United Utilities

HAWESWATER AQUEDUCT RESILIENCE PROGRAMME

Bowland Section - Biodiversity Net Gain Assessment, Habitat Compensation: Ribble Valley Borough Council

RVBC-BO-APP-008_02
JUNE 2021

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1. United Utilities are proposing a project known as Haweswater Aqueduct Resilience Project ('*the Proposed Programme*).

1.1.2. There are six Tunnel Routes (TR) to the Proposed Programme, known as TR1 to TR6. These traverse seven Local Planning Authorities (LPAs). A total of five Environment Statements are being produced, with some being submitted to more than one Local Planning Authority (LPA), with a total of nine planning applications being submitted.

1.1.3. Biodiversity Net Gain (BNG) is the result of a process applied to development so that overall, there is a positive outcome for biodiversity. The process itself follows the mitigation hierarchy, which sets out that everything possible must be done to firstly avoid, secondly minimise and thirdly restore / rehabilitate losses of biodiversity on-site. Only as a last resort, residual losses are compensated for using biodiversity offsets, which are distinguished from other forms of mitigation in that they are off the development site. BNG assessment reports are intended to provide a detailed insight into the adherence of a proposed development to the BNG Good Practice Principles for Development (CIRIA, CIEEM and IEMA, 2016) (hereafter, 'the Good Practice Principles').

1.1.4. To inform the planning applications for the Proposed Programme, BNG assessments are being completed for each Planning application and LPA. *The Environment Partnership Ltd* ('TEP') have completed BNG assessments that consider the effects of habitat clearance and post development reinstatement of habitats. These assessments are hereafter referred to as '*the On-site BNG Assessment(s)'.*

1.1.5. WSP UK Ltd ('WSP') have been commissioned to support the assessment and delivery of proposals for habitat compensation. These include sites within and outside of the Proposed Programme's Red Line Boundary (RLB, hereafter 'the Site'), where additional habitat creation and/ or enhancements are proposed, beyond simple reinstatement. These sites are hereafter referred to as 'Habitat Creation Site(s)'. It should be noted that some Habitat Creation Sites account for losses from more than one application. In this instance, this is clearly identified, and proposals are made such that double counting of biodiversity units is avoided.

1.2 SCOPE OF REPORT

1.2.1. The TR3 Bowland section of the Proposed Programme includes land within both Ribble Valley Borough Council and Lancaster City Council LPA areas. This report considers the land occurring within the Ribble Valley Brough Council area only. The following information is set out within this report:

- A summary of the outcome of the On-site BNG Assessment.

- Identification of an area with the Ribble Valley District Council area where habitat compensation[1] is proposed.
- A description of baseline habitat types at the Habitat Creation Site, including assumptions made with respect to habitat type, condition, distinctiveness, connectivity and strategic significance.
- Digitised mapping presenting the existing baseline conditions at the Habitat Creation Site.
- Details, supported by digitised mapping, of the proposed habitat creation and enhancements at the Habitat Creation Site, and the associated quantitative BNG outcome predicted. Reference is made to the associated, completed Biodiversity Metric 2.0 Calculation Tool.
- Commentary regarding the allocation of Biodiversity Units at the Habitat Creation Site to different planning applications[2].
- Commentary regarding adherence of the assessments to the Good Practice Principles.
- **Appendix A** presents a template habitat management plan for the Habitat Creation Site.

[1] Including both enhancement of existing habitats and creation of new ones.
[2] As set out in Section 2.3.6, the Habitat Creation Site is also proposed to offset effects arising from the TR4 Marl Hill section of the Proposed Programme (report ref RVDC-MH-008_02)

2 METHODS

2.1 REVIEW OF ON-SITE BNG ASSESSMENT

2.1.1. The baseline BNG assessment was reviewed to inform the development of a habitat creation and enhancement strategy for the Habitat Creation Site. This included Tabs A-1 and A-2 of the Biodiversity Metric 2.0 Calculation Tool and accompanying report (report reference RVBC-BO-APP-008_01).

2.1.2. The outcome of this review was used to devise an appropriate habitat creation/ enhancement strategy that aims to adhere to the Good Practice Principles. Particular regard was given to Principle 6 (achieve the best outcomes for biodiversity), and proposals for compensation are made that are ecologically appropriate and of an equivalent or better distinctiveness and / or condition. Compensation measures must also be ecologically appropriate, for example by supporting the same community of species.

2.2 HABITAT CREATION SITE

2.2.1. United Utilities in collaboration with WSP, reviewed their land holdings to identify a suitable Habitat Creation Site. In line with the Good Practice Principles, effort was made to identify a site that was as local as possible to the biodiversity losses and where it would be possible to secure long term benefits.

2.3 BNG ASSESSMENT OF HABITAT CREATON SITE

BASELINE CONDITIONS

2.3.1. This Habitat Creation Site (see **Figure 1**) was overlaid with Natural England's Ancient Woodland Inventory dataset to identify presence of irreplaceable habitat. Statutory designated sites for nature conservation were identified by overlaying publicly available Open Source Natural England datasets with the boundary.

2.3.2. The Habitat Creation Site overlaps with the Site (i.e. the Proposed Programme RLB). Baseline conditions (habitat type/ distinctiveness, condition) have been derived from datasets provided by United Utilities in UKHab typology (UK Habitat Classification Working Group, 2020), see **Figure 2**. In addition, condition assessment data of area-based habitats was provided, based on surveys undertaken between May and December 2020 (see **Appendix B**). With respect to hedgerow habitats, habitat condition has been attributed based upon distinctiveness such that Medium distinctiveness hedges are assumed to be in Moderate condition and Low distinctiveness hedges are assumed to be in Poor condition.

BNG ASSESSMENT

2.3.3. A BNG assessment of the Habitat Creation Site was undertaken in accordance with good practice guidance (CIEEM, IEMA & CIRIA, 2016 & 2019 and Natural England, 2019). This involves quantifying baseline and post development habitat type, condition, connectivity and strategic significance.

2.3.4. Relevant tabs of the Biodiversity Metric 2.0 Calculation Tool were completed as follows:

- For areas of the Habitat Creation Site lying within the Site (i.e. the TR3 RLB), data was input to Tab A-2. Data was added to rows 40 to 45 and deducted from rows 13 or 16, as habitats had already been entered as reinstatement. The habitat creation strategy includes Very High distinctiveness habitats which are excluded from calculations. Therefore, these were entered as 'Developed Land; Sealed Surface' to ensure habitat areas balance but that Habitat Units were not accrued.
- Data added or entered by WSP in Tab A-2 has been labelled in the assessors comments box.
- Habitat creation or enhancement outside of the Site was entered in Tabs D-1; D-2; D-3; E1 and E-3.

2.3.5. A plan in UKHab typology was produced to outline a proposed distribution of habitats at the Habitat Creation Site (see **Figure 3**).

