ARUP

Yorkshire Water Services

YWS Ingbirchworth Treatment Works

Biodiversity Net Gain Assessment

Reference: 286985-18_BNGAssessment

P01 | 15 April 2024

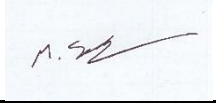
Job number 286985-18

Ove Arup & Partners Limited
6th Floor 3 Piccadilly Place
Manchester
M1 3BN
United Kingdom
arup.com

ARUP

Document Verification

Project title	YWS Ingbirchworth Treatment Works
Document title	Biodiversity Net Gain Assessment
Job number	286985-18
Document ref	286985-18_BNGAssessment
File reference	00-15-08

Revision	**Date**	**Filename**			
P01	15/04/24	**Description**	First Issue		
			Prepared by	**Checked by**	**Approved by**
		Name	Georgia Lonsdale	Matthew Sanders	Fraser Maxwell
		Signature			
		Filename			
		Description			
			Prepared by	**Checked by**	**Approved by**
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	**Checked by**	**Approved by**
		Name			
		Signature			

Issue Document Verification with Document ✓

Contents

Tables

Drawings

Appendices

1. Introduction

Ove Arup and Partners Ltd. (Arup) was commissioned by Yorkshire Water Services (YWS) to undertake a Biodiversity Net Gain (BNG) Assessment in relation to the proposed works at Ingbirchworth Water Treatment Works (WTW), South Yorkshire (NGR: SE2272705577). The assessment has been undertaken within a site boundary comprising approximately 36m^2 (hereafter referred to as 'the site')

1.1 Site and Scheme Description

The survey area ('the Site') is located south of the A629 (Huddersfield Road), on the outskirts of Ingbirchworth village. The Site is comprised of grassland. The proposed works include the installation of a new kiosk.

1.2 Biodiversity Net Gain Context

The revised National Planning Policy Framework (NPPF) was published in July 2021 and updated in December 2023, and is a material consideration in all planning decisions.[1] NPPF refers to the responsibilities of the local authorities to conserve the natural environment with respect to the use of the 'Circular 6/2005: Biodiversity and Geological Conservation – Statutory Obligation and their Impact within the Planning System' as guidance in this process. All public bodies including local planning authorities are to consider habitats and species of Principal Importance listed in Section 41 (S41) of the NERC Act (2006) and Priority Species/Habitats within Biodiversity Action Plans when considering a planning application.

BNG, as set out in Schedule 14 of the Environment Act 2021 applies in England only, through amendments in the Town and Country Planning Act (1990) and includes the mandatory requirement for new developments to provide BNG. This will require planning applicants to demonstrate that proposals will achieve at least a 10% increase in the level of biodiversity after the development, when compared to the level of biodiversity pre-development, calculated using the Defra Biodiversity Metric. This mandate came into effect in England on the 12th of February 2024 through an amendment to the Town and Country Planning Act (1990). Delivery of 10% BNG is therefore now mandatory for developments requiring planning permission (unless exempt). Any biodiversity net gain claimed on projects must be in adherence with the good practice principles.[2] Habitats will need to be secured for at least 30 years and secured on site, off site or via a new statutory biodiversity credit scheme.

1.3 Report Objectives

The objectives of this report are to:

- Assess the condition of habitat within the site in accordance with the Statutory Biodiversity Metric[3]
- Determine the total number of baseline Biodiversity Units within the site boundary, calculated using the Statutory Biodiversity Metric calculator tool.
- Determine the habitat unit losses associated with the Proposed Scheme;
- Determine the habitat enhancement and/or creation proposals on site; and
- Determine habitat enhancement and/or creation proposals off site.

[1] National Planning Policy Framework (2023) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf

[2] CIEEM, CIRIA, IEMA (2016). Biodiversity net gain: good practice principles for development. Available at: https://cieem.net/wpcontent/uploads/2019/02/Biodiversity-Net-Gain-Principles.pdf

[3] Available at https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides. (Accessed 12/04/2024)

2. Methodology

2.1 Biodiversity Net Gain Baseline Overview

Development that adopts a BNG approach seeks to have a positive impact, delivering biodiversity improvements through habitat creation or enhancement. The process follows the mitigation hierarchy, meaning that development should first seek to avoid and then minimise losses of biodiversity on site as far as possible. Where losses are incurred, these should be compensated for through habitat restoration/enhancement on site. If compensating for losses within the development footprint is not possible, as a last resort, residual biodiversity losses should be offset by gains elsewhere. Offsets are distinguished from other forms of mitigation in that they are off the development site and require measurable conservation outcomes.

