M5 Junction 10 Improvements Scheme

Environmental Statement

Appendix 7.16 Barn Owl Survey

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 7.16 Barn Owl Survey

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1. Introduction

1.1. Terms of Reference

1.1.1. Atkins, member of the SNC Lavalin group, was commissioned by Gloucestershire County Council (GCC) to undertake barn owl surveys to inform the Environmental Statement (ES) for the M5 Junction 10 Improvements Scheme (hereafter referred to as 'the Scheme').

1.1.2. The purpose of the barn owl surveys was to establish a more robust baseline with regard to this species following on from wintering and breeding bird surveys, such that the impacts could be further assessed; provide recommendations to enable compliance with legislation and policy; and, if necessary, identify the need for avoidance, mitigation, compensation or enhancement measures.

1.1.3. This Technical Appendix summarises the results of the barn owl surveys undertaken, including the methods used, results of the field surveys, and provides an evaluation of the nature conservation value of barn owl within the survey area.

1.1.4. This report provides factual information to support the ES, which will accompany the planning application for the Scheme.

1.2. Legislation

1.2.1. Relevant legislation in relation to barn owl is provided in Table 1.1 below.

Table 1-1 – Summary of Relevant Legislation

Species	Legislation	Offences	Licensing procedures and guidance
Birds (all wild birds including barn owl)	Wildlife and Countryside Act 1981 (as amended)	Intentionally kill, injure or take any wild bird; intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built; intentionally take or destroy the nest or eggs of any wild bird.	No licences are available to disturb any birds in regard to development. Licences are available in certain circumstances to damage or destroy nests, but these only apply to the list of licensable activities in the Act and do not cover development. General licences are available in respect of 'pest species' but only for certain very specific purposes e.g. public health, public safety, air safety. Guidance documents: Natural England Standing Advice for protected species 2022[1] and Natural England Standing Advice for wild birds 2022[2]
Barn owl (specific)	Wildlife and Countryside Act 1981 (as amended) S.1	Intentionally or recklessly disturb a Schedule 1 species while it is building a nest or is in, on or near a nest containing eggs or young; intentionally or recklessly disturb dependent young of such a species [e.g. most birds of prey, kingfisher, barn owl, black redstart, little ringed plover].	Guidance documents: Natural England Standing Advice for protected species 2022, and Natural England Standing Advice for wild birds 2022.

[1] https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications
[2] https://www.gov.uk/guidance/wild-birds-advice-for-making-planning-decisions

2. Methodology

2.1. Scheme Extent

2.1.1. Unless otherwise stated, the term 'Scheme Boundary' refers to the Order limits, excluding areas of 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 and the Scheme alignment are shown on the figures in Appendix B.

2.1.2. Within the areas of the Order limits that extend north and 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 m^2 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. These small-scale works are consistent with routine highway maintenance works. 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 is the approach that will be taken, which is considered to be proportionate.

2.2. Desk Study

2.2.1. The geographical area for obtaining ecological data through the desk study was determined using professional judgement. Baseline data was gathered from Gloucestershire Centre for Environmental Records (GCER). GCER was contacted in July 2022 to obtain recent[3] records of barn owl within 1.5 km of the Scheme Boundary. Records of protected and notable species within 1 km of the Scheme Boundary (including barn owl) were also obtained from GCER in September 2019 and April 2021 as part of the Preliminary Environmental Information Report (PEIR)[4].

2.2.2. Information relating to the population status of barn owl at a county level was sourced from the Barn Owl Trust's 'State of the UK Barn Owl population – 2019'[5], the Gloucestershire Bird Report[6] and 'The Birds of Gloucestershire'[7].

2.2.3. A desk study was also undertaken in order to collate existing information on barn owl gathered during previous field surveys. This involved assessment of data gathered during Phase 1 habitat surveys (2019 and 2022), bat roost inspection surveys undertaken for the Scheme (2019 to 2022), and incidental records documented by surveyors between 2019 and 2022. A data search using the Woodland Trust's Ancient Tree Inventory website[8] and aerial imagery[9] was also undertaken in order to search for habitats, trees and buildings to be included in the field survey.

[3] Records or observations within the last 10 years.
[4] Atkins (2021) M5 Junction 10 Improvements Scheme. Preliminary Environmental Information Report (PEIR) Biodiversity Chapter. Refer to Appendix 7.8 (Breeding Bird surveys) and 7.9 (Wintering Bird surveys). Online: https://www.gloucestershire.gov.uk/highways/major-projects-list/m5-junction-10-improvements-scheme/
[5] Barn Owl Trust (2019). State of the UK Barn Owl population – 2019. [redacted]f.
[6] Goodhall, R., Kirk, G. and Petrek, S. (2020) Gloucestershire Bird Report 2014-16. Gloucestershire Ornithological Co-ordinating Committee.
[7] Kirk, G. and Phillips, J. (2013). The Birds of Gloucestershire. [redacted] ccessed 07/02/2022].
[9] MAGIC. Online: https://magic.defra.gov.uk/MagicMap.aspx [Accessed: March 2022].

2.3. Field Survey

2.3.1. Surveys were led by suitably experienced ecologists (considered capable of undertaking barn owl surveys in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Competency Framework[10] and Atkins' internal Competency Framework, who are members of CIEEM and hold a Barn owl survey license for development projects (CL29)[11].

Defining the Survey Area

2.3.2. The survey methodology was based on guidelines set out in Barn Owl *Tyto alba* Survey Methodology and Techniques for use in Ecological Assessment: Developing Best Practice in Survey and Reporting[12]. This states that "for schemes such as these [most residential, commercial or land development schemes], the Survey Area is normally defined as that which falls within the development footprint" and "for land developments that involve transport schemes (road, rail and air) and wind farms, where direct mortality can potentially have a significant effect on the viability of barn owl populations, field surveys should always extend 1.5 km from the proposed route alignment or 1.5 km from the boundary of the development." Other guidance[13] states that major roads act as dispersal barriers to barn owl and reduce the populations of barn owls close to major roads. It is therefore considered that a survey radius of 200 m is an appropriate distance in order to assess barn owl populations which are expected to already be habituated to the presence of a main road.

2.3.3. For the purposes of this assessment, the Survey Area extended 1.5 km from the Link Road, and a 200 m radius from existing roads (the M5 and the A4019) (see Figure 7-16B).

2.3.4. Areas within 1.5 km of the Scheme Boundary considered unsuitable for barn owl, such as urban habitats, major infrastructure, or dense woodland interiors were screened out of field surveys and the Survey Area. In addition to these habitats, agricultural areas in which no potential nesting sites or foraging habitat were considered to be present, e.g. large fields with no margins or trees, were also excluded from the Survey Area.

Survey Methods

2.3.5. Survey techniques followed Stages 1 to 3 of the survey methodology as per best practice guidance. These are:

- Stage 1: On-site scoping survey.
- Stage 2: Investigative field survey.
- Stage 3: Nest site verification survey.

2.3.6. The surveys were undertaken from March to July 2022.

Stage 1: On-site scoping survey

2.3.7. The Stage 1 survey involved an initial walkover to assess the parts of the Survey Area that could not be adequately assessed during the desk-based scoping survey. This aimed to broadly establish and record additional landscape features which may be of potential

[10] CIEEM (2019) Competencies for species survey (CSS). https://cieem.net/resource/competencies-for-species-survey-css/ [Accessed 01/09/22]

[11] Natural England (2022) Barn owls: survey licen [redacted] 01/09/22].

[12] Shawyer, C. R. (2011). Barn Owl Survey Methodology and Techniques for use in Ecological Assessment. Developing Best Practice in Survey and Reporting. Online: https://cieem.net/resource/barn-owl-survey-methodology-and-techniques-for-use-in-ecological-assessment/ .

[13] David J Ramsden (Undated) Barn Owls and Major Roads - Barn Owl Trust. Online: Microsoft Word - Copy of MRRP originals.doc (barnowltrust.org.uk)

value to barn owl. This included built structures and trees that could potentially be used as breeding and roosting sites and potential foraging habitats (PFH).

2.3.8. Suitable trees not previously identified (i.e. from the Ancient Tree Inventory and aerial imagery), and barn owl nest boxes that are not part of local nest box schemes were identified during Stage 1 of the field surveys.

2.3.9. Suitable trees that included mature trees with a trunk diameter of sufficient girth to contain a cavity of sufficient size to support breeding barn owl[14] (*e.g.*, provide a roosting or nesting platform) were recorded.

2.3.10. Built structures with features that could support breeding barn owl, such as agricultural buildings and structures with access to the interior were recorded. Suitable buildings/structures that were recorded include disused or derelict cottages, agricultural buildings or industrial buildings with suitable access (and potentially possessing an upper floor, loft, roof void, disused/blocked chimney, wide wall plate, bale-stack, empty water tank, ducting, large nest box, a joist or broken ceiling panel). Any structure, tree or other feature with a barn owl nest box attached were also recorded.

2.3.11. Stage 1 was undertaken from clear vantage points located on public rights of way, farm tracks and field margins, where permitted and safe access allowed, and where the landscape could be scanned using binoculars.

Stage 2: Investigative field survey

2.3.12. This stage involved a ground-level inspection of the structures and trees previously identified in the desk-based scoping survey and Stage 1 on-site scoping survey. This survey determined if they possessed a suitable cavity or chamber, and therefore categorised as a potential nest site (PNS), or were not suitable for nesting but had signs of use, including thick, chalky-white, streaky droppings, regurgitated pellets and moulted feathers, and therefore categorised as an active roost site (ARS) or temporary roost site (TRS).