2.3.6. The Habitat Creation Site considered in this report (Land at Newton-in-Bowland, see Section 3.2) is also currently proposed to offset effects relating to the TR4 Marl Hill planning application (see report RVBC-MH-APP-008_02). Proposals for habitat creation/ enhancement have been made such that offsets for both applications are accounted for. Two Biodiversity Metric 2.0 Calculation Tools have been produced for these applications that split the proposed enhancement and creation measures, with the habitat creation/ enhancement proposed for one application treated as retained in the other Biodiversity Metric 2.0 Calculation Tool.

2.3.7. An overall quantitative BNG result is presented for the TR3 Bowland planning application, factoring in the On-site BNG Assessment and Habitat Creation Site BNG assessments. The results were categorised as achieving Net Loss (NL), No Net Loss (NNL) or Net Gain (NG). The quantitative outcome awarded will be dependent on the residual change in Habitat Units (HU) or Hedgerow Units (HeU).

2.3.8. Commentary is also provided with respect to adherence of the Habitat Creation Site BNG Assessment to the Good Practice Principles; limited to the aspects relevant to the Habitat Creation Site.

2.4 ASSUMPTIONS AND LIMITATIONS

2.4.1. This report details the Habitat Creation Site BNG assessment only and should be read in conjunction with the On-site BNG Assessment (report number RVBC-BO-APP-008_01).

2.4.2. Strategic significance was assigned into the category 'Area/ compensation not in local strategy/ no local strategy' on a precautionary basis.

2.4.3. Habitat connectivity values were assigned according to the metric default assumptions, based on habitat distinctiveness scores. Connectivity is assumed to be medium for High and Very High distinctiveness habitats and low for Low and Medium distinctiveness habitats.

2.4.4. The post development plan (**Figure 3**) has been devised to outline proposals for habitat creation. It is proposed that this would be developed to include technical information regarding how habitats will be created and to include detailed planting plans. The template management plan provides a framework into which such information may be detailed.

2.4.5. It is assumed that created or enhanced habitats will reach good condition, based on the implementation of a long-term management plan.

2.4.6. The BNG Assessment does not, at the time of writing, include River Units. However preliminary calculations have been provided by United Utilities for the entirety of the TR3 area (i.e. inclusive of the section within Lancaster City Council) to inform potential compensation requirements. These calculations are summarised in this report and commentary is provided on potential habitat compensation requirements. River Units are excluded from the accompanying Biodiversity Metric 2.0 Calculation Tool. In part this is due to a known fault with the tool affecting the calculation of enhancement measures.

3 RESULTS

3.1 REVIEW OF ON-SITE BNG ASSESSEMENT

3.1.1. The On-site BNG Assessment for TR3 Bowland, Ribble Valley Borough Council is summarised in **Table 3-1**. This is based on the reinstatement of baseline habitats of equivalent or better distinctiveness and condition and represents the quantitative BNG result prior to the inclusion of habitat creation and enhancement measures described in this report.

Table 3-1 – TR4 Marl Hill, Ribble Valley Borough Council: On-site BNG Assessment Summary Results

Biodiversity Units	Baseline Value	Post-development Value	Change in Units	Percentage Outcome
Habitat-based	123.16	104.00[3]	-19.15	-15.55%
Hedgerow	14.51	6.94	-7.57	-52.15%
River[4]	16.94	19.70	-0.15	-0.86%

3.1.2. The On-site BNG Assessment identifies the loss of 0.63ha of 'fens (upland and lowland)' between good and moderate condition. This habitat is a Very High distinctiveness habitat (and priority habitat/ Habitat of Principal Importance, HPI), and therefore in accordance with good practice guidance is excluded from BNG calculations. Bespoke compensation measures are required for such habitats; it has been agreed that a compensation ratio of 4:1 is targeted for these habitats.

3.1.3. Other habitats identified are of between Very Low and Medium distinctiveness. They include UKHab types 'other neutral grassland' and 'other woodland; broadleaved'. Accordingly, habitat compensation measures will need to consist of habitats of the same or higher distinctiveness. Compensation measures must also be ecologically appropriate, for example by supporting the same community of species.

3.2 HABITAT CREATION SITE

3.2.1. Habitat compensation will be provided at the following site:

- Land at Newton-in-Bowland, BB7 3ED. Grid Reference: SD 6961 4998

3.2.2. The boundary of this site is set out in **Figure 1**. It is 21.63ha in size. The Habitat Creation Site is located within the Ribble Valley LPA area, and 5.66ha of it overlaps with the TR3 Bowland section of the Site. A further 1.64ha comprises the River Ribble.

[3] Note that this value is from the On-site BNG Assessment (report reference RVBC-BO-APP-008_1) and is prior to the application of increased units within the On-site area that overlaps with the Habitat Creation Site
[4] Refer to 2.4.6

3.2.3. As detailed in Section 3.4 (qualitative outcome), consideration is being given to including an additional Habitat Creation Site, Coppid Hill Pasture Biological Heritage Site (grid reference SD715573). It is located approximately 8km from the TR3 Section of the Site and within the RIbble Valley LPA area. However, at the time of writing this site is not included within the BNG assessment.

3.3 BNG ASSESSMENT OF HABITAT CREATION SITE

BASELINE CONDITIONS

3.3.1. A figure showing the habitats within the Habitat Creation Site is included in **Figure 2**.

3.3.2. There are no internationally or nationally designated sites for nature conservation within the Habitat Creation Site. There are no HPI as recorded in the Priority Habitat Inventory within the Habitat Creation Site.

Table 3-2 and

3.3.3. **Table 3-3** summarise the baseline conditions at the Habitat Creation Site. This is also detailed in the Biodiversity Metric 2.0 Calculation Tool (Tabs D-1 and E-1).

3.3.4. These figures exclude 5.66ha that occurs within the TR3 Site boundary. This area is assumed to be cleared as part of the Proposed Programme. Rivers and Streams (comprising the River Ribble), of 1.64ha, is also excluded.

Table 3-2 –Habitat Creation Site – Baseline Biodiversity Units

Habitat type	Distinctiveness	Condition	Area total	Area excluded - meadow creation/ fen creation	Area included	Total habitat units
Grassland - Modified grassland	Low	Poor	12.88	2.54/ 1.21	9.13	18.26
Grassland - Other neutral grassland	Medium	Moderate	1.10	0.08/ 0.00	1.02	8.16
Heathland and shrub - Mixed scrub	Medium	Moderate	0.05	N/A	0.05	0.4
Woodland and forest - Other woodland; broadleaved	Medium	Moderate	0.30	N/A	0.30	2.4
Totals			**14.33**	**2.62**	**10.50**	**29.22**

Table 3-3 –Habitat Creation Site – Baseline Hedgerow Units

Hedgerow Type	Distinctiveness	Length	Condition	Hedgerow Units
Native Hedgerow	Low	3.53	Poor	7.06
Native Species Rich Hedgerow	Medium	0.21	Moderate	1.68
Native Hedgerow	Low	0.11	Poor	0.22
Totals		**3.85**		**8.96**

POST DEVELOPMENT BIODIVERSITY

3.3.5. A figure showing the proposed habitats within the Habitat Creation Site is included in **Figure 3**.

3.3.6. Table 3-4 below details the habitat creation within the Site, all of which is allocated to the TR3 Bowland section of the Proposed Programme.

