national highways

Lower Thames Crossing

9.152 Responses to the Examining Authority's ExQ2 Appendix G – 11. Biodiversity (Part 1 of 2)

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1 Introduction

1.1 Introduction

1.1.1 This document has been prepared by the Applicant to set out its responses to the ExQ2 - Examining Authority's (ExA's) written questions and requests for information (ExQ2) [**PD-040**].

1.1.2 These can be found in Tables set out under the following headings:

a. Climate Change and carbon emissions (Found in Appendix A)

b. Traffic and transportation (Found in Appendix B)

c. Air quality (Found in Appendix C)

d. Geology and soils (Found in Appendix D)

e. Tunnelling considerations (Found in Appendix D)

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h. Road Drainage, water environment and flooding (Found in Appendix F)

i. Biodiversity (Found in Appendix G)

j. Physical effects of development and operation (Found in Appendix H)

k. Social, economic and land-use considerations (Found in Appendix I)

l. The acquisition and temporary possession of land and rights (Found in Appendix J)

m. General overarching questions (Found in Appendix J)

2 Responses to the Examining Authority's ExQ2 11

PINS ID	Question to:	Question / Response
ExQ2_Q11.1.1	Applicant, Natural England	**Species surveys limitations** The Applicant's response to ExQ1 Q11.2.1 suggests that the mitigation proposals are based upon a "precautionary" approach. In the example, the Water Vole receptor site for the translocation of the mammals will only be used if there is a sufficient number to warrant its use and maintain a viable population. • Can the Applicant set out how mitigation will be achieved if numbers are not sufficient? • Is Natural England content that this alternative proposition can be accommodated within the construction phase without causing undue distress to the translocated population, particularly as there is a suggestion that it could involve multiple captures and releases?
		Response: The Applicant's mitigation proposals are designed to be proportionate to the likely significance of effect on ecological receptors reported in Environmental Statement Chapter 8: Terrestrial Biodiversity [**APP-146**], and follows the precautionary principle advocated in best practice guidance such as CIEEM 2018[1]. This approach is important on projects such as the Lower Thames Crossing, where the consenting and construction phases cover many years and require the provision of pre-construction surveys (secured under Requirement 7 of the draft Development Consent Order [**REP5-024**]) to ensure detailed design and relevant protected species mitigation licences are based on up to date information. Regarding the translocation of water voles to an appropriate receptor site, it is important that the number of individuals moved to a site is sufficient to either form a viable population (minimum 50 individuals) or is close enough to an existing population to allow genetic exchange. Should the number of water voles trapped as part of the Project's mitigation strategy meet this threshold, they would be released in a receptor site on the River Pant/Blackwater. If the number trapped does not reach that threshold, they would be released along the Mardyke where there are extant water vole populations. Due to the presence of the extant water vole population, if more than 50 animals were caught and required translocation then the carrying capacity on the Mardyke would be exceeded, which is why the offsite translocation site is the preferred receptor site.

[1] Chartered Institute of Ecology and Environmental Management (CIEEM) (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester.

PINS ID	Question to:	Question / Response
		This methodology has been developed in discussion with Natural England and is detailed in Section 4.2.38 of The Water Vole Mitigation Licence method statement Version 3 (currently under review by Natural England – see Natural England's Responses to comments on Written Representations [**REP3-193**], paragraph 1.9.1). Once water voles have been translocated to a receptor site, these animals would not then undergo any further translocation.
ExQ2_Q11.1.2	Applicant, Natural England, IPs with an interest in the natural	**Monitoring of success** • Do Natural England and other IPs agree that the proposals suggested in the Applicant's response to question Q11.5.2 provide a robust method of monitoring the success of species mitigation proposals? • Should aspects of the monitoring of the success of the proposed Green Bridges in relation to the use by the design species be undertaken alongside any monitoring required to meet Licence Applications? • In the document [**REP4-182**] the Applicant suggests that the oLEMP [**REP3-106**] refers to monitoring target habitats. Should the oLEMP be more specific in relation to species monitoring? • Over what time period should monitoring and subsequent mitigation and remedial action of different species, take place and are there natural, extreme weather events that justify extensions to the periods of assessment and replacement suggested? Can the Applicant set this information out in a table. • How could such be secured in the documentation?
		Response: The Applicant's proposed monitoring is set out in the relevant draft Natural England mitigation licences. This monitoring is detailed in Table 1 below and is based on construction commencing in 2024 – the start dates and years undertaken would be amended for the Natural England mitigation licences once the construction programme for the Project is confirmed; this is currently anticipated as 2026, following the ministerial statement earlier this year. These monitoring periods are secured within Environmental Statement Appendix 2.2: Code of Construction Practice [**REP5-048**]: Register of Environmental Actions and Commitments (REAC) Ref No TB015: '*Monitoring of protected species during and post-construction would be in line with the requirements of the protected species mitigation licence*.' The seasonal survey windows for protected species surveys are generally broad (e.g. bats – summer roosts are surveyed May to August, hibernation sites between November and March; great crested newts – six surveys between mid-March and 15 June; dormice – monthly between April to November; badger – can be undertaken year round; water vole – two surveys split between spring and early autumn). The long-term nature of the monitoring requirements (minimum of five years, maximum of 13 years – as indicated in Table

<table>
<tr><th>PINS ID</th><th>Question to:</th><th>Question / Response</th></tr>
<tr><td></td><td></td><td>G1.1 below) mean that ‘one off’ extreme weather events can be taken into account. They would not normally require additional survey work because if conditions are unsuitable at the time a survey is planned there is adequate scope to re-programme. If conditions are so extreme that no survey is possible this would be identified as a constraint at the time of submitting the licence return.

Table 1 Species monitoring periods
<table>
<tr><th>Species</th><th>Construction/post construction</th><th>Monitoring undertaken</th><th>Years undertaken</th></tr>
<tr><td>Badger</td><td>Construction</td><td>Ongoing monitoring programme</td><td>2025 – 2030</td></tr>
<tr><td></td><td>Post construction</td><td>Ongoing monitoring programme within the construction areas and monitoring of the artificial badger setts and compensation mitigation areas</td><td>2025 – 2030</td></tr>
<tr><td>Water vole</td><td>Construction</td><td>Ongoing monitoring programme to ensure adequate time to monitor Tilbury Main culvert</td><td>2026 – 2032</td></tr>
<tr><td></td><td>Post construction</td><td>Ongoing monitoring programme</td><td>5yrs post construction</td></tr>
<tr><td>Bats</td><td>Construction and post construction</td><td>Ongoing monitoring programme</td><td>2025, 2026, 2027, 2028, 2029, 2030, 2032, 2035</td></tr>
<tr><td>Dormouse</td><td>Construction and post construction</td><td>Ongoing monitoring programme</td><td>2027 – 2037</td></tr>
<tr><td>Great crested newt</td><td>Construction and post construction</td><td>Ongoing monitoring programme</td><td>2024 – 2037</td></tr>
</table></td></tr>
<tr><td>ExQ2_Q11.1.3</td><td>Applicant</td><td>Habitat creation, compensation and mitigation
The ExA recognise that mitigation and compensation measures will take time to develop and be effective. Can the Applicant explain how the proposed programming of the mitigation/compensation and enhancement works has been taken into account and relied upon in the assessments?</td></tr>
</table>

PINS ID	Question to:	Question / Response
		The Applicant is suggesting an approach to allow the detailed design phase flexibility. If the land-take currently highlighted as being necessary from designated sites and other habitats may be reduced at the detailed design stage, can the Applicant confirm that this would not result in mitigation as currently set out in the ES being reduced?
		Response: The Applicant has accounted for the delay in the creation and establishment of mitigation and compensation measures within the impact assessment as part of Environmental Statement (ES) Chapter 8: Terrestrial Biodiversity [**APP-146**]. In order to characterise the impact on an ecological receptor, a number of considerations are included: extent, magnitude, reversibility, timing, frequency and duration. This is in line with published best practice guidance for ecological impact assessment[2]. The duration aspect of the characterisation allows for the consideration of mitigation or compensation provision, for example, the period for habitat establishment when considered against the timing of habitat loss and how any species might be affected by that establishment period. An example of this establishment duration consideration is shown in the assessment of likely significant effects during the construction phase of the Project on terrestrial invertebrates (see paragraph 8.6.301 of ES Chapter 8: Terrestrial Biodiversity [**APP-146**] for full details): *'Loss of habitat due to construction works would take place in advance of habitat creation through mitigation measures, reducing the amount of available invertebrate habitat available for assemblages mentioned above on a temporary basis. This time lag would be further exacerbated by the newly created habitats taking time to mature, create habitat structure diversity and reach a similar quality to habitats lost. However, given the disturbed and ephemeral nature of open mosaic habitats, colonisation would be quick. Considering the proximity of created habitat to habitat lost and the speed at which new habitat can be colonised, the proposed habitat creation would compensate for the losses of terrestrial invertebrate habitats and reduce the residual impact on terrestrial invertebrates to a minor adverse level that would result in a slight adverse effect that is not significant in the medium to long term. A reversible temporary moderate adverse level of impact would persist on a short-term basis (approximately five years) between the time at which habitat clearance is undertaken and the establishment of the newly created habitats. This would result in a moderate adverse effect that is significant during that time.'*

[2] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester.

PINS ID	Question to:	Question / Response
		A further example of this establishment duration consideration relates to the impact of habitat loss on dormice (see paragraph 8.6.160 [**APP-146**]): *'The Project design and mitigation measures further described in Section 8.5 would result in habitats of greater connectivity and quality for dormouse in the medium to long term (after approximately five to 10 years of the habitat being created), which would maintain the favourable conservation status of the dormouse populations. The initial level of impact of habitat loss on dormouse would become reversible temporary negligible adverse at the opening year of the Project given the habitat creation proposed, changing to permanent minor beneficial after approximately 10 years. Given the timescale between initial habitat loss and new habitat establishing, the effects of habitat loss on the dormouse population, which is of county importance, are considered to be slight adverse and not significant.'* The Applicant has secured a number of design commitments which propose measures to retain and protect as much vegetation as reasonably practicable: Design Principles [**REP4-146**] Clause no LSP.01: '*All existing vegetation shall be retained as far as reasonably practicable in order to:* • *preserve its intrinsic ecological value* • *preserve the existing woodland character and pattern* • *preserve its function as a natural screen to the works* • *preserve the natural enclosed woodland settings for existing adjacent properties.'* Minimum areas of retained woodland and hedges are shown in the Environmental Masterplan sections 1&1A, 2, 3, 4, 9, 10, 11, 12, 13 and 14 [**REP4-124**, **REP3-098**, **REP2-018**, **APP-162**, **REP4-127**, **REP4-129**, **REP2-024**, **REP2-026**, **REP2-028** **and** **REP2-031**]. However, even outside these areas, existing vegetation shall be retained as far as reasonably practicable. Measures for the protection of retained vegetation during site clearance works are provided for in the Register of Environmental Actions and Commitments (REAC) commitment LV028 which is secured via ES Appendix 2.2: Code of Construction Practice [**REP5-048**]. Details relating to root protection for veteran or ancient trees are defined within the REAC commitment LV030. Also secured in ES Appendix 2.2: Code of Construction Practice [**REP5-048**]: REAC commitment LV001 ensures that: '*Detailed design for the Project, including diverted utilities, will aim to reduce the removal of trees and vegetation as far as reasonably practicable, and in accordance with the LEMP and the Environmental Masterplan (Figure 2.4, Application Document 6.2)*'.

PINS ID	Question to:	Question / Response
		The Applicant does not propose to amend or revise any habitat creation secured as essential mitigation or compensation provision in its application following any changes made during the detailed design process, even where detailed design measures have resulted in a reduction in impacts on important habitats.
ExQ2_Q11.1.4	Applicant	**Vegetation reinstatement** In 6.1 Environmental Statement - Chapter 14 - Road Drainage and the Water Environment [**APP-152**], paragraph 14.5.10 j suggests that " …. Bankside vegetation would be reinstated at culvert entries and exits following the completion of construction works as soon as conditions are suitable for planting (RDWE009) …. ". Can the Applicant confirm if the policy is to reinstate as soon as practicable following construction of the work or is there likely to be an end of contract 'catch-up' and that this was considered as the basis for the EIA?
		Response: The Applicant confirms that vegetation will be reinstated as soon as reasonably practicable following construction works. The type of planting is secured as a commitment in the Design Principles [**REP4-146**]: '*S9.10 Scattered wetland trees and scrub are to be reinstated along the existing watercourse network and to connect into existing features and patterns as defined in the Environmental Masterplan (Application Document 6.2, Figure 2.4*)' and the timing of planting is secured via the Code of Construction Practice [**REP5-048**]: '*RDWE009: Bankside vegetation would be reinstated at culvert entries and exits following the completion of construction works as soon as conditions are suitable for planting*.'
ExQ2_Q11.2.1	Applicant, Environmental Statutory Authorities, LLFAs	**West Tilbury Main Culvert** The comment provided within the Applicant's response to ExQ1 Q10.6.5 is noted; however Badgers are nocturnal animals who do not require good vision, being dependent on hearing and smell. It has been suggested that species that are more reliant on sight require to see the 'other' end of culverts etc, to give them the assurance they require to enter the darker confines. It is recognised that culverting can affect the ecological value of the watercourse, while inhibiting the migration of some species and consequently it is suggested in industry guidance documentation that the length of culverts etc should be as short as possible. While it is acknowledged that within the answer to ExQ1 Q11.6.1 the Applicant is proposing many features to minimise detrimental effects, can the Applicant, and other IP, provide documented evidence that a culvert length of the 46 metres proposed will not act as a migration barrier? If no guidance is available, are there examples where such a length of culvert of similar diameter etc has been proven not to act as a barrier or are there options to further reduce the length of culvert? If this is the case, what amendment will be required to be made to the submitted documentation?

PINS ID	Question to:	Question / Response
		• What is the maximum length of culvert for the diameter proposed that will not act as a barrier to species migration thereby isolating upstream catchments etc? • It is suggested that the number of culverts being highlighted within 7.5 Design Principles Document [**REP4-146**] as being designed to allow mammal passage and to be as short a length as possible is only one. It is the West Tilbury Main Culvert and is listed in Table 5.5 Clause No. S9.10. Can the Applicant confirm if this is the only location for such mitigation to be introduced?
		Response: *'While it is acknowledged that within the answer to ExQ1 Q11.6.1 the Applicant is proposing many features to minimise detrimental effects, can the Applicant, and other IP, provide documented evidence that a culvert length of the 46 metres proposed will not act as a migration barrier? If no guidance is available, are there examples where such a length of culvert of similar diameter etc has been proven not to act as a barrier.'* Successful fish passage through culverts requires adequate swimming space, water depth, appropriate water velocities and no physical or behavioural barriers within the culvert[3]. The correct physical and flow conditions can be provided through culvert design and the necessary measures are secured through the commitments that were detailed in response to ExQ1 Q11.6.1 [**REP4-194**]. There are no case studies on the effectiveness of provision of light chimneys/light wells in improving fish passage[4]. Provision of artificial lighting in culverts greater than 46m is recommended by some guidance[5]. However, on a recent project on the A96 in Scotland culverts greater than 50m were proposed and, due to a lack of evidence in relation to reduced light and barriers to fish passage, no light sources were included in the design. Instead, vegetation around the inlet and outlets was incorporated to reduce sudden light/dark interfaces. This was not challenged by the regulator Scottish Environment Protection Agency (SEPA). A review of the literature concludes that there is insufficient evidence to suggest length of a culvert would prevent migration. Water depth, velocity, and availability of resting areas are much more important factors. With regard to mammals using culverts, there is no guidance on the length of culvert that would present a barrier to movement. Studies on use of culverts are limited, but one study on the use of underpasses by

[3] Institute of Fisheries Management (n.d.). Fish Pass Manual.
[4] Environment Agency & Flood and Coastal Erosion Risk Management Research and Development Programme (May 2022) Culverts, Screens and Outfall Manual. https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/culvert-screens-and-outfall-manual
[5] California Department of Transportation (2007) Fish passage design for road crossings. https://dot.ca.gov/programs/design/manual-fish-passage-design-for-roadway-crossings

PINS ID	Question to:	Question / Response
		badgers found that tunnels longer than 50m were regularly used by badgers[6]. Due to the use of culverts of similar length on other projects, the Applicant does not consider that this 46m long culvert would provide a commuting barrier for mammals. *'Are there options to further reduce the length of culvert? If this is the case, what amendment will be required to be made to the submitted documentation?'* The Applicant has considered several alternative options for the crossing of the West Tilbury Main by the Project road, as evidenced in Annex C.6 of the Environment Agency Statement of Common Ground [**REP5-034**], which provides the minutes of a Choosing By Advantage workshop, in which the Environment Agency participated. The conclusions were that the adopted design represents the least damaging option and that no more favourable options are available for crossing this watercourse. The West Tilbury Main culvert will undergo detailed design and whilst opportunities to shorten the culvert further may be explored it is considered unlikely, on the basis of the current evidence, that any practical options to further reduce its length would be available. The application has therefore assessed a reasonable worst case and no amendments are therefore required to the submitted documentation. *'What is the maximum length of culvert for the diameter proposed that will not act as a barrier to species migration thereby isolating upstream catchments etc?'* As indicated above, there is no guidance or compelling evidence that a culvert above a particular length will act as a barrier to species migration. However, the literature review evidence presented above indicates that a culvert of 46m in length should not act as a barrier to the movement of fish or mammals. As noted above re fish and eels, a review of the literature concludes that there is insufficient evidence to suggest culvert length would prevent migration provided that the depth and velocity of flow through the culvert is suitable and that resting areas are available. With regard to other species the downstream drift of macrophyte seeds and invertebrate larvae would not be impeded through the culvert and the invert of the culvert would be buried below existing bed levels; natural bed materials would be maintained, so reducing loss of in-channel macroinvertebrate habitat. *'It is suggested that the number of culverts being highlighted within 7.5 Design Principles Document [**REP4-146**] as being designed to allow mammal passage and to be as short a length as possible is only one. It is the West Tilbury Main Culvert and is listed in Table 5.5 Clause No. S9.10. Can the Applicant confirm if this is the only location for such mitigation to be introduced?'*

[6] Eldridge B. & Wynn J. (2011). Use of badger tunnels on Highway Agency schemes in England. *Conservation Evidence*, 8, 53-57.

PINS ID	Question to:	Question / Response
		The Applicant commits to having mammal passages in all culverts as detailed in the Code of Construction Practice [**REP5-048**]: Register of Environmental Actions and Commitments (REAC) commitment RDWE044*: 'Culverts would incorporate ledges or underpasses to ensure continued passage of mammals'.* The location and design of mammal ledges and underpasses would be as detailed in Section 5 of Part 10 of Environmental Statement Appendix 14.6: Flood Risk Assessment [**APP-477**], which describes parameters such as mammal ledge widths and headroom allowances.
ExQ2_Q11.2.2	Applicant, Environment Agency, other IPs with interests in environmental performance and outcomes	**Culverting general** Table 4.10 Structural form of water crossings in Document 6.3 Environmental Statement - Appendix 14.6 - Flood Risk Assessment - Part 10 [**APP-477**] provides a list of various proposed culverts. • Can the Applicant confirm what are being introduced to prevent these culverts being 'environmental blackspots' through acting as barriers, reducing species movement, migration etc? How are relevant design measures being secured? • Can the Environment Agency, or other IPs, confirm that the proposed culverts listed in Table 4.10, referenced above, alongside the proposed mitigation, will not decrease the ecological value of the watercourses upstream from the culverts or that the Applicant has provided sufficient mitigation or alternative routes that minimises the risk of the upstream catchments becoming disjointed and isolated? • Where there is limited or no opportunity to provide sufficient mitigation or alternative routes that minimises the risk of the upstream catchments becoming disjointed and isolated due to the location of the watercourses to be culverted, can the Applicant explain why the modification of the surface water body should be accepted?
		Response: Can the Applicant confirm what are being introduced to prevent these culverts being *'environmental blackspots' through acting as barriers, reducing species movement, migration etc? How are relevant design measures being secured*? Where culverts cannot be avoided, sufficient mitigation has been provided that reduces the risk of these becoming barriers that prevent species movement and migration. A key design parameter that will achieve this is the burying of culvert inverts below existing bed levels to allow baseline bed levels, slopes and bed materials to be maintained, in turn reducing effects on existing flow and sediment transport regimes and effects on hydromorphology. This is secured by commitment RDWE013 in the Register of Environmental Actions and Commitments (REAC) within Environmental Statement (ES) Appendix 2.2: Code of Construction Practice [**REP5-048**].

PINS ID	Question to:	Question / Response
		Maintaining bed materials would reduce loss of in-channel macroinvertebrate habitat and maintaining flow regimes would prevent barriers to fish passage and allow the downstream drift of macrophyte seeds and invertebrate larvae to continue. In addition, bankside vegetation would be reinstated at culvert entries and exits following the completion of construction works as soon as conditions are suitable for planting, as secured by commitment RDWE009. This would prevent sharp light/dark interfaces, which the literature[7] suggests may contribute to a barrier effect. The Applicant commits to having mammal passages in culverts to allow for safe passage as detailed in ES Appendix 2.2: Code of Construction Practice [**REP5-048**], REAC commitment RDWE044*: 'Culverts would incorporate ledges or underpasses to ensure continued passage of mammals. The location and design of mammal ledges and underpasses would be as detailed in Part 10 of ES Appendix 14.6, Flood Risk Assessment (Application Document 6.3).'* *Where there is limited or no opportunity to provide sufficient mitigation or alternative routes that minimises the risk of the upstream catchments becoming disjointed and isolated due to the location of the watercourses to be culverted, can the Applicant explain why the modification of the surface water body should be accepted?* The Applicant has sought to avoid culverting through design, for example, the Mardyke and its tributaries the Golden Bridge and Orsett Fen Sewers would be spanned by viaducts. In other locations, long watercourse diversions would be needed to avoid culverting, and the preference in these cases is for a culvert that is as short as practicable, and that is designed sympathetically to maintain existing channel slopes, flow regime, etc. This avoids the potential for transferring flows between catchments and reduces overall disturbance to watercourse channels associated with long channel diversions, for example, making it easier to maintain existing channel gradients and profiles. Of the eight proposed culverts on ordinary watercourses, as detailed in Table 4.1 of the ES Appendix 14.4: Hydromorphology Assessment [**APP-457**], five were screened out of the assessment because the watercourses do not support a permanent flow system, have a channel width of less than 1m, and exhibit no natural features or processes. The screening decisions taken were reviewed and approved by the Environment Agency as detailed in correspondence dating to August 2020. This rationale provides justification for these surface waterbodies being modified by culverts as there is no practicable alternative.

[7] Jacobs (2019) A96 Dualling Inverness to Naim. Assessment of Fish Passage Through Culverts with Low Light Levels.