Table 2-1 - Classification of breeding and roost sites

Roost/Nest Type	Signs of use/description
Temporary Roost Site (TRS)	Small spots of thick, chalky cream-coloured droppings that can often be seen underneath a tree, in a building or on a fence post and which are sometimes accompanied by an occasional pellet or body feather, can indicate a temporary night-time stopping-off place of a barn owl.
Active Roost Site (ARS)	A place at which breeding does not occur, but where the bird is seen or heard regularly or its current or recent presence (last 12 months) can be recognised by signs of thick, chalky-white, streaky droppings (commonly referred to as 'splashing', 'whitewash', 'mutes' or 'liming') which is usually accompanied by regurgitated pellets (usually more than ten) and moulted feathers. Only pellets and feathers can be used to confidently say that the roost is that of a barn owl and not another raptor species. Any pellets found should be used to assess the time of year the ARS is used, as well as if it has been used within the last three years, or if it is a historic roost (no signs of use in the last three years).
Potential Nest Site (PNS)	Cavities or chambers of a suitable size and structure to provide a suitable barn owl nest site (80 mm diameter (about tennis ball size) or vertical slot of this width backed by a sufficiently large and dark chamber with a floor area greater than 250 mm x 250 mm). Suitable PNSs include, but are not limited to, the features described above.

[14] Shawyer, C. R. (2011). Barn Owl Survey Methodology and Techniques for use in Ecological Assessment. Developing Best Practice in Survey and Reporting. Online: https://cieem.net/resource/barn-owl-survey-methodology-and-techniques-for-use-in-ecological-assessment/.

2.3.13. The habitats identified during the desk study aerial image review and Stage 1 on-site scoping survey were assessed in detail to determine the distribution of PFH.

2.3.14. The PFH areas identified during the desk study aerial image review and Stage 1 on-site scoping survey were ranked by certain characteristics relating to their potential to provide suitable habitat for an abundant small mammal population. Small mammals, particularly voles, are the preferred prey of barn owl making their abundance a primary indicator of likely suitability for barn owl[15]. The areas of PFH were ranked as shown in Table 2-2 below[16]:

Table 2-2 - Classification of habitats

Habitat Classification	Description	PFH
Type 1 Habitat	Habitat that is optimal for field voles or other small mammals. This would be permanent unimproved or semi-improved grassland, rank and heterogeneous in appearance, often with a mixture of heights, with dead grass stems or 'thatch' layer, at least 30 mm deep. dominating the leaf sward. This grassland often possesses a high abundance of raised tussocks. These habitats usually receive no real management or anything other than periodic light grazing by farm animals. Long-term set-aside grassland and unmanaged fields, wasteland, ditches, riverbanks, field margins and road verges are common examples.	Yes
Type 2 Habitat	Habitats are sub-optimal to field voles or other small mammals and are of intermediate and often transient value to barn owl. This type of improved or semi-improved grassland is characterised by having a homogeneous, more even-height sward, sometimes displaying some lush and emerging tussock structure but little sign of a litter layer or 'thatch'. It will receive some level of farm management such as occasional fertilization, annual topping or light grazing.	Yes
Type 3 Habitat	Habitats offer very poor habitat for field voles and other small mammals and as such are of low value to barn owl. These improved grasslands are characterised by having a sward which is often kept short throughout much of the year, no tussock structure and are devoid of any litter layer at their base. These are often heavily grazed or managed and can be for public use (e.g. amenity). Grasslands overgrown with scrub which can restrict barn owl from hunting also fall into this habitat category. Type 3 habitat is not illustrated on the final survey map because of its poor suitability to barn owl.	No
Non-suitable Habitat	Habitats that do not exhibit any of the features or characteristics listed above. Generally non-grassland habitats, such as arable fields and mature woodland that are generally of little or no value as a permanent foraging resource to barn owl. For the purpose of the survey, arable fields without grass margins and woodlands (except those possessing wide grass rides or young plantations) are, therefore, considered unsuitable for barn owl and are not illustrated on the survey map.	No

[15] The Barn Owl Trust, 2012. Barn Owl Conservation Handbook. A comprehensive guide for ecologists, surveyors, land managers and ornithologists. Exeter: Pelagic Publishing.

[16] Shawyer, C. R. (2011). Barn Owl Survey Methodology and Techniques for use in Ecological Assessment. Developing Best Practice in Survey and Reporting. Online:

2.3.15. Anecdotal evidence from local residents and other members of the public was also recorded during the investigative field survey.

2.3.16. The investigative field survey and on-site scoping survey were undertaken concurrently where practicable, during March to July 2022.

Stage 3: Nest site verification survey

2.3.17. Nest site verification surveys were undertaken in mid-June to mid-August 2022.

2.3.18. Stage 3 confirms whether any of the PNS within trees and structures identified in Stage 2 are actively used by barn owl for breeding or if it has been in the recent past, i.e. classified as occupied breeding sites (OBS).

2.3.19. The potential nest sites were subject to a detailed inspection. Cavities within trees and chambers and ledges in buildings were inspected, using a torch and a GoPro camera or similar mounted on a long telescopic pole, and/or the use of a ladder where possible and safe, and searched for signs of barn owl nesting activity. All internal and external features of the buildings were inspected where possible, including the walls, beams, floors, hay/straw bales and flat surfaces on top of old machinery, for barn owl field signs, e.g. adult barn owl, their moulted feathers, pellets, eggs, egg shells, chicks or down feathers.

2.3.20. The Stage 3 surveys were undertaken by an appropriately licensed ecologist, holding a CL29 class licence, which permits registered persons to disturb nesting barn owl by observation in the course of undertaking presence or absence surveys, nest monitoring and, or to monitor the effectiveness of conservation efforts.

2.4. Assessment

2.4.1. The barn owl population has been valued in a geographical context following the framework provided in LA 108[17]. The evaluation is based on the information gathered from the desk study and field surveys, using a combination of professional judgement and accepted criteria[18] (e.g., diversity, rarity, and naturalness).

2.5. Limitations

2.5.1. The barn owl surveys were subject to certain limitations, as outlined below.

Desk Study

2.5.2. An absence of desk study records does not necessarily convey an absence in that area but is often a facet of under recording and/or reporting to the relevant local environmental records centre. The desk study provides an overview of the barn owl records within the Survey Area and has been used to help inform the requirement for field surveys. As such this is not considered to be a constraint to the interpretation of the desk study records.

Field Survey

2.5.3. Some land parcels (as shown in Figure 7.-16B) could not be surveyed due to access restrictions put in place by landowners. Approximately 77.5% of land within the Survey Area (approximately 615 ha of 793.6 ha (834 ha in Survey Area, minus scoped out land) that could be of value to barn owl[19] was accessed for surveying. This limitation was partially overcome by surveyors assessing inaccessible land parcels from adjacent land parcels over boundary features with the use of binoculars. Using this approach, a total of 728.4 ha (91.8% of land within the Survey Area) was surveyed. Where it has not been

[17] Highways England (2020). Design Manual for Roads and Bridges. LA 108 Biodiversity (formerly Volume 11, Section 3, Part 4 Ecology and Nature Conservation and IAN 130/10). (March 2020, version 1). Online: [redacted]

[18] Set out in Ratcliffe, D.A (1977). A Nature Conservation Review. Cambridge University Press.

[19] This includes open countryside, recently planted plantation woodland, orchards and woodland glades

possible to achieve complete survey coverage for barn owl, the assessment has been based on a reasonable precautionary approach (considering existing knowledge of barn owl and applying professional judgement). Recent biological records, publicly available aerial imagery, survey results from adjacent areas, and the suitability of habitats present within the surrounding area have also been used, where appropriate, to inform the ecological baseline for barn owl. Taking these methods into account, it is considered that there was sufficient coverage of the Survey Area to inform the ecological baseline for barn owl.

2.5.4. While often traditional in their nesting sites, barn owl are a mobile species and habitat quality in the arable landscape may change each year, the distribution of barn owl may not necessarily be fixed between years. As such, a distribution map is likely only to be valid for the year in which the survey was undertaken. A survey can only assess the site as it was found at the time of the survey. Nationally recognised standard survey methodologies have been used to ensure that the results are suitable to be used for ecological evaluation and impact assessment.

2.5.5. Not all potential nest sites and areas of potentially suitable foraging habitat could be fully assessed due to health and safety reasons (such as cavities being too high to safely reach using ladders, or cavities above dense vegetation or water preventing the safe use of ladders) and restricted access, including road verges. During the surveys, if a feature was identified as having potential for breeding barn owl but could not be fully assessed, a reasonably precautionary approach was taken, and the feature was recorded as a Potential Nest Site.

2.5.6. This approach is considered appropriate to establish a robust ecological baseline and evaluation for barn owl across the Survey Area of the Scheme.

3. Results

3.1. Desk Study

Desk Study Results from GCER

3.1.1. Following a data request in 2021, GCER returned one record of barn owl (April 2011) within 1 km of the Scheme Boundary. Although this was included in the PEIR reports[4], this is no longer considered a recent record as it is now dated over 10 years ago.

3.1.2. This data request was also extended to a search within 1.5 km of the Scheme Boundary in 2022 and GCER returned one recent record of barn owl (January 2013) approximately 1.2 km north east of the Scheme Boundary.

Desk Study Results from Other Online Resources

3.1.3. The Barn Owl Trust's 'State of the UK Barn Owl population' revealed that the Gloucestershire Raptor Monitoring Group reported 43 occupied barn owl nest sites out of 115 sites checked in the county in 2019, which represents an increase in comparison to counts recorded in previous years[20].

