

M5 Junction 10 Improvements Scheme

Environmental Statement Appendix 7.17 Validation Report

TR010063 - APP 6.15

Regulation 5 (2) (a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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Infrastructure Planning Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

M5 Junction 10 Improvements Scheme Development Consent Order 202[x]

6.15 Environmental Statement:

APPENDIX 7.17 VALIDATION REPORT

Regulation Number:	Regulation 5(2)(a)
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Author:	M5 Junction 10 Improvements Scheme Project Team

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Contents

Chapter	Page
1. Introduction	5
1.1. Terms of Reference	5
1.2. Study Area	5
1.3. Background	6
1.4. Report Scope	6
1.5. 2022 Validation Surveys	6
1.6. Limitations	7
2. Habitat Survey Data Comparison	8
2.1. Habitats measured by area	8
2.2. Protected species	9
3. Evaluation	10
4. Conclusion	12
Appendix A. Schedule of figures included in this application document	14

Tables

Table 2-1 – Habitat Cover within the Scheme Boundary pre-2022 and in 2022	8
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1. Introduction

1.1. Terms of Reference

- 1.1.1. Atkins, a member of the SNC Lavalin Group, was commissioned by Gloucestershire County Council (GCC) to undertake extended Phase 1 habitat validation surveys (hereafter referred to as 'validation surveys') to inform the Environmental Statement (ES) for the M5 Junction 10 Improvements Scheme (hereafter referred to as 'the Scheme').
- 1.1.2. The majority of the extended Phase 1 habitat surveys were undertaken pre-2022. Validation surveys were undertaken in 2022 to determine whether any of the baseline conditions have changed considerably, and validate, or otherwise, the results described, and conclusions drawn in the ES (and associated Technical Appendices).
- 1.1.3. This Technical Appendix describes the methods and the results of the validation surveys, and provides an assessment of any changes to the habitats since the pre-2022 Phase 1 habitat surveys were undertaken.
- 1.1.4. This report provides factual information to support the ES, which accompanies the planning application for the Scheme.

1.2. Study Area

- 1.2.1. The term 'Scheme Boundary' refers to the Order limits for the majority of the works but excludes the Order limits that extend approximately 2 km north and 2 km south of the Scheme alignment, along the M5. In these locations the Scheme Boundary is the Scheme alignment. The Order limits, the Scheme alignment and the Scheme Boundary are shown on Figure 7-17B in Appendix A.
- 1.2.2. Within the areas of the Order limits that extend 2 km north and 2 km south of the Scheme alignment, the only works proposed are the installation of signs in discrete locations, which will require vegetation clearance of up to approximately 20 m² plus some minor trimming back of vegetation up to a distance of 180 m in front of the sign to ensure visibility. These signage locations can be micro sited to avoid/minimise ecological impacts. The results of desk study and field surveys here would not have any bearing on the impact assessment for the Scheme, and these areas have been excluded from assessments to inform the ES. Pre-construction surveys of the discrete signage locations and working with the contractor to micro site locations where appropriate to avoid or minimise ecological impacts will be undertaken and is considered to be proportionate.
- 1.2.3. The study area in relation to terrestrial habitats was previously 250 m and has since been reduced to 200 m from the Scheme Boundary. This is in line with potential air quality impacts to habitats as a result of nitrogen deposition from road traffic emissions and is the likely maximum distance over which there would be impacts to terrestrial habitats as a result of the Scheme. LA 105¹ states that designated habitats (European Sites, Statutory and non-statutory designated nature conservation sites, nature improvement areas, areas of ancient woodland and veteran trees) within 200 m of the Affected Road Network (ARN) should be included in the air quality assessment. Although such designated habitats are not present within 200 m of the Scheme Boundary, it was considered appropriate to maintain this zone of influence for consistency.

¹ Highways England (2019). Design Manual for Roads and Bridges. LA 105 Air Quality (formerly HA 207/07, IAN 170/12, IAN 174/13, IAN 175/13, part of IAN 185/15). (November 2019, version 0) Online: 10191621-07df-44a3-892e-c1d5c7a28d90 (standardsforhighways.co.uk).