3.3.7. Table 3-5 and Table 3-6 include all detail habitat creation and enhancement occurring within the Habitat Creation Site (and outside of the Site), inclusive of those allocated to the TR4 Marl Hill application (report reference RVBC-MH-APP-008_02). The final column details area/ units allocated specifically to the TR3 Bowland application, which when added to the area/ units detailed in RVBC-MH-APP-008_02 account for the total. Where the value is zero, this indicates all units are allocated to the TR4 Marl Hill application.

Table 3-4 –Habitat Creation Site – Post-Development Habitat Units- Inside of the Site (Tab A-2 of the Biodiversity Metric 2.0 Calculation Tool)

Habitats	Distinctiveness	Treatment	Condition	Total Area (ha)/ Habitat Units
Grassland - Other neutral grassland	Medium	Created on-site post development	Good	2.98/ 20.96
Heathland and shrub - Mixed scrub	Medium	Created on-site post development	Good	0.98/ 9.16
Lakes - Ponds (Priority Habitat)	High	Created on-site post development	Good	0.07/ 0.65
Woodland and forest - Other woodland; broadleaved	Medium	Created on-site post development	Good	0.11/ 0.28

Habitats	Distinctiveness	Treatment	Condition	Total Area (ha)/ Habitat Units
Wetland - Fens (upland and lowland)[5]	Very High	Created on-site post development; bespoke compensation	N/A	0.61/ N/A
Grand total				**4.75/ 31.05**

Table 3-5 –Habitat Creation Site – Post-Development Habitat Units- Outside of the Site (Tab D-2 and D-3 of the Biodiversity Metric 2.0 Calculation Tool)

Habitats	Distinctiveness	Treatment[6]	Condition	Total Area (ha)/ Habitat Units	Bowland/ Allocated Area (ha)/ Habitat Units
Grassland - Modified grassland	Low	Retained	Poor	0.01/ 0.00	N/A
Grassland - Other neutral grassland	Medium	Enhanced from modified grassland	Good	5.75/ 45.2	1.5/ 11.79
Grassland - Other neutral grassland	Medium	Retained	Moderate	0.16/ 0.0	N/A
Grassland- Lowland Hay meadow	Very High	Bespoke compensation[7]	N/A	2.54/ N/A	0.00/ N/A
Heathland and shrub - Mixed scrub	Medium	Retained	Moderate	0.05/ 0.00	N/A
Heathland and shrub - Mixed scrub	Medium	Created on modified grassland	Good	2.12/ 19.82	1.00/ 9.35
Lakes - Temporary lakes, ponds and pools	High	Created on modified grassland	Good	0.07/ 0.59	0.00/ 0.00
Wetland - Fens (upland and lowland)	Very High	Bespoke compensation[8]	N/A	1.29/ N/A	1.29/ N/A
Woodland - Other woodland;	Medium	Retained	Moderate	0.30/ 0.00	N/A

[5] As detailed in Section 2.3.4 this is entered in the Biodiversity Metric 2.0 Calculation Tool as 'Developed Land; Sealed Surface' to ensure habitat areas balance but that Habitat Units were not accrued.
[6] Note that if none of the creation/ enhancement is allocated to TR4 Marl Hill, it is treated as retained in the accompanying Biodiversity Metric 2.0 Calculation Tool
[7] Created on modified grassland. Excluded from toolkit.
[8] Created on modified grassland (1.21ha) and other neutral grassland (0.08ha). Excluded from toolkit.

Habitats	Distinctiveness	Treatment[6]	Condition	Total Area (ha)/ Habitat Units	Bowland/ Allocated Area (ha)/ Habitat Units
broadleaved and mixed					
Woodland - Other woodland; broadleaved	Medium	Created on modified grassland	Good	1.18/ 3.03	0.00/ 0.00
Woodland - Other woodland; broadleaved	Medium	Created on other neutral grassland	Good	0.86/ 2.21	0.86/ 2.21
Grand total				**14.33[9]/ 70.85**	**4.65/ 23.35**

Table 3-6 –Habitat Creation Site – Post Development Hedgerow Units

Hedgerow Type	Distinctiveness	Treatment[10]	Condition	Total Length (km)/ Hedgerow Units	Marl Hill Allocated Length/ Hedgerow Units
Native Hedgerow	Low	Enhanced	Good	3.53/ 16.95	3.53/ 16.95
Native Species Rich Hedgerow	Medium	Enhanced	Good	0.21/ 2.17	0.21/ 2.17
Native Hedgerow	Low	Enhanced	Good	0.11/ 0.53	0.11/ 0.53
Native Species Rich Hedgerow	Medium	Created	Good	1.89/ 10.64	0.00/ 0.00
Totals				**5.74/ 30.29**	**3.85/ 19.64**

FUTURE MANAGEMENT

3.3.8. A template habitat management plan is included within **Appendix A** providing details on proposed management methods for the created and enhanced habitats.

[9] 10.50 when Very High distinctiveness habitats are excluded
[10] Note that creation has all been allocated to TR4 Marl Hill and is therefore treated as retained within the Biodiversity Metric 2.0 calculation tool

3.4 OVERALL BIODIVERSITY NET GAIN OUTCOME

QUANTITATIVE OUTCOME

3.4.1. As detailed in the Biodiversity Metric 2.0 Calculation Tool, when considering the Habitat Creation Site, the following outcome is achieved within the LPA area (

3.4.2. **Table 3-7**).

Table 3-7 – Summary of Quantitative Results

Biodiversity Units	On-site Value Pre/ Post Development	Off-site Value Pre/ Post Development	Change in Units	Percentage Outcome
Habitat units	123.16/ 124.90	29.22/ 40.69	+13.21	+10.73%
Hedgerow Units	14.51/ 6.94	8.96/ 19.64	+3.12	+21.48%

3.4.3. Very High distinctiveness habitats are excluded from BNG calculations, and instead a replacement ratio of 4 to 1 has been targeted. A total of 0.54ha of 'fens (upland and lowland)' is to be lost and then reinstated by the Proposed Programme, occurring within the Site and Habitat Creation Site boundaries.

3.4.4. The proposed compensation for this habitat includes 1.9ha in addition to 0.54ha of on-site reinstatement, giving a total of 2.44ha. This is in excess of a 4:1 replacement ratio which would require at least 2.16ha to be provided.

3.4.5. As detailed within **Section 2.4**, River Units have been excluded from the quantitative assessment at this stage.