3.1.4. The Gloucestershire Bird Report lists barn owl as an 'uncommon or scarce' breeding resident.

3.1.5. The Birds of Gloucestershire states that barn owl are widely distributed across the county where there is suitable habitat. It reports that barn owl were present during the breeding season (2008-2011) in 124 survey tetrads (2 km by 2 km square), with breeding confirmed, probable or possible in 91 tetrads. Therefore, as a precaution there are considered to be at least 91 pairs of barn owl in Gloucestershire.

3.1.6. Aerial imagery indicated that the majority of the land within the Survey Area comprised habitat that was potentially suitable for use by barn owl, i.e. agricultural land with hedgerows and mature trees, woodland edge and farm buildings. The Woodland Trust's Ancient Tree Inventory included one record of a veteran yew at Elmstone Hardwicke within the Survey Area. The arboricultural survey report for the Scheme was reviewed which identified one veteran ash tree in a hedgerow within the Scheme boundary, just east of Withybridge Lane (the arboricultural survey is appended to Chapter 9, the Landscape chapter, in Technical Appendix 9.4 (application document TR010063 – APP 6.15)). No further ancient or veteran trees were identified within the Survey Area during this search.

Existing Survey Information

3.1.7. An assessment of barn owl potential was incorporated into the building and tree surveys for bats for the Scheme (2019 to 2021)[21]. In addition, incidental records of barn owl were recorded by ecologists during other surveys for the Scheme. This information is summarised below.

3.1.8. During extended Phase 1 habitat surveys, three areas of PFH for barn owl were identified, comprising areas of tussocky swards. One area is to the north of the A4019, another is adjacent to the M5 approximately 500 m north of the Scheme alignment, and another is within an orchard to the north of Stanboro Lane.

3.1.9. During roost inspection surveys for bats, 20 trees and one tree group within 100 m of the Scheme Boundary were recorded as having potential suitability for roosting barn owl.

3.1.10. Incidental records of barn owl and pellets were also observed by ecologists on 14 separate occasions between 2019 and 2022 (see Figure 7-16A). Incidental records comprised

[20] Increase in comparison to average occupied nests recorded in all previous years (since start year used in 2014).
[21] Where accessible, these were re-assessed as part of the 2022 barn owl surveys by a suitably qualified surveyor.

accounts of barn owl pellets, foraging and commuting barn owls, one record of a dead barn owl and one record of a barn owl flying out from a tree.

3.1.11. This species was observed at the same location (along Old Gloucester Road) on two separate occasions in the same breeding season (June and July 2020) within potentially suitable breeding habitat, and is therefore considered likely to be breeding in the area.

3.2. Field Survey

3.2.1. All trees identified as having barn owl potential during previous surveys were re- surveyed as part of the 2022 barn owl surveys. All locations with incidental records of barn owl were surveyed and the veteran yew tree identified during the desk study was surveyed, as well as the veteran ash tree within the Scheme Boundary.

Nest sites and active roost sites

3.2.2. No OBS were identified within the Survey Area during the Stage 1 to Stage 3 surveys undertaken in March to August 2022.

3.2.3. A total of 42 PNS[22] were identified within the Survey Area during Stage 2 surveys, comprising:

- 32 mature/dead trees.
- Nine agricultural buildings.
- One nest box.

3.2.4. During Stage 3 surveys, 27 of these 42 PNS were accessed and ruled out due to no barn owl nesting evidence being found[23]. Twelve trees and three buildings contained PNS that were not fully accessed as part of Stage 3 surveys, and therefore a precautionary approach has been taken whereby it is assumed that all 15 of these features are PNS. PNS were recorded in the highest number in trees at the south of the Survey Area.

3.2.5. In addition to PNS, a total of three ARS, one of which was a mature tree and two of which were in a barn, were identified within the Survey Area. The tree is located between Withybridge Lane and the Link Road, and the two barns are located north of the A4019 at Uckington.

3.2.6. The nest site and active/temporary roost site Stage 3 survey results are summarised below in Table 3-1

Table 3-1 Number of occupied breeding sites (OBS), potential nest sites (PNS) and active roost sites (ARS) identified during Stage 3 surveys within the Survey Area

Feature		Survey Area	Total
OBS	Mature/dead tree	0	0
	Building/bale rick	0	
	Nest box	0	
PNS	Mature/dead tree	12	15
	Building/bale rick	3	
	Nest box	0	
ARS/TRS	Mature/dead tree	1	3
	Building/bale rick	2	

[22] Including 'assumed', for example if surveyors were not able to fully access the feature during the survey, but recorded as potentially suitable.
[23] While no nesting evidence was found, old evidence of barn owl presence (pellets over 12 months old and feathers) was found at two of these PNS.

	Nest box	0	

3.2.7. Full details of the potential nest sites and active roost sites are given in Table 7.16A in Appendix A. The locations of all PNS and ARS (which were not ruled out during Stage 3 surveys) are shown in Figure 7-16C.

Potential Foraging Habitat

3.2.8. The surveys recorded patches of PFH (Type 1, Type 2 and mosaic habitat including some Type 1 and/or Type 2 habitat – see Table 7.16A and Figure 7-16C) spread throughout accessible areas of the Survey Area.

3.2.9. This habitat was predominantly located away from major roads at the south of the Survey Area (with small areas of Type 1 and Type 2 near Uckington and larger areas of Type 2 at Hayden Green, Hayden Knoll and Fiddler's Green), with a small amount of PFH north of the A4019 east of Uckington. Large, continuous areas of Type 1 and Type 2 habitats were relatively rare within the Survey Area, with the vast majority of the Survey Area occupied by Type 3 habitat or non-suitable habitats. The total areas of potential barn owl habitat within the Survey Area are summarised in Table 3-2 below.

Table 3-2- Total areas of habitat types within accessed land within the Survey Area.

Habitat Type	Area surveyed (hectares)	Percentage of total area surveyed (728.4 ha)
Type 1 (PFH)	4.8	0.7
Type 2 (PFH)	98.5	13.5
Type 1/2 mosaic (PFH)	0.8	0.1
Type 2/3 mosaic (PFH)	3.8	0.5
Type 1/2/3 mosaic (PFH)	0.1	0.01
Type 3	313.9	43.1
Non-suitable habitat	306.5	42.1

3.2.10. Of the total area assessed (approximately 728.4 ha) within the Survey Area, there was a total of 108 ha of PFH (14.8% of the area assessed).

3.2.11. The survey results including the barn owl habitat suitability are shown in Table 7.16A and Figure 7-16C.

4. Evaluation

4.1.1. The surveys recorded PFH throughout the Survey Area, predominantly located at the east and south of the Survey Area. Large, continuous areas of Type 1 and Type 2 habitats were relatively rare within the Survey Area, with the vast majority of the Survey Area occupied by Type 3 or 'non-suitable' habitats. Of the total area assessed within the Survey Area, there was a total of 108 ha of PFH (14.8% of the area assessed).

4.1.2. No occupied breeding sites were identified with the Survey Area. A total of 15 PNS (comprising 12 mature/dead trees and 3 agricultural buildings) were recorded. PNS were recorded in the highest number in trees at the south of the Survey Area. Although 15 PNS were recorded, this is a precautionary assessment due to lack of accessibility. Three ARS (two barns and one tree) were identified within the Survey Area. The tree is located between Withybridge Lane and the Link Road, and the two barns are located north of the A4019 at Uckington.

4.1.3. The survey results indicate the current or recent[24] presence of barn owl at three locations within the Survey Area[25]. This includes: the ARS tree between Withybridge Lane and the Link Road; the two barns located north of the A4019 at Uckington (one location given the proximity of the buildings); and one recent incidental record of barn owl seen flying near Stanboro.

4.1.4. Evidence of barn owl presence over 12 months old was also identified at two locations during the 2022 barn owl surveys (see survey results in Table 7.16A and Figure 7-16C). In addition, ten incidental records of barn owl or pellets were recorded during surveys undertaken more than 12 months prior to the targeted barn owl surveys.

4.1.5. Barn owls have home ranges of approximately 350 ha on average[26]. The Survey Area is approximately 834 ha, and therefore based on this extent the Survey Area could fully support at least two home ranges. It is of course possible for territories to overlap, or partially fall within the Survey Area (and therefore partially accommodate more than two territories), but it is extremely improbable that all 15 PNS would support an active barn owl nest site (an OBS).

4.1.6. Taking into account the PFH available, and the locations of ARS, incidental records of pellets and clusters of incidental sightings (refer to Figure 7-16A), it is considered that the Survey Area could support up to four barn owl territories (i.e. the Survey Area forms part of a barn owls' territory, even if the nest site is not physically within the Survey Area).

4.1.7. The Barn Owl Trust's 'State of the UK Barn Owl population'[27] revealed that the Gloucestershire Raptor Monitoring Group reported 43 occupied barn owl nest sites out of 115 sites checked in the county in 2019, and the Birds of Gloucestershire[28] reports that confirmed, probable or possible breeding barn owl were present in 91 survey tetrads. Therefore, as a precaution there are considered to be at least 91 pairs of barn owl in Gloucestershire.

4.1.8. Based on the above, barn owl can be considered a notable feature within this assessment that requires further impact assessment and mitigation in relation to the Scheme. Based on the availability of potential nest sites and PFH identified, the Survey Area could potentially support four pairs, which would represent approximately 4.4% of the county population (if this is taken to be 91 pairs). This is considered to be a significant proportion

[24] Within the last 12 months.
[25] One location with fresh pellets found, second location where barn owl seen and fresh pellets found nearby and third location with potential barn owl splashing.
[26] The Barn Owl Trust (2021) Barn Owl home range. [redacted]
[27] Barn Owl Trust (2019). State of the UK Barn Owl population – 2019. [redacted]
[28] Gordon Kirk and John Phillips (2013). The Birds of Gloucestershire. [redacted]

of the county population. Therefore, the barn owl population within the Survey Area is considered to be of County nature conservation importance.