PINS ID	Question to:	Question / Response
ExQ2_Q11.2.3	Applicant	**Culverting general** In the DMRB, CD 529 - Design of outfall and culvert details suggests in section 3.5.1 that '…. The minimum culvert diameter should be 450 mm as smaller sizes are prone to blockage …. ', however twin 300 mm diameter culverts are proposed at Crossing Reference X-EFR-5-01. The decision is based upon hydraulic requirements to reduce their length to 87 metres. Where are the measures that are proposed to reduce the potential for blockage and where are these listed and secured?
		Response: Twin 300mm diameter culverts are proposed at Crossing Reference X-EFR-5-01 in preference to a 450mm diameter culvert, due to space constraints, and as noted above in the question, hydraulic requirements. This is a permitted derogation under DMRB CD 529. These 300mm diameter culverts will be subject to inspection and maintenance measures secured by commitment RDWE014 in the Register of Environmental Actions and Commitments (REAC), within Environmental Statement Appendix 2.2: Code of Construction Practice [**REP5-048**]. Commitment RDWE014 secures that culverts would be inspected and maintained, in accordance with Design Manual for Roads and Bridges (DMRB) CS 450[8], GS 801[9] and GM 701[10], as applicable. Where there are any additional specific inspection or maintenance requirements these would be documented in the Maintenance and Repair Statement. Regular inspection and maintenance will ensure any potential blockages are identified and rectified in a timely manner.
ExQ2_Q11.2.4	Applicant	**Definitions** Within 3.1 Draft Development Consent Order [**REP5-024**], in the section 'Interpretation' clause 2 the definition of "watercourse" the term includes all 'drains' excepting a public sewer or 'drain'. In Schedule 14, Part 3 clause 19 an "…. "ordinary watercourse" has the meaning given by section 72 (interpretation) of the Land Drainage Act 1991 ….", yet in Part 9 of that same schedule clause 117 defines a "watercourse" in a similar manner to the definition in clause 2 yet only the public sewer is excepted.

[8] Highways England (2021). DMRB CS 450 – Inspection of highway structures. https://www.standardsforhighways.co.uk/search/c5c2c3e5-f7f3-4c94-8254-184e41ccd1a0
[9] Highways England (2020). DMRB GS 801 – Asset delivery asset inspection requirements. https://www.standardsforhighways.co.uk/search/6b558352-5c85-4725-b5f2-f796f53d63a8
[10] Highways England (2020). DMRB GM 701 – Asset delivery asset maintenance requirements. https://www.standardsforhighways.co.uk/search/e0a134c8-f5e2-4f30-9cda-9e43d047f46e

PINS ID	Question to:	Question / Response
		• Why is the definition of a "watercourse, ordinary watercourse, main river and culvert etc" not referred to the definition contained in section 72(1) of the Land Drainage Act 1991? • What differences would it make to the submitted documentation? • Additionally, Local Authority, Internal Drainage Boards and The Environment Agency can operate under permissive powers with respect to watercourses without necessarily owning the watercourses etc. What changes are required in the Development Consent Order [**REP5-024**], in order to reflect this position?
		Response: *'Why is the definition of a "watercourse, ordinary watercourse, main river and culvert etc" not referred to the definition contained in section 72(1) of the Land Drainage Act 1991?'* The Applicant notes the reference made by the Examining Authority to words defined in section 72 of the Land Drainage Act 1991 (the 1991 Act) and separately defined in the draft Development Consent Order (DCO) [**REP5-024**]. 'Watercourse' is defined in the interpretation article of the draft DCO (article 2), as well as the Protective Provisions (Schedule 14) for Drainage Authorities (Part 3) and the Environment Agency (EA) (Part 9). Article 2 defines 'watercourse' for the purposes of the powers in the draft DCO in relation to watercourses at articles 18 (Powers in relation to relevant navigations or watercourses) and 19 (Discharge of water). This definition replicates the provisions of the 1991 Act but includes additional words (e.g. canal or winterbournes) to expressly reflect the factual situation within the Order Limits, ensuring that the powers in the draft DCO can apply to those areas. Without these additions, the Applicant's use of the above powers over, e.g. a canal or winterbourne, would not be certain. The definitions of 'ordinary watercourse' used in the Protective Provisions for Drainage Authorities (Schedule 14, Part 3) and 'main river' in the Protective Provisions for the EA (Schedule 14, Part 9) differ from 'watercourse' in article 2 due to the context. Drainage authorities have powers in respect of ordinary watercourses whereas the EA have powers in respect of main rivers. The definitions of both of these terms broadly replicate the definitions used in the 1991 Act. The differences between the definition of 'watercourse' in article 2 and the Protective Provisions for the EA (e.g. basins) arise out of the EA's requirements. These provisions were supplied by and have been agreed with the EA. The minor differences ensure there is certainty over which areas the EA consider the Protective Provisions (without reference to other powers in the draft DCO) should apply to on every scheme. The Applicant understands that the EA's provisions are generic and it seeks similar protection across all DCOs.

PINS ID	Question to:	Question / Response
		'What differences would it make to the submitted documentation?' Adopting the definitions only from the 1991 Act would limit the protections given to the EA in their Protective Provisions (despite these already being agreed), and limit the Applicant's ability to exercise powers in articles 18 and 19. The Applicant therefore does not consider it necessary or appropriate to make any amendments. The Applicant is not aware of any other submitted documentation that would need to be amended and has confirmed with its environmental team that no assessments would be impacted as the proposed mitigation for works is not based on a single definition of 'watercourse'. *'Additionally, Local Authority, Internal Drainage Boards and The Environment Agency can operate under permissive powers with respect to watercourses without necessarily owning the watercourses etc. What changes are required in the Development Consent Order [REP5-024], in order to reflect this position?'* The Applicant does not consider any amendments necessary to the draft DCO. Whilst the Examining Authority correctly identifies the existence of permissive powers, the Applicant's works to watercourses are controlled by the Protective Provisions. Those provisions are agreed with the EA and some of the drainage authorities already, and accordingly it would not be necessary to amend these provisions further.
ExQ2_Q11.2.5	Applicant	**Green bridges** In the response at Deadline 4, Natural England [**REP4-324**] has provided the following table:

PINS ID	Question to:	Question / Response

The Design Principles also provide details of the minimum width of the green elements to be provided on each bridge which are as follows:

Bridge	Total width of green element
Brewers Road (Clause S1.17)	11.5 metres (10 metres planting zone to the east, 1.5 metres to the west)
Thong Lane South (Clause S2.12)	21.5 metres (20 metres planting zone to the east, 1.5 metres to the west)
Thong Lane North (Clause S3.18)	Unknown 'The planting green zones shall be maximised. Their width shall vary across the length of the bridge but shall have a 7m minimum width at pinch points. The WCH routes may be located within the planting zones'
Muckingford Road (Clause S10.10)	14 metres (7 metres planting zone to the east, 7 metres to the west)
Hoford Road (Clause S10.11)	6 metres (3 metres planting zone to the north, 7 metres to the south)
Green Lane (Clause S11.11)	6 metres (3 metres planting zone to the east, 3 metres to the west)
North Road (Clause S12.18)	14 metres (7 metres planting zone to the east, 7 metres to the west)

Natural England also suggests that for mixed use bridges, their width should be determined by adding up the widths required to meet various needs. Within the 'DMRB CD 127 Cross-sections and headrooms' the standard verge width shown for rural all-purpose roads, alongside others, where noted, lies between 1.5 and 2.5 metres. This width can be augmented by the need for additional drainage provision etc. These are similar widths to the green elements to be provided on sections of the bridges.

- While it is accepted that roadside verges can be sanctuaries for wildflowers, pollinating insects, reptiles, amphibians and small mammals, can the Applicant confirm how the bridges are to satisfy the biodiversity outcomes expected, and not become utilised as verges?
- Can the Applicant provide examples of similar arrangements for other schemes and information regarding the success or failure of the design?
- What will be the Advisory Group's role in scrutinising the potential contractors to ensure that they have the appropriate experience and where is this secured?

PINS ID	Question to:	Question / Response
		• Should more clarity be contained in the oLEMP, with respect to the establishment and management of the green elements? What changes would be required to the documentation and Order Limits in order to meet the current good practice recommendations suggested by Natural England [**REP4-324**]?
		Response: '*While it is accepted that roadside verges can be sanctuaries for wildflowers, pollinating insects, reptiles, amphibians and small mammals, can the Applicant confirm how the bridges are to satisfy the biodiversity outcomes expected, and not become utilised as verges?*' The Applicant confirms that the mitigation planting areas on all the Project's green bridges are in addition to, and/or separate from, any highway standard 'verges' in locations where verge requirements are included within the green bridge designs. Separating these planting types within the design layout of the green bridges ensures that, where highway verges are required, the planting for mitigation cannot be attributed to or confused with highway verges. The term 'verge' merely defines an area of planting at the edge of a road or path, and so it could be argued the entirety of planting on the green bridge is in effect 'verge habitat'. However, the main planting zones, as defined in the Design Principles [**REP4-146**], are set back from the carriageway, behind vehicle restraint systems to prevent vehicles directly impacting the area of mitigation planting. In addition to these planting zones on the green bridges, there are separate areas defined as verges which either support walkers, cyclists and horse riders (WCH) provision or provide narrow areas of roadside planting – typically grass. The purpose of the planting zones is to provide suitable safe, separate, crossing habitat for mobile species to use; to provide a biodiversity enhancement for the existing crossings to help integrate the bridges into the woodland and other habitats adjacent to the A122 Lower Thames Crossing which would be fragmented as a result of the Project; and to enhance user experience for WCH, as defined in the Design Principles [**REP4-146**] in clauses STR.08, S1.04, S1.17, S2.04, S2.12, S3.18, S10.01, S10.03, S10.10, S10.11, S11.11, S12.13, S12.16 and S12.18. User experience will be enhanced by having a separate crossing (generally separated by a hedgerow or line of planting), away from the traffic using the main road crossing. The management requirements for the areas of planting on the green bridges are secured via the outline Landscape and Ecology Management Plan [**REP4-140**] – Section 5.6 (Brewers Road, Thong Lane over the A2 [Thong Lane South] and Thong Lane over Lower Thames Crossing [Thong Lane North]), Section 6.7 (Muckingford Road, Hoford Road and Green Lane) and Section 7.6 (North Road) – where specific management practices have been identified for each of the green bridges and the different habitats they would support to ensure they meet the defined measures of success for the habitat types that they support.

<table>
<tr><th>PINS ID</th><th>Question to:</th><th>Question / Response</th></tr>
<tr><td></td><td></td><td>‘Can the Applicant provide examples of similar arrangements for other schemes and information regarding the success or failure of the design?’
The Applicant outlined the green bridges currently either constructed or about to go into construction following grant of Development Consent Orders (DCOs) for National Highways projects in Deadline 4 Submission - 9.86 Post-event submissions, including written submission of oral comments, for ISH6 [REP4-182]; this is replicated below for ease of reference, with the addition of information regarding the HS1 green bridges that LTC green bridges at Thong Lane South and Brewers Road would connect to.

Table 2 Examples of green bridges in the UK, focusing primarily on those provided for highway projects and including details of the two HS1 green bridges that would be linked to the proposed LTC green bridges
<table>
<tr><th>Scheme</th><th>Description</th><th>Reference / location</th></tr>
<tr><td>A21 Scotney Castle</td><td>Bridge is 92m long, 29m at its narrowest point and 55m at its widest. Constructed in 2005.</td><td>Near Lamberhurst village, Kent</td></tr>
<tr><td>HS1 Thong Lane Green Bridge</td><td>Bridge is 20m wide with approx. 13m of green planting.</td><td>South of Thong Lane</td></tr>
<tr><td>HS1 Brewers Road Green Bridge</td><td>Bridge is 50m wide with approx. 35m of green planting.</td><td>South of Brewers Road</td></tr>
<tr><td>Mile End Green Bridge</td><td>25m width of landscaped parkland.</td><td>Mile End, London</td></tr>
<tr><td>A566 Knutsford to Bowden Scheme</td><td>11m green bridge comprising a farm track and 7m green verge. Consent granted August 2014.</td><td>West of Mere, Cheshire</td></tr>
<tr><td>Weymouth Relief Road (x3 Lorton Lane bridge, Ridgeway bridge and South Down bridge)</td><td>Adapted road and farm access. Greened for enhancement rather than for specific habitat mitigation.</td><td>North of Weymouth, Dorset</td></tr>
<tr><td>A30 Chiverton to Carland Cross Scheme</td><td>Features planting and hedgerows designed to help badgers, voles and other creatures cross the road as well as a footpath and bridleway. Consent granted February 2020.</td><td>Over Marazanvose section of A30, Cornwall</td></tr>
</table></td></tr>
</table>

PINS ID	Question to:	Question / Response

A417 Missing Link	Three green bridges proposed as part of the scheme. Consent granted November 2022.	Between Brockworth bypass and Cowley roundabout in Gloucestershire
M25 junction 10/A3 Wisley interchange improvement	Cockcrow heathland bridge. Proposed heathland green bridge with WCH provision. Consent granted May 2022.	M25 junction 10, near Wisley, Surrey and A3 between Cobham/Byfleet and Ripley/Ockham

The A556 Knutsford to Bowden Scheme's green bridge, which opened in 2017, comprises an '*11m green bridge with a farm track and a 7m green verge*'[11]. The A417 Missing Link[12] (currently under construction) includes two multi-functional green bridges: Cowley Overbridge that supports a 3m wide grass verge with a native species rich hedgerow and Stockwell Overbridge that provides two 3m wide verges each with a native species rich hedgerow, as well as the more substantial 'landscape scale' Gloucestershire Way green bridge which includes a 25m wide area of calcareous grassland and two native species-rich hedgerows three metres wide and at least 2m high (which is more akin to the 84m wide Thong Lane North green bridge over the Project). Also currently in construction is the A30 Chiverton to Carland Cross project which is delivering a '*20m wide green bridge* [to] *serve as both habitat and crossing for a huge variety of species whilst also enabling greater connectivity and biodiversity across the area*'[13].

Based on the precedent set by the recently consented projects above, the green bridge provision for the Project aligns with mitigation proposals for similar levels of habitat fragmentation that were identified for these highways projects.

Of the seven projects with green bridges identified above, two are in pre-construction/early construction phases (M25 junction 10/A3 interchange and the A417 Missing Link) and one (the A30 Chiverton Cross to Carland Cross) is in the later stages of construction and is on target to be completed between mid-December 2023 and the end of March 2024, so no data is available yet on the success or otherwise of the green bridges.

[11] Natural England (2015). Green Bridges. A literature review. https://publications.naturalengland.org.uk/file/6296975990325248
[12] Highways England (2022). A417 Missing Link. Appendix 2.1: Environmental Management Plan. https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010056/TR010056-001595-National%20Highways%20-%206.4%20Environmental%20Management%20Plan%20(EMP)%20(Clean)%20-%20Rev%203.pdf
[13] Department for Transport (2020). Road Investment Strategy 2: 2020–2025. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951100/road-investment-strategy-2-2020-2025.pdf

PINS ID	Question to:	Question / Response
		The A556 Knutsford to Bowden scheme, opened in 2017, had been designed to provide a safe crossing point for badgers and bats as well as accommodating a farm access track. Detailed post-opening evaluation for this structure is not yet available. The Weymouth relief road, which opened in January 2012 has three green bridges which provide landscape, recreational and biodiversity benefits including areas of chalk grassland. The A21 Scotney Castle green bridge is a well-documented example and one of the earliest green bridges to be constructed in the UK, opening in 2005 designed primarily for landscape and heritage benefits but also providing suitable habitat connectivity for protected species with surveys confirming use by dormice. The Mile End pedestrian green bridge in London opened in July 1999. '*What will be the Advisory Group's role in scrutinising the potential contractors to ensure that they have the appropriate experience and where is this secured?*' The terms of reference for the Advisory Group are defined in the outline Landscape and Ecology Management Plan (oLEMP) Appendix 1: LEMP Terms of Reference [**APP-491**]; this includes assurance of the LEMP and its implementation and ongoing decision making throughout the duration of the LEMP, as required. It does not provide scrutiny of potential Contractors, which is governed by the Applicant's tendering process which has been designed to ensure that appropriately qualified bidders are appointed. The Advisory Group membership would comprise the following senior executive representatives: • Contractors • Owners of land that is subject to restriction via the LEMP • Local planning authorities • The Applicant • Natural England • Other relevant groups This will ensure that direct communication with Contractors is available to discuss any concerns regarding the implementation of the LEMP or to flag any issues and seek an appropriate resolution. '*Should more clarity be contained in the oLEMP, with respect to the establishment and management of the green elements?*' The Applicant's position is that the outline Landscape and Ecology Management Plan [**REP4-140**] provides sufficient detail regarding the required establishment periods in Table 4.1 and management requirements relating to the habitats types that are included within the planting zones for the green bridges. The outline management requirements are identified in Section 5.6 (Brewers Road, Thong Lane over the A2 [Thong

PINS ID	Question to:	Question / Response
		Lane South] and Thong Lane over Lower Thames Crossing [Thong Lane North]), Section 6.7 (Muckingford Road, Hoford Road and Green Lane) and Section 7.6 (North Road). Section 8 describes the outline management prescriptions for habitat creation and/or management actions, timescales and measures of success for each of the proposed typologies contained within the management areas. It is the role of the LEMP to develop the detail. Requirement 5 of Schedule 2 of the DCO [**REP5-024**] sets out that the LEMP must be substantially in accordance with the oLEMP, include the details at requirement 5(2) and will be approved in writing by the Secretary of State prior to the opening of the relevant part. '*What changes would be required to the documentation and Order Limits in order to meet the current good practice recommendations suggested by Natural England [**REP4-324**]?*' The Applicant does not agree with Natural England's assertion, regarding green bridge proposals for planting zones 'below the minimum 20 metres of habitat in one block meaning they are unlikely to function'. Evidence in the recently published Bat Mitigation Guidelines[14] and IENE Handbook Wildlife & Traffic[15] indicates that where specific landscape features are being replicated this is more important than the width of structure, whilst acknowledging that wider crossings have higher levels of usage than narrower ones for particular species. For European examples, where green bridges, also known as 'overpasses', are more common, the IENE Handbook Wildlife & Traffic has reviewed the suitability of different types of green bridge, which are appraised on a 'species group' status (see Table 7.4.3: Suitability of different types of wildlife passages for a selection of species or groups of species) and confirms that for bats and badgers multi-use overpasses are an optimum solution, and that multi-use overpasses can also be used with some adaptation to local conditions for dormice. In Table 7.4.4 – Recommended minimum dimensions for different types of wildlife passages. Ranges are based on guidelines which apply in different European countries derived from local monitoring. – Multi-use overpasses have the following recommended minimum dimensions (based on case studies): width between 10–20m, with a width to length ratio of >0.6 – 0.8 where '*width is the total width of the structure including earthen/vegetated strips. Earthen/vegetated strips both side of trails/small roads: 1–2m'*. The minimum planting zone or vegetated strips for the Project's green bridges are as follows: 1.5m where there is an offset with a significantly wider planting zone of 10m to 20m (Brewers Road and Thong Lane South green bridges respectively) but where symmetrical planting is proposed this ranges from a minimum of 3m each side of the track/footpath (Hoford Road and Green Lane)

[14] Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield. https://cieem.net/resource/uk-bat-mitigation-guidelines-2023/
[15] Infrastructure & Ecology Network Europe (IENE) (2022). 7.4 Reducing barrier effect: wildlife passages – Handbook wildlife & traffic. https://handbookwildlifetraffic.info/ch-7-solutions-to-reduce-transport-infrastructure-impacts-on-wildlife/7-4-reducing-barrier-effect-wildlife-passages/

PINS ID	Question to:	Question / Response
		to 7m either side of a local road (Muckingford Road and North Road). As can be seen this is in line with the IENE recommendations for multi-use overpasses. The Applicant agrees that the A21 Scotney Castle bridge is an exemplar example; however, it was designed to meet very specific requirements which do not apply to the green bridge provision proposed for the Project and this has not been the approach taken for many recently consented highway projects where designs have sought to provide bespoke connectivity for specific species/habitats appropriate to the severance impact (e.g. reprovision of conditions that are being lost as a result of the project). Widening all except two of the Project's green bridges that currently provide this level of planting, to accommodate a 20m planting zone, would introduce new impacts for highways design where bridges intersect with on/off slips, likely extension to construction timescales and duration of road closures, utility diversions (since many utilities cross the A122 via bridge structures or run parallel to the new road), as well as additional impact to landowners through additional permanent acquisition of land and/or potential widening of the Order Limits (e.g. Hoford Road green bridge, North Road green bridge) and potential additional impacts on designated habitats (Brewers Road green bridge) and other environmental impacts (e.g. landscape and visual and cultural heritage particularly, but also additional impacts on agricultural land).
ExQ2_Q11.2.6	Applicant	**Green bridges** The Applicant stated during the ISH6 Hearing that the green bridges' locations were selected where evidence of species crossing was noted during the surveys. Can the Applicant provide more detail on the background to this statement, and/or signpost the location(s) in the existing document set where this information is set out?

PINS ID	Question to:	Question / Response
		Response: A summary of the requirement for green bridges is set out in Environmental Statement (ES) Chapter 8: Terrestrial Biodiversity, Section 8.5, paragraphs 8.5.8, sub paragraphs a-e [**APP-146**]. The Applicant provided this in a written response in its Post-event submission, including written submission of oral comments, for Issue Specific Hearing 6 (ISH6) [**REP4-182**], Item 4(a) purpose of green bridges and Annex B, Section B.3: Clarity on the purpose of the Green Bridges in this Project. In terms of specifics, the green bridges are intended to provide habitat linkages as well as reducing either new or existing habitat fragmentation effects. The rationale for the proposed mitigation in relation to habitat fragmentation is discussed in relation to both construction and/or operational impacts, as appropriate, in Section 8.6 of ES Chapter 8 [**APP-146**]. Primarily green bridges are proposed where the intention is to connect habitats in locations where they would otherwise be severed and/or to provide safe crossing points for species in locations which have been highlighted through the ecology surveys as providing important crossing locations for animals (e.g. bat flightlines, or where existing territories are severed, e.g. badger) or to facilitate improved connectivity between otherwise separated populations (e.g. dormice populations either side of the A2). More detail regarding the *primary* rationale for green bridge locations can be found below. The Applicant notes that the structures would potentially benefit other terrestrial species (e.g. reptiles, small mammals, amphibians, invertebrates, etc.), but that they have not been identified from surveys as the key driver for provision of green bridges at the chosen locations identified below. South of the river – green bridge provision: • Brewers Road and Thong Lane south – both of these green bridges have been designed to connect the woodland to the north and south of the A2. Primarily, these green bridges have been designed to connect for dormouse, and to mitigate for the loss of any bat commuting routes over the A2 which might have been using the island of woodland planting between the two carriageways as a hop-over (see ES Chapter 8: Terrestrial Biodiversity [**APP-146**] paragraphs 8.6.159 and 8.6.166, paragraph 8.6.475, paragraphs 8.6.150 to 8.6.151, and paragraphs 8.6.469 and 8.6.474). • Thong Lane north – this has been designed to connect the ancient woodland of Claylane Wood and Shorne and Ashenbank Woods Site of Special Scientific Interest (SSSI) (see ES Chapter 8: Terrestrial Biodiversity [**APP-146**] paragraph 8.6.9 and Table 8.29). North of the river – green bridge provision: Muckingford Road – this green bridge has primarily been designed to connect badger territories in this location. A number of latrines and a main sett were located in close proximity (see ES Figure 8.29: Badger Survey Results [**APP-290**]).

<table>
<tr><th>PINS ID</th><th>Question to:</th><th>Question / Response</th></tr>
<tr><td></td><td></td><td>Hoford Road – this green bridge was primarily designed for use by commuting bats. This area had the second highest number of bat passes of any crossing point (of 21 crossing locations) (see Section E3.4 of ES Appendix 8.16: Draft EPS Mitigation Licence Application – Bats [APP-408]). In addition, a number of latrines and a main sett were located in close proximity, so this green bridge was designed to allow for connectivity for badgers (see ES Figure 8.29: Badger Survey Results [APP-290]).

Green Lane – this green bridge was primarily designed for use by commuting bats. This area had the sixth highest number of bat passes of any crossing point (of 21 crossing locations) (see Section E3.4 of ES Appendix 8.16: Draft EPS Mitigation Licence Application – Bats [APP-408]).

