A46 Newark Bypass

TR010065/APP/6.3

6.3 Environmental Statement

Appendix 8.14 Biodiversity Net Gain Technical Report

APFP Regulation 5(2)(a)

Planning Act 2008

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

Volume 6

March 2025

Infrastructure Planning

Planning Act 2008

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

A46 Newark Bypass

Development Consent Order 202[x]

ENVIRONMENTAL STATEMENT

APPENDIX 8.14 BIODIVERSITY NET GAIN TECHNICAL REPORT

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Executive Summary

Biodiversity Net Gain (BNG) involves both a numerical increase in biodiversity unit value following development, compliance with the metric's trading rules and implementation of a 30-year management plan. The BNG assessment on this Scheme has been undertaken in line with the BNG: Good Practice Principles for Development, a set of ten guiding principles for delivering BNG in the UK. Section 4 of this report provides statements on how each of these guiding principles has been applied to the A46 Newark Bypass (the "Scheme").

The BNG metric calculation uses baseline habitat data from Phase 1 habitat surveys, National Vegetation Classification (NVC) surveys, Modular River Physical (MoRPh) surveys and condition surveys completed by Mott MacDonald from 2022-2023. Post-development habitat types and distinctiveness scores are based on the Environmental Masterplan (see Figure 2.3 of the Environmental Statement (ES) Figures [AS-026]).

To calculate the percentage change in 'habitat units' from the Scheme, the pre-development (baseline) and post-development (proposed) value of the habitats within the Scheme were entered into the Natural England Biodiversity Metric 3.1 calculation tool. Although Biodiversity Metric 4.0 was published on 19 April 2023 the assessment had already made substantial progress by that point. The Natural England webpage for Biodiversity Metric 4.0 states that: *Users of previous versions of the Biodiversity Metric should continue to use that metric (unless requested to do otherwise by their client or consenting body) for the duration of the project it is being used for*. The report was completed, except for minor updates, prior to the publication of the Statutory Biodiversity Metric on 29 November 2023.Therefore the assessment has continued to use Biodiversity Metric 3.1. The conversion tool in the Biodiversity Metric 3.1 was used to inform translation of the baseline Phase 1 habitat survey data into the habitat types used in the metric which are based on UK Habitat Classification (UKHab).

The Scheme would involve losses to a number of habitats of high and very high distinctiveness including coastal and floodplain grazing marsh, lowland mixed deciduous woodland, reedbed and lowland meadow. Losses of these habitats are unavoidable and the majority of the impacts would be compensated in line with the Biodiversity Metric 3.1 Trading Rules. This would be through a combination of on site and off-site habitat creation and enhancement to the same habitats that are affected. However, the impacts to lowland meadow are considered unacceptable under Biodiversity Metric 3.1 because it is a habitat of very high distinctiveness. Therefore, it is not possible to compensate for its loss

and achieve Scheme wide BNG. Instead, the loss of lowland meadow, affecting an area of 0.1032 hectares, would be addressed separately through a Bespoke Compensation Agreement (see 5.1.6 for further detail). Calculations under Biodiversity Metric 3.1 are therefore applied to the remainder of the Scheme, excluding areas where lowland meadow is lost and compensated for.

The pre-development baseline value has been calculated using Biodiversity Metric 3.1 as:

- 905.60 habitat biodiversity units (893.64 on site and 11.96 off-site)
- 97.35 hedgerow biodiversity units (all on site)
- 40.55 river biodiversity units (all on site) units

The post-development habitats have been calculated as having a predicted value of:

- 949.82habitat units (937.23 on site and12.59 off-site)
- 105.30 hedgerow units (all on site)
- 54.04 river units (all on site)

When compared to the baseline, this equates to a predicted percentage change of:

- 4.95% net gain in habitat units
- 8.17% net gain in hedgerow units
- 33.28% net gain in river units

Trading rules are built into the metric to ensure that losses are compensated with either the same habitat or, depending on the habitat, another habitat of higher distinctiveness. These rules were met in the metric in relation to habitat units. However, the Scheme does involve a trading down in river units. Although there is a positive change in river units some of the river units lost for Other Rivers and Streams, a high distinctiveness habitat, are compensated for with Ditches which are of medium distinctiveness. Whilst river units are not included in the formal trading rules within Biodiversity Metric 3.1 they are still covered under Rule 3 of the User Guide.

BNG as set out in the Biodiversity Metric 3.1 calculation would be secured through Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026] which is secured through Requirement 12 of the draft DCO [REP6-004] and the First Iteration Environmental Management Plan (EMP) which is a required under Schedule 2 of the draft DCO [REP6-004]. The First Iteration EMP makes provision for several further documents that secure BNG including the Landscape and Ecology Management Plan (LEMP). The LEMP will set out the management required to ensure the scheme landscape planting establishes,

matures and fulfils its intended functions as set out in the Environmental Statement. The First Iteration EMP [REP6-012] also requires the production of a BNG Management and Monitoring Plan to ensure the specific habitat types and condition required for BNG are provided.

A BNG Audit Report would be undertaken at the end of construction and 5 years after the construction completion of all habitats on site, whether retained, enhanced or created. Its purpose would be to review the delivery of the habitat creation and enhancement, and determine whether BNG is on track to be achieved at the end of the 30 year period. This BNG Audit Report will be secured through the EMP.

Any off-site habitat works contributing to BNG will be secured through a legal agreement with the landowner concerned.

1 Introduction

Background

1.1.1 As part of the Scheme, a BNG Assessment was undertaken to inform the biodiversity assessment reported in Chapter 8 (Biodiversity) of the ES [APP-052].

1.1.2 Chapter 2 (The Scheme) of the ES [APP-046] provides the background and a description of the Scheme.

Biodiversity Net Gain overview

1.1.3 BNG is an approach for a development to achieve a measurable net gain in biodiversity. It follows the 'mitigation hierarchy' process of first avoiding and minimising biodiversity loss and providing positive habitat intervention, resulting in a net improvement to biodiversity. BNG means that the biodiversity value of a site brought forward for development must exceed the pre-development value of the site. The post-development value can include not just the value of the site itself, but off-site biodiversity gain and (when available from government) purchased biodiversity credits.

1.1.4 The net gain is measured using the Biodiversity Metric Tool published by Natural England which measures the net gains in 'biodiversity units'.

Document purpose

1.1.5 This report presents the BNG assessment of the Scheme, which included a biodiversity metric calculation using the Biodiversity Metric 3.1 Calculation Tool[1] and following the Biodiversity Metric 3.1 User Guide.[2] The updated Biodiversity Metric 4.0 was not used as the Natural England webpage for Biodiversity Metric 4.0[3] states that users of previous versions of the Biodiversity Metric should continue to do so for the duration of the Scheme. As the Scheme had already made substantial progress with Biodiversity Metric 3.1 by this point there is no requirement to change versions. Natural

[1] Natural England. (2022). Biodiversity Metric 3.1 - Calculation Tool (Macro Enabled) [online] available at: http://nepubprod.appspot.com/publication/5850908674228224 (last accessed December 2023).

[2] Panks et al. (2022). Biodiversity metric 3.1: Auditing and accounting for biodiversity - User Guide. Natural England [online] available at: http://nepubprod.appspot.com/publication/5850908674228224 (last accessed December 2023).

[3] Natural England. (2023). The Biodiversity Metric 4.0 (JP039) Webpage. [online] available at: http://publications.naturalengland.org.uk/publication/6049804846366720 (last accessed December 2023).

England have also been consulted specifically for the Scheme and have raised no objection to this approach. The report was completed, except for minor updates, prior to the publication of the Statutory Biodiversity Metric on 29 November 2023.

1.1.6 BNG would involve both a numerical increase in biodiversity unit value following development, compliance with the metric's trading rules and implementation of a 30-year management plan.

1.1.7 This report has been prepared following the framework provided in the Chartered Institute of Ecology and Environmental Management (CIEEM) BNG Report & Audit Templates document.[4] The aim for this document is to provide a 'Biodiversity Net Gain Design Stage Report', ie, for it to be a report aimed at decision-makers, for development consent of the Scheme (in this case to form part of the application for development consent), with the decision-makers being the Secretary of State for Transport (Secretary of State). This BNG Technical Report includes the:

- approach, methods used and assumptions for the BNG assessment (Section 2)
- baseline ecological context of the Scheme (Section 3)
- good practice principles for BNG that have been applied (Section 4)
- results of the BNG assessment for the scheme 'as designed' and an overview of the BNG calculations (Section 5)
- mechanisms the project would use to deliver BNG (Section 6)
- management and monitoring prescriptions (Section 7)

1.1.8 This report (and its associated figures and appendices) refers to the following application documents:

- The Chapter 8 (Biodiversity) of the ES [APP-052] and associated ES Appendices (contained within Volume 6.3 of the ES)
- Figure 2.3 Environmental Masterplan of the ES Figures [AS-026]

Biodiversity Net Gain Legislation, Policy and Guidance

1.1.9 This section provides a summary of the legislation, policy and guidance relevant to BNG.

Legislation

1.1.10 The Environment Act 2021[5] was granted Royal Assent on 9 November 2021 and contains provisions which mandates

[4] CIEEM. (2021). Biodiversity Net Gain Report and Audit Templates. Winchester, UK: Chartered Institute of Ecology and Environmental Management (last accessed December 2023).

[5] UK Parliament. (2021). Environment Act 2021 [online] available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted (last accessed December 2023).

achieving BNG for developments in England seeking development consent. Statutory requirements for Nationally Significant Infrastructure Projects (NSIPs) are expected for those applications for development consent which are not yet in examination, in November 2025[6]. These provisions will legally require developers to ensure that development sites are improved for biodiversity, or to ensure that off-site areas are improved as compensation, or a combination of both. These improvements must result in a 10% increase in habitat value for wildlife compared with the pre-development baseline. Mandatory BNG is measured by the Statutory Biodiversity Metric published by the Secretary of State for Environment Food and Rural Affairs.

1.1.11 Given the timing of the application for development consent for this Scheme there are no statutory requirements to undertake a BNG Assessment or to achieve a particular percentage increase through the Scheme. However, NSIP applicants are encouraged to take a proactive approach in the transition to mandatory BNG by completing a metric and taking opportunities to improve scheme performance against this. The use of a metric is also useful in demonstrating to stakeholders how a scheme is taking biodiversity into account.

1.1.12 BNG can be achieved through habitat creation or enhancement to existing habitats. All biodiversity enhancements will be required to be maintained for a minimum of 30 years.

Planning policy

1.1.13 The Government's Environmental Improvement Plan 2023 for England [7] describes an ambition to halt the decline in our biodiversity so we can achieve thriving plants and wildlife. This ambition is supported by the National Planning Policy Framework (NPPF)[8] which makes general provisions for the delivery of BNG. The NPPF states that "*plans should…identify and pursue opportunities for securing measurable net gains for biodiversity*" although no numerical definition of "*net gains for biodiversity*" is provided.

1.1.14 The National Policy Statement for National Networks (NPSNN) sets out the policy which the Scheme should comply with. It is also the

[6] Department for Environment, Food and Rural Affairs (2023). Consultation on Biodiversity Net Gain regulations and implementation: Consultation outcome. Government response and summary of responses (21 February 2023) [online] available at: https://www.gov.uk/government/consultations/consultation-on-biodiversity-net-gain-regulations-and-implementation/outcome/government-response-and-summary-of-responses (last accessed December 2023).

[7] Defra. (2023). Environmental Improvement Plan 2023 [online] available at: https://www.gov.uk/government/publications/environmental-improvement-plan (last accessed December 2023).

[8] Ministry of Housing, Communities and Local Government (December 2024) National Planning Policy Framework [online] available at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf (last accessed March 2025)

basis for informing a judgement on the impacts of the Scheme, for example whether the Scheme is consistent with the requirements of the NPSNN. Compliance of the Scheme with the 2015 NPSNN is detailed within the NPSNN (2015) Accordance Tables [REP6-016].

1.1.15 At the time of the DCO application submission in April 2024, a Draft NPSNN (2024) Accordance Table [APP-192] was submitted with the application which summarised compliance of the Scheme with the draft NPSNN. This was because, even though the NPSNN 2024 was still in draft at that time (having been published for consultation in March 2023), it was still capable of constituting a material consideration in the Secretary of State's decision on the Application. As the 2024 NPSNN was designated on 24 May 2024, the Draft NPSNN (2024) Accordance Table [APP-192] has been superseded by the NPSNN (2024) Accordance Table [REP5-032], which assesses the Scheme against the designated 2024 NPSNN. The application for development consent for the Scheme was accepted for examination on 23 May 2024. As set out in the transitional provisions of the 2024 NPSNN (paragraphs 1.16 and 1.17), the 2015 NPSNN has effect for any application for development consent accepted for examination prior to 24 May 2024 and will inform decisions made by the Secretary of State in relation to those applications. However, it is noted that the 2024 NPSNN may still be an important consideration for the Secretary of State for Transport when determining whether to consent the DCO for this Scheme. Therefore, the NPSNN (2024) Accordance Tables [REP5-032] summarised compliance of the Scheme with the 2024 NPSNN.

1.1.16 The 2015 NPSNN[9] states that development should avoid significant harm to biodiversity through avoidance and mitigation. Where harm cannot be avoided then as a last resort compensation measures should be sought. Compensation can include biodiversity offsetting to help achieve no net loss and preferably a net gain for biodiversity. Development proposals should build in beneficial biodiversity features wherever possible. In addition, the Draft 2024 NPSNN[10] and Final 2024 NPSNN, recommends the use of an appropriate Biodiversity Metric to achieve net gain outcomes together with application of the mitigation hierarchy. The 2024 NPSNN also notes that any off-site net gain delivery should contribute to strategic outcomes such as habitat connectivity and ecosystem services.

[9] Department for Transport (2014) National Policy Statement for National Networks [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/npsnn-web.pdf (last accessed December 2023).

[10] Department for Transport (2023) Draft National Policy Statement for National Networks [online] available at: Draft national policy statement for national networks (web version) (publishing.service.gov.uk) (last accessed December 2023).

1.1.17 Local planning policy relevant to BNG includes the Newark & Sherwood Amended Core Strategy (Adopted March 2019).[11] Spatial Policy 9 includes the requirements that development should: *Not impact on sites that are designated nationally or locally for their biodiversity and give preference to sites of lesser environmental value, avoid impact on biodiversity and provide net gains in biodiversity wherever possible.*

1.1.18 The Nottinghamshire Biodiversity Action Plan (BAP)[12] outlines the approach to biodiversity in Nottinghamshire and sets out the habitats and species of conservation concern in the county. Habitat Action Plans and Species Action Plans are set out for these local priorities including targets for protection, enhancement and creation of habitats.

Guidance

1.1.19 The following publications have been used to inform the BNG assessment and this report:

- Biodiversity Metric 3.1 User Guide[2] and Technical Supplement[13] (including the Condition Assessment Sheets for each habitat type).
- The Good Practice Principles for Development, A Practical Guide for the assessment and delivery of BNG.[14] The guide contains ten principles that were published to provide a framework for developers to design and deliver BNG based on good practice.
- BS 8683:2021, the British Standard for Biodiversity Net Gain.[15]
- CIEEM Biodiversity Net Gain Report & Audit Templates document.[16]

[11] Newark & Sherwood District Council (2019) Review Of The Newark & Sherwood Local Development Framework Core Strategy & Allocations Amended Core Strategy [online] available at: https://www.newark-sherwooddc.gov.uk/media/newark-and-sherwood/images-and-files/planning-policy/pdfs/core-strategy/ACS2019.pdf (last accessed December 2023).

[12] Nottinghamshire Biodiversity Action Group (2008) Local Biodiversity Action Plan [online] available at: https://nottsbag.org.uk/lbap/lbap-introduction-and-sections-1-to-6/ (last accessed December 2023).

[13] Panks et al. (2022). Biodiversity metric 3.1: Auditing and accounting for biodiversity - Technical Supplement [online] available at: http://nepubprod.appspot.com/publication/5850908674228224 (last accessed December 2023).

[14] CIEEM, CIRIA, IEMA . (2016). Biodiversity net gain: Good practice principles for development [online] available at: Biodiversity Net Gain: Good Practice Principles for Development. | CIEEM (last accessed December 2023).

15 British Standards Institute. (2021). BS8683 - Process for designing and implementing biodiversity net gain [online] available at: BS 8683 Process for designing and implementing Biodiversity Net Gain | BSI (bsigroup.com) (last accessed December 2023).

16 CIEEM. (2021). Biodiversity Net Gain Report and Audit Templates [online] available at: https://cieem.net/resource/biodiversity-net-gain-report-and-audit-templates/ (last accessed December 2023).

2 Methods

2.1.1 The pre-development (baseline) and post-development (proposed) value of the habitats within the Order Limits has been calculated using Natural England's Biodiversity Metric 3.1 calculator tool.[1] The methodology for determining habitat distinctiveness and condition values follows the guidelines set out by the User Guide[2] and Technical Supplement for Biodiversity Metric 3.1.[10] Although Biodiversity Metric 4.0 was published on 19 April 2023, the Natural England webpage for Biodiversity Metric 4.0[3] states that users of Biodiversity Metric 3.1 should continue to use the 3.1 metric for the duration of the Scheme. As the Scheme had already made substantial progress with Biodiversity Metric 3.1 by this point there is no requirement to change versions. Biodiversity Metric 3.1 would therefore continue to be used for the Scheme duration.

Data sources

2.1.2 The following data sources have been used to define the boundary for the Biodiversity Net Gain (BNG) calculation and determine the relevant attributes for BNG (e.g., size, habitat type and condition) for the pre- and post-development habitats.

Boundary

2.1.3 The boundary used for the BNG assessment is the Order Limits shown in Chapter 2 (The Scheme) of the ES [APP-046]. The Order Limits cover an area of 210.75 hectares. Note that the area of baseline habitat used in the report is approximately 1.45 hectares smaller than this. This is due to the area of the River Trent and Kelham Channel which are included within the Order Limits but excluded from the area-based BNG calculations. Exclusion of such larger watercourses (greater than 5 metres in width) is recommended by the Biodiversity Metric 3.1 User Guide[2].

2.1.4 Where a river habitat falls outside of a site boundary but the bank top is within 10 metres of the boundary the Biodiversity Metric 3.1 User Guide[2] states that it should be treated as if they were on site. There are a number of sections of the River Trent outside of but adjacent to the Order Limits. These have been included in the assessment.

Pre-development (baseline) habitats

2.1.5 In order to generate the site baseline habitat data (eg, habitat type, condition) the following survey data were used:

- Phase 1 habitat surveys completed in 2022 and 2023 covering the Order Limits (outlined in Appendix 8.1 (Extended Phase 1 Habitat Technical Report) of the ES Appendices [APP-145 and APP-146]).
- Phase 2 National Vegetation Classification (NVC) surveys of specific habitats, including semi-natural woodland and grassland completed in 2022 and 2023 (outlined in Appendix 8.2 (National Vegetation Classification Technical Report) of the ES Appendices [APP-147]).
- Modular river survey (MoRPh) of the river habitats completed in 2022 and 2023 (outlined in Appendix 8.13 (River Physical Habitat Technical Report) of the ES Appendices [APP-158]).
- Habitat condition assessments completed in 2022 and 2023 (outlined in Section 5 of this report).

2.1.6 A map of baseline habitat types is displayed in Appendix A.1 of this report.

Post-development habitats

2.1.7 The General Arrangement Plans [AS-007] were used to identify the extent of permanent works.

2.1.8 Post-development habitat types, distinctiveness scores and condition scores have been based on Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026]. It includes new habitats as well as areas where the pre-development habitats would be reinstated. Interpretation of the habitats proposed in the Environmental Masterplan is covered in Section 3 of this report.

2.1.9 Vegetation lost and retained has also been taken from Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026]. Where white space has been left on the Environmental Masterplan and there were also no permanent works shown on the General Arrangement Plans [AS-007]**,** it was assumed that the habitat would be retained. Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026] highlights areas of existing vegetation to be retained. Some interpretation of this was necessary. Where the vegetation to be retained corresponds to a feature used in the biodiversity metric such as an area of woodland, a line of trees or a hedgerow it is assumed that the feature would be retained. Where it relates to individual trees there will be a different baseline habitat beneath the tree canopy area shown and it is assumed that this would be retained if it is adjacent to either retained habitat or proposed habitat of the same broad habitat type, e.g., an area of

grassland beneath a retained tree canopy would be retained if further grassland was proposed around it. However, if a different broad habitat has been proposed adjacent then it has been assumed that this would extend within the tree canopy, e.g., if the baseline habitat beneath the canopy is arable but woodland is proposed around the tree it is assumed that the arable area would become part of the woodland.

2.1.10 A different approach was needed for three areas of temporary works in Network Rail operational land. In these areas, if vegetation will be affected by the works, it will not be possible to recreate the existing habitat or maintain any soft landscaping. A precautionary assumption has therefore been made that modified grassland in poor condition would develop in these areas. If temporary works in Network Rail operational land take place on hardstanding or bare ground it is assumed that the habitat would be retained. The temporary works on Network Rail operational land cover approximately 0.2ha of the Order Limits.

2.1.11 Tab A-2 of the completed biodiversity metric (Appendix A.4) highlights Check Areas – Area cross checks failed. This relates to a difference in the area of baseline habitats versus post-development habitat (retained and created). The total for post-development habitat is 0.78 hectares smaller than the total for baseline habitat. This corresponds closely to the area of lowland meadow lost and the proposed lowland meadow areas which are excluded from the metric post-development habitat areas. These areas total 0.86ha. The remaining difference is due to polygon alignment in the GIS. This small difference will have a negligible impact on the scores for habitat units.

Off-Site habitat compensation area

2.1.12 Off-site habitat compensation is currently proposed at Doddington Hall, located approximately 13 kilometres north-east of the Scheme. UK Habitat Classification (UKHab) survey and BNG Condition Assessment data has been collected for the proposed off-site compensation area and is set out in Appendix A.5 of this report.

2.1.13 This Report has been prepared to show that the use of Doddington Hall is a suitable and achievable solution. However, while the Applicant is committed to the use of Doddington Hall and discussions with the landowners are ongoing, as this is an offsite location it must be recognised that should this not be possible a suitable alternative would be found in its place. The Applicant will keep the Examining Authority informed of its progress in securing the necessary legal agreements with Doddington Hall, or suitable alternative, throughout the Examination.

Competency statement

2.1.14 The metric calculations were undertaken by an experienced botanist and BNG practitioner with experience completing BNG calculations for several large development schemes (using Biodiversity Metric 3.1), defined as a competent person under British Standard BS 8683:2021, the technical standard for designing and implementing BNG.

2.1.15 The qualifications and experience of the BNG assessors are set out in the competency statement (Table 2-1 below).

Table 2-1: Competency statement

Name	Years Experience	Role	Qualifications	Experience summary
RH	15	Principal Ecologist	MSc, BSc	Experience of BNG Assessments for several large-scale developments undertaking calculations using Biodiversity Metric 3.0 and 3.1.

Limitations and assumptions

2.1.16 The following limitations and assumptions apply to this BNG assessment:

- Post-development target habitat condition scores are indicative and are dependent on the appropriate detailed design and maintenance of the post-development habitats.
- The BNG metric accounts for the fact there is an inherent risk to all habitat creation and that some habitats are more difficult to create than others. Deviations from the standard risk multipliers for habitat creation used in Biodiversity Metric 3.1 have been avoided.
- Baseline habitat surveys were undertaken in 2022 and 2023, this data is considered to be valid at the time of the report issue.
- A precautionary approach has been taken to assigning condition for baseline habitats where condition was not assessed as part of the Phase 1 Habitat survey and where no National Vegetation Classification (NVC) surveys were undertaken. In these cases, the baseline condition was precautionarily assessed as good. Because of the precautionary approach taken, the value (distinctiveness and condition) of some pre-development habitats may actually be lower than currently assessed.
- It was not possible to survey some habitat areas due to restrictions on access. In these areas a judgement was made on habitat type from available information such as aerial photos.
- It is assumed, unless otherwise stated, that land temporarily required for the construction of the Scheme would be reinstated once construction is complete. A 3-year duration for temporary land take

has been assumed as outlined in Chapter 2 (The Scheme) of the ES [APP-046].

- Where Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026] shows Proposed Species Rich Grassland (LE1.3) following Design Manual for Roads and Bridges (DMRB) LD 117 - Landscape Design[17] it is assumed that the requirement in this report for low nutrient soils is met. Further National Highways guidance states that the low nutrient standard should be achieved by not using topsoil in these plots and it is assumed this would occur. It is also assumed that the requirements for grass cutting once per year and scrub removal every 5 years set out in DMRB GM 701 Asset Delivery Asset Maintenance Requirements[18] would be followed for the duration of the 30-year management period.
- It is assumed that an area of woodland plantation would be enhanced off-site at Doddington Hall. The area is intended to be enhanced to Lowland Mixed Deciduous Woodland.

Assessment steps

Baseline (pre-development)

2.1.17 The following steps were taken for the calculation of the baseline habitat biodiversity units.

2.1.18 The conversion tool in the Biodiversity Metric 3.1 was used to inform translation of the baseline Phase 1 habitat survey into the habitat types used in the metric which are based on UK Habitat Classification (UKHab). This was undertaken with reference to guidance in the User Guide and Technical Supplement. Table 2-2 below outlines how habitats were converted between the two classification systems.

Table 2-2: Conversion between habitat classifications

Habitat Type (Phase 1)	Habitat Type (Biodiversity Metric 3.1)
Area Habitats	
A1.1.1 - Broadleaved woodland - semi-natural	Lowland mixed deciduous woodland, where identified by the NVC Report and MAGIC Website[19]. Other woodland; broadleaved, where possibility excluded by NVC Report.

[17] Design Manual for Roads and Bridges (2020) Sustainability & Environment Design LD 117 Landscape design. [online] available at: https://www.standardsforhighways.co.uk/tses/attachments/82073bde-ec0c-4d4f-8eeb-afe0ace3c639?inline=true (last accessed December 2023).

[18] Design Manual for Roads and Bridges General Principles and Scheme Governance Maintenance & Operation.GM 701 Asset delivery asset maintenance. Available at: https://www.standardsforhighways.co.uk/tses/attachments/e0a134c8-f5e2-4f30-9cda-9e43d047f46e?inline=true. (Last Accessed December 2023).

[19] Defra (2018) MAGIC Interactive Map [online]. Available at: http://magic.defra.gov.uk/ (Last accessed April 2024)

Habitat Type (Phase 1)	Habitat Type (Biodiversity Metric 3.1)
A1.1.2 – Broadleaved woodland – plantation	Other woodland; broadleaved
A1.2.2 – Coniferous woodland – plantation	Other coniferous woodland
A1.3.2 – Mixed woodland – plantation	Other woodland; mixed
A2.1 – Scrub – dense/continuous	Mixed scrub
A2.2 – Scrub – scattered	Mixed scrub
A3.1 – Broadleaved parkland/scattered trees	Woodland and forest – Wood-pasture and parkland
A3.3 – Mixed parkland/scattered trees	Woodland and forest – Wood-pasture and parkland
B2.1 – Neutral grassland – unimproved	Grassland – Lowland meadows
B2.2 – Neutral grassland – semi-improved	Other neutral grassland
B4 – Improved grassland	Modified grassland
B5 – Marsh/marshy grassland	Floodplain Wetland Mosaic (CFGM)/Other neutral grassland – dependent on HPI criteria
B6 – Poor semi-improved grassland	Grassland – Modified grassland
C3.1 – Other tall herb and fern – ruderal	Ruderal/Ephemeral
F2.2 – Marginal and inundation – inundation vegetation	Reedbeds
G1 – Standing water	Ponds (Non-Priority Habitat)
J1.1 – Cultivated/disturbed land – arable	Cereal crops
J1.2 – Cultivated/disturbed land – amenity grassland	Modified grassland
J1.3 – Cultivated/disturbed land – ephemeral/short perennial	Ruderal/Ephemeral
J3.4 – Caravan site	Urban – Developed land; sealed surface
J3.6 – Buildings	Developed land; sealed surface
J4 – Bare ground	Vacant/derelict land/bare ground
J5 – Hardstanding	Developed land; sealed surface
Hedgerow Habitats	
A3.1 – Broadleaved parkland/scattered trees	Line of Trees/Line of Trees (Ecologically Valuable) – dependent on presence of ancient/veteran trees
J2.1.2 – Intact hedge – species-poor	Native Hedgerow/Native Hedgerow – Associated with bank or ditch – dependent on presence of bank/ditch
J2.2.2 – Defunct hedge – species-poor	Native Hedgerow/Native Hedgerow – Associated with bank or ditch – dependent on presence of bank/ditch
J2.3.2 – Hedge with trees – species-poor	Native Hedgerow with trees/Native Hedgerow with trees – Associated with bank or ditch – dependent on presence of bank/ditch
River Habitats	
G1 – Standing water	Ditches
G2 – Running water	Ditches/Other Rivers and Streams (dependent on whether drainage feature or not)

2.1.19 Whilst the majority of habitats were assigned based on Table 2-2 it was recognised that certain habitats used within the Biodiversity Metric 3.1 do not have an equivalent Phase 1 habitat type. One area of B4 Improved Grassland met the priority habitat definition of

Coastal and Floodplain Grazing Marsh[20] and was therefore recorded as Floodplain Wetland Mosaic (CFGM) in the metric. Similarly, two small areas recorded in the Phase 1 Habitat Survey as A3.1 – Broadleaved parkland/scattered trees did not meet the UK Hab definition of Wood Pasture and Parkland[21] so were classed as other woodland; broadleaved. As highlighted in Table 2-2, the treatment of A1.1.1 – Broadleaved woodland – semi-natural followed the conclusions of the NVC Report (Appendix 8.2 (National Vegetation Classification Technical Report) of the ES Appendices [APP-147]). This identified a maximum extent for Lowland Mixed Deciduous Woodland based on a combination of NVC Survey and its inclusion as a Habitat of Principal Importance on the MAGIC Website.

2.1.20 It should be noted that Chapter 8 (Biodiversity) of the Environmental Statement [APP-052] reports on impacts to habitat in relation to Phase 1 Habitat Survey classification and Habitats of Principal Importance. This is not fully comparable to the habitat types used by the Biodiversity Metric referred to in this report. However this report does align with Chapter 8 (Biodiversity) of the Environmental Statement [APP-052] in terms of the extent of habitats of high and very high distinctiveness present and affected as these correspond to Habitats of Principal Importance.

2.1.21 The extent of area-based and linear habitats were defined (represented by polygons and lines in GIS, respectively). The metric includes three broad categories of habitats and biodiversity units for which scores are calculated differently:

- area habitats (such as grasslands, woodlands and ponds)
- linear hedgerows and lines of trees
- linear rivers and ditches

2.1.22 Distinctiveness and condition scores were assigned to habitats based on the results of the Phase 1 habitat surveys and guidance in the Biodiversity Metric 3.1 User Guide[2] and Technical Supplement[10] (including the Condition Assessment Sheets for each habitat type).

- Distinctiveness: Each habitat type is pre-assigned a distinctiveness band which is a measure of habitat quality, relating to the distinguishing features of a habitat type such as rarity, conservation status and species assemblage. Habitat distinctiveness was pre-assigned in Biodiversity Metric 3.1 based on habitat type.
- Condition: Each habitat area was assigned a condition score based on the number of assessment criteria (including essential criteria) that are

[20]UK Biodiversity Action Plan (2016) Priority Habitat Descriptions Coastal and Floodplain Grazing Marsh [online] available at: Coastal and floodplain grazing marsh (UK BAP Priority Habitat description) (jncc.gov.uk) (last accessed December 2023).

[21] UK Biodiversity Action Plan (2016) Priority Habitat Descriptions Wood-Pasture and Parkland [online] available at: Wood-pasture and parkland (UK BAP Priority Habitat description) – Revised 2011 (jncc.gov.uk) (last accessed December 2023).

passed/failed within the Biodiversity Metric 3.1 Condition Assessment Sheets. These provide a structured condition assessment process for each broad habitat type within the biodiversity metric. This is assessed with a range of criteria relating to the overall "biological working order of a habitat type, judged against the perceived ecological optimum state".[10] The habitat condition assessment applies to variation in quality within each habitat type, rather than between habitat types.

- Strategic significance: to understand local conservation priorities all baseline habitats were reviewed against the Nottinghamshire BAP[9] and the National Character Area for Trent and Belvoir Vales.[22] The BAP provided a relatively long list of Habitat Action Plans which should be considered local priorities. The National Character Areas (NCA) also emphasised the local ecological importance of woodland and agricultural grassland (this covering both the Order Limits and the off-site enhancement area at Doddington Hall). As a result the majority of habitats were classed as high strategic significance with the exceptions of amenity grassland, scrub and ruderal. This is in line with the User Guide which states that strategic significance should be assigned as high when the habitat location is identified in local plans, strategies, or policies.

2.1.23 River habitats are assigned either high or low strategic significance in Biodiversity Metric 3.1 based on the following:

- High significance: delivery of river restoration actions within a Local Plan, River Basin Management Plan, Catchment Plans, Catchment Planning System, or Priority Habitats for Restoration.
- Low significance low potential; action not identified in any plan.

2.1.24 The river habitats present in the Order Limits were all assigned as high strategic significance due to their profile within the Nottinghamshire BAP, NCA or River Basin Management Plans (RBMP), with the exception of culverts.

2.1.25 Biodiversity Metric 3.1 applies additional unit modifiers to river habitats (pre- and post-development) to account for levels of riparian zone and in-watercourse encroachment existing before and then by a development, reducing biodiversity units based on the level of encroachment.

2.1.26 In the Biodiversity Metric 3.1, the riparian zone is defined as a 10 metre zone from the top of a riverbank. In accordance with Biodiversity Metric 3.1, a riparian zone is the interface between land and a watercourse.

2.1.27 The riparian zone encroachment unit modifier accounts for the level of reduction in quality or quantity of riparian habitat, and the use of available habitat that forms a specific ecological function for

[22] Natural England (2013). NCA Profile: 48: Trent and Belvoir Vales (NE429) [online] available at: https://publications.naturalengland.org.uk/publication/7030006?category=587130 (last accessed December 2023).

riparian or aquatic species. The level of encroachment is identified on a scale of 'no encroachment/minor/moderate/major' based on criteria set out in the Biodiversity Metric 3.1 User Guide. The riparian zone is defined as a 10 metre zone from the top of the riverbank, this was determined using a 10 metre buffer in ArcMap. The bands reflect how far the development has encroached toward the river channel (distance) or how much of the 10 metre riparian zone (by % area) is covered by the development footprint. Riparian encroachment was based on the baseline habitat mapping.

2.1.28 The watercourse encroachment unit modifier accounts for interventions that adversely affect a watercourse in terms of hydrological or geomorphological processes, which result in localised changes in habitat, species and the use of migratory pathways. The level of encroachment is identified on a scale of 'no encroachment/minor/major' based on criteria set out in the Biodiversity Metric 3.1 User Guide.[2] These bands reflect how far the development has encroached into the river channel (% width) or along the bank (% length). The percentage length is measured as a percentage of the total length of the watercourse within the on site boundary. Watercourse encroachment was based on the baseline habitat mapping.

2.1.29 Esri ArcGIS Pro was used to prepare the baseline survey data for entry into the Biodiversity Metric 3.1 Calculation Tool.[1] For each individual habitat parcel identified within the Order Limits, the attributes identified included the specific habitat type and its area (hectares), or length (kilometres) for linear habitats, the outcome of the habitat condition assessments and indicated whether the habitat would be lost.

2.1.30 GIS output was checked against baseline data collection before the data was added into the calculation tool for area-based, hedgerow and river habitats. Each habitat type and condition combination was added as a separate row in the Biodiversity Metric 3.1 calculation tool.

2.1.31 The calculation tool produced a baseline biodiversity unit value for each habitat type and condition combination as well as for the Order Limits as a whole.

Calculation of the post-development habitat biodiversity units

2.1.32 Quantification of post-development habitat biodiversity units was undertaken using habitat data derived from Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026]. This shows areas where new habitats would be provided as well as areas where the previous habitat would be reinstated following temporary works. Post-development habitats were assigned metric habitat types based on their planting mix and proposed

management. Where reinstatement is shown it is assumed that the same habitat type and condition would result. In either case details of the expected habitat were added to the relevant habitat creation tabs in the Biodiversity Metric 3.1.

2.1.33 The planned time intervals between habitat clearance in a location and habitat creation need to be included in the metric. In each case this was entered as 3 years which is the planned duration of construction.

2.1.34 Post-development habitat condition is generally predicted as Moderate for newly created habitats within the Order Limits. For reinstated habitats it is assumed that the same condition would be achieved post-development. Some reinstated habitats would take a significant time to mature however this is factored into the time to creation and difficulty of creation multipliers that are built into the metric and the overall unit gain score reflects this.

2.1.35 For the Farndon East and West Flood Compensation Areas habitat condition of the resulting wetlands is predicted to be good. This is because the areas would be managed with a strong focus for their biodiversity value.

2.1.36 For the enhanced area of woodland at Doddington Hall the post-enhancement is set to moderate.

2.1.37 Post-development strategic significance of habitats was assigned on the same basis as for the baseline following the review of local significance of different habitats. Therefore, the majority of habitats were classed as high strategic significance with the exceptions of amenity grassland, scrub and ruderal.

2.1.38 Biodiversity Metric 3.1 only considers losses to be temporary when the baseline habitat is recreated/reinstated in the same or better condition within two years from the date of the impact occurring. This requires the habitat creation/restoration to be complete in this timeframe (i.e, that the time to target condition is two years or less). In these instances, the reinstated habitats are included as retained habitats in the post-development part of the metric rather than as newly created habitats. For habitats that would not return to their target condition within two years of the initial impact these are treated as newly created habitats in the post-development part of the metric. This approach was followed in the Scheme's BNG calculations. It is uncommon to be able to record habitat losses as temporary and none of the losses within the Scheme met the criteria for doing so.

2.1.39 Data from the post-development GIS layer were inputted into the metric calculator. At this stage, the calculation tool produced a post-development biodiversity unit value for each habitat type and condition combination possible as well as for the Order Limits as a whole.

2.1.40 Once the calculation had been completed, the outputs were reviewed to understand the losses and gains for each habitat type and to understand whether the development complies with the Biodiversity Metric 3.1 trading rules (no trading down in habitat value).

2.1.41 The User Guide for Biodiversity Metric 3.1 states as a rule (Rule 3) that schemes must avoid trading down of habitat value, i.e., habitat replacement that is not *"like for like"* or "*like for better"* in terms of distinctiveness, condition, and total units. If this is not achieved then the metric would flag an error and the % gain shown would not be considered valid due to breaking this rule.

3 Biodiversity context

Introduction

3.1.1 This section provides an overview of the baseline of the area of land required for the Scheme together with details of the habitat creation.

Site baseline ecological features

3.1.2 The majority of land within the Order Limits are common and widespread habitats such as arable farmland and agriculturally improved or amenity grassland. However, there are also areas of higher quality habitat. These include a number of non-statutory designated local wildlife sites and areas of Habitats of Principal Importance (HPI) listed under Section 41 of The Natural Environment and Rural Communities (NERC) Act.[23]

3.1.3 The following Local Wildlife Sites are present within the Order Limits:

- Dairy Farm Railway Strip, Newark
- Great North Road Grasslands
- Old Trent Dyke
- River Trent, Staythorpe
- Trent Banks/Wharves, Newark
- Newark (Beet Factory) Dismantled Railway

3.1.4 HPIs within the Order Limits include:

- Lowland meadows
- Coastal and floodplain grazing marsh
- Wood pasture
- Lowland mixed deciduous woodland
- Hedgerows

3.1.5 The impacts of the Scheme on these features are discussed in Chapter 8 (Biodiversity) of the ES [APP-052].

Site proposed habitats

3.1.6 Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026] has sought to create a range of habitats similar to those already

[23] Natural England and the Commission for Rural Communities (2006). Natural Environment and Rural Communities Act 2006 [online] available at: https://www.legislation.gov.uk/ukpga/2006/16/contents (last accessed December 2023).

present on site and affected by the Scheme. However, this would include habitats of higher biodiversity where possible, for example a species rich grassland would be provided where much of the existing grassland is species poor. The highway drainage has also been designed to provide swales and ponds of value to nature. This contrasts with the existing road drainage which includes concrete lined channels of minimal biodiversity value.

3.1.7 Table 3-1 sets out how the habitats in Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026] are judged to correspond to habitat types and condition in the Biodiversity Metric 3.1.