Appendices

Appendix A. Full Barn Owl Survey Results

Table A-1 - Barn owl survey results for all land parcels accessed

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
GR1015	Surveyed 08/06/22; Stage 3 on 27/06/22 and 12/08/22. One PNS barn (flat area at north end of barn with nesting potential). One PNS at dead horse chestnut tree with kestrel present 27/06/22. Stage 3 of horse chestnut 12/08/22: all but 1 cavity was checked (one too high to reach). Suitable for nesting barn owl but kestrels used highest cavity this year, chicks seen previously, castings found around the tree.	Yes- highest cavity in horse chestnut was unreachable.	N	Y (assumed PNS at dead tree)	N	N	Type 3- cattle/sheep grazing and non-grassland.	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
GR102110	Surveyed 13/06/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Largely Type 1 habitat with some Type 3.	
GR130009	Surveyed 15/07/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 3.	
GR130902	Surveyed 17/06/22. Little owl box in tree with potential for barn owl. No evidence of barn owl so ruled out.	No	N	N	N	N	Type 3.	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
GR145179	Surveyed 14/04/22; Stage 3 on 17/06/22. Barn owl seen flying from roost in barn at south of parcel to tree. Feathers observed in this barn and assumed PNS on top of hay bales in barn. PNS in trees in fields to north and in second barn to south (open cattle barn has a ledge in the corner with 40-70 pellets). Two trees with PNS at north of parcel.	Yes- access restriction to tree at south due to vegetation; access restriction to two barns and tree at south due to flushing risk near to major road.	N	Y (1 barn and 1 tree assumed) .	Y (2 barns ARS)	Y (barn owl observed, feathers, 40-70 fresh pellets)	Largely Type 3 with a small area of Type 2 to the south.	 

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
GR156580	Surveyed 08/06/22, Stage 3 on 22/06/22. Two barns with PNS. One barn at south east of parcel with mezzanine platform in north end and hay bales. Old pellet and potential barn owl feather found. Barn at south west with potential ledge on the top of a brick wall and on top of hay bales.	No access to platform or on top of hay bales in one barn.	N	Y (1 barn, assumed)	N	Y (old pellet and potential feather)	Type 2 and Type 3.	 

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
GR172566	Surveyed 16/05/22, Stage 3 on 21/07/22. Two trees with PNS. Persian walnut with multiple large crevices. Ash tree with 30 x 30 cm hole with cavity to the base of the tree. Pigeon nesting inside.	Yes. Highest cavity inaccessible in Persian walnut.	N	Y (1 tree assumed)	N	N	Type 1 (infrequently mown orchard with a deep litter layer and fallen and standing deadwood. Type 2 (Young orchard, extensively grazed), Type 3 and non-grassland.	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
GR173639	Surveyed 29/07/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 2	
GR177887	Surveyed 31/3/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Not recorded- later scoped out due to small area size.	
GR211814	Surveyed 31/3/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 3- arable	
GR216008	Surveyed 20/07/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Non- grassland habitat (arable)	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
GR216349	Surveyed 25/05/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Non-grassland habitat	
GR217241	Surveyed 20/07/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 3	
GR219581	Surveyed 20/07/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Non-grassland habitat	
GR226911	Surveyed 31/3/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Non- grassland habitat (arable)	
GR235417	Surveyed 20/07/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Non-grassland habitat (trees) and Type 3	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
GR241866	Surveyed 17/05/22. One assumed PNS tree at boundary with GR440145 with large stem cavity at 4 m height. One tree assumed PNS outside of Survey Area in inaccessible land (mature ash with large stem wound nest potential).	Yes. Tree at boundary unsafe to access and tree to south inaccessible (but out of Survey Area).	N	Y (1 tree assumed)	N	N	Type 2	
GR246577	Surveyed 13/6/2022. No nesting/roosting features or evidence found.	No	N	N	N	N	Good Type 2 (see photo), Type 3 and non-grassland.	
GR247059	Surveyed 29/07/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Non-grassland habitat.	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
GR248886	Surveyed 01/06/22; Stage 3 on 17/06/22. One tree with PNS. Dead ash tree with large cavity west facing 5 m high. Highly suitable for nest.	No	N	N	N	N	Type 2 (extensively grazed orchard), Type 3 and non-grassland	
GR262339	Surveyed 29/04/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 3	
GR281562	Surveyed 21/06/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Non-grassland habitat.	
GR282330	Surveyed 31/03/22 and 27/04/22. No nesting/roosting	No	N	N	N	N	Non-grassland habitat.	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
	features or evidence found.							
GR282506	Surveyed 31/3/22; Stage 3 on 22/06/22. Two trees with PNS. Mature ash with large rotted cavity and rot hole in mature ash currently occupied by squirrel.	No	N	N	N	N	Strip of Type 2 along watercourse (River Chelt) and non-grassland habitat (woodland and arable).	
GR282732	Surveyed 27/04/22. Type 3 PFH and no nesting potential in trees.	No	N	N	N	N	Non-grassland habitat (woodland and arable).	
GR305280	Surveyed 09/03/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 2 around orchard trees (some tussocks and thatch- see photo), Type 2/3 mosaic (some thin thatch) and Type 3 (short grazed).	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
GR310325	Surveyed 16/05/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 3 (improved grassland with no thatch)	
GR315690	Surveyed 14/04/22; Stage 3 on 21/07/22. Two PNS trees. Ash tree with large split in trunk, second PNS tree with no evidence.	Yes Stage 3 - unable to safely access ash tree with split and too high for ladder & pole	N	Y (one tree assumed)	N	N	Type 3 (cattle grazing) and non-grassland (woodland and buildings)	
GR318999	Surveyed 29/04/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 1 (7 cm thatch below tussocks interspersed with bare patches, lightly horse grazed). Type 1/2/3 mosaic (lightly horse grazed with Type 3 that could	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
							become Type 2 in summer) and Type 3 (short grazed/mown)	
GR32021	Surveyed 31/03/22; 08/06/22; Stage 3 on 27/06/22. No PNS - roost potential only.	No	N	N	N	Y- old pellet incidental	Type 2, Type 3, and non-grassland habitat (arable).	
GR333574	Surveyed 13/07/22. One tree with assumed PNS with a callous roll hole at 4 m on north aspect of tree.	No access as tree on the other side of the fence	N	Y (1 tree, assumed)	N	N	Type 2, Type 3 and non-grassland habitat.	
GR343386	Surveyed 13/07/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 3 and non-grassland habitat.	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
GR359885	Surveyed 13/06/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 2 and Type 3.	
GR362823	Surveyed 15/07/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Non-grassland habitat (arable).	
GR369118	Surveyed 17/05/22. Two PNS trees on boundary with GR440145. Ash tree with rot hole approximately 5 m high leading to hollow cavity with a small ledge at 1.2 m height. Ash tree with split stem and hole approximately 5 m high).	Yes- no access to one tree with pole camera due to fallen branches on ground.	N	Y (1 tree assumed)	N	N	Type 2.	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
								
GR373277	Surveyed 08/06/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Not recorded.	
GR373335	Surveyed 08/06/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Not recorded.	
GR375214	Surveyed 25/05/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Non-grassland habitat.	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
GR375241	Surveyed 25/05/22; Stage 3 on 29/07/22. Three PNS barns 1. Platform for nesting (photo 2) with good access in and out - optimal nest site but busy as next to yard and house. 2. barn with PNS on bales 3. Platform for nest on metal sheets (photo 3) within barn. One tree with assumed PNS (ash tree with cavity visible).	Yes- unable to climb ladder for ash tree as cow in field.	N	Y (1 tree-assumed)	N	N	Type 2, 3 and non-grassland habitat.	 

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
								
GR377552	Surveyed 17/05/22. One PNS tree on boundary with GR440145 comprising ash with stem cavity and woodpigeon currently nesting inside. No nesting/roosting evidence found.	No	N	N	N	N	Largely Type 2 with some non-grassland habitat.	
GR388963	Surveyed 08/06/22. No nesting/roosting	No	N	N	N	N	Type 3.	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
	features or evidence found.							
GR393207	Surveyed 27/06/22. No nesting/roosting features or evidence found.	Access not granted to part of GR393207 and un-mapped.	N	N	N	N	Type 1 (see photo, including area with thick lumpy sward), Type 2, Type 3 and non-grassland habitat.	
GR405482	Survey 18/03/22. Pellets in roost potential tree. Approximately 40 pellets of varying ages - from a couple of weeks to 6 months). One ash tree (cavity leading down) with no nesting/roosting evidence found.	No	N	N	Y (one tree)	Y (around 40 pellets)	Largely Type 3 (arable), with small area of Type 1 at river bank (5x20m approximately, with tussocks/long grass), and small area of Type 2 (tall ruderal/semi improved grassland mosaic in field corner- 5x20m approximately).	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
								
GR412610	Surveyed 15/07/22. Seven PNS trees. 1. Small ash. 2. Ash tree with nesting potential in trunk cavity. 3. Large oak tree with rot holes and splits. 4. Ash tree with large limb split hole and barn owl feathers in tree. 5. Large ash with splits and rot holes - old barn owl pellets	Unable to reach all features on trees 3, 4 and 5. as too high (including tree where pellets and feathers on ground) and unable to reach tree 7 due to stream.	N	Y (4 trees, assumed)	N	Y (feathers at tree 4. and feathers and pellets at tree 5.)	Type 2, Type 3 and non-grassland habitat (arable).	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
	(photo 1) found at base of tree and barn owl feathers (photo 2) found around split. 6. Ash tree with large holes heavily covered with cobwebs. 7. Poplar with nesting potential (photo 3).							 
GR425871	Surveyed 29/07/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 2.	