North Road – this green bridge was primarily designed for use by commuting bats. Although the recorded number of bat passes was relatively moderate (ninth highest of 21 crossing locations), it was noted that there are limited crossing locations at this point and connecting the Wilderness with habitat south of the Project would mitigate impacts on the wider bat population (see Section E3.4 of ES Appendix 8.16: Draft EPS Mitigation Licence Application – Bats [APP-408]).

To address concerns raised regarding the effectiveness of the connectivity for wildlife, specifically in relation to Thong Lane south and Brewers Road green bridges, the Applicant is proposing to include two new Design Principles, as detailed below, to further enhance connectivity for wildlife between habitat north and south of the A2 corridor:

<table>
<tr><td>S1.23</td><td>Brewers Road green bridge:
Habitat connectivity</td><td>A mammal culvert shall be provided at the north side of the bridge, between the existing and new bridge abutments. The culvert shall be designed to allow mammal passage and adequate space for maintenance and inspection. The culvert structure shall be designed to integrate into the surrounding landscape.</td></tr>
</table>

<table>
<tr><td>S2.14</td><td>Thong Lane green bridge south:
Habitat connectivity</td><td>A mammal culvert shall be provided southwest of the bridge, under the southern connector road. The culvert shall be designed to allow mammal passage and adequate space for maintenance and inspection. The culvert structure shall be designed to integrate into the surrounding landscape.</td></tr>
</table>
</td></tr>
<tr><td>ExQ2_Q11.3.1</td><td>Applicant</td><td>Post-consent surveys

If it is accepted that the species surveys have been limited but provide a basis on which the worst-case scenario may be assessed, it must therefore be accepted that, as many IPs have suggested, revised surveys are required to validate previous surveys etc prior to detailed design and construction phases of the project.</td></tr>
</table>

PINS ID	Question to:	Question / Response
		It is noted that within Document 6.3 ES Appx 2.2 - CoCP, First iteration of Environmental Management Plan v4.0 [**REP5-049**] there are a number of updates being specifically offered; however there appears to be no reference to species surveys. • Can the Applicant confirm that all necessary protected species assessments are updated where appropriate prior to any site clearance or construction works commencing and identify where this commitment is secured in the control documents? • What risk exists that, when further surveys are undertaken, further mitigation works are required, and in which areas? Are there any potential risks to the need to increase the Order Limits?
		Response: *'Can the Applicant confirm that all necessary protected species assessments are updated where appropriate prior to any site clearance or construction works commencing and identify where this commitment is secured in the control documents?'* The Applicant confirms that the commitment to protected species surveys being undertaken prior to the start of construction is secured within the draft Development Consent Order (DCO) at Requirement 7 [**REP5-024**]. Pre-construction surveys will be undertaken to ensure robust baselines are available to support detailed design of protected species mitigation strategies, including licensable species. Surveys will be timed to provide updated baseline data from the season prior to the start of construction works which aligns with the standard requirements when applying for protected species licences. *'What risk exists that, when further surveys are undertaken, further mitigation works are required, and in which areas? Are there any potential risks to the need to increase the Order Limits?'* • It is not anticipated that the Project Order Limits would require any subsequent change as a result of the updated baseline assessment or amendments (if necessary) to the current mitigation proposals. The Applicant considers that its assessment of likely significant effects on terrestrial biodiversity from the Project, and the associated mitigation strategy designed to avoid, reduce or compensate for any adverse effects (reported in Environmental Statement Chapter 8: Terrestrial Biodiversity [**APP-146**]), is sufficiently precautionary to address any changes in baseline following pre-construction surveys. • However, the Applicant recognises that, for any nationally significant infrastructure project, there will be a delay between consent and commencement of construction where baseline conditions may change, requiring amendments to mitigation proposals. Requirement 7 is the appropriate mechanism for dealing with this risk. Requirement 7 [**REP5-024**] provides that:

PINS ID	Question to:	Question / Response
		– *'(2) Following pre-construction survey work or at any time when carrying out the authorised development, where* – *(a) a protected species is shown to be present, or where there is a reasonable likelihood of it being present;* – (b) app*lication of the relevant assessment methods used in the environmental statement show that a significant effect is likely to occur which was not previously identified in the environmental statement; and* – *(c) that effect is not addressed by any prior approved scheme of protection and mitigation established in accordance with this paragraph,* – *the relevant parts of the relevant works must cease until a scheme of protection and mitigation measures has been submitted to and approved in writing by the Secretary of State.* – *(3) The undertaker must consult with Natural England and the relevant planning authority on the scheme referred to in sub-paragraph (2) prior to submission to the Secretary of State for approval, except where a suitably qualified and experienced ecologist, holding where relevant and appropriate a licence relating to the species in question, determines that the relevant works do not require a protected species licence.* *(4) The relevant works under sub-paragraph (2) must be carried out in accordance with the approved scheme, unless otherwise agreed by the Secretary of State after consultation with Natural England, and under any necessary licences.'*
ExQ2_Q11.3.2	Applicant	**Offsetting** The document reference 9.90 Mitigation Route Map [**REP4-203**] is noted, but the ExA would like to see a simple graphical representation / location plan to understand which area(s) of habitat are being created for particular impacts; such an approach will help provide clarity that the impacts are fully mitigated or compensated for. The detail provided in Tables 8.31 (south of the River Thames) and 8.35 (north of the River Thames) of Chapter 8 Terrestrial Biodiversity of the Environmental Statement [**APP-146**] are noted, but it continues to be difficult to track where the individual areas of habitat impacted are mitigated or compensated for on the ground within the submitted documents.
		Response: The Applicant has provided simple graphical representations which illustrate the location and extent of habitat creation proposals and the corresponding Project impacts for which they provide mitigation and compensation. These cover the following key habitat types:

PINS ID	Question to:	Question / Response
		• Woodland (excluding designated woodland loss and compensation which is reported in ES – Figure 8.33: Ancient Woodland Impacts [APP-294]) • Open mosaic habitat • Grassland (excluding amenity and poor semi-improved grassland of low biodiversity value) • Hedgerows These figures are provided in the Figures Annex to this document. We are also working to produce a similar map showing wetland habitats which, due to the range of wetland habitats involved, will be submitted at Deadline 7.
ExQ2_Q11.3.3	Applicant	**Biodiversity Net Gain (BNG)** In a similar manner to ExQ2 Q11.3.2 of this set of questions, the ExA requests the Applicant provide a graphical representation / location plan in addition to that detailed above showing all areas of environmental improvement included in the BNG metric.
		Response: The Applicant's BNG Metric assessment [APP-417] includes all areas of *direct habitat loss and creation* within the Order Limits, with the following exceptions: • Ancient woodland habitat lost (6.87ha) as a result of the Project is excluded from the baseline assessment. • Wood-pasture parkland habitat lost (0.07ha) as a result of the Project is excluded from the baseline assessment. • Bespoke compensation for ancient woodland loss (81ha) is excluded from the post-intervention assessment. • Nitrogen deposition compensation areas (246ha) are excluded from both the baseline and post-intervention parts of the assessment. Areas of temporary land-take within the Order Limits are included in the BNG Metric assessment. For these areas, there is an assumption in the Metric assessment that the baseline habitat is lost and then re-instated post-construction to the same habitat type and condition as in the baseline. These explanatory notes support the Applicant's submission of graphical representations / location plans which the Applicant commits to issuing by Deadline 7, so that it is clear which features on the plans are included in the BNG Metric.

PINS ID	Question to:	Question / Response
ExQ2_Q11.3.4	Applicant, Natural England	**BNG** The Applicant's response to Written Representations [**REP2-046**] states that it will require significant work to apply the classifications to update the BNG calculator. It is agreed that, although it is likely that a shift from version 3.1 to 4.0 will not require new field surveys, it may require additional desk-based work. The Applicant is asked to agree with Natural England the version of the BNG calculator that should be used.
		Response: Natural England, in their Deadline 5 submission [**REP5-109**], under Annex A Post-hearing submissions on Agenda Item 3: Mitigation, Compensation and Enhancement, state their position remains that, if a shift from Biodiversity Net Gain Metric v3.1 to v4.0 generates a disproportionate level of work, they will accept the ongoing use of v3.1. The Applicant set out its position on this change in its Post-event submissions, including written submission of oral comments, for Issue Specific Hearing 6 (ISH6) [**REP4-182**], Annex A.3 Response to Action Point 3: Biodiversity Net Gain. The conclusion of this consideration is that the Applicant does not consider re-running the calculations in Metric 4.0 to compare or supersede those presented within the Development Consent Order application in Metric 3.1 [**APP-417**] as a necessary or proportionate response to the release of Metric 4.0. Natural England still requests confirmation from the Applicant that it will rerun the figures through whatever metric is adopted (3.1 or 4.0) after detailed design. The Applicant confirms that the metric will be rerun after the detailed design stage, and that the version used for this rerun will be Metric v3.1 to enable comparison of figures for pre- and post-detailed design. This requirement would be secured via a new Register of Environmental Actions and Commitments (REAC) commitment in the Code of Construction Practice to be submitted at Deadline 6 [**Document Reference 6.3 Appendix 2.2 (6)**].
ExQ2_Q11.4.1	Applicant, Natural England, Kent Downs AONB Unit, Kent County	**Retention of construction compound as a car park: AONB considerations** It is suggested that the intention is for part of the construction compound in this location (Work No. CA2) to be repurposed as a car park. • Is an additional car park in this location necessary? • Should this facility be viewed as necessary, can its location be justified in AONB terms?

PINS ID	Question to:	Question / Response
	Council, Gravesham Borough Council, Shorne Parish Council	To the extent that additional visitors to this part of the AONB potentially could have negative implications from overuse on particular trees/paths, but additional parking provision may encourage additional visitor use and pressure; • Can the Applicant signpost where the introduction of a new permanent car park is assessed within the submitted documentation and the AONB effects, if any, that are attributed to it? • Is further mitigation required to be provided, or can it be demonstrated that it is accommodated within existing proposals? How is this secured?
		Response: **Introduction and summary of Applicant's position** The Applicant has had detailed discussions with Kent County Council about the proposals in this area. The Applicant is aware of issues related to anti-social parking and has therefore sought to provide a potential solution over and above those required as mitigation for the Project. However, following the consideration of representations made by Interested Parties and the discussion at Issue Specific Hearing 9, the Applicant is exploring the removal of the car park and reconfiguration of this area of the project, further revised plans will be submitted at Deadline 7. The Applicant considers that such an amendment, if pursued, would not need to engage the change process in Advice Note Sixteen (*Requests to change applications after they have been accepted for examination*). The site is not located in the Area of Outstanding Natural Beauty (AONB). It is located to the west of Thong Lane and the AONB boundary runs along the eastern side of Thong Lane in this locality. Accordingly, the site lies within the setting of the AONB but not within the AONB itself. This is an important distinction on which to be clear at the outset as the relevant paragraph of the National Policy Statement for National Networks (NPSNN)[16] against which the proposal should be considered is 5.154 rather than 5.152; the distinction being that, under 5.152, there is a strong presumption against projects in AONBs unless there are compelling reasons, or the benefits outweigh the impacts very significantly. Under 5.154 the duty is to 'have regard to the purposes of nationally designated areas' where the aim should be to 'avoid compromising the purposes of the designation'. The Applicant does not consider that any future car park use would compromise the purposes of the AONB designation in this locality. Schedule 1, Part 1 of draft Development Consent Order (DCO) [**REP5-024**] identifies Work No. CA2, as shown on Sheet 4 of the Works Plans [**REP4-038**], comprising the establishment of a construction compound for main works, located west of Thong Lane, of approximately 50,605 square metres.

[16] Department for Transport (2014). National Policy Statement for National Networks.

PINS ID	Question to:	Question / Response
		After use of the construction compound has ceased, Work No. 1P, as shown on Sheet 4 of the Works Plans [**REP4-038**], comprises the construction of a new car park next to the realigned Thong Lane which passes over the improved section of the A2 mainline (Work No. 1H). Clause S2.11 in the Design Principles [**REP4-146**] states: '*A car park area shall be provided to the west of Thong Lane to provide recreational access to the PRoW network and open spaces within the wider area. The car park area shall repurpose hardstanding as a base for new surfacing and utility connections from the construction phase of the Project as far as reasonably practicable. Provision shall be made for facilities such as buildings (including a kiosk, toilets, changing and storage facility), and an area for cycle hire and cycle washing. The car park area shall also include provision for horsebox parking with suitable surfaced parking for 10-12 horseboxes, located away from the main car park circulation. A wooded buffer shall be provided along Thong Lane between the car park within the constraints of proposed utilities and highway visibility splays to the car park entrance. Planting shall be designed to the north of the car park to screen views from the village of Thong. Boundary planting shall be provided to integrate the car park into the surrounding landscape. Substations shall be appropriately sited and designed (materials and colour) to integrate with the car park and surrounding landscape.*' Further information, including an assessment of the recreational effects of the proposed car park in terms of visitor numbers and associated effects on the surrounding area, is provided in Appendix A of the Environmental Statement (ES) Addendum [**REP5-062**]. A description of the proposals, the design evolution of the car park proposal and the benefits it would deliver are set out at paragraphs A.3.1 to A.3.6. An assessment of the impacts of the proposed car park and the increased use of the new walking, cycling and horse riding (WCH) routes it would facilitate is set out at Section A.4 (paragraphs A.4.2 to A.4.18). Paragraph A.5.1 summarises that no significant effects are considered likely to arise on the Shorne and Ashenbank Woods SSSI as a result of the creation of the new car park or additional WCH provision for the reasons set out at bullets (a) to (d) of that paragraph. The primary reason is that '*the number of net additional visitors to the area as a result of the new car park are considered to be very small. Visitors are primarily likely to be displaced from other nearby locations … rather than new visitors to the area entirely.*' The Applicant's response to ExQ1_Q13.1.8 presented in its Responses to the Examining Authority's ExQ1 Appendix I: 13 Social, Economic & Land-Use Considerations [**REP4-201**] further clarifies how the car park proposal might be brought forward by a third party in due course.

PINS ID	Question to:	Question / Response
		Is an additional car park necessary? Provision of the car park in this location is not necessary to mitigate the impacts of the Project but is proposed as an opportunity to provide an enhancement to recreation facilities in the area, where there are understood to be existing congestion and capacity issues as set out below. Paragraph A.2.7 of Appendix A of the ES Addendum [**REP5-062**] notes that Shorne Woods Country Park is Kent County Council's flagship Country Park. It contains existing built development in the form of the visitor centre and café and other ancillary built features. Paragraphs A.2.17 to A.2.19 of Appendix A of the ES Addendum [**REP5-062**] also note that to the west of Shorne and Ashenbank Woods SSSI is Jeskyns Community Woodland, which opened in 2007 and is approximately 149ha in size. The woodland is managed and maintained by Forestry England and includes woodlands, orchards, ponds, play areas and a café. It incorporates parking on-site (pay and display) for approximately 200 vehicles (including horse boxes). The Annual Survey of Visits to Visitor Attractions 2021 records a total of 878,626 visitors to Jeskyns in 2021, making it one of the most visited attractions in the region. Paragraph A.2.26 of Appendix A of the ES Addendum [**REP5-062**] notes that: '*Shorne and Ashenbank Woods form part of the northernmost extent of the Kent Downs Area of Outstanding Natural Beauty (AONB). The AONB Management Plan 2021-2026 notes that ''over visiting' has rapidly become an issue across the AONB particularly at countryside with heritage sites. Visitor site car parks are often full by mid-morning on a sunny weekend and the visitor experience at risk of declining, along with erosion to paths, damage to the historic, natural and cultural heritage as well as loss of tranquillity'. In response, the AONB is seeking to improve facilities that promote off season visiting, encourage sustainable tourism and promote new sites and visitor resources so reducing pressure on honey pot destinations (Kent Downs AONB Management Plan, 2021-2026).*' The primary function of the new car park is to relieve congestion and capacity issues at the main Shorne Woods Country Park car park, with secondary benefits being that it may help to reduce some of the off-road parking which takes place along Park Pale and Brewers Road during peak periods as well as providing access to the wider countryside. Kent County Council have acknowledged in meetings with the Applicant that the existing footpath opposite the car park is already a well-used entrance to Shorne Woods Country Park. The car park will therefore provide an alternative parking option where visitors do not specifically intend to use the facilities provided at Shorne Woods Country Park, for example parking for horseboxes, which is currently underprovided in the area. Users are likely to be dispersed across a wide area, including the new recreational routes to the west of Thong Lane, areas to the south of the car park (for example

PINS ID	Question to:	Question / Response
		providing a route to Jeskyns Community Woodland) as well as to the western extent of Shorne Woods Country Park. Accordingly, the Applicant considers that the provision of a car park and associated facilities as described above meets a clearly identified need and would result in a positive legacy benefit from the Project. Kent County Council is supportive of the principle of the proposed car park as noted in its Statement of Common Ground with the Applicant (item 2.1.5) [**REP1-103**]. Further discussion regarding the facilities that would be provided at the car park are currently underway (item 2.1.6 of the Statement of Common Ground with Kent County Council submitted at Deadline 6 [**Document Reference 5.4.4.7 (3)**]). **Can its location be justified in AONB terms?** As noted in the introduction, the proposed car park is not located within the AONB. It is adjacent to the AONB. Planning Statement Appendix F: Kent Downs Area of Outstanding Natural Beauty [**APP-501**] describes how the Project accords with relevant policy on the protection of AONBs and how it has been designed to minimise impacts on the AONB as far as possible in the context of the need to deliver a safe and successful scheme which meets the Scheme Objectives. Where impacts arise, the Project includes measures to mitigate those impacts. Appendix F explains that, while the primary purpose of AONB designation is to conserve and enhance natural beauty of the landscape, account should be taken of the '*needs of agriculture, forestry and other rural industries and of the economic and social needs of local communities*' (paragraph F.4.25). Paragraph F.4.23(c) (which is an extract from the 1991 policy statement on AONBs[17]) notes that: '*c. Recreation is not an objective of designation, but the demand for recreation should be met so far as this is consistent with the conservation and natural beauty and the needs of agriculture, forestry and other uses.*' As a resource which will result in positive recreational benefit for the users of the Country Park, the Applicant considers that the proposal can be justified in AONB policy terms in its location adjacent to the AONB. **Where in the Application Documents is the introduction of a new permanent car park assessed and the effects on the AONB if any, that are attributed to it?** Although not specifically referenced within ES Chapter 7: Landscape and Visual [**APP-145**], the potential effects of the car park have been considered as part of the Project as a whole, on the landscape character

[17] Countryside Commission (1991). Areas of Outstanding Natural Beauty: A Policy Statement

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		and visual amenity of the Kent Downs AONB in ES Appendix 7.9: Schedule of Landscape Effects [**APP-384**] and ES Appendix 7.10: Schedule of Visual Effects [**APP-385**]. The proposed car park adjacent to Shorne Woods Country Park lies just beyond the western boundary of the Kent Downs AONB, within the Higham Arable Farmland (sub area Thong) Local Landscape Character Area (LLCA) shown on ES Figure 7.2: Local Landscape Character Areas [**APP-198**]. Except for some potential glimpsed views from the Darnley Trail on the western edge of Shorne Woods Country Park, there would be no publicly accessible views of the proposed car park from within the Kent Downs AONB. No Representative Viewpoints encompassing the site of the proposed car park are identified on ES Figure 7.16: Visual Effects Drawing with Representative Viewpoint and Photomontage Locations [**REP1-128**]. This is because the proposed car park is typically screened from publicly accessible locations by existing woodland, except for glimpsed views through gaps in roadside vegetation along the adjoining Thong Lane. However, Thong Mead is identified as a residential receptor (VR-S02-R-024) on ES Figure 7.16, to the north-east of the proposed car park. A description of existing views from Thong Mead is provided in ES Appendix 7.7: Representative Viewpoint and Visual Receptor Baseline Descriptions and Visual Sensitivity [**APP-382**], with a visual impact assessment presented in ES Appendix 7.10: Schedule of Visual Effects. Views from Thong Mead residential property, south-west towards the car park, would be densely filtered by retained vegetation along the garden boundary with Thong Lane. During construction, a large adverse significance of visual effect has been assessed from Thong Mead, but this is principally due to the adjoining A2 compound and gas main diversion. In the opening year, a moderate adverse significance of visual effect has been assessed from Thong Mead before planting mitigation on the M2/A2/A122 Lower Thames Crossing junction embankment to the west and to the perimeter of the car park to the south-west has become established. However, by the design year, a slight beneficial significance of visual effect has been assessed due to the establishment of planting mitigation and removal of the existing pole-mounted overhead line in close-range westward views. For road users on Thong Lane, the removal of adjoining roadside vegetation to facilitate the A2 compound and works to Thong Lane would allow passing views of the proposed car park in year 1 of operation. However, by the design year, proposed woodland edge planting would have established, helping to integrate the car park into the landscape and substantially screen views of the car park from Thong Lane. Proposed hedgerow planting along the west side of Thong Lane to the south of the car park would also help screen views for road users approaching from the south, on the realigned section of Thong Lane on embankment and users of the Darnley Trail adjoining Thong Lane to the east.

PINS ID	Question to:	Question / Response
		Based upon the above appraisal, the car park would not compromise the primary purpose of the AONB designation, which is to conserve and enhance the natural beauty of the landscape. The recreational impacts associated with the proposed car park are assessed in Appendix A of the ES Addendum [**REP5-062**]. This assesses the impacts in relation to the Shorne and Ashenbank Woods SSSI specifically, noting that Shorne and Ashenbank Woods form part of the northernmost extent of the Kent Downs AONB. The assessment has been based on professional judgement and makes reasonable assumptions around usage based on current visitor numbers and behaviours at Shorne Woods Country Park. The assessment has considered a range of direct and indirect visitor impacts and concludes that there would be no significant effects on the Shorne and Ashenbank Woods SSSI as a result of the provision of new recreational facilities. As noted in the Applicant's response to ExQ1_Q13.1.8 presented in its Responses to the Examining Authority's ExQ1 Appendix I: 13. Social, Economic & Land-Use Considerations [**REP4-201**], the associated facilities at the car park would need to be subject to a planning application to the local planning authority. This would ensure any changes in impact upon the environment and AONB as a result of any associated facilities are considered should the authority or statutory consultees on any planning application deem that appropriate or necessary. **Is further mitigation required, or can it be demonstrated that it is accommodated within existing proposals?** The Applicant considers that the measures identified in clause S2.11 of the Design Principles [**REP4-146**] are sufficient, proportionate and appropriate to ensure the car park is appropriately designed and screened and minimises its impacts on the environment and on the AONB to an appropriate degree. **How are the proposals secured?** As noted above, the works are secured through Schedule 1, Part 1 of the draft DCO [**REP5-024**] as follows: • Work No. 1P, as shown on Sheet 4 of the Works Plans [**REP4-038**], and being the construction of a new car park next to the realignment of Thong Lane over the improved section of the A2 mainline (Work No. 1H). • Design Principle commitments (clause S2.11) are secured through Requirements 3 and 5 of Part 1 of Schedule 2 of the draft DCO [**REP5-024**].
ExQ2_Q11.4.2	Applicant, Natural England, Kent	**Retention of construction compound as a car park: SSSI considerations** With reference to the impact of the construction compound retention raised in Q11.4.1, there are potential impacts on the Shorne and Ashenbank Woods SSSI that also arise from this proposal.