Table 3-1: Habitats in Environmental Masterplan and Corresponding type and condition to be used in Biodiversity Metric 3.1

The Environmental Masterplan (with landscape element codes[14])	Habitat type to be used in BNG Metric	Habitat condition to be used in BNG Metric	Justification
Species Rich Grassland (LE1.3)	Other Neutral Grassland	Moderate	A species rich seed mix would be used on low nutrient soil free from topsoil and maintenance would include an annual cut and scrub control.[14,15] This would achieve the desired habitat type and condition by developing a sward closely resembling a UK Hab g3c habitat (generally the false-oat grass g3c5 variant), with appropriate levels of bare ground and scrub and good species diversity.
Proposed marsh and wet grassland (LE 6.4) at drainage ponds and around Farndon wetlands.	Other Neutral Grassland	Moderate	A species rich seed mix would be used on the periphery of wetland areas. Management by annual cutting (may also be grazing at Farndon wetlands). Likely to form g3c7 or g3c8 with high frequency of tufted hair grass, Yorkshire fog and rushes in the sward. Management would promote sward diversity and appropriate structure.
Woodland (LE2.1)	Lowland mixed deciduous woodland	Moderate	The woodland areas would be blocks separated from the highway and adjacent to other woodland, planted with a mix of native species and managed by coppicing or thinning.[15]

The Environmental Masterplan (with landscape element codes[14])	Habitat type to be used in BNG Metric	Habitat condition to be used in BNG Metric	Justification
			The habitat type and condition would be met as a result of appropriate planting and management to create a natural range of age classes, maintain a range and cover of native tree species and allow appropriate structure and dead wood to develop.
Linear Belts of Trees and Shrubs (LE2.4)	Other woodland; broadleaved	Moderate	Native species planting that in some cases would be in narrower strips less able to develop the structure of semi-natural woodland. Planting and management to achieve canopy cover with a good range of native species, prevent cover of invasives and manage tree health. Note a significant proportion of the existing other woodland; broadleaved on site has achieved moderate condition.
Shrubs with intermittent trees (LE2.5)	Mixed scrub	Moderate	Native planting likely to remain dominated by shrubs so would not form a woodland canopy. Careful planting selection would ensure native species cover but avoid dominance of any one species. Scrub planting is frequently adjacent to other neutral grassland to provide favourable combination of habitats.
Shrubs (LE2.6)	Mixed scrub	Moderate	Native shrub species planting. Careful planting selection would ensure native species cover but avoid dominance of any one species. Scrub planting is frequently adjacent to other neutral grassland to provide favourable combination of habitats.
Floodplain and Coastal Grazing Marsh (at	Floodplain and Coastal Grazing	Good	Ground levels would be set to achieve seasonally

The Environmental Masterplan (with landscape element codes[14])	Habitat type to be used in BNG Metric	Habitat condition to be used in BNG Metric	Justification
Farndon West FCA)	Marsh		inundated conditions with shallow water table and ditches staying wet rest of year. Water source is ground water so quality should be good, no inflows from road. Grazing or cutting will provide appropriate habitat structure. Invasive species can be managed.
Reedbed (at Farndon West FCA)	Reedbed	Good	Ground levels would be set to achieve permanently wet conditions. Water source is ground water so quality should be good, no inflows from road. Conditions suitable to maintain high cover of reed but with other wetland plants, some open water and occasional trees to add variety. Invasive species can be managed.
Lake	High alkalinity lakes	Fairly Poor	Lakes are categorised according to the alkalinity of drainage waters. It is a reasonable assumption that drainage waters of the proposed lake will be chemically similar to other water bodies in the region, including the River Trent. Environment Agency open source water quality data for monitoring sites on the River Trent near Newark show that alkalinity and conductivity measurements are within the range specified by WFD-UKTAG for 'High Alkalinity' lakes. Prediction on condition reflects deep and steep sided nature of lake, which may limit aquatic plant growth, this may lead to algal blooms. However, hydrology should be relatively unmodified and fluctuate with groundwater and non-native plants and animal species can be controlled.

The Environmental Masterplan (with landscape element codes[14])	Habitat type to be used in BNG Metric	Habitat condition to be used in BNG Metric	Justification
Ponds (at Farndon West FCA)	Ponds, non-priority habitat	Good	Ground levels would be set to achieve permanently wet conditions. Water source is ground water so quality should be good, no inflows from road. Suitable conditions for macrophytes which should in turn prevent excess duckweed and algae growth. Invasive species can be managed.
Pond (drainage)	Ponds, non-priority habitat	Moderate	Ponds forming part of the road drainage but with significant improvements in water quality from treatment in the swales. The ponds would be surrounded by semi-natural grasslands. With a gentle slope and native planting, they should support a range of aquatic vegetation to prevent excess algae and duckweed.
Main Basin	Reedbed	Moderate	Regular wet ground conditions next to the ponds would maintain a high cover of reed, swale network would support water quality. Maintenance to prevent scrub encroachment.
Native Species Hedgerows (LE4.3)	Native Species Rich Hedgerow	Moderate	Would include five or more native woody species. Frequently planted next to semi-natural grassland which would remain undisturbed. Standard management should maintain good dimensions.
Native Species Hedgerows with Trees (LE4.4)	Native Species Rich Hedgerow with Trees	Moderate	Would include five or more native woody species including trees with their canopies less than 20m apart. Frequently planted next to semi-natural grassland which would remain undisturbed. Standard management should maintain good dimensions. Careful tree choice would allow timely

The Environmental Masterplan (with landscape element codes[14])	Habitat type to be used in BNG Metric	Habitat condition to be used in BNG Metric	Justification
			mature trees and promote tree health.
Swale / Ditch	Ditches	Poor	The highway drainage swales are designed to hold water (with low gradients and check dams) to provide water quality treatment. 4km would be designed to regularly hold water at least 30cm deep. Water quality may be poor so condition set to poor.
Ditches within reedbed (note ditches in grazing marsh not counted as separate ditch feature)	Ditches	Good	Likely to meet all requirements of good condition as located in the centre of a large wetland area ensuring good water supply and quality, lack of disturbance, suitable conditions for macrophytes and appropriate surrounding vegetation.

3.1.8 The Farndon East and West areas would initially be used as borrow pits during construction and as floodplain compensation areas (FCAs) in the long term. Whilst these areas serve a range of purposes the design rationale has been to create high distinctiveness habitats that complement local biodiversity. They need to be appropriate to floodplain conditions and allow high confidence in successful establishment. They also need to be designed to allow appropriate long-term management that maintains their biodiversity value. The habitats would be ponds, reedbeds, floodplain grazing marsh and a lake surrounded by areas of grassland (other neutral grassland).

3.1.9 In the Farndon West FCA (west of the A46) a series of ponds fringed by reedbeds would be provided. The ponds would not be connected to the road drainage and are expected to be fed by ground water given the high water table in the area. They would be connected to one another by ditches to assist with circulation of water and movement of aquatic species. Small areas of tree and shrub planting would also be desirable to add to the range of habitat features but this would be on a very small scale in terms of area and is not included in the calculations.

3.1.10 The Farndon West FCA would also include an area of floodplain grazing marsh. This would provide compensation for construction impacts on this habitat, including habitat loss to a temporary compound and a small loss to the road footprint. The grazing marsh would be designed to provide wet conditions throughout the

year and would include a network of scrapes, drains and ditches. There would also be an area of drier grassland to assist with site management. The management would include a hay cut and/or stock grazing.

3.1.11 At Farndon East FCA the Scheme would result in a large lake, a maximum of 4 metres deep, following material excavated for the Scheme construction. This would necessarily be steep sided to maximise sand and gravel extraction but the landscaping has been designed to include a variety of natural elements such as a fringe of reeds, grassland areas and groups of trees.

3.1.12 Proposals for watercourses include the highway drainage swales. These are expected to hold water the majority of the time, and are designed to have gently sloping earth banks that would allow marginal wetland plants to establish. They are intended to improve water quality which may be low when received from the highway and their condition has therefore been set to low. Appendix 13.1 (Water Framework Directive Compliance Assessment) of the ES Appendices [APP-176] demonstrates how changes to the water environment as a result of the Scheme does not result in the deterioration of any Water Framework Directive (WFD) waterbodies or prevent WFD objectives being achieved.

3.1.13 A stretch of an existing stream, The Fleet at Winthorpe, would be enhanced immediately downstream of where it passes under the A46. The stream passes through a strip of woodland but more semi-natural habitat would be added in the bank top zone. Felled timber from the Scheme would also be placed on the bank top and banks to add structure to the riparian habitat and the stream banks would be locally regraded to more natural profiles to improve habitat quality.

3.1.14 A section of the Slough dyke would be diverted due to construction of a bridge over the A1 with the new channel slightly longer than existing. A number of ditches and streams have culverts under the A46 and these would be made longer by the new highway construction.

Off-site habitat proposals

3.1.15 Additional off-site measures are currently proposed at Doddington Hall. This would involve enhancement within an existing area of woodland. This is currently plantation woodland and its location is shown in Figure 3-1 below. Note that this figure shows a block of woodland within which an area would be enhanced.

3.1.16 The area is referred to as Plot W10a (Pickworth's Plot). It has been surveyed as Other woodland; mixed (See Appendix A.5 of this report for habitat survey). A part of it would be enhanced to a semi-

natural broadleaved woodland. The enhancement works would include removing non-native tree cover and a combination of re-planting and promoting natural regeneration of native woody species. Existing native trees including silver birch and English oak are widespread and would be retained to provide structure and promote natural regeneration. Additional work would need to include tree thinning to promote variation in age classes, removal of rhododendron, ongoing removal of non-native tree species and protection of planted and regenerating trees and shrubs from browsing.

3.1.17 It is considered feasible to establish Lowland Mixed Deciduous Woodland because a range of plant species that could form semi-natural woodland are already present. A range of native trees are already present, some at low density, such as silver birch, holly, rowan, English oak and eared willow as well as ground flora such as foxglove and ferns.

3.1.18 Additionally, there are nearby areas of semi-natural woodland including ancient woodland that would allow colonisation by further species. With removal of non-native tree cover the native flora would increase in abundance through natural regeneration supplemented with tree and shrub planting. The most likely woodland type is a W10 community within the National Vegetation Classification.

3.1.19 There has also been a long continuity of woodland cover. The southern and western boundaries of the plot are shown as woodland shelter belt on a map of the estate from 1749. Since then timber has been felled and tree cover re-established through planting and natural regeneration. The duration of woodland will have given rise to suitable environmental conditions, for example relating to soils, to establish the proposed habitat type.

3.1.20 The habitat enhancement described above would be secured through a legal agreement with the landowner. This would include the initial works to allow the habitat enhancement to commence as well as management over a 30 year timescale.

Figure 3-1: Broad location off-site enhancement at Doddington Hall

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4 Biodiversity Net Gain good practice principles

4.1.1 This delivery of BNG for the Scheme has been undertaken in line with the BNG Good Practice Principles for Development[11], a set of ten guiding principles for delivering BNG in the UK.

4.1.2 Table 4-1 lists each of the good practice principles and provides a statement on how each has been applied as part of the BNG assessment for the Scheme.

Table 4-1: The BNG good practice principles for development and their application on the Scheme

Principle	Description	Application on the Scheme
Apply the mitigation hierarchy	Do everything possible to first avoid and then minimise impacts on biodiversity. Only as a last resort, and in agreement with external decision-makers where possible, compensate for losses that cannot be avoided. If compensating for losses within the development footprint is not possible or does not generate the most benefits for nature conservation, then offset biodiversity losses by gains elsewhere.	The Scheme has avoided high value habitats where possible. For example, access routes have been planned to avoid impacts on wood pasture and the borrow pit areas have been amended to avoid floodplain grazing marsh. However, some high value habitats would be affected (including lowland meadow), discussed under irreplaceable habitats. Given the requirements of the Scheme and constraints within the local area these losses are unavoidable. Impacts to the grazing marsh, through a temporary compound and loss to the footprint of the road would be compensated on site through creation of the same habitat in an adjacent area. The losses are unavoidable due to issues with construction adjacent to the railway and the need for maintenance tracks in this location. Impact to a small area of reedbed would be compensated on site through new wetland creation including a large area of reedbed. Impact to lowland mixed deciduous woodland would be compensated through a combination of on-site creation and off-site habitat enhancement measures.
Avoid losing biodiversity that cannot be offset elsewhere	Avoid impacts on irreplaceable biodiversity - these impacts cannot be offset to achieve No Net Loss or Net Gain.	Impacts to 0.1032 hectares of lowland meadow would occur. The loss is unavoidable due to the need to widen the Smeaton's Arches at this location as part of works to Cattle Market Roundabout. This will involve some permanent land take from the habitat (118m2) and temporary works to allow construction access.

Principle	Description	Application on the Scheme
		There are a lack of alternatives but the area affected has been reduced through design changes. Further information is provided in Chapter 3: (Assessment of Alternatives) of the ES (TR010065/APP/6.1). This is a very high distinctiveness habitat and its loss is not considered acceptable within the Biodiversity Metric. However, it would be compensated on site through re-creating habitat after temporary works as well as additional compensation at a nearby location within the Scheme. See Appendix A.6: Outline Bespoke Compensation Agreement of this report for further details.
Be inclusive and equitable	Engage stakeholders early, and involve them in designing, implementing, monitoring, and evaluating the approach to Net Gain. Achieve Net Gain in partnership with stakeholders where possible and share the benefits fairly among stakeholders.	Environmental stakeholders including Natural England, Environment Agency, Nottinghamshire County Council and Newark & Sherwood District Council have been involved throughout the Environmental Impact Assessment (EIA) process and have helped to shape mitigation and compensation for the Scheme. For example, the stakeholders have provided advice on topics such as Local Wildlife Sites and fish migration which have aided the assessment process and improved expected environmental outcomes. The BNG assessment has been presented to Natural England and the Environment Agency and their feedback has been invited. During updates given to Natural England during the Environmental Techical Working Group held in November 2023, Natural England indicated that they are supportive of the BNG assessment and range of proposed habitats that contribute to the BNG scores.
Address risk	Mitigate difficulty, uncertainty and other risks to	The difficulty of creating different habitat types

Principle	Description	Application on the Scheme
	achieving Net Gain. Apply well-accepted ways to add contingency when calculating biodiversity losses and gains in order to account for any remaining risks, as well as to compensate for the time between the losses occurring and the gains being fully realised.	and the time lag between initial habitat creation and habitats reaching target condition has been accounted for by the post-development habitat multipliers in the Biodiversity Metric 3.1 calculator and is reflected in the final BNG scores. In accordance with the CIEEM BNG Report & Audit Templates document[24] no deviations have been made from the calculator methodology. Furthermore, where relevant the time period between habitat clearance and new habitat creation has been factored into the metric calculations (based on the schedule of works), and as such multipliers have been applied to account for this temporal risk. A precautionary approach has been taken to assigning the distinctiveness and condition of created habitats in the calculations. There is generally a target for newly created habitats to be in 'Moderate' condition and for reinstated habitats to be restored to their prior condition. Targeted habitat types are realistic and representative of existing types in the local area.
Make a measurable net gain contribution	Achieve a measurable, overall gain for biodiversity and the services ecosystems provide while directly contributing towards nature conservation priorities.	The Scheme would achieve a measurable net gain (excluding the areas covered by separate compensation for lowland meadow) as measured by the Biodiversity Metric 3.1 calculator (as demonstrated in Section 5 of this report). The development has taken a multifunctional approach to deliver landscape enhancement, visual screening and recreational opportunities

[24] CIEEM. (2021). Biodiversity Net Gain Report and Audit Templates [online] available at: https://cieem.net/resource/biodiversity-net-gain-report-and-audit-templates/ (last accessed December 2023).

Principle	Description	Application on the Scheme
		alongside BNG. A nature-based approach has also been taken to water management with highway drainage and water quality treatment designed to be achieved by creating a range of wetland habitats with a minimum of hard engineering.
Achieve the best outcomes for biodiversity	Achieve the best outcomes for biodiversity by using robust, credible evidence and local knowledge to make clearly justified choices when: • Delivering compensation that is ecologically equivalent in type, amount and condition, and that accounts for the location and timing of biodiversity losses. • Compensating for losses of one type of biodiversity by providing a different type that delivers greater benefits for nature conservation. • Achieving Net Gain locally to the development while also contributing towards nature conservation priorities at local, regional and national levels. • Enhancing existing or creating new habitat enhancing ecological connectivity by creating more, bigger, better and joined up areas for biodiversity.	The habitat creation as part of the Scheme has been targeted to avoid a trading down in habitat value (a replacement of higher with lower value habitats). Except for lowland mixed deciduous woodland habitat compensation would be achieved within the Order Limits. Given the high compensation ratios (in terms of area) for this habitat and that habitat compensation needs to be agreed with landowners on a voluntary basis there are insufficient opportunities to fully compensate for losses on site. However the off-site woodland enhancement area sits within the same National Character Area as the Scheme and would provide strong ecological benefit. The woodland to be enhanced sits within an extensive network of woodland habitat and its enhancement would contribute to improved habitat quality and connectivity. It would also support aspirations of the Greater Lincolnshire Local Nature Partnership to undertake habitat restoration in the area between Doddington Hall Estate and Whisby Nature Park; an area of high quality habitats to the south of the enhancement area created from mineral site restoration. Habitat creation within the borrow pit areas

Principle	Description	Application on the Scheme
		provides an opportunity to create wetland habitats (some currently of very limited extent on the site) on a significant scale. A combination of wetland types including ponds, lake, reedbed and grazing marsh will complement existing wetlands in the Trent valley and form part of an ecological network supporting many species including many facing decline. Much of the new woodland and grassland within the Environmental Masterplan (see Figure 2.3 of the ES Figures (TR010065/APP/6.2)) runs alongside the road network where it will play a locally important role in providing habitat connectivity. The landscaping adopts native species planting and has been designed to maximise biodiversity value.
Be additional	Achieve nature conservation outcomes that demonstrably exceed existing obligations (ie, do not deliver something that would occur anyway).	Much of the habitat has been designed to support BNG, for example new areas of pond, reedbed, grazing marsh and woodland enhancement. Habitat features that also serve other purposes have been designed to achieve greater biodiversity value than would have occurred by default. For example, the proposed grassland within Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026] has been designed to be species rich. The road drainage network also provides far greater biodiversity value than many potential solutions would have and has been informed by close working between different disciplines.

Principle	Description	Application on the Scheme
Create a net gain legacy	Ensure Net Gain generates long-term benefits by: • Engaging stakeholders and jointly agreeing practical solutions that secure Net Gain in perpetuity • Planning for adaptive management and securing dedicated funding for long-term management • Designing Net Gain for biodiversity to be resilient to external factors, especially climate change • Mitigating risks from other land uses • Avoiding displacing harmful activities from one location to another • Supporting local-level management of Net Gain activities	The Environmental Technical Working Group (TWG) is a forum for the local authority representatives, Environment Agency, Natural England and Historic England. The TWG has been involved throughout the Scheme design process and contributed to developing a biodiversity legacy from the Scheme. Management of created habitats would be secured for the next 30 years through a series of requirements within the EMP. These include implementation of Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026], the LEMP, a Biodiversity Net Gain Audit Report, and a Biodiversity Management and Monitoring Plan. These requirements will provide habitat creation and management, long term monitoring and the ability to steer management practice in response to environmental pressures when needed. Resilience has been considered in designing habitat creation. Tree species for woodland planting has considered both current and future climate, e.g. inclusion of hornbeam and wild service which will continue to be suitable components for woodlands in the location in 2080. Habitat creation has also sought to create larger blocks of habitat where possible which will create greater ecological continuity under adverse climatic conditions. For example proposed woodland that will compensate for loss of lowland mixed deciduous woodland will be planted in relatively large woodland blocks (generally excludes proposed linear tree belts)

Principle	Description	Application on the Scheme
		which will be better able to maintain cool humid conditions than small fragments. Wetland areas with multiple ponds of varying size and depth will be better able to provide suitable habitat for freshwater life in a range of weather conditions. In addition to increasing climate resilience these larger habitat areas will be less affected by activities on neighboring land as their size will allow more buffering, for example from arable spray drift or recreational pressure. Larger habitat areas will support larger species populations more resilient to environmental pressures. The created habitats have also been designed to be high diversity and, therefore, more resilient to climate change and other external factors. Where land is to be handed back to landowners, biodiversity management will be delivered with landowners taking on habitat management through voluntary agreements.
Optimise sustainability	Prioritise Biodiversity Net Gain and, where possible, optimise the wider environmental benefits for a sustainable society and economy.	The Scheme has taken a multifunctional approach to deliver landscape enhancement, visual and noise screening, recreational opportunities along with BNG. Habitat enhancement at Doddington would also provide social benefit by improving the quality of the natural environment in areas that are accessible to the public through rights of way and cycle tracks. They are in close proximity to the urban centre of Lincoln including the Birchwood area across the A46 and can be accessed by over 250,000 visitors per year to Doddington Hall.
Be transparent	Communicate all Net Gain activities in a transparent and timely manner, sharing the	The Environmental TWG has been involved with environmental aspects of the design, including

Principle	Description	Application on the Scheme
	learning with all stakeholders.	BNG throughout the design process. They were presented results and have inputted into the BNG process during the design stage.

5 Biodiversity Net Gain metric

Value of baseline habitats

5.1.1 The baseline habitat values for the area of land within the Order Limits have been calculated using Biodiversity Metric 3.1 as having a baseline habitat value of:

- 905.60 habitat biodiversity units (893.64 on site and 11.96 off-site)
- 97.35 hedgerow biodiversity units (all on site)
- 40.55 river biodiversity units (all on site)

5.1.2 Summaries of the pre-development (baseline) habitats including their area, distinctiveness, condition and their biodiversity unit value are provided in Table 5-1 (habitat units), Table 5-2 (hedgerow units), Table 5-3 (river units) and Table 5-4 (off-site habitat units) below. The area of habitats within Table 5-1 is approximately 1.45 hectares smaller than the Order Limits due to the area of the River Trent and Kelham Channel which are included within the Order Limits but excluded from the area-based BNG calculations (due to rivers being linear features in the metric).

5.1.3 A map of the pre-development (baseline) habitats is provided in Appendix A.1 of this report. The most abundant habitat within the Order Limits is arable land. There are also large areas of low quality (modified) grassland and smaller areas of higher quality neutral grassland within agricultural fields and along the highway network. Strips of plantation woodland are present alongside much of the existing highway network. Hedges are common as both field boundaries and alongside roads. The River Trent is a notable feature crossing the A46 twice within the Order Limits. Other habitats include scrub, ponds, ditches, small streams, ruderal vegetation, bare ground and hardstanding.

5.1.4 There are a number of high and very-high distinctiveness habitats within the Order Limits. These are shown in a map in Appendix A.3 of this report. The high distinctiveness habitats are: lowland mixed deciduous woodland, coastal and floodplain grazing marsh, reedbeds and rivers. Lowland mixed deciduous woodland is present totaling approx. 2.3 hectares within the Order Limits. Grazing marsh within the Order Limits comprises one parcel of approx. 1.1 hectares. A single very small (0.01 hectare) area of reedbed is present in grassland close to the Cattle Market Roundabout. Rivers include the River Trent (including the Kelham Channel), the Slough Dyke which is a small watercourse towards the north of the Scheme and The Fleet, a small stream that meets the Slough Dyke at Winthorpe. The very high distinctiveness habitats are wood pasture, present in two parcels, which slightly intersect the Order Limits at the north end of the Scheme near Winthorpe, and lowland meadow, present in a field next to the Cattle

Market Roundabout as well as another field adjacent on the Scheme boundary.

5.1.5 The BNG Assessment includes an area of off-site habitat enhancement at Doddington Hall (as described in Sections 2 and 3). The baseline habitat for the area to be enhanced is mixed plantation woodland of medium distinctiveness.

5.1.6 Losses of very high distinctiveness habitats are unacceptable within the BNG metric 3.1. If these losses occur, then bespoke compensation must be agreed with Natural England. This needs to include agreement that the loss is unavoidable and that the most appropriate actions to mitigate and compensate for the loss have been identified. The area of habitat loss and areas forming part of the bespoke compensation are then excluded from calculations within the metric and the Scheme can only claim a biodiversity gain in relation to other areas of habitat. An area of lowland meadow is lost through this Scheme (affecting 0.1033 hectares). Therefore, a bespoke compensation agreement is required with Natural England. An outline of the agreement is included at Appendix A.6 of this report. The outline agreement has been presented to Natural England and their feedback sought.

Value of post-development habitats

5.1.7 The post-development (proposed) habitats within the Order Limits have been calculated as having a value of:

- 949.82 habitat units (937.23 on site and 12.59 off-site)
- 105.30 hedgerow units (all on site)
- 54.04 river units (all on site)

5.1.8 When compared to the baseline this equates to a percentage change of:

- 4.95% net gain in habitat units
- 8.17% net gain in hedgerow units
- 33.28% net gain in river units

5.1.9 Summaries of the post-development habitats including their area, distinctiveness, condition, and their biodiversity unit value are provided in Table 5-5 (habitat units), Table 5-6 (hedgerow units), Table 5-7 (river units) and Table 5-8 (off-site habitat units).

5.1.10 The completed Biodiversity Metric 3.1 Calculation Tool is included at Appendix A.4.

5.1.11 Appendix 6.2 illustrates the post-development habitats for the site. This includes new and retained habitats (as described in Section 3 - Site proposed habitats).

Table 5-1: Summary of site pre-development baseline habitat units

Habitat type (Biodiversity Metric 3.1)	Area (ha)	Distinctiveness	Condition	Habitat units
Cropland - Cereal crops	77.0761	Low	Condition Assessment N/A	177.28
Grassland - Floodplain Wetland Mosaic (CFGM)	1.1291	High	Good	23.37
Grassland - Lowland meadows	0.0048	V.High	Good	0.13
Grassland - Lowland meadows	0.148	V.High	Moderate	0.82
Grassland - Modified grassland	18.1914	Low	Good	125.52
Grassland - Modified grassland	11.8189	Low	Moderate	54.37
Grassland - Modified grassland	19.2141	Low	Poor	44.19
Grassland - Other neutral grassland	1.8029	Medium	Poor	8.29
Grassland - Other neutral grassland	1.8389	Medium	Moderate	16.92
Grassland - Other neutral grassland	4.38	Medium	Good	60.44
Heathland and shrub - Mixed scrub	1.9057	Medium	Good	22.87
Heathland and shrub - Mixed scrub	1.9776	Medium	Moderate	15.82
Heathland and shrub - Mixed scrub	1.3508	Medium	Poor	5.40

Habitat type (Biodiversity Metric 3.1)	Area (ha)	Distinctiveness	Condition	Habitat units
Lakes - Ponds (Non- Priority Habitat)	0.0663	Medium	Good	0.91
Lakes - Ponds (Non- Priority Habitat)	0.0393	Medium	Moderate	0.36
Lakes - Ponds (Non- Priority Habitat)	0.1512	Medium	Poor	0.70
Sparsely vegetated land - Ruderal/Ephemeral	2.5134	Low	Poor	5.78
Sparsely vegetated land - Ruderal/Ephemeral	0.2122	Low	Moderate	0.98
Sparsely vegetated land - Ruderal/Ephemeral	0.7283	Low	Good	5.03
Urban - Developed land; sealed surface	29.2928	V.Low	N/A - Other	0.00
Urban - Introduced shrub	0.0195	Low	Condition Assessment N/A	0.04
Urban - Vacant/derelict land/ bareground	0.1943	Low	Moderate	0.89
Urban - Vacant/derelict land/ bareground	2.3516	Low	Good	16.23
Urban - Vacant/derelict land/ bareground	0.324	Low	Poor	0.75
Wetland - Reedbeds	0.0109	High	Good	0.23
Woodland and forest - Lowland mixed deciduous woodland	0.8385	High	Good	17.36

Habitat type (Biodiversity Metric 3.1)	Area (ha)	Distinctiveness	Condition	Habitat units
Woodland and forest - Lowland mixed deciduous woodland	1.419	High	Moderate	19.58
Woodland and forest - Other coniferous woodland	0.0399	Low	Good	0.28
Woodland and forest - Other woodland; broadleaved	7.6078	Medium	Poor	35.00
Woodland and forest - Other woodland; broadleaved	16.2249	Medium	Moderate	149.27
Woodland and forest - Other woodland; broadleaved	5.8013	Medium	Good	80.06
Woodland and forest - Other woodland; mixed	0.0399	Medium	Good	0.55
Woodland and forest - Other woodland; mixed	0.2585	Medium	Moderate	2.38
Woodland and forest - Other woodland; mixed	0.0399	Medium	Good	0.551
Woodland and forest – Wood-pasture and parkland	0.0222	V.High	Moderate	0.41
Total Site Baseline	**209.31**	**-**	**-**	**893.64**

Table 5-2: Summary of pre-development baseline hedgerow units

Habitat type (Biodiversity Metric 3.1)	Length (km)	Distinctiveness	Condition	Hedgerow units
Line of Trees	0.7077	Low	Moderate	3.11
Line of Trees	1.3069	Low	Poor	2.88
Line of Trees	1.4621	Low	Good	9.65

Habitat type (Biodiversity Metric 3.1)	Length (km)	Distinctiveness	Condition	Hedgerow units
Native Hedgerow	1.2944	Low	Moderate	5.95
Native Hedgerow	4.082	Low	Good	28.17
Native Hedgerow	0.8584	Low	Poor	1.97
Native Hedgerow with trees	2.2506	Medium	Good	31.06
Native Hedgerow with trees	1.1449	Medium	Moderate	10.53
Native Hedgerow - Associated with bank or ditch	0.292	Medium	Good	4.03
Total Site Baseline	**13.4**			**97.35**

Table 5-3: Summary of pre-development baseline river units

Habitat type (Biodiversity Metric 3.1)	Length (km)	Distinctiveness	Condition	Riparian encroachment	Watercourse encroachment	River units
Culvert	0.2238	Low	Poor	No Encroachment	N/A - Culvert	0.45
Culvert	0.1676	Low	Poor	No Encroachment	N/A - Culvert	0.34
Ditches	0.2519	Medium	Poor	No Encroachment	No Encroachment	1.16
Ditches	0.6235	Medium	Good	No Encroachment	No Encroachment	8.60
Ditches	0.1857	Medium	Poor	Moderate	No Encroachment	0.73
Ditches	0.0896	Medium	Good	Minor	No Encroachment	1.17
Ditches	0.926	Medium	Poor	Minor	No Encroachment	4.05
Ditches	0.0379	Medium	Good	Moderate	No Encroachment	0.44
Other Rivers and Streams	0.3477	High	Fairly Poor	Major	Major	1.35
Other Rivers and Streams	0.9906	High	Moderate	No Encroachment	No Encroachment	13.67
Other Rivers and Streams	0.7724	High	Fairly Poor	Major	Major	3.00
Other Rivers and Streams	0.1953	High	Moderate	Major	No Encroachment	2.02
Other Rivers and Streams	0.3482	High	Fairly Poor	Major	No Encroachment	2.70
Other Rivers and	0.0345	High	Fairly Poor	Minor	Major	0.17

Streams						
Other Rivers and Streams	0.1192	High	Fairly Poor	No Encroachment	Major	0.62
Other Rivers and Streams	0.0158	High	Moderate	Major	Major	0.08
Total Site Baseline	**5.33**	**-**	**-**			**40.55**

Table 5-4: Summary of off-site pre-development baseline habitat units (area to be enhanced)

Habitat type (Biodiversity Metric 3.1)	Area (ha)	Distinctiveness	Condition	Habitat units
Other woodland; mixed	1.3	Medium	Moderate	11.96
Total Off-Site Baseline	**1.3**	**-**	**-**	**11.96**

Table 5-5: Summary of on-site post-development habitat units

Habitat type (Biodiversity Metric 3.1)	Area (ha)	Distinctiveness	Condition	Habitat units	Retained/Created	Delay in starting creation (years)
Cropland - Cereal crops	1.7622	Low	Condition Assessment N/A	4.05	Retained	n/a
Grassland - Floodplain Wetland Mosaic (CFGM)	0.16	High	Good	3.31	Retained	n/a
Grassland - Lowland meadows	0.0048	V.High	Good	0.13	Retained	n/a
Grassland - Lowland meadows	0.0447	V.High	Moderate	0.82	Retained	n/a

Habitat type (Biodiversity Metric 3.1)	Area (ha)	Distinctiveness	Condition	Habitat units	Retained/Created	Delay in starting creation (years)
Grassland - Modified grassland	4.6803	Low	Good	32.29	Retained	n/a
Grassland - Modified grassland	3.2772	Low	Moderate	15.08	Retained	n/a
Grassland - Modified grassland	4.1161	Low	Poor	9.47	Retained	n/a
Grassland - Other neutral grassland	0.2188	Medium	Poor	1.01	Retained	n/a
Grassland - Other neutral grassland	0.521	Medium	Moderate	4.79	Retained	n/a
Grassland - Other neutral grassland	1.4213	Medium	Good	19.61	Retained	n/a
Heathland and shrub - Mixed scrub	1.2284	Medium	Good	14.74	Retained	n/a
Heathland and shrub - Mixed scrub	0.9621	Medium	Moderate	7.70	Retained	n/a
Heathland and shrub - Mixed scrub	0.6968	Medium	Poor	2.79	Retained	n/a
Lakes - Ponds (Non- Priority Habitat)	0.0031	Medium	Good	0.04	Retained	n/a

Habitat type (Biodiversity Metric 3.1)	Area (ha)	Distinctiveness	Condition	Habitat units	Retained/Created	Delay in starting creation (years)
Lakes - Ponds (Non- Priority Habitat)	0.0393	Medium	Moderate	0.36	Retained	n/a
Lakes - Ponds (Non- Priority Habitat)	0.0003	Medium	Poor	0.00	Retained	n/a
Sparsely vegetated land - Ruderal/Ephemeral	0.9948	Low	Poor	2.29	Retained	n/a
Sparsely vegetated land - Ruderal/Ephemeral	0.0974	Low	Moderate	0.45	Retained	n/a
Sparsely vegetated land - Ruderal/Ephemeral	0.3464	Low	Good	2.39	Retained	n/a
Urban - Developed land; sealed surface	14.2069	V.Low	N/A - Other	0.00	Retained	n/a
Urban - Introduced shrub	0.0195	Low	Condition Assessment N/A	0.04	Retained	n/a
Urban - Vacant/derelict land/ bareground	0.1943	Low	Moderate	0.89	Retained	n/a
Urban - Vacant/derelict land/ bareground	0.7199	Low	Good	4.97	Retained	n/a

Habitat type (Biodiversity Metric 3.1)	Area (ha)	Distinctiveness	Condition	Habitat units	Retained/Created	Delay in starting creation (years)
Urban - Vacant/derelict land/ bareground	0.1048	Low	Poor	0.24	Retained	n/a
Woodland and forest - Lowland mixed deciduous woodland	0.3239	High	Moderate	4.47	Retained	n/a
Woodland and forest - Lowland mixed deciduous woodland	0.7992	High	Good	16.54	Retained	n/a
Woodland and forest - Other coniferous woodland	0.0356	Low	Good	0.25	Retained	n/a
Woodland and forest - Other woodland; broadleaved	3.1922	Medium	Poor	14.68	Retained	n/a
Woodland and forest - Other woodland; broadleaved	8.9352	Medium	Moderate	82.20	Retained	n/a
Woodland and forest - Other woodland; broadleaved	4.008	Medium	Good	55.31	Retained	n/a

Habitat type (Biodiversity Metric 3.1)	Area (ha)	Distinctiveness	Condition	Habitat units	Retained/Created	Delay in starting creation (years)
Woodland and forest - Other woodland; mixed	0.1097	Medium	Poor	0.50	Retained	n/a
Woodland and forest - Other woodland; mixed	0.1159	Medium	Moderate	1.07	Retained	n/a
Woodland and forest - Other woodland; mixed	0.0037	Medium	Good	0.05	Retained	n/a
Woodland and forest - Wood-pasture and parkland	0.0222	V.High	Moderate	0.41	Retained	n/a
Cropland - Cereal crops	20.1171	Low	Condition Assessment N/A	40.12	Created	3
Grassland - Floodplain Wetland Mosaic (CFGM)	6.9511	High	Good	20.93	Created	3
Grassland - Modified grassland	3.2448	Low	Good	15.68	Created	3
Grassland - Modified grassland	9.1647	Low	Poor	18.28	Created	3
Grassland - Other neutral grassland	44.6859	Medium	Moderate	309.16	Created	3
Grassland - Other neutral grassland	0.3849	Medium	Good	3.34	Created	3

Habitat type (Biodiversity Metric 3.1)	Area (ha)	Distinctiveness	Condition	Habitat units	Retained/Created	Delay in starting creation (years)
Heathland and shrub - Mixed scrub	5.1267	Medium	Moderate	30.84	Created	3
Lakes - High alkalinity lakes	9.6301	High	Moderate	27.60	Created	3
Lakes - Ponds (Non- Priority Habitat)	1.1349	Medium	Moderate	8.43	Created	3
Lakes - Ponds (Non- Priority Habitat)	2.5046	Medium	Good	25.99	Created	3
Sparsely vegetated land - Ruderal/Ephemeral	0.075	Low	Good	0.39	Created	3
Urban - Developed land; sealed surface	29.8343	V.Low	N/A - Other	0.00	Created	3
Urban - Vacant/derelict land/ bareground	0.2191	Low	Poor	0.44	Created	3
Urban - Vacant/derelict land/ bareground	1.4722	Low	Good	7.64	Created	3
Wetland - Reedbeds	1.7584	High	Moderate	11.39	Created	3

Habitat type (Biodiversity Metric 3.1)	Area (ha)	Distinctiveness	Condition	Habitat units	Retained/Created	Delay in starting creation (years)
Wetland - Reedbeds	9.7457	High	Good	79.21	Created	3
Woodland and forest - Lowland mixed deciduous woodland	2.7202	High	Moderate	3.96	Created	3
Woodland and forest - Other woodland; broadleaved	6.3751	Medium	Moderate	30.89	Created	3
Total Site Post-development	208.51	-	-	937.23	-	-

Table 5-6: Summary of post-development hedgerow units

Habitat Type (Biodiversity Metric 3.1)	Length (km)	Distinctiveness	Condition	Hedge units	Retained/ Created	Delay in starting creation (years)
Line of Trees	0.541	Low	Moderate	2.38	Retained	n/a
Line of Trees	1.2702	Low	Poor	2.79	Retained	n/a
Line of Trees	1.0195	Low	Good	6.73	Retained	n/a
Native Hedgerow	0.6587	Low	Moderate	3.03	Retained	n/a
Native Hedgerow	2.2696	Low	Good	15.66	Retained	n/a
Native Hedgerow	0.2721	Low	Poor	0.63	Retained	n/a
Native Hedgerow with trees	1.4909	Medium	Good	20.57	Retained	n/a
Native Hedgerow with trees	0.3564	Medium	Moderate	3.28	Retained	n/a

Native Hedgerow - Associated with bank or ditch	0.1659	Medium	Good	2.29	Retained	n/a
Native Species Rich Hedgerow	3.0123	Medium	Moderate	20.84	Created	3
Native Species Rich Hedgerow with trees	3.1208	High	Moderate	27.10	Created	3
Total post-development	**14.18**			**105.3**		

Table 5-7: Summary of post-development river units

Habitat Type (Biodiversity Metric 3.1)	Length (km)	Distinctiveness	Condition	Riparian encroachment	Watercourse encroachment	River units	Retained/ Created/ Enhanced	Delay in starting creation (years)
Culvert	0.2002	Low	Poor	No Encroachment	N/A - Culvert	0.40	Retained	n/a
Culvert	0.1676	Low	Poor	No Encroachment	N/A - Culvert	0.34	Retained	n/a
Ditches	0.1666	Medium	Poor	No Encroachment	No Encroachment	0.77	Retained	n/a
Ditches	0.5824	Medium	Good	No Encroachment	No Encroachment	8.04	Retained	n/a
Ditches	0.1857	Medium	Poor	Moderate	No Encroachment	0.73	Retained	n/a
Ditches	0.0698	Medium	Good	Minor	No Encroachment	0.92	Retained	n/a
Ditches	0.8892	Medium	Poor	Minor	No Encroachment	3.89	Retained	n/a
Ditches	0.0379	Medium	Good	Moderate	No Encroachment	0.44	Retained	n/a
Other Rivers and Streams	0.3477	High	Fairly Poor	Major	Major	1.35	Retained	n/a
Other Rivers and Streams	0.9906	High	Moderate	No	No	13.67	Retained	n/a

Habitat Type (Biodiversity Metric 3.1)	Length (km)	Distinctiveness	Condition	Riparian encroachment	Watercourse encroachment	River units	Retained/ Created/ Enhanced	Delay in starting creation (years)
				Encroachment	Encroachment			
Other Rivers and Streams	0.7724	High	Fairly Poor	Major	Major	3.00	Retained	n/a
Other Rivers and Streams	0.1953	High	Moderate	Major	No Encroachment	2.02	Retained	n/a
Other Rivers and Streams	0.0345	High	Fairly Poor	Minor	Major	0.17	Retained	n/a
Other Rivers and Streams	0.0194	High	Fairly Poor	No Encroachment	Major	0.10	Retained	n/a
Other Rivers and Streams	0.0158	High	Moderate	Major	Major	0.08	Retained	n/a
Culvert	0.1476	Low	Poor	No Encroachment	N/A - Culvert	0.26	Created	3
Culvert	0.028	Low	Poor	No Encroachment	N/A - Culvert	0.02	Created	3
Ditches	0.1051	Medium	Good	No Encroachment	No Encroachment	0.68	Created	3
Ditches	0.1074	Medium	Poor	Moderate	No Encroachment	0.36	Created	3
Ditches	4.2396	Medium	Poor	Major	No Encroachment	12.68	Created	3
Ditches	0.8196	Medium	Poor	No Encroachment	No Encroachment	3.27	Created	3
Other Rivers and Streams	0.1947	High	Fairly Poor	Major	No Encroachment	0.42	Created	3
Other Rivers and Streams	0.072	High	Moderate	Major	No Encroachment	0.44	Enhanced	3
Total post-development	**10.39**					**54.04**		

Table 5-8: Summary of off-site post-development habitat units (areas to be enhanced)

Habitat type (Biodiversity Metric 3.1)	Area (ha)	Distinctiveness	Condition	Habitat units	Retained/Created	Delay in starting creation (years)
Lowland mixed deciduous woodland	1.30	High	Moderate	12.59	Created (enhanced)	0
Total Off-Site Post-development	**1.30**	**-**	**-**	**12.59**	**-**	

Habitat trading rules

5.1.12 For high distinctiveness baseline (existing) habitat units that would be lost during construction must be replaced with habitats that are of the same exact type (e.g., priority habitat ponds, reedbeds). Medium value habitats must be replaced by habitats of the same general type (e.g. grassland, woodland, scrub). In these cases, there must also be a unit gain generated by the new habitat compared to the baseline (instead of just like-for-like in terms of the area covered). As described at 5.1.6 losses of very high distinctiveness habitat are not acceptable within the metric and must be addressed separately through bespoke compensation.