QUALITATIVE OUTCOME

3.4.1. **Table 3-8** discusses, where relevant to this report and the Habitat Creation Site, compliance to each of the Good Practice Principles. As proposals for habitat creation and enhancement are at an outline stage, this outcome should be revisited at detailed design stage.

Table 3-8 - Evidence of Project Compliance with the Good Practice Principles

Principle	Description	Evidence of Compliance
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.	Details on avoidance and minimising of effects are considered in the Environmental Statement chapter. The proposed Habitat Creation Site overlaps with the TR3 section of the Site.

Principle	Description	Evidence of Compliance
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.	Refer to TEP (RVBC-BO-APP-008_01) for baseline effects. No impacts to irreplaceable habitats are known to occur.
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 LPA ecologist (where in-position) and Natural England have been consulted as part of the BNG process for the Proposed Programme.
Address risks	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 BNG assessment used industry recognised risk multipliers from the Biodiversity Metric 2.0 Calculation Tool. The offset site is within United Utilities ownership and therefore delivery can be controlled.
Make a measurable net gain contribution	Achieve a measurable overall gain for biodiversity and the services ecosystems provide while directly contributing towards nature conservation priorities.	With the exception of River Units, this report demonstrates that the Bowland section of the Proposed Programme will deliver a quantitative Net Gain. Bespoke compensation will be provided for Very High Distinctiveness habitats. The Habitat Creation Site includes semi-natural habitat types that will contribute to maintaining biodiversity in the surrounding area by providing dedicated areas for biodiversity.
Achieve the best outcomes for biodiversity	Achieve the best outcomes for biodiversity by using robust, credible evidence and local knowledge to make clearly-justified choices when: Delivering compensation that is ecologically equivalent in type, amount and condition, and that accounts for the location and timing of biodiversity losses; Compensating for losses of one type of biodiversity by providing a different type that delivers greater benefits for nature conservation; Achieving Net Gain locally to development while also contributing towards nature conservation priorities at local, regional and national;	The Habitat Creation Site includes semi-natural habitat types that will contribute to maintaining biodiversity in the surrounding area by providing dedicated areas for biodiversity. With regard to Very High Distinctives Habitats, 4:1 compensation has been identified. The trading summary tab of the Biodiversity Metric 2.0 Calculation Tool identifies that the proposed habitat compensation strategy would result in an overall deficit in moderate distinctiveness woodland units, although more area is replaced than is lost. Similarly, a net loss in 'other lowland acid grassland' is identified, given the Habitat Creation Site is not though to be

Principle	Description	Evidence of Compliance
	Enhancing existing or creating new habitat; and Enhancing ecological connectivity by creating more, bigger, better and joined areas for biodiversity.	amendable to creating this habitat type. Opportunities address these shortfalls should be sought. As set out in Section 3.2, United Utilities is seeking additional sites, and Coppid Hill Pasture Biological Heritage Site is being considered a potential additional offset site. The trading summary tab identifies a shortfall in blackthorn scrub, but it is considered that this may be compensated by the provision of 'mixed scrub'. As set out in Section 2.4, it has not been possible to include an assessment of River Units. However, the Habitat Creation Site includes a section of the River Ribble. Proposed habitat improvements should act to enhance this river corridor by the addition of tree cover, which would also act to exclude livestock. These measures are in line with recommendations provided to the project team by the Ribble Rivers Trust. Subsequent BNG assessments should seek to include a formal assessment of river enhancements and aim to deliver a net gain in River Units.
Be additional	Achieve nature conservation outcomes that demonstrably exceed existing obligations (i.e. do not deliver something that would occur anyway).	The Habitat Creation Site delivers habitat compensation above and beyond simple reinstatement.
Create a net gain legacy	Ensure Net Gain generates long-term benefits by: Engaging stakeholders and jointly agreeing practical solutions that secure Net Gain in perpetuity; Planning for adaptive management and securing dedicated funding for long-term management; Designing Net Gain for biodiversity to be resilient to external factors, especially climate change; Mitigating risks from other land uses; Avoiding displacing harmful activities from one location to another; Supporting local-level management of Net Gain activities.	United Utilities own the Habitat Creation Sites and can commit to their long-term management. A template management plan accompanies this report, and development of this will demonstrate adherence to this principle.

Principle	Description	Evidence of Compliance
Optimise sustainability	Prioritise Biodiversity Net Gain and, where possible, optimise the wider environmental benefits for a sustainable society and economy,	Proposals for habitat creation include a range of semi-natural habitat types such as scrub and woodland which may contribute to wider environmental gains such as carbon sequestration and water attenuation.
Be transparent	Communicate all Net Gain activities in a transparent and timely manner, sharing the learning with all stakeholders.	The full BNG outcome is to be shared with relevant stakeholders through delivery of the Proposed Programme. Documents will be available to the public through the planning process.

4 CONCLUSIONS

4.1.1. This report demonstrates that the TR3 Bowland section of the Proposed Programme can deliver a quantitative net-gain, when River Units are excluded from the assessment. Bespoke compensation measures are proposed to address losses of Very High distinctiveness habitats. Further assessment is required with regard to River Units, but proposals for habitat creation and compensation do include enhancement of the river corridor. Like for like compensation in Moderate distinctiveness woodland and 'other lowland acid grassland' has not been delivered by the habitat compensation strategy presented herein.

4.1.2. It is proposed that updated BNG assessments are undertaken as detailed proposals for the Proposed Programme emerge, including technical design specifications for proposals for habitat creation and enhancement. Updated BNG assessments would include assessment of River Units and opportunities would be sought to deliver like for like compensation in woodland and acid grassland habitats.

5 REFERENCES

5.1 PROJECT REFERENCES

- The Environment Partnership (2021): Haweswater Aqueduct Resilience Programme Bowland Section: Biodiversity Net Gain Assessment. Document Reference: RBC-BO-APP-008_01