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	County Council, Gravesham Borough	Natural England currently view these as underassessed. • Is an additional car park in this location necessary? • Should this facility be viewed as necessary, can its location be justified in SSSI terms? • If there is a view that a permanent car park is to be created, the Applicant is requested to set out its latest view on the number of vehicles using the car park each day (moving on from the assessment in the ES of one trip each way per carparking space), to a breakdown of modes of access. • A statement of any mitigation measures necessary in respect of the SSSI designation should also be provided. Where would this be secured? Should this facility be viewed as necessary, can its location be justified in AONB terms?
		Response: **Introduction and summary of Applicant's position** The Applicant has had detailed discussions with Kent County Council about the proposals in this area. The Applicant is aware of issues related to anti-social parking and has therefore sought to provide a potential solution over and above those required as mitigation for the Project. However, following the consideration of representations made by Interested Parties and the discussion at Issue Specific Hearing 9, the Applicant is exploring the removal of the car park and reconfiguration of this area of the project, further revised plans will be submitted at Deadline 7. The Applicant considers that such an amendment, if pursued, would not need to engage the change process in Advice Note Sixteen (*Requests to change applications after they have been accepted for examination*). The site is not located in the Shorne and Ashenbank Woods Site of Special Scientific Interest (SSSI). It is located to the west of Thong Lane, and the SSSI boundary runs along the eastern side of Thong Lane in this locality. Schedule 1, Part 1 of the draft Development Consent Order (DCO) [**REP5-024**] identifies Work No. CA2, as shown on Sheet 4 of the Works Plans [**REP4-038**], comprising the establishment of a construction compound for main works, located west of Thong Lane, of approximately 50,605 square metres. After the use of the construction compound has ceased, Work No. 1P, as shown on Sheet 4 of the Works Plans [**REP4-038**], comprises the construction of a new car park next to the realigned Thong Lane over the improved section of the A2 mainline (Work No. 1H). Clause S2.11 in the Design Principles [**REP4-146**] states: '*A car park area shall be provided to the west of Thong Lane to provide recreational access to the PRoW network and open spaces within the wider area. The car park area shall repurpose hardstanding as a base*

PINS ID	Question to:	Question / Response
		for new surfacing and utility connections from the construction phase of the Project as far as reasonably practicable. Provision shall be made for facilities such as buildings (including a kiosk, toilets, changing and storage facility), and an area for cycle hire and cycle washing. The car park area shall also include provision for horsebox parking with suitable surfaced parking for 10-12 horseboxes, located away from the main car park circulation. A wooded buffer shall be provided along Thong Lane between the car park within the constraints of proposed utilities and highway visibility splays to the car park entrance. Planting shall be designed to the north of the car park to screen views from the village of Thong. Boundary planting shall be provided to integrate the car park into the surrounding landscape. Substations shall be appropriately sited and designed (materials and colour) to integrate with the car park and surrounding landscape.' Further information, including an assessment of the recreational effects of the proposed car park in terms of visitor numbers and associated effects on the surrounding area, is provided in Appendix A of the Environmental Statement (ES) Addendum [**REP5-062**]. A description of the proposals, the design evolution of the car park proposal and the benefits it would deliver are set out at paragraphs A.3.1 to A.3.6. An assessment of the impacts of the proposed car park and the increased use of the new walking, cycling and horse riding (WCH) routes it would facilitate is set out at Section A.4 (paragraphs A.4.2 to A.4.18). Paragraph A.5.1 summarises that no significant effects are considered likely to arise on the Shorne and Ashenbank Woods SSSI as a result of the creation of the new car park or additional WCH provision for the reasons set out at bullets (a) to (d) of that paragraph. The primary reason is that '*the number of net additional visitors to the area as a result of the new car park are considered to be very small. Visitors are primarily likely to be displaced from other nearby locations … rather than new visitors to the area entirely.*' The Applicant's response to ExQ1_Q13.1.8 presented in its Responses to the Examining Authority's ExQ1 Appendix I: 13 Social, Economic & Land-Use Considerations [**REP4-201**] provides further information. The Applicant does not consider that impacts on the SSSI as a result of the creation of the proposed car park at Thong Lane have been 'under-assessed'. **Is an additional car park necessary?** Provision of the car park in this location is not necessary to mitigate the impacts of the Project but is proposed as an opportunity to provide an enhancement to recreation facilities in the area, where there are understood to be existing congestion and capacity issues as set out below. Paragraph A.2.7 of Appendix A of the ES Addendum [**REP5-062**] notes that Shorne Woods Country Park is Kent County Council's flagship Country Park. It contains existing built development in the form of the visitor centre and café and other ancillary built features.

PINS ID	Question to:	Question / Response
		Paragraphs A.2.17 to A.2.19 of Appendix A of the ES Addendum [**REP5-062**] also note that to the west of Shorne and Ashenbank Woods SSSI is Jeskyns Community Woodland, which opened in 2007 and is approximately 149ha in size. The woodland is managed and maintained by Forestry England and includes woodlands, orchards, ponds, play areas and a café. It incorporates parking on-site (pay and display) for approximately 200 vehicles (including horse boxes). The Annual Survey of Visits to Visitor Attractions 2021 records a total of 878,626 visitors to Jeskyns in 2021, making it one of the most visited attractions in the region. Paragraph A.2.26 of Appendix A of the ES Addendum [**REP5-062**] notes that: '*Shorne and Ashenbank Woods form part of the northernmost extent of the Kent Downs Area of Outstanding Natural Beauty (AONB). The AONB Management Plan 2021-2026 notes that ''over visiting' has rapidly become an issue across the AONB particularly at countryside with heritage sites. Visitor site car parks are often full by mid-morning on a sunny weekend and the visitor experience at risk of declining, along with erosion to paths, damage to the historic, natural and cultural heritage as well as loss of tranquillity'. In response, the AONB is seeking to improve facilities that promote off season visiting, encourage sustainable tourism and promote new sites and visitor resources so reducing pressure on honey pot destinations (Kent Downs AONB Management Plan, 2021-2026).*' The primary function of the new car park is to relieve congestion and capacity issues at the main Shorne Woods Country Park car park, with secondary benefits being that it may help to reduce some of the off-road parking which takes place along Park Pale and Brewers Road during peak periods, as well as providing access to the wider countryside. Kent County Council have acknowledged in meetings with the Applicant that the existing footpath opposite the car park is already a well-used entrance to Shorne Woods Country Park. The car park will therefore provide an alternative parking option where visitors do not specifically intend to use the facilities provided at Shorne Woods Country Park, for example parking for horseboxes, which is currently underprovided in the area. Users are likely to be dispersed across a wide area, including the new recreational routes to the west of Thong Lane, areas to the south of the car park (for example providing a route to Jeskyns Community Woodland) as well as to the western extent of Shorne Woods Country Park. Accordingly, the Applicant considers that the provision of a car park and associated facilities as described above meets a clearly identified need and would result in a positive legacy benefit from the Project. Kent County Council is supportive of the principle of the proposed car park as noted in its Statement of Common Ground with the Applicant (item 2.1.5) [**REP1-103**]. Further discussion regarding the facilities that would be provided at the car park are currently underway (item 2.1.6 of the Statement of Common Ground with Kent County Council submitted at Deadline 6 [**Document Reference 5.4.4.7 (3)**]).

PINS ID	Question to:	Question / Response
		Can its location be justified in SSSI terms? The recreational impacts associated with the proposed car park are assessed in Appendix A of the ES Addendum [**REP5-062**]. This assesses the impacts in relation to the Shorne and Ashenbank Woods SSSI specifically, noting that Shorne and Ashenbank Woods form part of the northernmost extent of the Kent Downs AONB. The assessment has been based on professional judgement and makes reasonable assumptions around usage based on current visitor numbers and behaviours at Shorne Woods Country Park. The assessment has considered a range of direct and indirect visitor impacts and concludes that there would be no significant effects on the Shorne and Ashenbank Woods SSSI as a result of the provision of new recreational facilities. As noted in the Applicant's response to ExQ1_Q13.1.8 presented in its Responses to the Examining Authority's ExQ1 Appendix I: 13. Social, Economic & Land-Use Considerations [**REP4-201**], the associated facilities at the car park would need to be subject to a planning application to the local planning authority. This would ensure any changes in impact upon the environment and AONB as a result of any associated facilities are considered should the authority or statutory consultees on any planning application deem that appropriate or necessary. The site of the proposed car park is adjacent to the SSSI and therefore paragraph 5.29 of the National Policy Statement for National Networks[18] applies. As there would not be a significant impact upon the Shorne and Ashenbank Woods SSSI as a result of the new car park, it is considered to accord with this policy requirement. **Vehicle use statistics and breakdown of modes of access** Section A.4 of the ES Addendum [**REP5-062**] sets out two high-level occupancy scenarios for the car park providing a range of between 36,300 and 58,080 visitors per year. Since this document was produced, the Applicant has reviewed Natural England's subsequent submissions and further engaged with them to understand areas of concern. This has led to a revised assessment being produced, taking into account more detailed evidence-based assumptions from the Applicant's understanding of how the Shorne Woods Country Park car park is currently used. This includes incorporating assumptions relating to turnover of spaces within the car park (rather than assuming a single visit per car parking space per day) and providing a more detailed annual profile of visitor use (with lower occupancy rates for the car park during the winter months and higher occupancy rates during summer and shoulder season periods). This revised annual profile is set out below.

[18] Department for Transport (2014). National Policy Statement for National Networks.

Table 3 Projected visitor numbers at Thong Lane car park

Criteria	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
Spaces	100	100	100	100	100	100	100	100	100	100	100	100	
% occupancy	0.2	0.2	0.2	0.4	0.6	0.6	0.8	0.8	0.6	0.4	0.2	0.2	
Turnover per space	1	1	1	1	2	2	3	3	2	1	1	1	
No. vehicles	620	560	620	1200	3720	3600	7440	7440	3600	1240	600	620	
No. visitors	1240	1120	1240	2400	7440	7200	14880	14880	7200	2480	1200	1240	**62,520**

The table shows the annual number of visitors totalling **62,520 people**. This is slightly higher than the 58,080 people referenced in the high occupancy scenario set out in the ES Addendum [**REP5-062**]. However, it is not considered to be significantly different and the conclusions as set out in paragraph A.4.10 of the ES Addendum remain valid, i.e. that the increase is '*not considered to have a significant additional effect in the wider context of the local visitor environment, particularly as the visitors using the car park are likely to be dispersed across a wide area*'. This usage profile, which is rooted in evidence-based assumptions from the existing Shorne Woods Country Park (for example turnover of visitor spaces, length of stay) has been shared with Natural England.

Natural England has requested further detail relating to the split of users of the car park between walkers, cyclists and horse riders. User profile of the car park is anticipated to largely reflect that of the existing Shorne Woods Country Park car park, with the majority of users being walkers (including dog walkers), with the second highest proportion being cyclists, and the smallest proportion being horse riders.

An online questionnaire about the consultation draft Kent Country Parks Strategy 2023-2028[19] asked respondents to identify which of the various service and facilities within the Country Parks they considered most important. Nearly half of respondents (48%) identified signposted walking routes and 28% identified easy access paths; some 13% of respondents identified cycle routes; and around 2% identified horse routes. There is clearly some unmet demand for cycling and horse riding, as evidenced by commentary in the consultation responses to the Strategy in relation to questions relating to additional services or facilities

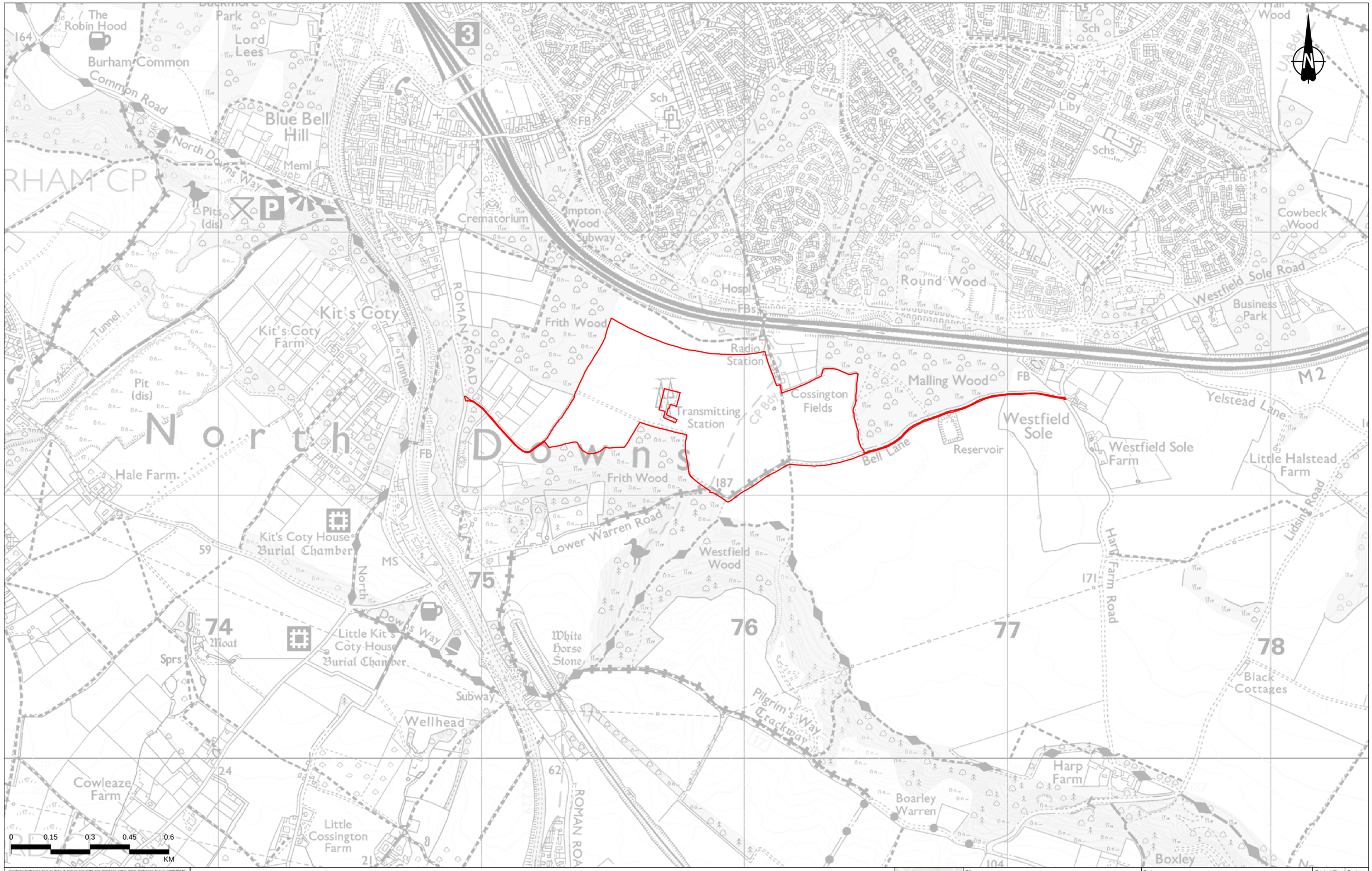
PINS ID	Question to:	Question / Response
		needed (11% of respondents cited that they would like to see horse/cycle trails offered within the Country Parks). This need has also been highlighted in consultation with WCH groups as part of the development of the Project and is referenced in Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**], with proposed enhancements including the opportunity to provide links between key open areas and country parks surrounding the M2/A2/A122 Lower Thames Crossing junction and South Portal. An estimated split of users between walkers, cyclists and horse riders is anticipated to be 75%, 20% and 5% respectively. This is not considered to change the conclusions as set out in paragraph A.4.10 of the ES Addendum [**REP5-062**] as set out above. **SSSI mitigation measures** The Applicant considers that the measures identified in clause S2.11 of the Design Principles [**REP4-146**] are sufficient, proportionate and appropriate to ensure the car park is appropriately designed and screened and minimises its impacts on the environment and on the SSSI to an appropriate degree. **How is this secured?** As noted above, the works are secured through the Schedule 1, Part 1 of the draft DCO [**REP5-024**] as follows: • Work No. 1P, as shown on Sheet 4 of the Works Plans [**REP4-038**], and being the construction of a new car park next to the realignment Thong Lane over the improved section of the A2 mainline (Work No. 1H). Design Principle commitments (clause S2.11) are secured through Requirements 3 and 5 of Part 1 of Schedule 2 of the draft DCO [**REP5-024**].
ExQ2_Q11.5.1	Applicant, Natural England	**Preparation of the Report on the Implications on European Sites (RIES)** The ExA has noted points raised by NE in its Deadline 5 response relating to the HRA. The Applicant will appreciate the need for the ExA to provide robust evidence to inform its advice to the SoS about the impacts on European Sites as part of the Recommendation Report. To aid this, a Report on the Implications on European Sites (RIES) is proposed to be issued by the ExA as part of the examination, on 14 November 2023. To inform this report, the ExA requests the Applicant liaise with NE, discussing all matters of disagreement as set out in the D5 response, and provide: • HRA response, with and without tracked changes. • An updated SoCG covering the points raised by NE in its D5 response.

[19] Kent County Council (2023). Draft Kent Country Parks Strategy 2023-2028. Accessed October 2023. https://letstalk.kent.gov.uk/countryparksstrategy

PINS ID	Question to:	Question / Response
		• A review of the methodology and consequent conclusions, including a list (with justifications) of projects included in the in-combination assessment within the HRA. Where matters remain outstanding between the Applicant and NE following these discussions, the Applicant is requested to provide a commentary explaining the plan to resolve them in terms of either a process to undertake further work towards an agreed position; or a reservation of position and a justification for the absence of agreement on a particular matter. Is further mitigation required to be provided, or can it be demonstrated that it is accommodated within existing proposals? How is this secured?
		Response: The Applicant thanks the ExA for their request for further information and update on the position with regards to the Habitats Regulations Assessment (HRA) and ongoing engagement with Natural England. The Applicant's response is provided in the Deadline 6 submission Applicant's response to comments made by Natural England on HRA matters and Response to ExA ExQ2_Q11.5.1 [**Document Reference 9.153**].

Figures

ExQ2_Q11.3.2 figures: Figure 1 - Woodland habitat loss mitigation (excluding ancient woodland impacts and compensation)



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Order Limits

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
P01	S9	17/10/2023	ExQ2 11.3.2	CD	EE	SM

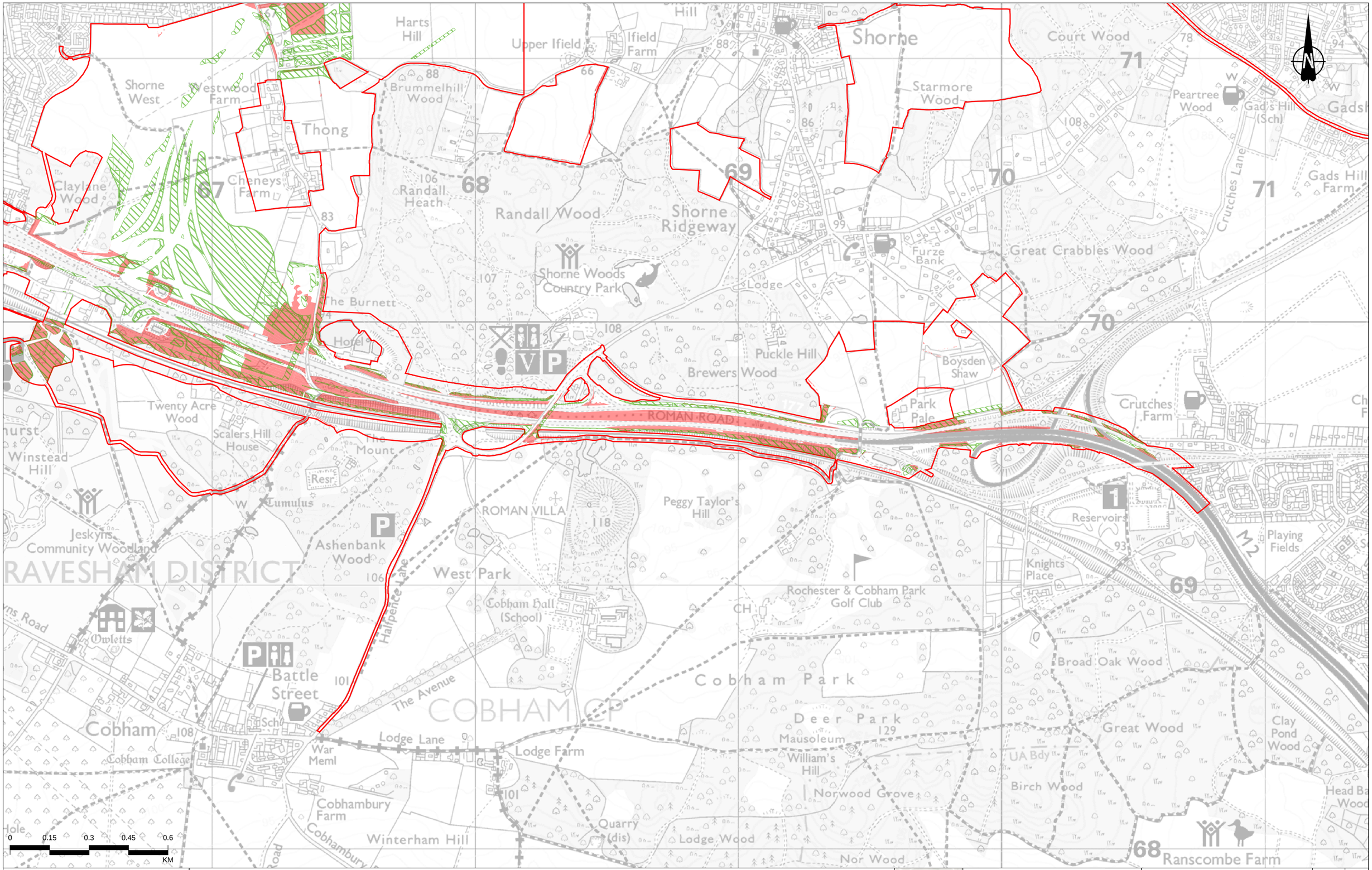
Client: national highways

Project: LOWER THAMES CROSSING

Status	PINS SUBMISSION	Original Size	Revision
Application Document Number	TR010032/EXAM/9.152	A3	P01
		Scale	1:13,000

Drawing Title: Figure 1 - Woodland habitat loss/mitigation

Drawing Number: HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-50149



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- Order Limits
- Woodland habitat loss
- Woodland habitat creation