5.1.13 Trading rules for high distinctiveness habitat units are met through the Scheme. This is because sufficient units of new Coastal and Floodplain Grazing Marsh as well as Reedbed would be provided within the Order Limits. Trading rules for Lowland Mixed Deciduous Woodland would be met off-site at Doddington Hall through enhancement of a lower distinctiveness mixed plantation.

5.1.14 Trading rules are also met for medium distinctiveness habitat units. Other neutral grassland and mixed scrub are compensated within the Scheme landscaping. Other woodland, both broadleaved and mixed, are compensated through on-site creation of the same broad habitat type and new units of high distinctiveness habitat including reedbed. A small loss of non-priority habitat ponds is compensated with new ponds at the Farndon wetland area and the drainage ponds.

5.1.15 For very high distinctiveness habitat there is a loss of Lowland Meadow which is considered unacceptable under BNG and would therefore require bespoke compensation outside of the metric. In total 0.1032 hectares would be lost through the Scheme with 0.0118 hectares lost through permanent land take to the road network and the remaining 0.915 hectares through temporary works. The area lost to temporary works would be reinstated and a further 0.75 hectare of the habitat would be created. In area terms this gives a compensation ratio of over 8:1. Although the bespoke compensation is not based on BNG habitat units it is still helpful to consider the units involved to ensure it is not treated less favorably than other habitats that are assessed in the metric. The habitat lost is in moderate condition and high strategic significance and the new and recreated habitat is expected to be the same. Given this and the areas above the change in units would be 1.9 units lost and 3.58 created. Further details on the habitat compensation for Lowland Meadow are provided in Appendix A.6 of this report.

5.1.16 In Biodiversity Metric 3.1 there is no trading error generated in the metric by trading down hedgerow or river distinctiveness and condition. However, trading down in these instances would still violate Rule 3 of the metric as defined in the User Guide, which states that losses of

habitat must be compensated for on a *'like for like'* or *'like for better'* basis.

5.1.17 There is no trading down for hedgerow units. All of the baseline hedgerows and tree lines are low or medium distinctiveness and the distinctiveness of the proposed hedgerows is medium and high so there is no trading down relating to distinctiveness. There is also an overall gain in the length of hedgerow and lines of trees of 0.78 kilometres.

5.1.18 The Schemes involves a trading down in river units. Although there is a positive change in river units some of the river units lost for Other Rivers and Streams, a high distinctiveness habitat, are compensated for with Ditches which are of medium distinctiveness. There are 2.85 units of Other Rivers and Streams lost and 0.86 units would be provided.

6 Scheme implementation

Securing Biodiversity Net Gain

6.1.1 The draft Development Consent Order (DCO) [REP6-004] includes a series of requirements which are required to be implemented by the Applicant. Those relevant to achieving BNG are Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026] which is secured through Requirement 12 of the draft DCO [REP6-004], and the Landscape and Ecology Management Plan, the BNG Management and Monitoring Plan and the BNG Audit Report as detailed in the First Iteration EMP, secured through Requirement 3 of the draft DCO [REP6-004]. These are described below.

6.1.2 The Environmental Masterplan sets out the proposed habitat that this BNG Assessment is based on. A Landscape and Ecology Management Plan (LEMP) would be produced post-consent of the DCO. It would provide a range of post-development habitats within the LEMP area. The land included would deliver multiple functions (delivering landscape mitigation and screening, supporting surface water drainage, replacing lost habitats and creating new higher value habitats).

6.1.3 The post-development habitats would be managed in order to achieve the target habitat type and condition set out in the Biodiversity Metric 3.1 calculation completed for the scheme. This would be achieved by a BNG Management and Monitoring Plan implemented for a minimum of 30-years. This would emphasise the need to apply ecological principles so that the long-term habitat creation and enhancement included within the BNG assessment remains realistic and deliverable based on local conditions (geology, hydrology, nutrient levels, water availability) and the complexity of future management requirements. It would also outline the application of adaptative management principles.

6.1.4 A BNG Audit Report would be undertaken both at the end of construction and 5 years after construction completion. The purpose of this would be to review the delivery of the habitat creation and determine whether BNG has occurred.

6.1.5 Management would be guided by appropriate expert ecological and landscape management advice throughout the 30-year management period. Good management practice does not, by itself, constitute restoration or enhancement, though reinstating certain management practices may contribute to achieving it, for example by improving condition.

Mitigation measures during construction

6.1.6 During the construction phase, the Code of Construction Practice (CoCP) and associated management plans specify the range of

measures to avoid and minimise impacts that may occur in construction. Section 1 of the CoCP requires that the Principal Contractor(s) produce a Second Iteration Environmental Management Plan (EMP). This would be developed from the First Iteration EMP [REP6-012] and would require to be in place before works associated with each part of the development commence. This would contain the detailed commitments derived from the measures set out in the CoCP and approved as part of the requirements of the DCO. Implementation of these plans is intended to avoid and minimise loss of habitat and or diminish the quality of retained habitats within the Order Limits. It is a requirement of the DCO that the CoCP and associated plans (including monitoring) are implemented during construction. Section 7.2 (Ecology and Nature Conservation) of the CoCP Part A, contains a series of control measures relating to the safeguarding of habitats and wildlife.

7 Monitoring and management

7.1.1 Biodiversity Metric 3.1 requires the consideration of long-term delivery of the measures to achieve net gain. Schedule 2 of the draft DCO [REP6-004] would include the Requirements, of which Requirement 3 would require the production of a Second Iteration EMP to be developed from the First Iteration EMP [REP6-012]. The First EMP commits to development and implementation of further documents including the LEMP, BNG Audit Report and BNG Management and Monitoring Plan. These would form the main mechanisms for delivering net gain. They would focus on the delivery of long-term management and monitoring of created or enhanced habitats.

7.1.2 These documents will include detailed management and maintenance information for years 1 to 5 (including frequency and timing of measures) with a commitment to review maintenance and management regimes every 5 years.

7.1.3 In addition, the identified off-site habitat enhancements will be secured through a legal agreement with the landowner. This will secure initial habitat works and long-term habitat management over 30 years.

7.1.4 Table 7-1 summarises the various elements of the Scheme and how the Applicant intends to secure and monitor features contributing to BNG over the operational lifetime of 30 years.

Table 7-1: Summary of future monitoring mechanisms to implement and monitor created and reinstated habitats as part of the Scheme

Aspect of Scheme	Habitat types	Monitoring	Duration of monitoring	Secured by
Construction stage mitigation to avoid and minimise habitat loss and degradation	Various	Construction activity in relation to habitats for retention.	Construction period (3 years)	Requirement 12 of the draft DCO [REP6-004] requires implementation of the Environmental Masterplan. Requirement 3 of the draft DCO [REP6-004] requires the Second Iteration EMP to be developed from the First Iteration EMP [REP6-012] which sets out the measures required during construction of the Scheme.
Habitat creation during and after construction	Various	Establishment of new and reinstated habitats.	5 years from end of construction	Requirement 12 of the draft DCO [REP6-004] requires the implementation of the Environmental Masterplan [AS-026]. The LEMP, the Biodiversity Management and Monitoring Plan and the BNG Audit Report are required by the First Iteration EMP which is included in Requirement 3 of the draft DCO [REP6-004].
Long-term management of created habitats	Various	Habitat development and maintenance.	30 years from end of construction	Requirement 3 of the draft DCO [REP6-004] requires the First Iteration EMP which includes production and implementation of the BNG Management and Monitoring Plan.

8 Conclusion

8.1.1 The assessment has predicted a positive BNG score under the Biodiversity Metric 3.1. However, the assessment excludes the loss and compensation for lowland meadow; a habitat of very high distinctiveness for which losses are unacceptable under Biodiversity Metric 3.1. Impacts to lowland meadow will need to be agreed separately with Natural England through a bespoke compensation agreement. The predicted scores are as follows:

- 4.95% net gain in habitat units
- 8.17% net gain in hedgerow units
- 33.28% net gain in river units

8.1.2 The trading rules within Biodiversity Metric 3.1 have been met by the assessment, ie habitat losses would be compensated with sufficient units of the required habitat type. However, some losses of Other Rivers and Streams are to be compensated with Ditch habitat. This does not breach the trading rules in Biodiversity Metric 3.1 but does not meet Rule 3 in the associated User Guide which requires habitats to be compensated with habitat that is like for like or better.

8.1.3 Securing the predicted changes in biodiversity would require ongoing activity post-consent. Retained habitats would be protected during development by the Code of Construction Practice. Creation, enhancement and ongoing management of habitats would be secured through the LEMP. Finally, the LEMP would make provision for monitoring the success of habitat establishment and maintenance. Only at the end of the 30-year implementation period can net gain be said to be achieved.

9 Glossary

9.1.1 The following terms are used in relation to BNG, these are based on the terminology and descriptions used in the User Guide and Technical Supplement for Biodiversity Metric 3.1.

Table 9-1: Glossary

Term	Definition
Baseline value	This refers to the pre-development biodiversity value which is the biodiversity value when development permission is granted (on application or on appeal). In this case this would be at the point where the DCO is granted.
Condition	The BNG metric calculations require that all land parcels undergo a condition assessment. This prescribed process is carried out by assessing a number of criteria, as defined in the habitat condition assessment sheets in the Technical Supplement for Biodiversity Metric 3.1. The criteria are habitat-specific, and are assessed as being either Good, Moderate, or Poor.
Distinctiveness	In the Biodiversity Metric 3.1 habitats are assigned to distinctiveness bands based on the following criteria: • Total remaining amount of this habitat type in England (rarity) • Proportion of habitat protected in Site of Special Scientific Interest (SSSI) (where less of this habitat type is protected in SSSI's, it is considered of higher distinctiveness) • UK Priority Habitat Status (Priority Habitats are generally classed as High or Very High distinctiveness) • European Red List Categories. Each habitat type is classified in the metric as being of Low, Medium, High or Very High distinctiveness.
Post-development value	The post-development biodiversity value of the on site habitat is the projected value of the on site habitat at the time the development is completed. This value can only be accepted if the Applicant can demonstrate that the gain will be maintained for at least 30 years after creation. This is through one of three options: a planning condition, a planning obligation, or a conservation covenant.
Trading rules	The metric includes rules in relation to replacement of existing habitat with a new habitat. These are termed trading rules whereby the replacement of lost habitat should be on a *"like for like"* or "*like for better*" basis in terms of distinctiveness, condition, and total units. The plan should include new or restored habitats that aim to achieve a higher distinctiveness and/or condition than the habitat to be lost.

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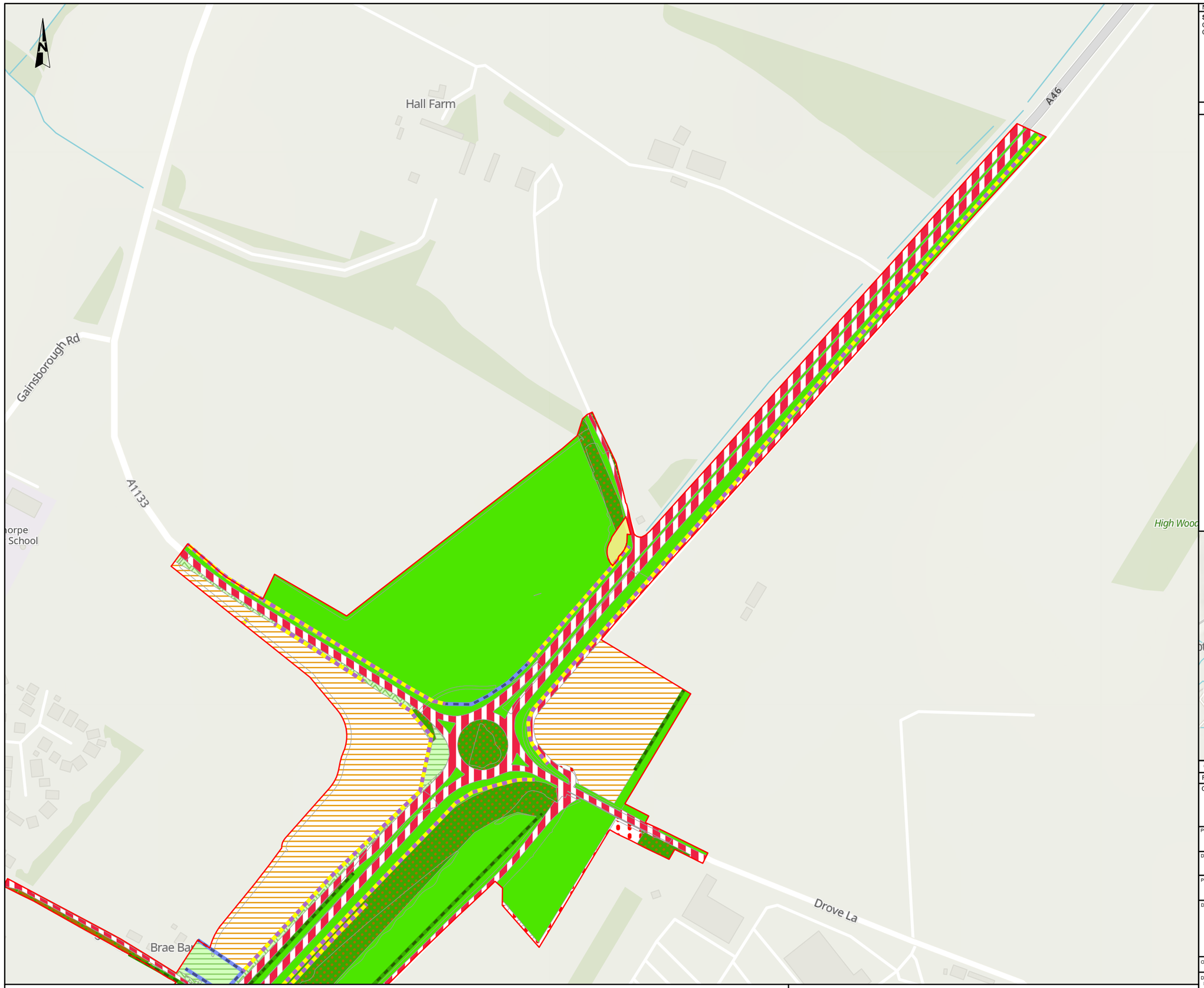
A. Appendix

A.1 Baseline habitats map



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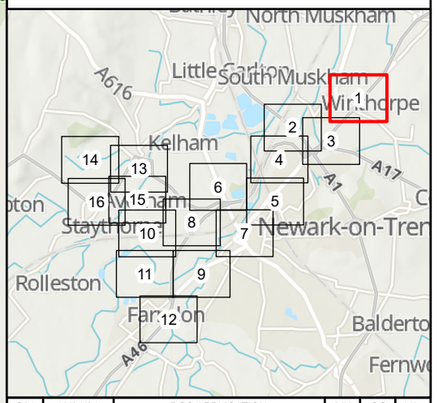
KEY TO SYMBOLS

- Order Limits
- Land not included within the Order Limits

Metric Habitat

- Line of Trees
- Native Hedgerow
- Native Hedgerow with trees
- Cereal crops
- Modified grassland
- Other neutral grassland
- Other woodland; broadleaved
- Other woodland; mixed
- Wood-pasture and parkland
- Vacant/derelict land/ bareground
- Ruderal/Ephemeral
- Developed land; sealed surface



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Appendix A.1
Biodiversity Net Gain Baseline Habitats
Sheet 1 of 16

ORIGINAL SIZE A3 SCALE 1:4,000

DRAWING NUMBER
HE PIN | ORIGINATOR | VOLUME | LOCATION | TYPE | ROLE | NUMBER
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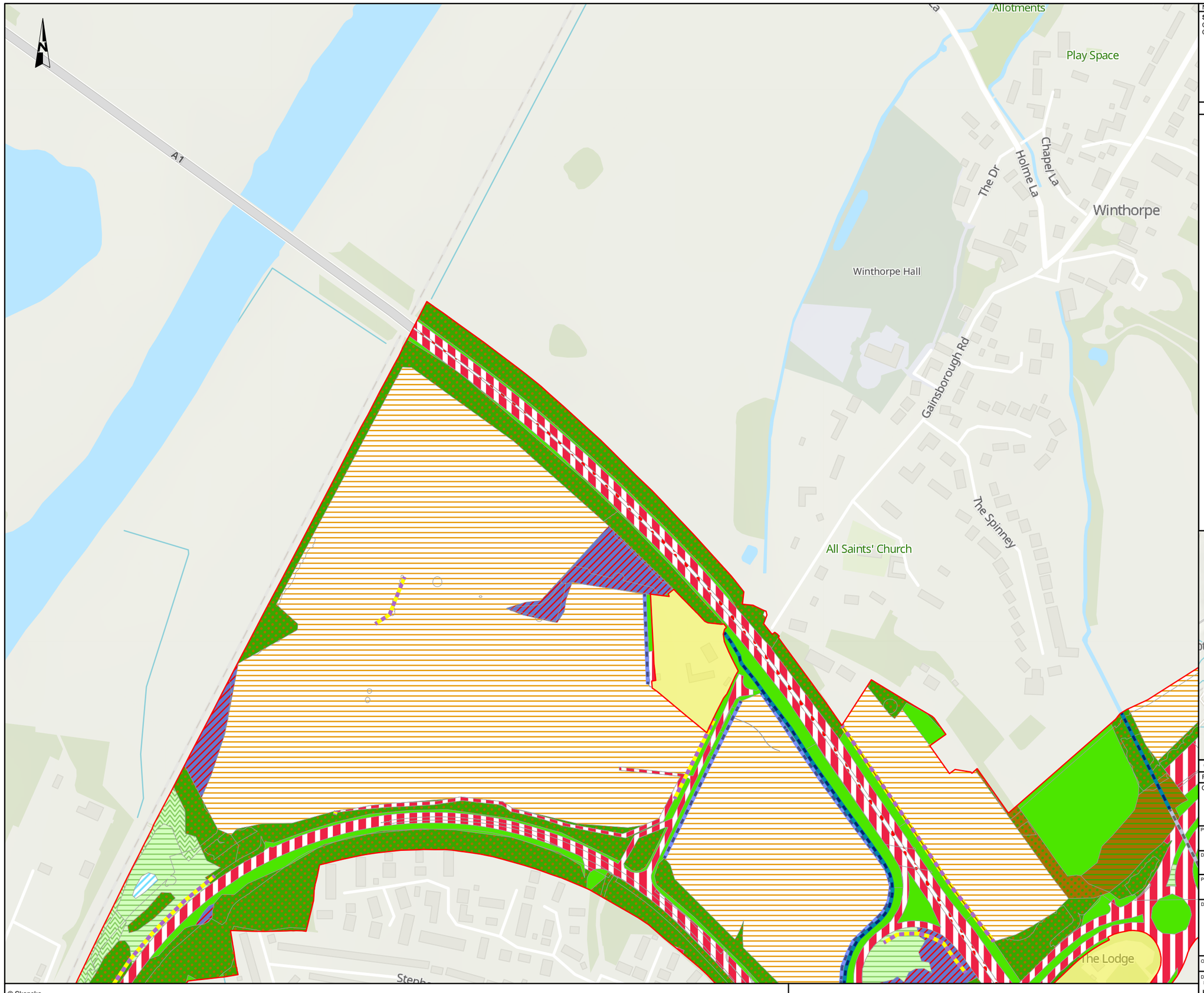

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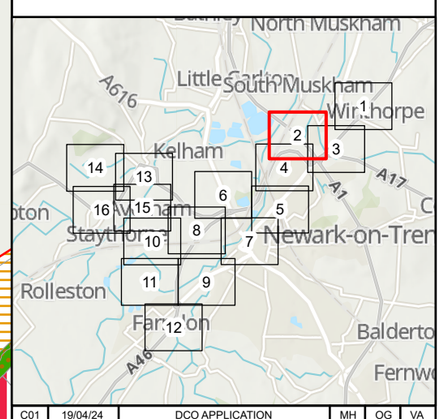

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ORIGINAL SIZE A3 SCALE 1:4,000

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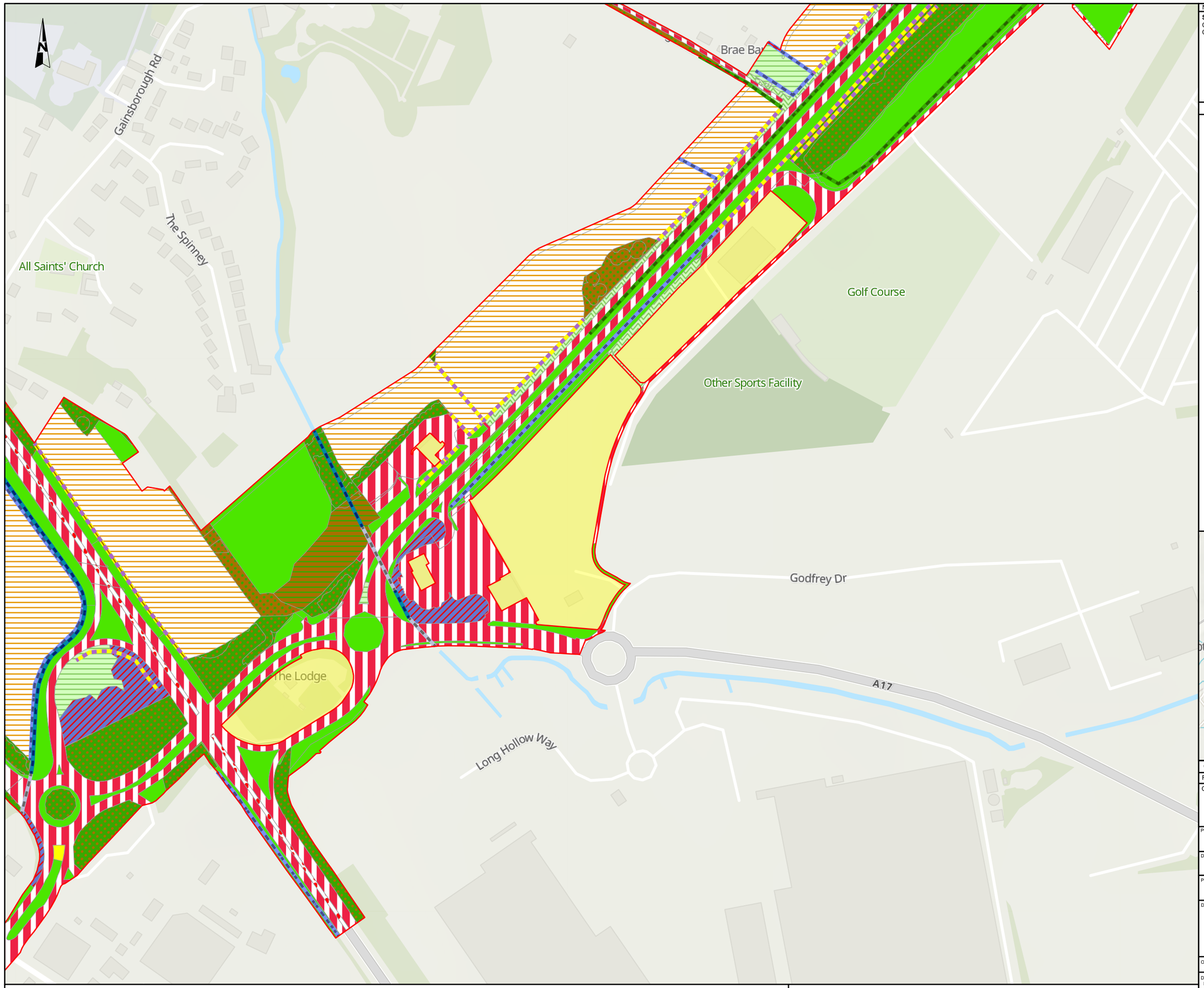

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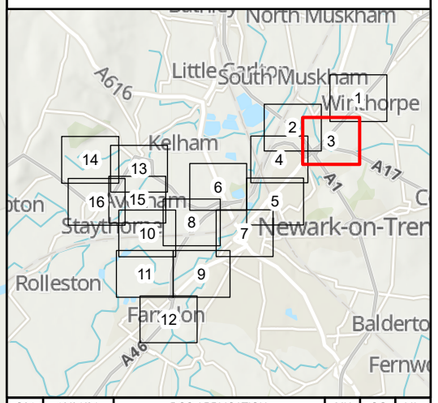

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ORIGINAL SIZE A3 SCALE 1:4,000

DRAWING NUMBER
HE PIN | ORIGINATOR | VOLUME
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LOCATION | TYPE | ROLE | NUMBER
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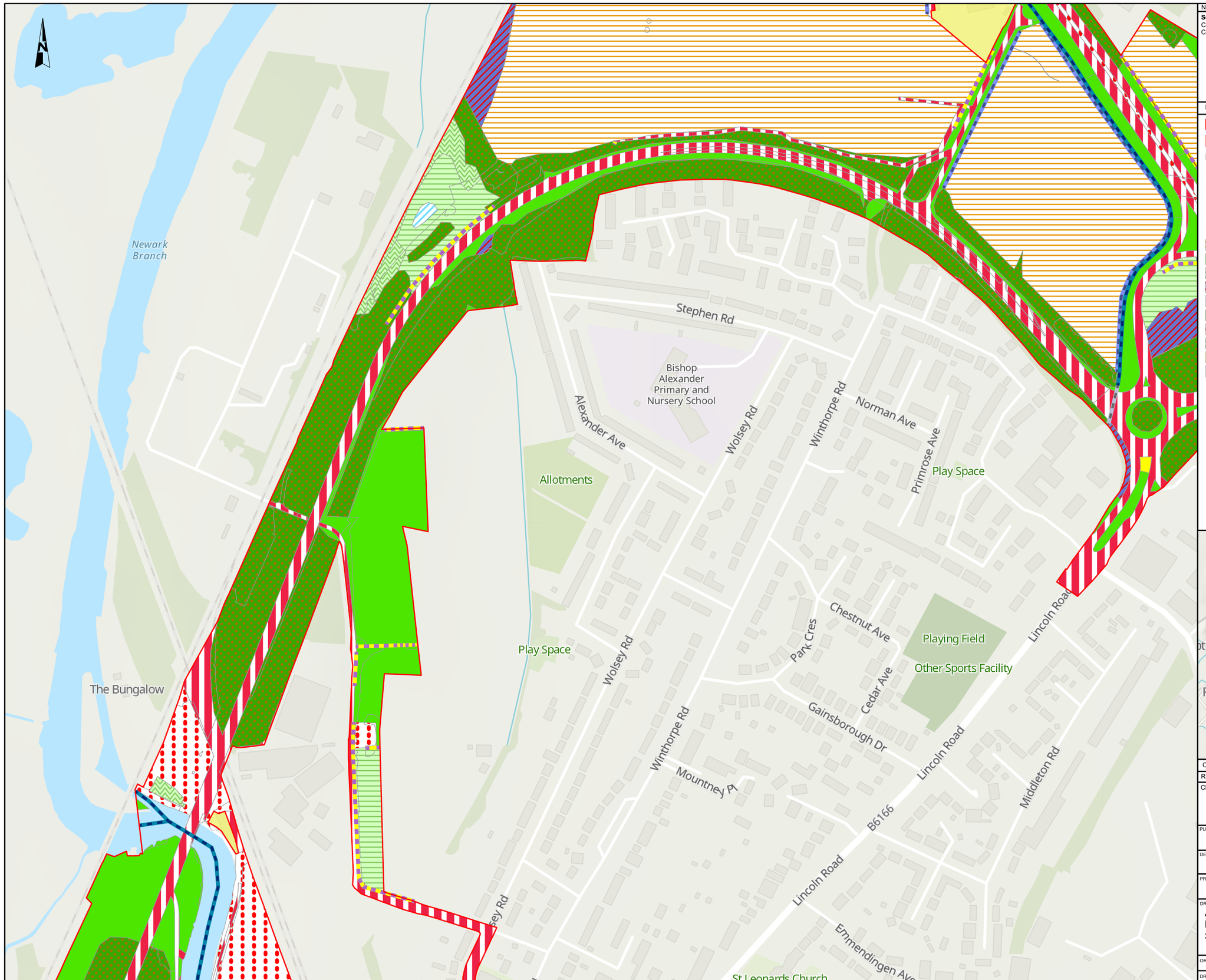

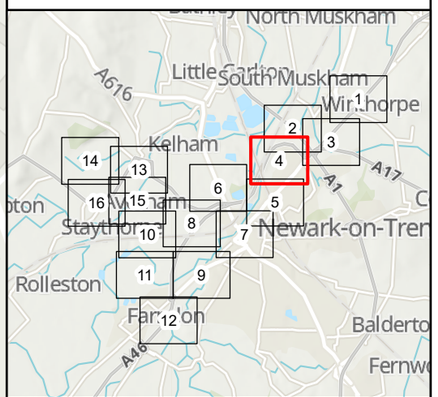

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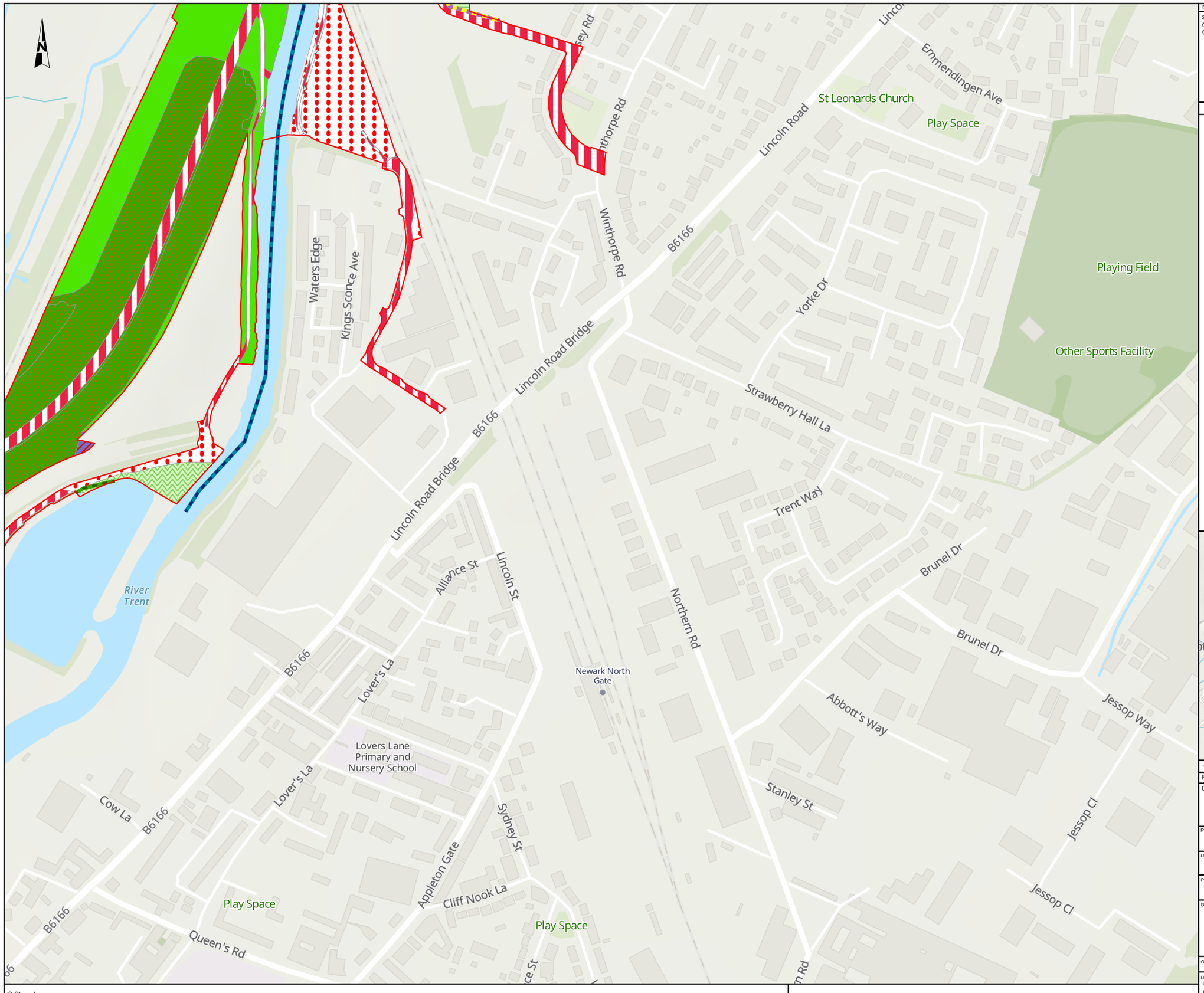

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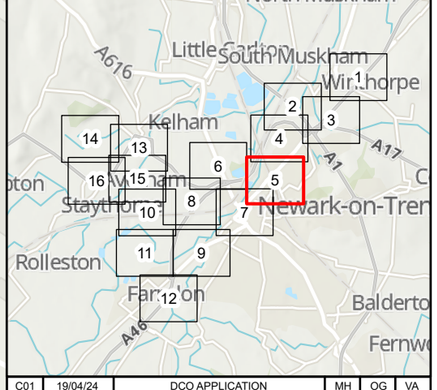
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Other woodland; broadleaved
- Vacant/derelict land/ bareground
- Ruderal/Ephemeral
- Developed land; sealed surface



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

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national highways

PURPOSE OF ISSUE
DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.1
Biodiversity Net Gain Baseline Habitats
Sheet 5 of 16

ORIGINAL SIZE A3 | SCALE 1:4,000

DRAWING NUMBER | HE PIN | ORIGINATOR | VOLUME | LOCATION | TYPE | ROLE | NUMBER
HE551478 | SKAG | EBD | CONWI_CONW | DR | LE | 00134

PROJECT REF NO. HE551478

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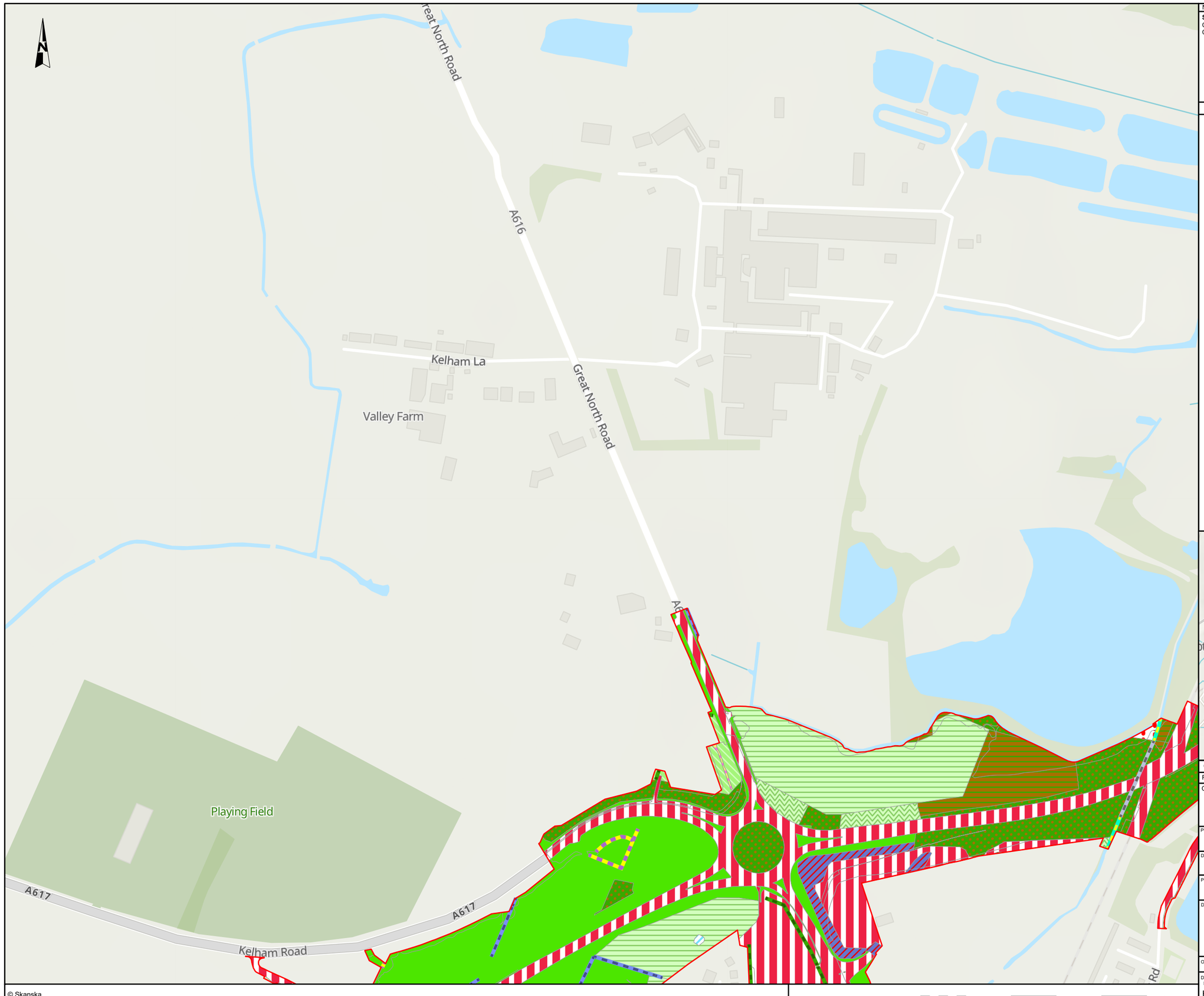

NOTES

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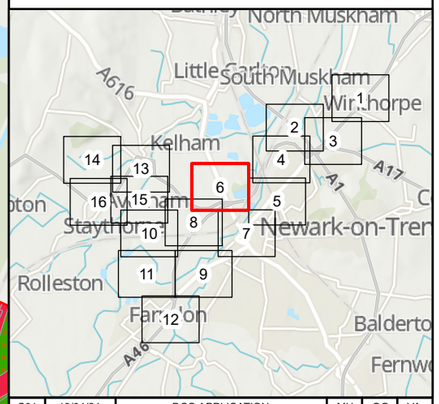
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Ditches
- Line of Trees
- Native Hedgerow
- Native Hedgerow with trees
- Culvert
- Lowland meadows
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Lowland mixed deciduous woodland
- Other woodland; broadleaved
- Vacant/derelict land/ bareground
- Ruderal/Ephemeral
- Reedbeds
- Developed land; sealed surface



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.1
Biodiversity Net Gain Baseline Habitats
Sheet 6 of 16

ORIGINAL SIZE: A3 | SCALE: 1:4,000

DRAWING NUMBER: HE PIN HE551478 | ORIGINATOR SKAG | VOLUME EBD | LOCATION CONWI_CONW | TYPE DR | ROLE LE | NUMBER 00135

PROJECT REF NO.: HE551478

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NOTES

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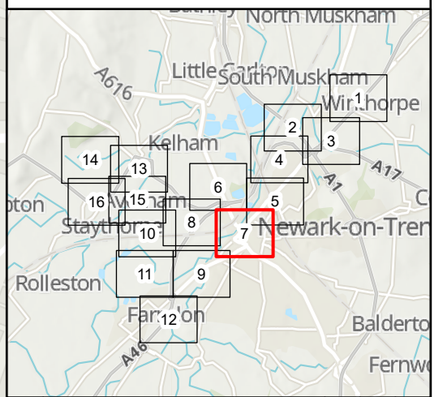
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Line of Trees
- Native Hedgerow with trees
- Cereal crops
- Modified grassland
- Other neutral grassland
- Developed land; sealed surface



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

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PURPOSE OF ISSUE
DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.1
Biodiversity Net Gain Baseline Habitats
Sheet 7 of 16

ORIGINAL SIZE A3 SCALE 1:4,000

DRAWING NUMBER HE PIN	ORIGINATOR	VOLUME	PROJECT REF NO.
HE551478	SKAG	EBD	HE551478
CONWI_CONW LOCATION	DR | TYPE	LE | ROLE	00136 | NUMBER