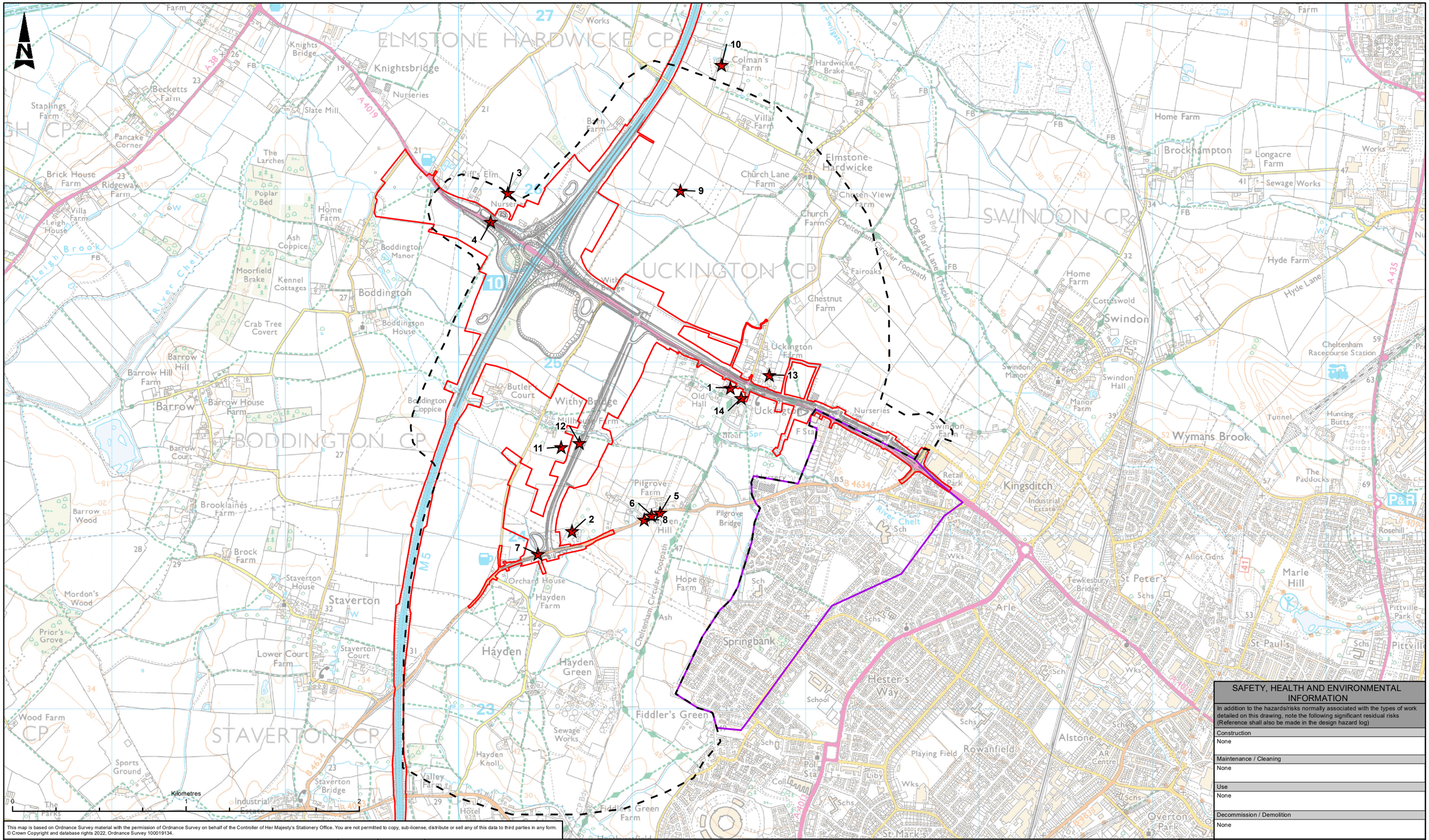
PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
GR429405	Surveyed 07/04/22, 25/05/22 and Stage 3 on 20/07/22. One PNS tree adjacent to M5 verge.	No	N	N	N	N	Type 3 and non-grassland habitat.	
GR442797	Surveyed 18/03/22; Stage 3 on 13/06/22. Hay barn PNS with potential barn owl splashing on wall identified on first visit, but during Stage 3 bales had been removed.	No	N	Y (1 barn, assumed)	N	Y (ARS-some splashing, potentially barn owl)	Type 3.	
GR805	Surveyed 27/06/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 2 (one area with some Type 1 patches)	
LP3	Surveyed 09/03/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 3 and non-grassland habitat.	
LP4	Surveyed 09/03/22; Stage 3 on 15/06/22. One PNS tree with cavity. During the Stage 3 survey it was noted that the	No	N	N	N	N	Type 3 with some areas of Type 2.	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
	vegetation was too overgrown for the cavity to be used by barn owl, but it could be used if/when the vegetation is less dense.							
LP5	Surveyed 14/04/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 2 with some Type 3.	
VF 01	Surveyed 4/08/22. 1. Field maple PNS due to cavity in stem at 2m height. 2. PNS in tree cavity. 3. Little owl roosting and pellets, but barn owl PNS. 4. Little owl nesting in suitable barn owl PNS cavity (see photo). 5. Willow with PNS but pigeon currently present.	No	N	N	N	N	Small area of Type 2 (thistle tall ruderal) but largely Type 3 (arable).	

PIL or Land Title Number	Survey notes (Stage 1/2 and Stage 3)	Access restrictions preventing full assessment of any structures/ habitats?	OBS (Y/N)	PNS (Y/N)	ARS (Y/N)	Barn owl Evidence (Y/N)	PFH notes	Photograph(s)
WBL01 (GR432051)	Surveyed 31/3/22. No nesting/roosting features or evidence found.	No	N	N	N	N	Type 2.	

Appendix B. Schedule of figures included in this application document

Figure reference	Document title	Sheet	Document number	Revision
7-16A	Barn owl - incidental records	1 of 1	GCCM5J10-ATK-EBD-ZZ-GS-GI-000070	0
7-16B	Barn owl - land access limitations	1 of 1	GCCM5J10-ATK-EBD-ZZ-GS-GI-000071	0
7-16C	Barn owl - survey results	1 of 6	GCCM5J10-ATK-EBD-ZZ-GS-GI-000072	0
7-16C	Barn owl - survey results	2 of 6	GCCM5J10-ATK-EBD-ZZ-GS-GI-000072	0
7-16C	Barn owl - survey results	3 of 6	GCCM5J10-ATK-EBD-ZZ-GS-GI-000072	0
7-16C	Barn owl - survey results	4 of 6	GCCM5J10-ATK-EBD-ZZ-GS-GI-000072	0
7-16C	Barn owl - survey results	5 of 6	GCCM5J10-ATK-EBD-ZZ-GS-GI-000072	0
7-16C	Barn owl - survey results	6 of 6	GCCM5J10-ATK-EBD-ZZ-GS-GI-000072	0



LEGEND

- ORDER LIMITS
- SCHEME ALIGNMENT
- BARN OWL SURVEY AREA
- AREA SCOPED OUT FROM FULL SURVEY
- INCIDENTAL RECORD

INCIDENT	DATE	DETAILS
1	09/03/2022	POSSIBLE OLD PELLET RECORDED AT BU_668
2	12/01/2022	POSSIBLE BARN OWL PELLETS RECORDED WITHIN BUILDING BU_813
3	23/09/2021	BARN OWL SEEN FLYING OVERHEAD AT 19:40
4	01/07/2021	BARN OWL RECORDED CROSSING THE A4019 JUST TO THE WEST OF JUNCTION 10
5	21/09/2020	AT 19:27 OLD GLOUCESTER ROAD 2M FROM GROUND FLEW N ALONG HEDGE CROSSING OVER HEDGE W TO E
6	17/07/2020	AT 20:53 OLD GLOUCESTER ROAD
7	10/06/2020	OBSERVED AT 21:56, FLYING OVER HEDGE AND ROAD (APPROX 5-6 M HIGH); OLD GLOUCESTER ROAD
8	10/06/2020	CROSSED ROAD AT APPROX 3 M, OLD GLOUCESTER ROAD
9	09/10/2019	OBSERVED FLYING OUT FROM TREE
10	21/08/2019	BARN OWL FLEW OVER HOUSE AND ORCHARD THREE TIMES
11	12/09/2019	SKULL AND WINGS OF DEAD BARN OWL FOUND
12	10/07/2019	OBSERVED FORAGING OVER FIELD
13	20/08/2022	BARN OWL PELLET OBSERVED IN BUILDING
14	29/03/2022	BARN OWL PELLET OBSERVED

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
PUBLISHED	A1	P01	EM	IH	CC	TT	25/08/23

Drawing Suitability: PUBLISHED — Status: A1

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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

Project Title: M5 Junction 10 Improvements Scheme

Drawing Title: FIGURE 7-16A
BARN OWL - INCIDENTAL RECORDS

Drawing Number: Project | Originator | Volume
GCCM5J10 - ATK - EBD
ZZ - GS - GI - 000070
Location | Type | Role | Number