1.3. Background

- 1.3.1. An extended Phase 1 habitat survey (following JNCC guidance²) was undertaken pre-2022, in May and September 2019. The extent of the Phase 1 habitat survey included all land within the Scheme Boundary and a 250 m buffer extending out in all directions from the Scheme Boundary where permitted and safe access allowed. The verges of the M5 motorway were not surveyed at this time. An extended Phase 1 habitat survey and UK Habitat (UKHab) classification system³ survey was undertaken of the verges of the M5 motorway within the Scheme alignment in September 2021.
- 1.3.2. A desk-based data gathering exercise using the Natural England website⁴, MAGIC⁵, The Woodland Trust's Ancient Tree Inventory website⁶, Gloucestershire Centre for Environmental Records (GCER) and Google Earth Pro (version 7.3.3) was also undertaken to collect relevant habitat information. Information from these sources, plus limited field-based gap filling exercises, was used to assess the habitat present within the study area pre-2022.

1.4. Report Scope

- 1.4.1. Given that the pre-2022 survey data from 2019 will be four years old by the time the Development Consent Order (DCO) application is determined, it was proposed to undertake validation surveys in targeted areas in order to determine whether any of the baseline conditions have changed considerably, using habitat change as a proxy for predicting any changes in relation to protected species. CIEEM guidance states that data more than three years old is unlikely to be valid and that most if not all surveys are likely to need to be updated (subject to an assessment by a professional ecologist)⁷.
- 1.4.2. The results of the validation surveys are described in detail in the Phase 1 Habitat Survey report (Appendix 7.1 (application document TR010063 - APP 6.15)). A comparison of the 2022 Phase 1 habitat data against the pre-2022 Phase 1 habitat data is provided here, in order to provide an indication of whether any of the baseline conditions have changed considerably in the interim period. This comparison, combined with any protected species information collected during the 2022 Phase 1 habitat surveys, has been used as a way to validate, or otherwise, any conclusions drawn from the pre-2022 survey data.

1.5. 2022 Validation Surveys

- 1.5.1. The validation surveys comprised an update extended Phase 1 habitat survey undertaken from 9 - 12 May, 17 - 20 May, and 27 - 29 June 2022, covering all land (temporary and permanent land take) within the Scheme Boundary where permitted and safe access allowed. The more diverse grassland areas were generally located outside of the temporary and permanent land take areas. Therefore, an area of neutral grassland up to 200 m from the Scheme Boundary was also included in the survey area to ensure that a diverse range of habitats were covered. Three areas of orchard outside of the Scheme Boundary but within the 200 m study area, were also included in the survey area. In addition, surveyors were vigilant for field signs of protected, notable and invasive species such as prints, droppings and spraint.
- 1.5.2. For the purposes of this validation report, a comparison has been made between the pre-2022 and the 2022 Phase 1 data. Where Phase 1 data does not exist from both pre-2022

² JNCC (2016). Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit [Online]. Available at: <http://data.jncc.gov.uk/data/9578d07b-e018-4c66-9c1b-47110f14df2a/Handbook-Phase1-HabitatSurvey-Revised-2016.pdf>

³ Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020) The UK Habitat Classification User Manual Version 1.1 at <https://ukhab.org>. UKHab is the classification system that Biodiversity Metric 3.0 predominantly uses for terrestrial area habitats.

⁴ <http://publications.naturalengland.org.uk/category/587130>.

⁵ Defra. c2019. Magic Map Application. Available from: <https://magic.defra.gov.uk/MagicMap.aspx>

⁶ Woodland Trust. 2019. Ancient Tree Inventory - Woodland Trust. Available from: <https://ati.woodlandtrust.org.uk/>

⁷ CIEEM (2019) Advice Note On The Lifespan Of Ecological Reports & Surveys

and 2022, no comparison can be made and these areas have therefore been excluded from this validation report. Areas surveyed both pre-2022 and in 2022 are shown on Figure 7-17A Appendix A.