The Statutory Biodiversity Metric provides a proxy value for biodiversity in the form of Area Habitat Units, Hedgerow Units and River Units. Baseline habitat losses were calculated using the Small Sites (Statutory Biodiversity Metric) tool, henceforth referred to as "the Metric". The Metric provides a score for different habitats and linear features based on their distinctiveness, and adjusts their value according to the condition and strategic significance of the habitat. The habitat distinctiveness values are based on the species richness, rarity (local, regional, national and international scales) and degree to which the habitat supports species rarely found in other habitats.

Habitats were mapped in a Geographic Information System (GIS) to calculate the area/length of each habitat. These values, along with on-site condition assessments were used in the Metric calculator tool to establish the baseline Biodiversity Units for habitats, hedgerows, and rivers on site.

2.2 Terrestrial Habitat Survey

Field surveys were conducted by Arup in June 2023 to collect the relevant habitat condition information for Biodiversity Metric 4.0.[4] During the survey all terrestrial habitats were mapped using the UK Habitat Classification (UKHab) system, on which the BNG calculations are based[5]. As part of the field survey, condition assessments were performed in the field using the condition assessment sheets from the Biodiversity Metric 4.0 technical supplement[6]. Following the release of the statutory metric on 29th November 2023, a desk-based exercise was undertaken to update the habitat information to the statutory version.

Each of the area habitats recorded during the baseline field survey were entered into the site habitat baseline calculator. The habitat distinctiveness and habitat condition score[7] is auto-populated by the Metric based on the habitat type.

Where scattered trees are present within a site, the number of trees is recorded and each is categorised by size (small, medium or large) or alternatively, their diameter at breast height (DBH) measurements are recorded. The Metric includes an urban tree tool which uses this data to calculate the area (ha) of urban trees to be included within the habitat baseline.

2.2.1 Strategic Significance

The strategic significance of each habitat is based on a landscape scale assessment. Public local plans and objectives were used to identify the local priorities for biodiversity and nature improvement. The habitats

[4] Arup (2023) YWS Ingbirchworth Preliminary Ecological Assessment.

[5] UKHab Ltd (2023) UK Habitat Classification Version 2.0. Available at https://ukhab.org.

[6] Natural England (2023) Biodiversity Metric 4.0 – Technical Annex 1, Condition Sheets. Available at: https://publications.naturalengland.org.uk/publication/5850908674228224 (Accessed 12/04/2024).

[7] Defra (2023). Biodiversity Net Gain. Available at: https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides?fbclid=IwAR3t_S8djN97HZzsb8H9ISdfVqDiUZJcSR7pp4Kz5zHRFK5KWoLjPBlmRcw (Accessed 12/04/2024)

were then scored accordingly, based on their strategic significance categories, which are summarised in Table 2-1.

Table 2-1 Strategic Significance categories and scores.

Category	Score	Point applied to calculation	
		Pre-intervention	Post-intervention
High Strategic Significance High potential – Area/action formally identified within a local plan, strategy, or policy.	1.15	Yes	Yes
Medium strategic significance Good potential – Location ecologically desirable but area/action not identified in local plan, strategy, or policy.	1.1	Yes	Yes
Low strategic significance Low potential – Area/action not identified in any local plan, strategy, or policy	1	Yes	Yes

2.3 Protected and Irreplaceable Habitats

Impacts to protected sites and irreplaceable habitats as defined within the NPPF, are not adequately measured within the Metric. Consequently, they require separate consideration which must comply with relevant policy and legislation. No irreplaceable habitats were identified during the field survey and no protected sites were identified within the site from the desk study carried out during the Preliminary Ecological Appraisal (PEA) of the site.[4]

2.4 Survey Limitations

Ecological surveys are limited by factors that affect the presence of plants and animals, such as the time of year, migration patterns and behaviour. Therefore, the absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future. However, professional judgement allows for the likely presence of these species to be predicted with sufficient certainty to not significantly limit the validity of these findings.

Any grid references provided within this report are approximate (obtained through handheld GPS devices) and are to be used as a guide only.

3. Baseline Habitats

The Proposed Scheme consists of grassland. The habitat condition grading, habitat distinctiveness and other parameters are all outlined within the Metric (Appendix B). The baseline habitats are displayed in Drawing 1.

3.1 Strategic Significance

The Barnsley Biodiversity Action plan identifies neutral grassland as a local priority habitat, and as such the baseline habitat other neutral grassland (g3c) has been designated as having high strategic significance.