5.2 TECHNICAL REFERENCES

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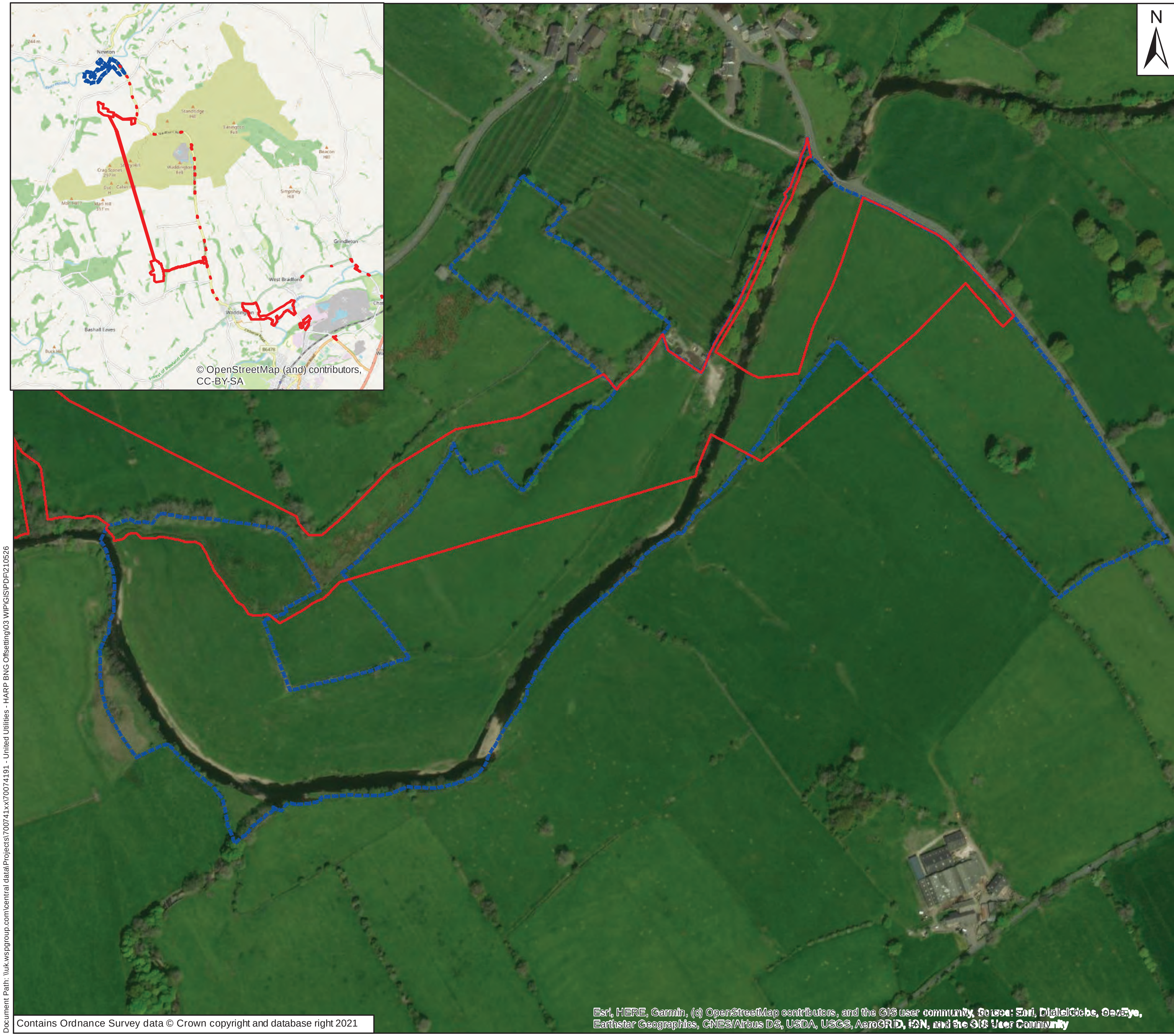
6 FIGURES

Figure 1 – Newton-in-Bowland Habitat Creation Site: Location Plan

Figure 2 - Newton-in-Bowland Habitat Creation Site: Baseline Habitat Map

Figure 3 - Newton-in-Bowland Habitat Creation Site: Post-development Habitats



Key

Site Boundary

Newton-in-Bowland Habitat Creation Site

0 0.05 0.1 0.15 0.2 km

Client:

United Utilities

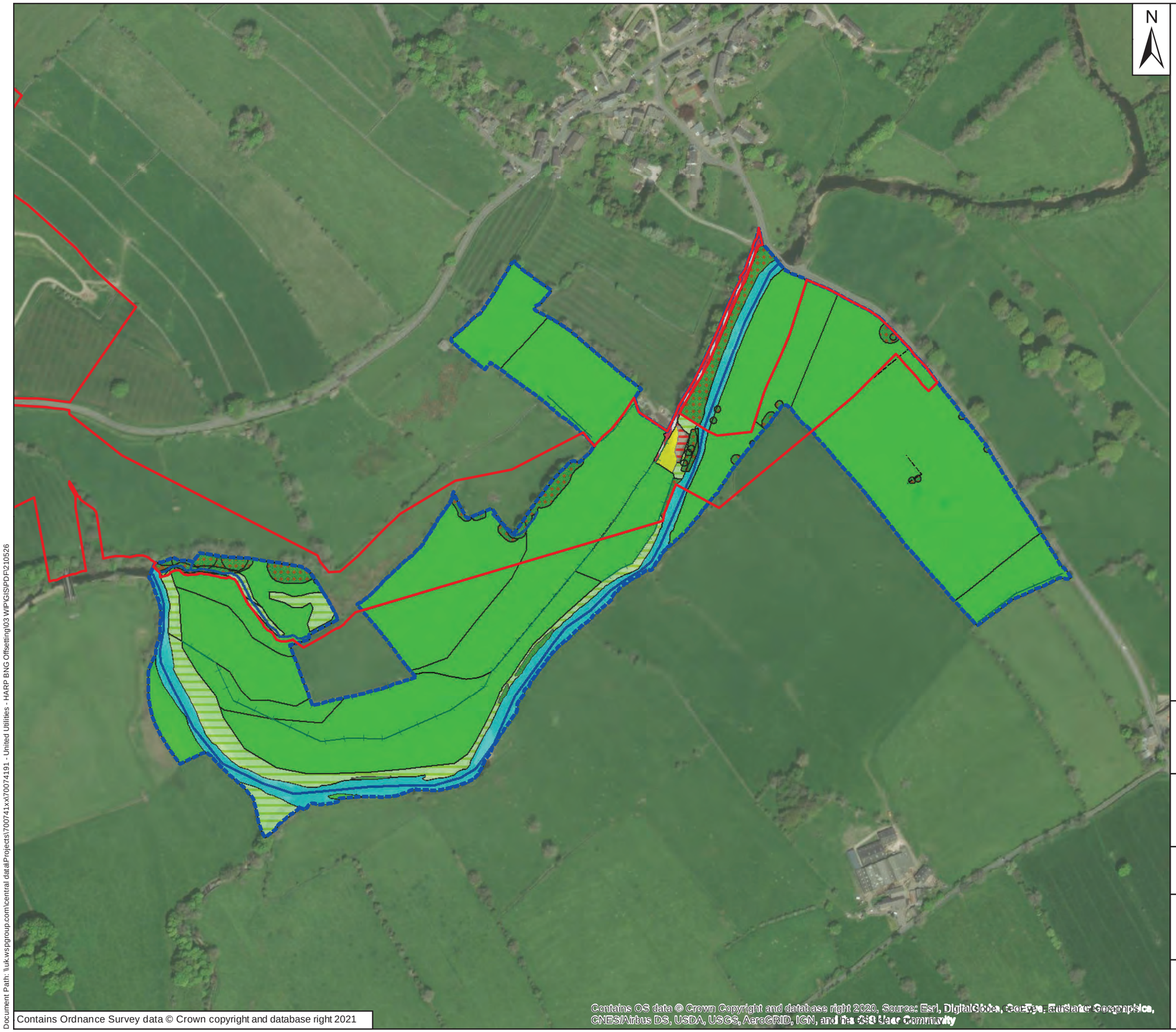
Project:

Haweswater Aqueduct Resilience Programme

Title

Netwon-in-Bowland
Habitat Creation Site: Location Plan

Drawing No:	Figure 1	Drawn:	JR
Date:	26/05/2021	Checked:	LR
Scale:	93,852 @ A3	Approved:	TB



Key

- Site Boundary
- Newton-in-Bowland Habitat Creation Site

Baseline Habitats (UKHab)

- h - hedgerow
- r - river
- u1e - urban - fence and wall
- f2a - lowland fens
- g3c - other neutral grassland
- g4 - modified grassland
- h3h - mixed scrub
- r - rivers and lakes
- s1e - ruderal/ephemeral
- u1b - developed land, sealed surface
- u1h - bare ground
- w1g - other woodland, broadleaved
- w1h - other woodland, mixed
- Very High Distinctiveness Habitats

0 0.06 0.12 0.18 0.24 km

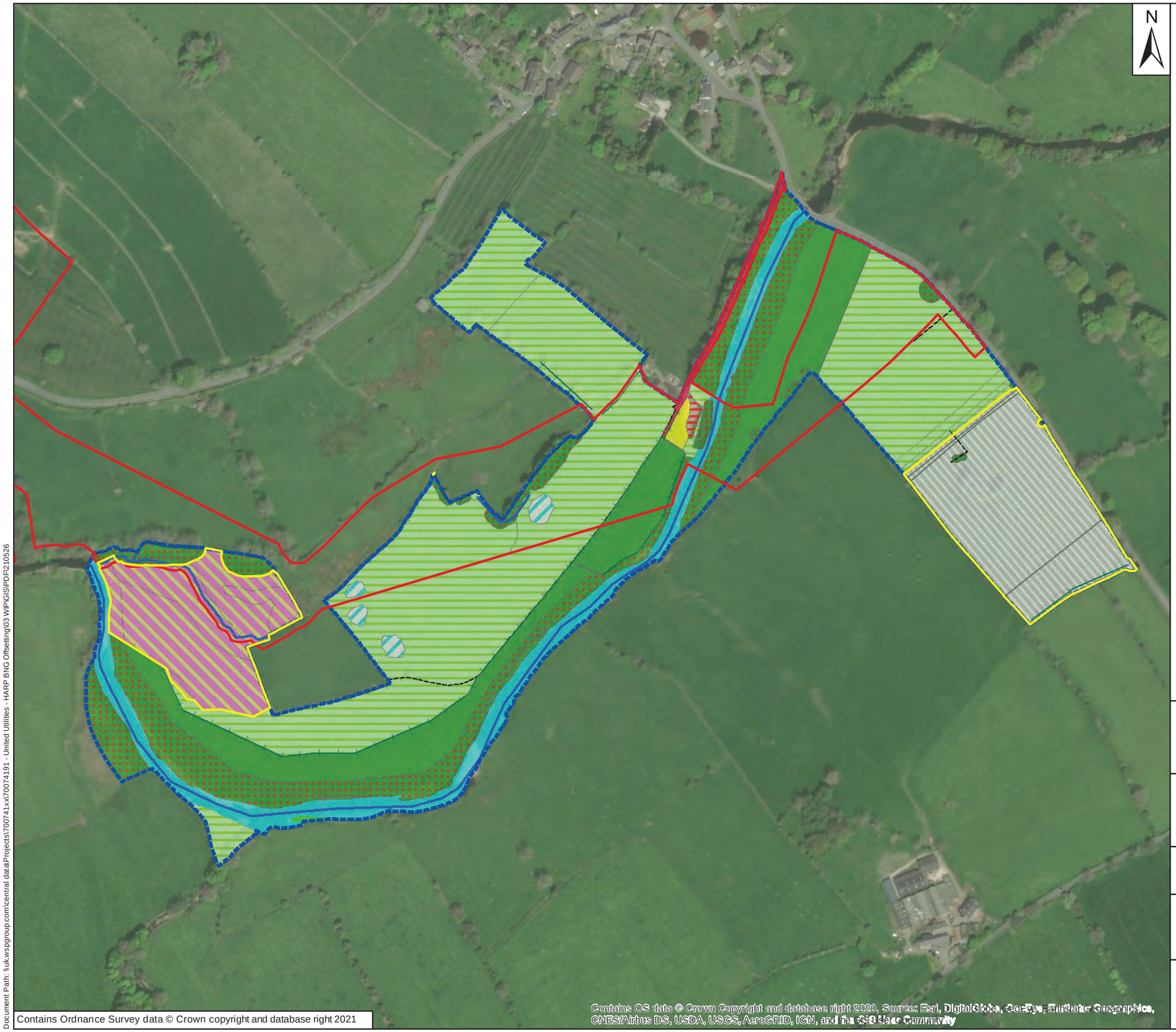
wsp

Client: United Utilities

Project: Haweswater Aqueduct Resilience Programme

Title: Newton-in-Bowland Habitat Creation Site: Baseline Habitats

Drawing No: Figure 2
Date: 26/05/2021
Scale: 4,046 @ A3
Drawn: JR
Checked: LR
Approved: TB



Key

- Site Boundary
- Newton-in-Bowland Habitat Creation Site

Post-development Habitats (UKHab)

- h - hedgerow
- r - river
- u1e - urban - fence and wall
- f2a - lowland fens
- g3a5 - lowland hay meadows
- g3c - other neutral grassland
- g4 - modified grassland
- h3h - mixed scrub
- r - rivers and lakes
- r1 - standing open water and canals
- s1e - ruderal/ephemeral
- u - urban
- u1h - bare ground
- w1g - other woodland,
- w1h - other woodland, mixed
- Very High Distinctiveness Habitats

0 0.05 0.1 0.15 0.2 km

Client: United Utilities

Project: Haweswater Aqueduct Resilience Programme

Title: Newton-in-Bowland Habitat Creation Site: Post-development Habitats

Drawing No: Figure 3
Date: 26/05/2021
Scale: 3,551 @ A3
Drawn: JR
Checked: LR
Approved: TB

Appendix A

TEMPLATE HABITAT MANAGEMENT PLAN

United Utilities

BIODIVERSITY NET GAIN

Template Long Term Management Plan

APRIL 2021

PUBLIC

United Utilities

BIODIVERSITY NET GAIN

Template Long Term Management Plan

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 70067651

DATE: APRIL 2021

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QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Template			
Date				
Prepared by				
Signature				
Checked by				
Signature				
Authorised by				
Signature				
Project number				
Report number				
File reference				

CONTENTS

APPENDICES

1 PROJECT DETAILS

1.1.1. United Utilities are proposing a programme of works known as Haweswater Aqueduct Resilience Programme ('the Proposed Scheme'). Habitat creation works are proposed to compensate the effects of the Proposed Scheme are described in an accompanying Biodiversity Net Gain (BNG) report.