1.6. Limitations

- 1.6.1. Phase 1 habitat surveys are limited by factors which affect the presence/visibility of plants and the appearance of habitats, such as the time of year, recent management (e.g. mowing) and the weather. Furthermore, the aim of the surveys pre-2022 and in 2022 was to characterise habitats and, therefore, did not include systematic recording of all plants observed. The surveys have not, therefore, produced a complete list of plants and the absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future.
- 1.6.2. Due to land access permissions, some of the pre-2022 Phase 1 surveys were carried out in September, whereas the 2022 surveys were carried out in May and June. May and June are optimal times of the year for Phase 1 habitat surveys, as some plant species are less conspicuous and less easily identifiable in late September compared with May and June. Therefore, an exact assessment of the change in species composition may not be possible. However, it was considered that the September surveys accurately characterised the observed habitats based on the visible species present. Therefore, this limitation does not pose a significant constraint to the results or assessment.
- 1.6.3. As the pre-2022 and 2022 surveys were carried out at different times, differences in management and maintenance of land may have resulted in different plants being present or visible. For example, a land parcel with fields grazed by sheep in one year may result in fewer plant species being identified compared to a year where no grazing occurred. Differences in management practice was noted since 2019 during survey visits for other surveys and from communication with landowners. However, highly managed parcels of land within the Scheme Boundary mainly consisted of agricultural land that was considered to be of low conservation value and changes in management within these parcels did not change the value of these habitats. Due to this, changes in land management were not considered to be a significant limitation to this report.
- 1.6.4. For the purposes of this validation report, a comparison has been made between the pre-2022 and the 2022 Phase 1 data. Due to differences in land access pre-2022 and in 2022, habitats in the entire Scheme Boundary could not be compared. Where Phase 1 data does not exist from both pre-2022 and 2022, no comparison can be made and these areas have therefore been excluded from this validation report. The Scheme Boundary covers approximately 150 ha. Of this approximately 75%, 112 ha, was surveyed in both 2022 and pre-2022. Habitats from within this area have been compared and form the basis of this report. This is considered to be a sufficient proportion for the purposes of this report, and therefore lack of access to some areas is not considered to be a significant constraint to this assessment. Areas surveyed both pre-2022 and in 2022 are shown on Figure 7-17A.
- 1.6.5. During the 2022 validation surveys, two of the three areas of orchard were not surveyed, as access was not granted. However, the remaining area of orchard was surveyed in 2022. The area of diverse grassland within 200 m of the Scheme Boundary was not surveyed in 2022, as access was not granted. However, areas of neutral grassland within the Scheme Boundary were surveyed. Therefore, this is not considered to be a significant constraint to the assessment.
- 1.6.6. The 2022 Phase 1 Habitat Survey data included some very small areas of bare ground (0.00556 ha), building (0.00188 ha), residential garden (0.000003 ha) and running water (0.00004 ha) that were not mapped within the same area pre-2022. This is likely due to slight discrepancies in polygon boundaries between the two sets of data. These have been excluded from this report due to their very small size (it is not possible to represent these areas to two decimal places) and generally low ecological value. This is not considered to be a significant constraint to the assessment.

2. Habitat Survey Data Comparison

2.1. Habitats measured by area

2.1.1. The areas of habitats recorded pre-2022 and in 2022 within the Scheme Boundary are shown in Table 2-1 below.

Table 2-1 – Habitat Cover within the Scheme Boundary pre-2022 and in 2022

Habitat	Area (ha)		
	Pre-2022	2022	Difference
Amenity grassland	0.01	0.02	+ 0.01
Arable	63.16	86.04	+ 22.88
Dense/continuous Scrub	0.16	0.89	+ 0.73
Hardstanding (note, this excludes hardstanding associated with existing roads)	0.00	0.06	+ 0.06
Improved grassland	16.11	6.30	- 9.81
Plantation broad-leaved woodland	4.69	3.65	- 1.04
Plantation mixed woodland	3.77	3.86	+ 0.09
Poor semi-improved grassland	24.16	1.83	- 22.33
Scattered scrub	0.00	0.01	+ 0.01
Semi-improved neutral grassland	0.21	9.86	+ 9.65
Tall Ruderal	0.51	0.11	- 0.40
Total The slight difference in total areas is due to minor mapping discrepancies	112.78 ha	112.63 ha	