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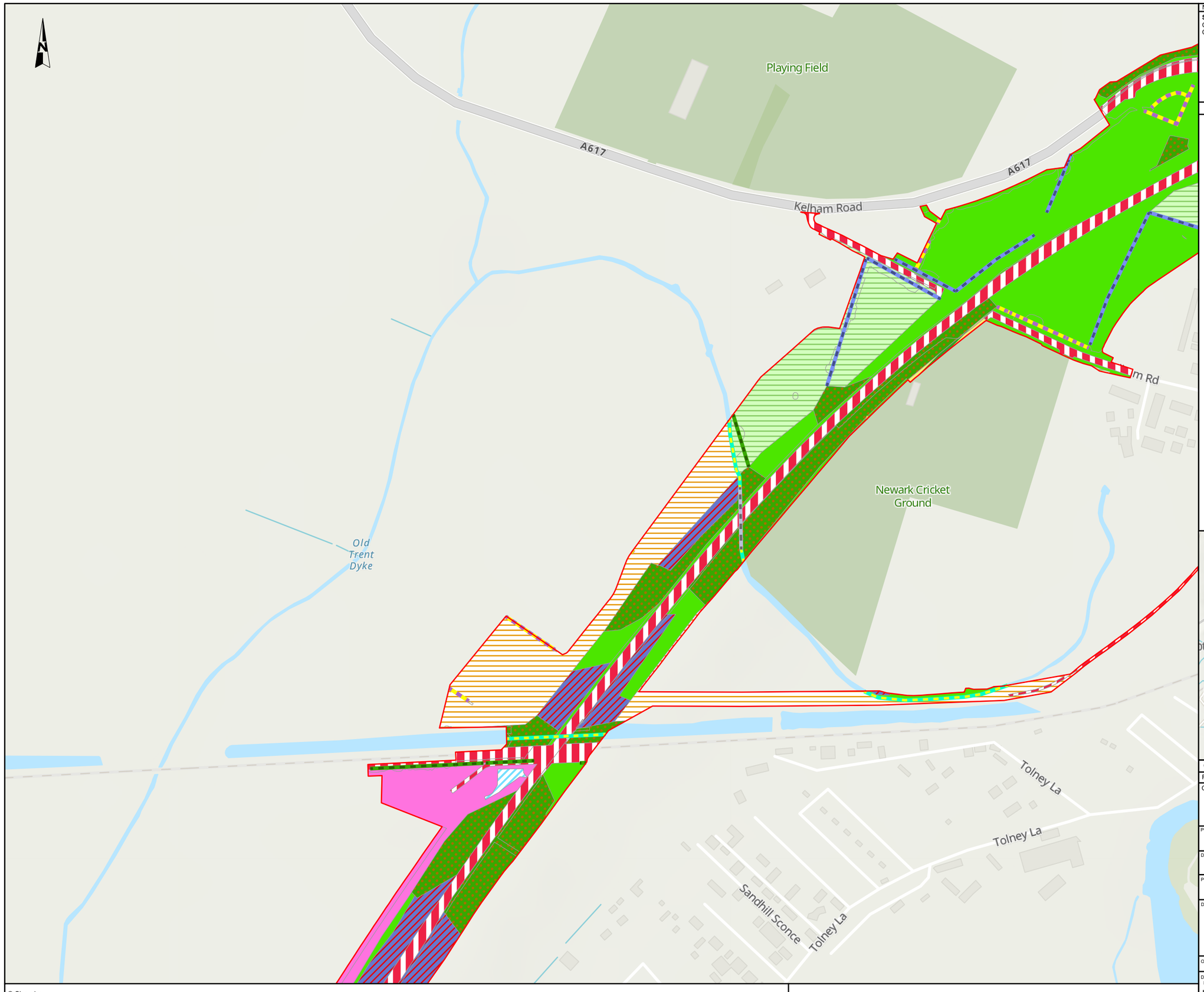
0 50 100 150 200 250 Metres



NOTES

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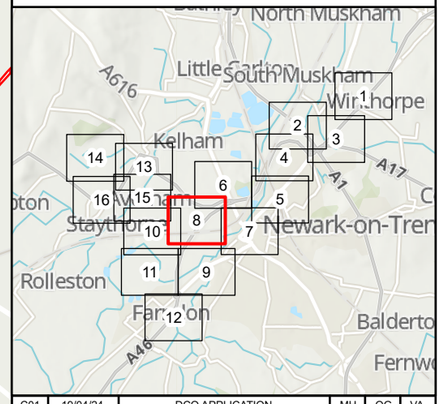
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Ditches
- Line of Trees
- Native Hedgerow
- Native Hedgerow with trees
- Culvert
- Cereal crops
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Other woodland; broadleaved
- Other coniferous woodland
- Developed land; sealed surface
- Floodplain Wetland Mosaic (CFGM)



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

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PURPOSE OF ISSUE
DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.1
Biodiversity Net Gain Baseline Habitats
Sheet 8 of 16

ORIGINAL SIZE A3
SCALE 1:4,000

DRAWING NUMBER
HE PIN | ORIGINATOR | VOLUME
HE551478 SKAG EBD
LOCATION | TYPE | ROLE | NUMBER
CONWI_CONW DR LE 00137

PROJECT REF NO.
HE551478

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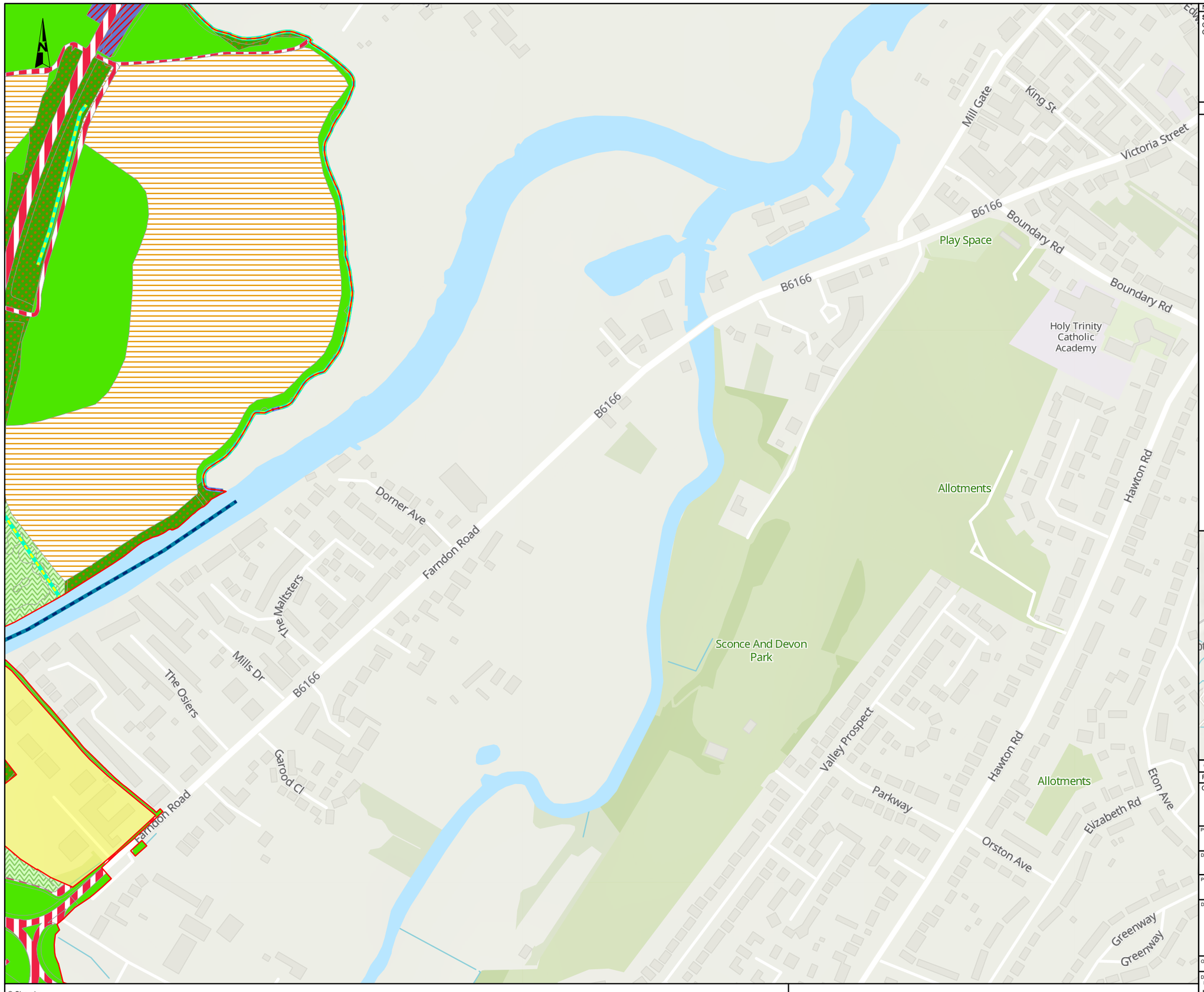
0 50 100 150 200 250 Metres



NOTES

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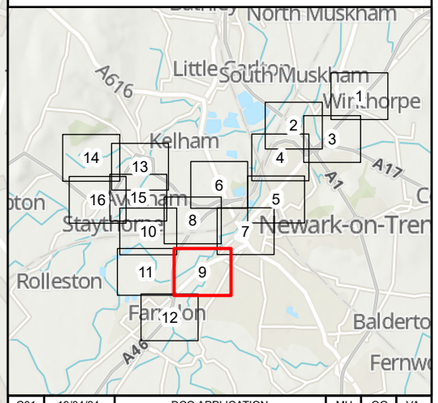
KEY TO SYMBOLS

- Order Limits
- Land not included within the Order Limits

Metric Habitat

- Ditches
- Native Hedgerow with trees
- Other Rivers and Streams
- Cereal crops
- Modified grassland
- Mixed scrub
- Other woodland; broadleaved
- Ruderal/Ephemeral
- Developed land; sealed surface



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

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PURPOSE OF ISSUE
DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.1
Biodiversity Net Gain Baseline Habitats
Sheet 9 of 16

ORIGINAL SIZE A3
SCALE 1:4,000

DRAWING NUMBER
HE PIN | ORIGINATOR | VOLUME
HE551478 SKAG EBD
LOCATION | TYPE | ROLE | NUMBER
CONWI_CONW DR LE 00138

PROJECT REF NO.
HE551478

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0 50 100 150 200 250 Metres

River Trent

NOTES

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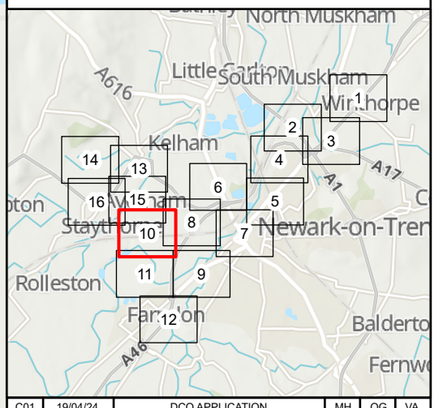
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Ditches
- Line of Trees
- Cereal crops
- Modified grassland
- Other woodland; broadleaved
- Ruderal/Ephemeral
- Developed land; sealed surface



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.1
Biodiversity Net Gain Baseline Habitats
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ORIGINAL SIZE: A3 | SCALE: 1:4,000

DRAWING NUMBER: HE PIN HE551478 | ORIGINATOR SKAG | VOLUME EBD | LOCATION CONWI_CONW | TYPE DR | ROLE LE | NUMBER 00139

PROJECT REF NO.: HE551478

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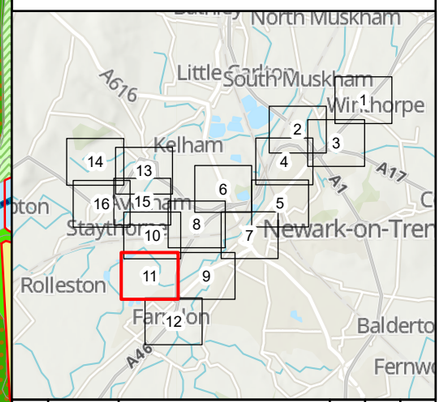
KEY TO SYMBOLS

- Order Limits
- Land not included within the Order Limits

Metric Habitat

- Ditches
- Line of Trees
- Native Hedgerow
- Other Rivers and Streams
- Culvert
- Cereal crops
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Other woodland; broadleaved
- Ruderal/Ephemeral
- Developed land; sealed surface



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

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PURPOSE OF ISSUE
DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.1
Biodiversity Net Gain Baseline Habitats
Sheet 11 of 16

ORIGINAL SIZE A3
SCALE 1:4,000

DRAWING NUMBER
HE PIN | ORIGINATOR | VOLUME
HE551478 SKAG EBD
LOCATION | TYPE | ROLE | NUMBER
CONWI_CONW DR LE 00140

PROJECT REF NO.
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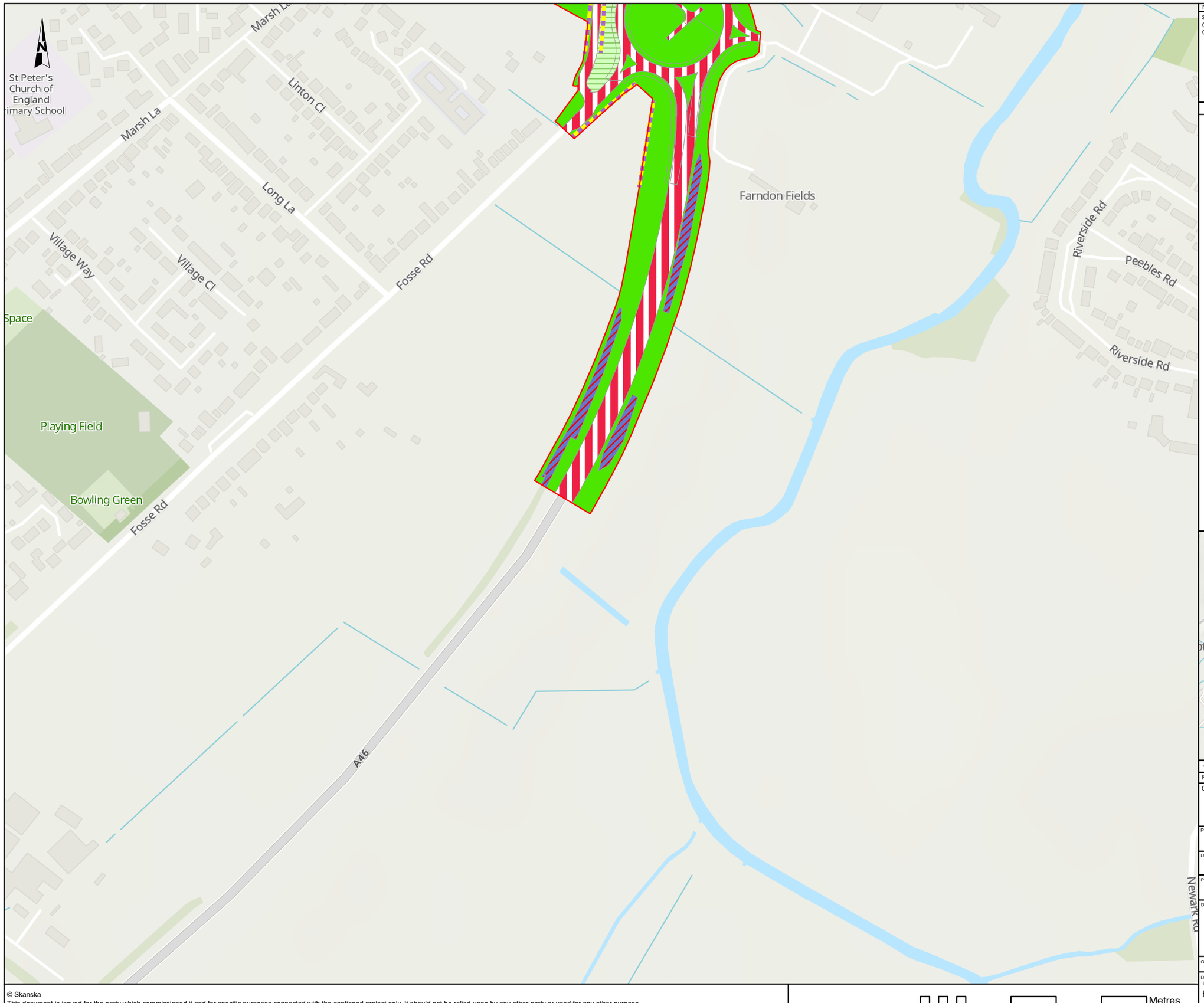

NOTES

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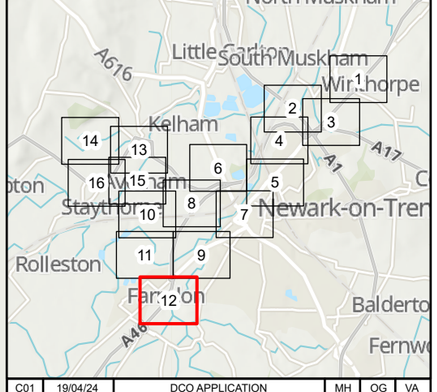
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Native Hedgerow
- Cereal crops
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Developed land; sealed surface



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

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DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.1
Biodiversity Net Gain Baseline Habitats
Sheet 12 of 16

ORIGINAL SIZE A3 | SCALE 1:4,000

DRAWING NUMBER

HE PIN	ORIGINATOR	VOLUME			
HE551478	SKAG	EBD			
LOCATION		TYPE	ROLE	NUMBER	
CONWI_CONW		DR	LE	00141	

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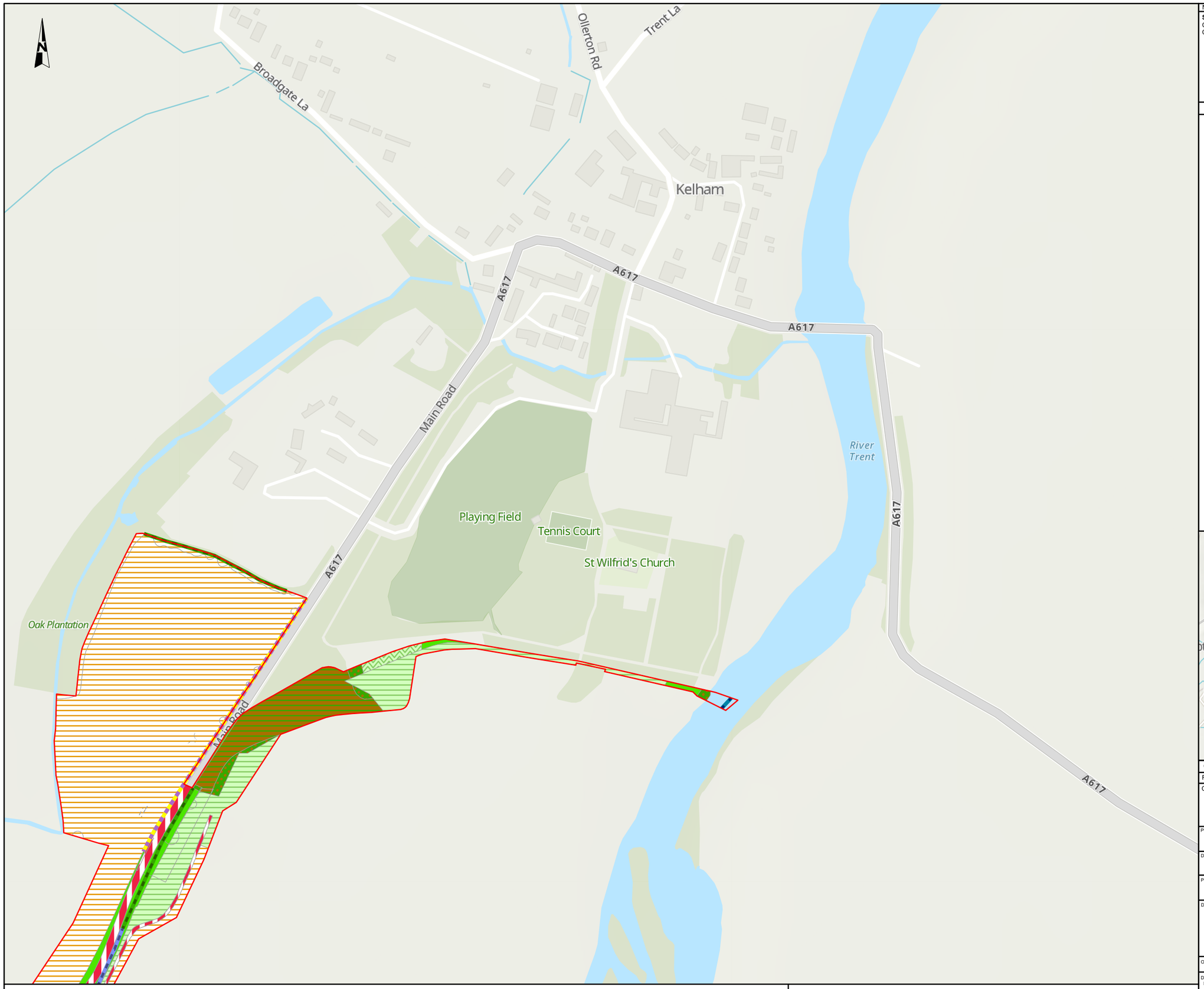

NOTES

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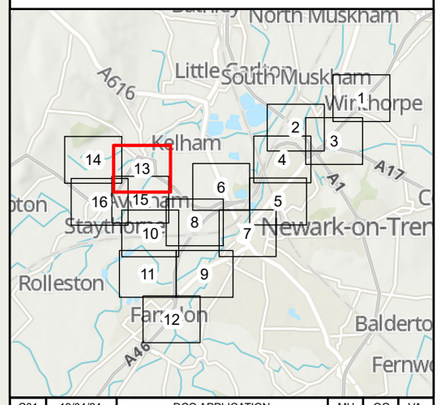
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Line of Trees
- Native Hedgerow
- Native Hedgerow with trees
- Other Rivers and Streams
- Cereal crops
- Modified grassland
- Other neutral grassland
- Lowland mixed deciduous woodland
- Other woodland; broadleaved
- Ruderal/Ephemeral
- Developed land; sealed surface



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE:
Appendix A.1
Biodiversity Net Gain Baseline Habitats
Sheet 13 of 16

ORIGINAL SIZE: A3

SCALE: 1:4,000

DRAWING NUMBER

HE PIN	ORIGINATOR	VOLUME			
HE551478	SKAG	EBD			
CONWI_CONW		DR	LE	00142	
LOCATION		TYPE	ROLE	NUMBER	

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NOTES

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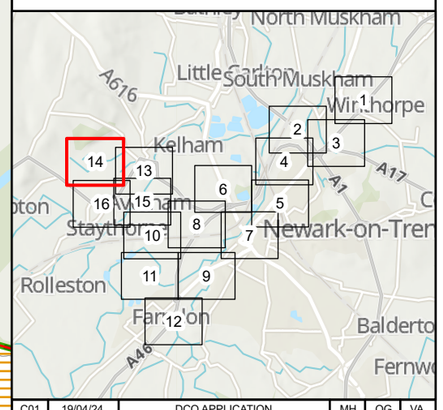
KEY TO SYMBOLS

Order Limits

Metric Habitat

Line of Trees
Native Hedgerow
Cereal crops
Modified grassland
Developed land; sealed surface



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

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PURPOSE OF ISSUE
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DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.1
Biodiversity Net Gain Baseline Habitats
Sheet 14 of 16

ORIGINAL SIZE A3
SCALE 1:4,000

DRAWING NUMBER
HE PIN | ORIGINATOR | VOLUME
HE551478 SKAG EBD
LOCATION | TYPE | ROLE | NUMBER
CONWI_CONW DR LE 00143

PROJECT REF NO.
HE551478

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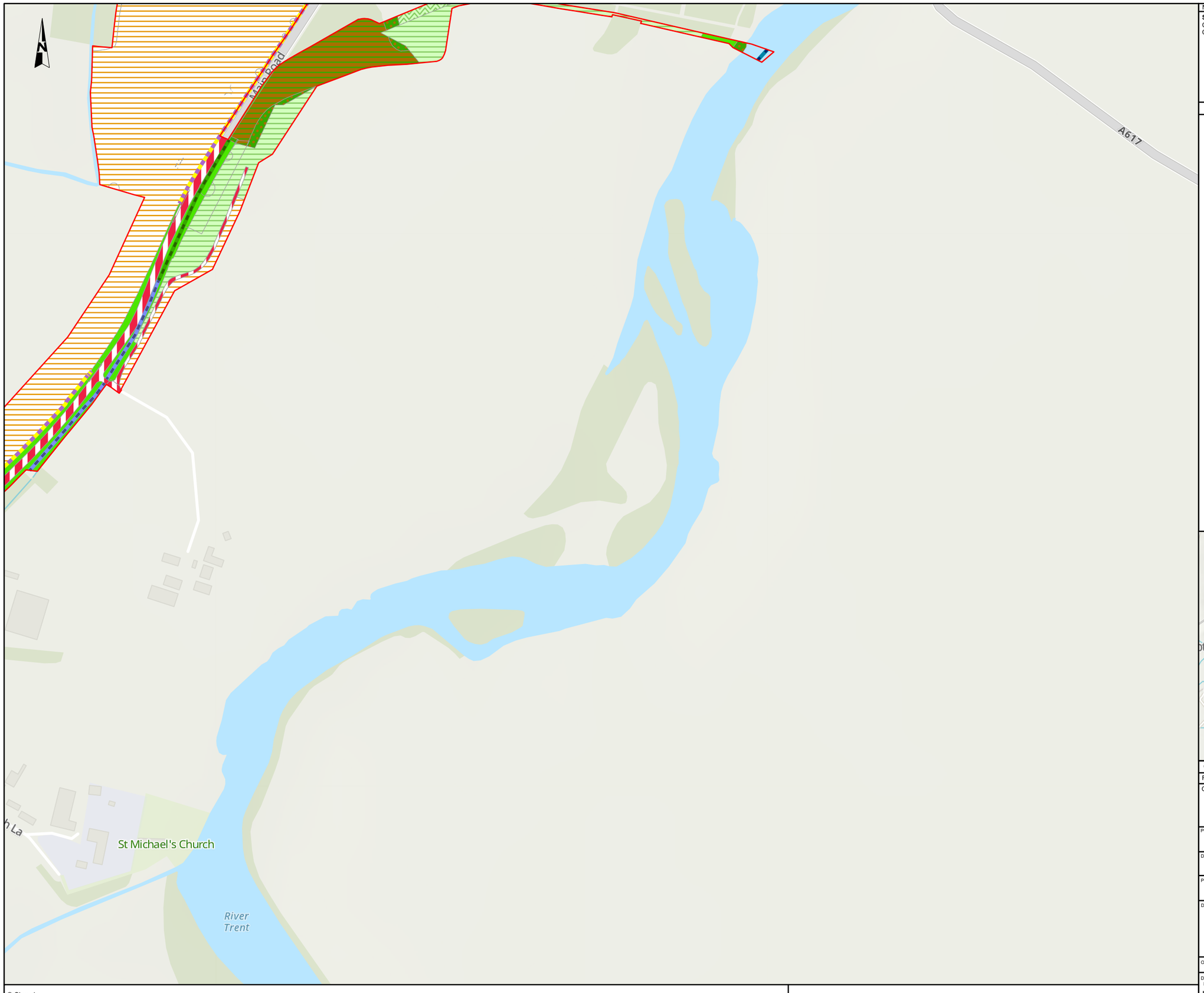

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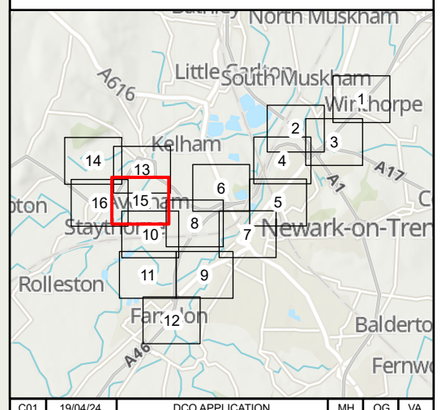
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Line of Trees
- Native Hedgerow
- Native Hedgerow with trees
- Other Rivers and Streams
- Cereal crops
- Modified grassland
- Other neutral grassland
- Lowland mixed deciduous woodland
- Other woodland; broadleaved
- Ruderal/Ephemeral
- Developed land; sealed surface



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE:
Appendix A.1
Biodiversity Net Gain Baseline Habitats
Sheet 15 of 16

ORIGINAL SIZE: A3 | SCALE: 1:4,000

DRAWING NUMBER

HE PIN	ORIGINATOR	VOLUME	LOCATION	TYPE	ROLE	NUMBER
HE551478	SKAG	EBD	CONWI_CONW	DR	LE	00144

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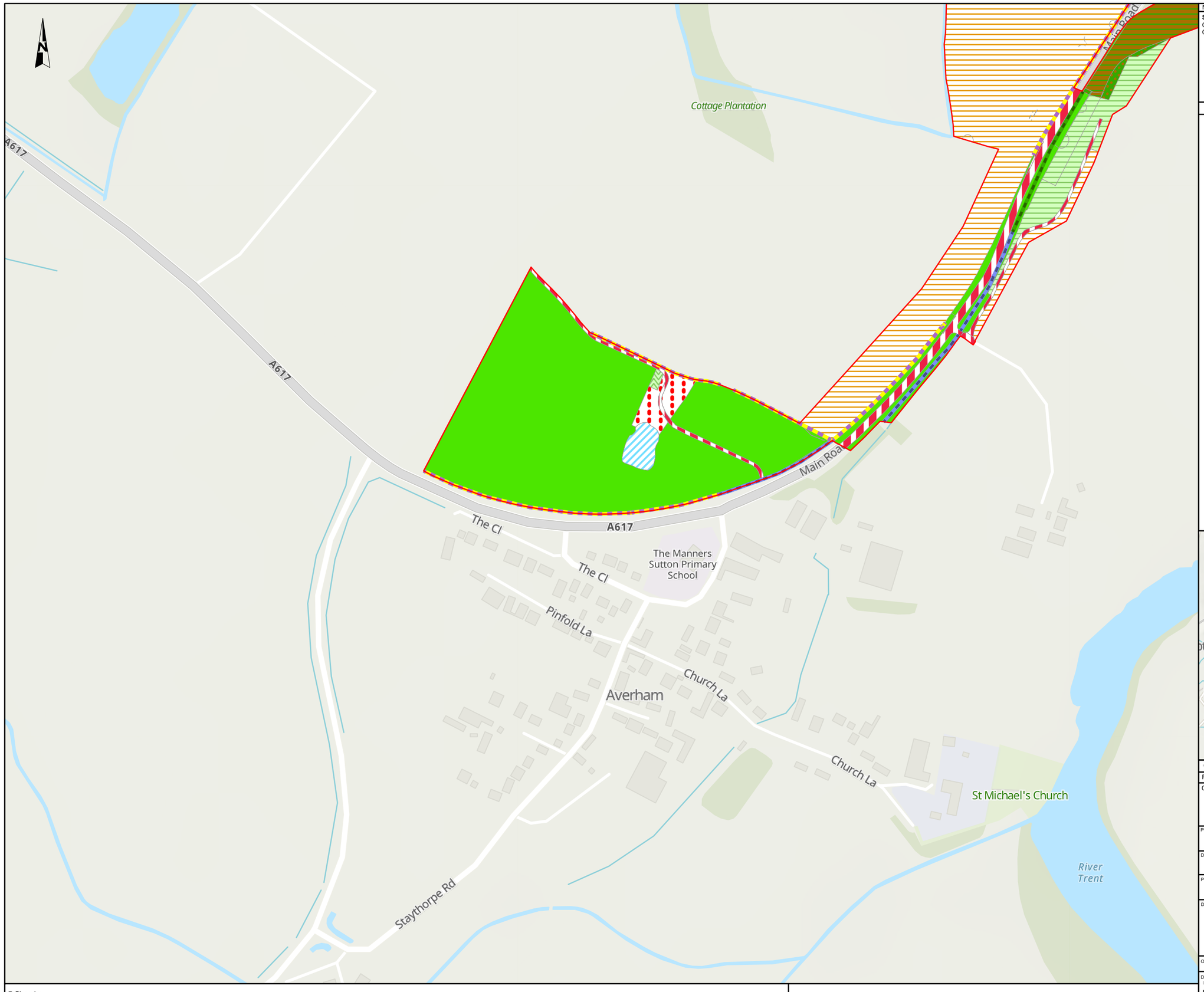

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0 50 100 150 200 250 Metres

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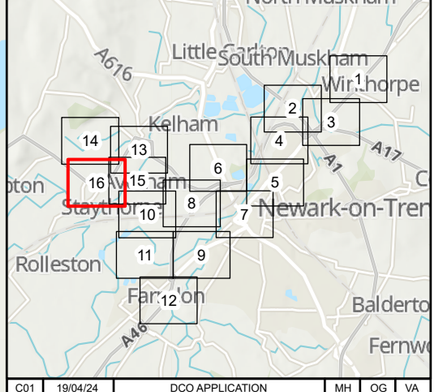
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Line of Trees
- Native Hedgerow
- Native Hedgerow with trees
- Cereal crops
- Modified grassland
- Other neutral grassland
- Ponds (Non- Priority Habitat)
- Lowland mixed deciduous woodland
- Other woodland; broadleaved
- Vacant/derelict land/ bareground
- Ruderal/Ephemeral
- Developed land; sealed surface



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

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DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.1
Biodiversity Net Gain Baseline Habitats
Sheet 16 of 16

ORIGINAL SIZE A3
SCALE 1:4,000

DRAWING NUMBER
HE PIN | ORIGINATOR | VOLUME
HE551478 SKAG EBD
LOCATION | TYPE | ROLE | NUMBER
CONWI_CONW DR LE 00145

PROJECT REF NO.
HE551478

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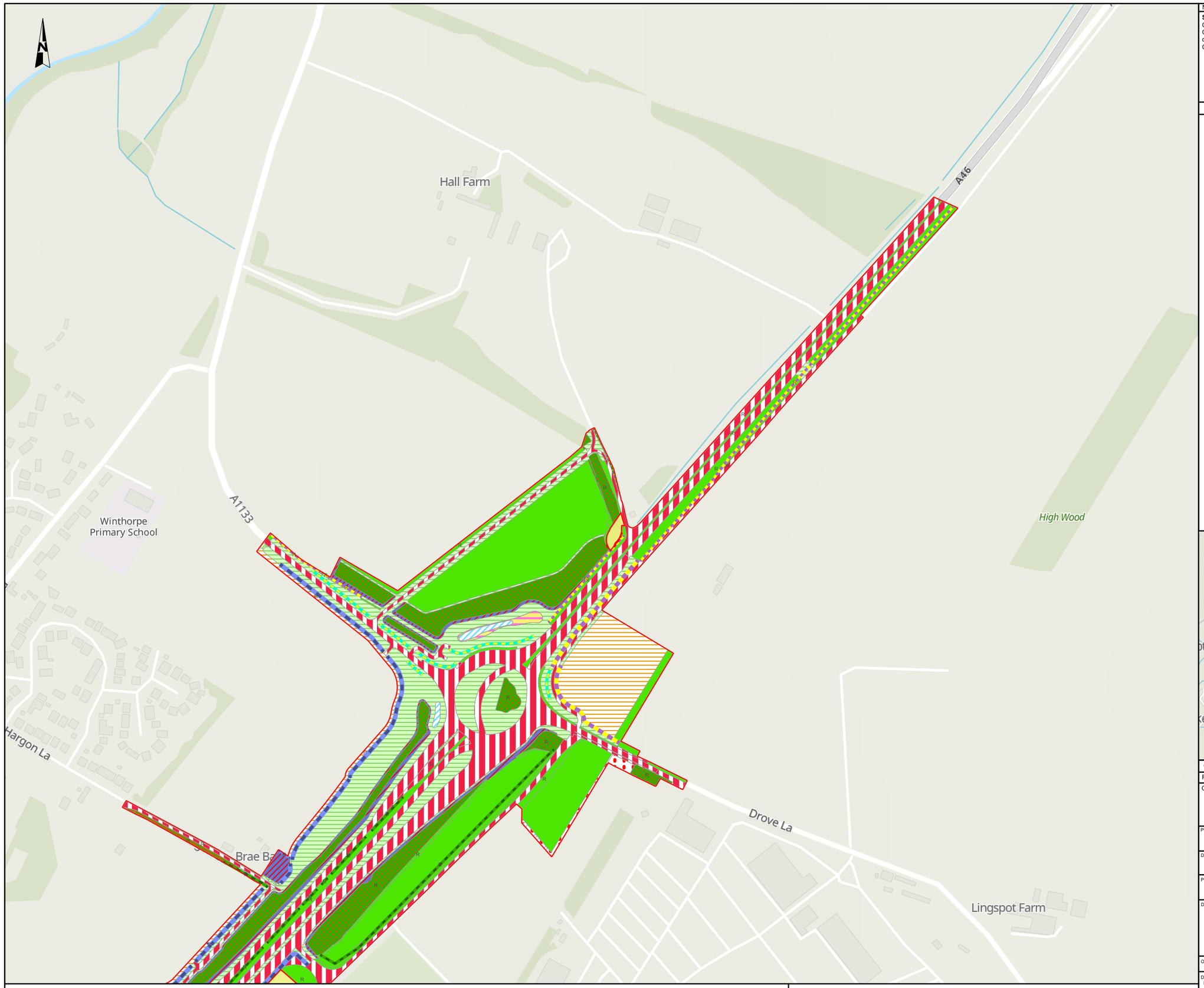
C01

A.2 Post-development habitats map



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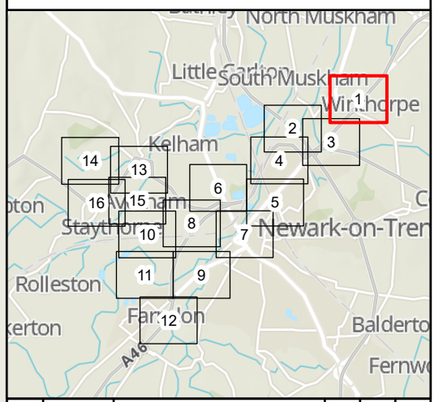
KEY TO SYMBOLS

- Order Limits
- Land not included within the Order Limits

Metric Habitat

- Ditches
- Line of Trees
- Native Hedgerow
- Native Species Rich Hedgerow
- Native Hedgerow with trees
- Native Species Rich Hedgerow with trees
- Cereal crops
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Other woodland; broadleaved
- Vacant/derelict land/ bareground
- Reedbeds
- Developed land; sealed surface
- R Retained



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT
national highways

PURPOSE OF ISSUE
DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 1 of 16

ORIGINAL SIZE A3 SCALE 1:5,000

DRAWING NUMBER HE PIN	ORIGINATOR	VOLUME			PROJECT REF NO.
HE551478	SKAG	EBD			HE551478
CONWI_CONW LOCATION		DR TYPE	LE ROLE	00150 NUMBER	REVISION C02

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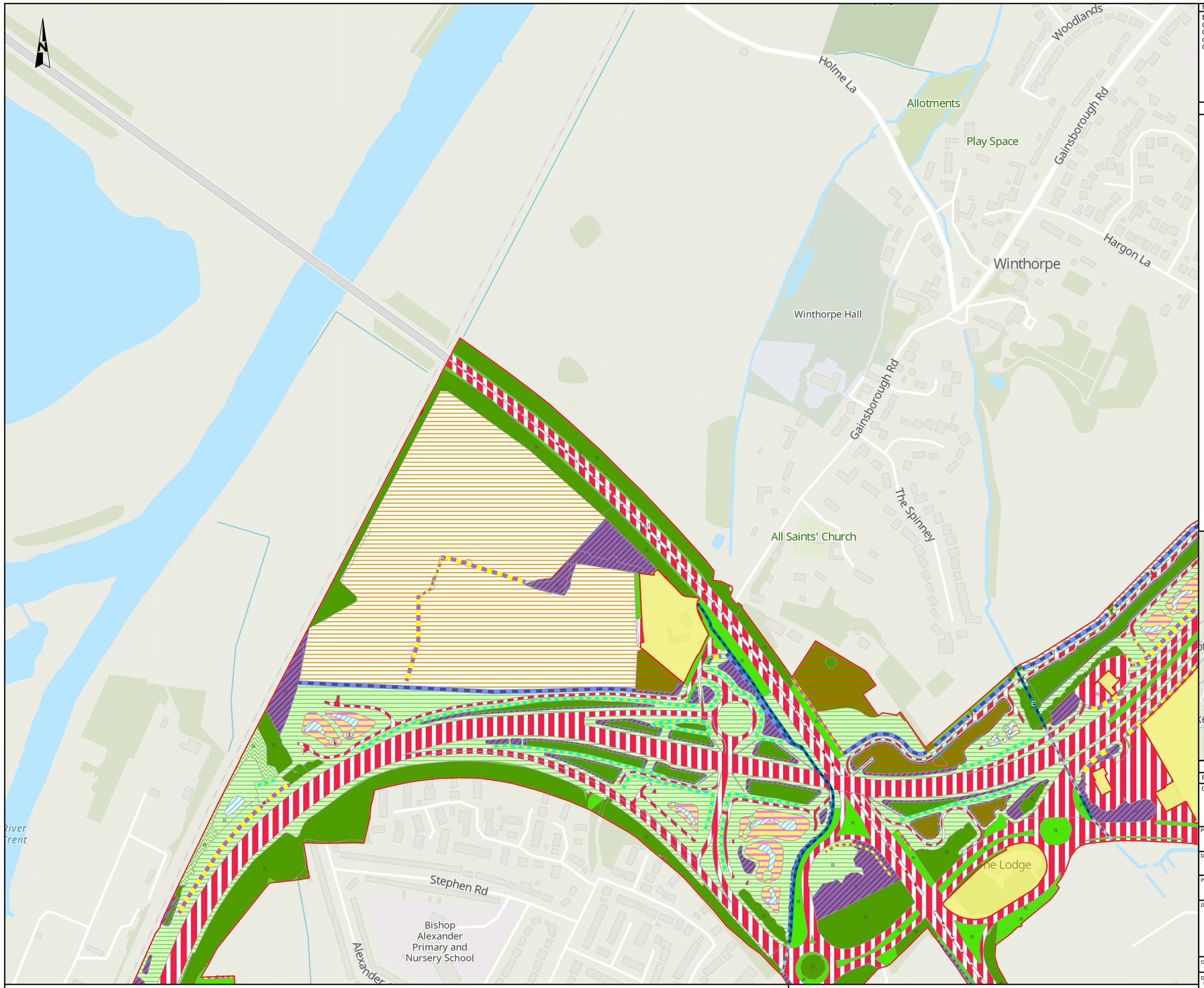