1.1.2. This management plan outline proposals for management to support the delivery of the measures described within the BNG report.

2 LONG-TERM MANAGEMENT PLAN

2.1 EXTENT OF THE LONG-TERM MANAGEMENT PLAN

2.1.1. This long-term management plan (hereafter referred to as 'the Plan') is based on the suggested structure of landscape ecological management plans as set by British Standard 42020:2013 Biodiversity — Code of practice for planning and development[1]. It applies to the land located at nearest village, county, British National Grid Reference] (hereafter referred to as 'the Habitat Creation Site). The extent of the Habitat Creation Site is shown on Figure 1 of the accompanying BNG report (reference).

2.1.2. This plan is currently in outline status and will be updated as detailed proposals for habitat creation and management are available.

2.2 DESCRIPTION AND EVALUATION OF FEATURES TO BE MANAGED

2.2.1. A description of the features to be managed on the Site are provided in Annex A below. Habitats are described in terms of the [UKHab[2] / Phase 1 habitat survey[3]] classification. Habitat to be retained, enhanced or created is identified with the corresponding distinctiveness and condition. An evaluation of the nature conservation importance of these features is also provided.

2.3 ECOLOGICAL TRENDS AND CONSTRAINTS ON SITE THAT MIGHT INFLUENCE MANAGEMENT

2.3.1. Certain operations required to implement this Plan (or subsequent updated versions) could negatively affect ecological features and/ or contravene nature conservation legislation. For example, legally protected species could be present and be affected by management, or legally controlled plant species could be present or colonise the site and be spread by management.

2.3.2. The detailed update to this management plan should informed an up to date Preliminary Ecological Appraisal of the Habitat Creation Site, which should be used to devise appropriate measures to ensure ecological constraints to management are properly considered and addressed.

2.4 AIMS AND OBJECTIVES OF MANAGEMENT

2.4.1. The overall aim of this Plan is to promote delivery of habitat compensation measures described in the accompanying Biodiversity Net Gain report. Objectives to achieve this for each ecological feature is provided in Tables C1 and of Annex B. The parameters of these objectives including the target distinctiveness, condition and BU will be the parameters that will be measured to identify progress and determine if the objective has been achieved.

[1] The British Standards Institution (2013). BS 42020:2013 Biodiversity — Code of practice for planning and development. British Standards Institution, London.
[2] UK Habitat Classification Working Group (undated). UK Habitat classification [online]. Available at: https://ecountability.co.uk/ukhabworkinggroup-ukhab/ [Accessed 28/02/2020]
[3] Joint Nature Conservation Committee (JNCC) (2010). Handbook for Phase 1 habitat survey – a technique for environmental audit. JNCC, Peterborough

2.5 PRESCRIPTIONS FOR MANAGEMENT

2.5.1. Annex C below sets out the habitat creation and enhancement, management prescriptions required to achieve the stated objectives and end targets (Annex B). The Annex provides a works schedule and details of those responsible for undertaking each intervention.

2.6 PRESCRIPTIONS FOR MONITORING

2.6.1. Annex D sets out monitoring of the ecological features to be managed, to assess whether the stated aim and objectives of the project are being met (Annex B). The Annex provides a works schedule and details of those responsible for undertaking each intervention.

2.7 ONGOING MONITORING AND REMEDIAL MEASURES

2.7.1. In addition to the management and monitoring activities, a review of this management plan should be undertaken every five years to ensure that the results of monitoring activities and remedial measures identified are captured and implemented; or if necessary, to ensure that the objectives of the Plan are reviewed to allow for appropriate adaptive management measures to be taken. Changes to this plan are captured in Annex E.

2.8 GLOSSARY OF TERMS

2.8.1. Annex F provides a glossary of terms used in this document.

Annex A

DESCRIPTION OF FEATURES TO BE MANAGED ON THE SITE

Table A1 Description and evaluation of habitats to be managed on the Site

Existing feature UKHAB Primary Code EXAMPLE	Existing feature UKHAB Secondary Codes EXAMPLE	Existing feature Phase 1 Habitat code EXAMPLE	Habitat retained / created or enhanced	Distinctiveness	Condition	Biodiversity Units (BU)/ Linear Units (LU)	Nature conservation importance (as determined through legal / policy protection) EXAMPLE
Cropland – arable field margin	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	Arable field margins may qualify as a Habitat of Principal Importance (HPI).
Grassland – lowland meadows	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	Lowland calcareous grassland is a HPI.
Heathland and shrub – mixed scrub	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	-
Rivers and lakes – eutrophic standing waters	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	Rivers are HPI.
Sparsely vegetated land - ephemeral	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	Open Mosaic Habitats on Previously Developed Land is a HPI.
Urban – street tree	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	Certain trees have protection under Tree Preservation Orders.

Existing feature UKHAB Primary Code EXAMPLE	Existing feature UKHAB Secondary Codes EXAMPLE	Existing feature Phase 1 Habitat code EXAMPLE	Habitat retained / created or enhanced	Distinctiveness	Condition	Biodiversity Units (BU)/ Linear Units (LU)	Nature conservation importance (as determined through legal / policy protection) EXAMPLE
Wetland – blanket bog	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	Blanket bog is an Annex I habitat[4] under the European Habitats Directive.
Woodland and forest – lowland beech and yew woodland	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	Wood pasture and parkland is a HPI.
Native species-rich hedgerow with trees	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	[Xx]	Hedgerow is a HPI.

[4] Certain habitats have protection under the EU Habitats Directive (Council Directive 92/43/EEC) transposed in as the Conservation and Habitats Regulations 2019 (EU Exit). The Act provides for the maintenance and restoration of habitats listed in the Annex I at a favourable conservation status, as defined in Articles 1 and 2 of the Directive.

