

Cambridge Waste Water Treatment Plant Relocation Project
Anglian Water Services Limited

Appendix 8.13: Biodiversity Net Gain (BNG) Report

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Summary

Anglian Water Services Limited (the 'Applicant') is proposing to build a modern, low carbon waste water treatment for Greater Cambridge on a new site area north of the A14 between Fen Ditton and Horningsea.

This Biodiversity Net Gain (BNG) assessment report has been prepared for the development following the framework provided in the Chartered Institute of Ecology and Environmental Management (CIEEM) Biodiversity Net Gain Report & Audit Templates document (CIEEM, 2021). BNG will 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.

The aim is for this document to provide a 'Biodiversity Net Gain Design Stage Report', i.e., for it to be a report aimed at decision-makers, at the design consent stage of a project, in this case to form part of a Development Consent Order (DCO) application, with the decision makers being the Planning Inspectorate and Secretary of State. BNG will be secured through DCO conditions.

The BNG assessment on this project has been undertaken in line with the BNG: Good Practice Principles for Development (CIEEM, CIRIA, IEMA, 2016), a set of ten guiding principles for delivering BNG in the UK. Section 4 of this BNG Design Stage Report provides statements on how each of these guiding principles has been applied to the project.

The boundary for the BNG assessment is the Scheme Order Limits (see Figure 1.1, in this document). The BNG metric calculation uses baseline habitat data from Phase 1 habitat surveys, National Vegetation Classification (NVC) surveys, Modular River Survey (MoRPh) surveys and ditch condition surveys completed by Mott MacDonald in 2020 and 2021. Post-development habitat types and distinctiveness scores were based on the Landscape Masterplan produced for the Proposed Development (Appendix B) as well as figures produced by @One showing the temporary works areas for the Proposed Development (App Doc Ref 4.3).

To calculate the percentage change in 'habitat units' from the development, the pre-development (baseline) and post-development (proposed) value of the habitats within the Proposed Development were entered into the Natural England Biodiversity Metric 3.0 calculation tool (Natural England, 2022). Although Biodiversity Metric 3.1 was published on 21 April 2022, the Natural England webpage (Natural England, 2022) for Biodiversity Metric 3.1 states that users of Biodiversity Metric 3.0 should continue to use the 3.0 metric for the duration of the project, this tool was used for full feasibility calculations for the project completed in January 2022. The conversion tool in the Biodiversity Metric 3.0 was used to inform translation of the baseline Phase 1 habitat survey and National Vegetation Classification (NVC) habitat data into the habitat types used in the metric which are based on UK Habitat Classification (UKHab).

The pre-development value of the site has been calculated using Biodiversity Metric 3.0 as:

- 493.46 habitat biodiversity units,
- 56.59 hedgerow biodiversity units and
- 12.13 river biodiversity units.

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

- 698.08 habitat biodiversity units,
- 68.20 hedgerow biodiversity units and
- 12.56 river biodiversity units.

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

- +41.47% in habitat biodiversity units,
- +20.51% in hedgerow biodiversity units and
- +3.49% in river biodiversity units.

High distinctiveness baseline (pre-development) habitats proposed to be lost during construction must be replaced with habitats that are of the same specific type, and medium value habitats by habitats of the same broad habitat type. Currently, the calculation completed for this assessment shows 'trading down', i.e., uncompensated habitat loss, of two high distinctiveness habitats ('Reedbeds' and 'Other rivers and streams') and can only be used to demonstrate net gain once this is resolved.

However, the Applicant is committed to achieving at least a 20% net gain in all unit types including river units, and to avoid trading down habitat value, proposed measures by which this will be achieved are presented in an Outline River Units Net Gain Strategy (Appendix C). This will involve creating additional ditch habitat within the Scheme Order Limit and funding river unit gain outside of the Scheme Order Limits. This approach has been taken to factor in emerging opportunities that are likely to arise for purchasing river units by funding off-site habitat restoration.

BNG as set out in the Biodiversity Metric 3.0 calculation will be secured through Schedule 2 of the DCO which includes a series of requirements which obligate the Applicant to implement the 30-year Landscape Masterplan and the Landscape Ecology and Recreational Management Plan (LERMP) (Appendix 8.14, App Doc Ref 5.4.8.14). Schedule 2 of the DCO will also commit the Proposed Development to achieving 20% gain in river units and avoid a trading down in habitat value as outlined in Appendix C of this report.

A Biodiversity Net Gain Audit Survey and Report will be undertaken at the end of construction and at the end of a 5-year aftercare period of all habitats on site, whether retained, enhanced or created. Its purpose will 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. The management period for habitats retained, created and enhanced for BNG will be for 30 years as detailed in Section 7 of this report.

1 Introduction

1.1 Anglian Water Services Limited

- 1.1.1 Anglian Water Services Limited (the 'Applicant') is the largest regulated water and water recycling company in England and Wales by geographic area, supplying water and water recycling services to almost seven million people in the East of England and Hartlepool.
- 1.1.2 The Applicant is committed to bringing environmental and social prosperity to the region they serve, through their commitment to Love Every Drop. As a purpose-led business, The Applicant seeks to contribute to the environmental and social wellbeing of the communities within which they operate. As one of the largest energy users in the East of England, they are also committed to reaching net zero carbon emissions by 2030.

1.2 Background

- 1.2.1 The Applicant is proposing to build a modern, low carbon waste water treatment for Greater Cambridge on a new site area north of the A14 between Fen Ditton and Horningsea within the Cambridge drainage catchment area, to replace the plant on Cowley Road, hereafter referred to as the Existing Cambridge Waste Water Treatment Plant (WWTP). The area of land within the Scheme Order Limits is provided in Figure 1.1.
- 1.2.2 The relocation will enable South Cambridgeshire District Council and Cambridge City Council's long held ambition to develop a new low-carbon city district on Cambridge's last major brownfield site, known as North East Cambridge. The site is an important component of the First Proposals (preferred options) for the new Greater Cambridge Local Plan (GCP, 2022) that were subject to public consultation in 2021. The North East Cambridge Area Action Plan (GCP, 2022) has recently been agreed by the Councils in its Proposed Submission form and will be subject to public consultation prior to submission, once the Development Consent Order is determined. The relocation of the existing waste water treatment facility will enable this new district to come forward and deliver 8,350 homes, 15,000 new jobs and a wide range of community, cultural and open space facilities in North East Cambridge. Further details can be found in the Statement of Requirement (App Doc Reference 7.2) published in September 2019.
- 1.2.3 The relocation of the WWTP will allow The Applicant to continue providing vital waste water services to customers across Cambridge and Greater Cambridge. The new plant will continue storing and treating storm flows and treating sludge to produce renewable energy. It will be designed to deal with a growing population. It offers the opportunity for a joined-up solution for treating waste water from Cambridge and Greater Cambridge, including Waterbeach. The proposal is for both waste water from the Existing Waterbeach Waste Water Treatment Plant and

future flows from Waterbeach New Town to be treated at the Proposed Cambridge Waste Water Treatment Plant.

- 1.2.4 The Proposed Development will be the first waste water project to seek a Development Consent Order that is not specifically named in the National Policy Statement (NPS). 'The Applicant' sought and obtained a direction from the Secretary of State under section 35 of the Planning Act 2008 ("the 2008 Act"), which confirms that the project will be treated as a Nationally Significant Infrastructure Project ("NSIP") when the application is submitted.

(Modified graphics)

Cambridge Waste Water Treatment Plant Relocation
Project Biodiversity Net Gain (BNG) Report

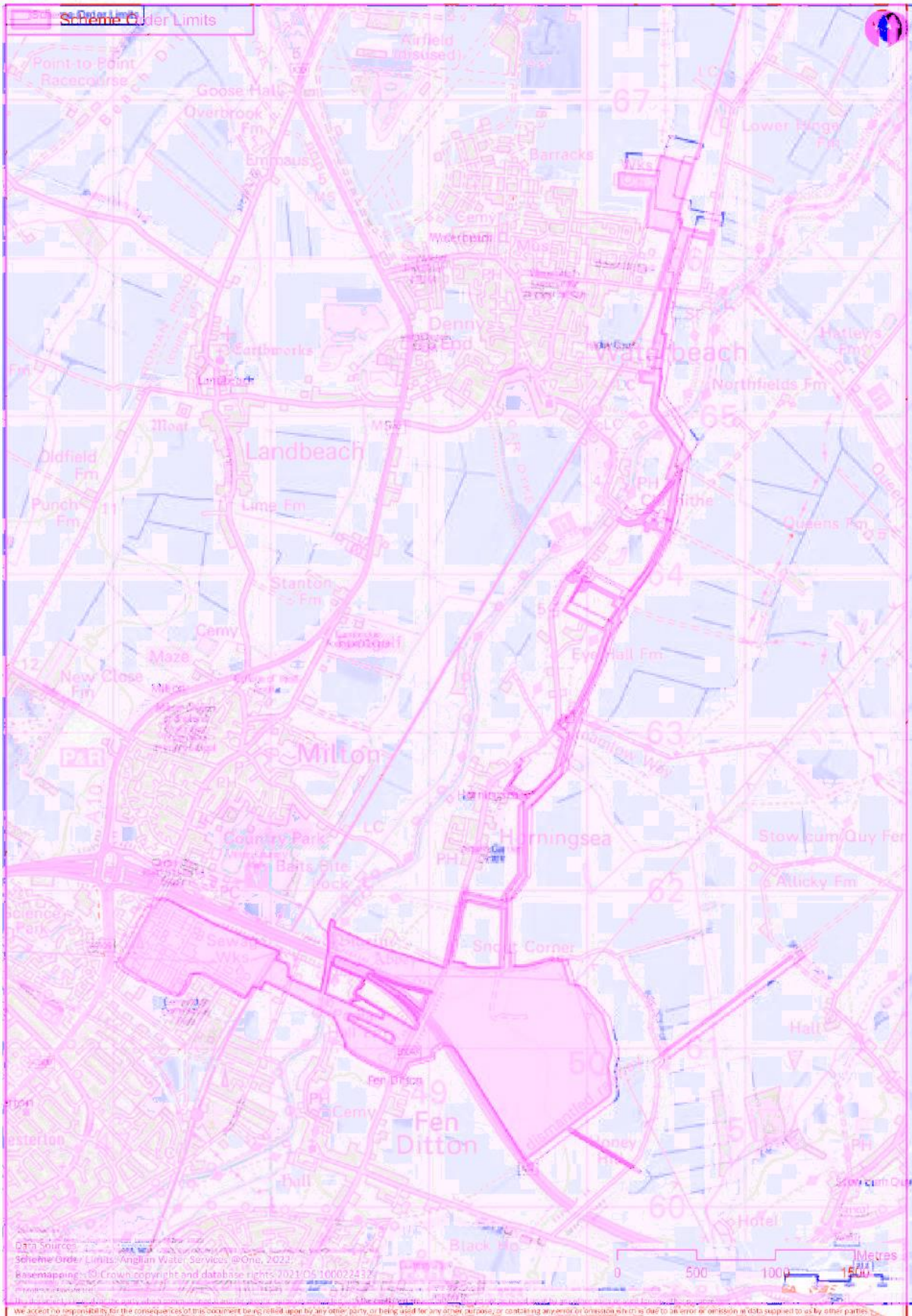


Figure 1.1. Scheme Order Limits

1.3 The Proposed Development

- 1.3.1 This section provides a high-level summary of the Proposed Development. The term Proposed Development refers to the Cambridge Waste Water Treatment Plant (WWTP) Relocation project in its entirety and all works associated with the development.
- 1.3.2 A detailed description of the Proposed Development can be found in Chapter 2 of the Environmental Statement (App Doc Reference 5.2.2).
- 1.3.3 The purpose of the Proposed WWTP is to treat all waste water and wet sludge from the Cambridge catchment just as the Existing Cambridge WWTP currently does, plus that from the growth indicated and being planned within the catchment in the Local Plan to 2041, with ability to expand beyond to deal with further growth.
- 1.3.4 As part of its statutory function, the Applicant operates the Existing Cambridge WWTP. The Existing Cambridge WWTP receives waste water from the Cambridge catchment either directly from the connected sewerage network or tankered to the plant from homes and businesses that are not connected. This waste water is then treated and the treated effluent discharged through an outfall to the nearby River Cam. The Existing Cambridge WWTP is an integrated WWTP, as would be the Proposed Development. Integrated WWTP incorporate a sludge treatment function, in the form of a Sludge Treatment Centre (STC), which treats the sludge derived from the waste water from the catchment, and the “wet sludge” produced by other satellite plants which do not have integrated STC.
- 1.3.5 The Waterbeach New Town development lies to the north of Cambridge. When built out Waterbeach new town will comprise some 11,000 new homes along with associated business, retail, community and leisure uses. Waste water from Waterbeach will ultimately be treated by the Proposed Cambridge WWTP once operational. However, the rate of development at Waterbeach New Town may require a new pipeline (rising main) to be built from Waterbeach to the Existing Cambridge WWTP to allow treatment of waste water in advance of the Proposed WWTP becoming operational. In that case, either a later connection would be made to the Proposed WWTP from a point on the pipeline route, or flows diverted from the Existing Cambridge WWTP via the transfer tunnel.
- 1.3.6 In summary the Proposed Development will comprise:
- an integrated waste water and sludge treatment plant;
 - a shaft to intercept waste water at the Existing Cambridge WWTP on Cowley Road and a tunnel/ pipeline to transfer it to the new site and terminal pumping station;
 - a gravity pipeline arrangement taking treated waste water effluent to a discharge point on the River Cam;
 - a pipeline transferring waste water from Waterbeach to the Proposed Development;

- connection of the upgraded Fen Ditton rising main to the transfer tunnel;
- ancillary on-site buildings, including a Gateway Building with incorporated Discovery Centre, substation building, workshop, vehicle parking including electrical vehicle charging points, fencing and lighting;
- renewable energy generation via anaerobic digestion which is part of the sludge treatment process that produces gas that may feed directly into the local gas network heating homes;
- renewable energy generation via solar photovoltaic and battery energy storage system;
- other associated development such as site access, utilities, connection to the site drainage system, landscaping and off-site highway network alteration measures to reduce potential traffic impacts;
- a new vehicle access including for Heavy Goods Vehicles (HGV's) bringing sludge onto the site for treatment; and
- environmental mitigation and enhancements including habitats for wildlife;
- landscaping and increased recreational access and connectivity.

1.4 Biodiversity Net Gain overview

1.4.1 The Applicant has provided a Biodiversity Net Gain (BNG) assessment for the Proposed Development as part of the Development Consent Order (DCO) submission, which is set out in this report.

1.4.2 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 by a minimum percentage. The post-development value can include not just the value of the site itself, but registered offsite biodiversity gain and (when available from government) purchased biodiversity credits.

1.4.3 The net gain is measured using the Biodiversity Metric published by Natural England (Panks et al, 2021) which measures the net gains in 'biodiversity units'.

1.5 Document purpose

1.5.1 This report presents the BNG assessment of the Proposed Development, which included a biodiversity metric calculation using the Biodiversity Metric 3.0 User Guide (Panks et al, 2021) and the Biodiversity Metric 3.0 Calculation Tool (Panks et al, 2021). The updated Biodiversity Metric 3.1 was not used as the Natural England webpage (Natural England, 2022) for Biodiversity Metric 3.1 states that users of Biodiversity Metric 3.0 should continue to use the 3.0 metric for the duration of the

project. This tool was used for full feasibility calculations for the project completed in January 2022.

1.5.2 BNG will 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.

1.5.3 This report has been prepared following the framework provided in the Chartered Institute of Ecology and Environmental Management (CIEEM) BNG Report & Audit Templates document (CIEEM, 2021), with the aim for this document to provide a 'Biodiversity Net Gain Design Stage Report', i.e., for it to be a report aimed at decision-makers, at the design consent stage of a project (in this case to form part of a DCO application), with the decision makers being the Planning Inspectorate and Secretary of State. BNG will be secured through DCO conditions. This BNG design stage report includes the:

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

1.5.4 This document (and its associated figures and appendices) refers to the following application documents:

- The ES Chapter 8: Biodiversity and associated appendices
- The Landscape, Ecological and Recreational Management Plan (LERMP) which includes the landscape masterplan (Appendix 8.14, App Doc Ref 5.4.8.14)
- The Construction Code of Practice Part A and B (Appendix 2.1 & 2.2, App Doc Ref 5.4.2.1 & 5.4.2.2).

1.6 Biodiversity Net Gain Legislation, Policy and Guidance

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

Legislation

1.6.2 The Environment Act 2021 (UK Parliament, 2021) was granted Royal Assent on 9 November 2021 and contains provisions which will mandate achieving BNG for developments in England seeking planning permission (expected late 2023) and for Nationally Significant Infrastructure Projects (expected 2025). 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 will be measured by the biodiversity metric published by the Secretary of State. This is expected to be a revision of the current Biodiversity Metric (V3.1) (Natural England, 2021) to version 4.0. Mandatory BNG is defined in numerical terms as a minimum 10% increase in each of the three types of habitat within the biodiversity metric: area-based habitat units; linear units; and river units.

1.6.3 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

1.6.4 The Government's 25 Year Environment Plan (DEFRA, 2021) describes an ambition to leave the environment in a better state than that which it inherited for the next generation. This ambition is supported by the National Planning Policy Framework (NPPF) (Ministry Housing, Community & Local Government, 2021), which makes general provisions for the delivery of BNG. The NPPF states that "planning policies and decisions should...identify and pursue opportunities for securing measurable net gains for biodiversity" although no numerical definition of "net gains for biodiversity" is provided.

1.6.5 Local planning documents relevant to BNG include the South Cambridgeshire District Council (SCDC) Doubling Nature Strategy (SCDC, 2021) which sets an aspirational (non-mandatory) goal of 20% BNG for developments within the district. BNG is also outlined in the Greater Cambridge Biodiversity Supplementary Planning Document (Greater Cambridge Shared Planning, 2022), this document does not set 20% BNG as a fixed target. However, it is noted although a mandatory requirement for 10% net gain in biodiversity value is within the Environment Act (applies in England only by amending the Town & Country Planning Act (TCPA) and to Nationally Significant Infrastructure Projects (NSIPs) consented under the Planning Act 2008 with a lead in period for each), a value of 20% is likely to be needed in order to meet the Natural Cambridgeshire target of doubling the amount of land managed for nature from 8%

to 16% of the county's area. It also advises that local plans should instruct a higher level of BNG than mandated by national legislation.

1.6.6 The policy paper for sustainable growth in the Oxford-Cambridge Arc (Ministry of Housing, Community & Local Government, 2021) (a strategic area which includes five counties including Cambridgeshire) sets out a goal for developments to achieve lasting improvements to biodiversity and to achieve BNG but does not set out a specific BNG target for developments in the arc area.

1.6.7 The Scheme Order Limits for the Proposed Development lies within or closely adjacent to land identified as a 'Biodiversity and Geodiversity Broad Opportunity Area' in South Cambridgeshire District Council and Cambridge City Council's (CCC) Greater Cambridges Green Infrastructure Opportunity Mapping document (SCDC & CCC, 2020). Areas within the Scheme Order Limits, for example around the River Cam, also lie within a 'Water Environment Broad Opportunity Area' identified in the Opportunity Mapping document. This document identifies areas with the potential to support multifunctional green infrastructure for a range of purposes including delivering BNG. The Cambridge Nature Network similarly identifies opportunity areas for biodiversity within 10km of the centre of Cambridge (Wildlife Trust for Bedfordshire, Cambridgeshire & Northamptonshire, 2021), most of the Scheme Order Limits lie within the Wicken Fen Vision South Priority Area or the River Cam Corridor Priority Area. These priority areas are targeted for habitat creation and management, with BNG identified as a potential way to enable this.

Guidance

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

- Biodiversity Metric 3.0 User Guide (Panks et al, 2021) and Technical Supplement (Panks et al, 2021) (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 (CIEEM, CIRIA, IEMA , 2016). 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 (British Standards Institute, 2021).
- CIEEM Biodiversity Net Gain Report & Audit Templates document (CIEEM, 2021).

2 Methods

2.1.1 The pre-development (baseline) and post-development (proposed) value of the habitats within the Scheme Order Limits has been calculated using Natural England's Biodiversity Metric 3.0 calculator tool (Natural England, 2021). The methodology for determining habitat distinctiveness and condition values follows the guidelines set out by the User Guide (Panks et al, 2021) and Technical Supplement for Biodiversity Metric 3.0 (Panks et al, 2021). Although Biodiversity Metric 3.1 was published on 21 April 2022 (and Biodiversity Metric 4.0, April 2023), the Natural England webpage (Natural England, 2022) for Biodiversity Metric 4.0 states that users of previous versions of the Biodiversity Metric should continue to use the same metric for the duration of the project. Biodiversity Metric 3.0 will therefore continue to be used for the project duration.

2.2 Data sources

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

Boundary

2.2.2 The boundary used for the BNG assessment is the DCO Scheme Order Limits shown in Figure 1.1. The Scheme Order Limits contain an area of 208.89 ha.

Pre-development (baseline) habitats

2.2.3 In order to generate the site baseline habitat data (e.g., habitat type, condition) the following survey data were used:

- Phase 1 habitat surveys completed in 2020 and 2021 covering the Scheme Order Limits (outlined in ES Chapter 8: Biodiversity, Document Ref 5.2.8).
- Phase 2 national vegetation classification (NVC) surveys of specific habitats, including semi-natural woodland, floodplain grazing marsh and other grassland habitats around the River Cam completed in 2021 (Appendix 8.10, App Doc Ref 5.4.8.10).
- Modular river survey (MoRPh) of the river habitats completed 2021 (Aquatic Technical Appendix (Appendices 8.1, App Doc Ref 5.4.8.1).
- Ditch condition assessments completed in 2020 and 2021 (Aquatic Technical Appendices 8.1, App Doc Ref 5.4.8.1).