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KEY TO SYMBOLS

- Order Limits
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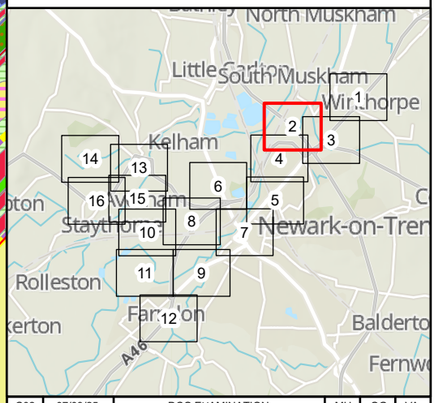
Metric Habitat

- Ditches
- Native Hedgerow
- Native Species Rich Hedgerow
- Native Hedgerow - Associated with bank or ditch
- Native Hedgerow with trees
- Native Species Rich Hedgerow with trees
- Other Rivers and Streams
- Culvert
- Cereal crops
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Lowland mixed deciduous woodland
- Other woodland; broadleaved
- Reedbeds
- Developed land; sealed surface
- R Retained
- E Enhanced



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 2 of 16

ORIGINAL SIZE: A3 | SCALE: 1:5,000

DRAWING NUMBER: HE PIN HE551478 | ORIGINATOR SKAG | VOLUME EBD | LOCATION CONWI_CONW | TYPE DR | ROLE LE | NUMBER 00151

PROJECT REF NO.: HE551478

REVISION: C02

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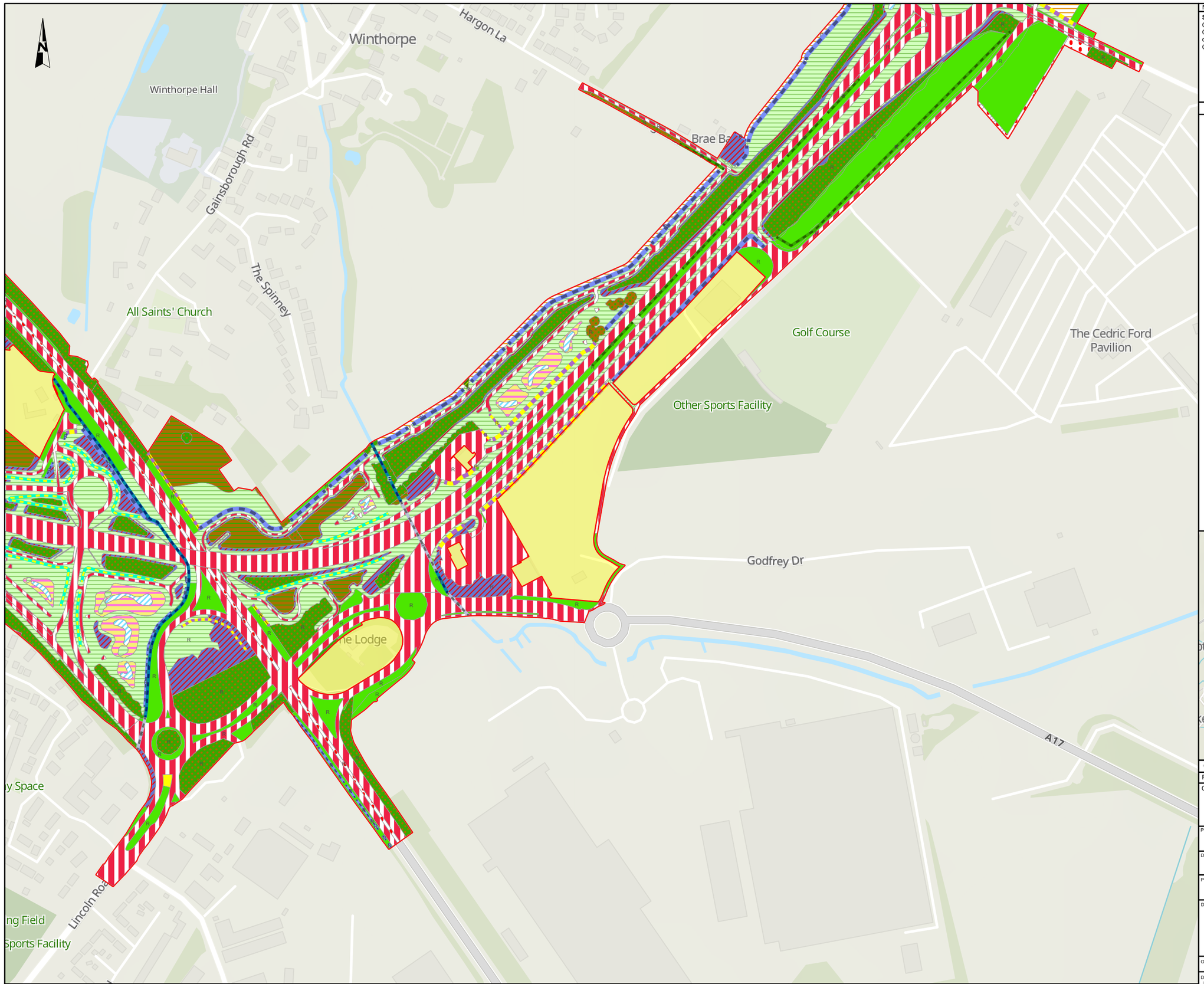

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KEY TO SYMBOLS

- Order Limits
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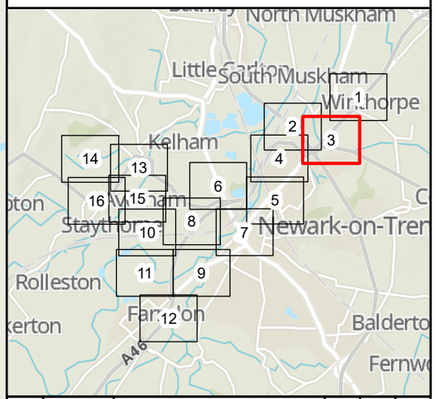
Metric Habitat

- Ditches
- Line of Trees
- Native Hedgerow
- Native Species Rich Hedgerow
- Native Hedgerow - Associated with bank or ditch
- Native Hedgerow with trees
- Native Species Rich Hedgerow with trees
- Other Rivers and Streams
- Culvert
- Cereal crops
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Lowland mixed deciduous woodland
- Other woodland; broadleaved
- Vacant/derelict land/ bareground
- Reedbeds
- Developed land; sealed surface
- R Retained
- E Enhanced



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 3 of 16

ORIGINAL SIZE: A3 | SCALE: 1:5,000

DRAWING NUMBER HE PIN	ORIGINATOR	VOLUME	LOCATION	TYPE	ROLE	NUMBER
HE551478	SKAG	EBD	CONWI_CONW	DR	LE	00152

PROJECT REF NO.: HE551478

REVISION: C02

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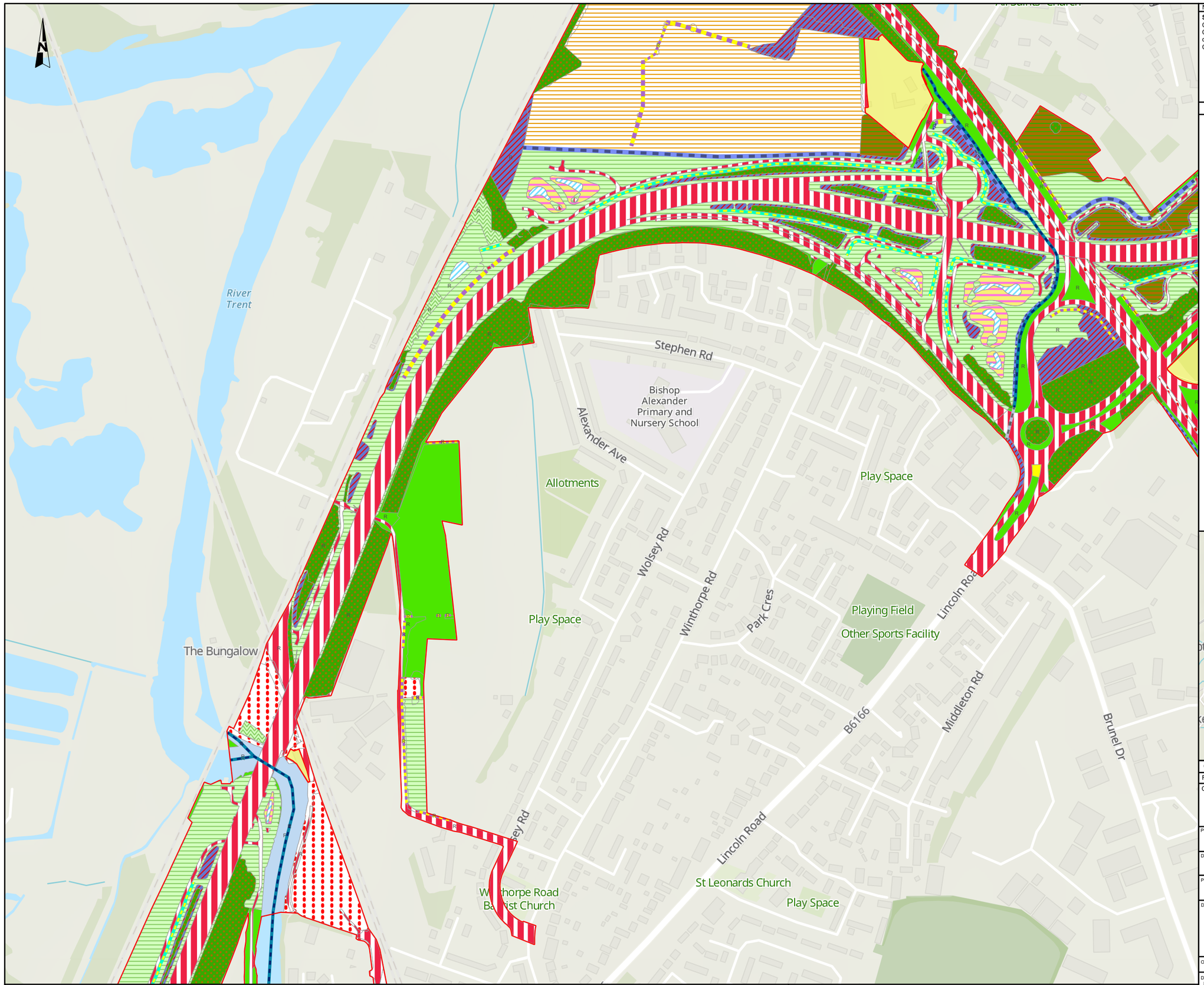

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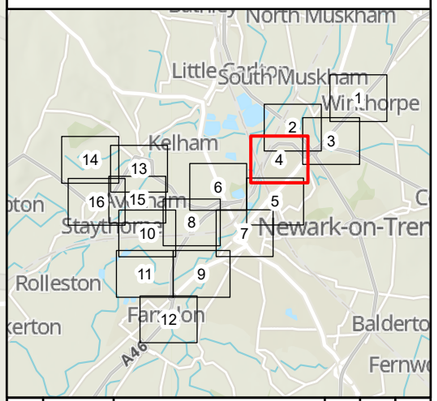
KEY TO SYMBOLS

- Order Limits
- Land not included within the Order Limits

Metric Habitat

- Ditches
- Native Hedgerow
- Native Species Rich Hedgerow
- Native Hedgerow - Associated with bank or ditch
- Native Hedgerow with trees
- Native Species Rich Hedgerow with trees
- Other Rivers and Streams
- Culvert
- Cereal crops
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Lowland mixed deciduous woodland
- Other woodland; broadleaved
- Vacant/derelict land/ bareground
- Ruderal/Ephemeral
- Reedbeds
- Developed land; sealed surface
- R Retained



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 4 of 16

ORIGINAL SIZE: A3 SCALE: 1:5,000

DRAWING NUMBER HE PIN	ORIGINATOR	VOLUME	LOCATION	TYPE	ROLE	NUMBER	PROJECT REF NO.	REVISION
HE551478	SKAG	EBD	CONWI_CONW	DR	LE	00153	HE551478	C02

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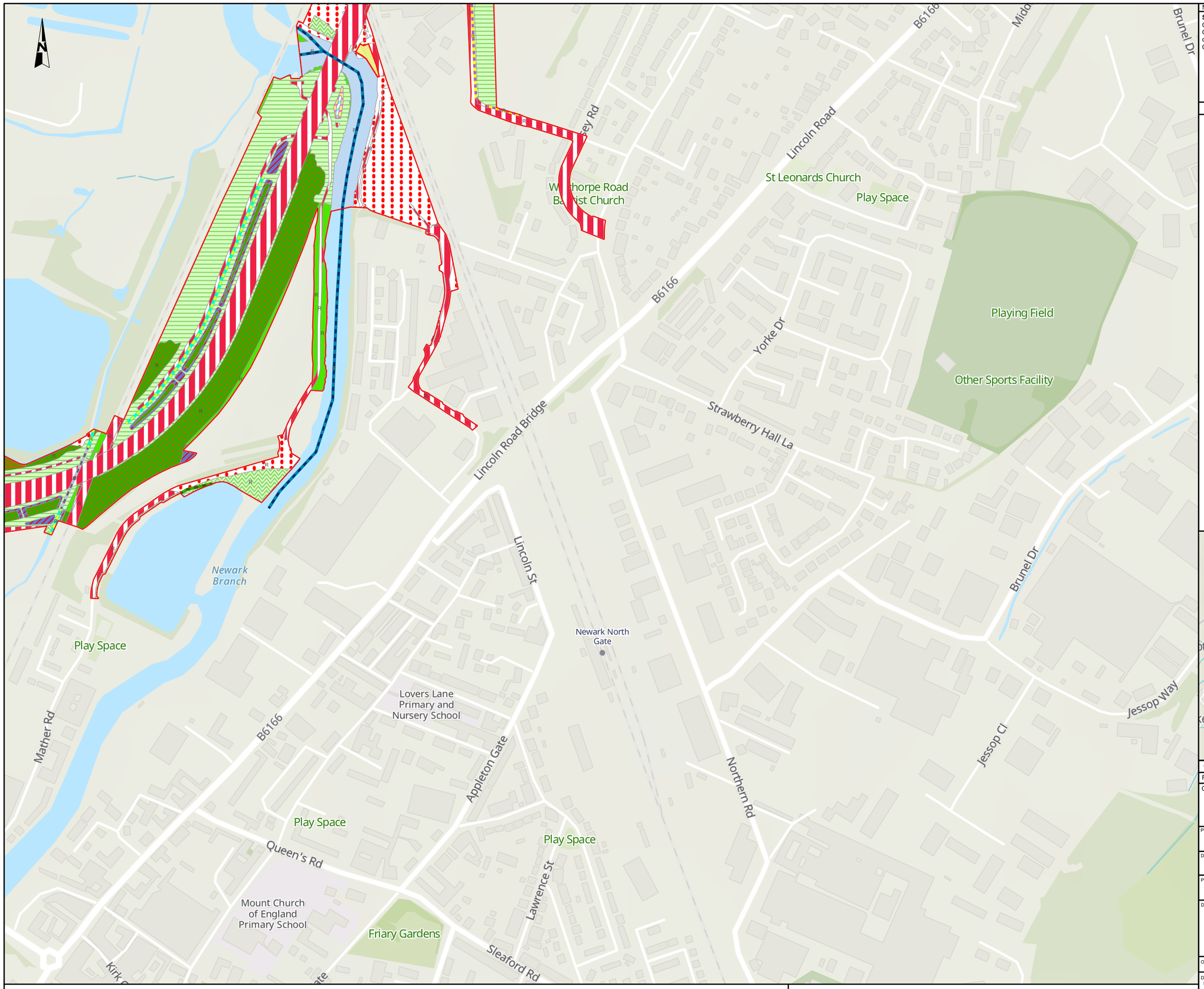

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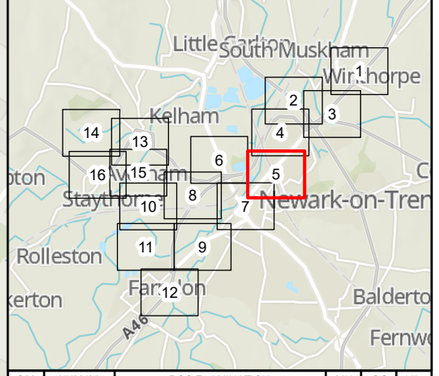
KEY TO SYMBOLS

- Order Limits
- Land not included within the Order Limits

Metric Habitat

- Ditches
- Line of Trees
- Native Hedgerow
- Other Rivers and Streams
- Culvert
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Other woodland; broadleaved
- Vacant/derelict land/ bareground
- Ruderal/Ephemeral
- Reedbeds
- Developed land; sealed surface
- R Retained



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 5 of 16

ORIGINAL SIZE: A3 | SCALE: 1:5,000

DRAWING NUMBER: HE PIN HE551478 | ORIGINATOR SKAG | VOLUME EBD | LOCATION CONWI_CONW | TYPE DR | ROLE LE | NUMBER 00154

PROJECT REF NO.: HE551478

REVISION: C02

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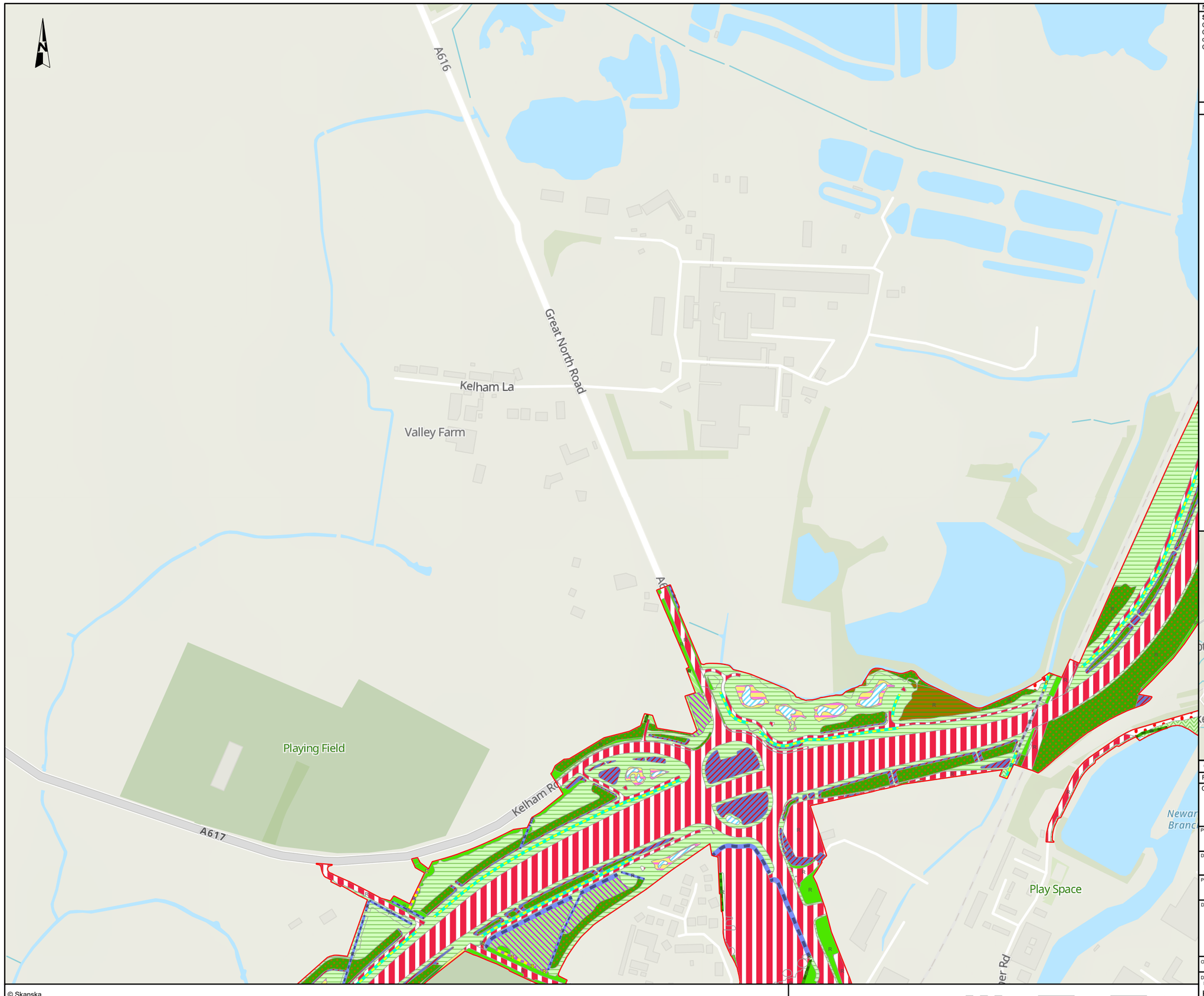

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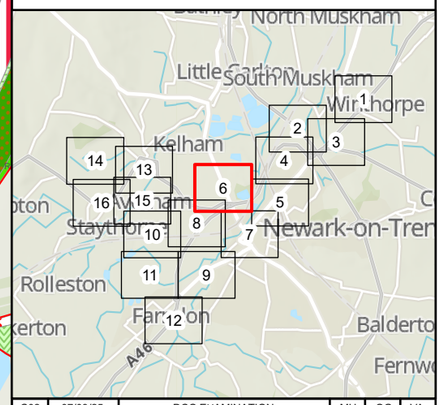
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Ditches
- Line of Trees
- Native Hedgerow
- Native Hedgerow with trees
- Native Species Rich Hedgerow with trees
- Culvert
- Lowland meadows
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Other woodland; broadleaved
- Reedbeds
- Developed land; sealed surface
- Proposed lowland meadows
- R Retained



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

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PURPOSE OF ISSUE
DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 6 of 16

ORIGINAL SIZE A3 SCALE 1:5,000

DRAWING NUMBER
HE PIN | ORIGINATOR | VOLUME | LOCATION | TYPE | ROLE | NUMBER
HE551478 SKAG EBD CONWI_CONW DR LE 00155

PROJECT REF NO. HE551478
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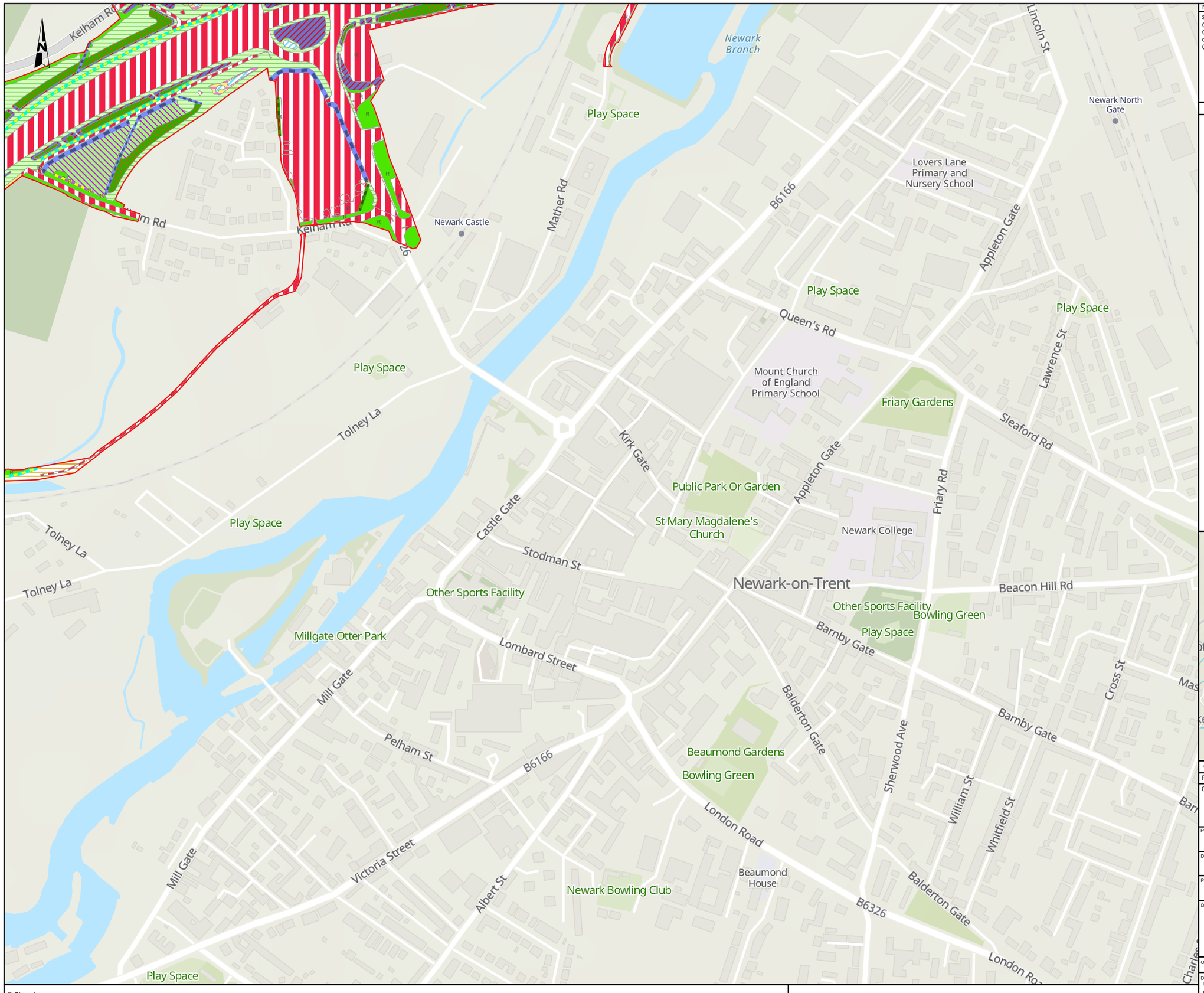

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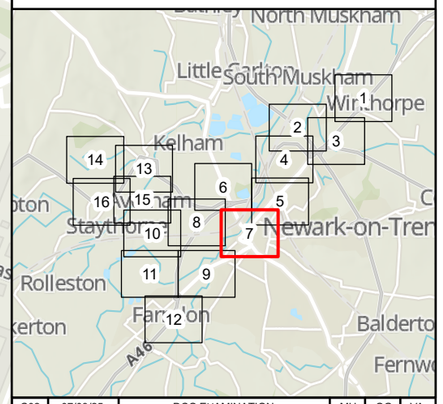
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Ditches
- Line of Trees
- Native Hedgerow
- Native Hedgerow with trees
- Native Species Rich Hedgerow with trees
- Lowland meadows
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Other woodland; broadleaved
- Reedbeds
- Developed land; sealed surface
- Proposed lowland meadows
- R Retained



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 7 of 16

ORIGINAL SIZE: A3 | SCALE: 1:5,000

DRAWING NUMBER: HE PIN HE551478 | ORIGINATOR SKAG | VOLUME EBD | LOCATION CONWI_CONW | TYPE DR | ROLE LE | NUMBER 00156

PROJECT REF NO.: HE551478

REVISION: C02

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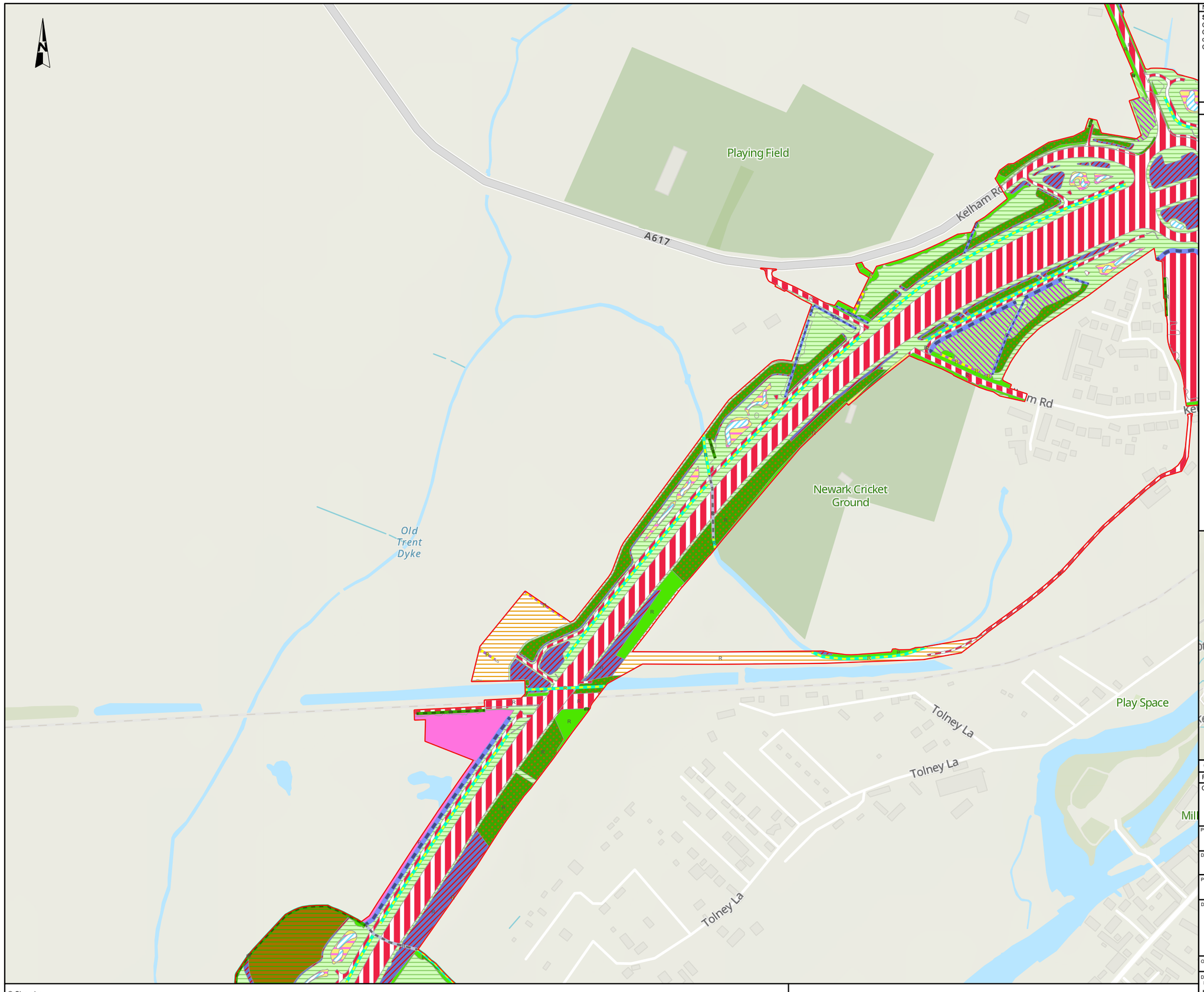

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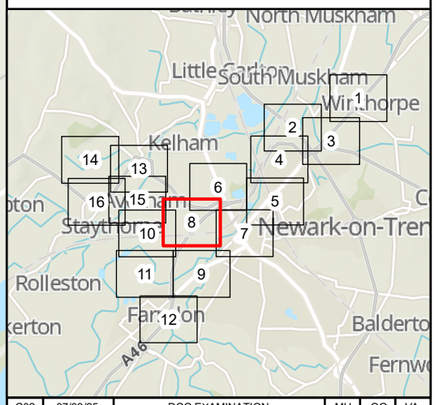
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Ditches
- Line of Trees
- Native Hedgerow
- Native Hedgerow with trees
- Native Species Rich Hedgerow with trees
- Culvert
- Cereal crops
- Lowland meadows
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Lowland mixed deciduous woodland
- Other woodland; broadleaved
- Reedbeds
- Developed land; sealed surface
- Floodplain Wetland Mosaic (CFGM)
- Proposed lowland meadows
- R Retained



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 8 of 16

ORIGINAL SIZE: A3 | SCALE: 1:5,000

DRAWING NUMBER: HE PIN HE551478 | ORIGINATOR SKAG | VOLUME EBD | LOCATION CONWI_CONW | TYPE DR | ROLE LE | NUMBER 00157

PROJECT REF NO.: HE551478

REVISION: C02

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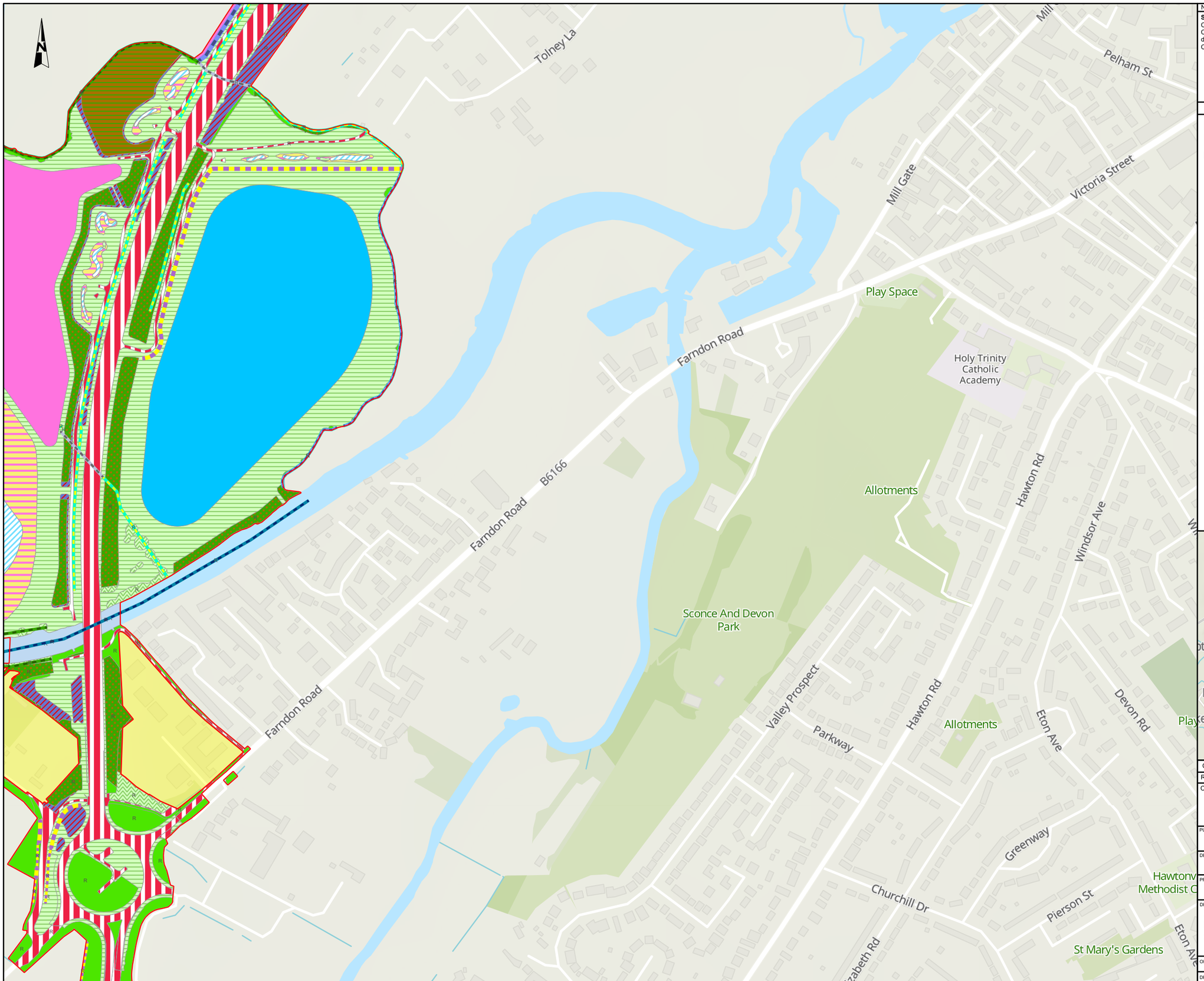

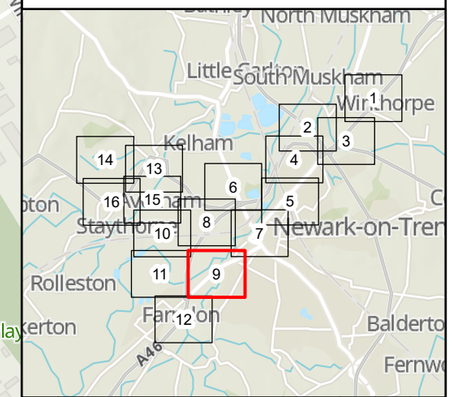

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KEY TO SYMBOLS

- Order Limits
- Land not included within the Order Limits

Metric Habitat

- Ditches
- Line of Trees
- Native Hedgerow
- Native Species Rich Hedgerow
- Native Hedgerow with trees
- Native Species Rich Hedgerow with trees
- Other Rivers and Streams
- Culvert
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Lowland mixed deciduous woodland
- Other woodland; broadleaved
- Reedbeds
- Developed land; sealed surface
- Floodplain Wetland Mosaic (CFGM)
- High alkalinity lakes
- R Retained

REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 9 of 16

ORIGINAL SIZE: A3 | SCALE: 1:5,000

DRAWING NUMBER: HE PIN HE551478 | ORIGINATOR SKAG | VOLUME EBD | LOCATION CONWI_CONW | TYPE DR | ROLE LE | NUMBER 00158

PROJECT REF NO.: HE551478

REVISION: C02

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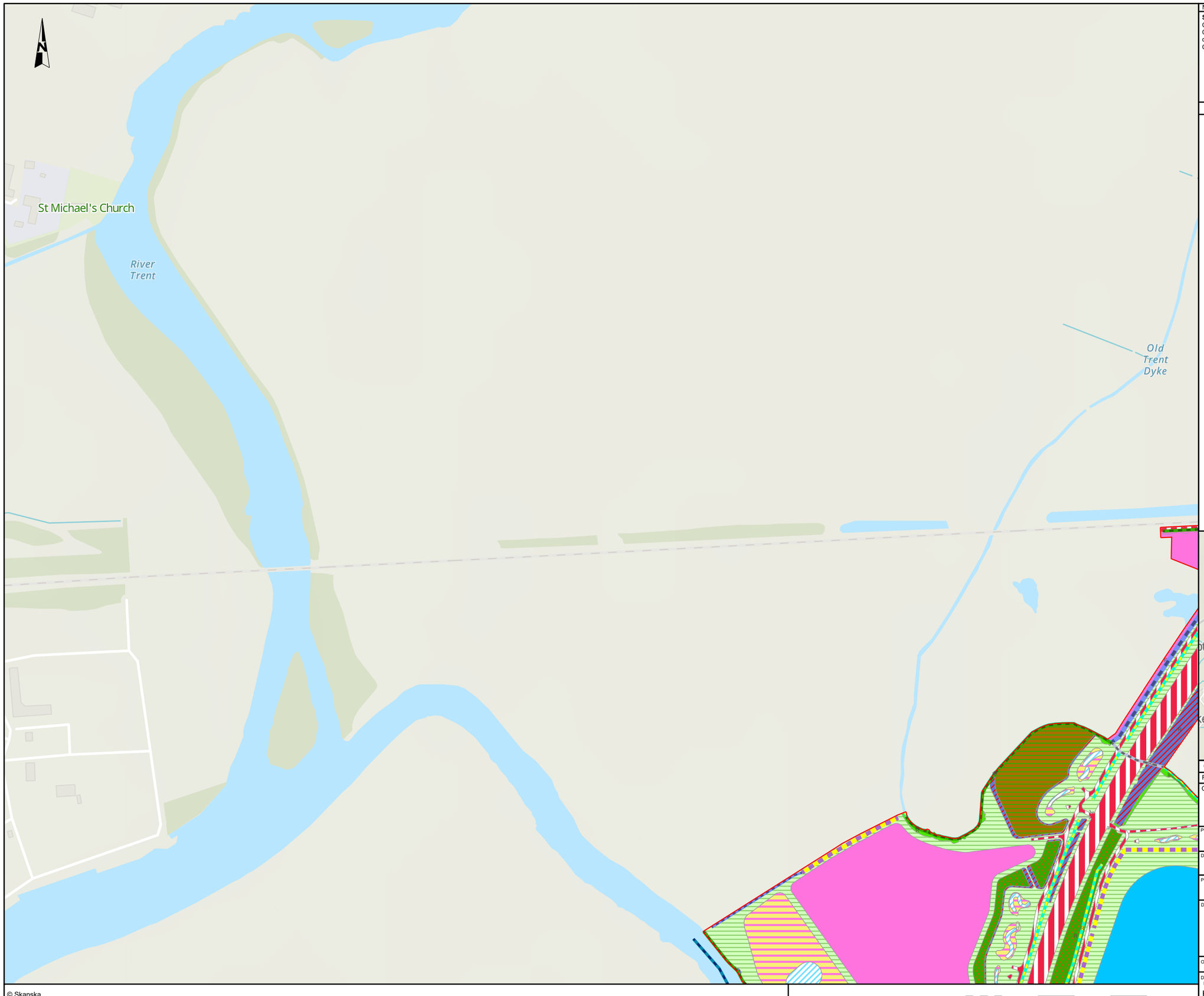
0 50 100 150 200 250 Metres