Original Size:	Scale	Project Ref:	Sheet:	Rev:
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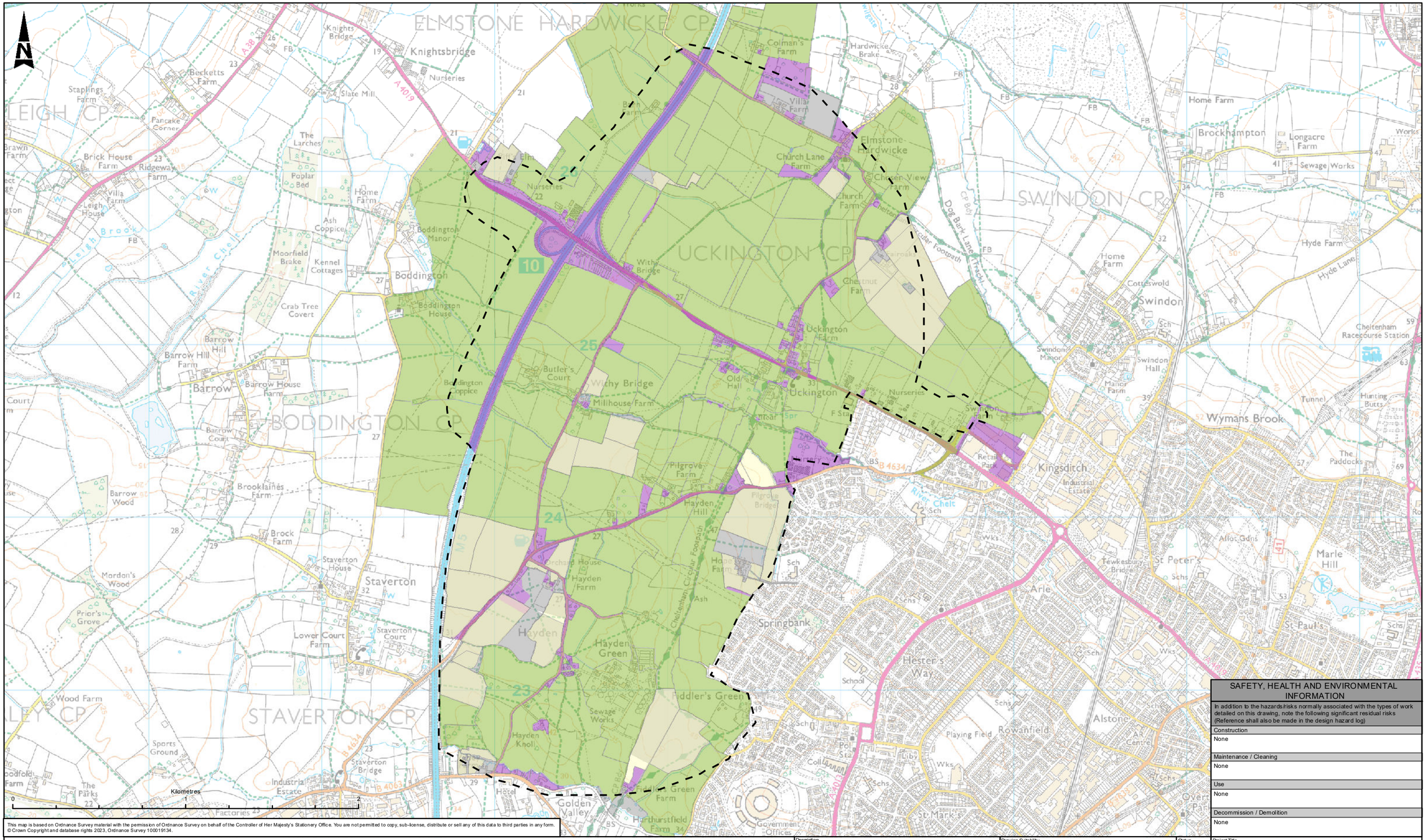

LEGEND

- BARN OWL SURVEY AREA

ACCESS STATUS

- SCOPED OUT
- ACCESSED
- NOT ACCESSED (ACCESS NOT GRANTED/H&S RESTRICTIONS)
- NOT ACCESSED BUT PFH SURVEYED FROM ADJACENT LAND

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
PUBLISHED	A1	P01	EM	IH	CC	TT	09/05/23

Drawing Suitability: PUBLISHED

Status: A1

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

Project Title: M5 Junction 10 Improvements Scheme

Drawing Title: FIGURE 7-16B
BARN OWL - LAND ACCESS LIMITATIONS

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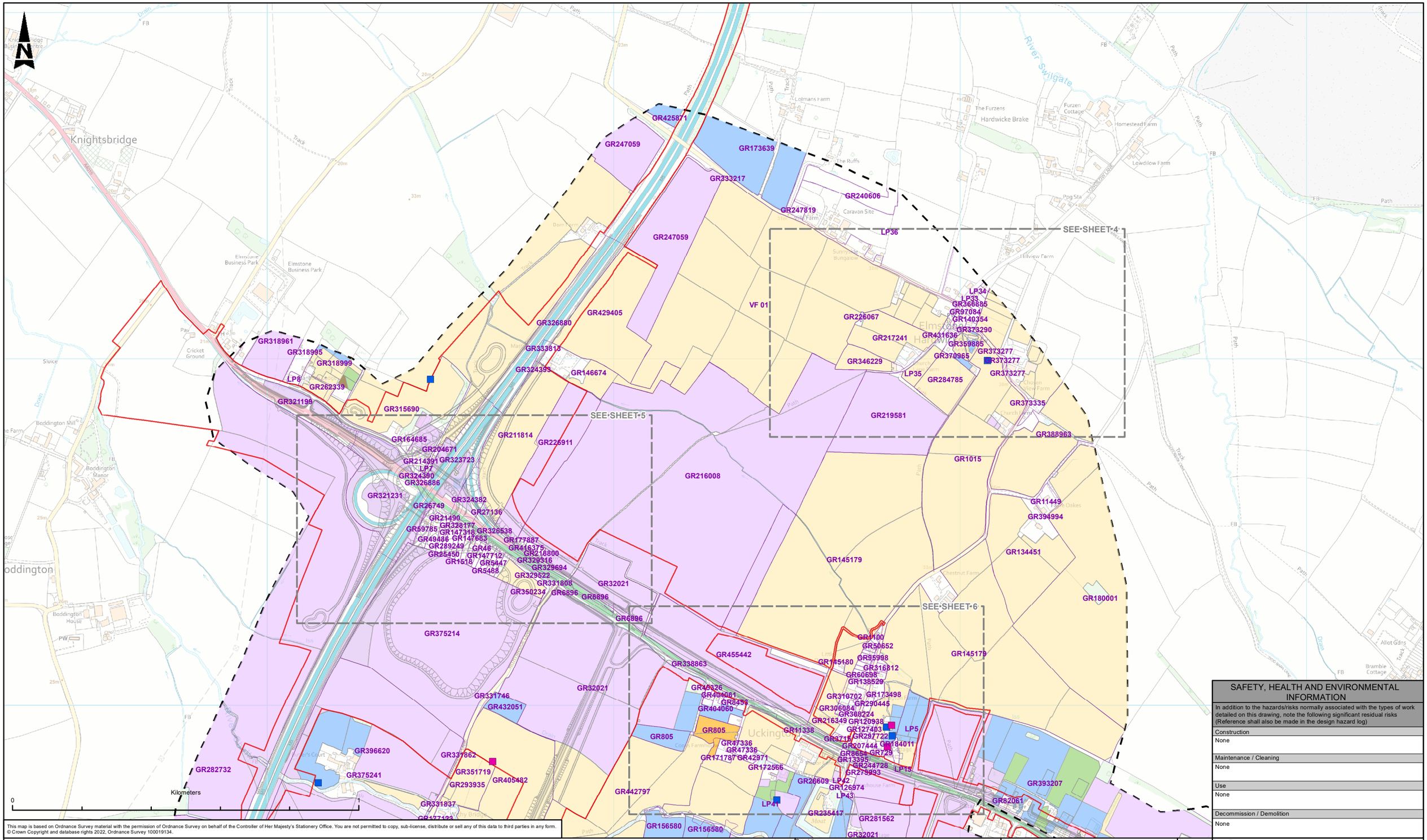
Client: Gloucestershire County Council

Drawing Number: GCCM5J10 - ATK - EBD
ZZ - GS - GI - 000071
(Project | Originator | Volume | Location | Type | Role | Number)

Original Size:	Scale	Project Ref:	Sheet:	Rev:
A3	1:20,000	5214106	1 of 1	P01



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LEGEND

- ORDER LIMITS
- SCHEME ALIGNMENT
- LAND PLOT BOUNDARIES (LABELLED WHERE POSSIBLE)
- BARN OWL SURVEY AREA

POTENTIAL FORAGING HABITAT TYPE

- OTHER - NON GRASSLAND HABITAT
- TYPE 1 - OPTIMAL
- TYPE 2 - SUB OPTIMAL
- TYPE 3 - POOR
- TYPE 1/2 MOSAIC
- TYPE 2/3 MOSAIC
- TYPE 1/2/3 MOSAIC

GOOD SUITABILITY (NESTING AND ROOSTING POTENTIAL)

- ACTIVE ROOST SITE (ARS)
- POTENTIAL NEST SITE (PNS)

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
PUBLISHED	A1	P01	EM	IH	CC	TT	25/08/23

Drawing Suitability: PUBLISHED

Status: A1

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

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Client: Gloucestershire County Council

Project Title: M5 Junction 10 Improvements Scheme

Drawing Title: FIGURE 7-16C
BARN OWL - SURVEY RESULTS

Drawing Number: GCCM5J10 - ATK - EBD ZZ - GS - GI - 000072
(Project | Originator | Volume | Location | Type | Role | Number)