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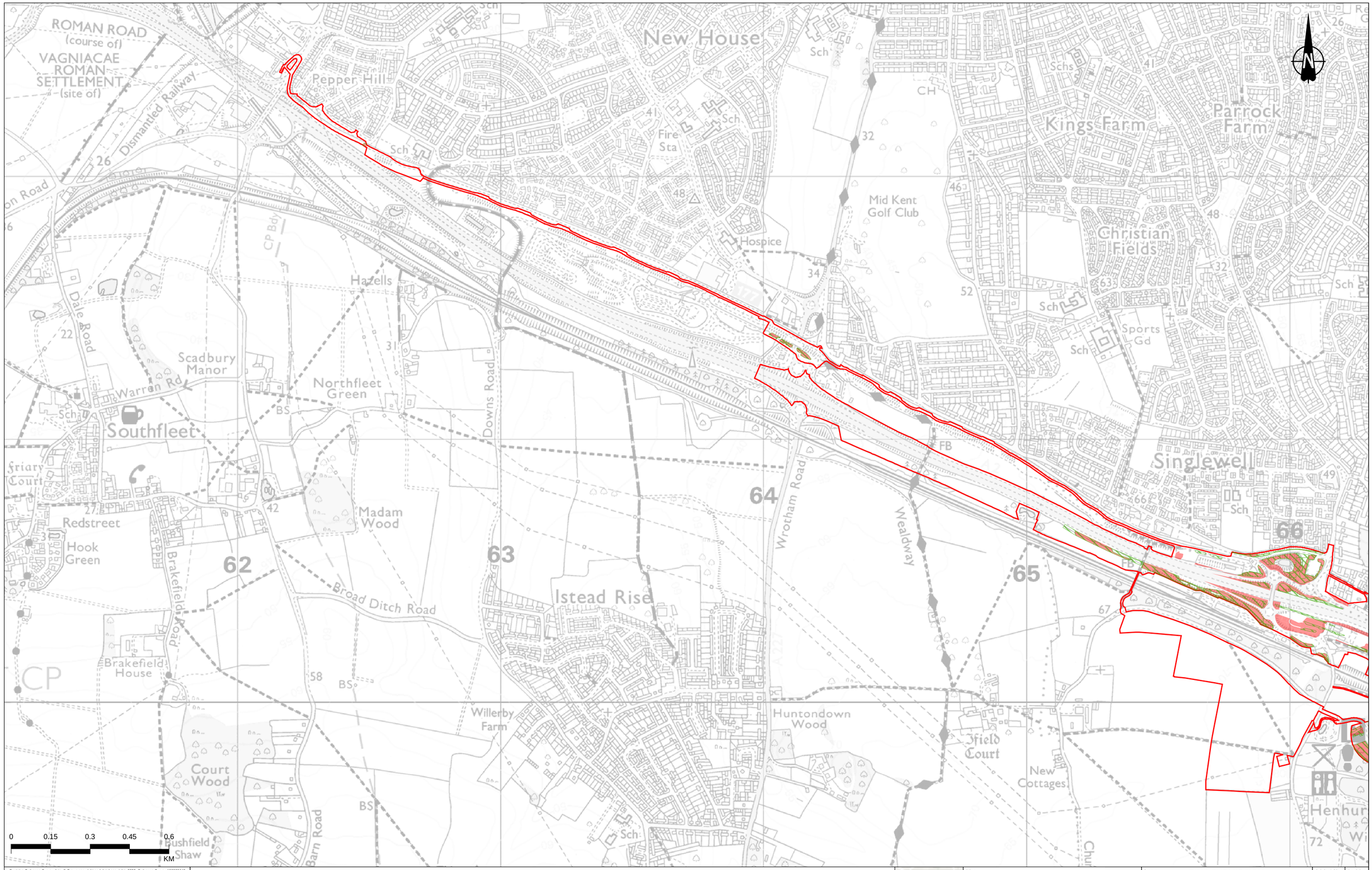

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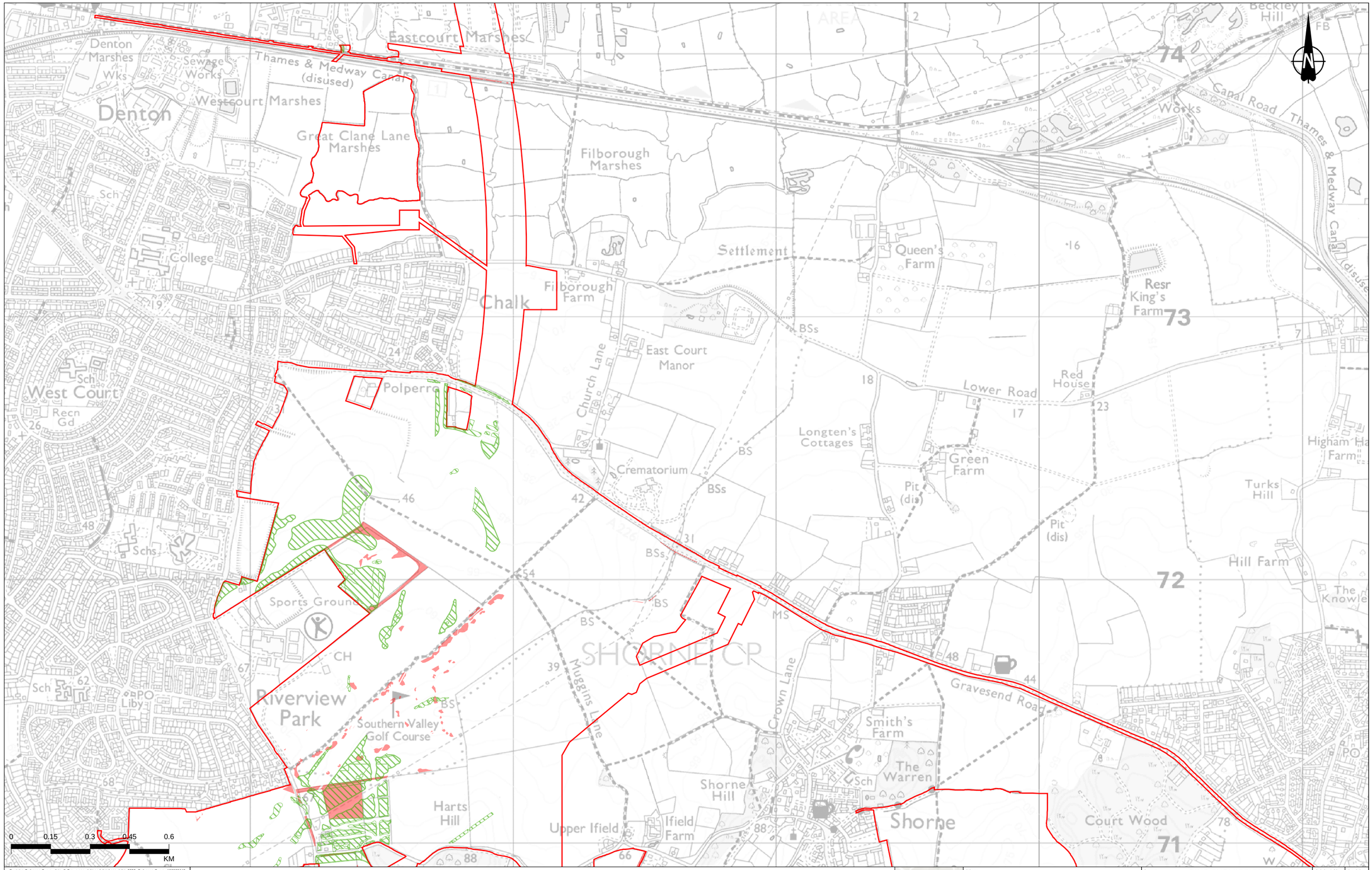

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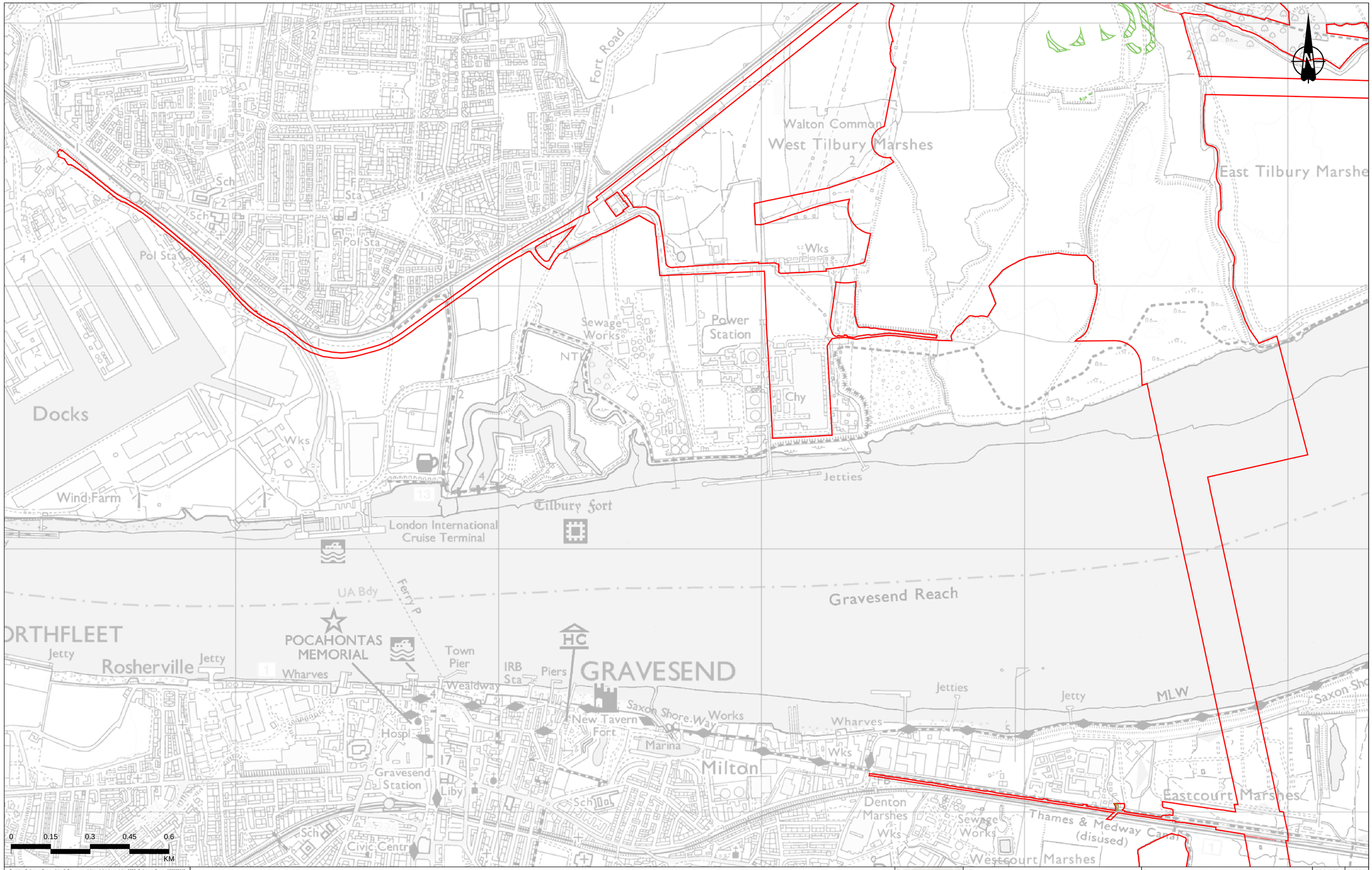

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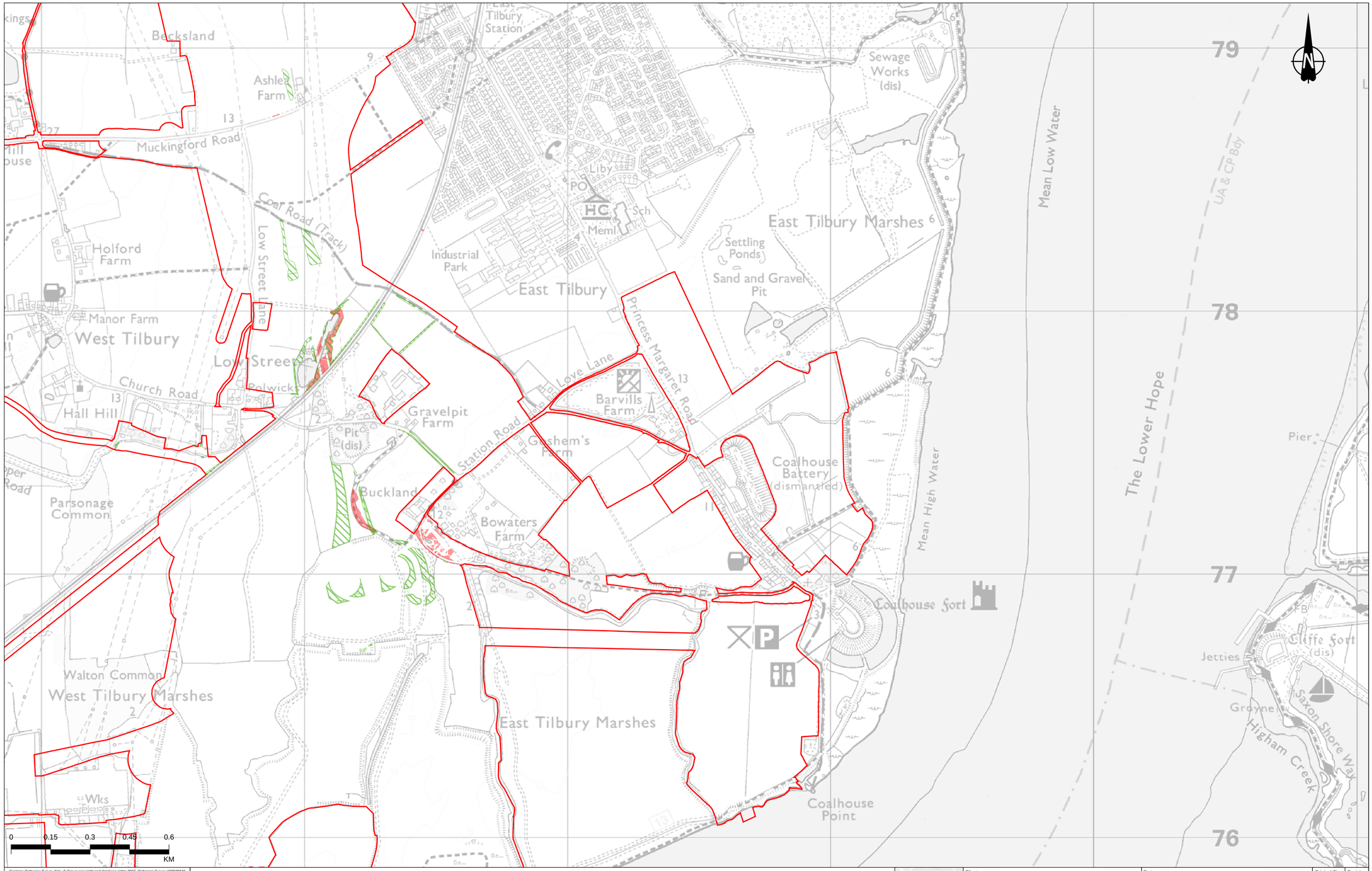

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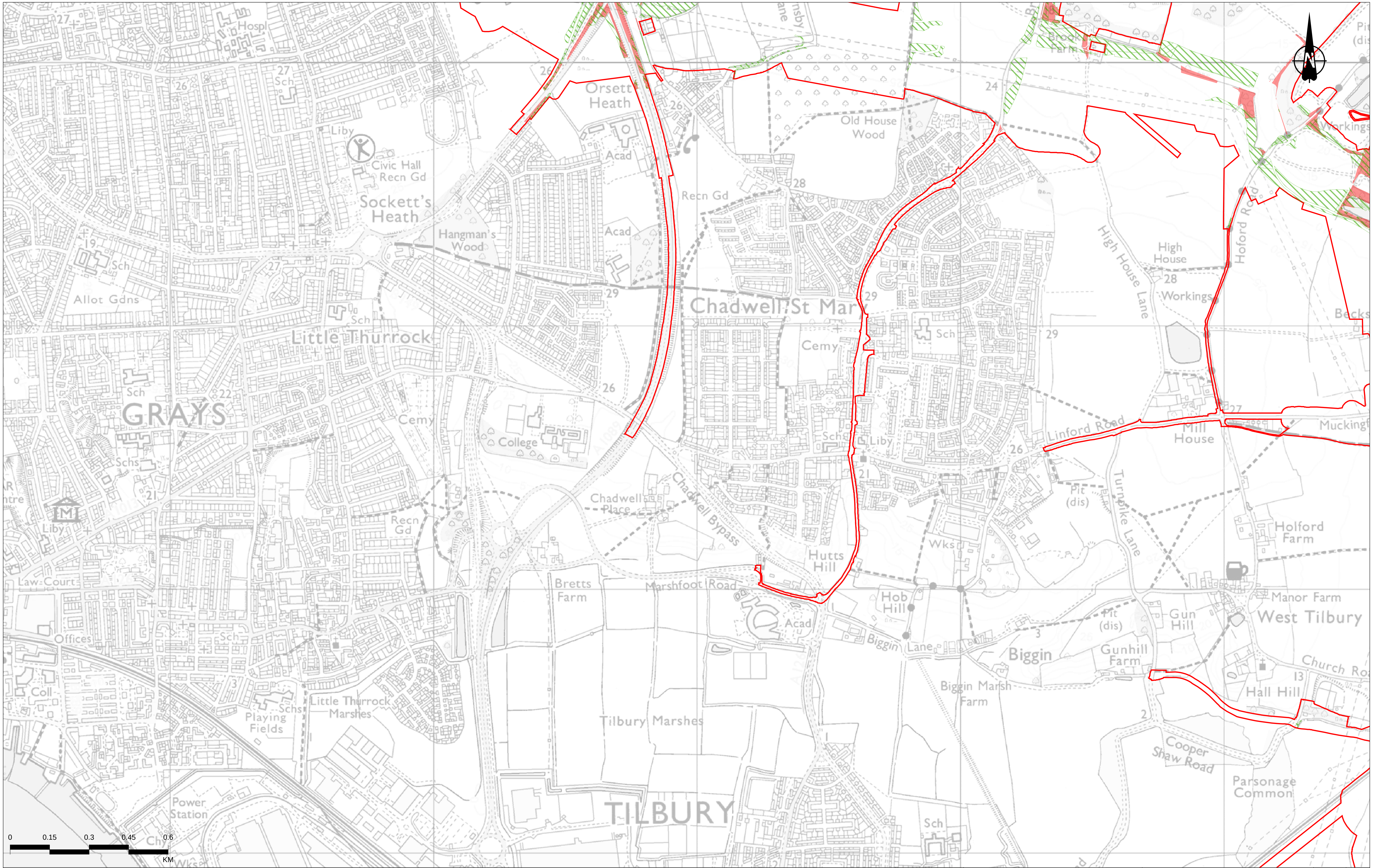

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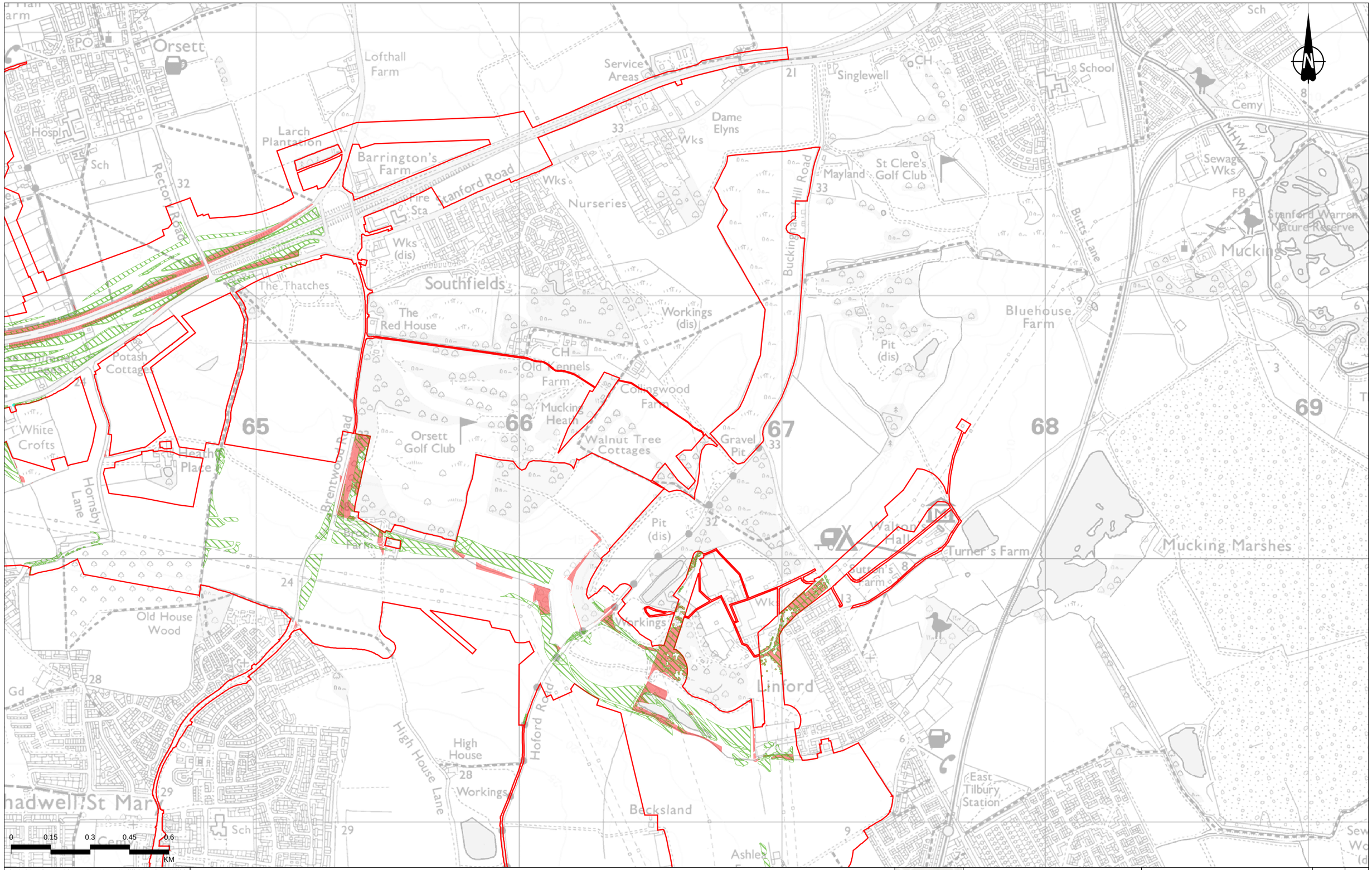

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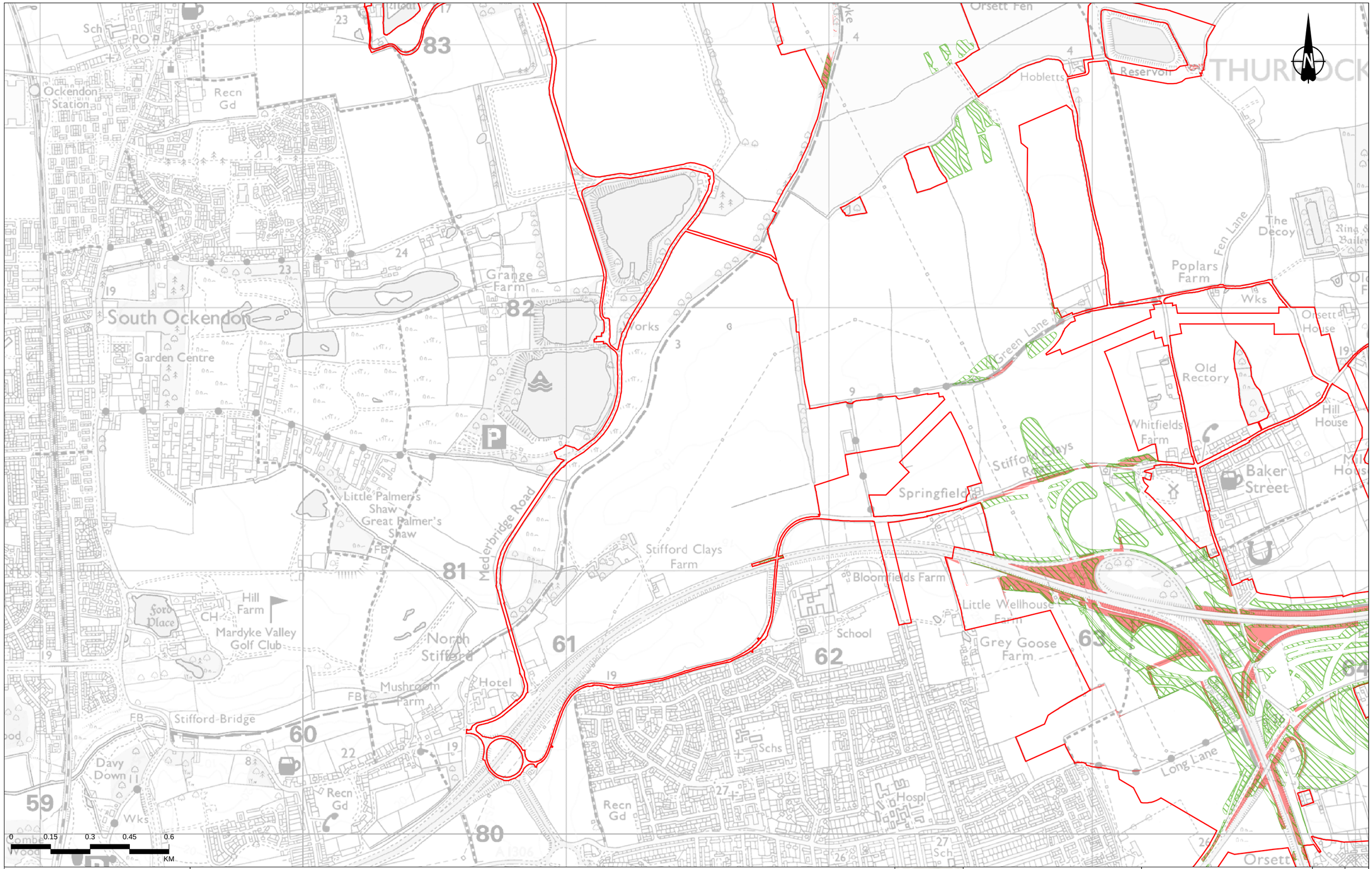