2.2.4 A map of baseline habitat types is displayed in Figure A.1, Appendix A.

2.2.5 Full details of the baseline ecology surveys undertaken are provided in the following baseline survey reports, which are technical appendices of ES Chapter 8: Biodiversity:

- Aquatic Technical Appendices (App Doc Ref 5.4.8.1)
- Appendix 8.7: Bats Baseline Technical Appendix (App Doc Ref 5.4.8.7)
- Appendix 8.8: Confidential Badger Baseline Technical Appendix (App Doc Ref 5.4.8.8)
- Appendix 8.4: Ornithology Technical Baseline Appendix (App Doc Ref 5.4.8.4)
- Appendix 8.11: Great Crested Newts Baseline Technical Appendix (App Doc Ref 5.4.8.11)
- Appendix 8.2: Hedgerow Baseline Technical Appendix (App Doc Ref 5.4.8.2)
- Appendix 8.6: Terrestrial Invertebrates Baseline Technical Appendix (App Doc Ref 5.4.8.6)
- Appendix 8.10 : National Vegetation Classification Baseline Technical Appendix (App Doc Ref 5.4.8.10)
- Appendix 8.9: Otter Baseline Technical Appendix (App Doc Ref 5.4.8.9)
- Appendix 8.3 : Water vole Baseline Technical Appendix (App Doc Ref 5.4.8.3)

Post-development habitats

- 2.2.6 Post-development habitat types, distinctiveness scores and condition scores have been based on the landscape masterplan design (Appendix B). The extent of newly created ditches is based on the length that will be created for mitigation under the water vole licence. The extents of new ditches to be created, including the ditch required for water vole mitigation, are shown in Appendix C.
- 2.2.7 Temporary habitat loss will occur during construction (for example because of land temporarily required for haul routes, access roads, compounds, spoil heaps, shafts as well as open cut areas for pipeline installation), the extent of these areas in the calculations is based on a Works Plans (App Doc Ref 4.3) and Land Information Plan (App Doc Ref 4.4). These habitats are planned to be reinstated post works, and the target habitat type, distinctiveness and condition scores of the recreated habitats will match those of habitats currently present. The condition of post-development habitats in the LERMP area has been assigned as 'moderate' which is considered likeliest given the proposed management, it is possible that these could achieve 'good' condition but as this is highly uncertain a precautionary approach has been taken.

2.1 Competency statement

- 2.1.0 The metric calculations were undertaken by an experienced botanist and BNG practitioner with experience completing BNG calculations for several large development projects (using both Biodiversity Metric 2.0 and 3.0), defined as a competent person under British Standard BS 8683:2021, the technical standard for designing and implementing BNG.

2.1.1 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
OG	7	Principal Botanist/ BNG Specialist	MCIEEM, MSc, BSc	BNG lead on several large-scale developments in different sectors (water, highways, mineral extraction, residential) undertaking calculations using Biodiversity Metric 2.0, 3.0, 3.1.
PH	10	Senior Ecologist/ BNG Specialist	MCIEEM, BSc	BNG lead on several large-scale developments (flood alleviation schemes, mixed-used developments, utilities and infrastructure projects), undertaking calculations using Biodiversity Metric 2.0, 3.0, 3.1. BNG Co-Trainer for CIEEM.
TC	15	Senior Associate Ecologist	BSc (Hons), MSc, CECol, MCIEEM	Chartered ecologist. Ecology lead on large scale infrastructure projects including experience as author of environmental statements, detailed design ecology lead, and construction phase ecology lead. Experienced in a range of metrics and fed into Natural England's 2022 stakeholder engagement workshops for the preparation of a Habitat Management and Monitoring Plan Template (HMMPT) for BNG. Led training courses for CIEEM on habitat design to support BNG proposals.

2.2 Limitations and assumptions

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

- Post-development target habitat condition scores are indicative and are dependent on the appropriate management and maintenance of the post-development habitats in accordance with the LERMP (Appendix 8.14, App Doc Ref 5.4.8.14). Effective implementation of this LERMP will ensure the created habitats achieve their target condition and retained habitats maintain



their condition for the duration of the BNG requirement. The target condition scores are based on a reasonable worst-case scenario where the LERMP is correctly implemented but site conditions do not prove conducive to the habitats achieving good condition.

- The BNG metric accounts for the fact there are 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 3.0 have been avoided.
- Baseline habitat surveys were undertaken in 2020 and 2021, this data is considered still to be valid as protected species completed throughout the site in 2021 and 2022 have not identified any habitat changes in this time.
- A precautionary approach has been taken to assigning distinctiveness and condition for baseline habitats where condition was not assessed as part of the Phase 1 Habitat survey and where no 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. This mostly related to small areas of scrub and woodland where assigning precautionary habitat condition scores had minimal impact on overall net gain.
- According to UKHab a ditch is described as an artificial standing-water linear feature less than 5m wide that is at least 20 times longer than its width and likely to contain water for at least four months of the year. Therefore, ditches that are dry (for at least nine months of the year) and adjacent to a hedgerow are covered under the hedgerow biodiversity units (e.g. a linear feature). Dry ditches that are not adjacent to a hedgerow have not been included in the metric calculations, instead the adjacent habitat has been mapped up to the central line of the ditch.

Land temporarily required

2.2.2 It is assumed, unless otherwise stated, that land temporarily required for the construction of the Proposed Development will be reinstated once construction is complete. The following durations for temporary loss have been assumed in this assessment (Table 2-2).

Table 2-2: Maximum design scenario – land temporarily required

Component	Maximum design scenario of Proposed Development
Waterbeach pipeline	Land required for the construction of the pipeline will be required for up to 12 months
	Land required for the Waterbeach compounds will be up to 3.67ha and be required for up to 12 months





**Component Maximum design scenario
 of Proposed
 Development**

	<p>The entire length will be open cut construction with the exceptions of crossings for the River Cam, the railway, the A14 and Horningsea Road</p> <p>The construction width will be up to 30m, the entire width is assumed to be temporarily lost</p> <p>Crossings of ditches and hedgerows will be by open cut and limited to 6m width and reinstated once construction has been completed</p> <p>There will be up to 16 above ground air valve structures the footprint of which will be minimal and is not considered in the assessment</p>
Transfer tunnel	<p>Land required for the construction of the transfer will be required for up to 24 months</p> <p>The footprint of the shaft 3, 4, and 5 sites will be up to 3.47ha.</p>
Treated effluent pipelines	<p>Land required for the construction of the pipeline will be required for up to 12 months</p> <p>The entire length will be by open cut construction with the exceptions of crossings for Horningsea Road</p> <p>The construction width will be up to 50m, the entire width is assumed to be temporarily lost</p> <p>Crossings of ditches and hedgerows will be by open cut and limited to 6m width and reinstated once construction has been completed</p> <p>The crossing of the ditch parallel to the River Cam will require a temporary loss of a 25m section of the ditch during the construction of the outfall</p> <p>Works to the ditch will be subject to a water vole Conservation Licence from Natural England and will require the creation of new habitat in advance of the proposed works.</p>

Land permanently required

2.2.3 The following permanent loss is predicted as per the current design information, and has been included in the BNG assessment (Table 2-3).

Table 2-3: Maximum design scenario – land permanently required

Component of Proposed Development	Maximum design scenario
Landscape masterplan	<p>The landscape masterplan will be applied to up to 96.87ha and broadly comprises:</p> <ul style="list-style-type: none"> • 36ha grassland • 24.5ha woodland • 9.7ha scrub/thicket • 27ha hard infrastructure • 5.5km hedgerow <p>Implementation will be in accordance with the LERMP (Appendix 8.14, App Doc Ref 5.4.8.14)</p>

(Proposed WWTP and permanent access road)	22ha of land required for the Proposed WWTP will be permanently lost (converted to hard standing)
	<p>Up to 3ha of land required for the permanent access will be converted to hard standing.</p> <p>The creation of the earth bank will increase the surface area of the land within the landscape masterplan. The BNG assessment has not factored this in.</p> <p>The roof of the gateway building will include solar panels and a green roof. The green roof is not factored into the calculations as its exact extent is not known.</p>
Outfall and riverbank protection works	<p>Land required for the construction outfall is up to 0.5km² (permanent land take)</p> <p>The length of the river bed requiring bed protection to prevent scour is approximately 40m in total length (with an area of 150m²)</p> <p>The length of the river bank requiring river bank protection works (sheet piling) is 70m in total as a worst case</p> <p>The creation of new habitat in advance of the proposed works to the ditch and River Cam will be monitored in accordance with the conditions of the water vole Conservation Licence, this is expected to be up to five years.</p> <p>Although the river bank design intends to re-establish riparian vegetation, the natural river bank is assumed to be lost for the entirety of the bank section subject to protection works</p>

Component of Proposed Development **Maximum design scenario**

Landscape management and monitoring will be for 30 years in accordance with DCO requirements to implement the LERMP

2.3 Assessment steps

Baseline (pre-development)

Calculation of baseline habitat biodiversity units

2.3.1 The following steps were taken for the calculation of the baseline habitat biodiversity units:

- The conversion tool in the Biodiversity Metric 3.0 was used to inform translation of the baseline Phase 1 habitat survey and National Vegetation Classification (NVC) habitat data 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 2-4 below outlines how habitats were converted between the two classification systems.

Table 2-4: Conversion between habitat classifications

<u>Habitat Type (Phase 1)</u>	<u>Habitat Type (Biodiversity Metric)</u>
3.0) Area Habitats	
A1.1.1 - Broadleaved woodland - semi-woodland natural	Lowland mixed deciduous
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
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	Other neutral 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
J1.4 - Introduced shrub	Introduced shrub
J3.6 – Buildings	Developed land; sealed surface
J4 - Bare ground	Vacant/derelict land/bareground
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
A3.2 - Coniferous parkland/scattered trees	Line of Trees
J2.1.1 - Intact hedge - native species-rich	Native Species Rich Hedgerow
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
J2.3.1 - Hedge with trees - native species-rich	Native Species Rich Hedgerow with trees - Associated with bank or ditch
J2.3.2 - Hedge with trees - species-poor	Native Hedgerow with trees
River Habitats	
G1 - Standing water	Ditches
G2 - Running water	Ditches/Other Rivers and Streams (dependent on whether drainage feature or not)

- The extent of area-based and linear habitats was 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; and
 - linear rivers and ditches.
- Distinctiveness and condition scores were assigned to habitats based on the results of the Phase 1 and NVC habitat surveys and guidance in the Biodiversity Metric 3.0 User Guide and Technical Supplement (including the Condition Assessment Sheets (Panks et al, 2021) 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 preassigned in Biodiversity Metric 3.0 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 passed/failed within the Biodiversity Metric 3.0 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” (Panks, et al., Biodiversity metric 3.0: Auditing and accounting for biodiversity - Technical Supplement, 2021). The habitat condition assessment applies to variation in quality within each habitat type, rather than between habitat types. As detailed in Section 2.2 Limitations and Assumptions, 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 NVC surveys were undertaken. In these cases, the baseline condition was precautionarily assessed as good.
 - Strategic significance: all baseline habitats (i.e. all area habitats, hedgerows, ditches, rivers) were assessed as having high strategic significance due to occurring in or having habitat connections to a ‘Biodiversity and Geodiversity Broad Opportunity Area’ in South Cambridgeshire District Council and Cambridge City Council’s Green Infrastructure Opportunity mapping document (SCDC & CCC, 2020). 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. All greenspace within Cambridge is defined as strategically important within this document

which is why all habitats of more than 'very low' distinctiveness have been assessed as strategically significant.

- River habitats are assigned either high or low strategic significance in Biodiversity Metric 3.0 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
- The river habitats present in the Scheme Order Limits were assigned as high significance as they fall within a 'Biodiversity and Geodiversity Broad

Opportunity Area' in South Cambridgeshire District Council and Cambridge City Council's Green Infrastructure Opportunity mapping document.

Biodiversity Unit Modifiers

- 2.3.2 Biodiversity Metric 3.0 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.**
- 2.3.3 In the Biodiversity Metric 3.0, the riparian zone is defined as a 10m zone from the top of a riverbank. In accordance with Biodiversity Metric 3.0, a riparian zone is the interface between land and a watercourse.**
- 2.3.4 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 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 3.0 User Guide. The riparian zone is defined as a 10m zone from the top of the riverbank, this was determined using a 10m buffer in ArcMap. The bands reflect how far the development has encroached toward the river channel (distance) or how much of the 10m riparian zone (by % area) is covered by the development footprint. Pre-development riparian encroachment was based on the baseline habitat mapping and post development riparian encroachment was based on the post-development landscape masterplan. To account for an increase in riparian encroachment, the affected length of the associated watercourse has been marked as 'enhanced' and the encroachment level adjusted accordingly (from moderate to major encroachment). This results in a decrease in watercourse units that is considered more representative of the change than marking the watercourse as lost and created.**
- 2.3.5 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 3.0

User Guide (Panks et al, 2021). 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. Pre-development watercourse encroachment was based on the baseline habitat mapping and post development watercourse encroachment was based on the post-development landscape masterplan.

Use of GIS in calculation

- 2.3.6 Esri ArcGIS Pro was used to prepare the baseline survey data for entry into the Biodiversity Metric 3.0 Calculation Tool (Natural England, 2022). For each individual habitat parcel identified within the Scheme Order Limits, the attributes identified included the specific habitat type and its area (ha), or length (km) for linear habitats, the outcome of the habitat condition assessments and river unit modifiers, and comments such as which part of the Proposed Development the habitat parcel related to and an attribute for whether the habitat would be lost, temporarily impacted or retained post development. Habitats were mapped onsite using Esri ArcGIS Collector and edited by a GIS consultant to ensure there were no overlapping polygons. The River Cam and some ditches were mapped as both polygons and lines. Where linear watercourses (covered under the watercourse biodiversity units) are also mapped as polygons, the associated area has been assigned 'Urban - Developed land; sealed surface' to account for the area and avoid gaps in the mapping whilst not generating additional area habitat units. Other linear features (ditches, hedges) have been mapped purely as lines; adjacent polygon
- 2.3.7 GIS output was checked against baseline data collection before the data was added into the calculation tool for area-based, linear and river habitats. Each habitat type and condition combination was added as a separate row in the 3.0 Metric calculation tool.
- 2.3.8 The calculation tool produced a baseline biodiversity unit value for each habitat type and condition combination as well as for Scheme Order Limits as a whole.

Calculation of the post-development habitat biodiversity units

- 2.3.9 Quantification of post-development habitat biodiversity units was undertaken using habitat data derived from the post-development landscape masterplan and on extents of temporary habitat loss as part of the proposed works as shown in the works plans (App Doc Ref 4.3). Post development habitats were assigned metric habitat types based on their planting mix and proposed management. The planned time intervals between habitat clearance and creation were also included in the metric where there will be a gap between these.
- 2.3.10 Post-development target habitat condition has also been informed by the LERMP produced for the development which outlines long-term maintenance measures for habitats on the site. Precautionary post-development habitat condition scores have been assigned based on likely outcomes of management as set out in the LERMP (generally with a target of 'Moderate' condition for newly created habitats, and for

reinstated habitats to be restored to their prior condition, which is considered feasible as none of the affected habitats has a high difficulty of creation). Some reinstated habitats will 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.

- 2.3.11 All post-development habitats were assessed as having high strategic significance due to occurring in a 'Biodiversity and Geodiversity Broad Opportunity Area' in South Cambridgeshire District Council and Cambridge City Council's Green Infrastructure Opportunity mapping document (SCDC & CCC, 2020). This follows the approach taken for the baseline habitats and aligns 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. All greenspace within Cambridge is defined as strategically important within the opportunity mapping document which is why all habitats of more than 'very low' distinctiveness have been assessed as strategically significant.
- 2.3.12 Biodiversity Metric 3.0 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 will 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, reinstated habitats were treated as retained if the interval between clearance and habitats reaching target condition was less than two years and treated as created habitats if not.
- 2.3.13 When developing the landscape plan and assigning target BNG habitat types to the habitats shown in the landscape masterplan, the feasibility of creating different habitats was based on the semi-natural habitats that are currently present within the Scheme Order Limits. For example, 'other neutral grassland' has been selected as a target habitat type for meadow grassland rather than 'lowland calcareous grassland' as the latter is a less realistic target habitat. The Proposed Development will not result in the loss of any lowland calcareous grassland, so it is not a requirement to create this habitat type as compensation. It is a more realistic aim to create 'other neutral grassland' as this is how the semi-natural grassland already present in the area of land required for the Proposed Development is classified (including along the disused railway line), despite some plant species indicative of calcareous conditions (calcoles) being present.
- 2.3.14 The post-development GIS layer was formatted similarly to the pre-development habitat layer but included an additional attribute for each habitat polygon and line which labelled them as being:
- retained;

- newly created; or
 - reinstated after temporary loss. In the case of reinstated habitats these also had an attribute for the time taken (in years) between habitat loss and reinstatement.
- 2.3.15 The post-development linear features have been mapped in the same way as the baseline linear features, with rivers mapped as both polygons and lines, while hedges and ditches have been mapped purely as lines, adjacent polygon features have been mapped as extending to these lines.
- 2.3.16 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 Scheme Order Limits as a whole.
- 2.3.17 Once the calculation had been completed, the outputs were reviewed to understand the losses and gains for each habitat type and understand whether the development complies with the Biodiversity Metric 3.0 trading rules (no trading down in habitat value).
- 2.3.18 The User Guide for Biodiversity Metric 3.0 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 will flag an error and the % gain shown will not be considered valid due to breaking this rule.

3 Baseline Context

3.1.1 This section provides an overview of the baseline of the area of land required for the Proposed Development.

3.2 Important ecological features

3.2.1 The majority of land included within the landscape masterplan has been assessed as being of low ecological value. However, there are three non-statutory designated sites for nature conservation within the Scheme Order Limits, including:

- Milton Road Hedgerows City Wildlife Site (CityWS).
- Low Fen Drove Way Grasslands and Hedges County Wildlife Site (CWS).
- River Cam CWS.

3.2.2 The design of the landscape masterplan has sought to protect these features and in the case of the Low Fen Drove Way Grasslands and Hedges CWS to create similar habitats in close proximity so there is ecological connectivity between existing a newly created habitats and increased buffers between the CWS and intensive agricultural land.

3.2.3 Other habitats of ecological value include:

- High distinctiveness Habitat of Principal Importance (HPI) marginal reedbed habitats around the River Cam
- High distinctiveness HPI floodplain grazing marsh.
- High distinctiveness HPI lowland deciduous woodland
- Ditches
- Hedgerows

3.2.4 The scheme has sought to protect these features including avoiding direct impacts on floodplain grazing marsh and lowland deciduous woodland habitats, in the former case by using Horizontal Directional Drilling (HDD) for pipeline installation to avoid the need to dig trenches in the grazing marsh.

3.2.5 Most of the baseline area is arable land with only scattered higher value habitats. Extensive areas of hard stranding are also present, constituting roads and paths including but not limited to sections of the A14, sections of Horningsea Road, sections of small roads and areas within the existing Cambridge WWTP.

3.2.6 The baseline habitat map (based on Phase 1 habitat descriptions) is provided in Figure A.1, Appendix A.

4 BNG Good Practice Principles

- 4.1.1 This delivery of BNG for the Proposed Development has been undertaken in line with the BNG Good Practice Principles for Development (CIEEM, CIRIA, IEMA , 2016), 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 Proposed Development.
- 4.1.3 Table 4-2 provides a record of BNG solutions agreed through Biodiversity Technical Working Group (TWG).

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

Principle	Description	Application on the project
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.	<ul style="list-style-type: none"><li data-bbox="1077 419 1984 600">• The Proposed Development will result in limited loss of high distinctiveness habitats, especially considering the relatively large area covered by the Scheme Order Limits. The losses of high distinctiveness habitat that will occur will be from the construction of the new outfall to the River Cam.<li data-bbox="1077 608 1984 831">• The new outfall on the River Cam avoids impacts on the river habitats as much as possible (it is sited in a location where there is existing encroachment from hard structures and the extent of hard structure has been minimised as much as possible). Alternative locations would have similar or greater impacts on habitats.<li data-bbox="1077 839 1984 999">• The most significant potential impacts on high distinctiveness habitats resulting from the Proposed Development will be avoided by HDD under the high distinctiveness HPI Floodplain Grazing Marsh.<li data-bbox="1077 1007 1984 1270">• During construction there will be a requirement for the Waterbeach pipeline to cross the River Cam in two locations. To avoid direct impact on the River Cam in these locations, the works will be undertaken by directional drilling and require temporary launch and recovery sites either side of the river. The closest pits for the launch and recovery of equipment are approximately 60m from the River Cam.<li data-bbox="1077 1278 1984 1428">• Avoidance of impacts on high distinctiveness habitats has been considered in consultation with the CWWTRP Biodiversity Technical Working Group (TWG), representing major environmental stakeholders in the Cambridge area.



Principle	Description	Application on the project
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.	The Proposed Development will result in no loss of irreplaceable habitats, e.g., those categorised as ‘very high’ distinctiveness in Biodiversity Metric 3.0 or defined as irreplaceable habitats in the NPPF.
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.	The Biodiversity TWG have been involved throughout the BNG assessment process and have helped to shape the Proposed Development’s BNG strategy (see Table 4-2 for examples).

Address risk

Mitigate difficulty, uncertainty and other risks to 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.

The difficulty of creating different habitat types 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 3.0 calculator and is reflected in the final BNG scores. In accordance with the CIEEM BNG Report & Audit Templates document (CIEEM, 2021) 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 proposed 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 natural





Principle	Description	Application on the project
<p>Make a measurable net gain contribution</p>	<p>Achieve a measurable, overall gain for biodiversity and the services ecosystems provide while directly contributing towards nature conservation priorities.</p>	<p>grassland types in the local area, e.g., 'other neutral grassland' has been targeted for created meadow grassland rather than 'lowland calcareous grassland' as this is more realistic.</p> <p>The development will achieve a measurable net gain of over 20% in area and hedgerow biodiversity units as measured by the Biodiversity Metric 3.0 calculator (as demonstrated in Section 4 of this report). The development will also commit to achieving a 20% gain in river biodiversity units as measured by the Biodiversity Metric 3.0 calculator (see Appendix D). Created habitats such as woodland and grassland will provide ecosystem services including carbon sequestration and recreational benefits.</p> <p>The development has taken a multifunctional approach to deliver landscape enhancement, visual screening and recreational opportunities alongside BNG. Further details are provided in the LERMP (App Doc Ref 5.8.12.14).</p> <p>The development contributes to nature conservation priorities through grassland creation in the Wicken Fen Vision area and also exceeds the requirements of national BNG policy by targeting a 20% gain rather than 10%.</p>

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.

- The habitat creation as part of the Proposed Development has been targeted to avoid a trading down in habitat value (a replacement of higher with lower value habitats). When the outline river units net gain strategy (App Doc Ref 5.8.13d) has been implemented, all created habitats will have the same or higher distinctiveness and condition than those lost and will be equivalent in type.
- Except for river unit's habitat creation will be achieved within the Scheme Order Limits where possible, for all types of BNG unit. Some existing high distinctiveness river units will need to



Principle	Description	Application on the project
	<ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 	<p>be compensated for offsite. Due to the highly constrained nature of the River Cam, there are limited opportunities for onsite river unit gain.</p> <ul style="list-style-type: none"> • The development contributes to local nature conservation policies such as grassland creation in the Wicken Fen Vision area and exceeds the requirements of national BNG policy by targeting a 20% rather than a 10% gain. • Species of Principal Importance (SPI) are also defined as local priority species by the Greater Cambridge Biodiversity Supplementary Planning Document (Greater Cambridge Shared Planning, 2022). Several of these species will benefit from habitat creation as part of the Scheme including bats and water voles. Impacts on species are assessed in the ES Chapter 8: Biodiversity and associated appendices. <p style="margin-left: 40px;">The newly created habitats will improve habitat connectivity (the creation of ‘stepping stones’) between protected sites and in the Cambridge Nature Network Opportunity Areas (as detailed in the LERMP).</p>

Be additional

Achieve nature conservation outcomes that demonstrably exceed existing obligations (i.e., do not deliver something that would occur anyway).