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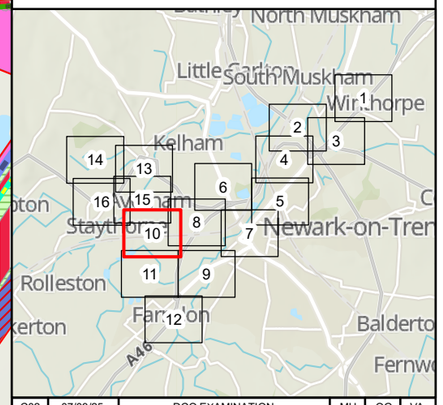
Contains data from OS Zoomstack

KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Ditches
- Line of Trees
- Native Hedgerow
- Native Species Rich Hedgerow
- Native Hedgerow with trees
- Native Species Rich Hedgerow with trees
- Other Rivers and Streams
- Culvert
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Lowland mixed deciduous woodland
- Other woodland; broadleaved
- Reedbeds
- Developed land; sealed surface
- Floodplain Wetland Mosaic (CFGM)
- High alkalinity lakes
- R Retained



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT
national highways

PURPOSE OF ISSUE
DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 10 of 16

ORIGINAL SIZE A3 SCALE 1:5,000

DRAWING NUMBER
HE PIN | ORIGINATOR | VOLUME
HE551478 SKAG EBD
CONWI_CONW | TYPE DR | ROLE LE | NUMBER 00159
LOCATION

PROJECT REF NO. HE551478
REVISION C02

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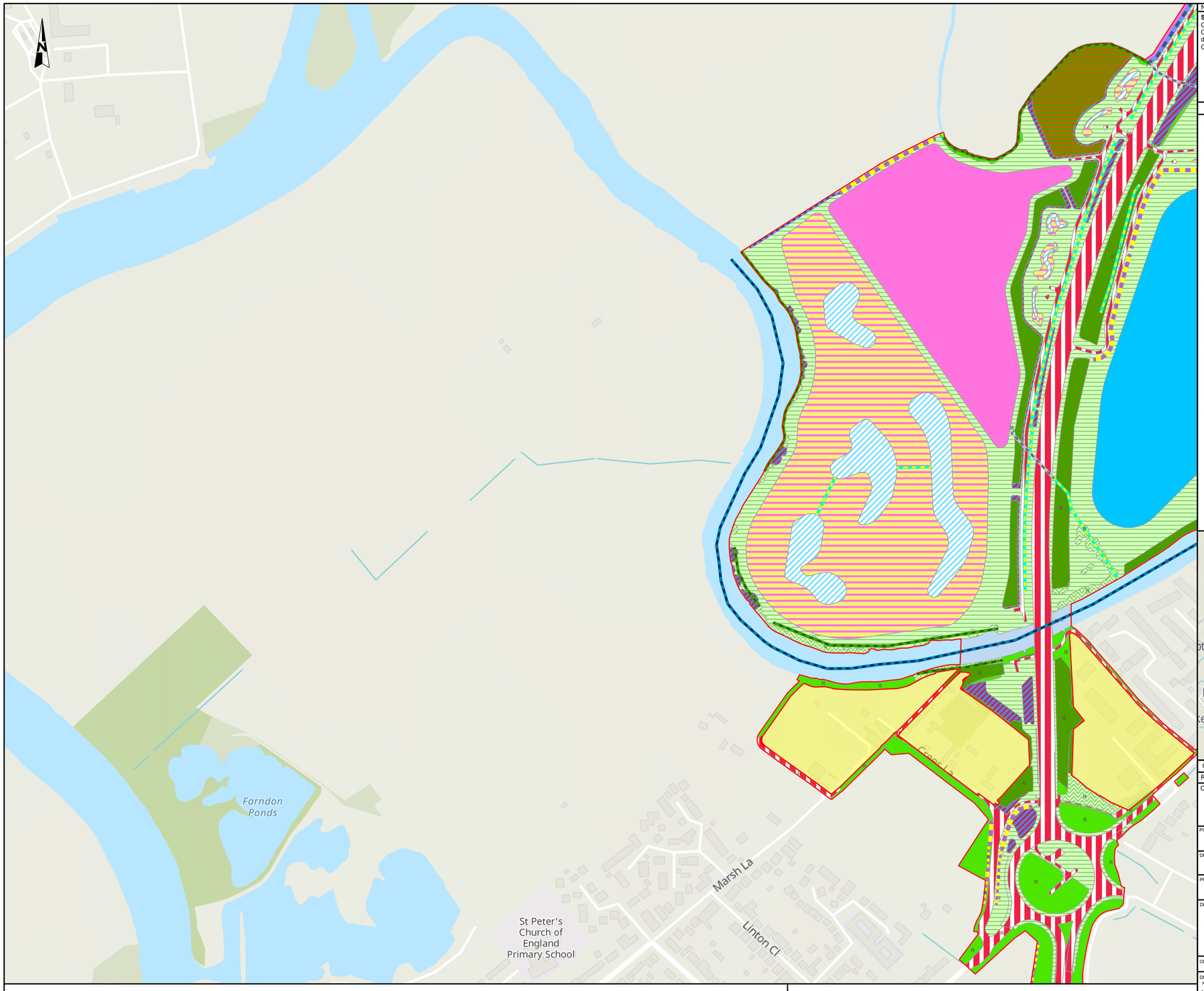

NOTES

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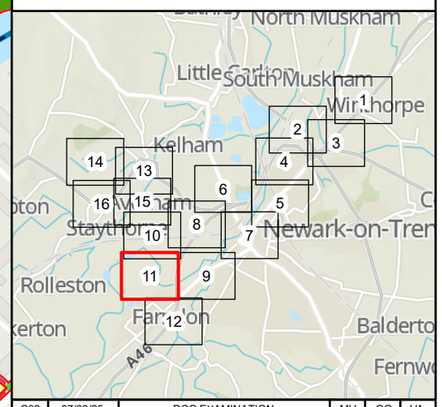
Contains data from OS Zoomstack

KEY TO SYMBOLS

- Order Limits
- Land not included within the Order Limits

Metric Habitat

- Ditches
- Line of Trees
- Native Hedgerow
- Native Species Rich Hedgerow
- Native Hedgerow with trees
- Native Species Rich Hedgerow with trees
- Other Rivers and Streams
- Culvert
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Ponds (Non- Priority Habitat)
- Lowland mixed deciduous woodland
- Other woodland; broadleaved
- Reedbeds
- Developed land; sealed surface
- Floodplain Wetland Mosaic (CFGM)
- High alkalinity lakes
- R Retained



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 11 of 16

ORIGINAL SIZE: A3 | SCALE: 1:5,000

DRAWING NUMBER: HE PIN HE551478 | ORIGINATOR SKAG | VOLUME EBD | LOCATION CONWI_CONW | TYPE DR | ROLE LE | NUMBER 00160

PROJECT REF NO.: HE551478

REVISION: C02

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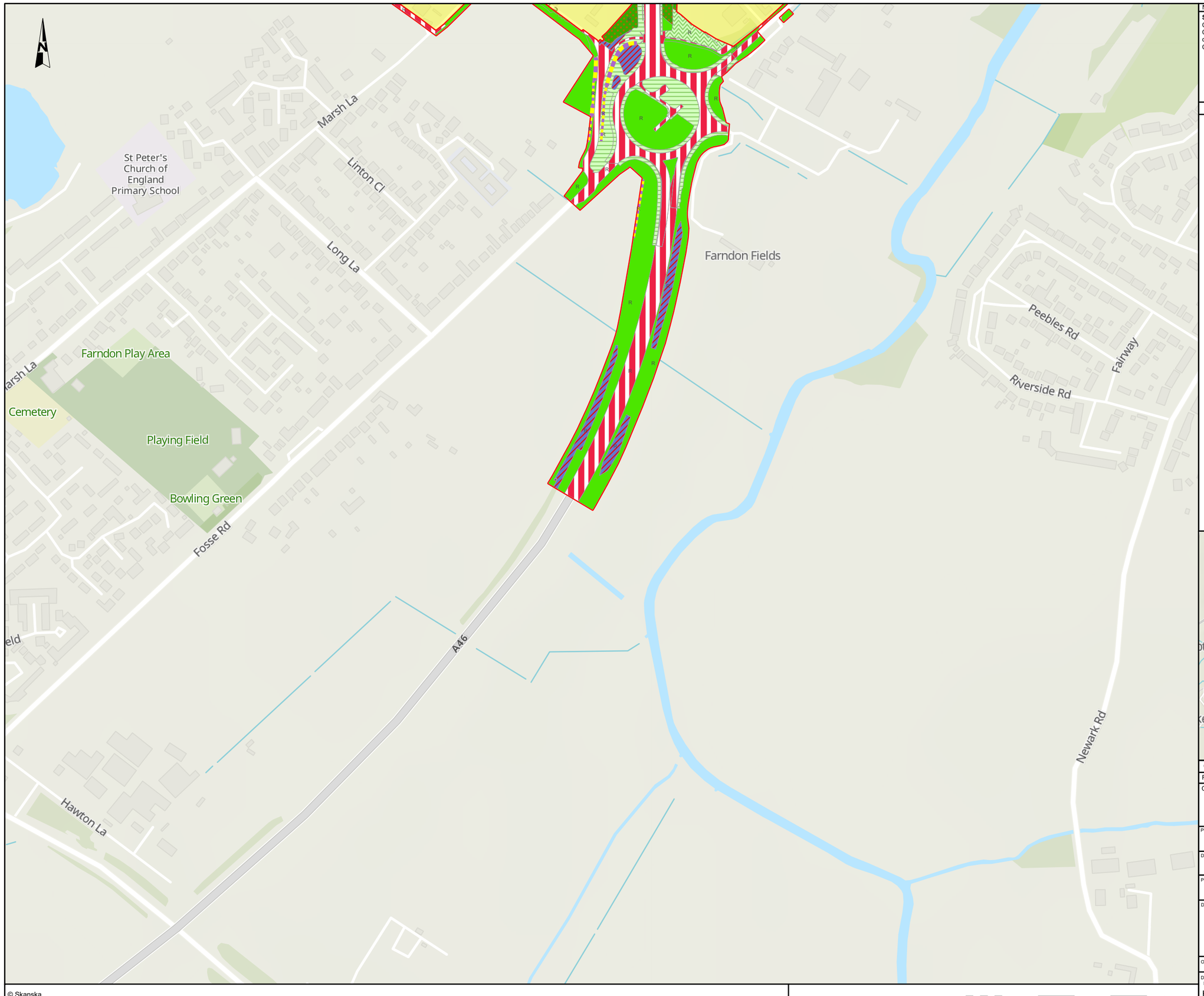
0 50 100 150 200 250 Metres



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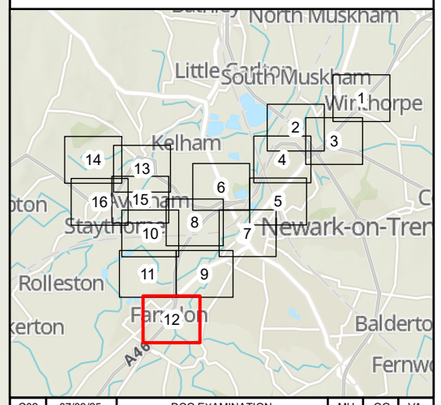
KEY TO SYMBOLS

- Order Limits
- Land not included within the Order Limits

Metric Habitat

- Native Hedgerow
- Native Species Rich Hedgerow
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Developed land; sealed surface
- R Retained



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 12 of 16

ORIGINAL SIZE: A3 | SCALE: 1:5,000

DRAWING NUMBER: HE PIN HE551478 | ORIGINATOR SKAG | VOLUME EBD | LOCATION CONWI_CONW | TYPE DR | ROLE LE | NUMBER 00161

PROJECT REF NO.: HE551478

REVISION: C02

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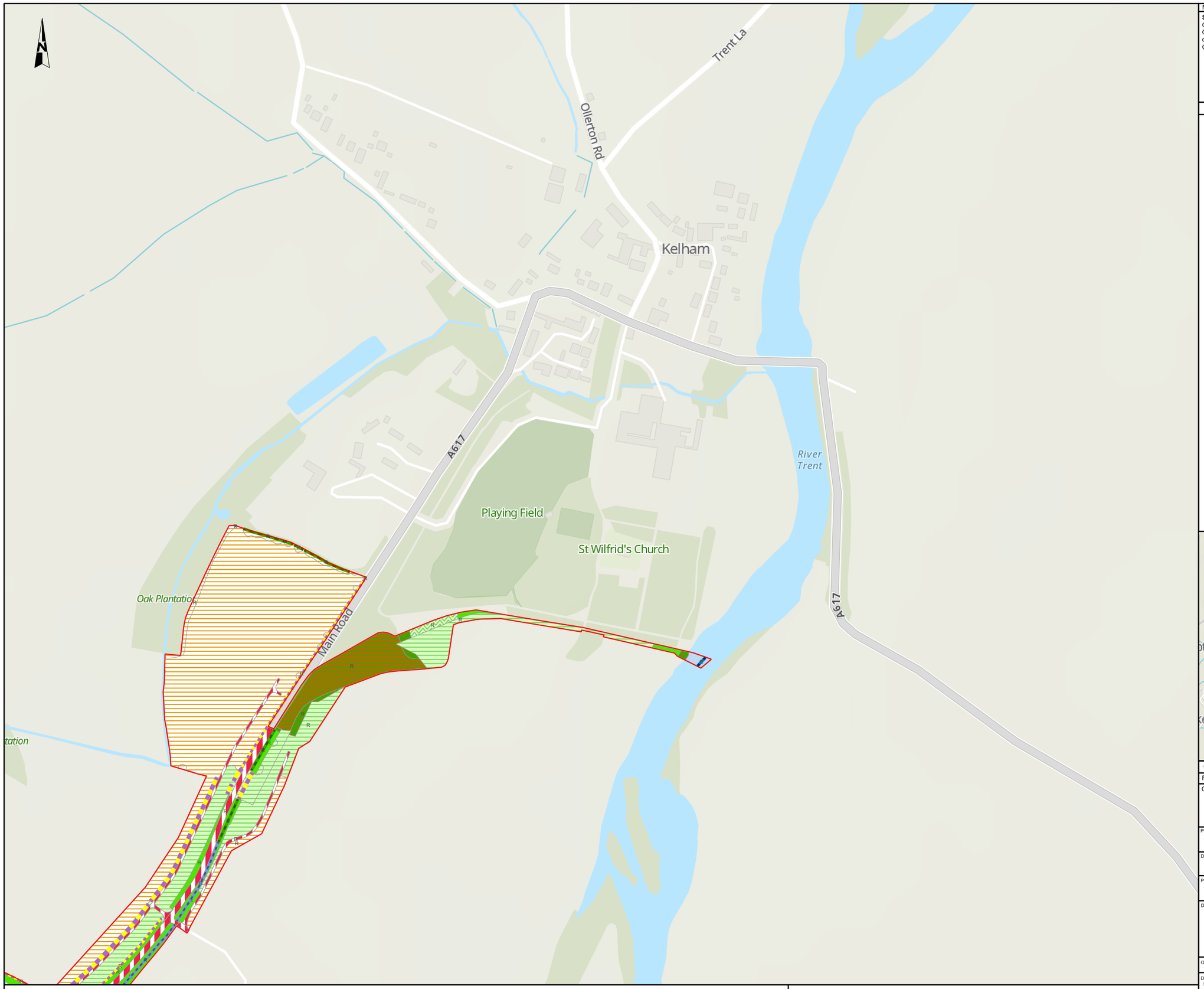

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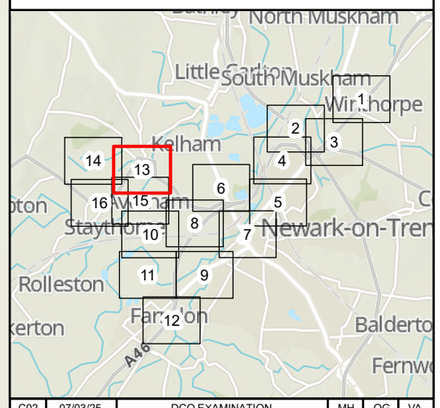
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Line of Trees
- Native Hedgerow
- Native Species Rich Hedgerow
- Native Hedgerow with trees
- Other Rivers and Streams
- Cereal crops
- Modified grassland
- Other neutral grassland
- Ponds (Non- Priority Habitat)
- Developed land; sealed surface
- R Retained



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT
national highways

PURPOSE OF ISSUE
DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 13 of 16

ORIGINAL SIZE A3
SCALE 1:5,000

DRAWING NUMBER
HE PIN | ORIGINATOR | VOLUME
HE551478 SKAG EBD
LOCATION | TYPE | ROLE | NUMBER
CONWI_CONW DR LE 00162

PROJECT REF NO.
HE551478

REVISION
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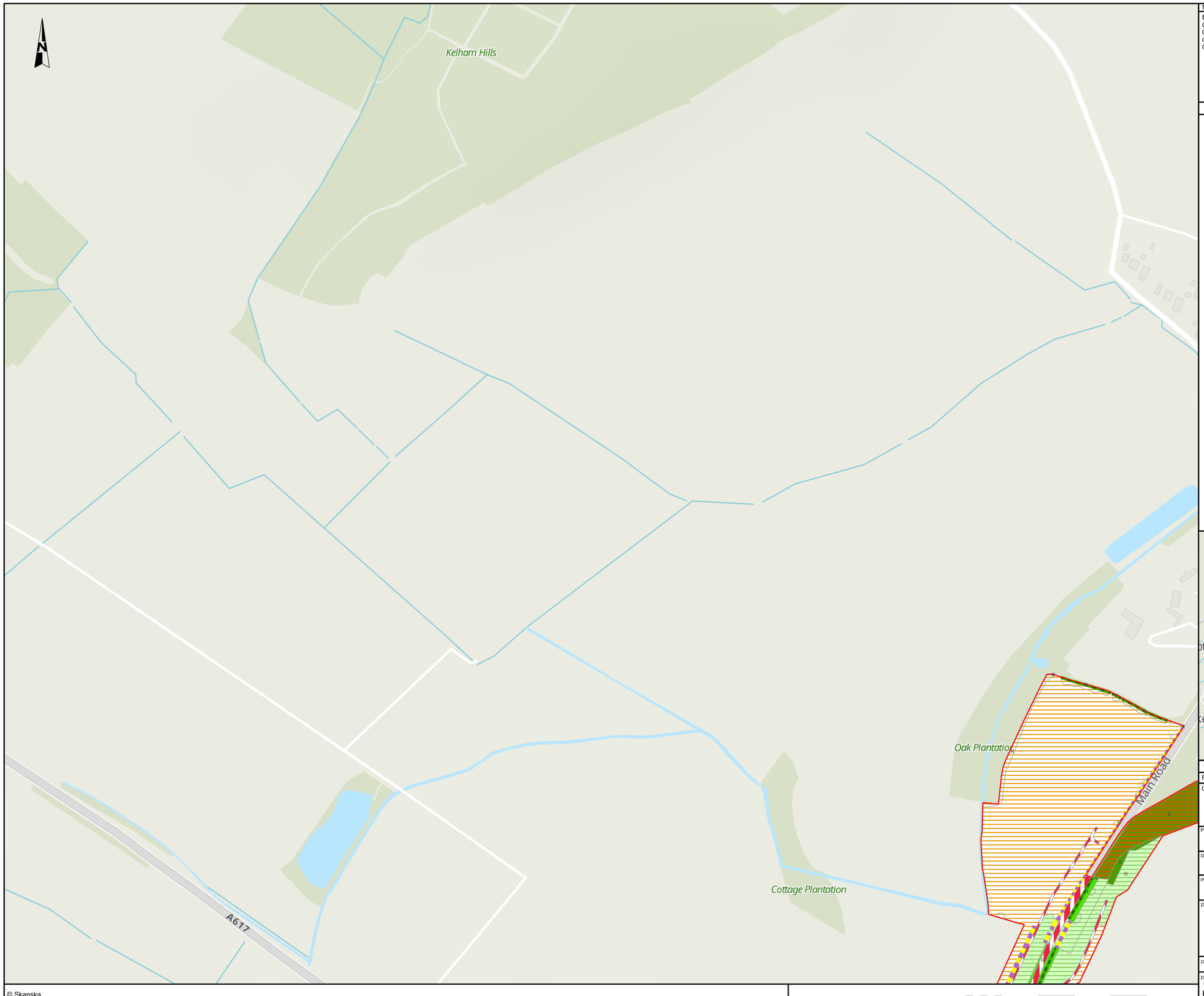
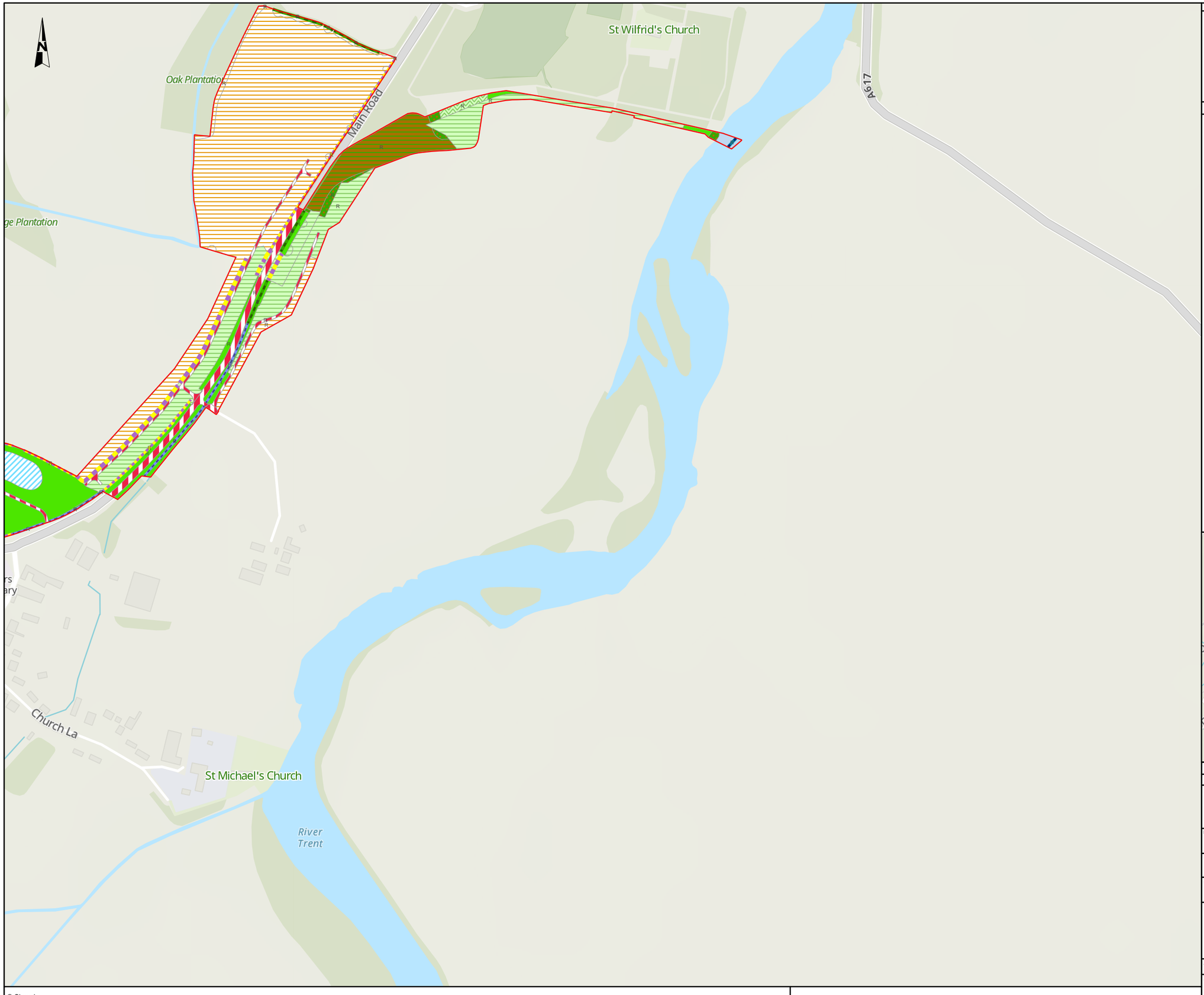

Kelham Hills
Oak Plantation
Cottage Plantation
Main Road
A617
R
R
R



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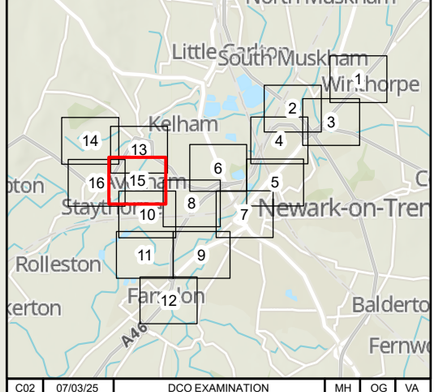
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Line of Trees
- Native Hedgerow
- Native Species Rich Hedgerow
- Native Hedgerow with trees
- Other Rivers and Streams
- Cereal crops
- Modified grassland
- Other neutral grassland
- Ponds (Non- Priority Habitat)
- Developed land; sealed surface
- R Retained



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 15 of 16

ORIGINAL SIZE: A3 SCALE: 1:5,000

DRAWING NUMBER

HE PIN	ORIGINATOR	VOLUME	LOCATION	TYPE	ROLE	NUMBER
HE551478	SKAG	EBD	CONWI_CONW	DR	LE	00164

PROJECT REF NO.: HE551478

REVISION: C02

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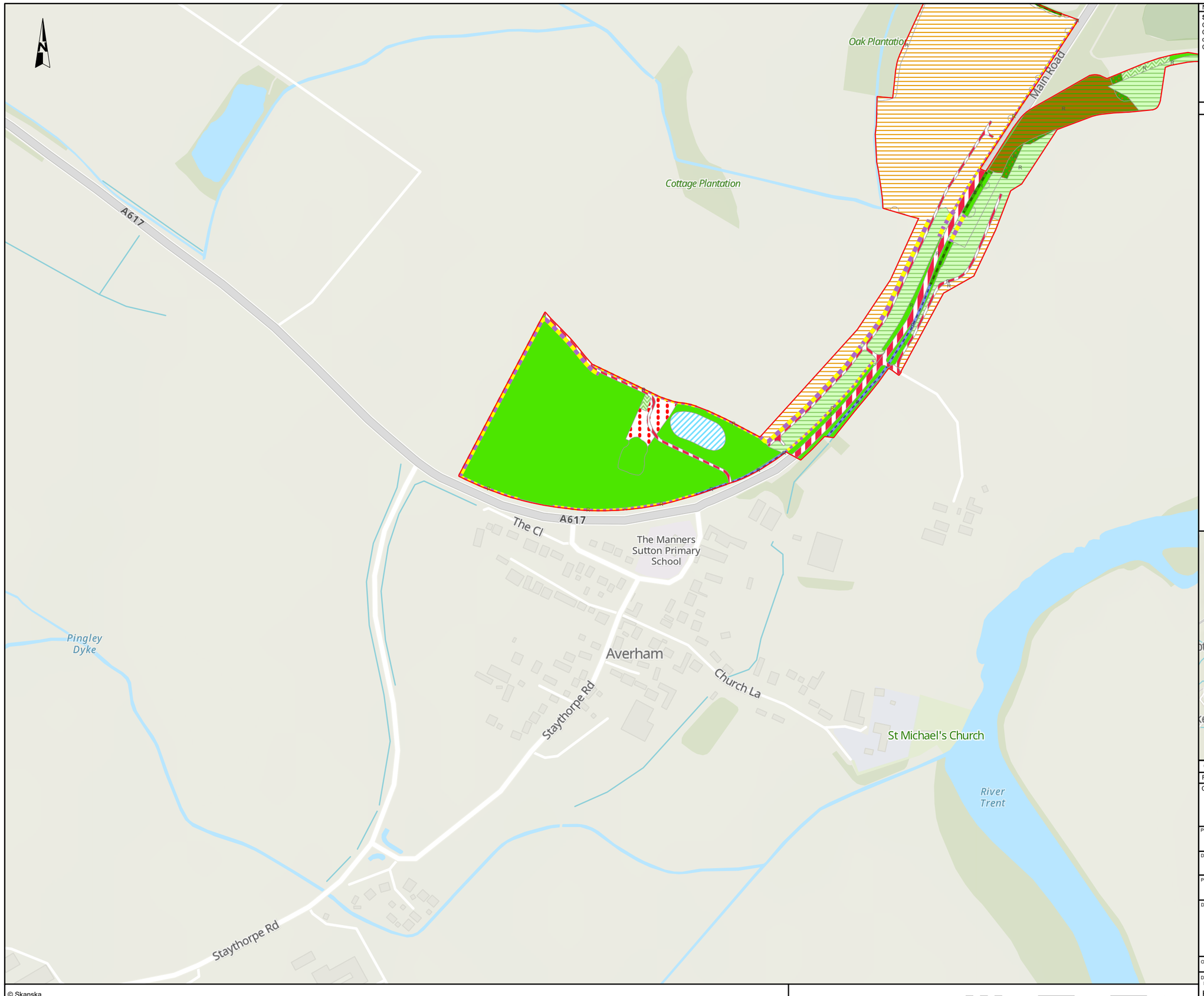
0 50 100 150 200 250 Metres



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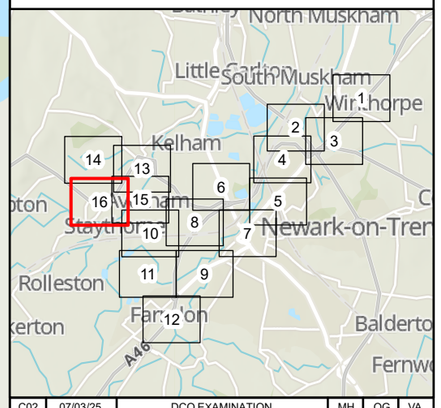
KEY TO SYMBOLS

- Order Limits

Metric Habitat

- Line of Trees
- Native Hedgerow
- Native Species Rich Hedgerow
- Native Hedgerow with trees
- Cereal crops
- Modified grassland
- Other neutral grassland
- Ponds (Non- Priority Habitat)
- Vacant/derelict land/ bareground
- Ruderal/Ephemeral
- Developed land; sealed surface
- R Retained



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C02	07/03/25	DCO EXAMINATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.2
Biodiversity Net Gain Post-Construction Habitats
Sheet 16 of 16

ORIGINAL SIZE: A3 | SCALE: 1:5,000

DRAWING NUMBER: HE PIN: HE551478 | ORIGINATOR: SKAG | VOLUME: EBD
LOCATION: CONWI_CONW | TYPE: DR | ROLE: LE | NUMBER: 00165

PROJECT REF NO.: HE551478

REVISION: C02

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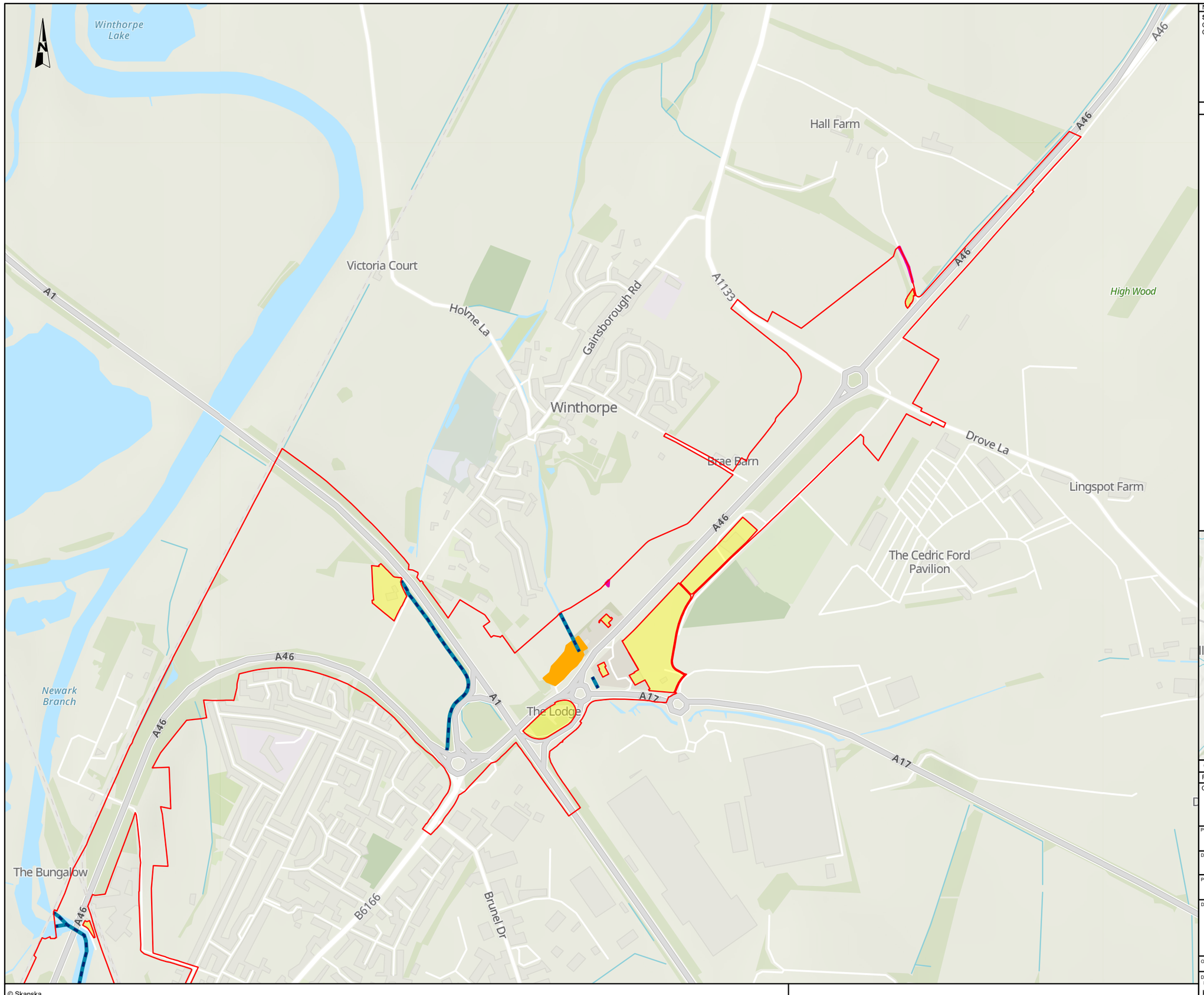
0 50 100 150 200 250 Metres

A.3 Map of the high distinctiveness baseline habitats



NOTES

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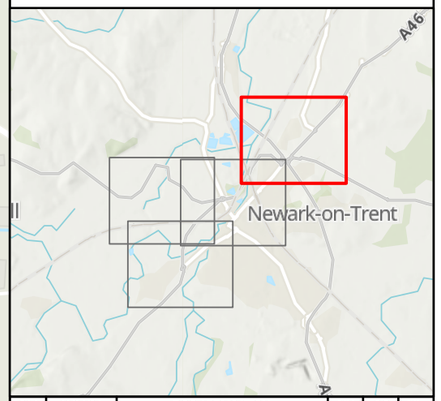
KEY TO SYMBOLS

- Order Limits
- Land not included within the Order Limits

Distinctiveness

- High
- Very High
- Other Rivers and Streams (High Distinctiveness)



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

CLIENT
national highways

PURPOSE OF ISSUE
DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.3
Biodiversity Net Gain Baseline Habitats of High and Very High Distinctiveness
Sheet 1 of 4

ORIGINAL SIZE A3
SCALE 1:10,000

DRAWING NUMBER
HE PIN | ORIGINATOR | VOLUME
HE551478 SKAG EBD
LOCATION | TYPE | ROLE | NUMBER
CONWI_CONW DR LE 00146

PROJECT REF NO.
HE551478

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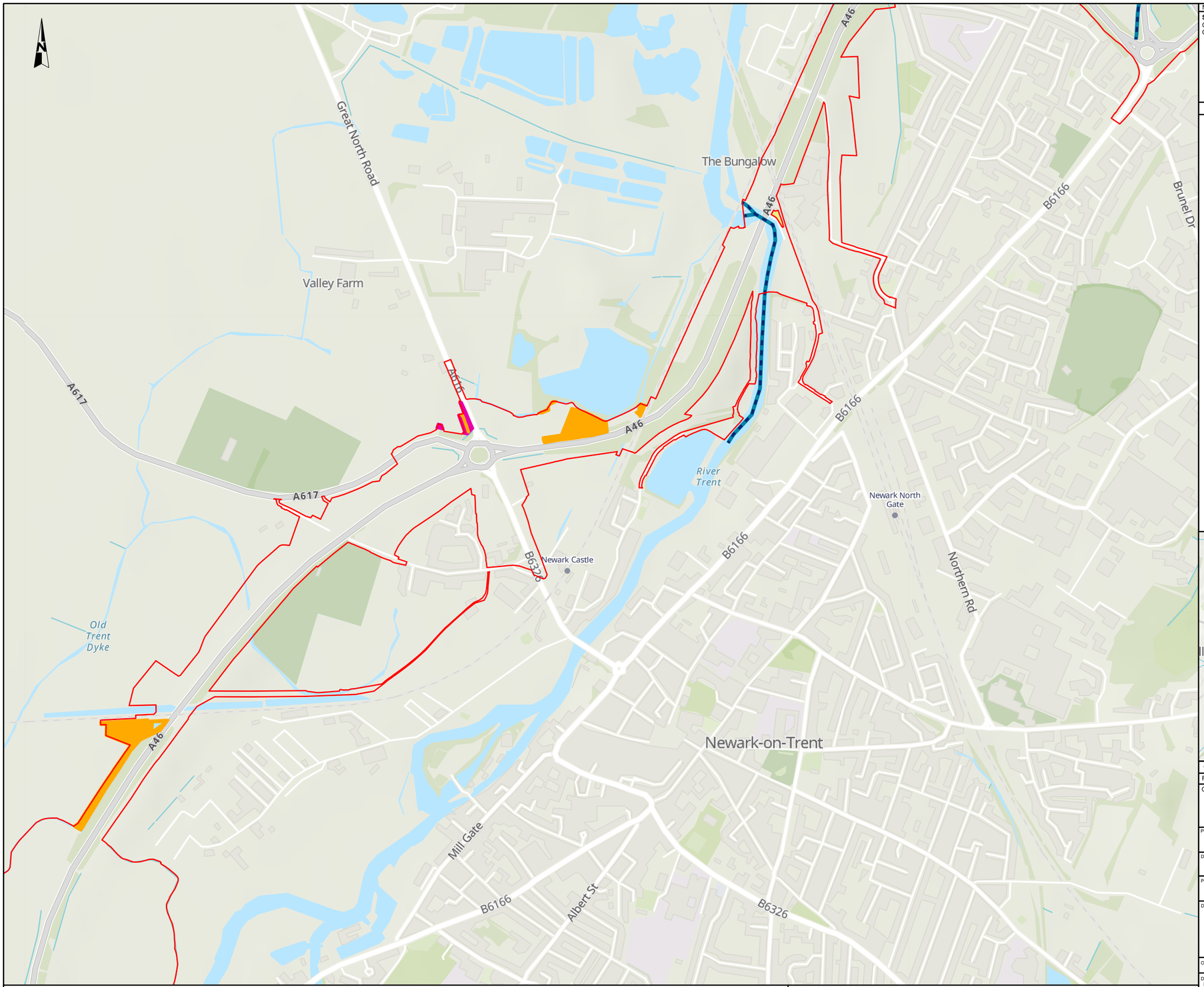

NOTES

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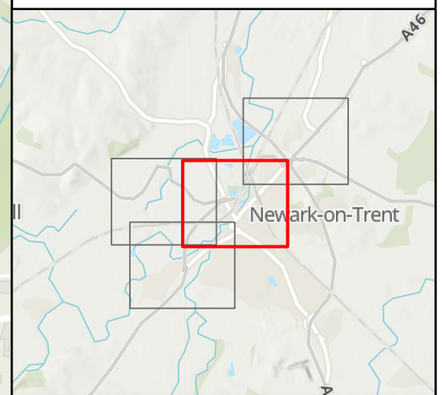
KEY TO SYMBOLS

- Order Limits
- Land not included within the Order Limits

Distinctiveness

- High
- Very High
- Other Rivers and Streams (High Distinctiveness)



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

CLIENT: national highways

PURPOSE OF ISSUE: DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER: TR010065

PROJECT TITLE: A46 NEWARK BYPASS

DRAWING TITLE: Appendix A.3
Biodiversity Net Gain Baseline Habitats of High and Very High Distinctiveness
Sheet 2 of 4