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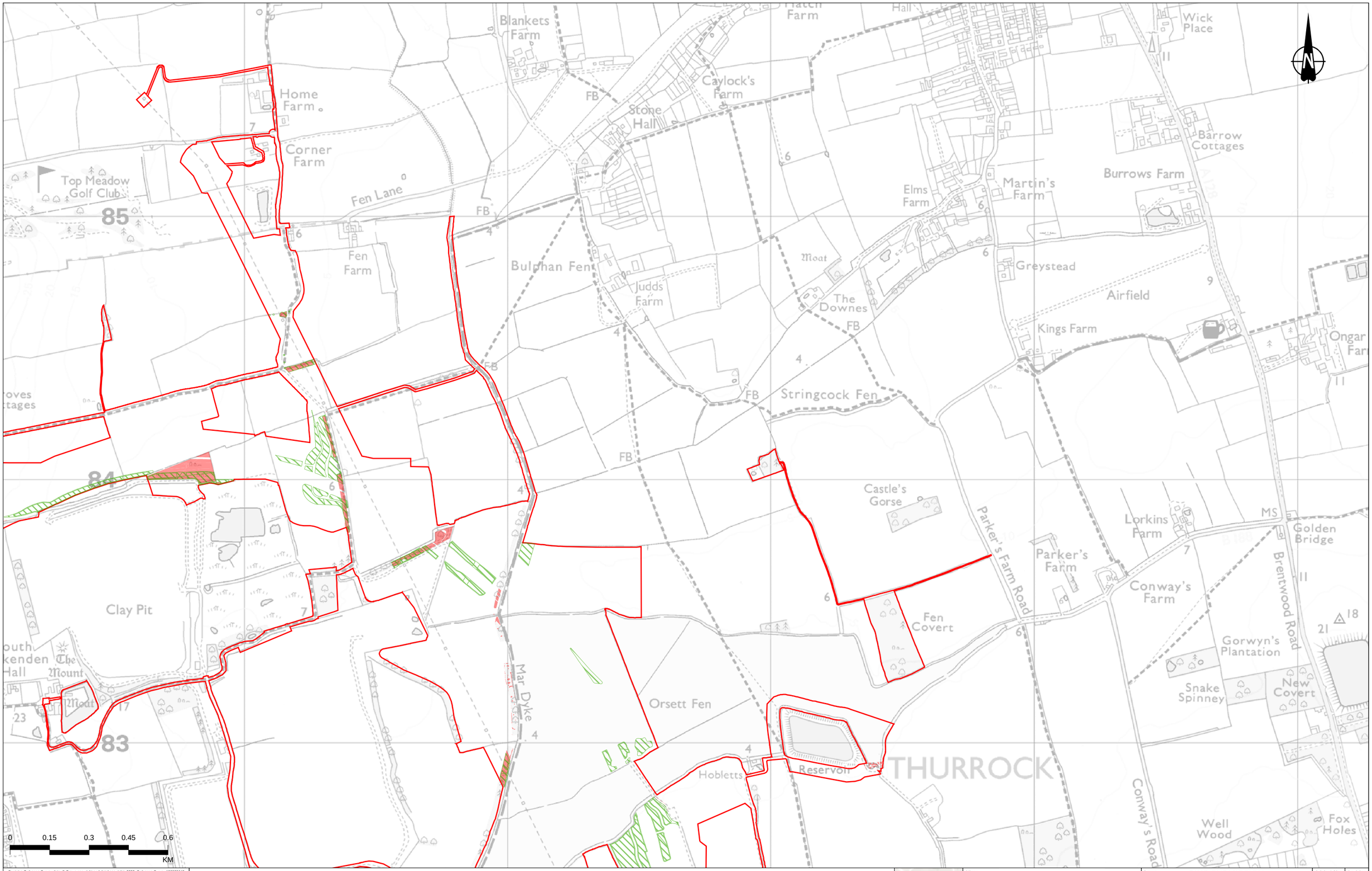

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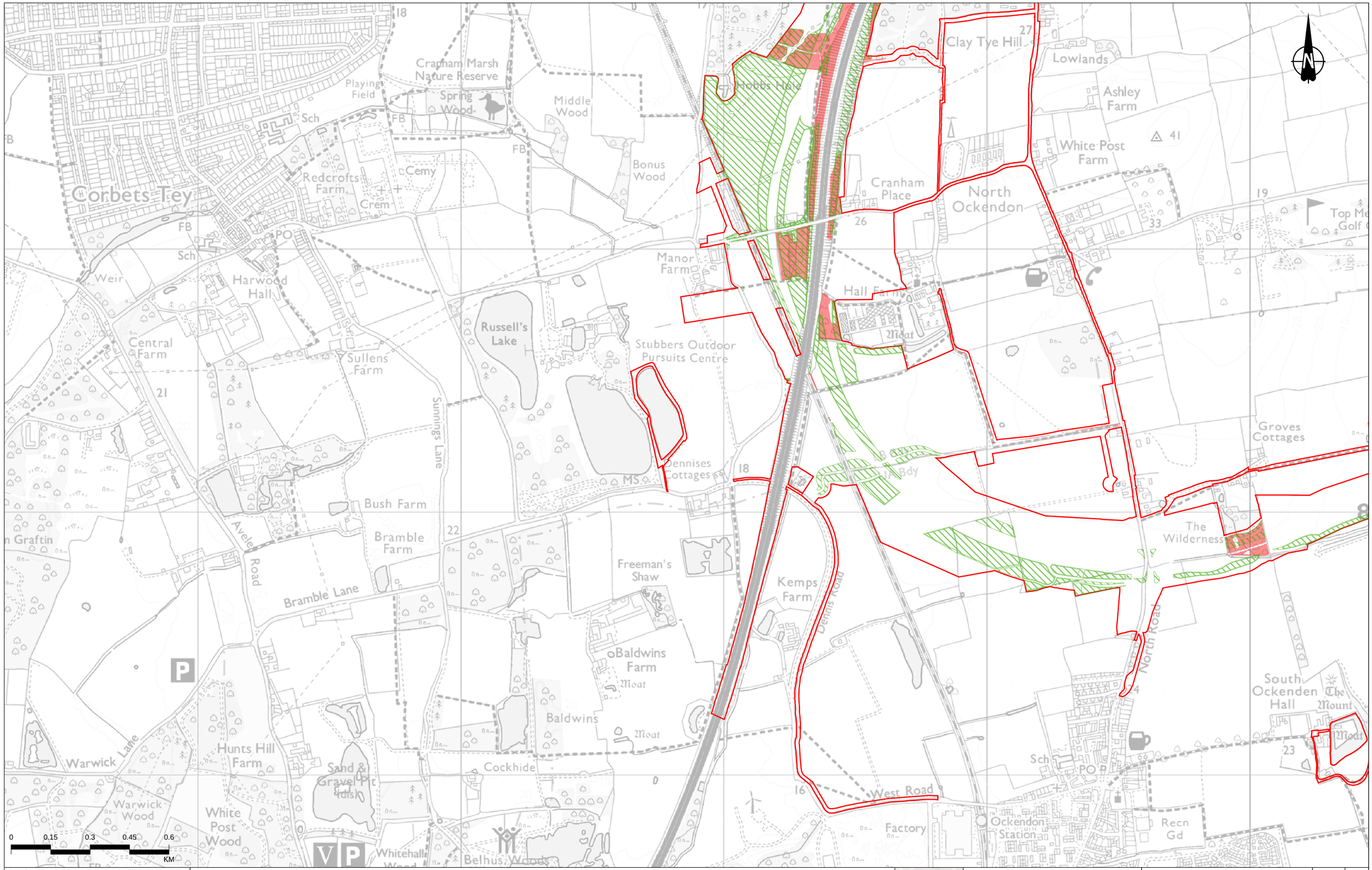

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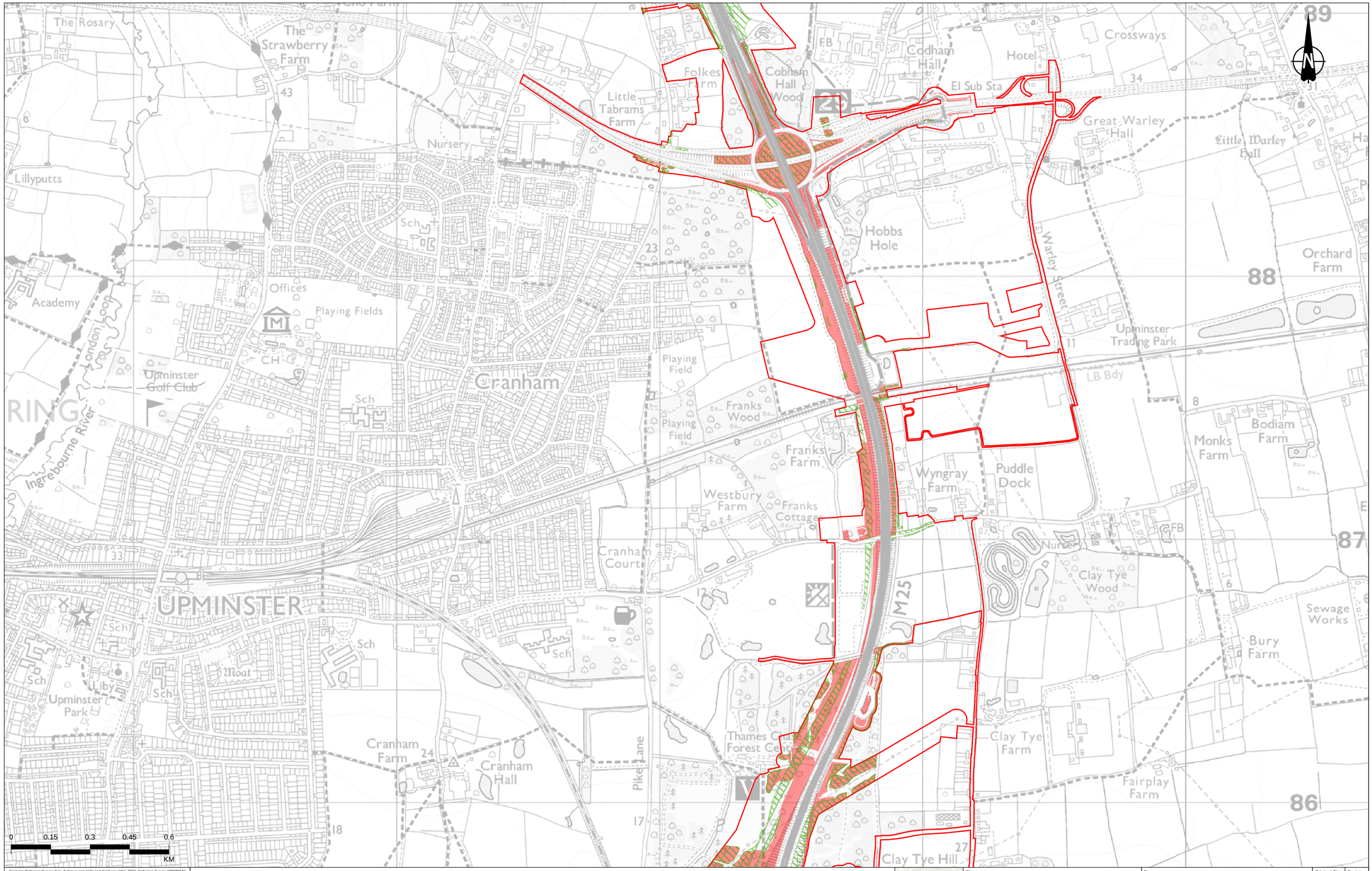

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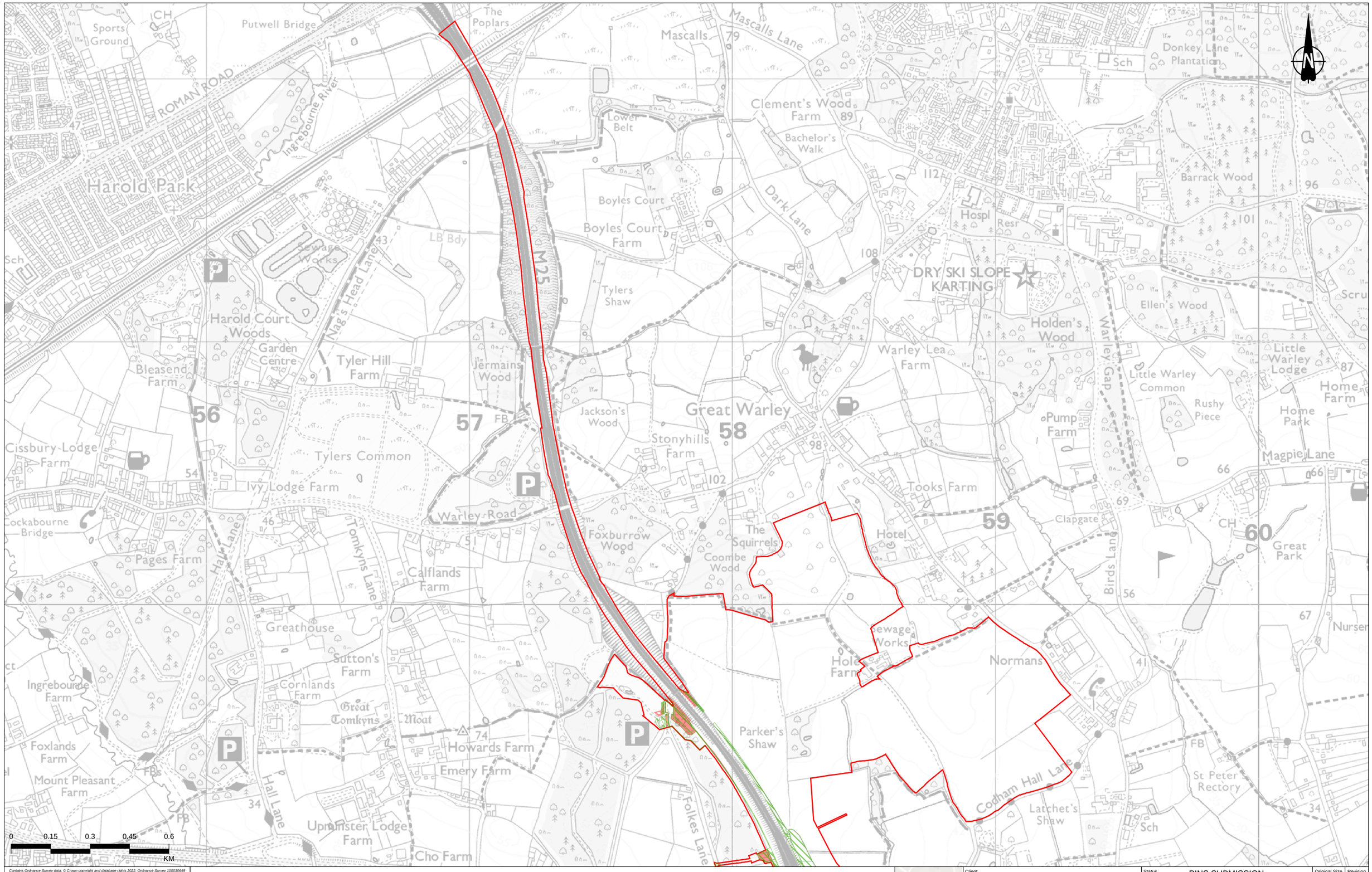

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Table 1 Woodland habitat losses and gains associated with the Project

Existing habitat	Importance	Habitat loss (ha)	New semi-natural habitat (from Environmental Masterplan)	Habitat permanent gain	Net permanent gain (gain-loss)
South of the River Thames					
Semi-natural broadleaved woodland	County	7.67ha	Native woodland (LE2.1), woodland with non-native species (LE2.11), woodland edge (LE2.2), linear belt of shrubs and trees (LE2.4)	138.45ha	95.91ha
Plantation woodland	County	34.87ha			
Scrub	County	4.23ha	Scrub (LE2.8), shrubs with intermittent trees (LE2.5)	11.23ha	7ha
North of the River Thames					
Semi-natural broadleaved woodland	County	8.75ha	Native Woodland (LE2.1), woodland with non-native species (LE2.11), wet/carr woodland (LE2.14), woodland edge (LE2.2), scrub woodland (LE2.22), linear belts of shrubs and trees (LE2.4)	173.75ha	100.2ha
Plantation woodland	Local	64.80ha			
Scrub	Local	24.72ha	Scrub (LE2.8), shrubs with intermittent trees (LE2.5)	46.52ha	21.80ha

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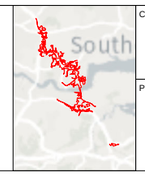

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Drawing Title: Figure 1 - Woodland habitat loss/mitigation

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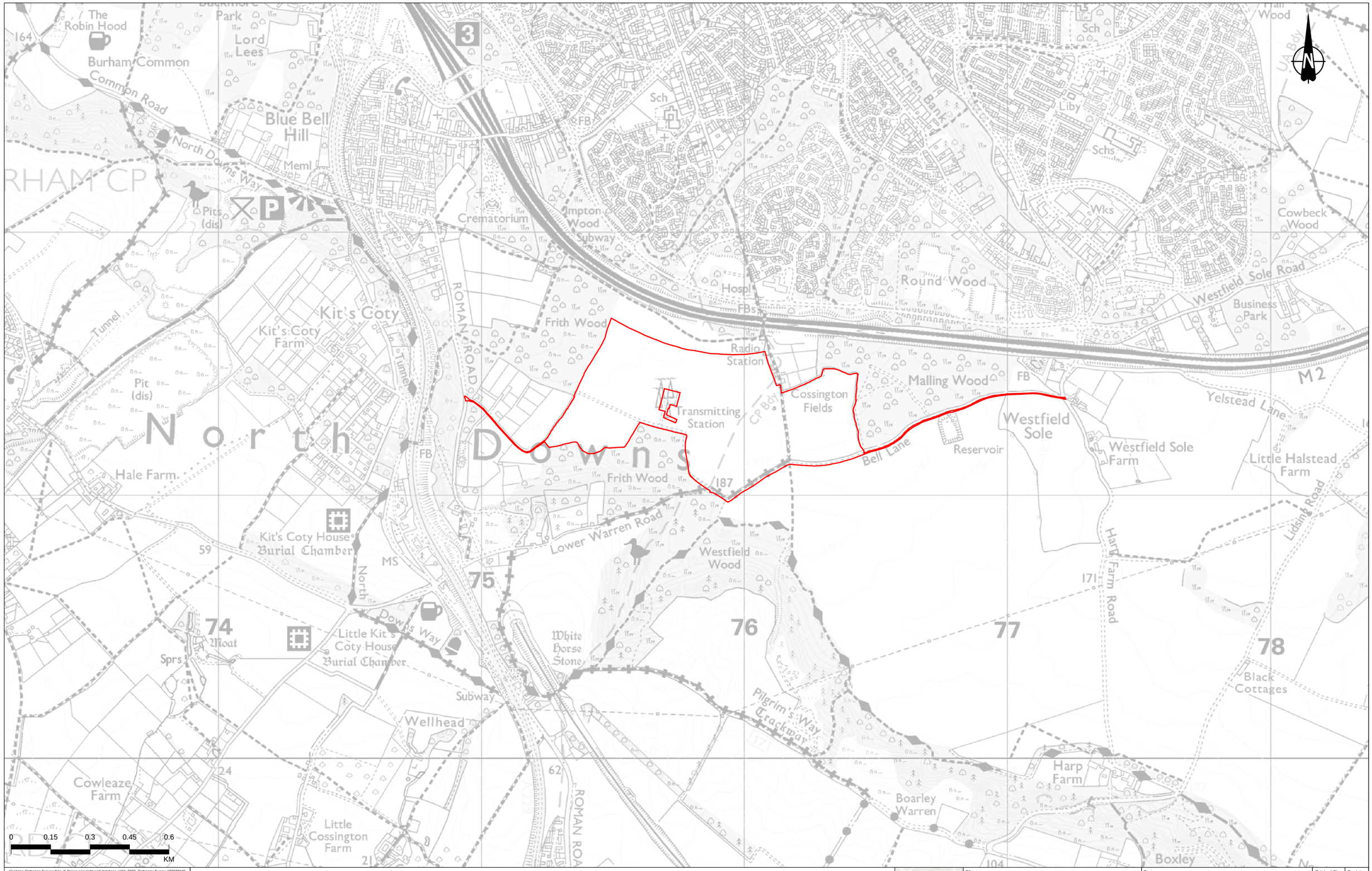
ExQ2_Q11.3.2 figures: Figure 2 - Open Mosaic habitat loss mitigation