The Proposed Development will achieve a measurable net gain of over 20% in area and hedgerow biodiversity units as measured by the Biodiversity Metric 3.0 calculator (as demonstrated in Section 4 of this report). The development will also commit to achieving a 20% gain in river biodiversity units as measured by the Biodiversity Metric 3.0 calculator (see Appendix D). These exceed the 10% gains mandated by the Environment Act 2021.

The development has followed the recommendations of the Defra Consultation on Biodiversity Net Gain Regulations and Implementation (Defra, 2022) in requiring at least 10% of the habitat unit, hedgerow unit or river unit gain to be derived from sources



<p>Create a net gain legacy</p>	<p>Ensure Net Gain generates long-term benefits by:</p> <ul style="list-style-type: none"> 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 	<p>The Biodiversity TWG has been involved throughout the BNG process and solutions agreed during this process are outlined in Table 4-2 below.</p> <p>Management of created habitats has been secured for the next 30 years through Schedule 2 of the DCO which includes a series of requirements which obligate The Applicant to implement the Landscape Masterplan and the Landscape Ecology and Recreational Management Plan (LERMP) (Appendix 8.14, App Doc Ref 5.4.8.14). The proposed created habitats have been designed to be high diversity and, therefore, more resilient to climate change and other external factors.</p> <p>The potential risks of other land uses (e.g., recreational disturbance) and mitigation to counter these risks is outlined in the LERMP (Appendix 8.14, App Doc Ref 5.4.8.14).</p>
<p>Principle</p>	<p>Description</p>	<p>Application on the project</p>
<p>Optimise sustainability</p>	<p>Prioritise Biodiversity Net Gain and, where possible, optimise the wider environmental benefits for a sustainable society and economy</p>	<p>other than protected species mitigation that would have occurred regardless of a net gain requirement (i.e., to be additional). The development has taken a multifunctional approach to deliver landscape enhancement, visual screening, recreational opportunities along with BNG, as outlined in the LERMP (Appendix 8.14, App Doc Ref 5.4.8.14).</p>
<p>Be transparent</p>	<p>Communicate all Net Gain activities in a transparent and timely manner, sharing</p>	<p>The Biodiversity TWG has been involved throughout the BNG process. They were presented interim results during the feasibility assessment</p>

the learning with all stakeholders.

and have inputted into the BNG process during the design stage (see Table 4-2).

Table 4-2: BNG solutions agreed through Biodiversity TWG

Feedback from during TWG meeting	Stakeholder	Date	Solutions implemented
The habitat created for BNG should be locally appropriate and provide a strategic link within the wider landscape.	Cambridgeshire County Council	7/10/2020	The created habitat is appropriate to local conditions and ensures ecological connectivity with neighbouring areas (described in more detail in the LERMP).
The target for created grassland should be calcareous loam grassland rather than strongly calcareous calculation. grassland.	Wildlife Trust	11/3/2021	This assumption is built into the assumptions of the BNG
The project should target a 20% rather than a 10% Biodiversity Net Gain.	GCP	11/3/2021	The project will achieve a >20% gain in all three habitat unit types.
For transparency the contents of the Biodiversity Metric 3.0 tool should be made available.	Cambridgeshire County Council	2/2/2022	Provided in this report (Appendix D).

5 BNG Metric

5.1 Value of baseline habitats

5.1.1 The baseline habitat values for the area of land within the Scheme Order Limits have been calculated using Biodiversity Metric 3.0 as having a baseline habitat value of:

- 493.46 habitat biodiversity units,
- 56.59 hedgerow biodiversity units and
- 12.13 river biodiversity units.

5.1.2 Summaries of the pre-development habitats including their area, distinctiveness, condition, strategic significance, action to address habitat losses, and their biodiversity unit value are provided in tables in the following appendices:

- Appendix E: Summary Pre-development Baseline Habitat Units.
- Appendix F: Summary Pre-development Baseline Hedgerow Units.
- Appendix G: Summary Pre-development Baseline River Units.

5.1.3 The tables in the appendices have been directly copied from the Biodiversity Metric 3.0 calculator tool.

5.1.4 A map of the pre-development baseline habitats is provided in Figure A.1, Appendix A. The majority of the area within the Scheme Order Limits is currently arable land, other habitats include a range of grassland types, some grazed and others unmanaged as well as plantation and semi-natural woodlands, scrub, hedges, ditches and sections of the River Cam.

5.1.5 Figure A.3, Appendix A shows the location of area habitats within the Scheme Order Limits recorded as high or medium distinctiveness. The high distinctiveness area habitats are: lowland mixed deciduous woodland, floodplain grazing marsh and reedbeds. The River Cam is a high distinctiveness river habitat and the 'native species rich hedgerows with trees - associated with bank or ditch' on disused railway are 'very high' distinctiveness hedgerow habitats.

5.1.6 If high distinctiveness habitats are removed during construction, they must be replaced with habitats of the same specific type worth at least the same number of biodiversity units or retained habitats of the same specific type must be enhanced to generate at least the same number of biodiversity units. There will a loss in units from two high distinctiveness habitats: the River Cam ('other rivers and streams') and reedbeds. The methods by which this loss will be compensated to avoid trading down is outlined in Appendix C.

5.1.7 Medium distinctiveness habitats removed during construction must be compensated with either the:

- Creation of habitats of the same general type (e.g., woodland, grassland) and distinctiveness worth at least the same number of biodiversity units.
- Creation of any habitat of higher distinctiveness worth at least the same number of biodiversity units.
- Enhancement of retained habitats of the same general type (or a habitat of higher distinctiveness) to generate at least the same number of biodiversity units.

5.2 Value of post-development habitats

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

- 698.08 habitat units,
- 68.20 hedgerow units; and
- 12.56 river units.

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

- 41.47% net gain in habitat units;
- 20.51% net gain in hedgerow units; and
- 3.49% net gain in river units.

5.2.3 Summaries of the post-development habitats including their area, distinctiveness, condition, strategic significance, temporal multiplier, difficulty of creation, and their biodiversity unit value are provided in tables in the following appendices:

- Appendix H: Summary Post-development Habitat Units.
- Appendix I: Summary Post-development Hedgerow Units.
- Appendix J: Summary Post-development River Units.

5.2.4 The tables in the appendices have been directly copied from the Biodiversity Metric 3.0 calculator tool.

5.2.5 A map of proposed post-development habitats is shown in Figure A.2, Appendix A and map of retained habitats is shown in Figure A.4, Appendix A. The retained habitats outside of the landscape masterplan area (but within the Scheme Order Limits which cover a wider area) will not be managed to produce an enhancement in BNG terms (i.e., an increase in condition score). Most of the retained habitats within the landscape masterplan area are hedges already in moderate condition, and it is not considered feasible to enhance these further.

5.3 Habitat trading

5.3.1 For high distinctiveness baseline (existing) habitat units proposed to be lost during construction these must be replaced with habitats that are of the same exact type

(e.g., priority habitat ponds, reedbeds) and medium value habitats 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).

5.3.2 In Biodiversity Metric 3.0 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.

5.3.3 The location of habitats assessed as having a high and medium distinctiveness within the Scheme Order Limits is shown in Figure A.3, Appendix A. Based on the current design the development will result in the trading down due to a small net unit loss of these habitat types, these are:

- Wetland – Reedbeds.
- Rivers - Other Rivers and Streams.
- Heathland and Shrub – Mixed Scrub.

5.3.4 The loss of river units and reedbed habitat units will occur at the proposed new outfall location on the River Cam as a result of increased riparian encroachment.

5.3.5 A summary of these habitats and the extent of units loss caused by trading down is provided in Table 5-1. These habitat trading issues will need to be resolved for the development to achieve an overall biodiversity net gain.

Table 5-1: Summary habitat loss resulting in trading down

Habitat Type	Distinctiveness	Uncompensated Required Habitat unit Loss	Habitat Compensation
Wetland - Reedbeds	High	1.06 Habitat units	Wetland – Reedbeds (approximately 0.16ha)
Other Rivers and Streams	High	0.04 River units	Other Rivers and Streams (must be the same watercourse (the River Cam))
Mixed scrub	Medium	3.58 Habitat units	Approximately 0.5ha of Scrub creation will be incorporated into the landscape masterplan during detailed design

5.3.6 Measures to avoid trading down and achieve an increased net gain in river units are outlined in Outline River Unit Gain Strategy (Appendix C). The Scheme will be committed to implementing this strategy and will therefore avoid any trading down in habitat value.

5.3.7 Measures to avoid or reduce impacts on habitats in line with the mitigation hierarchy have already been designed into the scheme, e.g., avoiding the Milton

Road Hedgerows CityWS, and the Low Fen Drove Way Grasslands and Hedges CWS. The purpose of this has been both to prevent direct impacts on habitats of importance and to also avoid impacts on protected species such as badgers, bats, reptiles, and birds. Proposed access roads and pipelines within the extent of the landscape masterplan have also been rerouted to avoid semi-natural woodland (a 'high distinctiveness' HPI).

6 Project Implementation

6.1 Securing biodiversity net gain within the DCO

6.1.1 Schedule 2 of the DCO includes a series of requirements which obligate The Applicant to implement design and management activities. Those relevant to achieving BNG are described below.

Landscape masterplan

6.1.2 The landscape design for the Proposed Development will be implemented in line with the Code of Construction Practice (CoCP): Part A General Requirements, Code of Construction Practice: Part B Site Specific Measures (Appendix 2.1 & 2.2, App Doc Ref 5.4.2.1 & 5.4.2.2 and the LERMP (Appendix 8.14, App Doc Ref 5.4.8.14).

6.1.3 The LERMP and landscape masterplan provide a range of post-development habitats within the LERMP area. This will include mostly newly created habitats but an existing ditch and hedgerow will also be incorporated into this area.

6.1.4 The LERMP and landscape masterplan will deliver multiple functions (delivering landscape mitigation and screening, formalising existing access to the land, supporting surface water drainage, replacing lost habitats (hedgerow), creating new higher value habitats, and providing benefits to protected animal and plant species).

6.1.5 The post-development habitats within the landscape masterplan will be managed in order to achieve the target habitat type and condition set out in the Biodiversity Metric 3.0 calculation completed for the Proposed Development. This will be achieved by a BNG management and monitoring plan implemented for a minimum of 30 years. Section 3 of the LERMP (Appendix 8.14, App Doc Ref 5.4.8.14) emphasises 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 also outlines the application of adaptive management principles.

6.1.6 A Biodiversity Net Gain Audit Survey and Report will be undertaken both at the end of construction and at the end of a 5-year aftercare period for new landscape planting and habitat creation. The purpose of this will be to review the delivery of the habitat creation and determine whether BNG has occurred.

6.1.7 Management will 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.

Compensatory habitat – water vole

6.1.8 Up to 84m of water vole habitat (wet ditch) will be created in relation to the construction of the outfall and direct impacts to ditch habitat and river habitat (River Cam).

6.1.9 This is outlined in Appendix C which sets out the strategy for river unit gain incorporating water vole habitat creation.

Mitigation measures during construction

6.1.10 During the construction phase, the CoCP Part A and B (Appendix 2.1, App Doc Ref 5.4.1.2) and associated management plans specify the range of measures to avoid and minimise impacts that may occur in construction.

6.1.11 Section 1 of the CoCP requires that the Principal Contractor(s) appointed by The Applicant produce a Construction Environmental Management Plan (CEMP) before works associated with each part of the Proposed Development commence. This will 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 diminishing the quality of retained habitats within the Scheme Order Limits.

6.1.12 It is requirement that the CoCP and associated plans (including monitoring) are implemented during construction.

6.1.13 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. Sections relevant to avoiding the loss of habitat or reinstating habitats are:

- Section 5.14 (Other Watercourses/Drainage Channels) required temporarily affected shallow ditches to be reinstated promptly once pipeline crossings have been completed. Deeper/larger ditches will be crossed using trenchless crossing techniques with negligible impact to water levels or flows in the ditch.
- Section 7.2 (Ecology and Nature Conservation) states that hedgerow removed for temporary works should, where possible, be retained and used for reinstatement purposes. In the case of the land required for the Proposed WWTP, the most species rich and to be removed should be translocated to elsewhere in the proposed development.
- Section 7.2 (Tree/Hedge removal) Reinstatement planting will be undertaken in the first available planting season following construction. Species mixes will match or improve on the existing hedgerow. Hedgerow planting will be of native species of British origin and appropriate for the local area. Any planting as part of the scheme which dies or becomes seriously damaged or diseased within five years after completion of construction will be replaced in the first available planting season with stock of the same species and size as that

originally planted unless otherwise agreed with the Local Planning Authority.
This will ensure that reinstated hedges reach the desired target condition.

6.1.14 The CoCP Part B contains a series of location specific measures relating to the safeguarding of habitats and wildlife. Annex 1 of the CoCP Part B details the approach to avoiding habitat loss and reinstating habitats. It includes limits to the crossing widths through the retained hedge and ditch within the LERMP area to 2 (Nos) 8m section in construction, reducing to 3m each once the LERMP and landscape masterplan are implemented.

Licenses and permits

6.1.15 Works to construct the treated effluent discharge outfall at the River Cam will be under a Natural England conservation licence in respect of water vole habitat at the River Cam and in the parallel ditch (see Appendix C).

6.1.16 The conservation licence permits intentional damage or destruction of water vole burrows, and/or disturbance to water voles occupying burrows, by use of the mitigation method known as 'displacement', prior to carrying out lawful development works.

6.1.17 For the purposes of the licence, 'displacement' means cutting vegetation back to bare earth, followed, where appropriate, by a destructive search of the burrows. The cutting of vegetation to bare earth must take place and be completed during the period 15 February to 15 April. Water draw-down/removal may be used in parallel with vegetation cutting, where appropriate.

6.1.18 This licence may only be relied upon where mitigation works include creation or enhancement of alternative compensatory habitat, such that there will be a demonstrable net conservation gain for water voles.

Net gain strategy – river units

6.1.19 A requirement within Schedule 2 of the DCO commits The Applicant to delivering a strategy to provide a minimum of 20% gain on river units (Appendix C). This will involve the creation of additional extents of ditch habitat within the Scheme Order Limits and creation of additional extents of river habitat through funding offsite habitat creation/ restoration initiatives (preferably within the local authority area). This will either be from a supplier of BNG credits or the habitat creation will be funded directly to generate the units.

6.1.20 Generating high distinctiveness river units within the Scheme Order Limits is not viable due to the constrained nature of the River Cam in this area.

7 Monitoring and Management

- 7.1.1 Biodiversity Metric 3.0 requires the consideration of long-term delivery of the measures to achieve net gain.
- 7.1.2 The LERMP (Appendix 8.14, App Doc Ref 5.4.8.14) forms the main mechanism for delivering net gain, the LERMP focuses on the delivery of long-term management and monitoring of created or enhanced habitats. This includes detailed management and maintenance information for years 1-5 (including frequency and timing of measures) with a commitment to review maintenance and management regimes every five years. This will be enforced by the DCO requirements.
- 7.1.3 For river units the mechanism for delivery is not yet confirmed, however a requirement within Schedule 2 of the DCO commits The Applicant to achieve 20% river unit BNG.
- 7.1.4 For habitat created as part of the water vole compensation, the Natural England conservation licence will place an ongoing obligation on The Applicant to monitor the habitat for a period of five years and to ensure that the habitat is suitable for its intended purpose. However, for BNG purposes this will need to be managed for a minimum of 30 years. This will be ensured in the same way as the river units from the River Cam as outlined above.
- 7.1.5 The Outfall Management and Monitoring Plans (OMMPs) will also provide a monitoring programme for habitats (ditches and reedbed) listed in the Outline River Units Net Gain Strategy (Appendix C). The OMMPs are detailed in the Outline Outfall Management and Monitoring Plan (App Doc Ref 5.4.8.24).
- 7.1.6 Table 7-1 summarises the various elements of the Proposed Development 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 Proposed Development

Secured by

Schedule 2 requirement to implement approved LERMP

Schedule 2 requirement to implement the CoCP

Schedule 2 requirement to implement the CoCP

Schedule 2 requirement to obtain the Conservation Licence and deliver habitat creation in accordance with the condition of the licence. Schedule 2 requirement that places an obligation on The Applicant to provide a gain of 20% for river units.

Schedule 2 requirement that places an obligation on The Applicant to provide a gain of 20% for river units.

Aspect of Proposed Development	Habitat types	Monitoring	Duration of monitoring
Habitat creation as part of Landscape Masterplan	Various (see LERMP)	As set out within the LERMP	30 years
Land temporarily required for construction of pipeline, transfer tunnel, treated effluent pipelines	Reinstated Reinstated ditch Various others	CoCP Part A Part B requirements	5 years
Land required for the river bank protection works	River Ditch Reedbed Grassland	CoCP Part A Part B requirements	5 years
Ditch creation for water vole habitat mitigation	Wet ditch	Conservation Licence specifications and Outfall Management Monitoring Plans	30 years for BNG (5 years for licence condition)
Measures specified in River Unit Net Gain (Appendix C)	Offsite river units	Through a monitoring prepared post consent as per commitment in Appendix C	Expected to be 30 years for created habitat

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Aspect of Proposed Development	Habitat types	Monitoring	Duration of monitoring
Measures specified in Outline River Unit Net Gain Strategy	Ditches Reedbed	Outfall Management and	Expected to be 30 years for



Secured by

Schedule 2 requirement that places an obligation on The Applicant to provide a gain of 20% for river units.

8 Glossary

8.1.1 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 3.0.

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 Development Consent Order (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 3.0. The criteria are habitat-specific, and are assessed as being either Good, Moderate, or Poor.
Distinctiveness	<p>In the Biodiversity Metric 3.0 habitats are assigned to distinctiveness bands based on the following criteria:</p> <ul style="list-style-type: none"> • 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. <p>Each habitat type is classified in the metric as being of Low, Medium, High or Very High distinctiveness.</p>
Post-development value	The post-development biodiversity value of the onsite habitat is the projected value of the onsite 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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Appendix A: BNG Figures

Figure A.1 Baseline Habitats

(Added graphics)

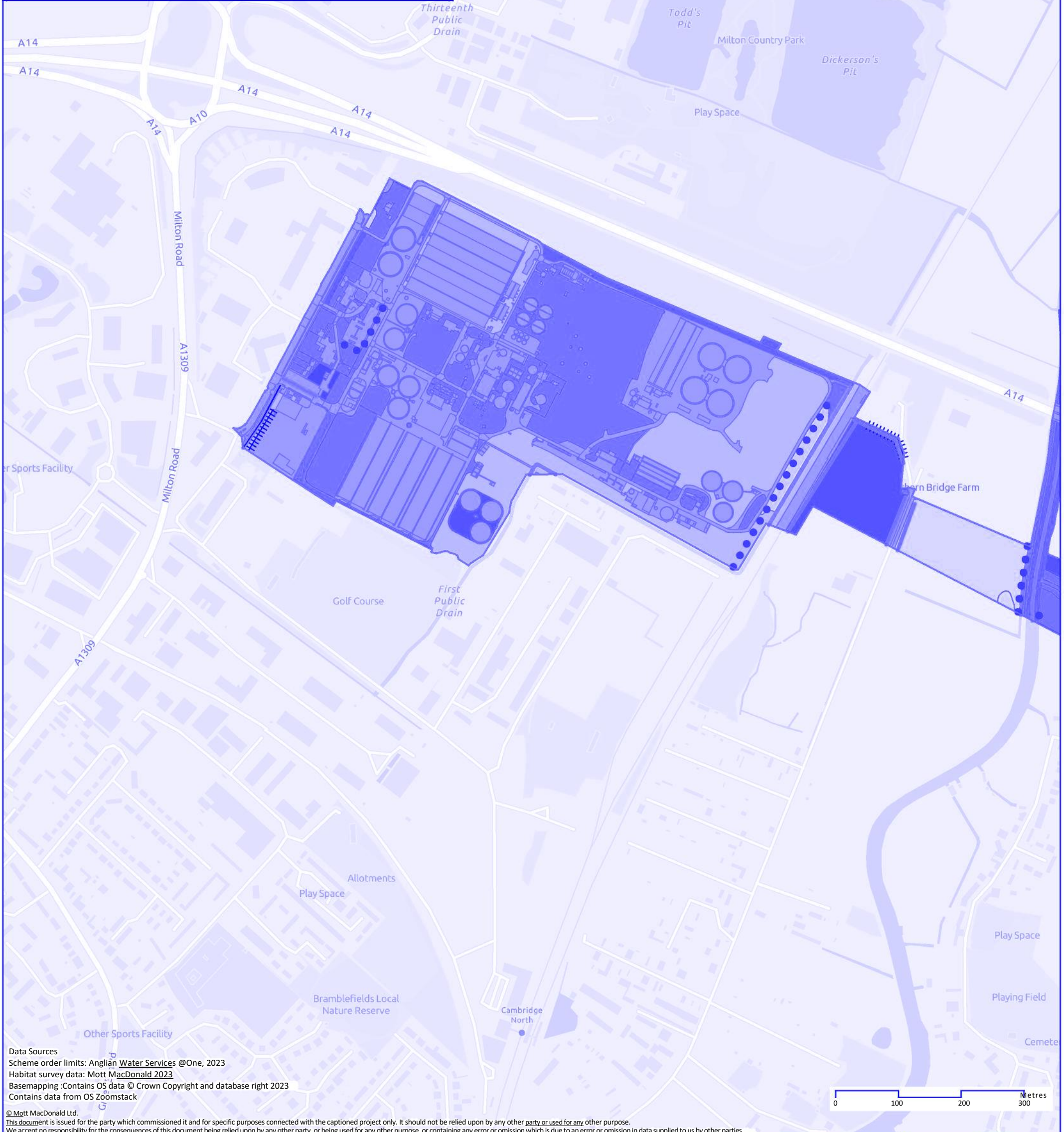
Scheme Order Limits

Broad Habitat Type

- Line of trees
- Native hedgerow
- Native hedgerow - associated with bank or ditch
- Ditch
- Other river and stream

Fence

- Ditches - watercourse footprint
- Developed land; sealed surface
- Floodplain Wetland Mosaic (CFGM)
- Introduced shrub