3.2 Terrestrial Habitats

The terrestrial habitats recorded on site (in accordance with the Metric) include:

- Grassland – Other neutral grassland (g3c)

A detailed description of the habitats recorded, and plant species present which underpin the classification of these habitats is available within the PEA report.[4] Table 3-1 summarises the baseline broad habitat types (in accordance to UKHab) within the Proposed Scheme boundary and the number of Habitat Units attributed.

Table 3-1 Baseline Area Habitat Units on site.

Habitat group	Existing area (m^2)	Existing value (units)
Grassland	36.40	0.034

4. Habitat Proposals

4.1 On-Site

4.1.1 Habitat Losses

The installation of installation of a new kiosk will result in permanent loss of terrestrial habitats within the site. There will be a permanent loss of 36.4m^2 of other neutral grassland, leading to a loss of 0.034 Habitat Units.

4.1.2 Habitat Creation

Drawing 2 illustrates the post-development habitats proposed on site using UKHab symbology. On-Site habitat creation measures will solely include the creation of a new 36.4m^2 dosing kiosk, an urban habitat that is attributed no Habitat Units within the Statutory Metric.

4.1.3 Summary

The proposed scheme will lead to a loss of 0.034 Habitat Units following on-site works. On-site habitat creation proposals will lead to a creation of 0 Habitat Units. Overall, the Proposed Scheme will lead to a loss of 0.034 Habitat Units, equivalent to a 100% loss.

4.2 Off-Site

Due to the absence of natural habitat following the Proposed Scheme on-site, off-site mitigation will be required.

0.0374 Habitat Units will be required to off-set the on-site losses and to achieve a 10% gain in relation to Habitats. As the baseline is other neutral grassland, the off-site habitats will either need to be a moderate distinctiveness grassland or a high/very high distinctiveness habitat.

YWS do not have any landholdings within the Local Authority boundary that are suitable for the required habitats and as such would need to undertake off-site mitigation outside of the Local Authority boundary. Therefore, YWS will purchase the required Habitat Units from Barnsley Metropolitan Borough Council to ensure that habitat improvements take place in the local area.

Alternatively, if Barnsley Metropolitan Borough Council do not have suitable Habitat Units available, YWS can undertake the off-site mitigation in their landholdings. However, this will take place outside of the Local Authority boundary (this will be factored into the Habitat Unit calculations as part of the spatial multiplier for creation).

5. Post-Development Biodiversity Value

The Proposed Scheme will result in the loss of 36.4m^2 of habitats, comprising of other neutral grassland only, equivalent to 0.034 Habitat Units. No watercourses or hedgerows will be impacted.

The Proposed scheme will create 36.4m^2 of developed land; sealed surface with a value of 0.00 Habitat Units. Therefore, there will be a deficit of 0.034 Habitat Units on-site, equivalent to a 100% loss.

Off-site mitigation will be sought to ensure the development reaches 10% net gain in relation to habitats. This report can be updated to reflect the confirmed Habitat Units, and that trading rules have been satisfied, in due course/when known (Table 5-1).

Table 5-1 Summary of net unit and percentage change.

Change summary	Unit type	Result
Total net unit change (including all onsite & off-site habitat retention, creation, and enhancement)	Habitat Units	TBC
	Hedgerow Units	0
	River Units	0
Trading rules satisfied?	TBC	

6. Management and Monitoring

A Management and Monitoring Plan (MMP) will be developed as part of the off-site mitigation. The plans for implementation and management of habitats on-site will include:

- Ground preparation;
- Seed mix sowing;
- First year management; and
- Management once established.

The MMP will stipulate requirements for monitoring including method, timing and auditing requirements. As the lifetime of the Proposed Development will exceed 30 years, the MMP of habitats will be for a 30-year duration in accordance with BNG best practice.

As developed land; sealed surface does not have condition criteria, it does not require a MMP. Therefore, a MMP will not be prepared for the on-site habitats.

7. BNG Good Practice Principles for Development

This project has been carried out in accordance with good practice principles for BNG. Each of the ten principles have been outlined below with a description to evidence conformance throughout Project development.

1. Apply the mitigation hierarchy

The mitigation hierarchy was applied throughout the design process to avoid, mitigate or compensate biodiversity losses. The Proposed Scheme boundary has been designed to avoid impacts on watercourses and hedgerows and to have the minimal footprint possible, whilst retaining operational functionality.