2.1.2. The amount of woodland identified in both sets of data was broadly very similar, with a small decrease of approximately 1 ha in the amount of broad-leaved plantation woodland in 2022 compared to pre-2022, and a slight increase of 0.09 ha in the amount of plantation mixed woodland present in 2022 compared to pre-2022. A comparison of Phase 1 Habitat maps from pre-2022 data and 2022 data show small variations in the sizes of the woodland blocks recorded but no changes in the number of woodland blocks present. As no woodland felling or planting was evident during the 2022 surveys, it is considered that this change is due to slight mapping discrepancies rather than any real changes to woodland.

2.1.3. The majority of the survey area comprises arable land, with over 55% of the survey area represented by arable land pre-2022 and in 2022. However, the amount of arable land recorded increased in 2022 compared to pre-2022 by 22.88 ha. Comparison of Phase 1 Habitat maps from pre-2022 data and 2022 data show that these changes are predominantly a result of areas of improved and poor semi-improved grassland recorded pre-2022 being recorded as arable land in 2022. These changes were particularly notable in three large land parcels southeast of the existing junction along the route of the Link Road, where poor semi-improved grassland had switched to arable; and north and south

of the A4019, east of Uckington, where areas of improved grassland had switched to arable.

- 2.1.4. The amount of improved grassland recorded decreased in 2022 compared with pre-2022, by 9.81 ha. Some areas identified as improved grassland pre-2022 were recorded as arable land in 2022 (as described in the previous paragraph). These were predominantly located north and south of the A4019, east of Uckington. In addition, an area of improved grassland located northwest of the existing junction was reassessed as semi-improved neutral grassland in 2022.
- 2.1.5. The amount of poor semi-improved grassland recorded decreased in 2022 compared with pre-2022, by 22.33 ha. This is due to poor semi-improved areas being recorded as arable land in 2022 (as described previously). In addition, three land parcels that were recorded as poor semi-improved grassland pre-2022, located at the southern extent of the Link Road, were recorded as semi-improved neutral grassland in 2022.
- 2.1.6. The amount of semi-improved neutral grassland recorded increased in 2022 compared with pre-2022, by 9.65 ha. As discussed in the previous paragraphs, this change is predominantly due to parcels of poor semi-improved grassland located at the southern extent of the Link Road being reassessed as semi-improved neutral grassland in 2022, and an area of improved grassland located northwest of the existing junction being reassessed as semi-improved neutral grassland in 2022.
- 2.1.7. Two areas were found to have a diverse botanical assemblage and were categorised as unimproved neutral grassland in 2022. These habitats were found to meet the criteria for 'Lowland meadow' Priority Habitat⁸. One area is located along the northern verge of Stanboro Lane (0.07 ha), and another in a verge along the A4019 corridor west of the M5 J10 (0.1 ha) (see Figure 7-17A for locations and Technical Appendix 7.1 – Phase 1 Habitat Survey (application document TR010063 – APP 6.15) for detailed descriptions). They are not included in the above table as they were not subject to field survey pre-2022, being identified as 'roadside verge' via aerial imagery, but they are discussed in this report given their nature conservation value.
- 2.1.8. In addition, one area of orchard outside of the Scheme Boundary, but within 200 m of the Scheme Boundary was surveyed pre-2022 and in 2022 and was found to be consistent in extent and condition between both surveys.

2.2. Protected species

- 2.2.1. During the 2022 surveys, surveyors were vigilant for field signs of protected, notable and invasive species such as prints, droppings and spraint. Fresh otter spraint was recorded at OS Grid reference SO 90772 24610 along the River Chelt in July 2022, which is consistent with otter surveys undertaken pre-2022 which confirmed otter presence along the River Chelt.