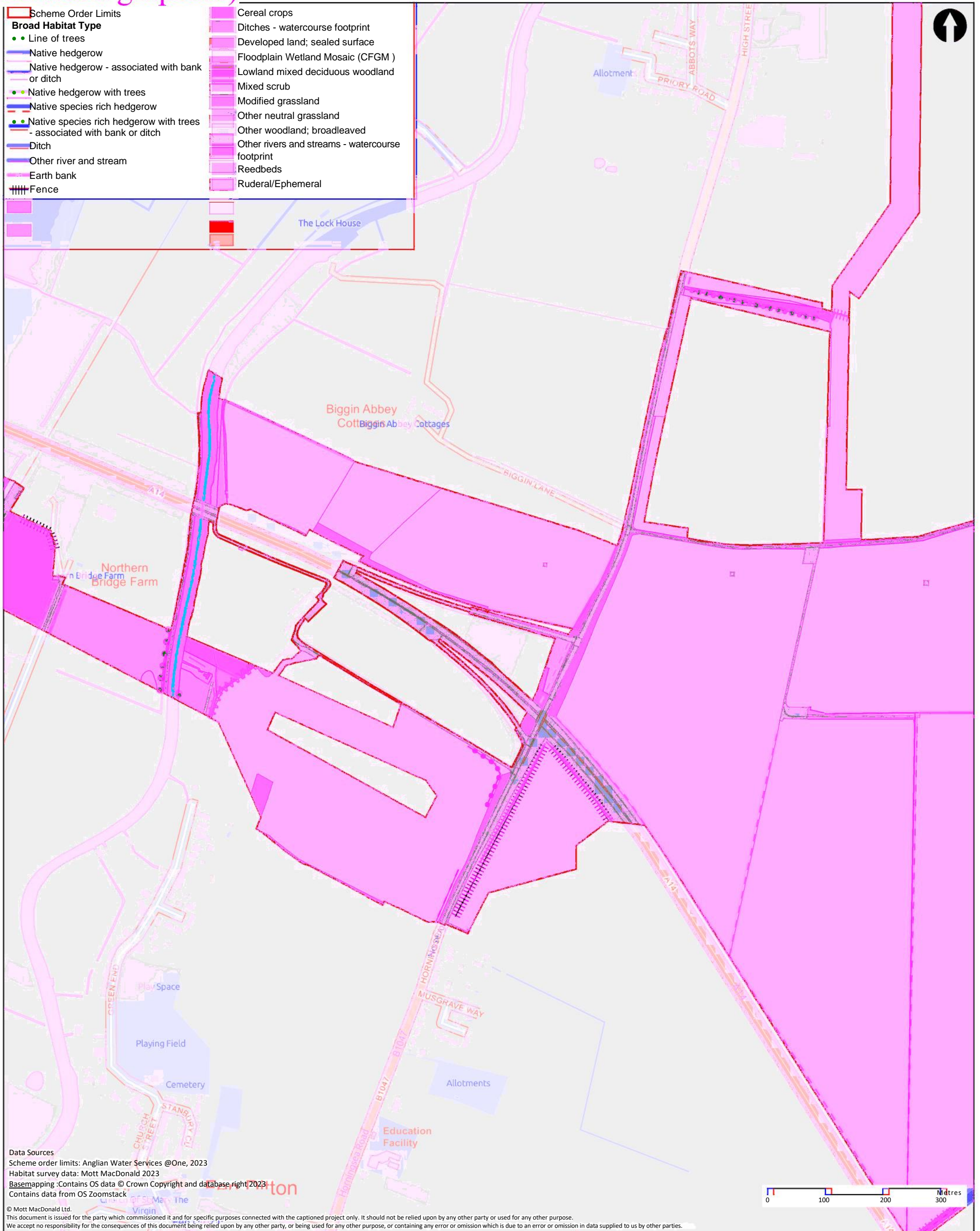


Data Sources
 Scheme order limits: Anglian Water Services @One, 2023
 Habitat survey data: Mott MacDonald 2023
 Basemapping: Contains OS data © Crown Copyright and database right 2023
 Contains data from OS Zoomstack

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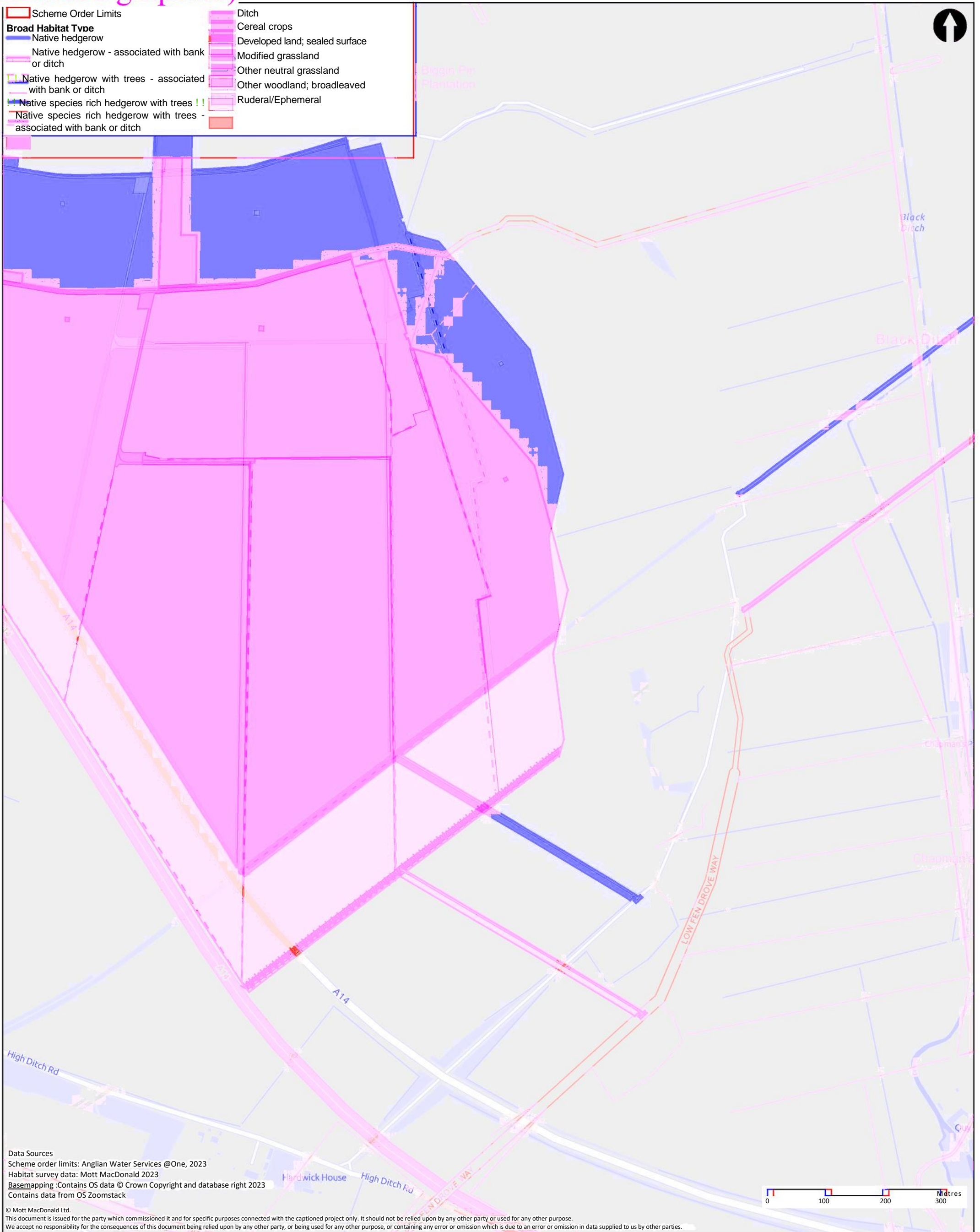
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







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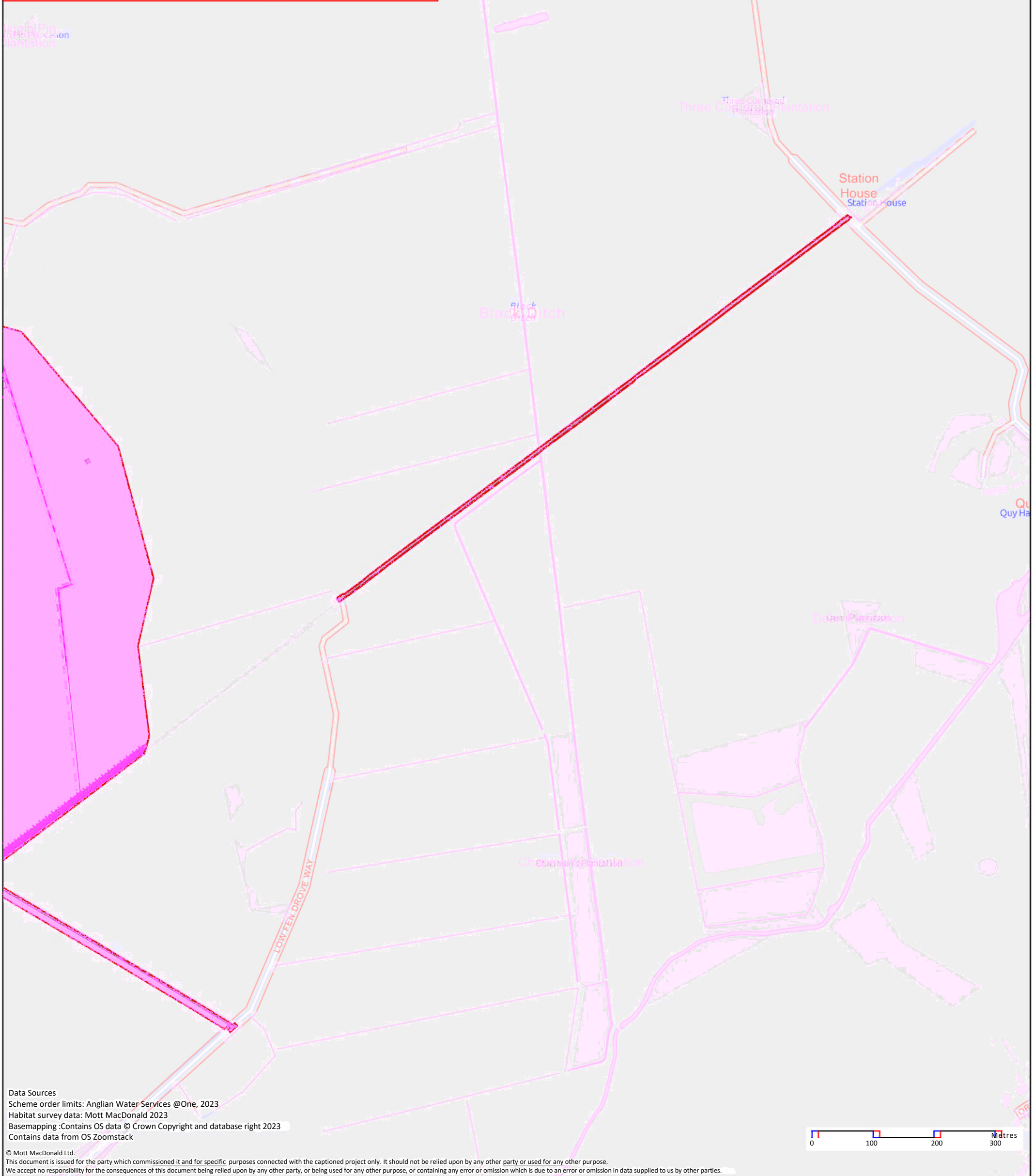
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(Modified graphics)

 Scheme Order	 Ditch
Broad Habitat Type	 Cereal crops
 Native hedgerow with trees - associated with bank or ditch	 Developed land; sealed surface
 Native species rich hedgerow with trees !!	 Modified grassland
 Native species rich hedgerow with trees - associated with bank or ditch	 Other neutral grassland
	 Other woodland; broadleaved



Data Sources
 Scheme order limits: Anglian Water Services @One, 2023
 Habitat survey data: Mott MacDonald 2023
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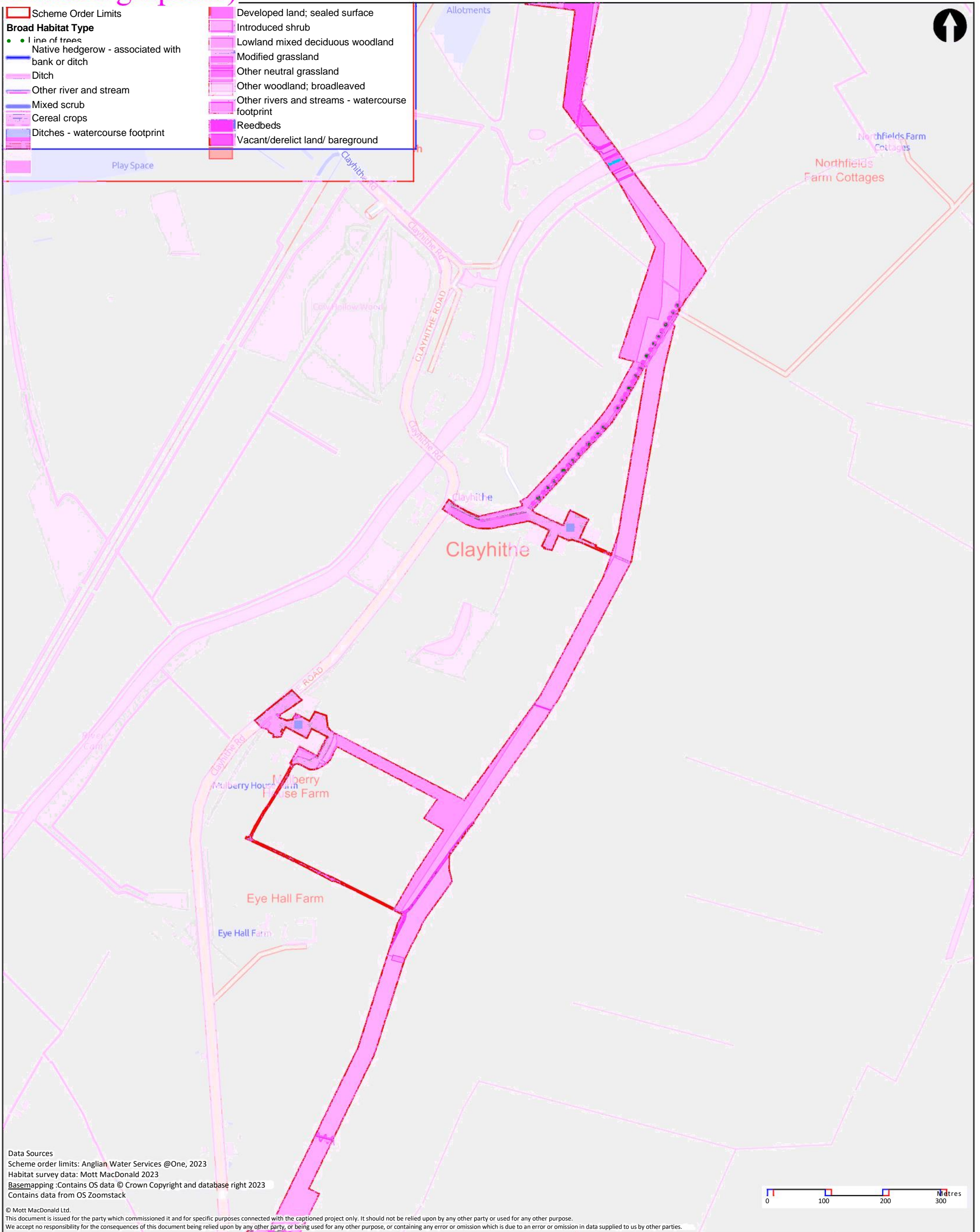
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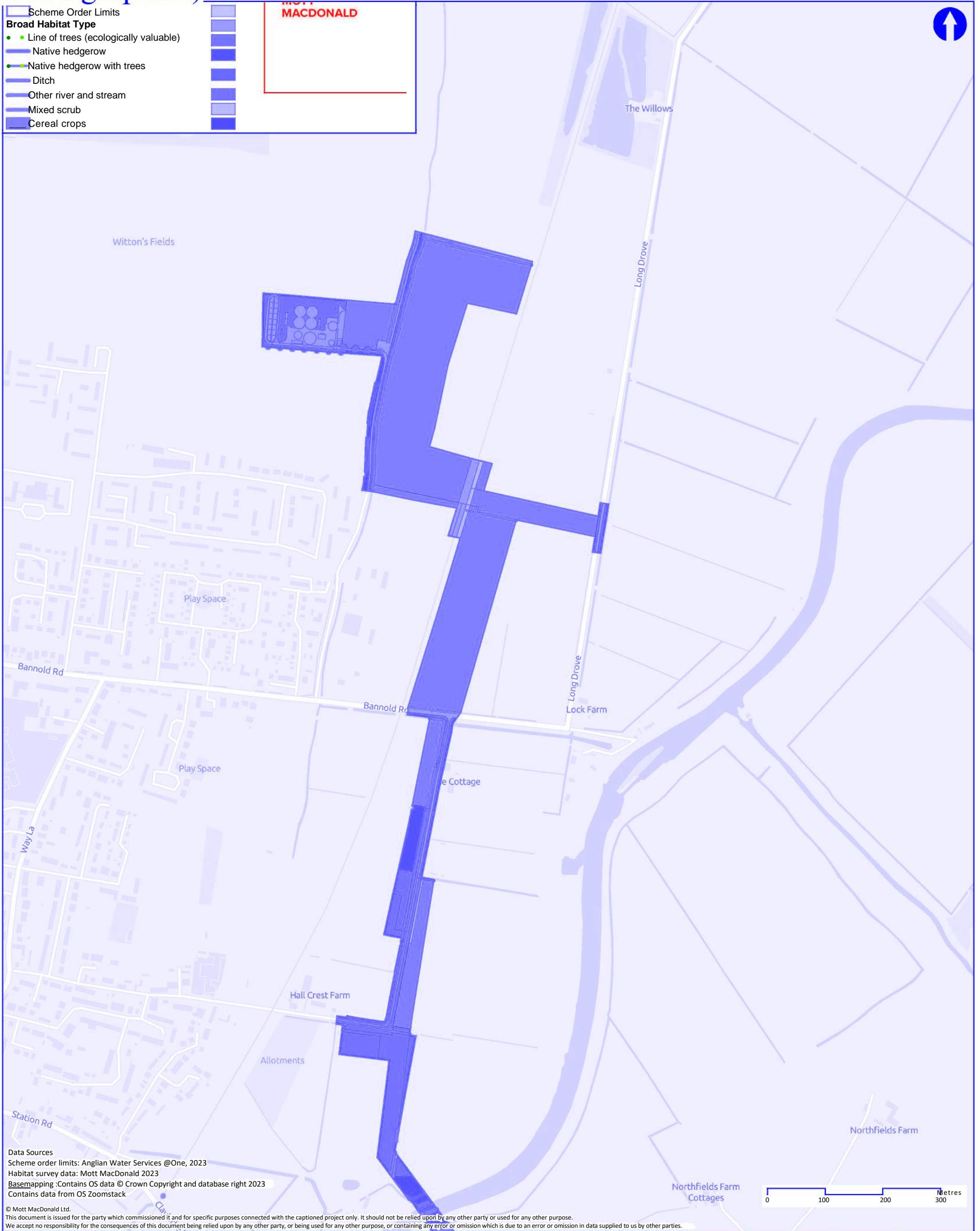
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(Added graphics)

Scheme Order Limits
Broad Habitat Type
● Line of trees (ecologically valuable)
 Native hedgerow
 Native hedgerow with trees
 Ditch
 Other river and stream
 Mixed scrub
 Cereal crops



Data Sources
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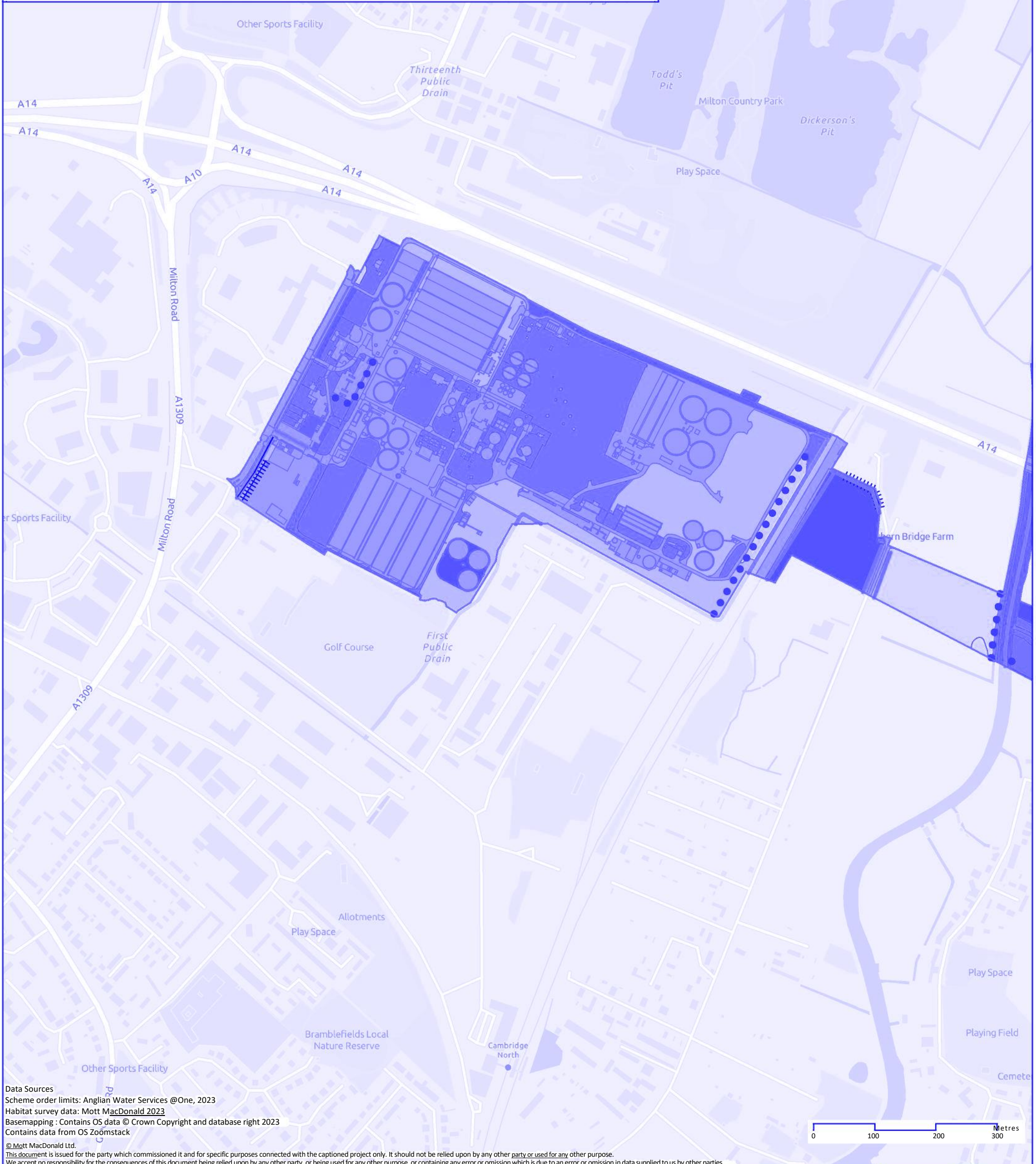
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**Cambridge Waste Water Treatment Plant Relocation Project
Biodiversity Net Gain (BNG) Report**