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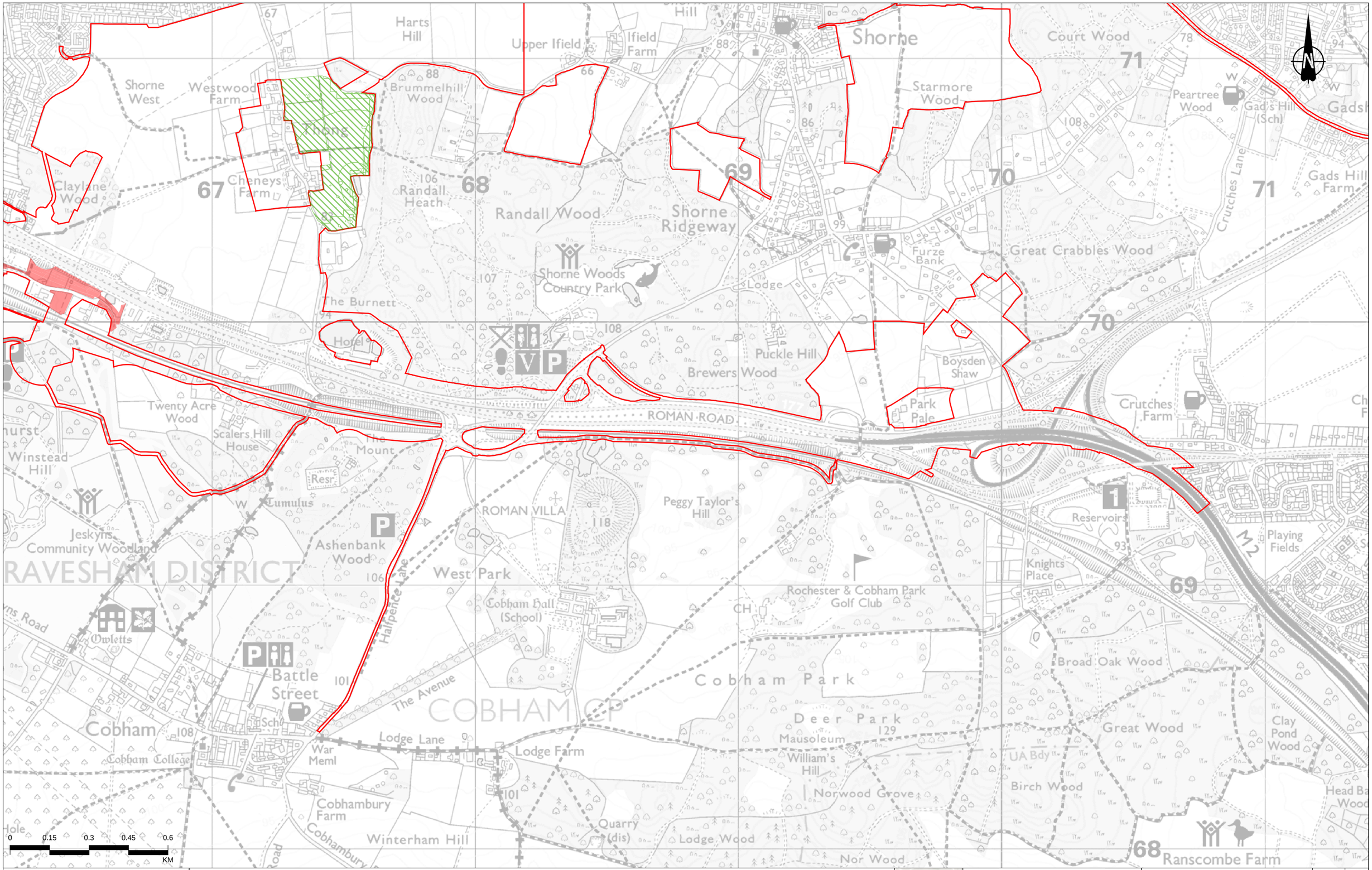

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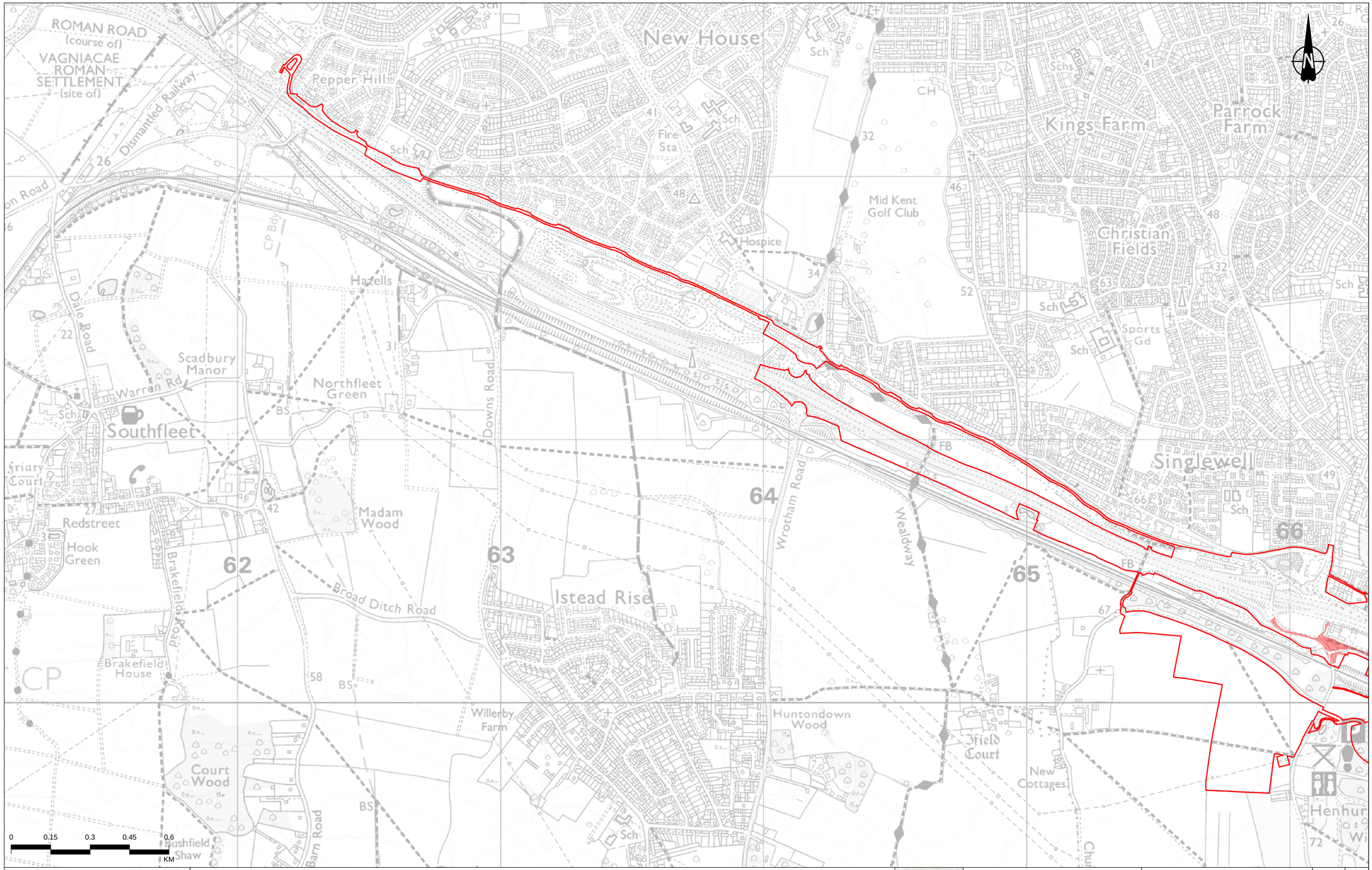

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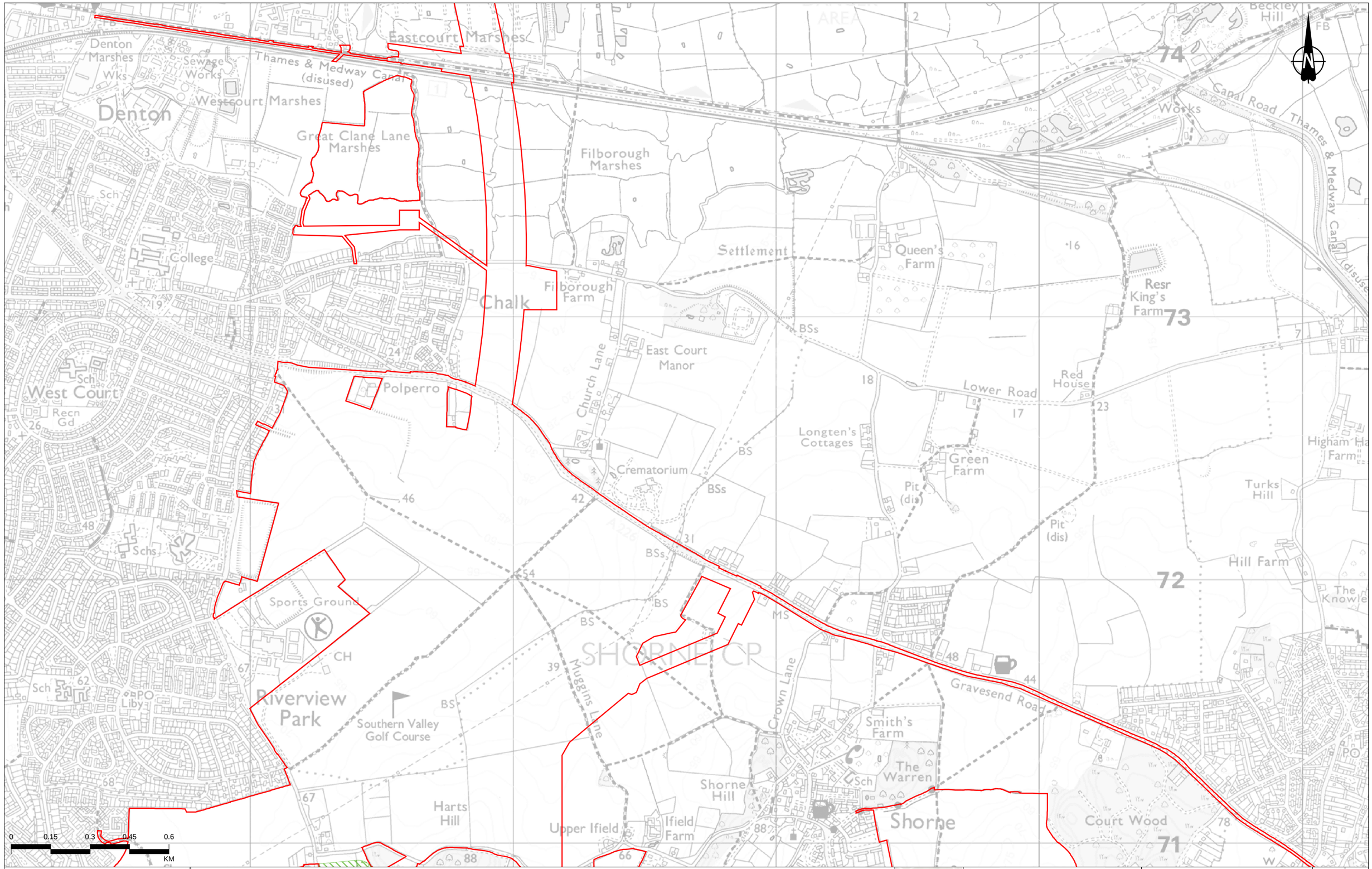

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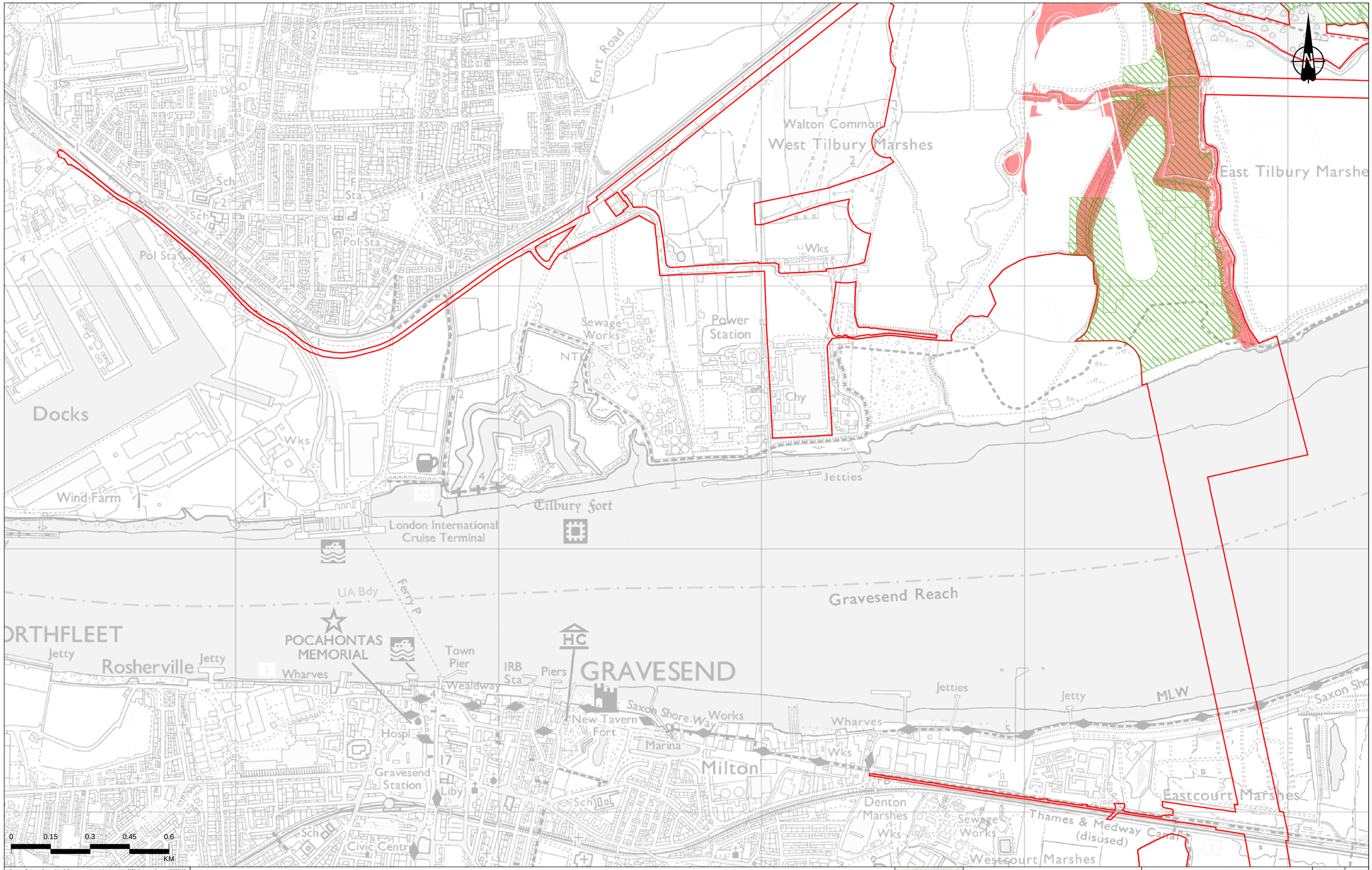

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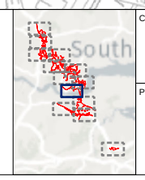

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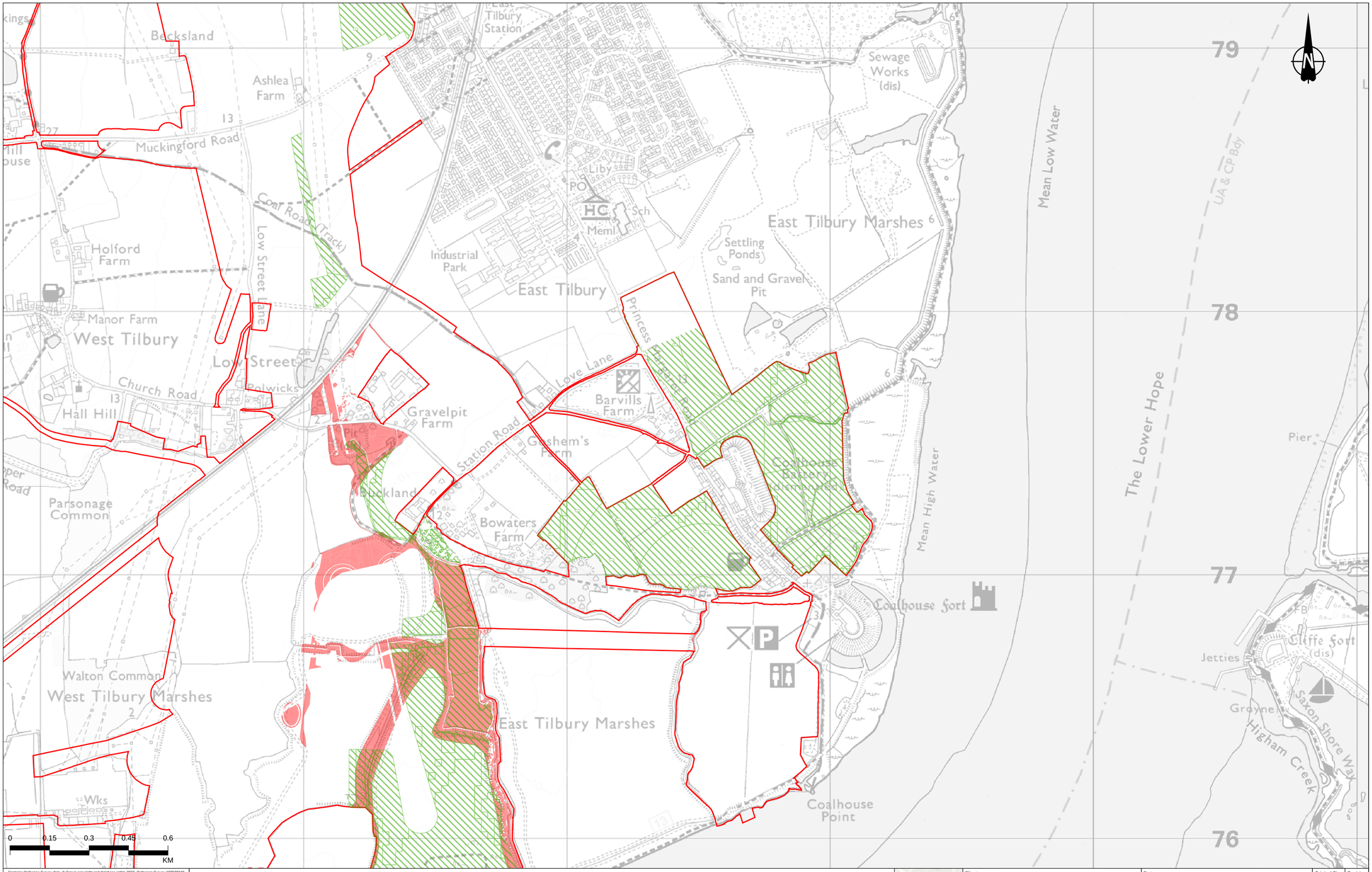

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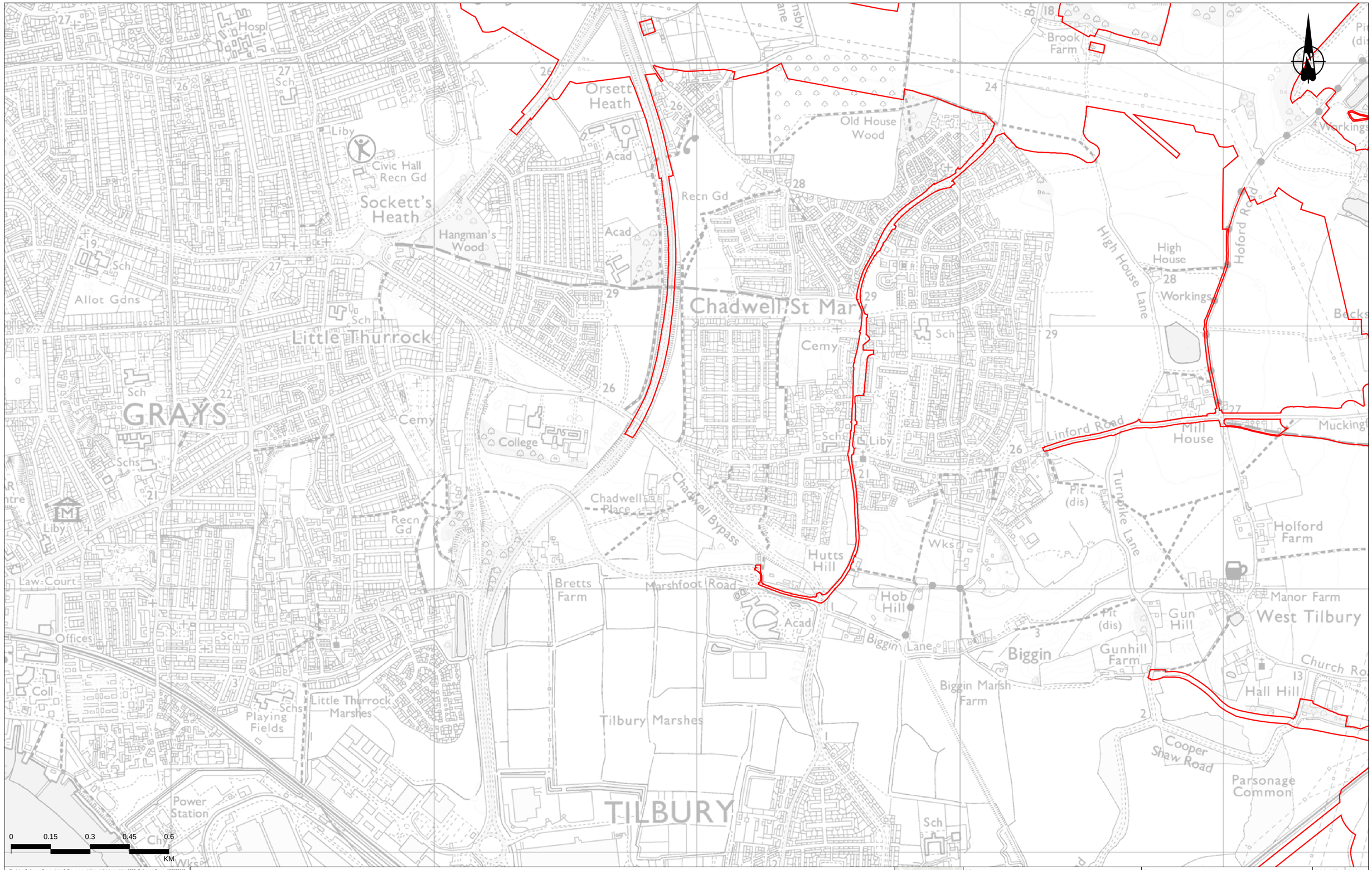

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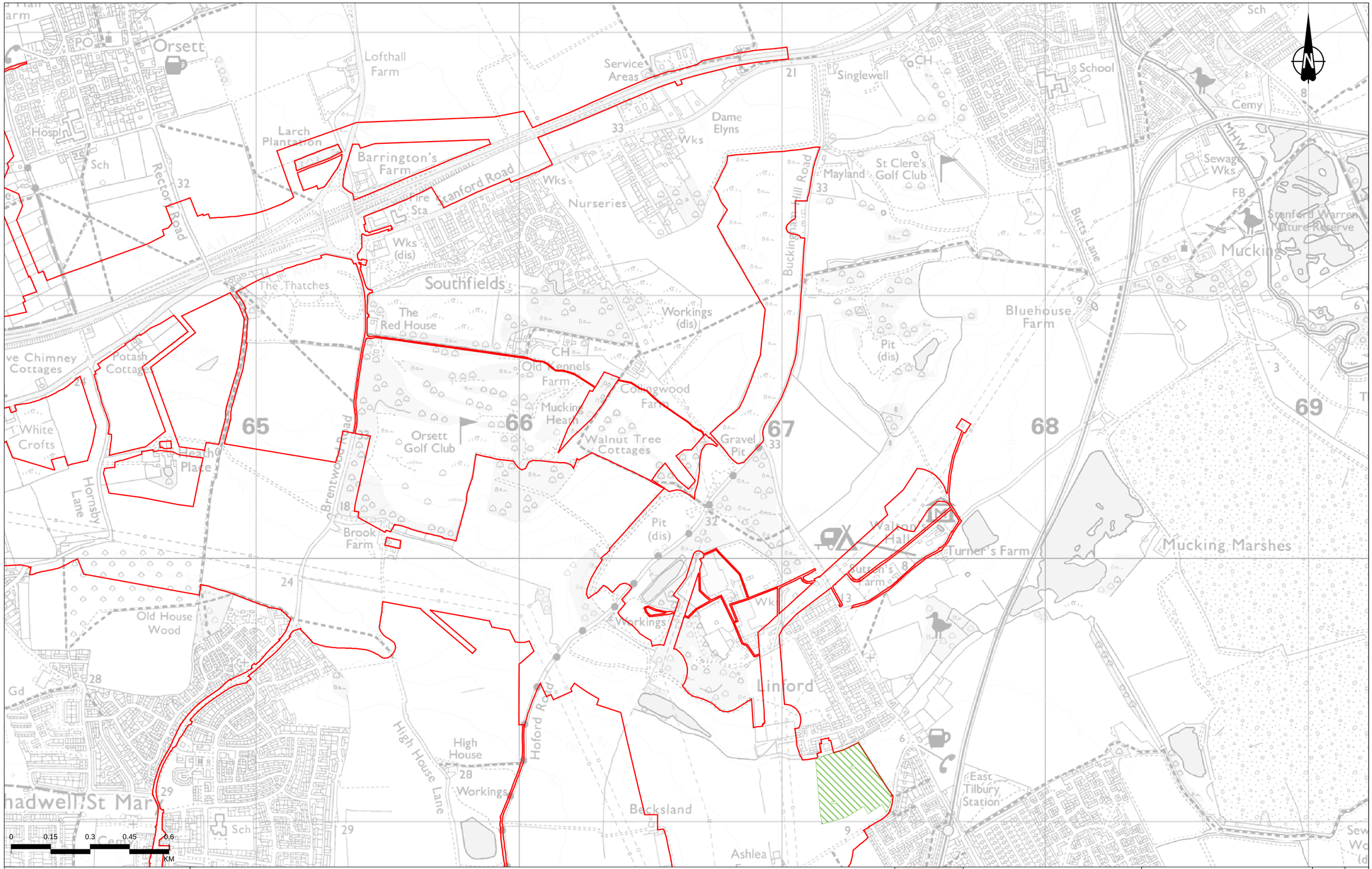