⁸ Maddock, A. (ed) (2008) *UK BAP Priority Habitat Descriptions - Lowland Meadows*. Online: <https://data.jncc.gov.uk/data/f0553254-1d47-474a-98e5-37fa163a28b5/UKBAP-BAPHabitats-29-Lowland-Meadows.pdf>
Assessed: 10/08/22

3. Evaluation

- 3.1.1. Areas of woodland, amenity grassland, scrub, tall ruderal and hardstanding were very similar in both the pre-2022 and 2022 data sets, with any minor differences attributed to small discrepancies in mapping, and the smaller scale of the 2022 surveys, which allowed for more precision in terms of area mapping. Similarly, the extent and condition of the area of orchard located outside of the Scheme Boundary was consistent in 2022 and pre-2022.
- 3.1.2. The increase in arable habitat in 2022 compared to pre-2022 is predominantly a result of areas of improved and poor semi-improved grassland recorded pre-2022 being recorded as arable land in 2022. This change in habitat classification is a result of agricultural rotation within the local area, with the extent of agricultural grassland and crops varying year on year. Given that improved grassland, poor semi-improved grassland and arable land are of similarly low levels of nature conservation value, these changes are not considered to be significant.
- 3.1.3. The increase in semi-improved neutral grassland recorded in 2022 compared to pre-2022 is predominantly due to parcels of poor semi-improved grassland being reassessed as semi-improved neutral grassland. Semi-improved neutral grassland has a more diverse range of herbaceous species compared to poor semi-improved grassland, and is recognizable as acid, calcareous or neutral in origin. The 2022 surveys and pre-2022 surveys were undertaken at different times of year, with the 2022 surveys undertaken at the optimal time for botanical identification. This may have resulted in higher numbers of species being identified in 2022 which resulted in the grassland being categorised differently. In addition, changes in land use management may have resulted in an increase in species diversity over time. Furthermore, the distinction between poor semi-improved grassland and semi-improved neutral grassland is not always clear cut, with different surveyors applying their professional judgement and sometimes reaching different conclusions. This may also have been a factor in the differences in area recorded. This may mean that some areas of poor semi-improved grassland outside of the Scheme Boundary, but within the 200 m study area that have only been surveyed pre-2022 may be more accurately categorised as semi-improved neutral grassland. This is not considered to be a significant limitation as areas of semi-improved neutral grassland located outside of the habitat complexes identified (small areas of lower value habitat types that together form complex habitat mosaics which together function as an area of greater value than the isolated patches of the individual parts) have been ascribed a value of less than local importance, and their potential to support protected species would not have changed. In any case, almost all of the poor semi-improved grassland habitat recorded pre-2022 was subject to re-survey in 2022 by virtue of the fact that it was within the Scheme Boundary, or within a field that was partially within the Scheme Boundary.
- 3.1.4. In 2022, two very small areas of unimproved neutral grassland which met the criteria for lowland meadow priority habitat were identified within the Scheme Boundary. These areas had not been subject to a site survey pre-2022 and had only been identified via aerial imagery as 'roadside verge'. These areas of unimproved neutral grassland were very small in extent, and the scale of the 2022 surveys allowed for habitats such as these to be captured in more detail than pre-2022. Given the detail of the 2022 surveys, it is considered likely that all areas of valuable habitats within the Scheme Boundary were recorded. There may be small areas of valuable habitat beyond the Scheme Boundary, within the 200 m study area for habitats, but the presence of any large areas of such habitats is considered unlikely. This is supported by the fact that of the 150 ha surveyed in 2022, only 0.17 ha (0.11%) was classified as a valuable habitat where it had not been previously. Any small areas of valuable habitat in the wider area are unlikely to be impacted by the Scheme, and their presence would therefore not have any bearing on the impact assessment for the Scheme.
- 3.1.5. Considering the comparison that has been undertaken between the 2022 habitat data and the pre-2022 habitat data, overall, there have not been considerable changes to habitats

in the interim period, with the majority of habitat change attributed to changes in low value agricultural habitats as a result of agricultural rotation.

