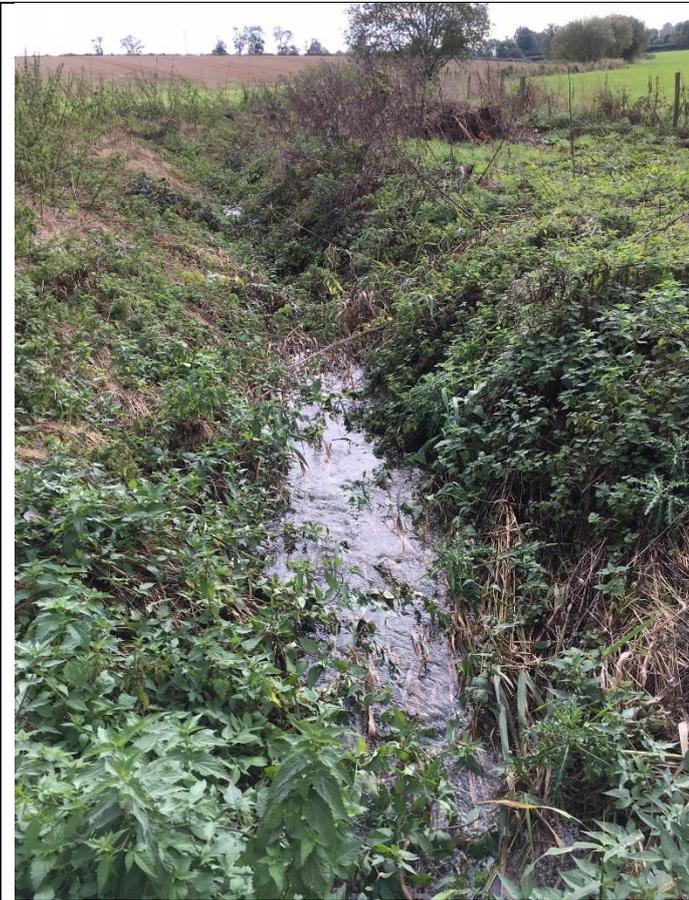
*Plate 6: Poached and heavily shaded pond of WB6 devoid of macrophyte cover.*



*Plate 7: WB4 holding recent field runoff with some fringing reedbed.*



*Plate 8: Landscaped pond of WB5 on the golf course.*



*Plate 9: Mesotrophic shallow stream of WB9 choked with instream vegetation.*



*Plate 10: Late successional and eutrophic WB8 near the main junction.*



*Plate 11: Poached and highly disturbed WB7.*



*Plate 12: Tall ruderal and briar scrub grading to rear ditch and intact species poor hedgerow on SB side.*

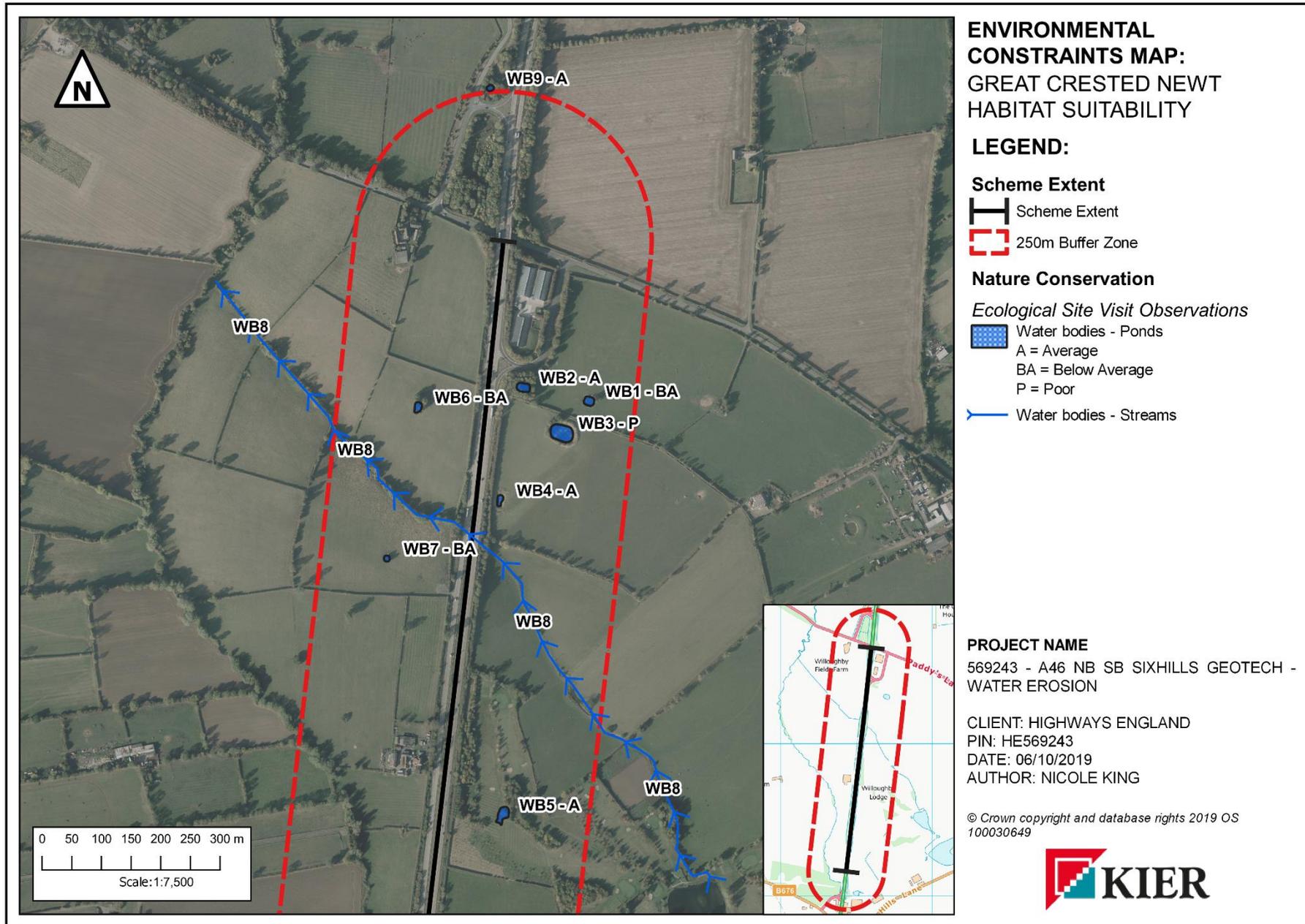


*Plate 13: Culverted channel under woodland cover of SB verge.*



*Plate 14: Water-course exiting on SB side.*

Appendix I: Environmental constraints maps of (i). location of water-bodies within 250m with GCN HSI results, and (ii). historic species records and statutory designated sites within 1km of scheme extent



# ENVIRONMENTAL CONSTRAINTS MAP: HISTORIC RECORDS

## LEGEND:

### Scheme Extent



Scheme Extent



1000m Buffer Zone

### Nature Conservation

#### Historical Records

- Amphibians
- Badger
- Bats
- Birds
- Brown Hare
- Great Crested Newts
- Otter
- Reptiles
- Water vole
- Multiple Records

### PROJECT NAME

569243 - A46 NB SB SIXHILLS GEOTECH - WATER EROSION

CLIENT: HIGHWAYS ENGLAND

PIN: HE569243

DATE: 06/10/2019

AUTHOR: NICOLE KING

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