Figure A.2 Proposed Habitats

(Added graphics)

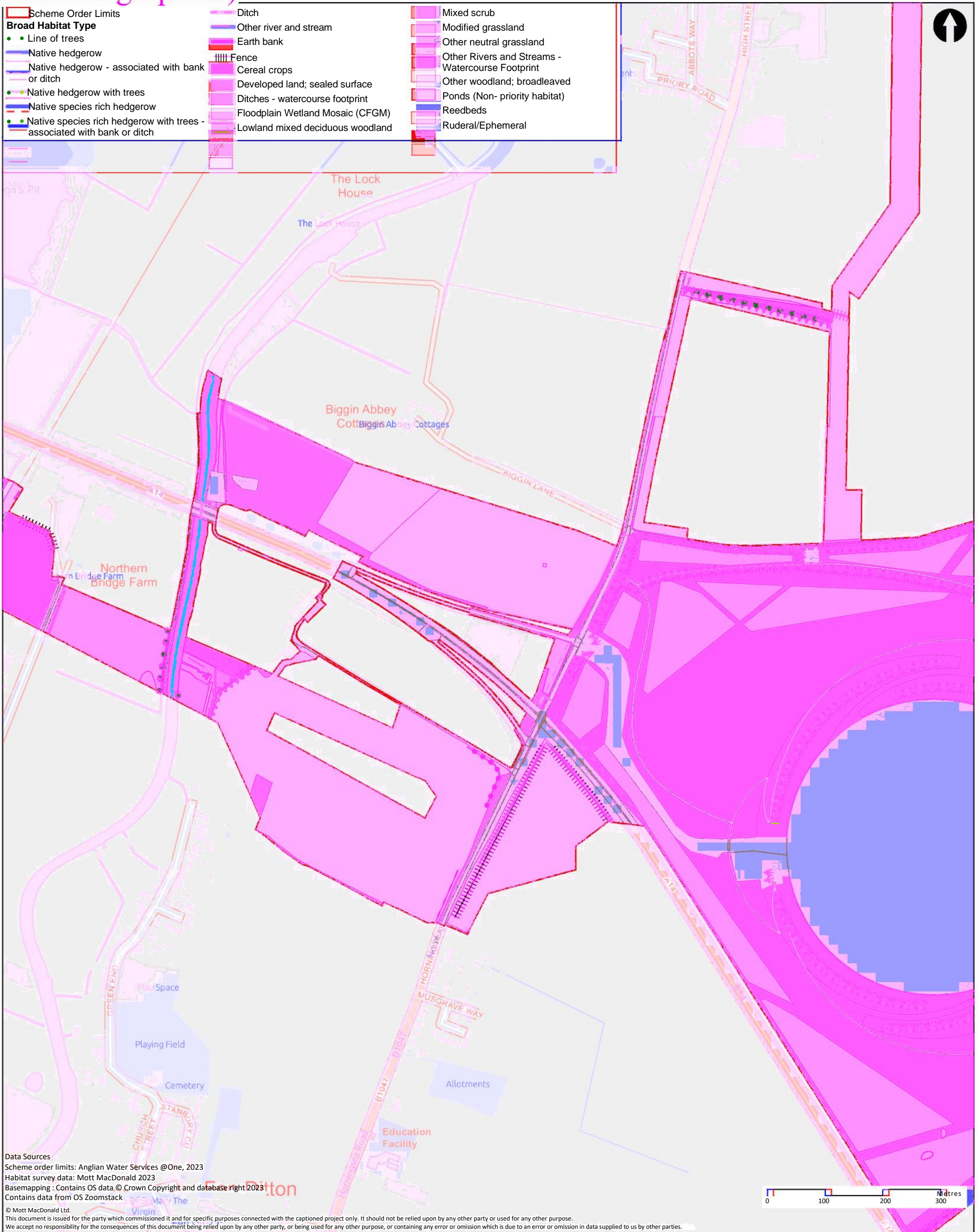
Scheme Order Limits	Developed land; sealed surface	Ditches - watercourse footprint
Broad Habitat Type	Floodplain Wetland Mosaic (CFGM)	Introduced shrub
Line of trees	Lowland mixed deciduous woodland Mixed scrub	Modified grassland
Native hedgerow	Other coniferous woodland	
Native hedgerow - associated with bank or ditch		
Ditch		
Other river and stream		
Fence		



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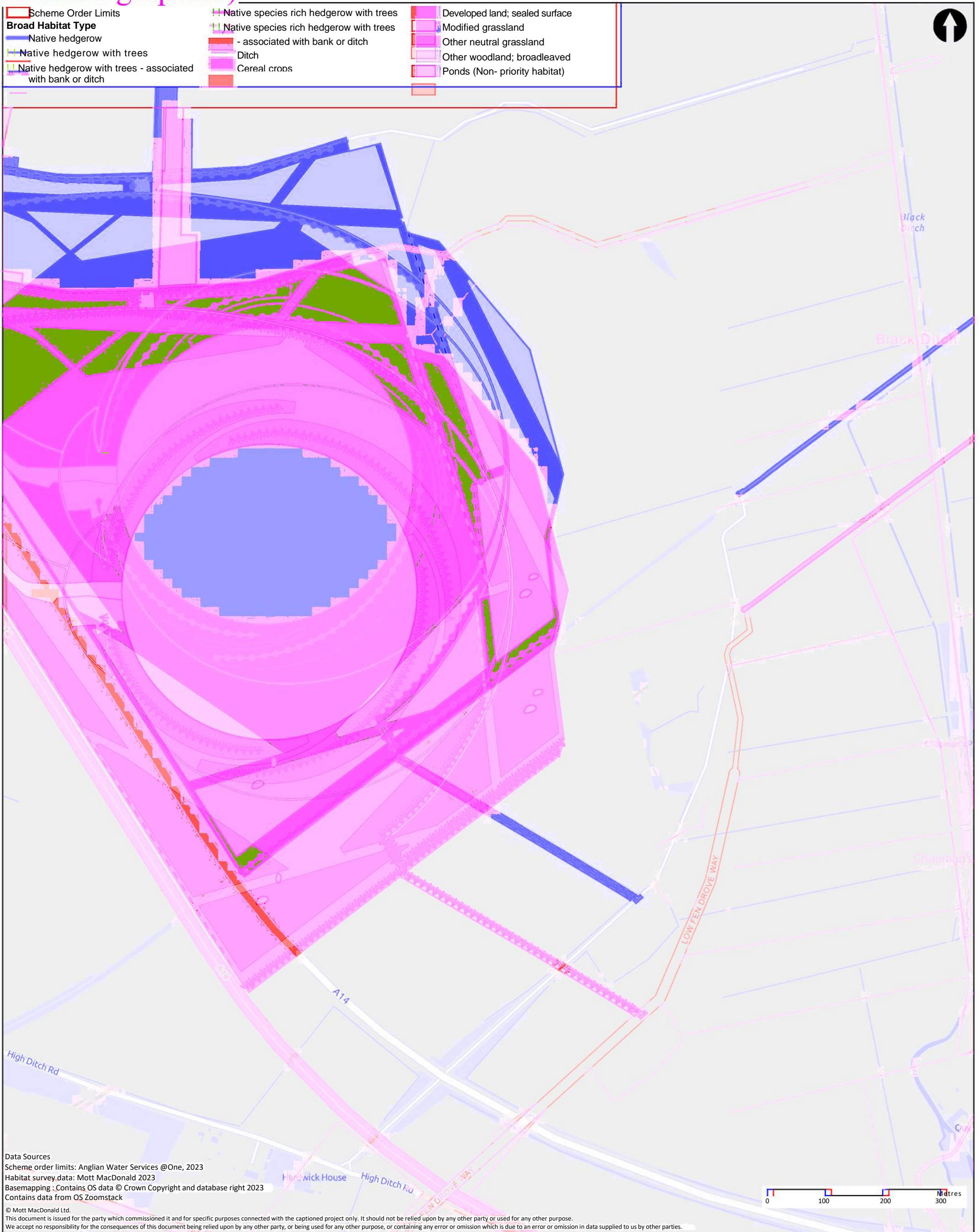
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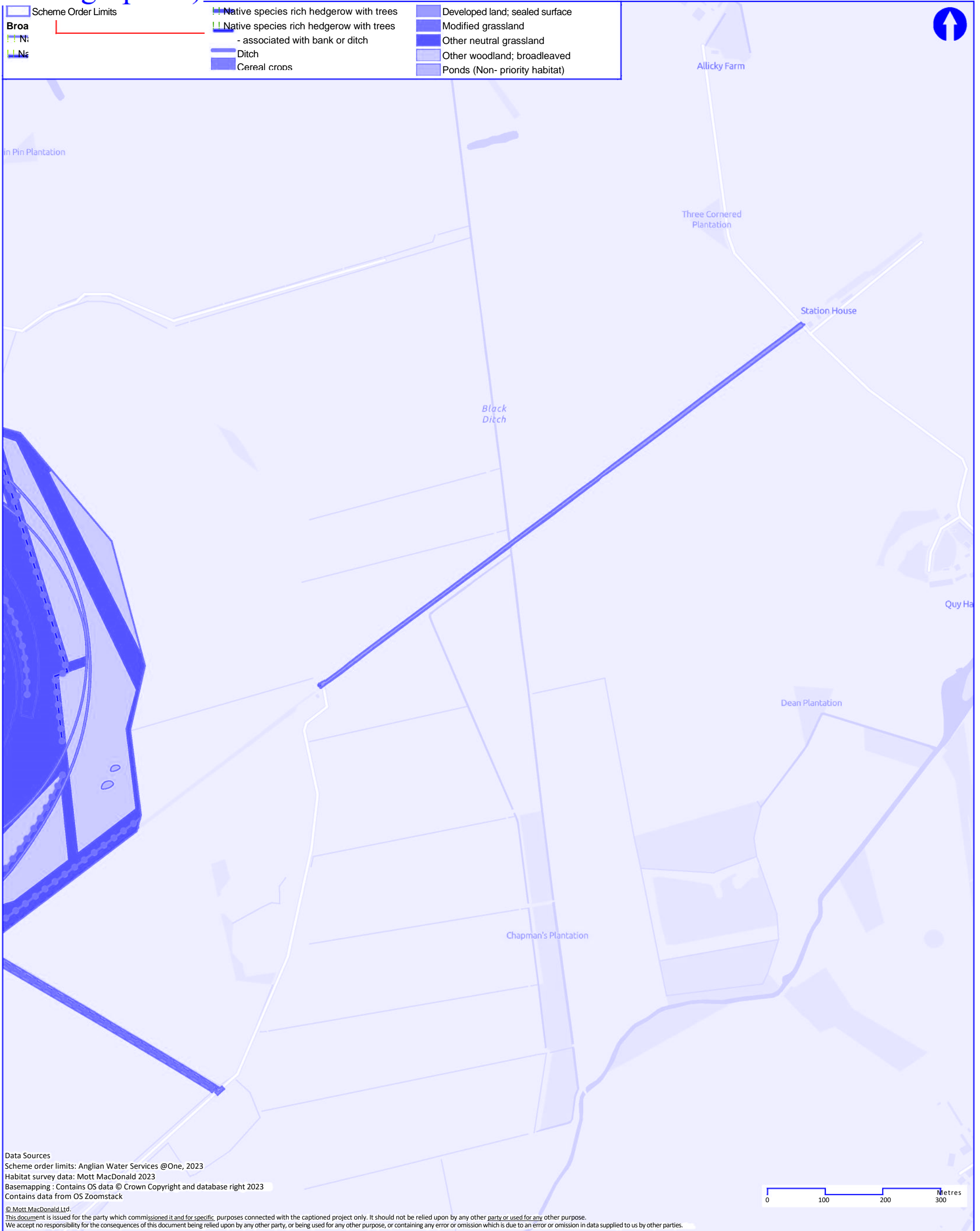
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(Added graphics)

Scheme Order	Native hedgerow with trees	Ditches - watercourse footprint
Broa	Native hedgerow with trees - associated with bank or ditch	Mixed scrub
Ditch	Cereal crops	Modified grassland
Developed land: sealed surface	Other neutral grassland	Other woodland; broadleaved
	Ponds (Non-priority habitat)	



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(Added graphics)

Scheme Order	Mixed scrub	Other neutral grassland
Broa	Cereal crops	Other Rivers and Streams -Watercourse Footprint
	Developed land; sealed surface	Other woodland; broadleaved
	Ditches - watercourse footprint	Ponds (Non- priority habitat)
	Introduced shrub	Reedbeds
	Lowland mixed deciduous woodland	Vacant/derelict land/ bareground
	Modified grassland	



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Scheme Order Limits	Mixed scrub	Cereal crops
Broad Habitat Type	Developed land; sealed surface	Ditches - watercourse footprint
Line of trees (ecologically valuable)	Modified grassland	Other neutral grassland
Native hedgerow	Ditch	
Native hedgerow with trees	Other river and stream	



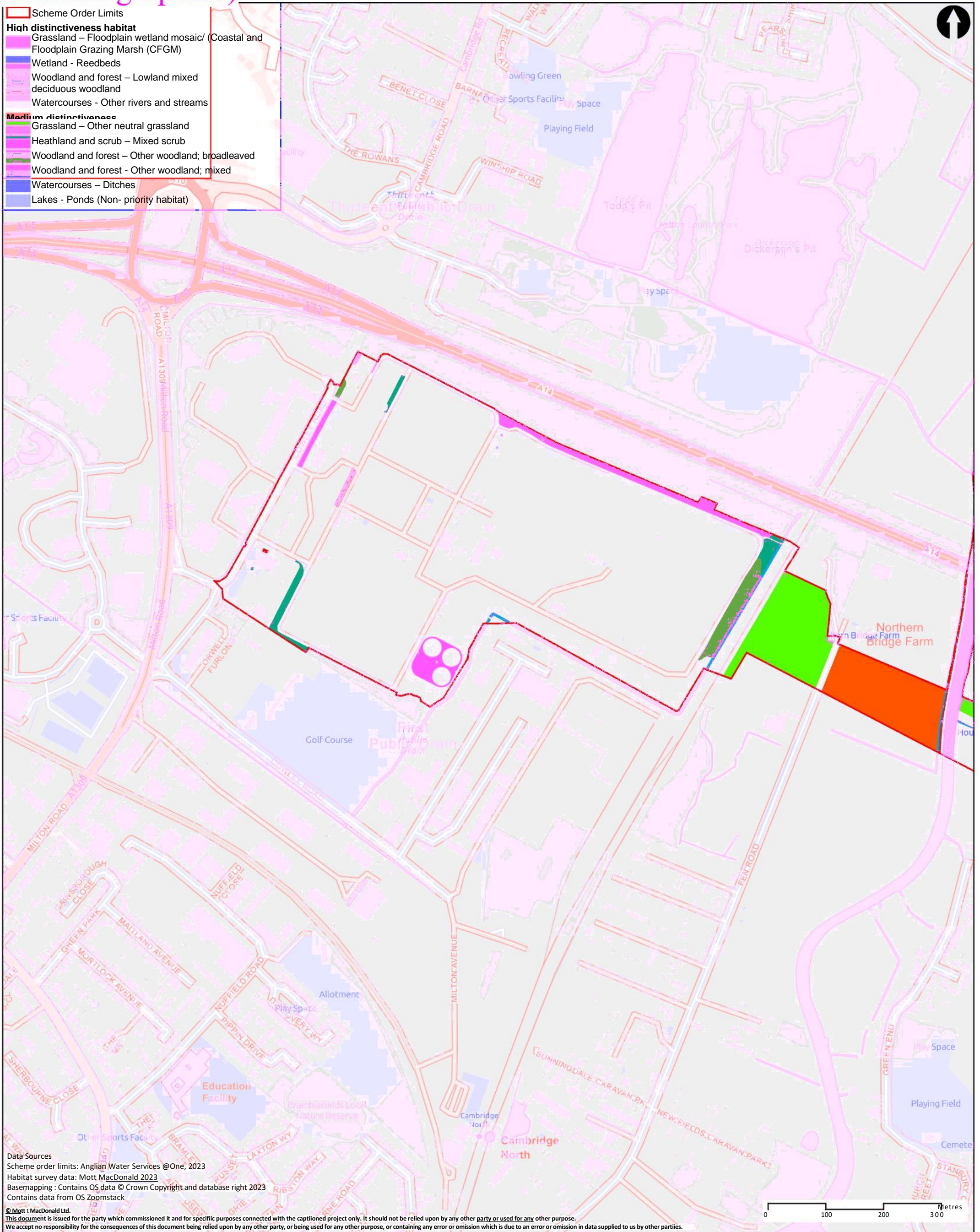
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Figure A.3 Map of the High and Medium Distinctiveness Baseline Habitats

(Modified graphics)



Data Sources
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 Habitat survey data: Mott MacDonald 2023
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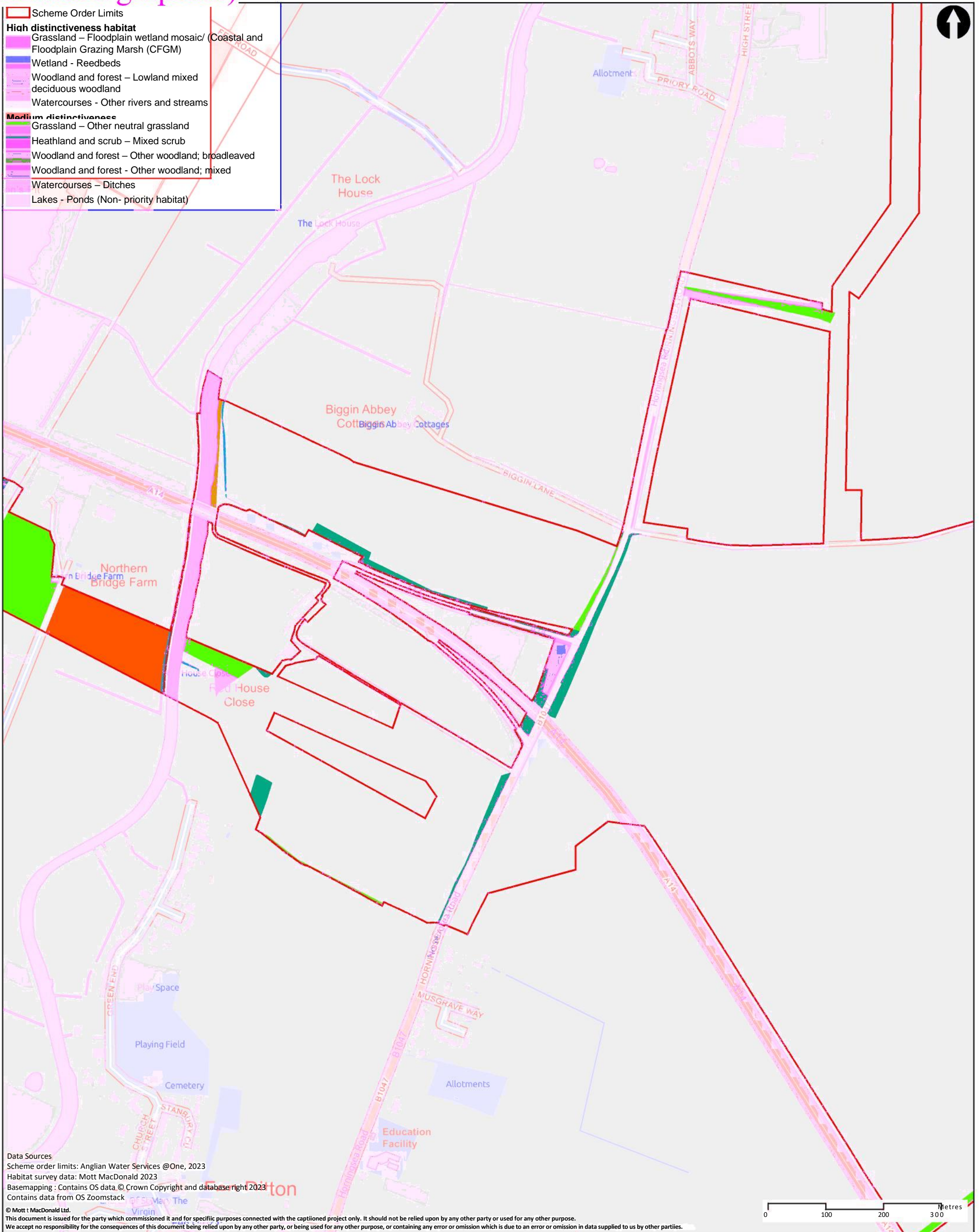
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Title
 Cambridge Waste Water Treatment Plant
 Relocation Project
 Biodiversity Net Gain
 High and medium distinctiveness
 habitats: Sheet 1 of 7