- 3.1.6. Survey data for some protected species is from 2019, 2020 and 2021. Although by the time the DCO application is submitted, some of the survey data for otter, water vole, breeding birds, wintering birds, reptiles and white-clawed crayfish will be almost or over three years old, as evidenced in this report, the habitats have not changed sufficiently during this time such that the results of these surveys would be significantly different. Furthermore, the 2022 desk study did not return records that indicate any considerable changes to the results of protected species surveys. The results of these surveys to inform the ES therefore remain valid and further surveys are not considered necessary to inform the assessment.
- 3.1.7. No targeted terrestrial invertebrate surveys have been undertaken, but habitat data (as well as desk study data) has been used to inform the assessment for this biodiversity resource. As evidenced in this report, the habitats have not changed sufficiently since 2019 that the results of this assessment would be significantly different. However, one potentially notable change relevant to terrestrial invertebrates is the recoding of two areas of unimproved neutral grassland (lowland meadow), previously categorised from aerial imagery as roadside verge. The assessment for terrestrial invertebrates has been undertaken on the basis that these areas (and the traditional orchard habitat) support potentially notable invertebrate assemblages. Therefore, no targeted terrestrial invertebrate surveys are considered necessary to inform the ES.
- 3.1.8. Survey work has been undertaken in 2022 for bats, hazel dormouse, badger, barn owl and aquatic habitats and species. Survey data for great crested newts (GCN) is greater than 12 months old, however, it is the intention to pursue the District Level Licensing Scheme which reduces the survey requirements for this species.

4. Conclusion

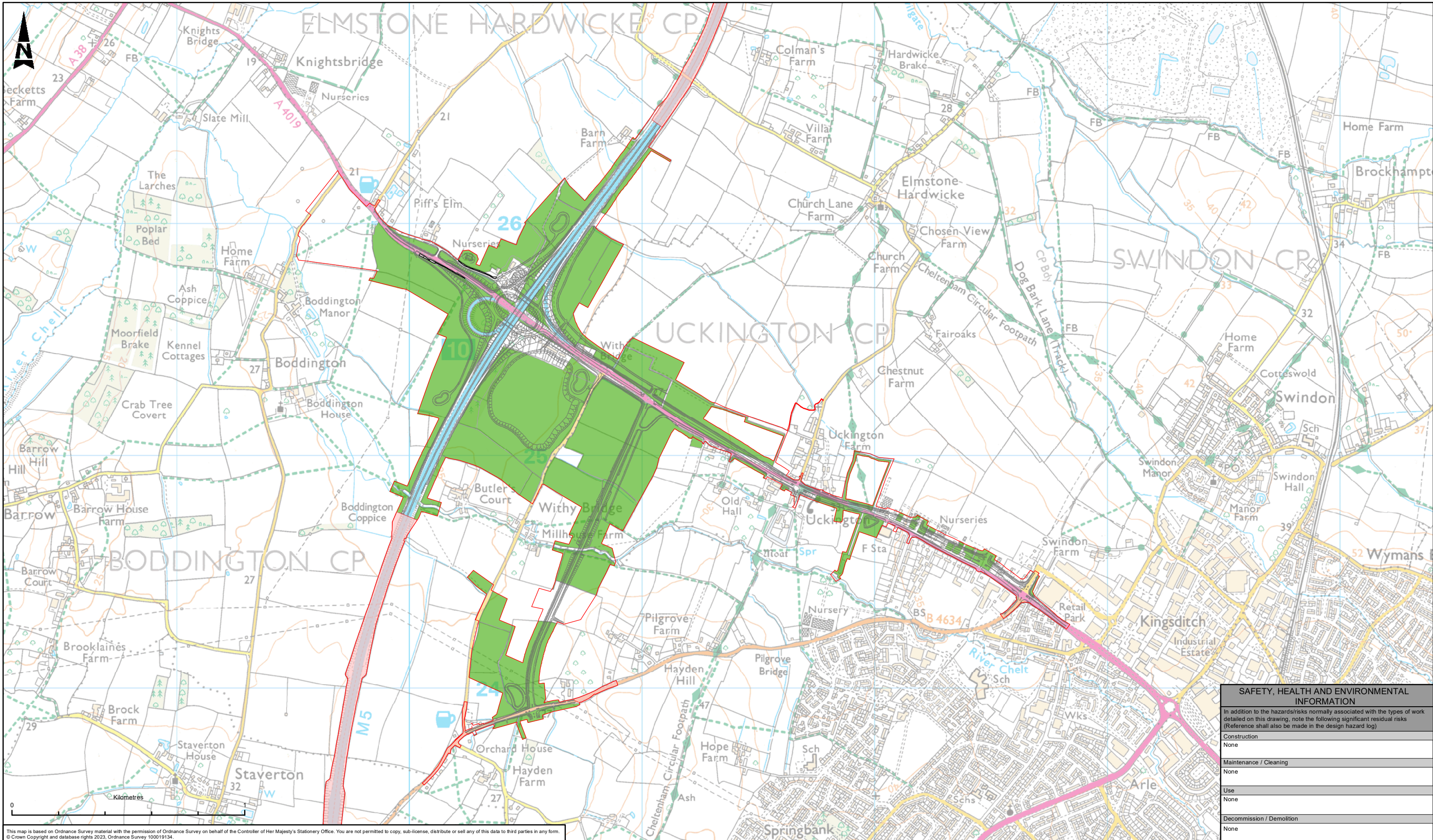
- 4.1.1. This assessment has demonstrated that there has not been a significant change to habitats between 2019 and 2022, and therefore the conclusions drawn from data from 2019, 2020 and 2021 data remain valid to inform the DCO application.