ORIGINAL SIZE: A3 | SCALE: 1:10,000

DRAWING NUMBER: HE PIN HE551478 | ORIGINATOR SKAG | VOLUME EBD | LOCATION CONWI_CONW | TYPE DR | ROLE LE | NUMBER 00147

PROJECT REF NO.: HE551478

REVISION: C01

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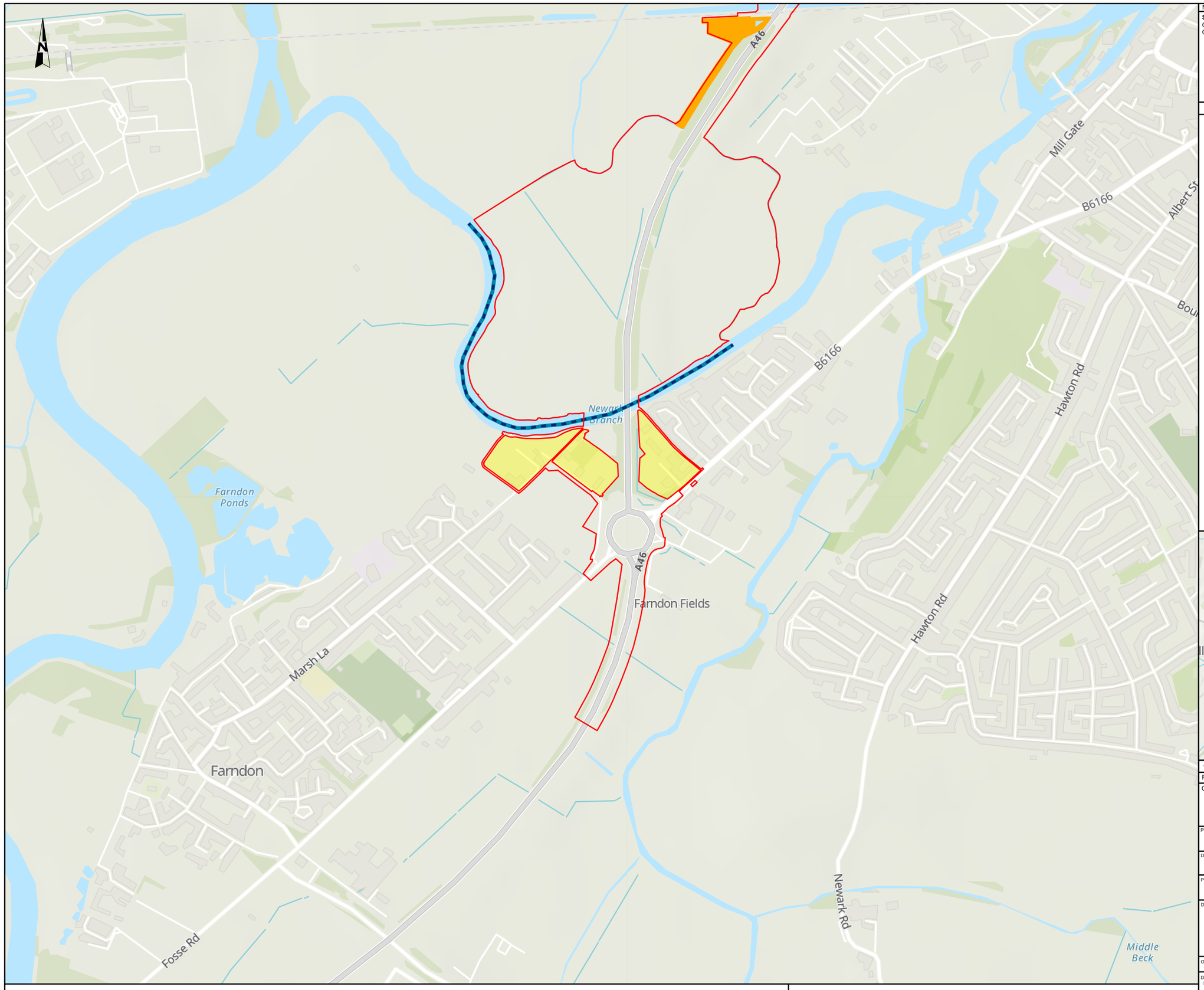
0 100 200 300 400 500 Metres



NOTES

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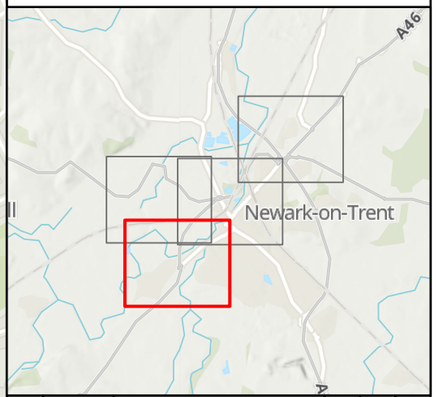
KEY TO SYMBOLS

- Order Limits
- Land not included within the Order Limits

Distinctiveness

- High
- Other Rivers and Streams (High Distinctiveness)



REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

CLIENT
national highways

PURPOSE OF ISSUE
DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER
TR010065

PROJECT TITLE
A46 NEWARK BYPASS

DRAWING TITLE
Appendix A.3
Biodiversity Net Gain Baseline Habitats of High and Very High Distinctiveness
Sheet 3 of 4

ORIGINAL SIZE A3 | SCALE 1:10,000

DRAWING NUMBER
HE PIN: HE551478 | ORIGINATOR: SKAG | VOLUME: EBD
LOCATION: CONWI_CONW | TYPE: DR | ROLE: LE | NUMBER: 00148

PROJECT REF NO. HE551478

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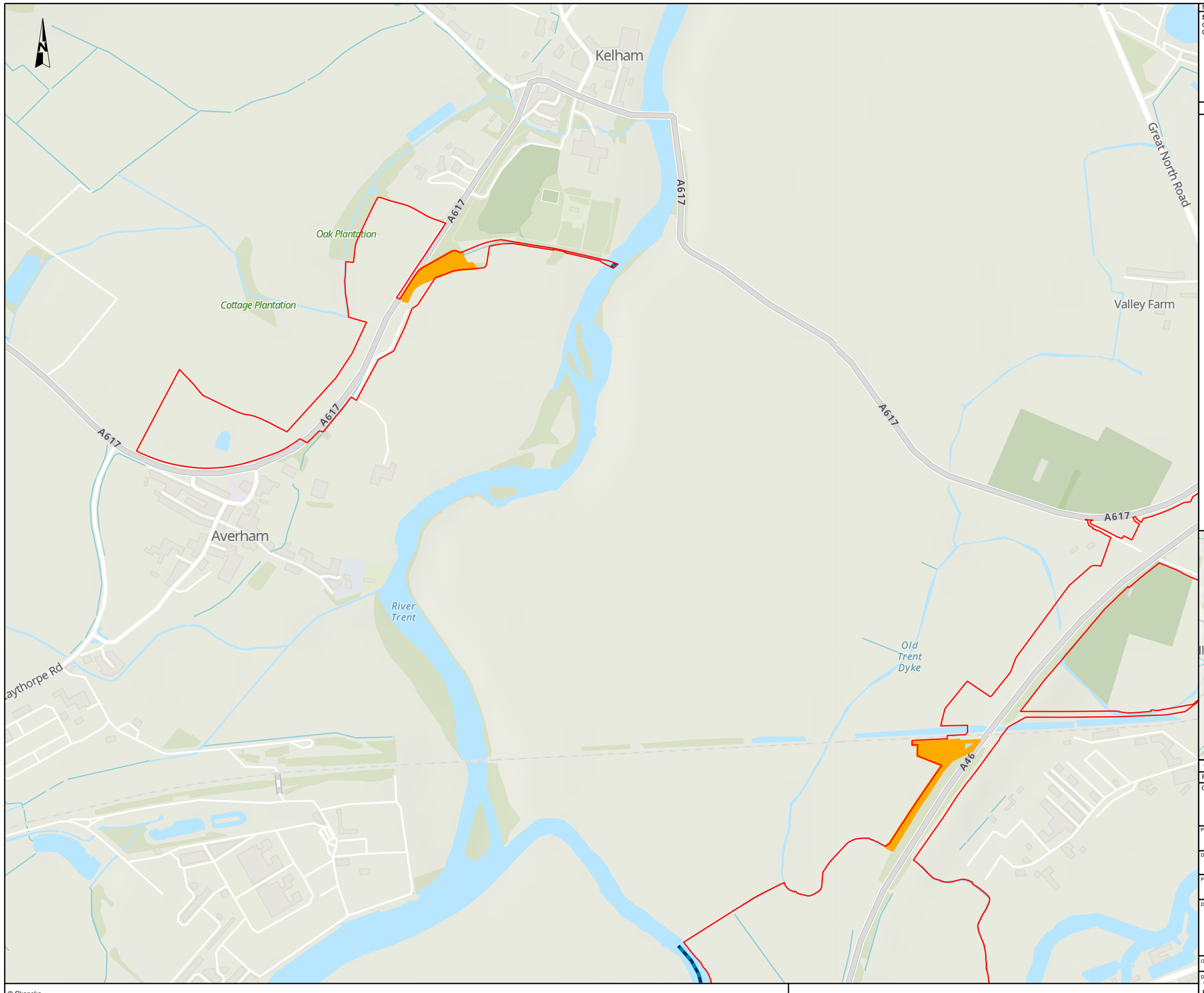
0 100 200 300 400 500 Metres



NOTES

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KEY TO SYMBOLS

Order Limits

Distinctiveness

High

Other Rivers and Streams (High Distinctiveness)

REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
C01	19/04/24	DCO APPLICATION	MH	OG	VA

CLIENT

national highways

PURPOSE OF ISSUE

DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER

TR010065

PROJECT TITLE

A46 NEWARK BYPASS

DRAWING TITLE

Appendix A.3
Biodiversity Net Gain Baseline Habitats of High and Very High Distinctiveness
Sheet 4 of 4

ORIGINAL SIZE A3

SCALE 1:10,000

DRAWING NUMBER

HE PIN	ORIGINATOR	VOLUME			
HE551478	SKAG	EBD			
LOCATION		TYPE	ROLE	NUMBER	
CONWI_CONW		DR	LE	00149	

PROJECT REF NO. HE551478

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0 100 200 300 400 500 Metres

A.4 Completed metric calculation tool

The Biodiversity Metric 3.1 - Calculation Tool
Start page

Project details	
Planning authority:	
Project name:	
Applicant:	
Application type:	
Planning application reference:	
Assessor:	
Reviewer:	
Metric version:	
Assessment date:	
Planning authority reviewer:	

Instructions

Main menu

Results

Cell style conventions
Enter data
Automatic lookup
Result

View all

Reset view

On-site baseline map Insert

On-site post intervention map Insert

Off-site baseline map Insert

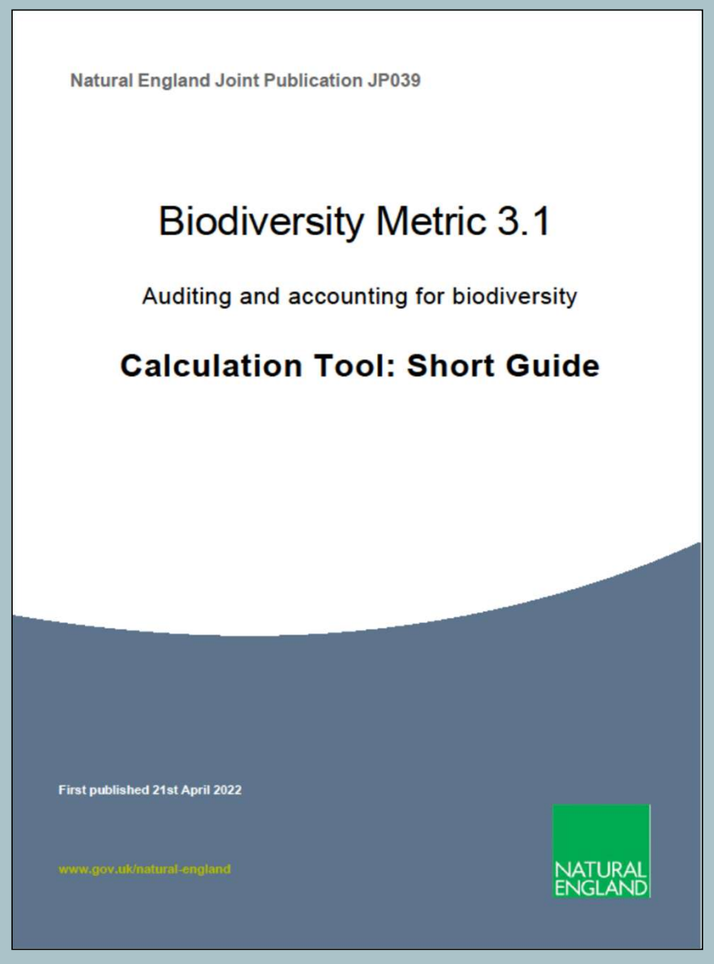
Off-site post intervention map Insert

The Biodiversity Metric 3.1 - Calculation Tool Instructions

Start page

Main menu

Double click the front page below to open the file



The Biodiversity Metric 3.1 - Calculation Tool
Main menu

Key

- Area habitats
- Hedgerows and lines of trees
- Rivers and streams

Start page | Instructions | Technical data | Results

Start here

1 → 2 → 3 → 4

Urban tree helper

Tree size	Number of trees and area (ha) for each condition state					
	Poor	Area	Moderate	Area	Good	Area
Small		0.0000		0.0000		0.0000
Medium		0.0000		0.0000		0.0000
Large		0.0000		0.0000		0.0000
Total	0	0.0000	0	0.0000	0	0.0000

On-site baseline

- A-1 On-site habitat baseline
- B-1 On-site hedge baseline
- C-1 On-site river baseline

On-site post development

- A-2 Habitat creation
- A-3 Habitat enhancement
- B-2 Hedgerow creation
- B-3 Hedgerow enhancement
- C-2 River creation
- C-3 River enhancement

Off-site baseline

- D-1 Off-site habitat baseline
- E-1 Off-site hedge baseline
- F-1 Off-site river baseline

Off-site post development

- D-2 Off-site habitat creation
- D-3 Off-site habitat enhancement
- E-2 Off-site hedge creation
- E-3 Off-site hedge enhancement
- F-2 Off-site river creation
- F-3 Off-site river enhancement

The Biodiversity Metric 3.1 - Calculation Tool Results

Return to start page

Headline results

Detailed results

Habitat trading summary

Headline Results

Return to results menu

On-site baseline	*Habitat units*	893.64
	Hedgerow units	97.35
	River units	40.55
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	937.23
	Hedgerow units	105.30
	River units	54.04
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	4.88%
	Hedgerow units	8.17%
	River units	33.28%
Off-site baseline	*Habitat units*	11.96
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	12.59
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	44.22
	Hedgerow units	7.95
	River units	13.49
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	4.95%
	Hedgerow units	8.17%
	River units	33.28%
Trading rules Satisfied?		Yes ✓

Detailed Results

Return to results menu

Summary Figures

Net project biodiversity units (including all on-site & off-site habitat retention/creation)	*Habitat units*	44.22
	Hedgerow units	7.95
	River units	13.49
Total project biodiversity % change (including all On-site & Off-site Habitat Creation + Retained Habitats)	*Habitat units*	4.98%
	Hedgerow units	8.17%
	River units	33.28%

Combined habitat retention and enhancement

	Habitats	Hedgerows	Rivers
Total on-site and off-site baseline area / length	210.61	13.40	5.33
Total on-site and off-site baseline units	905.60	97.35	40.55
Total on-site and off-site baseline area / length retained	53.37	8.04	4.68
Total on-site and off-site baseline units retained	302.96	57.36	35.90
Area / length proposed for enhancement	1.30	0.00	0.07
Baseline units proposed for enhancement	11.96	0.00	0.37
Total on-site and off-site baseline area / length lost	155.84	5.35	0.58
Total on-site and off-site baseline units lost	590.68	39.99	4.28

Area Habitats

Area habitats

On site change by broad habitat type

Habitat group	Baseline: Existing area	Baseline: Existing value	Post development on site: Proposed area	Post development on site: Proposed value	Onsite Change: Area change	Onsite Change: Onsite Unit change
Cropland	77.08	177.28	21.88	44.18	-55.20	-133.10
Grassland	58.42	334.06	#N/A	453.90	#N/A	119.84
Heathland and shrub	5.23	44.09	8.01	56.07	2.78	11.97
Lakes	0.26	1.97	13.31	62.43	13.06	60.46
Sparsely vegetated land	3.45	11.78	1.51	5.52	-1.94	-6.27
Urban	32.18	17.90	46.77	14.22	14.59	-3.69
Wetland	0.01	0.23	11.50	90.59	11.49	90.37
Woodland and forest	32.57	306.32	26.64	210.34	-5.93	-95.99
Intertidal sediment	0.00	0.00	0.00	0.00	0.00	0.00
Coastal saltmarsh	0.00	0.00	0.00	0.00	0.00	0.00
Rocky shore	0.00	0.00	0.00	0.00	0.00	0.00
Coastal lagoons	0.00	0.00	0.00	0.00	0.00	0.00
Intertidal Hard Structures	0.00	0.00	0.00	0.00	0.00	0.00

Area Habitats

Off site change by broad habitat type

Habitat group	Baseline: Existing area	Baseline: Off-site Existing value	Post development Off-site: Off-site proposed area	Post development Off-site: Off site Proposed value	Off-site Change: Off-site area change	Off-site Change: Off-site unit change
Cropland	0.00	0.00	0.00	0.00	0.00	0.00
Grassland	0.00	0.00	0.00	0.00	0.00	0.00
Heathland and shrub	0.00	0.00	0.00	0.00	0.00	0.00
Lakes	0.00	0.00	0.00	0.00	0.00	0.00
Sparsely vegetated land	0.00	0.00	0.00	0.00	0.00	0.00
Urban	0.00	0.00	0.00	0.00	0.00	0.00
Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Woodland and forest	1.30	11.96	1.30	12.59	0.00	0.63
Intertidal sediment	0.00	0.00	0.00	0.00	0.00	0.00
Coastal saltmarsh	0.00	0.00	0.00	0.00	0.00	0.00
Rocky shore	0.00	0.00	0.00	0.00	0.00	0.00
Coastal lagoons	0.00	0.00	0.00	0.00	0.00	0.00
Intertidal Hard Structures	0.00	0.00	0.00	0.00	0.00	0.00

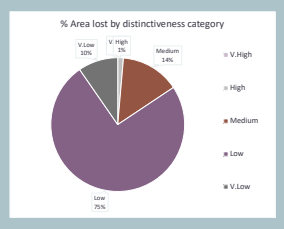
Area Habitats

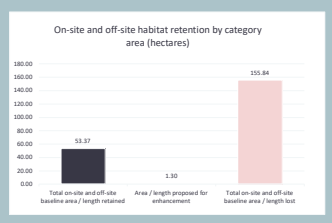
Combined on site and off site change by broad habitat type

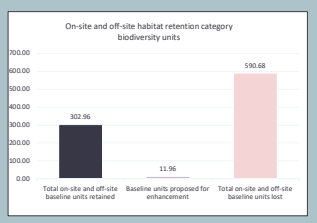
Habitat group	Baseline: Existing area	Baseline: Existing value	On-site and Off-site post development: Combined proposed area	On-site and Off-site post development: Combined proposed value	Combined change: Proposed area	Combined change: Proposed value
Cropland	77.08	177.28	21.88	44.18	-55.20	-133.10
Grassland	58.42	334.06	#N/A	453.90	#N/A	119.84
Heathland and shrub	5.23	44.09	8.01	56.07	2.78	11.97
Lakes	0.26	1.97	13.31	62.43	13.06	60.46
Sparsely vegetated land	3.45	11.78	1.51	5.52	-1.94	-6.27
Urban	32.18	17.90	46.77	14.22	14.59	-3.69
Wetland	0.01	0.23	11.50	90.59	11.49	90.37
Woodland and forest	33.87	318.28	27.94	222.93	-5.93	-95.36
Intertidal sediment	0.00	0.00	0.00	0.00	0.00	0.00
Coastal saltmarsh	0.00	0.00	0.00	0.00	0.00	0.00
Rocky shore	0.00	0.00	0.00	0.00	0.00	0.00
Coastal lagoons	0.00	0.00	0.00	0.00	0.00	0.00
Intertidal Hard Structures	0.00	0.00	0.00	0.00	0.00	0.00

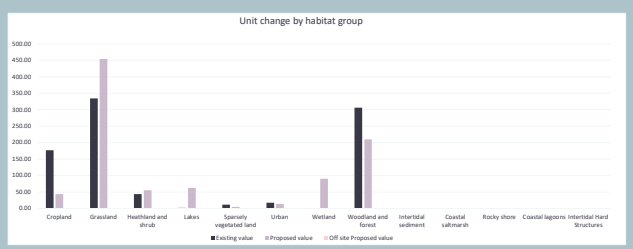
Combined area lost by distinctiveness band

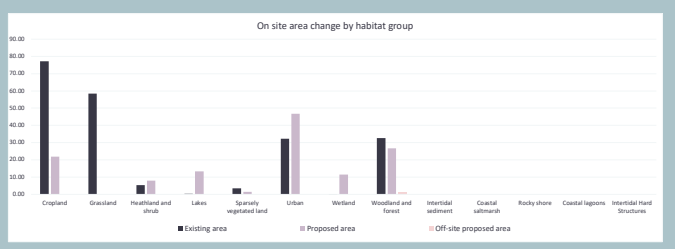
Category	Area lost (hectares)	Area lost (%)
V.High	0	
High	2.1144	1
Medium	22.3045	14
Low	116.3382	75
V.Low	15.0629	10

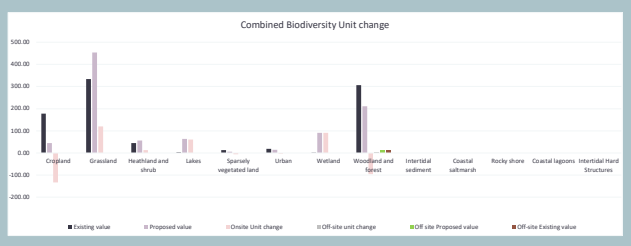


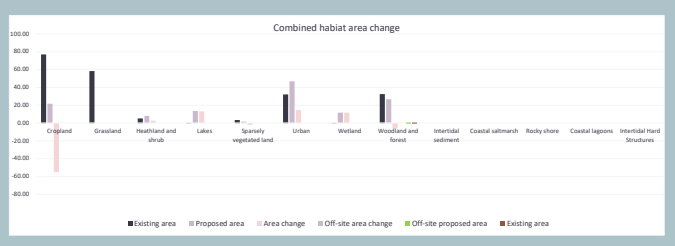












Hedgerows and Lines of Trees

Hedgerows and lines of trees

On site change by hedgerow type

Hedgerow type	Baseline: Existing length on-site	Baseline: Existing value	Post development on site: Proposed length on-site	Post development on site: Proposed value on-site	Onsite Change: On-site length change	Onsite Change: On-site Unit change
Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow with trees	0.00	0.00	3.12	27.10	3.12	27.10
Native Species Rich Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow	0.00	0.00	3.01	20.84	3.01	20.84
Native Hedgerow - Associated with bank or ditch	0.29	4.03	0.17	2.29	-0.13	-1.74
Native Hedgerow with trees	3.40	41.59	1.85	23.85	-1.55	-17.74
Line of Trees (Ecologically Valuable)	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable) - with Bank or Ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow	6.23	36.09	3.20	19.32	-3.03	-16.78
Line of Trees	3.48	15.64	2.83	11.90	-0.65	-3.74
Line of Trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Hedge Ornamental Non Native	0.00	0.00	0.00	0.00	0.00	0.00

Hedgerows and Lines of Trees

Off site change by hedgerow type

Hedgerow type	Off site baseline: Existing length off-site	Off site baseline: Existing value off-site	Post development off site: Proposed length off-site	Post development off site: Proposed value off-site	Off site Change: Off-site length change	Off site Change: Off site Unit change
Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow with trees	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable)	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable) - with Bank or Ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Hedge Ornamental Non Native	0.00	0.00	0.00	0.00	0.00	0.00

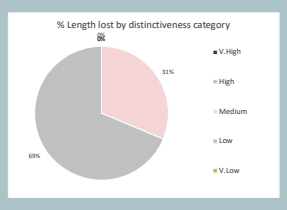
Hedgerows and Lines of Trees

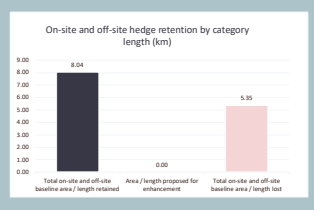
Combined on and off site change by hedgerow type

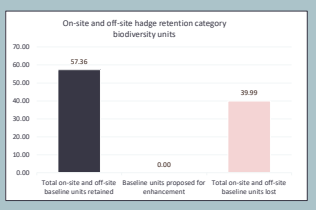
Hedgerow type	Baseline: Existing length	Baseline: Existing value	Post development on site: Proposed length	Post development on site: Proposed value	Onsite Change: length change	Onsite Change: Onsite Unit change
Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow with trees	0.00	0.00	3.12	27.10	3.12	27.10
Native Species Rich Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow	0.00	0.00	3.01	20.84	3.01	20.84
Native Hedgerow - Associated with bank or ditch	0.29	4.03	0.17	2.29	-0.13	-1.74
Native Hedgerow with trees	3.40	41.59	1.85	23.85	-1.55	-17.74
Line of Trees (Ecologically Valuable)	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable) - with Bank or Ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow	6.23	36.09	3.20	19.32	-3.03	-16.78
Line of Trees	3.48	15.64	2.83	11.90	-0.65	-3.74
Line of Trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Hedge Ornamental Non Native	0.00	0.00	0.00	0.00	0.00	0.00

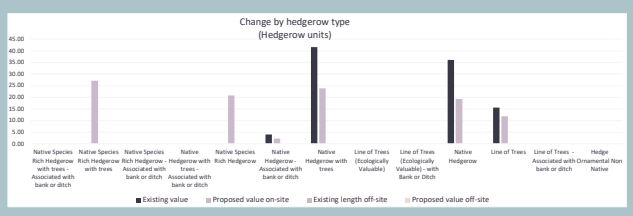
Combined length lost by distinctiveness band

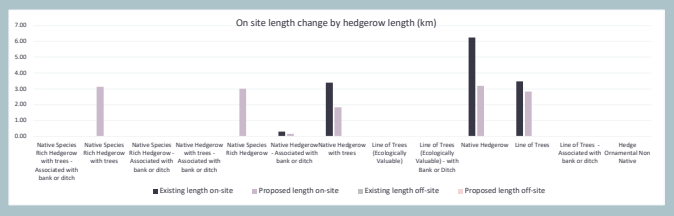
Category	Length lost (KM)	Length lost (%)
V.High	0	
High	0	
Medium	1.6743	31
Low	3.6804	69
V.Low	0	

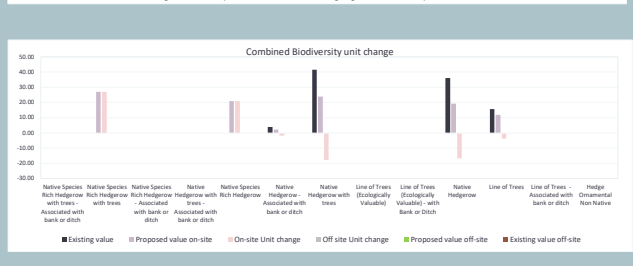












Rivers and Streams

Rivers and Streams

On site change by river type

River type	Baseline: Existing length	Baseline: Existing value	Post development on site: Proposed length	Post development on site: Proposed value	Onsite Change: length change	Onsite Change: Onsite Unit change
Priority Habitat	0.0	0.0	0.0	0.0	0.0	0.0
Other Rivers and Streams	2.8	23.6	2.6	21.2	-0.2	-2.4
Ditches	2.1	16.2	7.2	31.8	5.1	15.6
Canals	0.0	0.0	0.0	0.0	0.0	0.0
Culvert	0.4	0.8	0.5	1.0	0.2	0.2

Rivers and Streams

Off site change by river type

River type	Off site baseline: Existing length off-site	Off site baseline: Existing value off-site	Post development off-site: Proposed length off-site	Post development off-site: Proposed value off-site	Off-site Change: Off-site length change	Off-site Change: Off-site unit change
Priority Habitat	0.0	0.0	0.0	0.0	0.0	0.0
Other Rivers and Streams	0.0	0.0	0.0	0.0	0.0	0.0
Ditches	0.0	0.0	0.0	0.0	0.0	0.0
Canals	0.0	0.0	0.0	0.0	0.0	0.0
Culvert	0.0	0.0	0.0	0.0	0.0	0.0

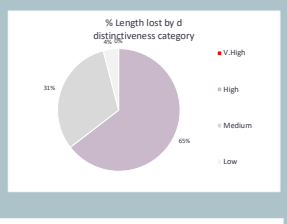
Rivers and Streams

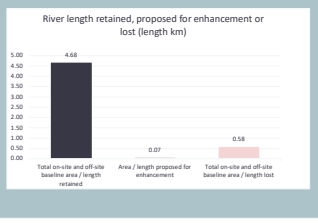
Combined on and off site change by river type

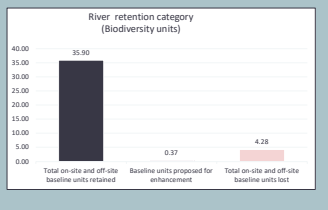
River type	Baseline: Existing length	Baseline: Existing value	Post development on site: Proposed length	Post development on site: Proposed value	Onsite Change: length change	Onsite Change: Onsite Unit change
Priority Habitat	0.0	0.0	0.0	0.0	0.0	0.0
Other Rivers and Streams	2.8	23.6	2.6	21.2	-0.2	-2.4
Ditches	2.1	16.2	7.2	31.8	5.1	15.6
Canals	0.0	0.0	0.0	0.0	0.0	0.0
Culvert	0.4	0.8	0.5	1.0	0.2	0.2

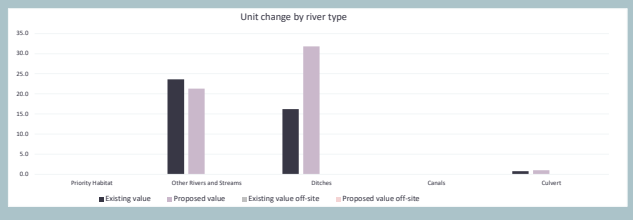
Combined length lost by distinctiveness band

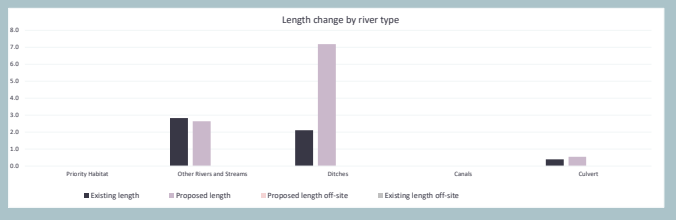
Category	Length lost (KM)	Length lost (%)
V.High	0	
High	0.3763	65
Medium	0.183	31
Low	0.0238	4

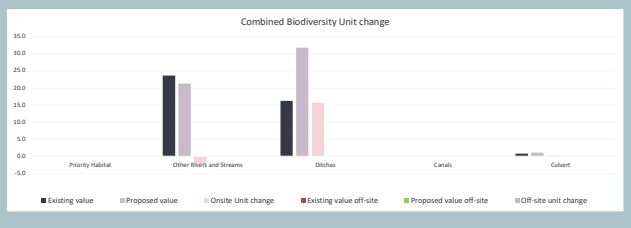


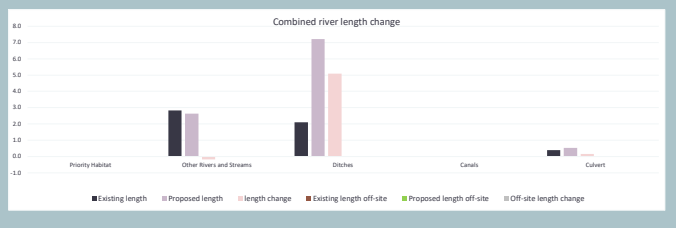












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Trading Summary

Distinctiveness Group	Trading Rule	Trading Satisfied?
Very High	Bespoke compensation likely to be required 🛠	Yes ✓
High	Same habitat required =	Yes ✓
Medium	Same broad habitat or a higher distinctiveness habitat required (≥)	Yes ✓
Low	Same distinctiveness or better habitat required ≥	Yes ✓

Very High Distinctiveness

Habitat group	Group	On Site Unit Change	Off Site Unit Change	Project wide Unit Change	Unit Losses
Grassland - Lowland dry acid grassland	Grassland	0.00	0.00	0.00	
Grassland - Lowland meadows	Grassland	0.00	0.00	0.00	
Grassland - Upland hay meadows	Grassland	0.00	0.00	0.00	
Heathland and shrub - Mountain heaths and willow scrub	Heathland and shrub	0.00	0.00	0.00	
Lakes - Aquifer fed naturally fluctuating water bodies	Lakes	0.00	0.00	0.00	
Sparsely vegetated land - Calaminarian grasslands	Sparsely vegetated land	0.00	0.00	0.00	
Sparsely vegetated land - Limestone pavement	Sparsely vegetated land	0.00	0.00	0.00	
Wetland - Blanket bog	Wetland	0.00	0.00	0.00	
Wetland - Depressions on Peat substrates (H7150)	Wetland	0.00	0.00	0.00	
Wetland - Fens (upland and lowland)	Wetland	0.00	0.00	0.00	
Wetland - Lowland raised bog	Wetland	0.00	0.00	0.00	
Wetland - Oceanic Valley Mire[1] (D2.1)	Wetland	0.00	0.00	0.00	
Wetland - Purple moor grass and rush pastures	Wetland	0.00	0.00	0.00	
Wetland - Transition mires and quaking bogs (H7140)	Wetland	0.00	0.00	0.00	
Woodland and forest - Wood-pasture and parkland	Woodland and forest	0.00	0.00	0.00	
Rocky shore - High energy littoral rock - on peat, clay or chalk	Rocky shore	0.00	0.00	0.00	
Rocky shore - Moderate energy littoral rock - on peat, clay or chalk	Rocky shore	0.00	0.00	0.00	
Rocky shore - Low energy littoral rock - on peat, clay or chalk	Rocky shore	0.00	0.00	0.00	
Rocky shore - Features of littoral rock - on peat, clay or chalk	Rocky shore	0.00	0.00	0.00	
Intertidal sediment - Littoral seagrass on peat, clay or chalk	Intertidal sediment	0.00	0.00	0.00	
		0.00	0.00	0.00	0.00

Very High Distinctiveness Summary

Very High Distinctiveness Units available to offset lower distinctiveness defecit	0.00

High Distinctiveness

Habitat group	Group	On Site Unit Change	Off Site Unit Change	Project wide Unit Change	Losses not yet accounted for
Grassland - Traditional orchards	Grassland	0.00	0.00	0.00	
Grassland - Floodplain Wetland Mosaic (CFGM)	Grassland	0.86	0.00	0.86	
Grassland - Lowland calcareous grassland	Grassland	0.00	0.00	0.00	
Grassland - Tall herb communities (H6430)	Grassland	0.00	0.00	0.00	
Grassland - Upland calcareous grassland	Grassland	0.00	0.00	0.00	
Heathland and shrub - Lowland Heathland	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Sea buckthorn scrub (Annex 1)	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Upland Heathland	Heathland and shrub	0.00	0.00	0.00	
Lakes - High alkalinity lakes	Lakes	27.60	0.00	27.60	
Lakes - Low alkalinity lakes	Lakes	0.00	0.00	0.00	
Lakes - Marl Lakes	Lakes	0.00	0.00	0.00	
Lakes - Moderate alkalinity lakes	Lakes	0.00	0.00	0.00	
Lakes - Peat Lakes	Lakes	0.00	0.00	0.00	
Lakes - Ponds (Priority Habitat)	Lakes	0.00	0.00	0.00	
Lakes - Temporary lakes, ponds and pools	Lakes	0.00	0.00	0.00	
Sparsely vegetated land - Coastal sand dunes	Sparsely vegetated land	0.00	0.00	0.00	
Sparsely vegetated land - Coastal vegetated shingle	Sparsely vegetated land	0.00	0.00	0.00	
Sparsely vegetated land - Inland rock outcrop and scree habitats	Sparsely vegetated land	0.00	0.00	0.00	
Sparsely vegetated land - Maritime cliff and slopes	Sparsely vegetated land	0.00	0.00	0.00	
Urban - Open Mosaic Habitats on Previously Developed Land	Urban	0.00	0.00	0.00	
Wetland - Reedbeds	Wetland	90.37	0.00	90.37	
Woodland and forest - Felled	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Lowland beech and yew woodland	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Lowland mixed deciduous woodland	Woodland and forest	-11.96	12.59	0.63	
Woodland and forest - Native pine woodlands	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Upland birchwoods	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Upland mixed ashwoods	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Upland oakwood	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Wet woodland	Woodland and forest	0.00	0.00	0.00	
Coastal lagoons - Coastal lagoons	Coastal lagoons	0.00	0.00	0.00	
Rocky shore - High energy littoral rock	Rocky shore	0.00	0.00	0.00	
Rocky shore - Moderate energy littoral rock	Rocky shore	0.00	0.00	0.00	
Rocky shore - Low energy littoral rock	Rocky shore	0.00	0.00	0.00	
Rocky shore - Features of littoral rock	Rocky shore	0.00	0.00	0.00	
Intertidal sediment - Littoral mud	Intertidal sediment	0.00	0.00	0.00	
Intertidal sediment - Littoral mixed sediments	Intertidal sediment	0.00	0.00	0.00	
Coastal saltmarsh - Saltmarshes and saline reedbeds	Coastal Saltmarsh	0.00	0.00	0.00	
Intertidal sediment - Littoral biogenic reefs - Mussels	Intertidal sediment	0.00	0.00	0.00	
Intertidal sediment - Littoral biogenic reefs - Sabellaria	Intertidal sediment	0.00	0.00	0.00	
Intertidal sediment - Features of littoral sediment	Intertidal sediment	0.00	0.00	0.00	
Intertidal sediment - Littoral muddy sand	Intertidal sediment	0.00	0.00	0.00	
		106.87	12.59	119.46	0.00

High Distinctiveness Summary

High Distinctiveness Units available to offset lower distinctiveness defecit	119.46
Unit Defecit; Like for like not satisfied	✓ 0.00

Medium Distinctiveness

Habitat Group	Group	On site unit change	Off Site unit Change	Project wide unit change	Cumulative Broad Habitat Change
Cropland - Arable field margins cultivated annually	Cropland	0.00	0.00	0.00	0.00
Cropland - Arable field margins game bird mix	Cropland	0.00	0.00	0.00	
Cropland - Arable field margins pollen & nectar	Cropland	0.00	0.00	0.00	
Cropland - Arable field margins tussocky	Cropland	0.00	0.00	0.00	
Grassland - Other lowland acid grassland	Grassland	0.00	0.00	0.00	252.26
Grassland - Other neutral grassland	Grassland	252.26	0.00	252.26	
Grassland - Upland acid grassland	Grassland	0.00	0.00	0.00	
Heathland and shrub - Blackthorn scrub	Heathland and shrub	0.00	0.00	0.00	11.97
Heathland and shrub - Bramble scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Gorse scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Hawthorn scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Hazel scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Mixed scrub	Heathland and shrub	11.97	0.00	11.97	
Lakes - Ponds (Non- Priority Habitat)	Lakes	32.86	0.00	32.86	32.86
Lakes - Reservoirs	Lakes	0.00	0.00	0.00	
Sparsely vegetated land - Other inland rock and scree	Sparsely vegetated land	0.00	0.00	0.00	0.00
Urban - Cemeteries and churchyards	Urban	0.00	0.00	0.00	0.00
Urban - Biodiverse green roof	Urban	0.00	0.00	0.00	
Urban - Urban Tree	Urban	0.00	0.00	0.00	
Woodland and forest - Other Scot's Pine woodland	Woodland and forest	0.00	0.00	0.00	-95.95
Woodland and forest - Other woodland; broadleaved	Woodland and forest	-81.24	0.00	-81.24	
Woodland and forest - Other woodland; mixed	Woodland and forest	-2.76	-11.96	-14.72	
Intertidal sediment - Littoral coarse sediment	Intertidal sediment	0.00	0.00	0.00	0.00
Intertidal sediment - Littoral sand	Intertidal sediment	0.00	0.00	0.00	
Intertidal Hard Structures - Artificial hard structures with Integrated Greening of Grey Infrastructure (IGGI)	Intertidal	0.00	0.00	0.00	
		213.09	-11.96	201.13	

Medium Distinctiveness Summary

Medium Distinctiveness Units available to offset lower distinctiveness defecit	297.09
Medium Distinctiveness Broad Habitat Deficit to be offset by trading up	-95.95
Higher distinctiveness surplus units minus Medium Distinctivenss Broad Habitat Defecit	23.50
Cumulative surplus of units	320.59