Drawing Number
Figure A.3

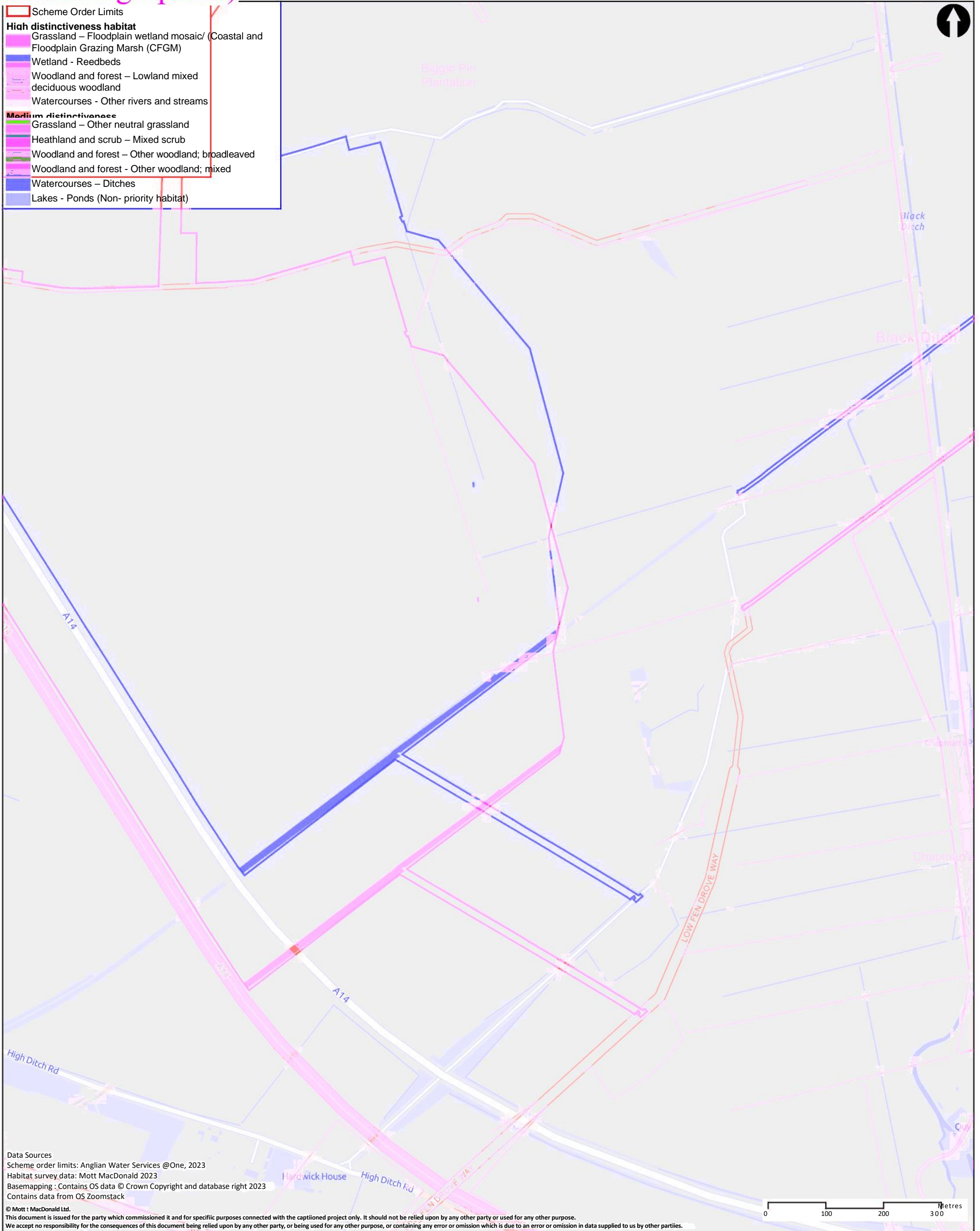
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(Modified graphics)



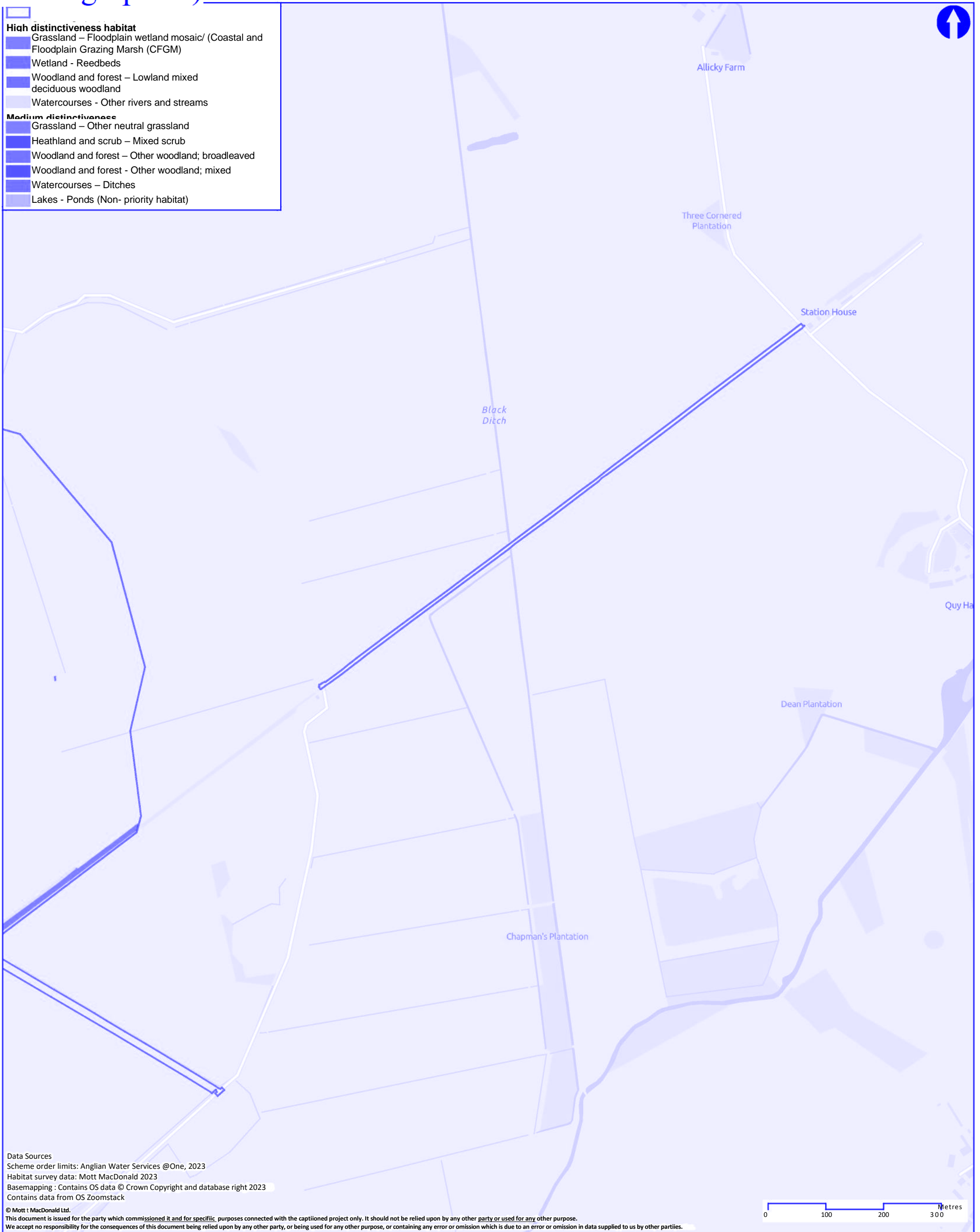
<p>MOTT MACDONALD</p> <p>22 Station Road Cambridge CB1 2JD United Kingdom</p> <p>T +44 (0)20 8774 2000 F +44 (0)20 8681 5706 W mottmac.com</p>	<p>Client</p>					<p>Title</p> <p>Cambridge Waste Water Treatment Plant Relocation Project Biodiversity Net Gain High and medium distinctiveness habitats: Sheet 2 of 7</p>			Drawn	MP/SLG																		
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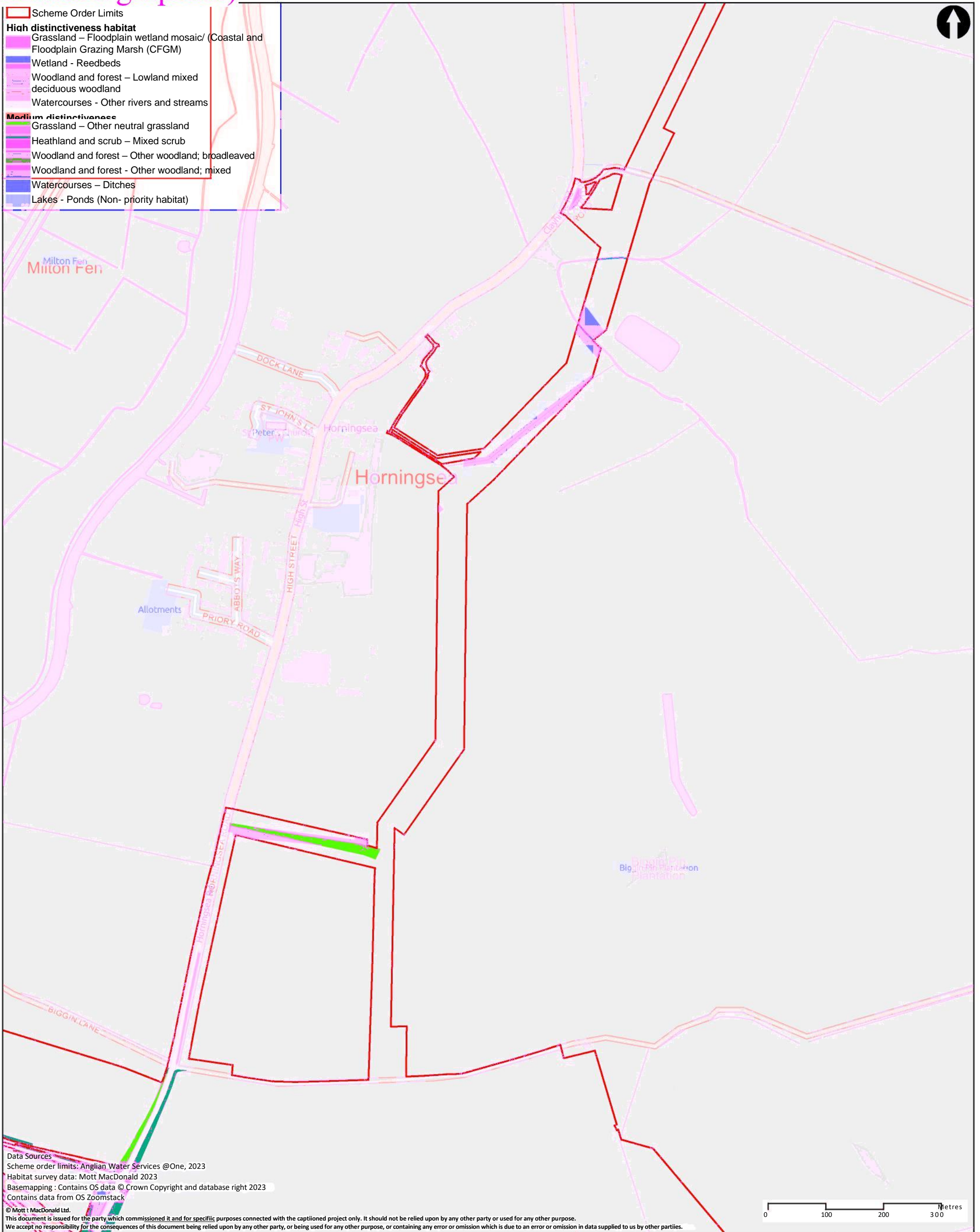
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(Modified graphics)

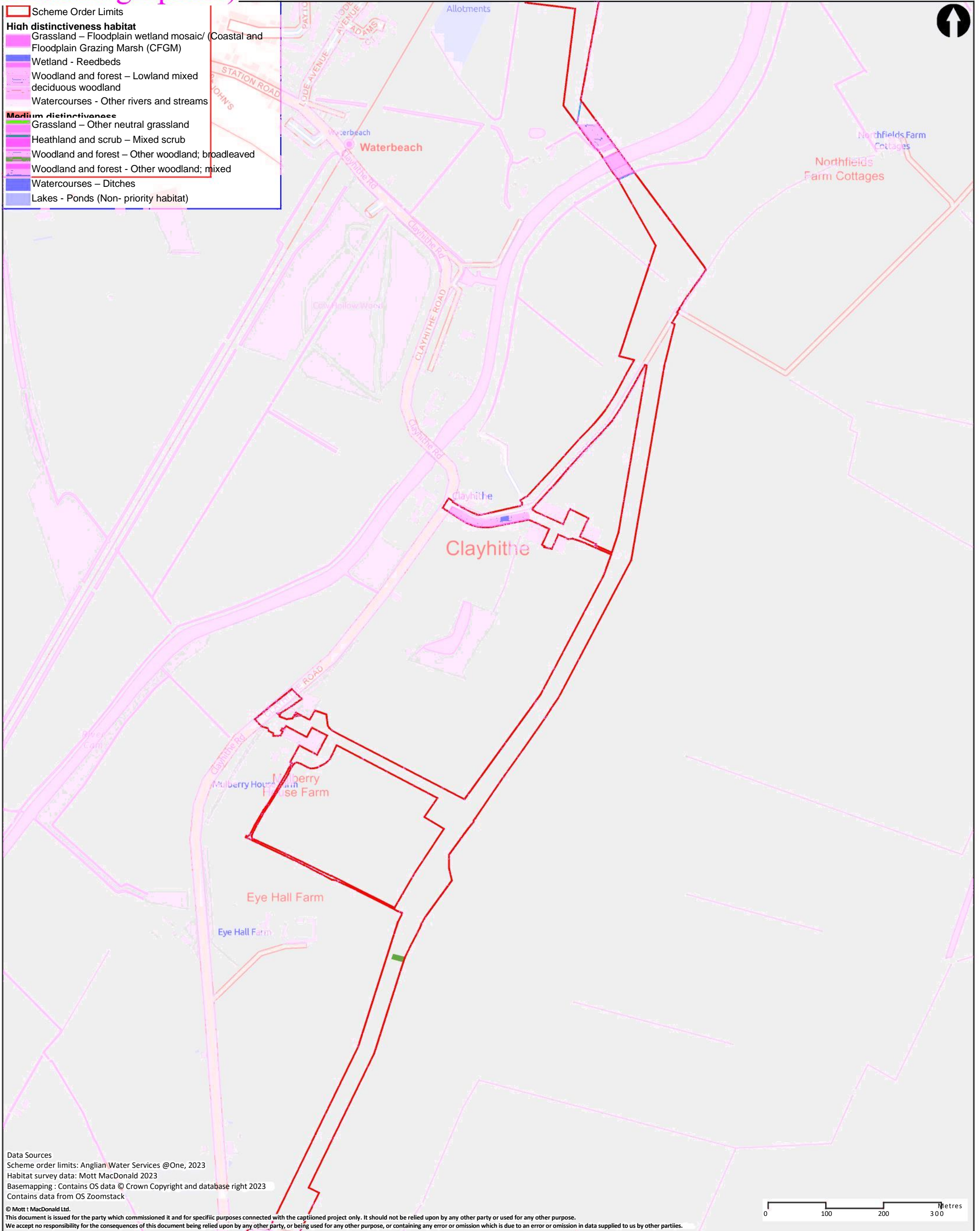


Data Sources
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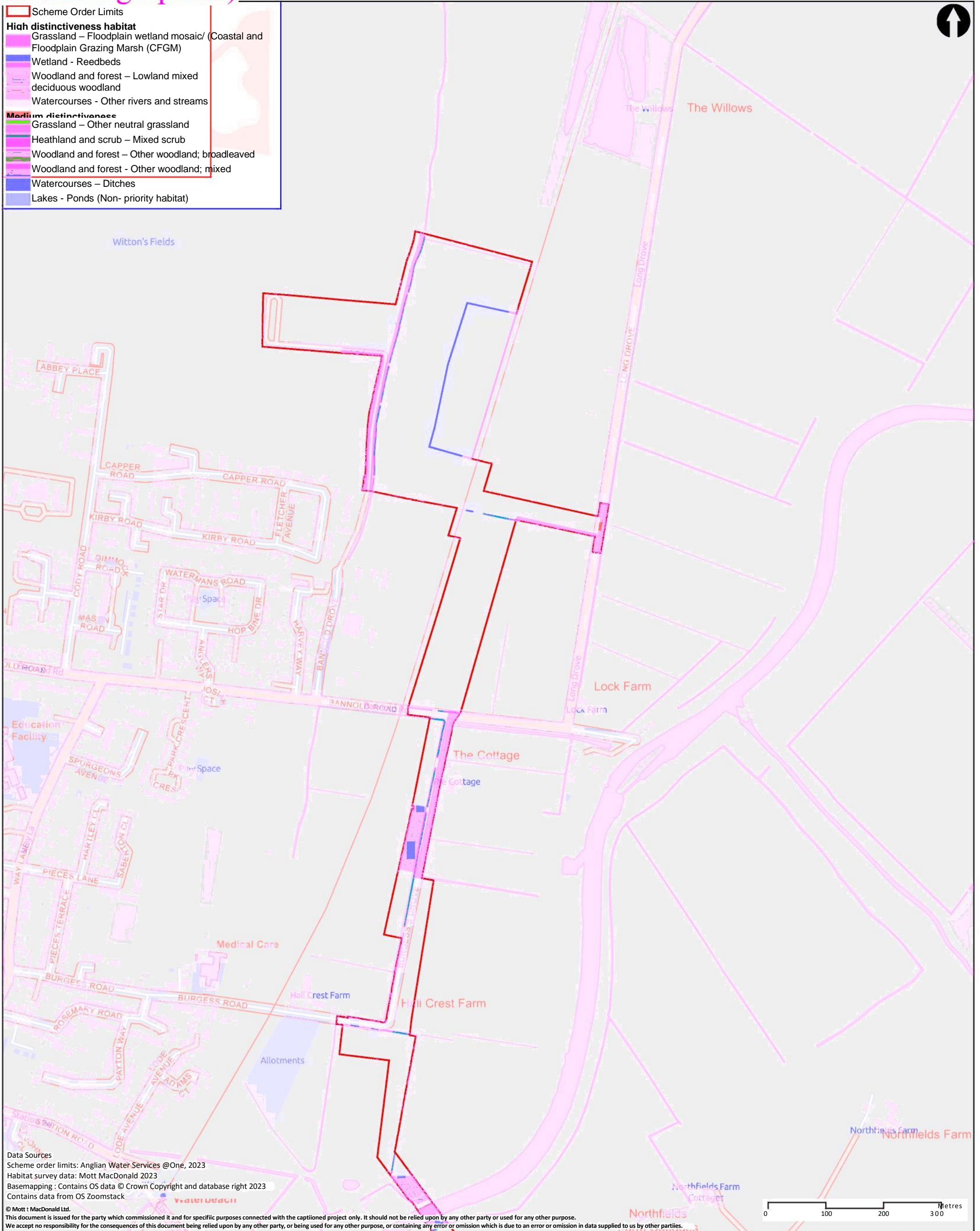
Scheme Order Limits

High distinctiveness habitat

- Grassland – Floodplain wetland mosaic/ (Coastal and Floodplain Grazing Marsh (CFGM))
- Wetland - Reedbeds
- Woodland and forest – Lowland mixed deciduous woodland
- Watercourses - Other rivers and streams

Medium distinctiveness

- Grassland – Other neutral grassland
- Heathland and scrub – Mixed scrub
- Woodland and forest – Other woodland; broadleaved
- Woodland and forest - Other woodland; mixed
- Watercourses – Ditches
- Lakes - Ponds (Non- priority habitat)



Data Sources
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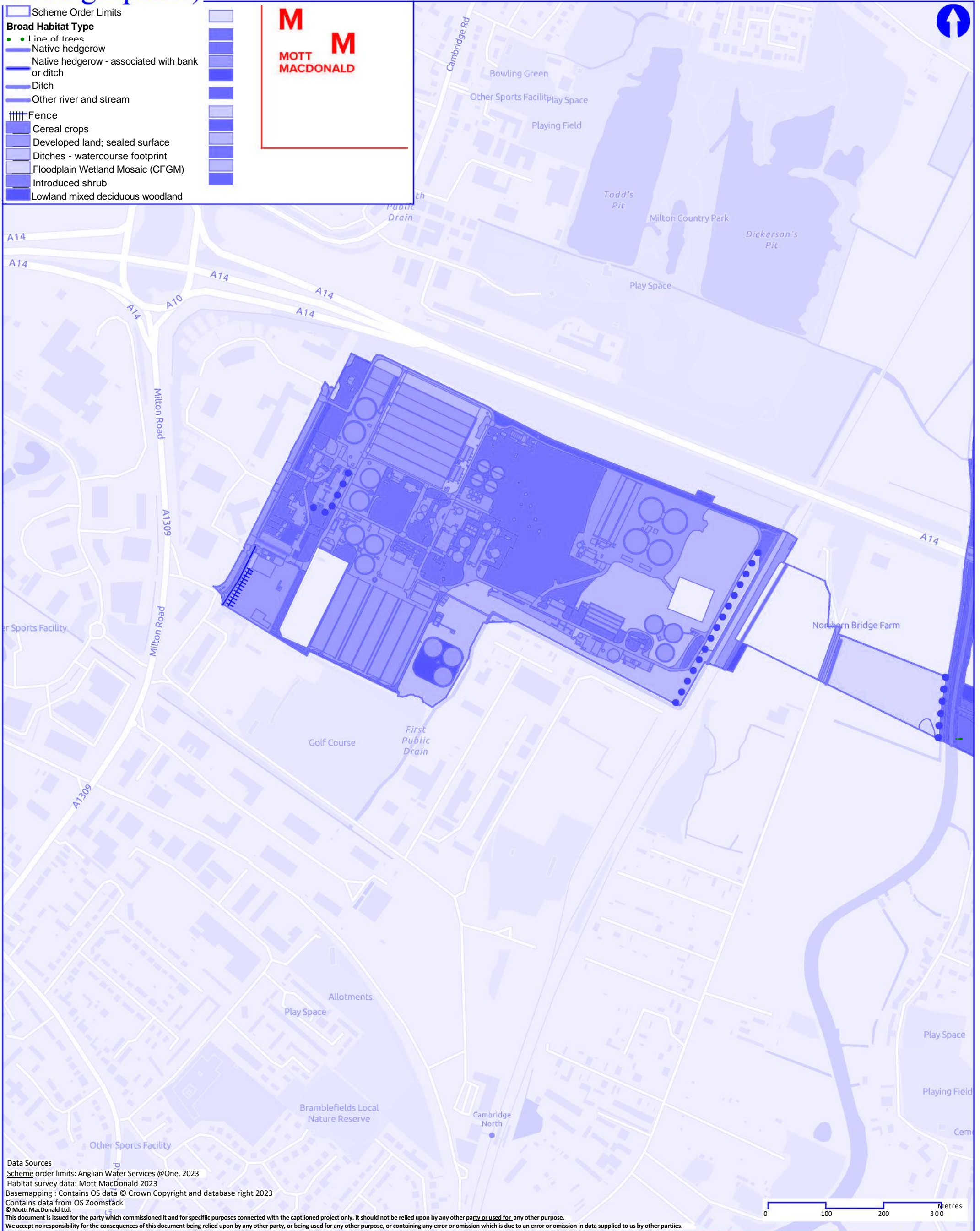
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Cambridge Waste Water Treatment Plant Relocation Project
Biodiversity Net Gain (BNG) Report