Appendices



Appendix A. Schedule of figures included in this application document

Figure reference	Document title	Sheet	Document number	Revision
7-17A	Ecology survey access results	1 of 1	GCCM5J10-ATK-EBD-ZZ-GS-GI-000073	0
7-17B	Scheme extent	1 of 1	GCCM5J10-ATK-EBD-ZZ-GS-GI-000074	0



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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made in the design hazard log)	
Construction	None
Maintenance / Cleaning	None
Use	None
Decommission / Demolition	None

LEGEND							
	ORDER LIMITS						
	SCHEME ALIGNMENT						
	EXCLUDED AREA OUTSIDE SCHEME BOUNDARY						
	AREAS SURVEYED PRE-2022 AND IN 2022						
	UNIMPROVED NEUTRAL GRASSLAND / LOWLAND MEADOW PRIORITY HABITAT						

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date

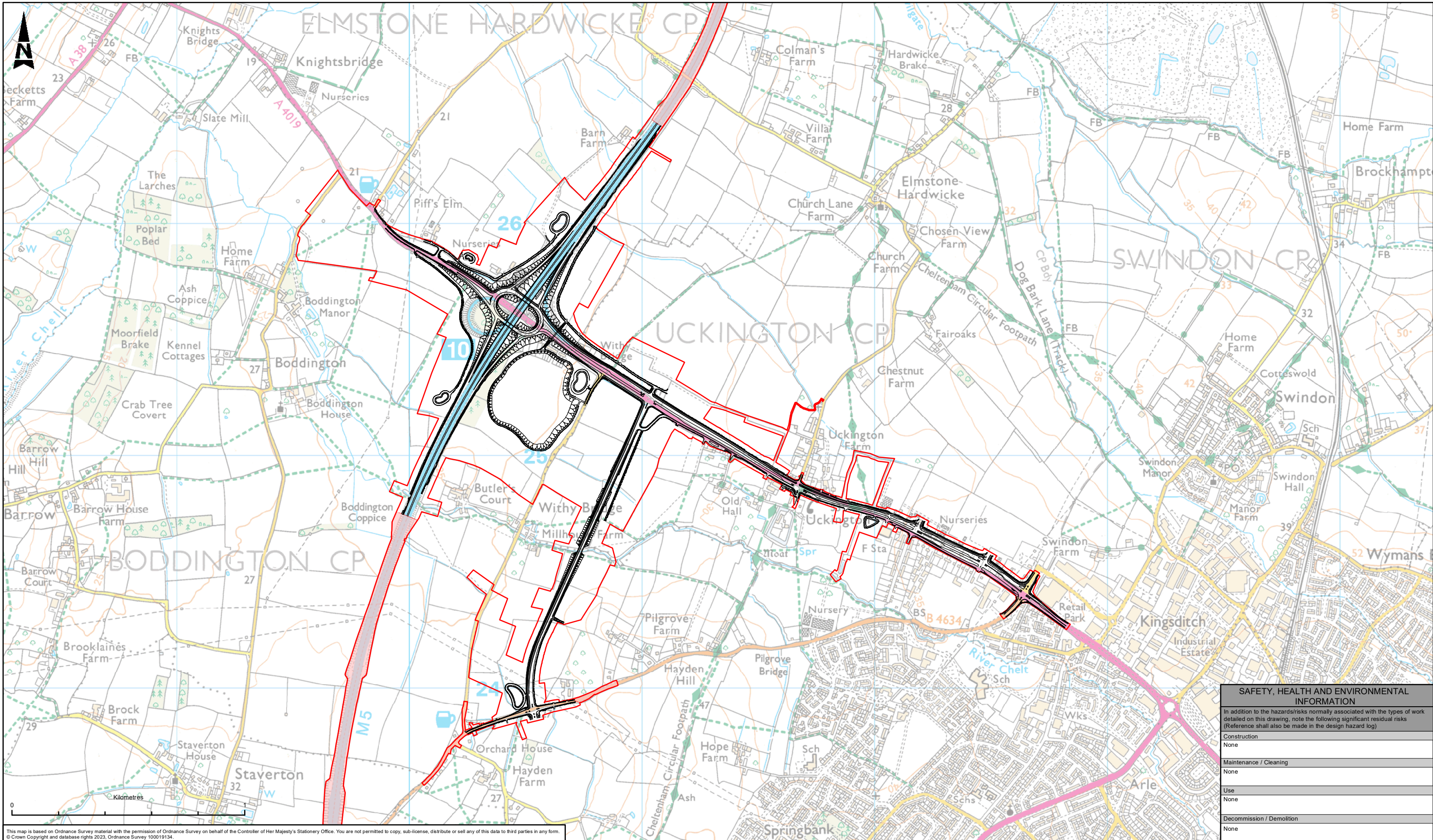
Drawing Suitability: **PUBLISHED** Status: **A1**

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Project Title		M5 Junction 10 Improvements Scheme	
Drawing Title		FIGURE 7-17A ECOLOGY SURVEY ACCESS RESULTS	
Drawing Number			
Project	Originator	Volume	
GCCM5J10 - ATK - EBD			
ZZ - GS - GI - 000073			
Location	Type	Role	Number
Original Size: A3	Scale: 1:15,000	Project Ref: 5214106	Sheet: 1 of 1 Rev: P01



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LEGEND

	ORDER LIMITS
	SCHEME ALIGNMENT
	EXCLUDED AREA OUTSIDE SCHEME BOUNDARY

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
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Construction	None
Maintenance / Cleaning	None
Use	None
Decommission / Demolition	None

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
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Project Title		M5 Junction 10 Improvements Scheme	
Drawing Title		FIGURE 7-17B SCHEME EXTENT	
Drawing Number		Project: GCCM5J10 - ATK - EBD Originator: ZZ - GS - GI - 000074 Volume: 1 of 1	
Original Size: A3	Scale: 1:15,000	Project Ref: 5214106	Sheet: 1 of 1 Rev: P01

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