Low Distinctiveness

Habitat group	Group	On site unit change	Off Site Unit Change	Project wide unit change
Cropland - Cereal crops	Cropland	-133.10	0.00	-133.10
Cropland - Horticulture	Cropland	0.00	0.00	0.00
Cropland - Intensive orchards	Cropland	0.00	0.00	0.00
Cropland - Non-cereal crops	Cropland	0.00	0.00	0.00
Cropland - Temporary grass and clover leys	Cropland	0.00	0.00	0.00
Cropland - Cereal crops winter stubble	Cropland	0.00	0.00	0.00
Grassland - Modified grassland	Grassland	-133.29	0.00	-133.29
Grassland - Bracken	Grassland	0.00	0.00	0.00
Heathland and shrub - Rhododendron scrub	Heathland and shrub	0.00	0.00	0.00
Lakes - Ornamental lake or pond	Lakes	0.00	0.00	0.00
Sparsely vegetated land - Ruderal/Ephemeral	Sparsely vegetated land	-6.27	0.00	-6.27
Urban - Bioswale	Sparsely vegetated land	0.00	0.00	0.00
Urban - Allotments	Urban	0.00	0.00	0.00
Urban - Facade-bound green wall	Urban	0.00	0.00	0.00
Urban - Ground based green wall	Urban	0.00	0.00	0.00
Urban - Ground level planters	Urban	0.00	0.00	0.00
Urban - Other green roof	Urban	0.00	0.00	0.00
Urban - Intensive green roof	Urban	0.00	0.00	0.00
Urban - Introduced shrub	Urban	0.00	0.00	0.00
Urban - Rain garden	Urban	0.00	0.00	0.00
Urban - Actively worked sand pit quarry or open cast mine	Urban	0.00	0.00	0.00
Urban - Sustainable urban drainage feature	Urban	0.00	0.00	0.00
Urban - Vacant/derelict land/ bareground	Urban	-3.69	0.00	-3.69
Urban - Vegetated garden	Urban	0.00	0.00	0.00
Woodland and forest - Other coniferous woodland	Woodland and forest	-0.03	0.00	-0.03
Coastal saltmarsh - Artificial saltmarshes and saline reedbeds	Coastal saltmarsh	0.00	0.00	0.00
Intertidal sediment - Artificial littoral coarse sediment	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral mud	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral sand	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral muddy sand	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral mixed sediments	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral seagrass	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral biogenic reefs	Intertidal sediment	0.00	0.00	0.00
Intertidal Hard Structures - Artificial hard structures	Intertidal	0.00	0.00	0.00
Intertidal Hard Structures - Artificial features of hard structures	Intertidal	0.00	0.00	0.00
Heathland and shrub - Sea buckthorn scrub (other)	Heathland and shrub	0.00	0.00	0.00
		-276.37		-276.37

Low Distinctiveness Summary

Low Distinctiveness Net Change in Units	-276.37
Cumulative surplus of units	44.22

A-1 Site Habitat Baseline

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	Habitats and areas			Distinctiveness		Condition		Strategic significance				Ecological baseline	Retention category biodiversity value						Bespoke compensation agreed for unacceptable losses	Comments	
Ref	Broad Habitat	Habitat Type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier	Suggested action to address habitat losses	Total habitat units	Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area habitat lost	Units lost		Assessor comments	Reviewer comments
1	Cropland	Cereal crops	77.0761	Low	2	Condition Assessment N/A	1	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	177.28	1.7622		4.05	0.00	75.31	173.22			
2	Grassland	Floodplain Wetland Mosaic (CFGM)	1.1291	High	6	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same habitat required =	23.37	0.16		3.31	0.00	0.97	20.06			
3	Grassland	Lowland meadows	0.0048	V.High	8	Good	3	Formally identified in local strategy	High strategic significance	1.15	Bespoke compensation likely to be required ⚒	0.13	0.0048		0.13	0.00	0.00	0.00			
4	Grassland	Lowland meadows	0.148	V.High	8	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Bespoke compensation likely to be required ⚒	0.82	0.0447		0.82	0.00	Unacceptable Loss	Alternative Compensation ✓	Yes		
5	Grassland	Modified grassland	18.1914	Low	2	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	125.52	4.6803		32.29	0.00	13.51	93.23			
6	Grassland	Modified grassland	11.8189	Low	2	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	54.37	3.2772		15.08	0.00	8.54	39.29			
7	Grassland	Modified grassland	19.2141	Low	2	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	44.19	4.1161		9.47	0.00	15.10	34.73			
8	Grassland	Other neutral grassland	1.8029	Medium	4	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	8.29	0.2188		1.01	0.00	1.58	7.29			
9	Grassland	Other neutral grassland	1.8389	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	16.92	0.521		4.79	0.00	1.32	12.12			
10	Grassland	Other neutral grassland	4.38	Medium	4	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	60.44	1.4213		19.61	0.00	2.96	40.83			
11	Heathland and shrub	Mixed scrub	1.9057	Medium	4	Good	3	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required (≥)	22.87	1.2284		14.74	0.00	0.68	8.13			
12	Heathland and shrub	Mixed scrub	1.9776	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required (≥)	15.82	0.9621		7.70	0.00	1.02	8.12			
13	Heathland and shrub	Mixed scrub	1.3508	Medium	4	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required (≥)	5.40	0.6968		2.79	0.00	0.65	2.62			
14	Lakes	Ponds (Non- Priority Habitat)	0.0663	Medium	4	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	0.91	0.0031		0.04	0.00	0.06	0.87			
15	Lakes	Ponds (Non- Priority Habitat)	0.0393	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	0.36	0.0393		0.36	0.00	0.00	0.00			
16	Lakes	Ponds (Non- Priority Habitat)	0.1512	Medium	4	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	0.70	0.0003		0.00	0.00	0.15	0.69			
17	Sparsely vegetated land	Ruderal/Ephemeral	2.5134	Low	2	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	5.78	0.9948		2.29	0.00	1.52	3.49			
18	Sparsely vegetated land	Ruderal/Ephemeral	0.2122	Low	2	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	0.98	0.0974		0.45	0.00	0.11	0.53			
19	Sparsely vegetated land	Ruderal/Ephemeral	0.7283	Low	2	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	5.03	0.3464		2.39	0.00	0.38	2.64			
20	Urban	Developed land; sealed surface	29.2928	V.Low	0	N/A - Other	0	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Compensation Not Required	0.00	14.2069		0.00	0.00	15.09	0.00			
21	Urban	Introduced shrub	0.0195	Low	2	Condition Assessment N/A	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required ≥	0.04	0.0195		0.04	0.00	0.00	0.00			
22	Urban	Vacant/derelict land/ bareground	0.1943	Low	2	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	0.89	0.1943		0.89	0.00	0.00	0.00			
23	Urban	Vacant/derelict land/ bareground	2.3516	Low	2	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	16.23	0.7199		4.97	0.00	1.63	11.26			
24	Urban	Vacant/derelict land/ bareground	0.324	Low	2	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	0.75	0.1048		0.24	0.00	0.22	0.50			
25	Wetland	Reedbeds	0.0109	High	6	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same habitat required =	0.23			0.00	0.00	0.01	0.23			
26	Woodland and forest	Lowland mixed deciduous woodland	0.8385	High	6	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same habitat required =	17.36	0.7992		16.54	0.00	0.04	0.81			
27	Woodland and forest	Lowland mixed deciduous woodland	1.419	High	6	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same habitat required =	19.58	0.3239		4.47	0.00	1.10	15.11			
28	Woodland and forest	Other coniferous woodland	0.0399	Low	2	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	0.28	0.0356		0.25	0.00	0.00	0.03			
29	Woodland and forest	Other woodland; broadleaved	5.8013	Medium	4	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	80.06	4.008		55.31	0.00	1.79	24.75			
30	Woodland and forest	Other woodland; broadleaved	16.2249	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	149.27	8.9352		82.20	0.00	7.29	67.07			
31	Woodland and forest	Other woodland; broadleaved	7.6078	Medium	4	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	35.00	3.1922		14.68	0.00	4.42	20.31			
32	Woodland and forest	Other woodland; mixed	0.0399	Medium	4	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	0.55	0.0037		0.05	0.00	0.04	0.50			
33	Woodland and forest	Other woodland; mixed	0.2585	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	2.38	0.1159		1.07	0.00	0.14	1.31			
34	Woodland and forest	Other woodland; mixed	0.3152	Medium	4	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	1.45	0.1097		0.50	0.00	0.21	0.95			
35	Woodland and forest	Wood-pasture and parkland	0.0222	V.High	8	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Bespoke compensation likely to be required ⚒	0.41	0.0222		0.41	0.00	0.00	0.00			
36																					
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		Total habitat area	209.31									893.64	83.37	0.00	302.96	0.00	155.84	590.68			

Total area lost (excluding area of Urban trees and Green walls)	155.84

D-1 Off Site Habitat Baseline

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Baseline ref	Habitats and areas			Habitat distinctiveness		Habitat condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline	Retention category biodiversity value						Bespoke compensation agreed for unacceptable losses	Comments	
	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier		Total habitat units	Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area lost	Units lost		Assessor comments	Reviewer comments
1	Woodland and forest	Other woodland; mixed	1.3	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (S)	11.96		1.3	0.00	11.96	0.00	0.00			
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			1.30								Total Site baseline	11.96	0.00	1.30	0.00	11.96	0.00	0.00			

Total area lost (excluding area of Urban trees and Green walls)	0.00

A-2 Site Habitat Creation

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Note; Habitat selected has a time to target condition greater than 30 years. Non standard agreement may be required.

Check Areas - Area cross check failed (Baseline habitat lost does not match development footprint plus area of new habitat creation)

Post development/ post intervention habitats

Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness		Condition		Strategic significance			Temporal multiplier					Difficulty multipliers				Habitat units delivered	Comments	
			Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier	Standard time to target condition/years	Habitat created in advance/years	Delay in starting habitat creation/years	Standard or adjusted time to target condition	Final time to target condition/years	Final time to target multiplier	Standard difficulty of creation	Applied difficulty multiplier	Final difficulty of creation	Difficulty multiplier applied		Assessor comments	Reviewer comments
Cropland	Cereal crops	20.1171	Low	2	Condition Assessment N/A	1	Formally identified in local strategy	High strategic significance	1.15	1		3	Check details- Delay in starting habitat in required condition? ⚠	4	0.867	Low	Standard difficulty applied	Low	1	40.12		
Grassland	Floodplain Wetland Mosaic (CFGM)	6.9511	High	6	Good	3	Formally identified in local strategy	High strategic significance	1.15	20		3	Check details- Delay in starting habitat in required condition? ⚠	23	0.441	High	Standard difficulty applied	High	0.33	20.93		
Grassland	Modified grassland	3.2448	Low	2	Good	3	Formally identified in local strategy	High strategic significance	1.15	7		3	Check details- Delay in starting habitat in required condition? ⚠	10	0.700	Low	Standard difficulty applied	Low	1	15.68		
Grassland	Modified grassland	9.1647	Low	2	Poor	1	Formally identified in local strategy	High strategic significance	1.15	1		3	Check details- Delay in starting habitat in required condition? ⚠	4	0.867	Low	Standard difficulty applied	Low	1	18.28		
Grassland	Other neutral grassland	44.6859	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	5		3	Check details- Delay in starting habitat in required condition? ⚠	8	0.752	Low	Standard difficulty applied	Low	1	309.16		
Grassland	Other neutral grassland	0.3849	Medium	4	Good	3	Formally identified in local strategy	High strategic significance	1.15	10		3	Check details- Delay in starting habitat in required condition? ⚠	13	0.629	Low	Standard difficulty applied	Low	1	3.34		
Heathland and shrub	Mixed scrub	5.1267	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	5		3	Check details- Delay in starting habitat in required condition? ⚠	8	0.752	Low	Standard difficulty applied	Low	1	30.84		
Lakes	High alkalinity lakes	9.6301	High	6	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	10		3	Check details- Delay in starting habitat in required condition? ⚠	13	0.629	High	Standard difficulty applied	High	0.33	27.60		
Lakes	Ponds (Non- Priority Habitat)	1.1349	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	3		3	Check details- Delay in starting habitat in required condition? ⚠	6	0.808	Low	Standard difficulty applied	Low	1	8.43		
Lakes	Ponds (Non- Priority Habitat)	2.5046	Medium	4	Good	3	Formally identified in local strategy	High strategic significance	1.15	5		3	Check details- Delay in starting habitat in required condition? ⚠	8	0.752	Low	Standard difficulty applied	Low	1	25.99		
Sparsely vegetated land	Ruderal/Ephemeral	0.075	Low	2	Good	3	Formally identified in local strategy	High strategic significance	1.15	5		3	Check details- Delay in starting habitat in required condition? ⚠	8	0.752	Low	Standard difficulty applied	Low	1	0.39		
Urban	Developed land; sealed surface	29.8343	V.Low	0	N/A - Other	0	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	0		3	Standard time to target condition applied	3	0.899	Low	Standard difficulty applied	Medium	0.67	0.00		
Urban	Vacant/derelict land/ bareground	0.2191	Low	2	Poor	1	Formally identified in local strategy	High strategic significance	1.15	1		3	Check details- Delay in starting habitat in required condition? ⚠	4	0.867	Low	Standard difficulty applied	Low	1	0.44		
Urban	Vacant/derelict land/ bareground	1.4722	Low	2	Good	3	Formally identified in local strategy	High strategic significance	1.15	5		3	Check details- Delay in starting habitat in required condition? ⚠	8	0.752	Low	Standard difficulty applied	Low	1	7.64		
Wetland	Reedbeds	1.7584	High	6	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	7		3	Check details- Delay in starting habitat in required condition? ⚠	10	0.700	Medium	Standard difficulty applied	Medium	0.67	11.39		
Wetland	Reedbeds	9.7457	High	6	Good	3	Formally identified in local strategy	High strategic significance	1.15	12		3	Check details- Delay in starting habitat in required condition? ⚠	15	0.586	Medium	Standard difficulty applied	Medium	0.67	79.21		
Woodland and forest	Lowland mixed deciduous woodland	2.7202	High	6	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	30+		3	Check details- Delay in starting habitat in required condition? ⚠	30+	0.320	High	Standard difficulty applied	High	0.33	3.96		
Woodland and forest	Other woodland; broadleaved	6.3751	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	15		3	Check details- Delay in starting habitat in required condition? ⚠	18	0.527	Low	Standard difficulty applied	Low	1	30.89		

D-3 Off Site Habitat Enhancement

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Note: Habitat selected has a time to target condition greater than 30 years. Non standard agreement may be required. A

Baseline habitats										Post development post intervention habitats																												Habitat units delivered	Comments	
										Proposed Habitat (Pre-Populated but can be overridden)		Change in distinctiveness and condition		Area ha	Distinctiveness	Score	Condition	Score	Strategic significance			Temporal multiplier			Difficulty multipliers				Spatial risk multiplier												
Baseline ref	Baseline habitat	Total habitat area	Baseline distinctiveness band	Baseline distinctiveness score	Baseline condition category	Baseline condition score	Baseline strategic significance category	Baseline strategic significance score	Baseline habitat units	Suggested action to achieve habitat license	Proposed Broad Habitat	Proposed Habitat	Distinctiveness change	Condition change						Strategic significance	Strategic significance	Strategic position multiplier	Standard time to target condition/years	Habitat enhanced in advance/years	Delay in starting habitat enhancement/years	Standard or adjusted time to target condition	Final time to target condition/years	Final time to target multiplier	Difficulty of enhancement category	Applied difficulty multiplier	Difficulty	Difficulty multiplier applied	Spatial risk category	Spatial risk multiplier										
1	Woodland and forest - Other woodland: mixed	1.3	Medium	4	Moderate	2	High strategic significance	1.15	11.96	Some broad habitat or a higher distinctiveness habitat	**Woodland and forest**	**Lowland mixed deciduous woodland**	Medium - High	Lower Distinctiveness Habitat - Moderate	1.3	High	6	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	30+			Standard time to target condition applied	30+	0.333	High	Standard difficulty applied	High	0.33	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	1	11.59										

B-1 Site Hedge Baseline

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Baseline ref	UK Habitats - existing habitats			Habitat distinctiveness		Habitat condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline	Retention category biodiversity value						Comments	
	Hedge number	Hedgerow type	Length (km)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier		Total hedgerow units	Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost	Assessor comments	Reviewer comments
1		Line of Trees	0.7077	Low	2	Moderate	2	Location ecologically desirable but not in local strategy	Medium strategic significance	1.1	Same distinctiveness band or better	3.11	0.541		2.38	0.00	0.17	0.73		
2		Line of Trees	1.3069	Low	2	Poor	1	Location ecologically desirable but not in local strategy	Medium strategic significance	1.1	Same distinctiveness band or better	2.88	1.2702		2.79	0.00	0.04	0.08		
3		Line of Trees	1.4621	Low	2	Good	3	Location ecologically desirable but not in local strategy	Medium strategic significance	1.1	Same distinctiveness band or better	9.65	1.0195		6.73	0.00	0.44	2.92		
4		Native Hedgerow	1.2944	Low	2	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	5.95	0.6587		3.03	0.00	0.64	2.92		
5		Native Hedgerow	4.082	Low	2	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	28.17	2.2696		15.66	0.00	1.81	12.51		
6		Native Hedgerow	0.8584	Low	2	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	1.97	0.2721		0.63	0.00	0.59	1.35		
7		Native Hedgerow with trees	2.2506	Medium	4	Good	3	Formally identified in local strategy	High strategic significance	1.15	Like for like or better	31.06	1.4909		20.57	0.00	0.76	10.48		
8		Native Hedgerow with trees	1.1449	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Like for like or better	10.53	0.3564		3.28	0.00	0.79	7.25		
9		Native Hedgerow - Associated with bank or ditch	0.292	Medium	4	Good	3	Formally identified in local strategy	High strategic significance	1.15	Like for like or better	4.03	0.1659		2.29	0.00	0.13	1.74		
10																				
11																				
12																				
13																				
			13.40									97.35	8.04	0.00	57.36	0.00	5.35	39.99		

B-2 Site Hedge Creation

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		Proposed habitats		Habitat distinctiveness		Habitat condition		Strategic significance			Temporal multiplier						Difficulty risk multipliers				Hedge units delivered	Comments	
Baseline ref	New hedge number	Habitat type	Length (km)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier	Standard Time to target condition/years	Habitat created in advance/years	Delay in starting habitat creation/years	Standard or adjusted time to target condition	Final time to target condition/years	Final time to target multiplier	Standard difficulty of creation	Applied difficulty multiplier	Final difficulty of creation	Difficulty multiplier applied		Assessor comments	Reviewer comments
1		Native Species Rich Hedgerow	3.0123	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	5		3	Check details- Delay in starting habitat in required condition? ⚠	8	0.752	Low	Standard difficulty applied	Low	1	20.84		
2		Native Species Rich Hedgerow with trees	3.1208	High	6	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	10		3	Check details- Delay in starting habitat in required condition? ⚠	13	0.629	Low	Standard difficulty applied	Low	1	27.10		
3																							
4																							
5																							
6																							
7																							
			6.13																		47.94		

C-1 Site River Baseline

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Existing river type			Habitat distinctiveness		Habitat condition		Strategic significance			Watercourse encroachment		Riparian encroachment		Suggested action	Ecological baseline	Retention category biodiversity value						Comments	
Baseline ref	River type	Length (km)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic significance multiplier	Extent of encroachment	Multiplier	Extent of encroachment	Multiplier		Total river units	Length retained	Length enhanced	Units retained	Units enhanced	Length Lost	Units Lost	Assessor Comments	Reviewer comments
1	Culvert	0.2238	Low	2	Poor	1	Low potential/action not identified in any plan	Low Strategic Significance	1	N/A - Culvert	1	No Encroachment	1	Restore	0.45	0.2002		0.40	0.00	0.02	0.05	Culvert with Ditch	
2	Culvert	0.1676	Low	2	Poor	1	Low potential/action not identified in any plan	Low Strategic Significance	1	N/A - Culvert	1	No Encroachment	1	Restore	0.34	0.1676		0.34	0.00	0.00	0.00	Culvert with River/Stream	
3	Ditches	0.2519	Medium	4	Poor	1	Within Local Plans	High strategic significance	1.15	No Encroachment	1	No Encroachment	1	Restore	1.16	0.1666		0.77	0.00	0.09	0.39	Ditch	
4	Ditches	0.6235	Medium	4	Good	3	Within Local Plans	High strategic significance	1.15	No Encroachment	1	No Encroachment	1	Restore	8.60	0.5824		8.04	0.00	0.04	0.57	Ditch	
5	Ditches	0.1857	Medium	4	Poor	1	Within Local Plans	High strategic significance	1.15	No Encroachment	1	Moderate	0.85	Restore	0.73	0.1857		0.73	0.00	0.00	0.00	Ditch	
6	Ditches	0.0896	Medium	4	Good	3	Within Local Plans	High strategic significance	1.15	No Encroachment	1	Minor	0.95	Restore	1.17	0.0698		0.92	0.00	0.02	0.26	Ditch	
7	Ditches	0.926	Medium	4	Poor	1	Within Local Plans	High strategic significance	1.15	No Encroachment	1	Minor	0.95	Restore	4.05	0.8892		3.89	0.00	0.04	0.16	Ditch	
8	Ditches	0.0379	Medium	4	Good	3	Within Local Plans	High strategic significance	1.15	No Encroachment	1	Moderate	0.85	Restore	0.44	0.0379		0.44	0.00	0.00	0.00	Ditch	
9	Other Rivers and Streams	0.3477	High	6	Fairly Poor	1.5	Within Local Plans	High strategic significance	1.15	Major	0.5	Major	0.75	Restore	1.35	0.3477		1.35	0.00	0.00	0.00	River/Stream 1	
10	Other Rivers and Streams	0.9906	High	6	Moderate	2	Within Local Plans	High strategic significance	1.15	No Encroachment	1	No Encroachment	1	Restore	13.67	0.9906		13.67	0.00	0.00	0.00	River/Stream 1	
11	Other Rivers and Streams	0.7724	High	6	Fairly Poor	1.5	Within Local Plans	High strategic significance	1.15	Major	0.5	Major	0.75	Restore	3.00	0.7724		3.00	0.00	0.00	0.00	River/Stream 2	
12	Other Rivers and Streams	0.1953	High	6	Moderate	2	Within Local Plans	High strategic significance	1.15	No Encroachment	1	Major	0.75	Restore	2.02	0.1953		2.02	0.00	0.00	0.00	River/Stream 3	
13	Other Rivers and Streams	0.3482	High	6	Fairly Poor	1.5	Within Local Plans	High strategic significance	1.15	No Encroachment	1	Major	0.75	Restore	2.70			0.00	0.00	0.35	2.70	River/Stream 3	
14	Other Rivers and Streams	0.0345	High	6	Fairly Poor	1.5	Within Local Plans	High strategic significance	1.15	Major	0.5	Minor	0.95	Restore	0.17	0.0345		0.17	0.00	0.00	0.00	River/Stream 4	
15	Other Rivers and Streams	0.1192	High	6	Fairly Poor	1.5	Within Local Plans	High strategic significance	1.15	Major	0.5	No Encroachment	1	Restore	0.62	0.0194	0.0717	0.10	0.37	0.03	0.15	River/Stream 4	
16	Other Rivers and Streams	0.0158	High	6	Moderate	2	Within Local Plans	High strategic significance	1.15	Major	0.5	Major	0.75	Restore	0.08	0.0158		0.08	0.00	0.00	0.00	River/Stream 5	
17																							
18																							
19																							
20																							
21																							
		5.33													40.55	4.68	0.07	35.90	0.37	0.58	4.28		

C-2 Site River Creation

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	Proposed habitats		Habitat distinctiveness		Habitat condition		Strategic significance			Temporal multiplier						Difficulty multipliers				Watercourse encroachment		Riparian encroachment		River units delivered	Comments	
Baseline ref	River type	Length (km)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier	Standard Time to target condition/years	Habitat created in advance/years	Delay in starting habitat creation/years	Standard or adjusted time to target condition	Final time to target condition/years	Final Time to target multiplier	Standard difficulty of creation	Applied difficulty multiplier	Final difficulty of creation	Difficulty multiplier applied	Extent of encroachment	Multiplier	Extent of encroachment	Multiplier		Assessor comments	Reviewer comments
1	Culvert	0.1476	Low	2	Poor	1	Low potential/action not identified in any plan	Low Strategic Significance	1	1		3	Check details- Delay in starting habitat in required condition? ⚠	4	0.867	Low	Standard difficulty applied	Low	1	N/A - Culvert	1	No Encroachment	1	0.26	Culvert with Ditch	
2	Culvert	0.028	Low	2	Poor	1	Low potential/action not identified in any plan	Low Strategic Significance	1	1		3	Check details- Delay in starting habitat in required condition? ⚠	4	0.867	Low	Standard difficulty applied	Low	1	Major	0.5	No Encroachment	1	0.02	Culvert with River/Stream	
3	Ditches	0.1051	Medium	4	Good	3	Delivery within Local Plans	High strategic significance	1.15	10		3	Check details- Delay in starting habitat in required condition? ⚠	13	0.629	Low	Standard difficulty applied	Low	1	No Encroachment	1	Major	0.75	0.68	Ditch	
4	Ditches	0.1074	Medium	4	Poor	1	Delivery within Local Plans	High strategic significance	1.15	1		3	Check details- Delay in starting habitat in required condition? ⚠	4	0.867	Low	Standard difficulty applied	Low	1	No Encroachment	1	Moderate	0.85	0.36	Ditch	
5	Ditches	4.2396	Medium	4	Poor	1	Delivery within Local Plans	High strategic significance	1.15	1		3	Check details- Delay in starting habitat in required condition? ⚠	4	0.867	Low	Standard difficulty applied	Low	1	No Encroachment	1	Major	0.75	12.68	Ditch	
6	Ditches	0.8196	Medium	4	Poor	1	Delivery within Local Plans	High strategic significance	1.15	1		3	Check details- Delay in starting habitat in required condition? ⚠	4	0.867	Low	Standard difficulty applied	Low	1	No Encroachment	1	No Encroachment	1	3.27	Ditch	
7	Other Rivers and Streams	0.1947	High	6	Fairly Poor	1.5	Delivery within Local Plans	High strategic significance	1.15	2		3	Check details- Delay in starting habitat in required condition? ⚠	5	0.837	High	Standard difficulty applied	High	0.33	No Encroachment	1	Major	0.75	0.42	River/Stream 3	
8																										
9																										
10																										
11																										
		5.64																						17.70		

C-3 Site River Enhancement

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Baseline habitat												Post development post intervention habitat																		River units delivered	Comments	
													Change in distinctiveness and condition																			
Baseline ref	Baseline habitat	Length (km)	Baseline distinctiveness band	Baseline distinctiveness score	Baseline condition category	Baseline condition score	Baseline strategic significance category	Strategic significance	Baseline strategic significance score	Suggested action	Total units	Proposed River Type (Pre-populated can be overridden)	Distinctiveness movement	Condition movement	Length (km)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier	Standard Time to target condition/years	Habitat enhanced in advance/years	Delay in starting habitat enhancement/years	Standard or adjusted time to target condition	Final time to target condition/years	Final Time to target multiplier	Standard difficulty of enhancement	Applied difficulty multiplier	Final difficulty of enhancement	Difficulty multiplier applied	Extent of encroachment	Multiplier	Extent of encroachment	Multiplier		Assessor comments	Reviewer comments
15	Other Rivers and Streams	0.1192	High	6	Fairly Poor	1.5	Within Local Plans	High strategic significance	1.15	Restore	0.61366	Other Rivers and Streams	High - High	Fairly Poor - Moderate	0.0712	High	6	Moderate	2	Delivery within Local Plans	High strategic significance	1.15	2	0	1	Check details: Delay in starting enhancement, standard enhancement time	3	0.423	Medium	Standard difficulty applied	Medium	0.67	Major	0.6	No Encroachment	1	0.44		

A.5 Doddington Woodland Assessment

Introduction

A.5.1.1 A habitat survey has been undertaken for an area of woodland at Doddington Hall, Doddington, Lincoln, LN6 4RU (approximate grid reference SK 89946 68516) to inform proposals for Biodiversity Net Gain compensation in relation to the A46 Newark Bypass. The survey included UKHab Assessments and habitat condition assessment in relation to Biodiversity Metric 3.1. The survey plot is shown in Figure A.5.1. It is referred to as Area W10a (Pickworth's Plot) and is 15.84 hectares. Note that woodland enhancements will only be required in a portion of this area.

Figure A.5.1 Survey Plot Location

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Methodology

A.5.1 Field Survey

A.5.1.1 The field survey was conducted on 22 June 2023 to assess the site according to the UK Habitat Classification (UKHab) methodology[25]. The habitat types were confirmed and plant species recorded using the DAFOR scale (standing for Dominant, Abundant, Frequent, Occasional, Rare). A condition assessment was also conducted for the surveyed area. The condition assessment was based on the method set out within Biodiversity Metric 3.1 User Guide[26] and also informed by England Woodland Biodiversity Group (EWBG) Woodland Condition Survey Method[27].

A.5.2 Limitations

A.5.2.1 Ecological surveys are limited by factors such as time of year which affect the ability to detect plants and animals; therefore, whilst the best efforts have been conducted during the survey, the survey cannot guarantee to have produced an exhaustive list of plants and animals, and the absence of evidence of any species should not be taken as conclusive proof that the species is not present or that it will not be present in the future.

Results

A.5.3 UKHab

A.5.3.1 The UKHab habitat type was recorded as w1h6: Other woodland; mixed; mainly conifer with secondary code 36. The area was a mature plantation dominated by non-native species, in particular Scots pine *Pinus sylvestris*. Mature European larch *Larix decidua* and silver birch *Betula pendula* were also frequent throughout the woodland, with English oak *Quercus robur* and the red oak *Quercus rubra* also present in low numbers. A photo of the plot is included as Figure A.5.3 below.

[24] Butcher B., Carey P., Edmonds R., Norton L. and Treweek J., (2020). The UK Habitat Classification User Manual Version 1.1. Available at: https://ukhab.org/ukhab-documentation/ (Last Accessed December 2023).

[25] Panks et al. (2022, April 21). Biodiversity metric 3.1: Auditing and accounting for biodiversity - User Guide. Natural England. Retrieved from Natural England: https://nepubprod.appspot.com/publication/5850908674228224. (Last Accessed December 2023).

[26] Woodland Wildlife Toolkit (sylva.org.uk). (Last Accessed December 2023).

A.5.3.2 The shrub layer was sparce, with young trees including rowan *Sorbus aucuparia*, holly *Ilex aquifolium* and eared willow *Salix aurita*, however all were found to be rare on the DAFOR scale. Rhododendron *Rhododendron ponticum* was found to be of frequent abundance within the shrub layer.The field layer was dominated by bracken *Pteridium aquilinum* throughout the woodland while bramble *Rubus fruticosus* was also abundant. Other ground flora species were occasional or rare and included foxglove *Digitalis purpurea*, Yorkshire fog *Holcus lanatus*, false oat grass *Arrhenatherum elatius* and honeysuckle *Lonicera periclymenum*. For a full species list see Table A.5.2.

A.5.3.3 An area of oak and birch woodland was present to the north-east but was not included in the survey. The area is adjacent to other woodland blocks to the north and east and farmland to the south. Footpaths and cycle-paths were present throughout the woodland.

Figure A.5.3: Woodland area W10a (Pickworth's Plot) photographed during the site visit on the 22/06/2023.

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A.5.4 Condition Assessment

A.5.4.1 The condition assessment of this area of woodland gave a total score of 30 indicating that the woodland is in moderate condition.

A.5.4.2 Negative impacts on the condition assessment include the following:

- Limited age distribution of trees
- The presence of rhododendron

- Dominance of non-native trees in the canopy
- No veteran trees
- No recognizable NVC community in the field layer

A.5.4.3 For details of the condition assessment see Table A.5.1.

Table A.5.1: Woodland Condition Assessment Sheet for both woodland areas

Indicator		Good (3 points)	Moderate (2 points)	Poor (1 point)	Score per indicator	Notes/Justification
1	**Age distribution of trees[1]**	Three age classes present	Two age classes present	One age class present	2	Mature trees and saplings present
2	**Wild, domestic and feral herbivore damage**	No significant browsing damage evident in woodland[2]	Evidence of significant browsing pressure is present in 40% or less of whole woodland	Evidence of significant browsing pressure is present in 40% or more of whole woodland	3	No damage evident
3	**Invasive plant species[3]**	No invasive species present in woodland	Rhododendron or laurel not present, other invasive species < 10% cover	Rhododendron or laurel present, or other invasive species > 10% cover	1	Rhododendron present (frequent)
4	**Number of native tree species**	Five or more native tree or shrub species found across woodland parcel	Three to four native tree or shrub species found across woodland parcel	None to two native tree or shrub species across woodland parcel	3	5 native tree species
5	**Cover of native tree and shrub species**	> 80% of canopy trees and >80% of understory shrubs are native	50-80% of canopy trees and 50-80% of understory shrubs are native	< 50% of canopy trees and <50% of understory shrubs are native	1	> 50% of canopy trees non-native Scots pine, larch and red oak.
6	**Open space within woodland[4]**	10 – 20% of woodland has areas of temporary open	21- 40% of woodland has areas of temporary open space	<10% or more than 40% of woodland has areas of temporary open space	1	Very little temporary open space.

Indicator		Good (3 points)	Moderate (2 points)	Poor (1 point)	Score per indicator	Notes/Justification
		space, unless woodland is <10ha in which case lower threshold of 10% does not apply				
7	**Woodland regeneration** [5]	All three classes present in woodland; trees 4-7cm dbh, saplings and seedlings or advanced coppice regrowth	One or two classes only present in woodland	No classes or coppice regrowth present in woodland	3	All 3 stages present
8	**Tree health**	Tree mortality less than 10%, no pests or diseases and no crown dieback	11% to 25% mortality and/or crown dieback or low risk pest or disease present	Greater than 25% tree mortality and or any high risk pest or disease present	3	Trees appear healthy
9	**Vegetation and ground flora**	Ancient woodland flora indicators present	Recognisable NVC plant community present	No recognisable NVC community	1	Largely limited to bracken and bramble
10	**Woodland vertical structure**[6]	Three or more storeys across all survey plots or a complex woodland	Two storeys across all survey plots	One or less storey across all survey plots	3	Good vertical structure in canopy
11	**Veteran trees**[7]	Two or more veteran trees per	One veteran tree per hectare	No veteran trees present in woodland	1	No veteran trees

Indicator		Good (3 points)	Moderate (2 points)	Poor (1 point)	Score per indicator	Notes/Justification
		hectare				
12	**Amount of deadwood**	50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Between 25% and 50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Less than 25% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	1	Dead wood present
13	**Woodland disturbance[8]**	No nutrient enrichment or damaged ground evident	Less than 1 hectare in total of nutrient enrichment across woodland area and/or less than 20% of woodland area has damaged ground	More than 1 hectare of nutrient enrichment and/or more than 20% of woodland area has damaged ground	3	No evidence of nutrient enrichment and little disturbed ground.
Total Score					26	

Condition Assessment Result	**Condition Assessment Score**	**Result Achieved**	
Total score >32 (33 to 39)	Good (3)		
Total score 26 to 32	Moderate (2)	x	
Total score <26 (13 to 25)	Poor (1)		

This condition sheet is based on the England Woodland Biodiversity Group (EWBG) Woodland Condition Survey Method, available here: Woodland Wildlife Toolkit (sylva.org.uk)

Table A.5.2: Species lists and DAFOR scale for both woodland plots

Species		**Pickworth's Plot**
		DAFOR
Field Layer		
Bramble	*Rubus fruticosus*	A
Bracken	*Pteridium aquilinum*	D
Honeysuckle	*Lonicera periclymenum*	R
Soft rush	*Juncus effusus*	R
Yorkshire Fog	*Holcus lanatus*	R
Foxglove	*Digitalis purpurea*	O
Wavy hair grass	*Deschampsia flexuosa*	O
Lady fern	*Athyrium filix-femina*	R
False oat grass	*Arrhenatherum elatius*	O
Trees and shrubs		
Silver Birch	*Betula pendula*	F
Holly	*Ilex aquifolium*	R
European Larch	*Larix decidua*	F
Scots Pine	*Pinus sylvestris*	D
English oak	*Quercus robur*	O
Red oak	*Quercus rubra*	R
Rhodedendron	*Rhododendron ponticum*	F
Eared willow	*Salix aurita*	R
Rowan	*Sorbus aucuparia*	R

A.6 Outline for Bespoke Compensation Agreement for Lowland Meadow

A.6.1 Introduction

A.6.1.1 The Scheme involves an unavoidable loss of an area of lowland meadow. The Scheme will affect 1032 m^2 of the habitat of which 118 m^2 will be permanent land take and the remainder is affected through temporary works to create construction access. Options to avoid the impact have been considered but given the need to widen the adjacent Smeaton's Arches and lack of alternatives for site access some impact is inevitable (for further details please see Chapter 3 (Assessment of Alternatives) of the ES [APP-047]). The extent of habitat loss has however been minimised through improvements in the works design.

A.6.1.2 Lowland Meadow is classed as a habitat of very high distinctiveness within the Biodiversity Metric 3.1. Any losses prevent a Scheme wide prediction of Biodiversity Net Gain (BNG). To allow BNG to be considered in relation to the remainder of the Scheme a Bespoke Compensation Agreement must be sought with Natural England in relation to the loss.

A.6.1.3 The habitat area affected has been surveyed as unimproved neutral grassland in a Phase 1 habitat survey (see Appendix 8.1 (Extended Phase 1 Habitat Technical Report) of the ES Appendices [APP-145 and APP-146]) and classed as MG5 within an NVC Survey (see Appendix 8.2 (National Vegetation Classification Technical Report) of the ES Appendices [APP-147]). This confirms its status as Lowland Meadow Habitat of Principal Importance and habitat of very high distinctiveness in the Biodiversity Metric 3.1. The NVC report included the following description:

A.6.1.4 Herbaceous plants comprised a substantial proportion of the sward herbage. Red fescue *Festuca rubra,* smooth meadow-grass *Poa pratensis,* common knapweed *Centaurea nigra,* common mouse-ear *Cerastium fontanum* and common ragwort *Jacobaea vulgaris* were all constant with rough meadow-grass *Poa trivialis,* pignut *Conopodium majus,* lady's bedstraw *Galium verum,* meadow buttercup *Ranunculus acris,* bulbous buttercup *Ranunculus bulbosus* and common sorrel *Rumex acetosa* being frequent associates.

A.6.2 Areas for Compensation

A.6.2.1 The compensation involves the creation of a new area of lowland meadow close to the area of habitat lost. Additionally, the area of habitat lost to temporary works would be re-created following the work. Figures from the BNG Assessment for the Scheme provide details of the location of the existing lowland meadow habitat as well as locations for the habitat creation (Appendix A.1 Biodiversity Net Gain Baseline Habitats, Appendix A.2 Biodiversity Net Gain Post-Construction Habitats of this report).

A.6.2.2 The size of the compensation areas should not be dictated by the Biodiversity Metric but it is nonetheless useful to ensure that the bespoke compensation is not less favourable in terms of area provided. Biodiversity Metric 3.1 was therefore used to calculate the value in terms of habitat units for the area of lowland meadow lost.

A.6.2.3 The area of lowland meadow lost is 0.1032 hectares in moderate condition with high strategic significance and has a value of 1.9 habitat units.

A.6.2.4 The area of lowland meadow compensation is 0.7505 hectares. If the habitat is created with moderate condition and high strategic significance it will have a value of 3.19 habitat units.

A.6.2.5 The area of lowland meadow to be re-created after temporary works has an area of 0.0915 hectares. An additional 0.0157 hectares will also be created at this location. If the habitat is created with moderate condition and high strategic significance it will have a value of 0.46 habitat units.

A.6.2.6 Therefore, a total of 3.64 units will be created versus 1.9 unit lost.

A.6.3 Principles for Habitat Creation

A.6.3.1 Soil Preparation

A.6.3.2 The location would be two small fields of poor semi-improved grassland. These areas are not affected by construction and would be protected during the works. The soil phosphorous index is zero indicating that existing soils are suitable for the habitat creation (Appendix 9.3 (Agricultural Land Classification Report) of the ES Appendices [REP5-021]). Existing soils would be retained but the uppermost layer including the existing vegetation would be removed to allow new vegetation to establish freely.

A.6.3.3 The soil in the area for re-creation would be left in-situ and protected during construction. This would involve ground protection such as track matting and good environmental practice for working in a sensitive area such as avoiding refuelling and leaks of oil and other chemicals. Given that the habitat can then be re-created in this location turf translocation is not being proposed. This is because it would be more valuable to conserve the soil profile and associated seed bank to support grassland for re-creation.

A.6.3.4 Use of Green Hay

A.6.3.5 There are areas of lowland meadow immediately outside the site boundary unaffected by the works and these would provide a source of green hay. A green hay cut would be made in mid-late summer with the arisings immediately spread on the two receptor areas, i.e. the area for re-creation and the additional compensation area. Herbicide treatment would be needed in advance of this for the new compensation area (but not for the re-creation area) to create a stale seedbed and avoid excessive competition from weeds.

A.6.3.6 Weed Management

A.6.3.7 Creating the conditions for perennial meadow plants to establish would also create openings for undesirable weed species. For example, thistles and docks. These may outcompete the target vegetation and become problematic for site management. Weed control would be required during and following establishment. Control could be carried out with a spot sprayer or if needed larger machinery such as a weed wiper.

A.6.3.8 Ongoing Management

A.6.3.9 For the newly created compensation area future management would involve cattle grazing and / or hay cutting annually through a management agreement with an appropriate party. For re-creating the existing meadow area the land would be returned to the owner after the work and the previous management, livestock grazing, would resume.

A.6.3.10 Monitoring

A.6.3.11 The success of the exercise should be gauged through regular ecological monitoring providing advice to adapt site management if necessary. Vegetation monitoring would take place annually in June or July for the first 5 years after establishment and would be extended if necessary.