Figure A.4 Map of Retained Habitats

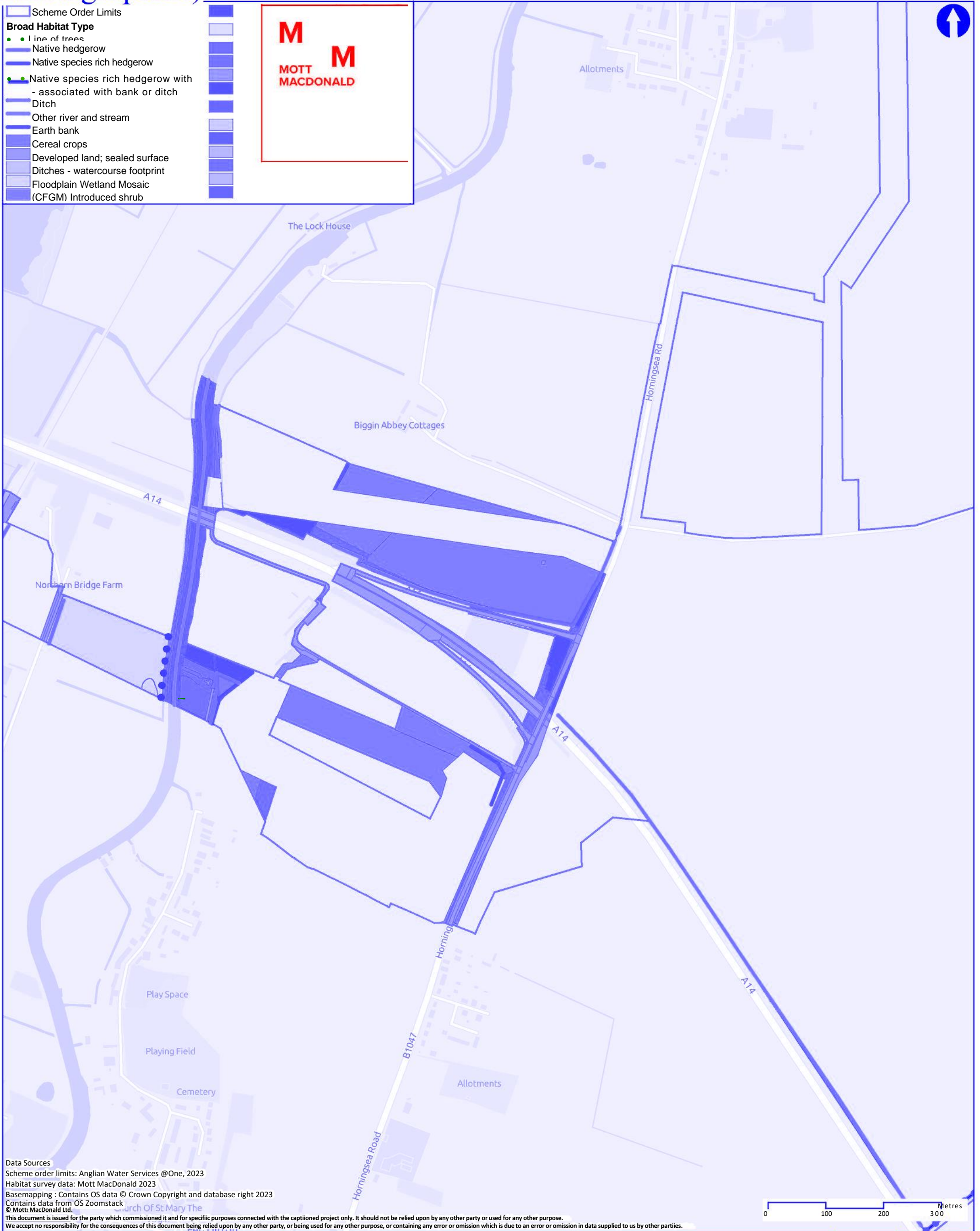
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(Added graphics)

Legend

- Scheme Order Limits
- Broad Habitat Type**
 - Native hedgerow
 - Native hedgerow with trees - associated with bank or ditch
 - Native species rich hedgerow with trees
 - Native species rich hedgerow - associated with bank or ditch
 - Ditch
 - Cereal crops
 - Developed land; sealed surface
 - Ditches - watercourse footprint
 - Floodplain Wetland Mosaic (CFGM)
 - Introduced shrub
 - Lowland mixed deciduous woodland

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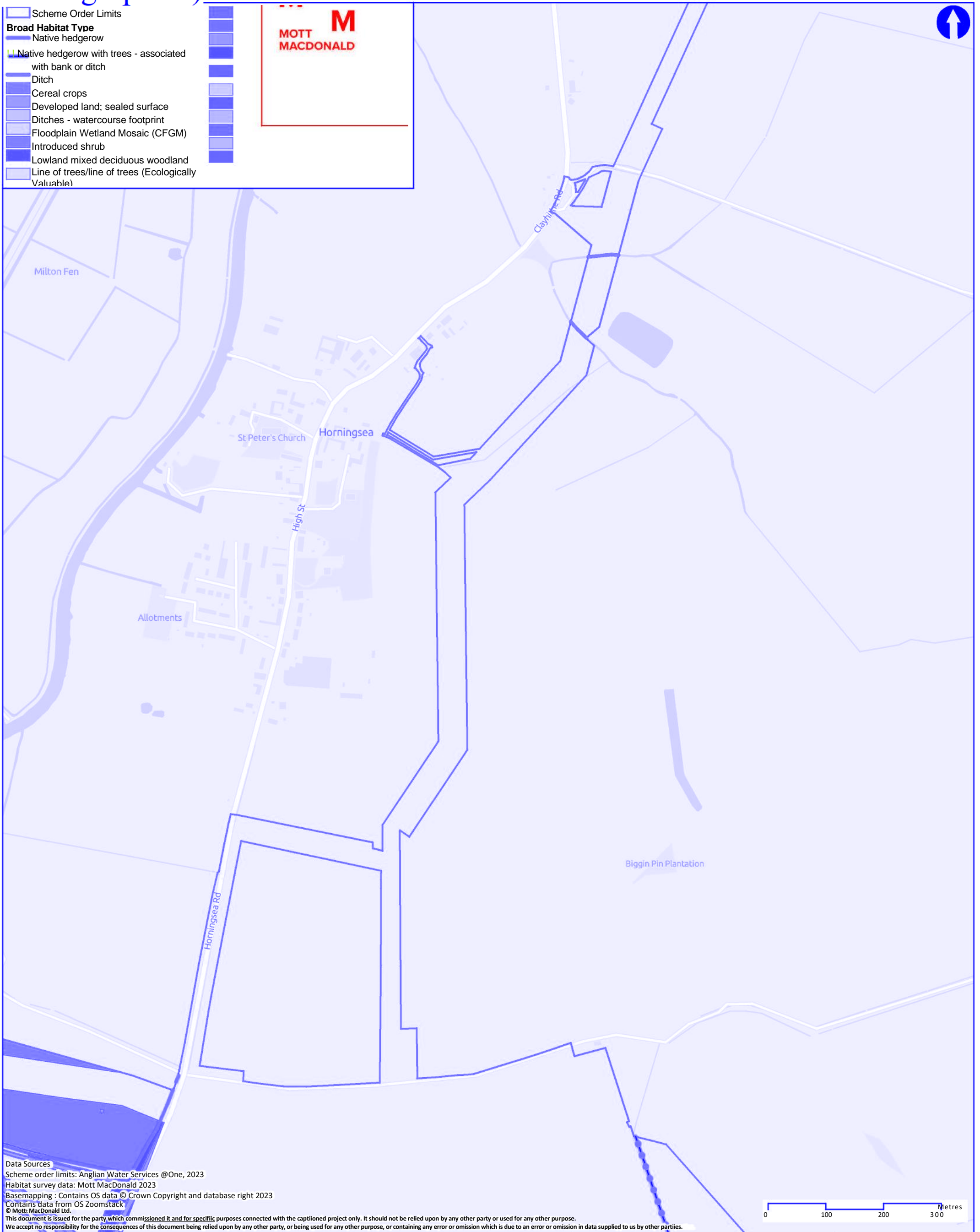
Scheme Order	Line of trees/line of trees (Ecologically Valuable)
Native species rich hedgerow with - associated with bank or ditch	Mixed scrub
Ditch	Modified grassland
Cereal crops	Other coniferous woodland
Developed land; sealed surface	Other neutral grassland
Ditches - watercourse footprint	Other Rivers and Streams -Watercourse Footprint
Floodplain Wetland Mosaic (CFGM)	Other woodland; broadleaved
Introduced shrub	Other woodland; mixed
Lowland mixed deciduous woodland	Ponds (Non- priority habitat)
	Reedbeds
	Ruderal/Ephemeral
	Vacant/derelict land/ bareground



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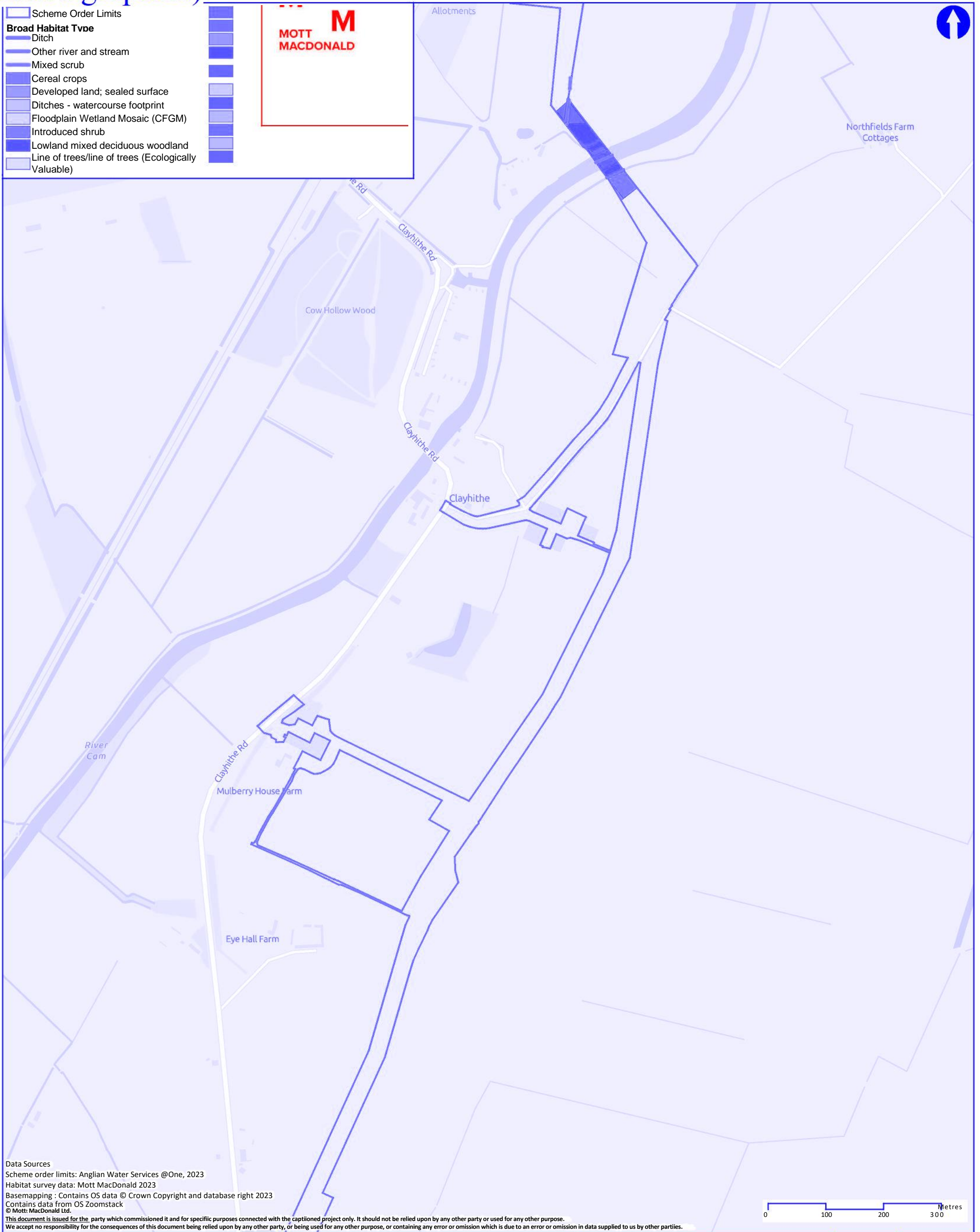
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(Added graphics)

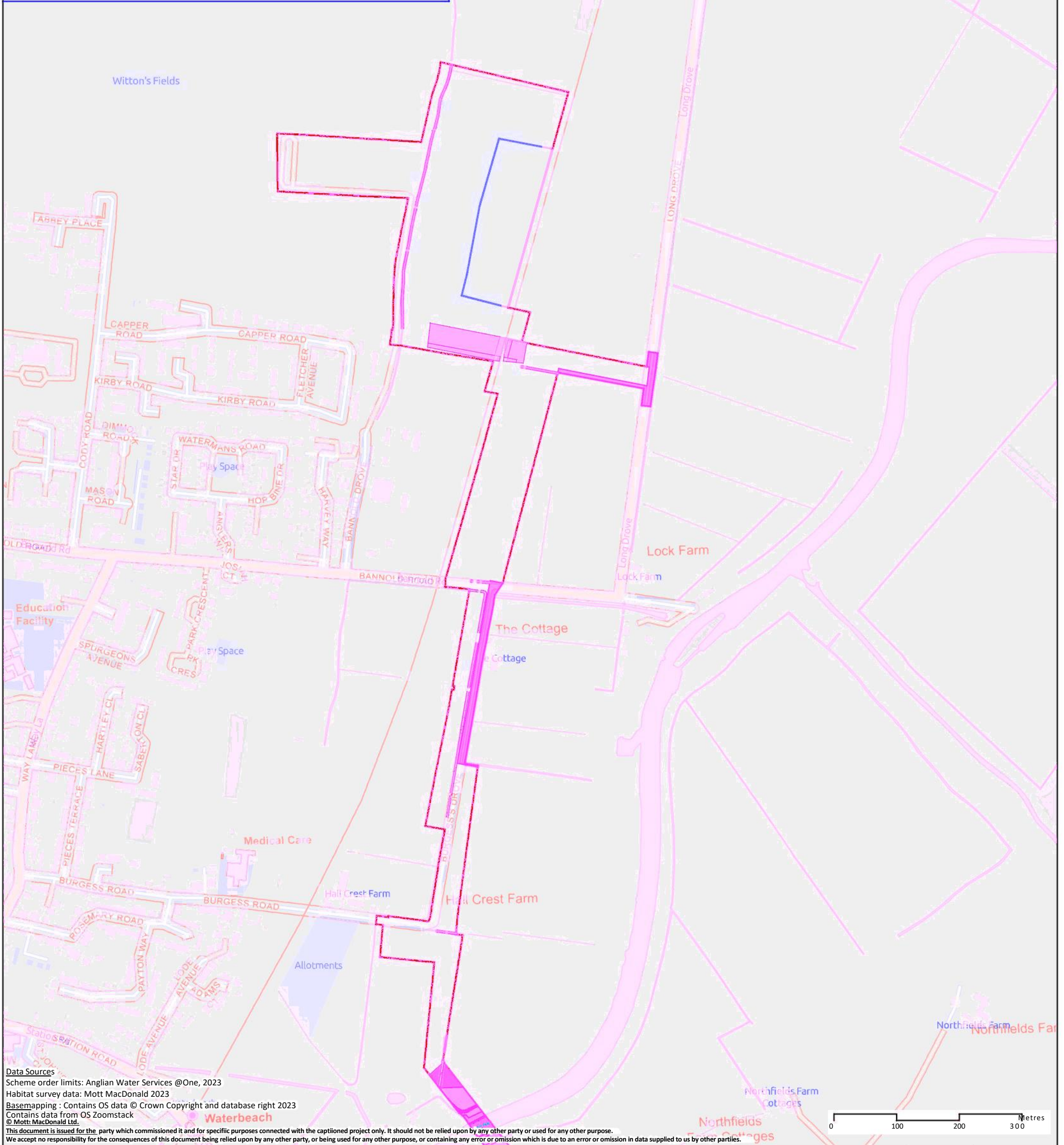


Data Sources
 Scheme order limits: Anglian Water Services @One, 2023
 Habitat survey data: Mott MacDonald 2023
 Basemapping : Contains OS data © Crown Copyright and database right 2023
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(Modified graphics)

Scheme Order Limits	Mixed scrub
Broad Habitat Type	Modified grassland
Ditch	Other coniferous woodland
Other river and stream	Other neutral grassland
Mixed scrub	Other Rivers and Streams -Watercourse
Cereal crops	Footprint
Developed land; sealed surface	Other woodland; broadleaved
Ditches - watercourse footprint	Other woodland; mixed
Floodplain Wetland Mosaic (CFGM)	Ponds (Non- priority habitat)
Introduced shrub	Reedbeds
Lowland mixed deciduous woodland	Ruderal/Ephemeral
Line of trees/line of trees (Ecologically Valuable)	Vacant/derelict land/ bareground



Data Sources
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Cambridge Waste Water Treatment Plant Relocation
Project Biodiversity Net Gain (BNG) Report

Appendix B: Landscape Masterplan

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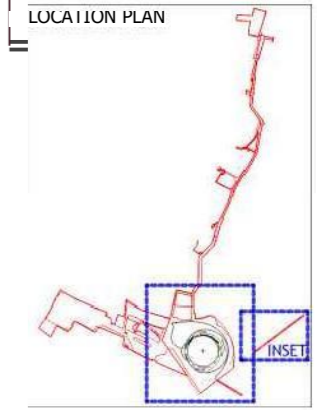
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- Proposed native whip planting to supplement existing young whip planting; infill and replace any existing that have failed
- Existing young whip planting
- Photovoltaic (PV) Solar Panels
- Existing line of pylons
- Hedgerow
- Low Fen Drove Way Grasslands and Hedges County Wildlife Site (tom buffer shown dashed)
- Drainage 'scrapes' to base of earth bank perimeter
- Easements for outfall and Waterbeach routes
- Existing PROW: Byway open to all traffic
- Proposed PROW: new bridleway (refer to Inset)
- Scheme order limits



Revisions Scale 1:125000 @ A3

Rev.	Date	Description:
12	14.05.21	Added arable and offsite options
13	19.05.21	Woodland links amended
14	27.05.21	Hedge added to redline
Updated layout		
15/106/12/21	21.12.21	Updates to bund, hedgerows and woodland
18	14.01.22	Vent reversed
19	18.01.22	visitor centre update
110	08.02.22	Amendments to path, ponds and bank trees
In	15.06.22	Design responses to Con3 feedback
112	11.07.22	Amendments to ear park, hedge, woodland
113	04.08.22	PV Solar panels added, Red line updated
114	22.08.22	Rey corrected
115	08.11.22	Antendiments to Earthwork bank trees

WWTP, CAMBRIDGE
 Client: **Anglian Water**
 Drawing: Landscape Masterplan
 Project No: 75_431

Drawing No: 775_01(MP)003

Scale: Scale: 1:750co@A3 Rev: 115

April 2021 Drawn: J13

Checked: PM Checked:

Robert Myers Associates **17,1**
LANDSCAPE ARCHITECTURE

Figure 3.1 Landscape Masterplan

13-15 Covent Garden Cambridge CBI 211S Tel: +44 (0) 1223 351400

info@robertmyers-associates.co.uk
www.robertmyers-associates.co.uk

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500 nt

P2 INSET Proposed Bridleway - Plan





Appendix C: Outline River Units Net Gain Strategy

Appendix C: Outline River Units Net Gain Strategy

1.1 Background

1.1.1 The Applicant is committed to achieving at least a 20% gain in river units and this strategy sets out how to achieve this and also how to avoid trading down of the 'Reedbeds' and 'Other rivers and streams' habitats.

1.1.2 This strategy presents the opportunity to create new habitats as part of the Proposed Development and also factors in emerging opportunities that are likely to arise for purchasing river units by funding off-site habitat restoration or off-site habitat creation that could be implemented. A key reason for maintaining this flexibility of approach (while still committing to 20% river unit BNG) is that river unit credits are not currently available on the market, but are likely to be in the near future.

1.1.3 CWWTPRP will adopt a staged approach to the approval of DCO requirements enabling requirements to be approved prior to the commencement of the relevant stage of works. This approach will be governed by the inclusion of a requirement within Schedule 2 of the Draft DCO which requires a detailed written scheme for BNG River Unit delivery prior to the commencement of the works at the proposed outfall (Work Area 32).

1.2 BNG River Units Required

1.2.1 Although it is currently predicted that the Proposed Development will achieve more than 20% gain in all non-river habitat types, the river unit gain will be 4.30%.

1.2.2 In order to achieve a 20% BNG on river units the following is required:

- 0.03 BNG river units delivered on the River Cam (or a river/watercourse in Cambridgeshire) to deliver on 'high distinctiveness'; and
- 1.75 BNG units delivered via the creation of at least 227m of ditches which hold water all year.

1.3 Results – Wet Ditch Creation

1.3.1 The landscape masterplan is focused on landscape and ecological mitigation suitable for land required for the proposed WWTP and access road (east of Horningsea Road), which is characterised by free-draining soils and a ground level of 9-10 meters AOD. The ground water levels within this location are up to 5 metres below ground level. There are existing ditches within the proposed WWTP landscape masterplan area which are dry, with the exception of the retained ditch to the east which is incorporated in the landscape masterplan.

1.3.2 The only proposed ditches (in the form of swales) in the landscape masterplan are to provide temporary storage of surface water from the access road.

1.3.3 There are no suggestions for further surface water features within the landscape masterplan for river unit BNG; these have been dismissed as any channels created would:

- need to be very deep (and present a safety concern in the context of the other objectives of the LERMP),
- would not maximise connectivity to existing wet ditches as much as other locations could, and
- may require lining.

1.3.4 It is recommended that an additional length of wet ditch is created within the Scheme Order Limits to achieve the 20% net gain in river units. This is also desirable as it would perform a wider biodiversity function and could be designed to benefit species such as water voles that are present within the Scheme Order Limits.

1.3.5 Work Area 39 has been identified for the delivery of on-site river units, as shown on Figure 2. This area has been identified for BNG river units opportunities using information obtained from the existing ecological baseline surveys. This area is also desirable as it would link to a habitat type used by water voles.

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Key

- Scheme Order Limits
- Indicative BNG Ditch Features
- PROW Diversion
- Works Area 39 - Ecological Mitigation Area

Ditch Feature	Length
A	210 m
B	155 m

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Drawn: KN	Checked: RC
Ref:	Revision: 01
Date: 07/09/2022	

Indicative Alignment of Proposed Ditch Features

Cambridge Waste Water Treatment Plant Relocation (CWWTPR) Project

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 W. www.jctr.co.uk

Figure 1 Indicative Alignment of Proposed Ditch Features

1.3.6 There is a wet ditch at the northern margin of the field east of to the outfall at the River Cam within which the final section of final effluent and storm pipelines are proposed. The wet ditch is approximately 1 to 1.5 meters deep and 1.5m wide bank to bank as shown in **Photo 1**. It is connected to the River Cam downstream of Baits Bite Lock and on visits throughout the year has remained wet.



Photo 1 Existing ditch along northern boundary of Work Area 39

1.3.7 The indicative proposal is to create approximately 311m of wet ditch connected to the existing wet ditch along the northern boundary of Work Area 39 as shown on Figure 2. The separation between the existing ditch and Ditch A is approx. 16m, as is the distance between Ditch A and B to allow access in the event that vehicular access is required for reactive or long-term maintenance e.g., to remove fallen debris from nearby trees or de-silting.