Original Size:	Scale	Project Ref:	Sheet:	Rev:
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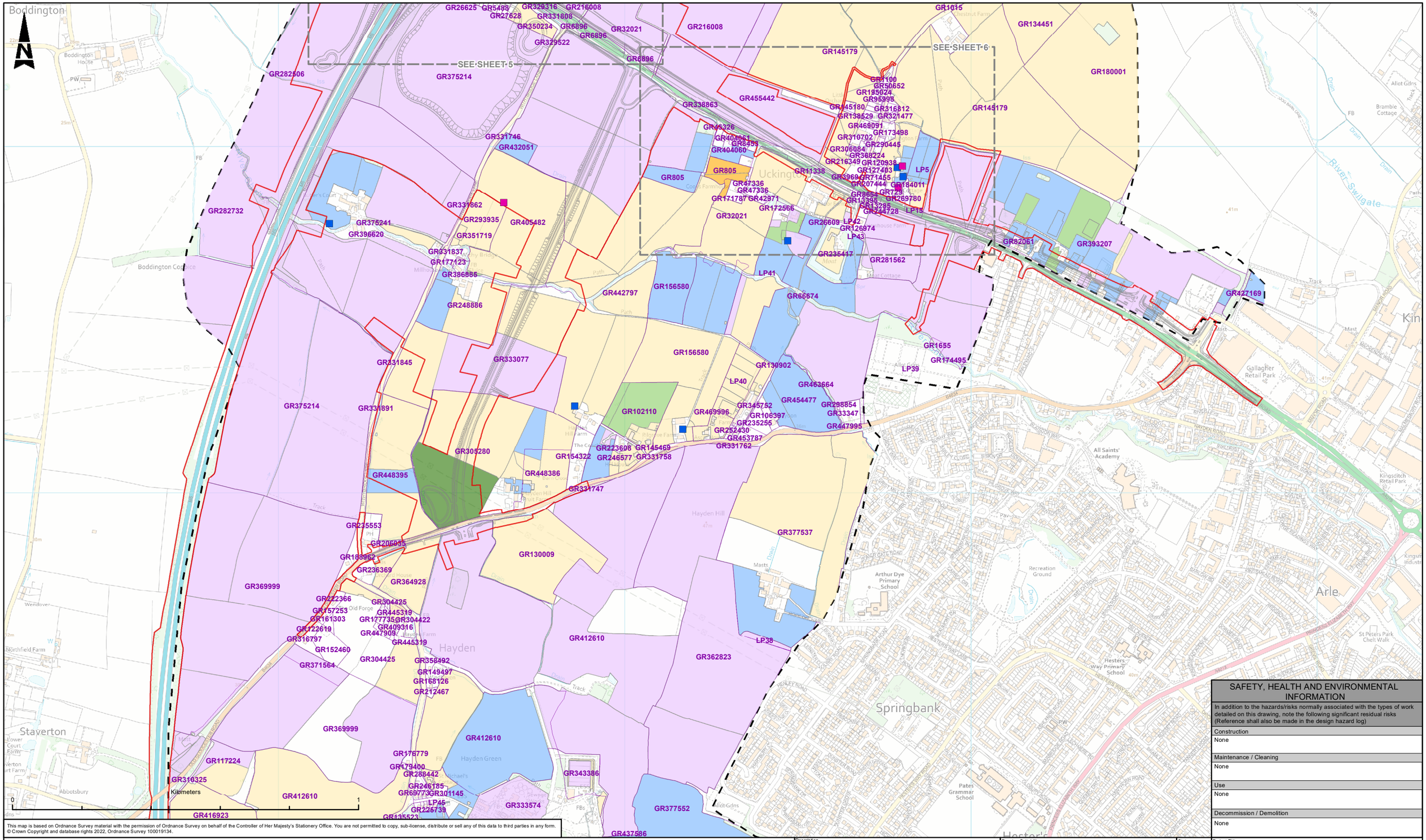

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LEGEND

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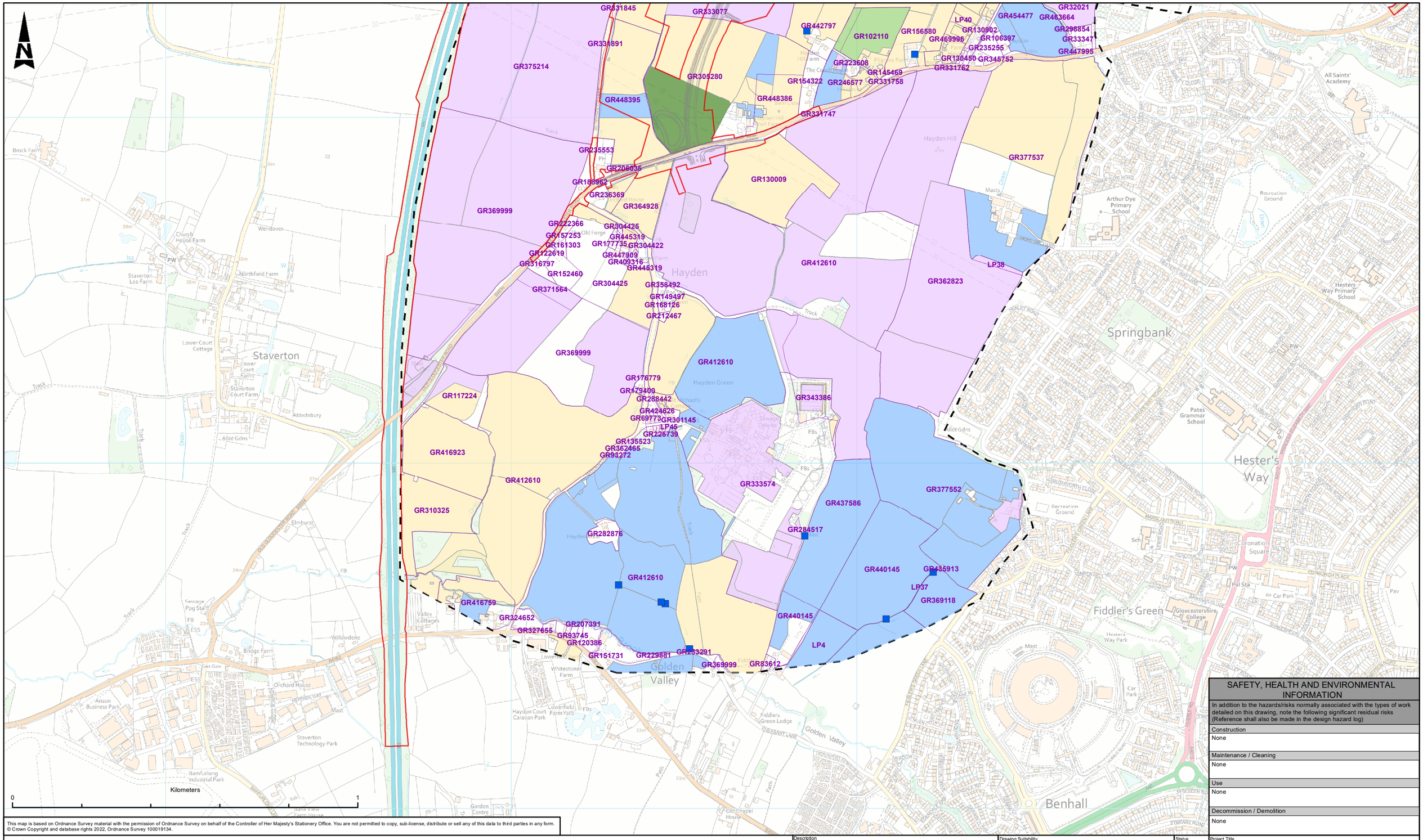