2. Avoid losing biodiversity that cannot be offset elsewhere

No habitats of high distinctiveness will be lost as a result of the Proposed Scheme.

3. Be inclusive and equitable

Engagement has been ongoing between Arup and YWS since August 2023, with a proactive and collaborative approach being taken to ensure that both parties are up to date with the status and ongoing design of the development.

4. Address risk

Risk associated with habitat enhancement proposals were identified within this report.

5. Make a measurable net gain contribution

This BNG Design Report has been carried out in accordance with the Small Sites Metric (Statutory Biodiversity Metric) which enables a quantified assessment of change to habitats as a proxy for biodiversity.

6. Achieve the best outcomes for biodiversity

The red line boundary has been reduced in order to minimise the impacts on habitats. The habitat creation proposals have been designed to deliver a measurable net gain through the Statutory Biodiversity Metric, adhering to the relevant rules and principles which underpin this version of the metric, including trading rules.

7. Be additional

All habitat enhancement proposals are associated with this project and are independent of other proposals in the area.

8. Create a net gain legacy

Management of the created habitats on-site will be detailed within the MMP to ensure the long-term management of habitats. This will include a monitoring and management plan to incorporate adaptive management if required to ensure habitat proposals meet net gain targets.

9. Optimise sustainability

The Proposes Scheme has been completed following the rules and principles of BNG to ensure that biodiversity enhancements are prioritised.

10. Be transparent

All BNG proposals are transparently documented within this report and the Biodiversity Metric which is to be made public through planning application.

8. Summary

- Terrestrial habitat field surveys were undertaken by Arup in June 2023. These surveys collected relevant habitat classification and condition information in conformance with Biodiversity Metric 4.0 and were later updated to reflect any changes to the Statutory Biodiversity Metric.
- In total, 36.4m^2 of terrestrial habitats were present within the site, corresponding to 0.034 Habitat Units. The Proposed Scheme results in a loss of 0.034ha of other neutral grassland, leading to a loss of 0.034 Habitat Units. No hedgerow or rivers and streams were present within the site.
- 36.4m^2 of developed land; sealed surface will be created by the Proposed Scheme, leading to the creation of 0.00 Habitat Units.
- Off-site mitigation will be sought to achieve 10% net gain in relation to habitats. This will be through either, Barnsley Metropolitan Borough Council or Yorkshire Water Services.
- This report can be updated once the off-site habitats are confirmed. A MMP will need to be produced at this stage also.

Appendix A

Drawings

Drawing 1: Baseline Habitats

A3

12/04/2024 15:05

Legend

- Site boundary
- g3c - other neutral grassland

Coordinate System: British National Grid

--

Metres

0 5 10 20

Rev	Date	By	Chkd	Appd	Authd
01	12/04/2024	GL	-	FM	FM

ARUP

6th Floor, 3 Piccadilly Place
Manchester M1 3BN
Tel 0161 288 2331
www.arup.com

Client
Yorkshire Water Services

Project Name
Ingbirchworth Treatment Works

Drawing Title
Drawing 1 - Baseline UK Habitat Classification Map

Scale at A3
1:600

Role
ECOLOGY

Suitability
ISSUE

Project Number
286985-13

Rev
01

Drawing Number
D1

\\global\europe\Leeds\Jobs\280000\286985-00\18 - Ingbirchworth\0 Arup\0-15 Environmental\0-15-05 Drawings\Workspaces\ARPX\YW_Ingbirchworth\YW_Ingbirchworth.aprx

Drawing 2: Post-Development Habitats

Legend

Site boundary

u1b5 - buildings

A3

12/04/2024 15:06

Coordinate System: British National Grid

--

Metres

0 5 10 20

Rev	Date	By	Chkd	Appd	Authd
01	12/04/2024	GL	-	FM	FM

ARUP

6th Floor, 3 Piccadilly Place
Manchester M1 3BN
Tel 0161 288 2331
www.arup.com

Client

Yorkshire Water Services

Project Name

Ingbirchworth Treatment Works

Drawing Title

Drawing 2 - Post-Development UK Habitat Classification Map

Scale at A3

1:600

Role

ECOLOGY

Suitability

ISSUE

Project Number

286985-13

Rev

01

Drawing Number

D2

\\global\europe\Leeds\Jobs\280000\286985-00\18 - Ingbirchworth\0 Arup\0-15 Environmental\0-15-05 Drawings\Workspaces\ARPX\YW_Ingbirchworth\YW_Ingbirchworth.aprx

Appendix B

Small Sites Metric