1.3.8 The proposed length of wet ditch feature shown in Figure 2 would provide the 227m of ditch to ensure a 20% gain in river units and also the 84m of ditch creation for water vole mitigation.

Connection to mitigation proposals for the Proposed Development

Water vole mitigation

1.3.9 A proportion of the wet ditches proposed are also part of the mitigation proposed for as part of the Proposed Development for water vole mitigation under licence which requires the project to create and maintain ditches for compensation water vole habitat adjacent to existing habitat at this location. It is expected that 84m of ditch would be required for this purpose.

Public Right of Way Temporary Diversion

- 1.3.10 A temporary diversion of an existing public right of way is proposed during construction of the outfall and associated pipelines as shown in **Figure 1**. The proposed wet ditches have sought to avoid the path diversion and would be fenced appropriately to avoid people or dogs accessing the ditch area.
- 1.3.11 A requirement within Schedule 2 of the Draft DCO requires a detailed written scheme for delivery, management and monitoring of the proposed BNG river unit ditches required to provide the 1.75 river units prior to the commencement of the works at the proposed outfall (Work Area 32).

1.4 Results - High distinctiveness river units

- 1.4.1 Opportunities to enhance other sections of the River Cam within the Draft Scheme Order Limits to compensate for the loss of the high distinctiveness river units were investigated. Due to the nature of the stretch of the River Cam within the Draft Scheme Order Limits enhancement is heavily constrained due to existing uses (public access, boating, angling, etc).
- 1.4.2 Therefore, the following options are available in order to deliver the 0.03 'high distinctiveness' river units:
- Partnership Project/s: A partnership approach with planned project/s with local stakeholder organisations or landowners whereby those organisations deliver the BNG on behalf of AWS and maintain the land; and
 - Purchasing BNG river units.
- 1.4.3 River unit credits are not currently available on the market, but are likely to be in the near future. A requirement within Schedule 2 of the Draft DCO requires a detailed written scheme for the 0.03 BNG high distinctiveness river unit delivery prior to the commencement of the works at the proposed outfall (Work Area 32).



Appendix D: Metric – Detailed Summary

Summary Figures

Net project biodiversity units (including all on-site & off-site habitat retention/creation)	Habitat units	204.63
	Hedgerow units	11.61
	River units	0.42
Total project biodiversity % change (including all On-site & Off-site Habitat Creation + Retained Habitats)	Habitat units	41.47%
	Hedgerow units	20.51%
	River units	3.49%

Combined

Habitats	Hedgerows	Rivers
Total area/length	238.00	3.00
Totals/units	493.45	58.59

Area / length retained Units Retained	Area / length proposed for enhancement Baseline units proposed for enhancement	Area / length lost Units Lost

Area habitats

On site change by broad habitat type

Category	Existing	Proposed	Change
High	100	100	0
Medium	100	100	0
Low	100	100	0
Other	100	100	0

Off site change by broad habitat type

Category	Existing	Proposed	Change
High	100	100	0
Medium	100	100	0
Low	100	100	0
Other	100	100	0

Combined on site and off site change by broad habitat type

Category	Existing	Proposed	Change
High	100	100	0
Medium	100	100	0
Low	100	100	0
Other	100	100	0

Combined area lost by distinctiveness band

Category	Area lost (hectares)	Area lost (%)
High	100	100
Medium	100	100
Low	100	100
Other	100	100



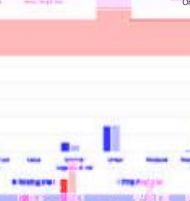
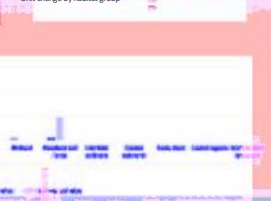
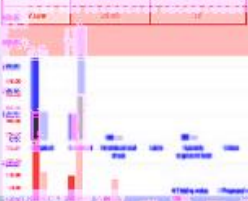
% Area lost by distinctiveness category



On site and off-site habitat retention by category



On site area change by habitat group



Hedgerows and lines of trees

On site change by hedgerow type

Category	Existing	Proposed	Change
High	100	100	0
Medium	100	100	0
Low	100	100	0
Other	100	100	0

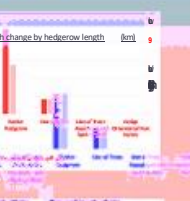
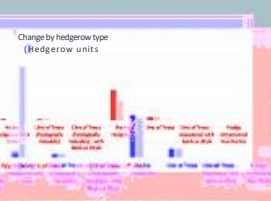
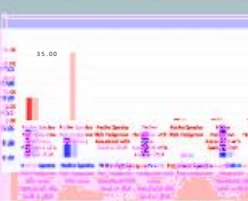
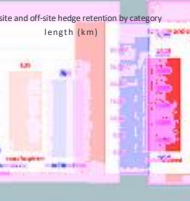
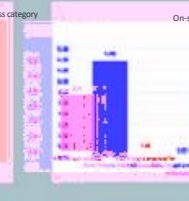
Off site change by hedgerow type

Category	Existing	Proposed	Change
High	100	100	0
Medium	100	100	0
Low	100	100	0
Other	100	100	0

Combined on and off site change by hedgerow type

Category	Existing	Proposed	Change
High	100	100	0
Medium	100	100	0
Low	100	100	0
Other	100	100	0

Category	Length lost (km)	Length lost (%)
High	100	100
Medium	100	100
Low	100	100
Other	100	100



Rivers and Streams

On site change by river type

Category	Existing	Proposed	Change
High	100	100	0
Medium	100	100	0
Low	100	100	0
Other	100	100	0

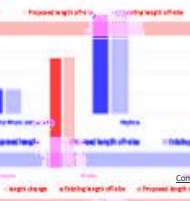
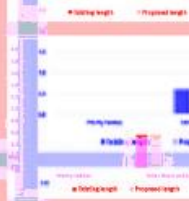
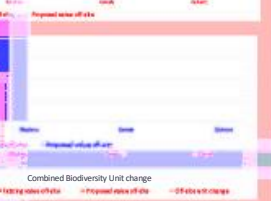
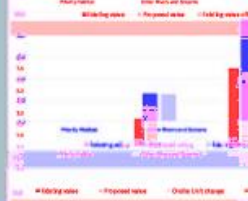
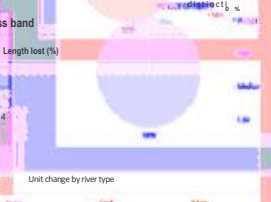
Off site change by river type

Category	Existing	Proposed	Change
High	100	100	0
Medium	100	100	0
Low	100	100	0
Other	100	100	0

Combined on and off site change by river type

Category	Existing	Proposed	Change
High	100	100	0
Medium	100	100	0
Low	100	100	0
Other	100	100	0

Category	Length lost (KM)	Length lost (%)
High	100	100
Medium	100	100
Low	100	100
Other	100	100



Appendix E: Summary Pre-development Baseline Habitat Units

Ref	Habitats and areas Distinctiveness					Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline
	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		Total habitat units
1	Cropland	Cereal crops	145.3674	Low	2	N/A - Agricultural	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	334.35
2	Urban	Developed land; sealed surface	26.7851	V.Low	0	N/A - Other	0	Within area formally identified in local strategy	High strategic significance	1.15	Compensation Not Required	0.00
3	Urban	Developed land; sealed surface	0.4984	V.Low	0	N/A - Other	0	Within area formally identified in	High strategic significance	1.15	Compensation Not Required	0.00

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Ref	Habitats and areas			Distinctiveness		Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline
	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		Total habitat units
								local strategy				
4	Grassland	Floodplain Wetland Mosaic (CFGM)	2.0073	High	6	Moderate	2	Within area formally identified in local strategy	High strategic significance	1.15	Same habitat required	27.70
5	Urban	Introduced shrub	0.0412	Low	2	Poor	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	0.09
6	Woodland and forest	Lowland mixed deciduous woodland	0.0069	High	6	Good	3	Within area formally identified in local strategy	High strategic significance	1.15	Same habitat required	0.14

7	Woodland and forest	Lowland mixed	0.0951	High	6	Poor	1	Within area formally	High strategic	1.15	Same habitat required	0.66
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Ref	Habitats and areas Distinctiveness					Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline
	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		Total habitat units
		deciduous woodland						identified in local strategy	significance			
8	Heathland and shrub	Mixed scrub	1.1355	Medium	4	Good	3	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	15.67
9	Heathland and shrub	Mixed scrub	0.1535	Medium	4	Moderate	2	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	1.41
10	Heathland and shrub	Mixed scrub	0.3375	Medium	4	Poor	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	1.55

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Ref	Habitats and areas			Distinctiveness		Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline
	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		Total habitat units
11	Grassland	Modified grassland	0.9892	Low	2	Good	3	Within area formally identified in	High strategic significance	1.15	Same distinctiveness or better habitat required	6.83
12	Grassland	Modified grassland	0.0078	Low	2	Moderate	2	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	0.04
13	Grassland	Modified grassland	12.4692	Low	2	Poor	1	Within area formally identified in	High strategic significance	1.15	Same distinctiveness or better habitat required	28.68

14	Woodland and forest	Other coniferous woodland	0.0814	Low	2	Poor	1	Within area formally identified in	High strategic significance	1.15	Same distinctiveness or better	0.19
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Cambridge Waste Water Treatment Plant Relocation Project
Biodiversity Net Gain (BNG) Report



Ref	Habitats and areas			Distinctiveness		Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline
	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		Total habitat units
								local strategy			habitat required	
15	Grassland	Other neutral grassland	0.4142	Medium	4	Good	3	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	5.72
16	Grassland	Other neutral grassland	2.7454	Medium	4	Moderate	2	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	25.26
17	Grassland	Other neutral grassland	2.8218	Medium	4	Poor	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	12.98

81	Urban	Developed land; sealed surface	1.3523	V.Low	0	N/A - Other	0	Within area formally	High strategic	1.15	Compensation Not Required	0.00
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Ref	Habitats and areas			Distinctiveness		Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline
	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		Total habitat units
								identified in local strategy	significance			
19	Woodland and forest	Other woodland; broadleaved	0.0251	Medium	4	Good	3	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	0.35
20	Woodland and forest	Other woodland; broadleaved	0.0309	Medium	4	Moderate	2	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	0.28
21	Woodland and forest	Other woodland; broadleaved	0.465	Medium	4	Poor	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	2.14

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Ref	Habitats and areas Distinctiveness					Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline
	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		Total habitat units
222	Woodland and forest	Other woodland; mixed	0.6272	Medium	4	Poor	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	2.89
233	Lakes	Ponds (Non-Priority Habitat)	0.0031	Medium	4	Poor	1	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	0.01
244	Wetland	Reedbeds	0.1335	High	6	Good	3	Within area formally identified in local strategy	High strategic significance	1.15	Same habitat required	2.76

25	Wetland	Reedbeds	0.0065	High	6	Moderate	2	Within area formally identified in	High strategic significance	1.15	Same habitat required	0.09
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Ref	Habitats and areas			Distinctiveness		Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline	
	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		Total habitat units	
								local strategy					
26	Sparsely vegetated land	Ruderal/Ephemeral	9.9707	Low	2	Poor	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	22.93	
27	Urban	Vacant/derelict land/bareground	0.3241	Low	2	Poor	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	0.75	
Total area			208.90									Total units	493.46

Appendix F: Summary Pre-development Baseline Hedgerow Units

	UK Habitats - existing habitats			Habitat distinctiveness	Habitat condition	Strategic significance	Suggested action to address habitat losses	Ecological baseline
Baseline ref	Hedge number	Hedgerow type	Length KM	Distinctiveness	Condition	Strategic significance		Total hedgerow units
1		Line of trees	0.0146	Low	Good	Within area formally identified in local strategy	Same distinctiveness band or better	0.10
2		Line of trees	0.1087	Low	Moderate	Within area formally identified in local strategy	Same distinctiveness band or better	0.50
3		Line of trees	1.0511	Low	Poor	Within area formally identified in local strategy	Same distinctiveness band or better	2.42
4		Line of trees (Ecologically valuable)	0.1397	Medium	Moderate	Within area formally identified in local strategy	Like for like or better	1.29
5		Native Hedgerow	3.019	Low	Moderate	Within area formally identified in local strategy	Same distinctiveness band or better	13.89

	UK Habitats - existing habitats			Habitat distinctiveness	Habitat condition	Strategic significance	Suggested action to address habitat losses	Ecological baseline
Baseline ref	Hedge number	Hedgerow type	Length KM	Distinctiveness	Condition	Strategic significance		Total hedgerow units
6		Native Hedgerow	0.097	Low	Poor	Within area formally identified in local strategy	Same distinctiveness band or better	0.22
7		Native Hedgerow - Associated with bank or ditch	0.2738	Medium	Moderate	Within area formally identified in local strategy	Like for like or better	2.52
8		Native Hedgerow - Associated with bank or ditch	1.7829	Medium	Poor	Within area formally identified in local strategy	Like for like or better	8.20
9		Native Hedgerow with trees	0.1721	Medium	Moderate	Within area formally identified in local strategy	Like for like or better	1.58
10		Native Hedgerow with trees - Associated with bank or ditch	0.5978	High	Moderate	Within area formally identified in local strategy	Like for like or better	8.25
11		Native Species Rich Hedgerow	0.1427	Medium	Moderate	Within area formally identified in local strategy	Like for like or better	1.31

12		Native Species Rich Hedgerow with trees	0.3377	High	Good	Within area formally identified in local strategy	Like for like or better	6.99
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	UK Habitats - existing habitats			Habitat distinctiveness	Habitat condition	Strategic significance	Suggested action to address habitat losses	Ecological baseline
Baseline ref	Hedge number	Hedgerow type	Length KM	Distinctiveness	Condition	Strategic significance		Total hedgerow units
13		Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.3377	V.High	Good	Within area formally identified in local strategy	Like for like	9.32
Total length			8.07				Total units	56.59

Appendix G: Summary Pre-development Baseline River Units

Existing river type			Habitat distinctiveness	Habitat condition	Strategic significance	Watercourse encroachment	Riparian encroachment	Suggested action	Ecological baseline
Baseline ref	River type	Length KM	Distinctiveness	Condition	Strategic significance	Extent of encroachment	Extent of encroachment		Total river units
1	Other Rivers and Streams	0.07	High	Fairly Poor	Within Local Plans	Major	Moderate	Restore	0.31
2	Other Rivers and Streams	0.497	High	Fairly Poor	Within Local Plans	Major	Moderate	Restore	2.19
3	Other Rivers and Streams	0.03	High	Fairly Poor	Within Local Plans	Major	Moderate	Restore	0.13
4	Ditches	1.5367	Medium	Good	Within Local Plans	Major	Major	Restore	7.95
5	Ditches	0.0383	Medium	Moderate	Within Local Plans	Major	Major	Restore	0.13
6	Ditches	0.825	Medium	Poor	Within Local Plans	Major	Major	Restore	1.42
Total length		3.00						Total units	12.13

Appendix H: Summary Post-development Habitat Units

Broad Habitat	Proposed habitat	Area (hectares)	Strategic Distinctiveness		Strategic significance	Temporal multipliers		Difficulty multiplier	Habitat units delivered
			Distinctiveness	Condition		Standard or adjusted time to target condition	Final time to target condition/years		
Cropland	Cereal crops	44.3316	Low	N/A - Agriculture 1	Within area formally identified in local strategy	Check details-Delay in starting habitat in required condition ?	3	Low	91.63
Urban	Developed land; sealed surface	6.1019	V.Low	N/A - Other	Within area formally identified in local strategy	Standard time to target condition applied	2	Medium	0.00
Urban	Developed land; sealed surface	0.0693	V.Low	N/A - Other	Within area formally identified in local strategy	Standard time to target condition applied	2	Medium	0.00
Urban	Introduced shrub	0.0101	Low	Poor	Within area formally identified	Check details-Delay in	3	Low	0.02

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Broad Habitat	Proposed habitat	Area (hectares)	Strategic Distinctiveness	Condition	significance	Temporal multiplier		Difficulty multiplier	Habitat units delivered
			Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation	
					in local strategy	starting habitat in required condition ?			
Woodland and forest	Other woodland; broadleaved	0.0378	Medium	Poor	Within area formally identified in local strategy	Check details-Delay in starting habitat in required condition ?	7	Low	0.14
Woodland and forest	Lowland mixed deciduous woodland	0.0069	High	Poor	Within area formally identified in local strategy	Check details-Delay in starting habitat in required condition ?	12	High	0.01

Heathland and shrub	Mixed scrub	0.0907	Medium	Good	Within area formally identified	Check details-Delay in starting	12	Low	0.82
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Broad Habitat	Proposed habitat	Area (hectares)	Strategic Distinctiveness	Condition	significance	Temporal multiplier		Difficulty multiplier	Habitat units delivered
			Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation	
					in local strategy	habitat in required condition ?			
Grassland	Modified grassland	3.8146	Low	Good	Within area formally identified in local strategy	Check details-Delay in starting habitat in required condition ?	9	Low	19.10
Grassland	Other neutral grassland	40.9789	Medium	Moderate	Within area formally identified in local strategy	Check details-Delay in starting habitat in required condition ?	7	Low	293.79

Woodland and forest	Other woodland; broadleaved	23.7355	Medium	Poor	Within area formally identified in local strategy	Check details-Delay in starting habitat in	7	Low	85.08
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Broad Habitat	Proposed habitat	Area (hectares)	Strategic Distinctiveness	Condition	significance	Temporal multiplier		Difficulty multiplier	Habitat units delivered
			Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation	
						required condition ?			
Lakes	Ponds (Non-Priority Habitat)	0.0947	Medium	Poor	Within area formally identified in local strategy	Check details-Delay in starting habitat in required condition ?	3	Low	0.39
Wetland	Reedbeds	0	High	Moderate	Within area formally identified in local strategy	Check details-Delay in starting habitat in required condition ?	9	Medium	0.00

Sparsely vegetated land	Ruderal/Ephemeral	0.4772	Low	Poor	Within area formally identified	Check details-Delay in starting	3	Low	0.99
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Broad Habitat	Proposed habitat	Area (hectares)	Strategic Distinctiveness	Condition	significance	Temporal multiplier		Difficulty multiplier	Habitat units delivered
			Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation	
					in local strategy	habitat in required condition ?			
Urban	Vacant/derelict land/ bareground	0.1931	Low	Poor	Within area formally identified in local strategy	Check details-Delay in starting habitat in required condition ?	3	Low	0.40
Cropland	Cereal crops	0.0368	Low	N/A - Agricultural	Within area formally identified in local strategy	Check details-Delay in starting habitat in required condition ?	3	Low	0.08

Urban	Developed land; sealed surface	0.18	V.Low	N/A - Other	Within area formally identified in local strategy	Standard time to target condition applied	2	Medium	0.00
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Broad Habitat	Proposed habitat	Area (hectares)	Strategic Distinctiveness	Condition	significance	Temporal multiplier		Difficulty multiplier	Habitat units delivered
			Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation	
Grassland	Modified grassland	0.0049	Low	Moderate	Within area formally identified in local strategy	Check details-Delay in starting habitat in required condition ?	6	Low	0.02
Grassland	Other neutral grassland	11.5836	Medium	Moderate	Within area formally identified in local strategy	Check details-Delay in starting habitat in required condition ?	7	Low	83.05
Lakes	Ponds (Non-Priority Habitat)	0.0225	Medium	Moderate	Within area formally identified in local strategy	Check details-Delay in starting habitat in required condition ?	5	Low	0.17

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Broad Habitat	Proposed habitat	Area (hectares)	Strategic Distinctiveness	Condition	significance	Temporal multiplier		Difficulty multipliers	Habitat units delivered	
			Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation		
	Total area	131.77							Total units	575.68

Appendix I: Summary Post-development Hedgerow Units

Baseline ref	New hedge number	Proposed habitats		Habitat Temporal multiplier		Habitat Strategic	Standard or adjusted time to target condition	Final time to target condition/years	Difficulty risk multipliers	Hedge units delivered
		Habitat type	Length km	Distinctiveness	Condition	Strategic significance				
1		Native Hedgerow	0.8655	Low	Moderate	Within area formally identified in local strategy	Check details- Delay in starting habitat in required condition?	7	Low	3.10
2		Native Hedgerow	0.0224	Low	Poor	Within area formally identified in local strategy	Check details- Delay in starting habitat in required condition?	3	Low	0.05
3		Native Hedgerow - Associated with bank or ditch	0.1587	Medium	Moderate	Within area formally identified in local strategy	Check details- Delay in starting habitat in required condition?	7	Low	1.14



		Proposed habitats		Habitat multiplier distinctiveness			Habitat Strategic condition significance		Difficulty risk		Hedge units delivered
Baseline ref	New hedge number	Habitat type	Length km	Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation		
4		Native Hedgerow with trees	5.1418	Medium	Moderate	Within area formally identified in local strategy	Check details-Delay in starting habitat in required condition?	12	Low	30.85	
Total length			6.19							Total units	35.13

Appendix J: Summary Post-development River Units

Post-development river habitat creation

Baseline ref	Proposed habitats		Habitat distinctiveness	Habitat condition	Strategic significance	Difficulty			Watercourse encroachment	Riparian encroachment	River units delivered
	River type	Length km	Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation	Extent of encroachment	Extent of encroachment	
1	Ditches	0.12	Medium	Good	Delivery within Local Plans	Standard time to target condition applied	10	Low	Major	Major	0.43
2	Ditches	0.01	Medium	Poor	Delivery within Local Plans	Standard time to target condition applied	1	Low	Major	Major	0.02

3	Ditches	0.084	Medium	Moderate	Delivery within Local Plans	Standard time to target	5	Low	No encroachment	No encroachment	0.65
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Baseline ref	Proposed habitats		Habitat distinctiveness	Habitat condition	Strategic significance	Difficulty			Watercourse encroachment	Riparian encroachment	River units delivered
	River type	Length km	Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation	Extent of encroachment	Extent of encroachment	
						condition applied					
Total length		0.21								Total units	1.10

Post-development riparian encroachment

		Post development/ post intervention habitats													
Base line ref	Base line habitats	Proposed River Type (Pre-populated can be overridden)	Change in distinctiveness and condition		Length KM	Habitat distinctiveness	Habitat condition	Strategic significance	Temporal multiplier		Difficulty multipliers	Watercourse encroachment	Riparian encroachment	River units delivered	
	Base line habitat		Distinctiveness movement	Condition movement		Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition /years	Final difficulty of enhancement	Extent of encroachment	Extent of encroachment		
1	Other Rivers and Streams	Other Rivers and Streams	High - High	Fairly Poor - Fairly Poor	0.07	High	Fairly Poor	Delivery within Local Plans	Standard time to target condition applied	1	Medium	Major	Major	0.27	
Total length					0.07									Total units	0.27

(Modified graphics)



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