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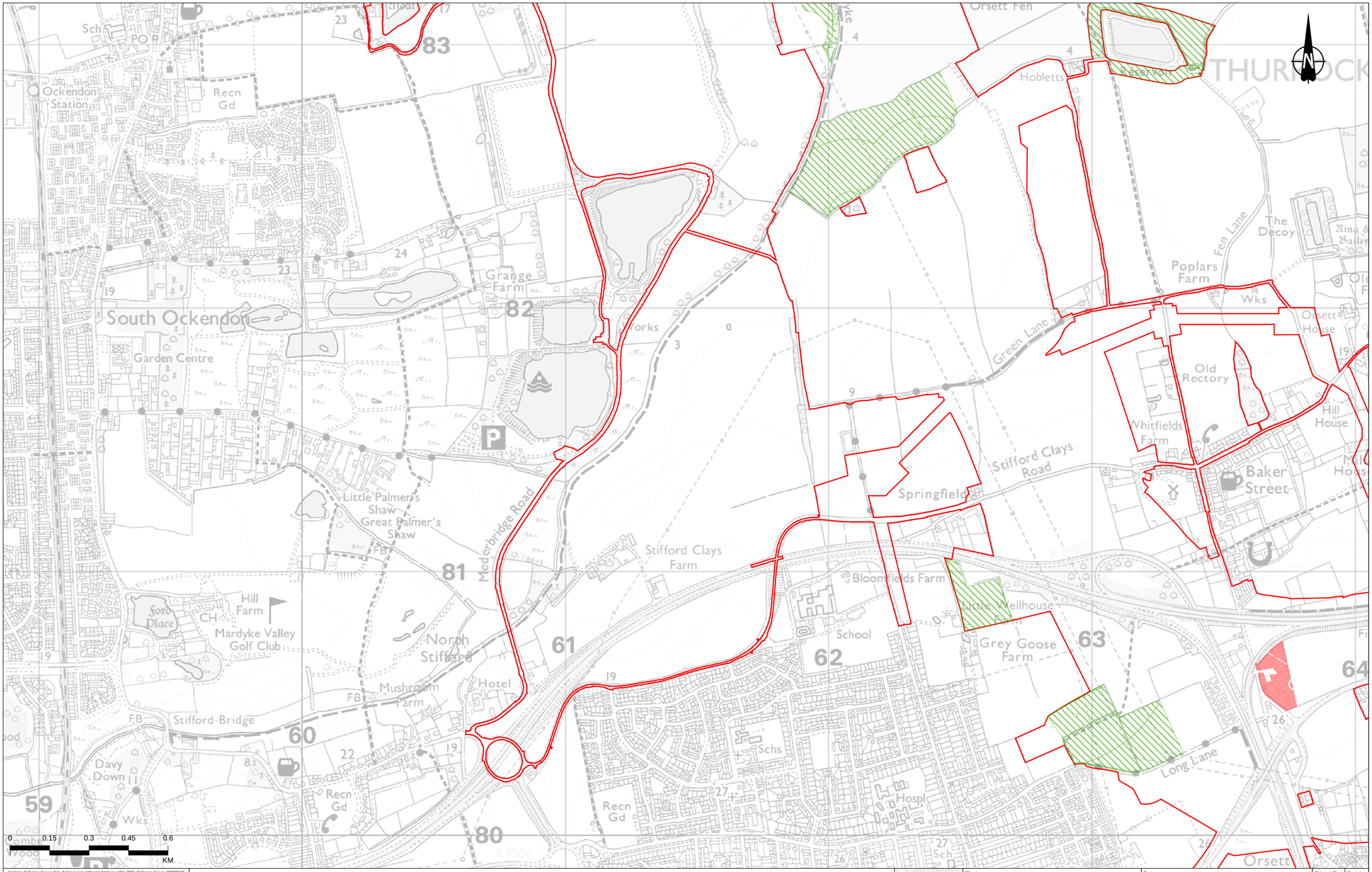

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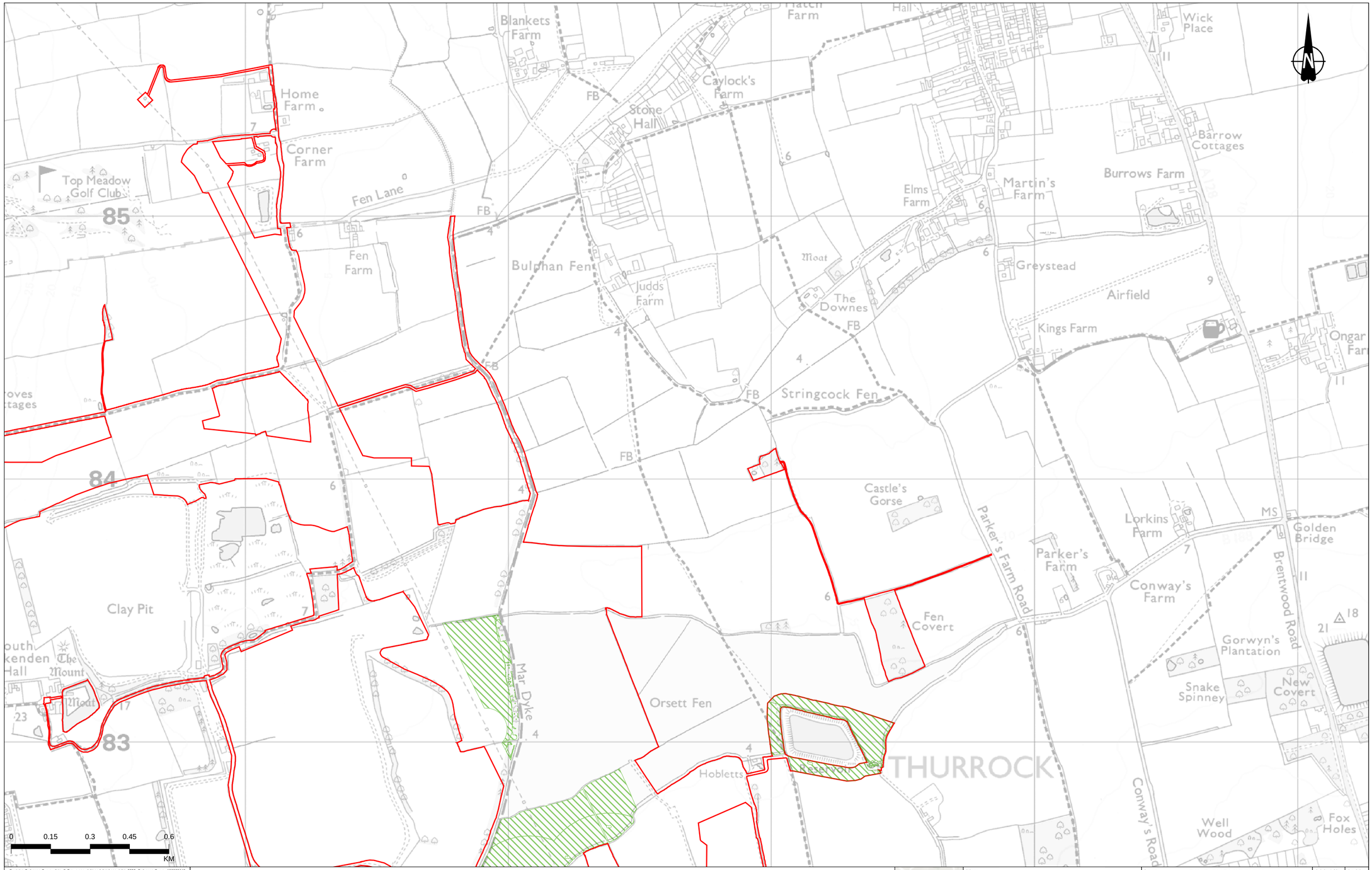

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P01	S9	17/10/2023	ExQ2 11.3.2	CD	EE	SM

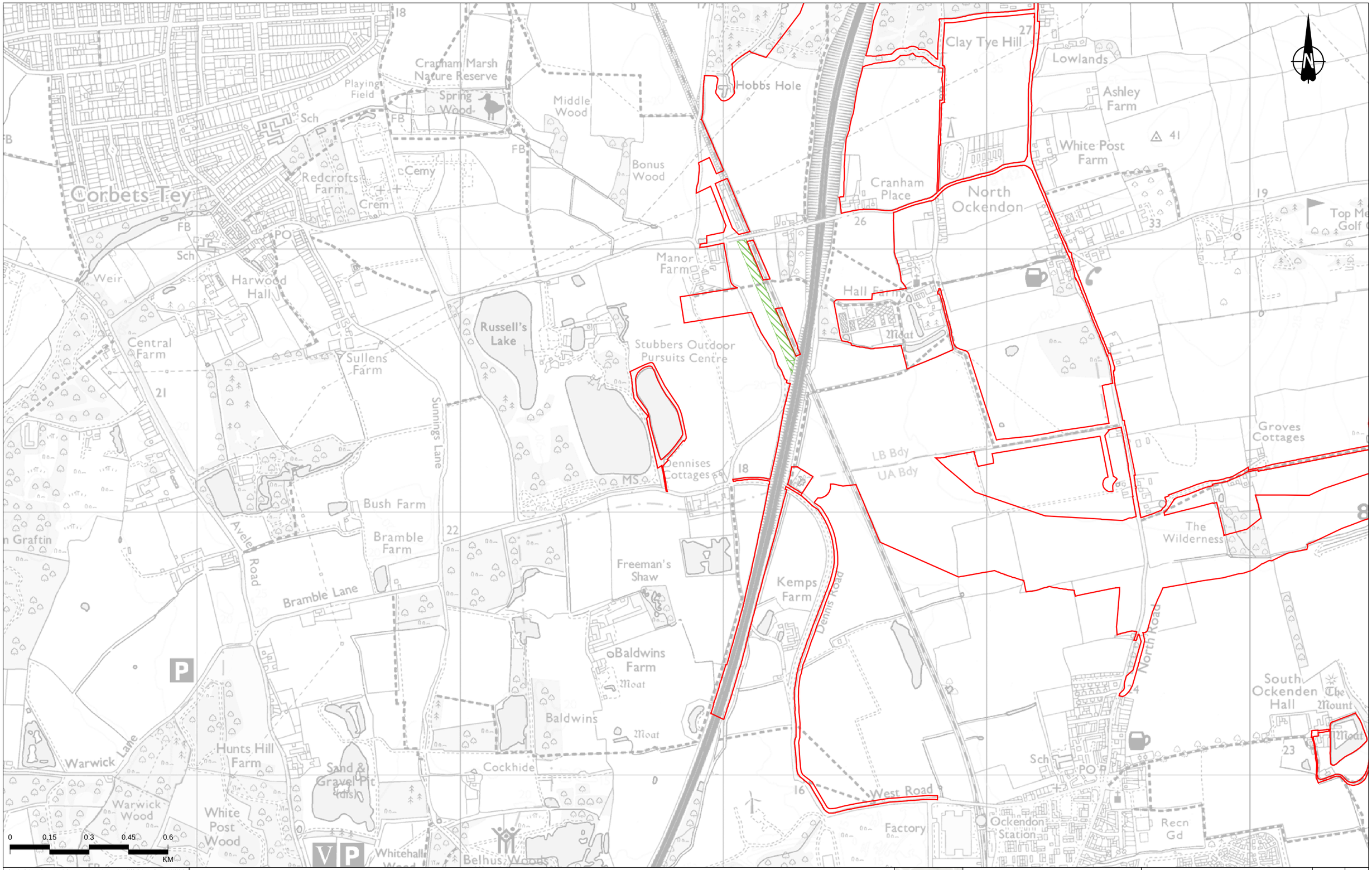
Client: national highways

Project: LOWER THAMES CROSSING

Status	PINS SUBMISSION	Original Size A3	Revision P01
Application Document Number	TR010032/EXAM/9.152	Scale 1:13,000	

Drawing Title: Figure 2 - Open Mosaic habitat loss/mitigation

Drawing Number: HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-50150



Legend

- Order Limits
- Open Mosaic habitat creation

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Appr'd
P01	S9	17/10/2023	ExQ2 11.3.2	CD	EE	SM

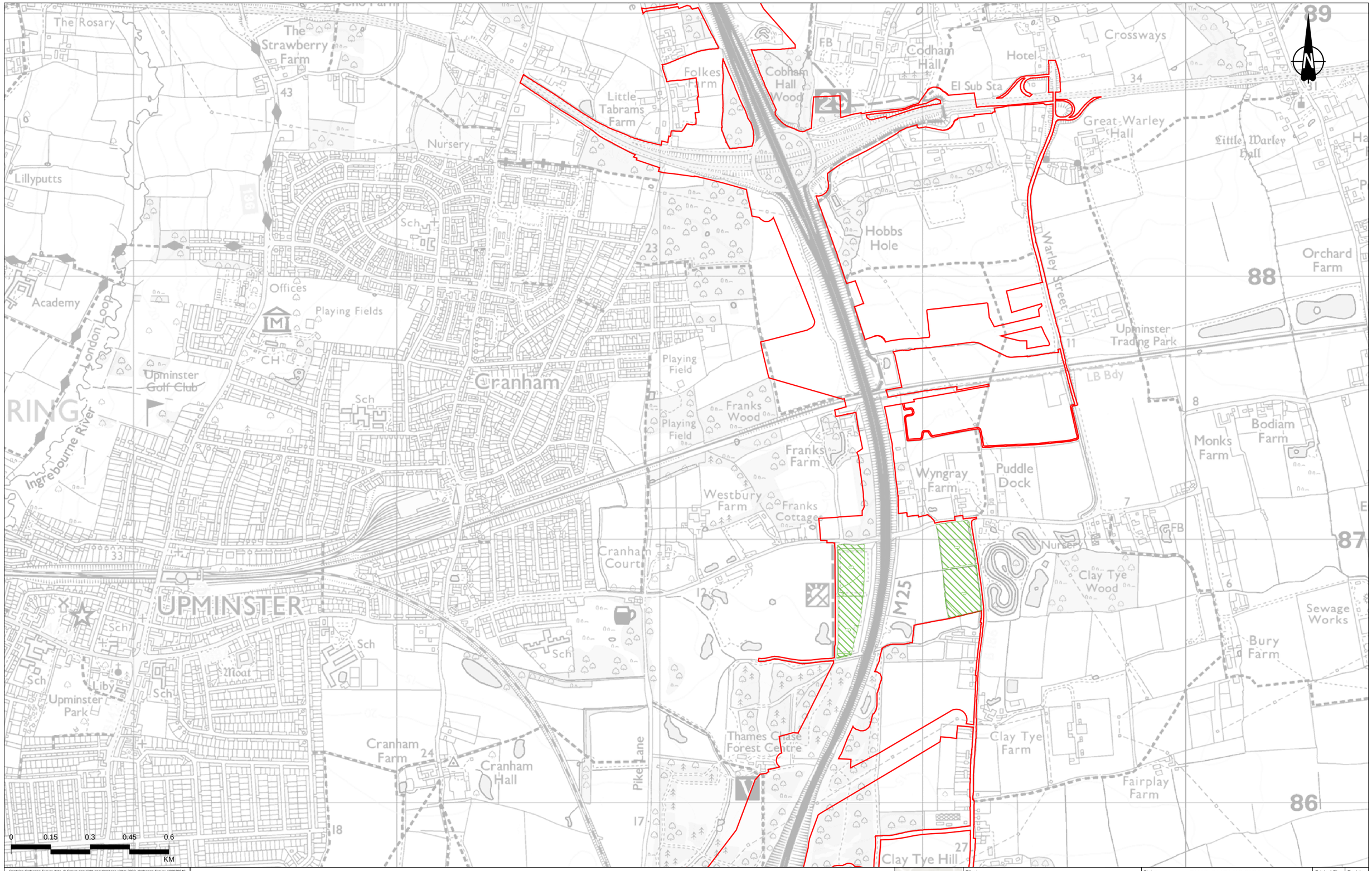
Client: national highways

Project: LOWER THAMES CROSSING

Status	PINS SUBMISSION	Original Size A3	Revision P01
Application Document Number	TR010032/EXAM/9.152	Scale 1:13,000	

Drawing Title: Figure 2 - Open Mosaic habitat loss/mitigation

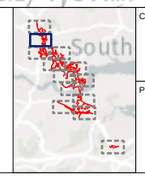
Drawing Number: HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-50150



Legend

- Order Limits
- Open Mosaic habitat creation

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
P01	S9	17/10/2023	ExQ2 11.3.2	CD	EE	SM



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Status: PINS SUBMISSION

Original Size: A3

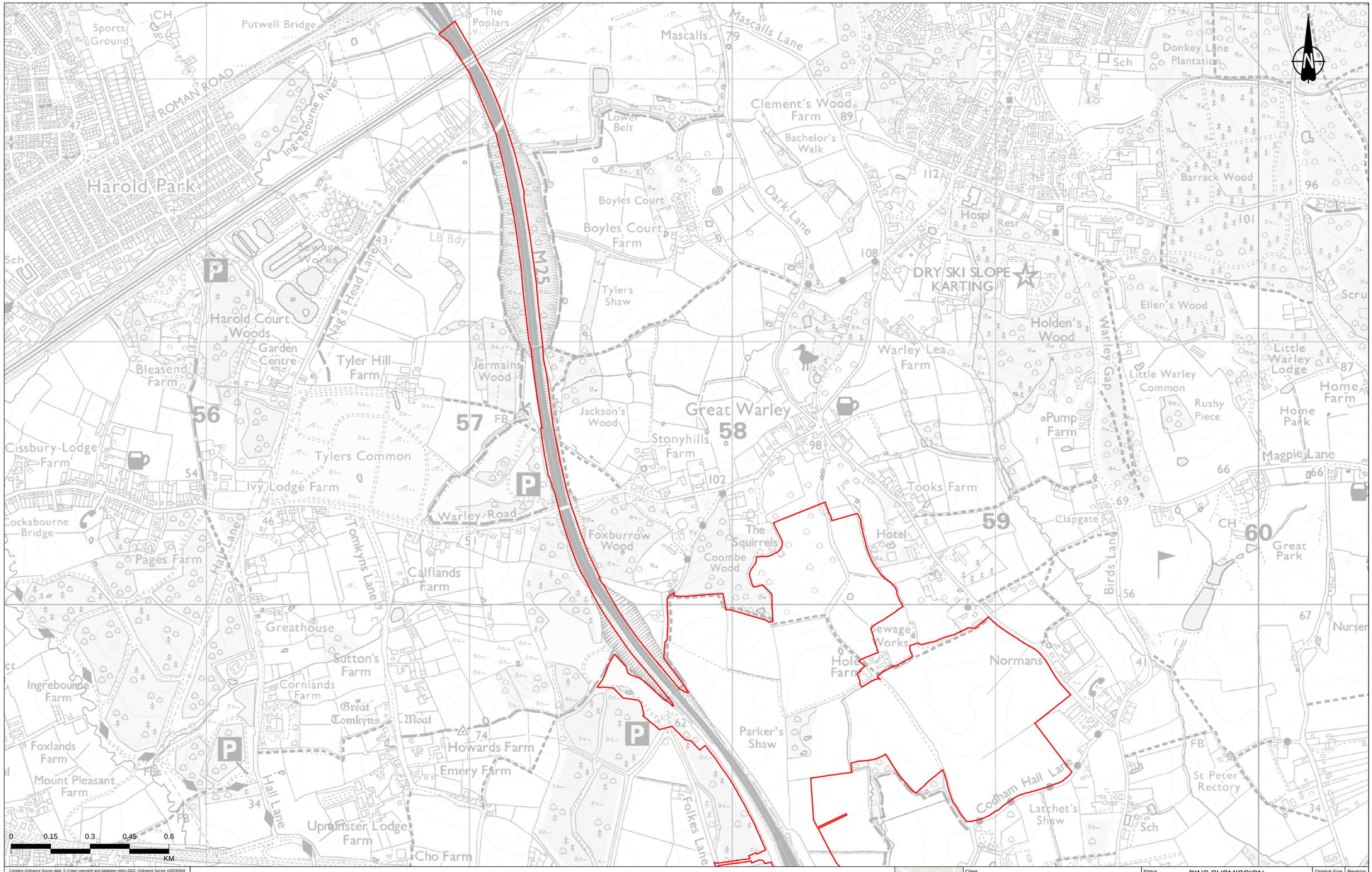
Revision: P01

Application Document Number: TR010032/EXAM/9.152

Scale: 1:13,000

Drawing Title: Figure 2 - Open Mosaic habitat loss/mitigation

Drawing Number: HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-50150



Legend

Order Limits

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
P01	S9	17/10/2023	ExQ2 11.3.2	CD	EE	SM

Client: national highways

Project: LOWER THAMES CROSSING

Status	PINS SUBMISSION
Original Size	A3
Revision	P01
Application Document Number	TR010032/EXAM/9.152
Scale	1:13,000

Drawing Title: Figure 2 - Open Mosaic habitat loss/mitigation

Drawing Number: HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-50150

Table 2 Open Mosaic habitat losses and gains associated with the Project

Existing habitat	Importance	Habitat loss (ha)	New semi-natural habitat (from Environmental Masterplan)	Habitat permanent gain	Net permanent gain (gain-loss)
South of the River Thames					
Open mosaic habitat	National	4.43ha	Open mosaic habitat (LE8.1)	13.87ha	9.44ha
North of the River Thames					
Open mosaic habitat	National	66.91ha	Open mosaic habitat (LE8.1)	199.75ha	132.84ha

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
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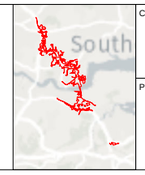

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Application Document Number: TR010032/EXAM/9.152 | Scale: 1:13,000

Drawing Title: Figure 2 - Open Mosaic habitat loss/mitigation

Drawing Number: HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-50150

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