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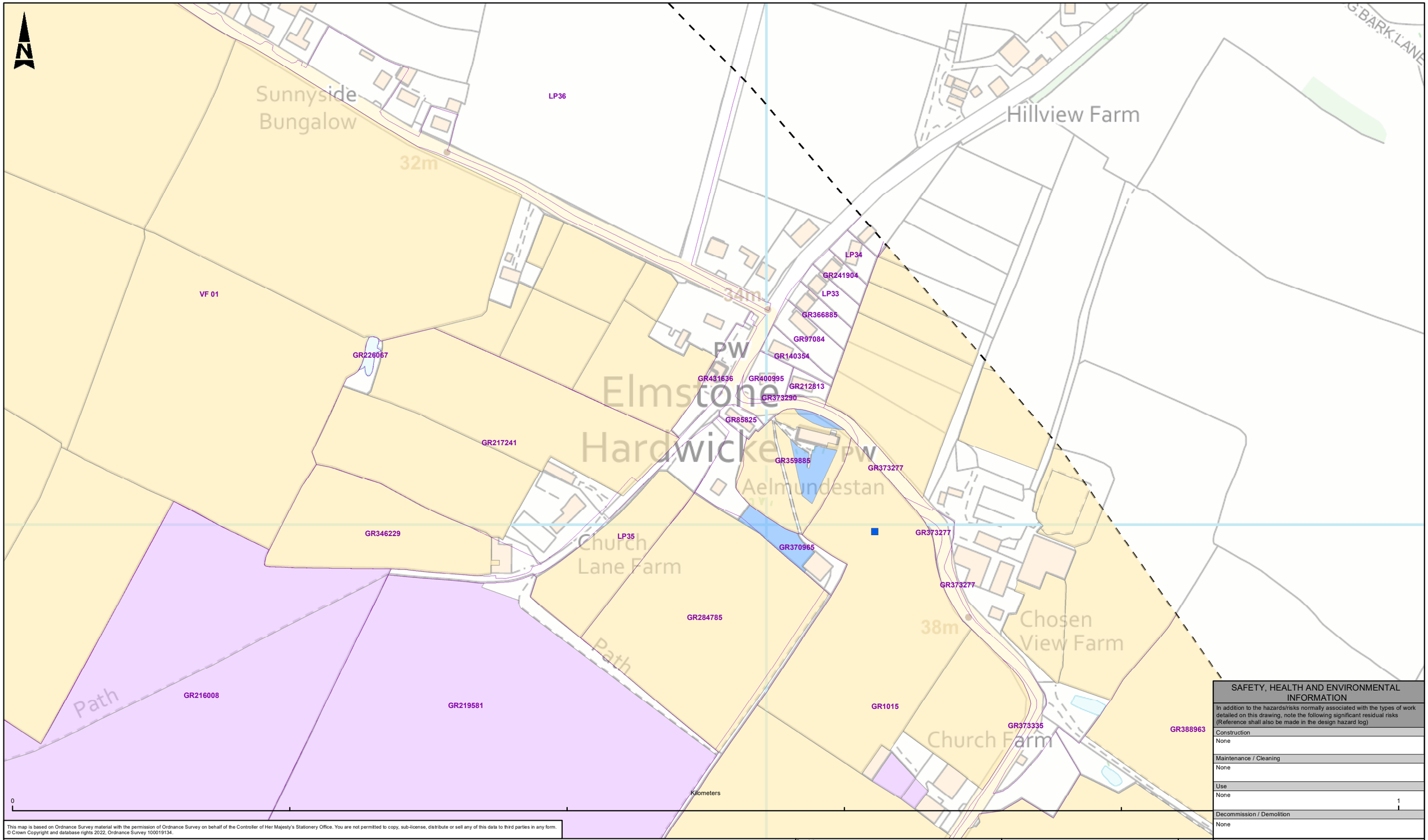

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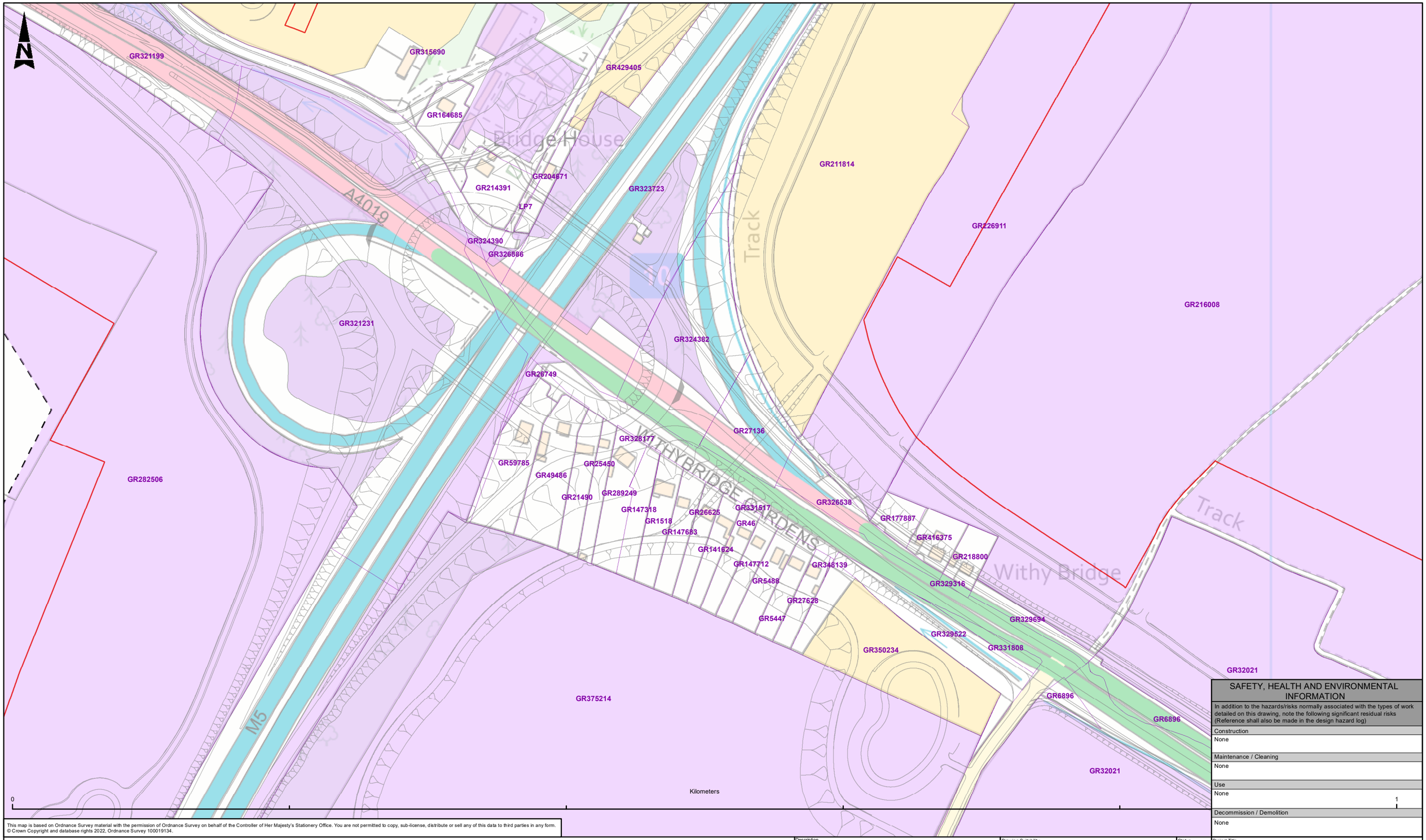

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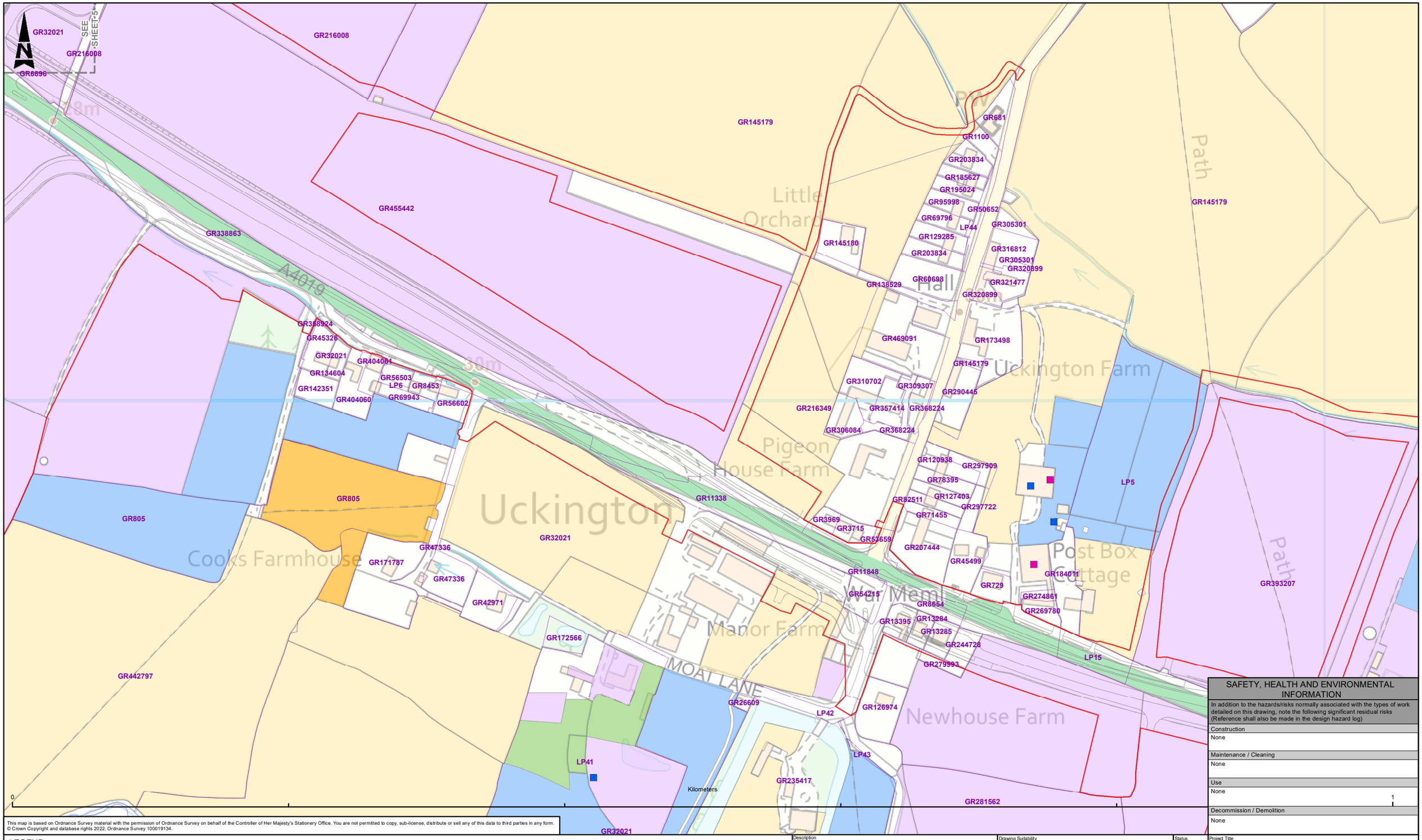

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