Annex B

AIMS AND OBJECTIVES

Table B1 Aims, objectives and management options - habitats

Existing feature UKHAB Primary Code EXAMPLE	Existing feature UKHAB Secondary Codes EXAMPLE	Aim EXAMPLE	Objectives EXAMPLE	Target distinctiveness	Target condition	Target BU / LU
Cropland – arable field margin	[Xx]	Create Arable Margin HPI	Area recognisable as Arable Field Margin HPI of x distinctiveness of xx condition providing xx BU	[Xx]	[Xx]	[Xx]
Grassland – lowland meadows	[Xx]	Create Lowland Meadow HPI	Area recognisable as Lowland Meadow HPI of xx distinctiveness of xx condition providing xx BU	[Xx]	[Xx]	[Xx]

Annex C

MANAGEMENT PRESCRIPTIONS

Table C1 Management prescriptions, responsibilities and work schedule

Ecological feature EXAMPLE	Management prescription EXAMPLE	Responsible	Required (years)
Cropland – arable field margin	Re-sow seed *according to monitoring recommendations* Cut annually in late summer / autumn. Cut from the inside of the area outwards to allow animals to escape to the field boundaries. Maintain a 2m buffer strip of uncut to allow an area of refuge for animals. Remove arisings and re-use to create compost piles suitable for a range of invertebrates.	Contractor 2	1 - 5
Grassland – lowland meadows	Grazing regime to be commenced on year three of grassland creation. Grazing regime to be reactive to annual monitoring to review stocking density to ensure habitat is not under or over grazed.	Contractor 1	3-10

Annex D

MONITORING PRESCRIPTIONS

Table D1 Monitoring prescriptions, responsibilities and work schedule

Ecological feature **EXAMPLE**	Monitoring prescription **EXAMPLE**	Responsible	Required (years)	Date last undertaken	Actioned by
Cropland – arable field margin	Survey and recommendations to achieve stated objective	SQE	1-3	[xx]	[xx]
	Audit of management actions (Annex C)	SQE	1-5	[xx]	[xx]
Grassland – lowland meadows	Annual review of grazing regime and recommendations to maintain moderate levels of grazing	SQE	3-10	[xx]	[xx]
	Audit of management actions (Annex C)	SQE	3-10	[xx]	[xx]

Annex E

CHANGE LOG

Table E1 below provides details of changes that have been made to the Plan and records to refer to informing the changes.

Table E1 Change log

Date EXAMPLE	Change EXAMPLE	Reason EXAMPLE	References / linked documents EXAMPLE
[DDMMYYYY]	[Not possible to sow seed through broadcasting; hydroseeding used]	[to protect against erosion of soil and run-off]	[survey details/meeting record/decision record]

Annex F

GLOSSARY

Table F1 Terms of reference used in this document

Term EXAMPLE	Description EXAMPLE
BNG	Biodiversity Net Gain
BU	Biodiversity Unit - this is a nominal figure that is derived from a calculation using numerical values assigned for the distinctiveness, condition and size (area), connectivity and strategic significance of a habitat. Post-Development Biodiversity Units are calculated using risk factor multipliers to aid the discussion of loss, impacts avoided and gains of habitat as a result of management and development activities. The tool automatically calculates the number of Biodiversity Units based on the information that the user inputs.
LU	Linear Unit – is the same as a biodiverstiy unit except that the measurement unit is length instead of area. BU and LU cannot be added together for this reason.

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Appendix B

CONDITION ASSESSMENT

1 Project Details			
Project Name:	Haweswater Aqueduct Resilience Programme	Project Number:	80061155
Written:	Eve Loxham, *Ecologist*	Approved:	Alice Helyar, *Principal Ecologist*
Report reference:	Pinder Estate, Ribble Valley: Baseline Biodiversity Net Gain Report V1	Date:	V1: 14.05.21
2 Project Drawings			
Pinder Estate Baseline BNG		BOW167_HARP_9.5_PH1_PINDER_ESTATE	
3 Ecology Surveys			
Surveyors:	Eve Loxham MBiolSci (Hons) Catrin Scott MRes, BSc (Hons) Philip Eades PhD, MCIEEM Fiona Shuttle BSc Lucy Pocock BSc Helena Davies BSc		
Survey date(s):	01/05/2020, 21/05/2020, 09/12/2020		
Survey Method:	The survey area was subject to a combination of extended Phase 1 habitat survey methodology (JNCC 2020 and CIEEM 2013) and Ground Water Dependent Terrestrial Ecosystem (GWDTE) assessment survey methodology. The GWDTE areas focussed on habitats which, based on professional judgement, were considered likely to constitute GWDTE. This took into consideration vegetation composition, observed groundwater and surface water levels and flows, topography and landscape situation. Detailed assessment of habitat quality was not included and boundary features were not mapped in detail. Habitat Condition has been assessed in accordance with Natural England Biodiversity Metric (July 2019; Crosher *et al.* 2019).		
Weather Conditions:	01/05/2020 - Cloud cover 3/8, Wind Beaufort F3, 10°C, dry. 21/05/2020 - Cloud cover 1/8, Wind Beaufort F1, 14°C, dry. 09/12/2020 – Cloud cover (5/8), Beaufort Wind F3 W, 7°C, no precipitation		
Limitations to the survey:	The proportion of the survey area which was mapped as a result of the GWDTE assessment was assessed to contain no GWDTE habitats. This area has not been surveyed to the level of detail required for a BNG assessment. If this is required, further survey will be needed. The details and habitat condition assessment was therefore undertaken using aerial photography, professional judgement and local surveyor knowledge of the site. This proportion of the site has been highlighted on the plans. The GWDTE surveys were carried out early in the growing season, constraining detailed survey and classification of plant communities. The survey also followed a period of prolonged dry weather, thus seasonal water features were possibly not evident during the survey period and certain habitat such as marshy grassland may not appear as extensive. Habitats at the edges of the survey area, e.g. adjacent to the River Hodder, were viewed from a single elevation due to access restrictions.		

4 Habitats – polygons	
No photographs.	
UK Habitat Classification definition:	Woodland and forest – Wet woodland (w1d) - Alder woodland on floodplains (w1d5)
JNCC Habitat definition:	Semi-natural broadleaved woodland (A111)
Map reference number(s):	01
Description:	Mature alder (*Alnus glutinosa*) and ash (*Fraxinus excelsior*) woodland lining the River Hodder.
Habitat condition criteria:	This should be an area of trees with complete canopy cover. TRUE Native species are dominant. Non-native and invasive species account for less than 10% of the vegetation cover. TRUE A diverse age and height structure of the trees. FALSE Free from damage [Bark stripping; Browse line; Damage shoot tips] (in the last five years) from stock or wild mammals with less than 20% of vegetation being browsed. TRUE There should be evidence of successful (i.e. not browsed off before it gets well established) tree regeneration such as seedlings, saplings and young trees. FALSE Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps. FALSE Wetland habitat if they exist within the wood has little sign of drainage or channel straightening. TRUE The area is protected from damage by agricultural and other adjacent operations. FALSE There should be no evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction). TRUE Invasive non-native plants are below 5% (see list below). TRUE No signs of significant nutrient enrichment present. TRUE More than 3 different native trees and 3 shrub species in an average 10 m radius. FALSE
Habitat condition assessment:	Moderate
Strategic significance:	Within area formally identified in the local strategy (High)


UK Habitat Classification definition:	Woodland and forest – Other woodland; broadleaved (w1g)
JNCC Habitat definition:	Plantation broad-leaved woodland (A112)
Map reference number(s):	02
Description:	Woodland dominated by mature beech (*Fagus sylvatica*) with immature and semi-mature ash, wych elm (*Ulmus glabra*) and hazel (*Corylus avellana*). Alder trees are present at the river edge. The understory layer is very sparse and includes hawthorn (*Crataegus monogyna*) saplings. The ground flora is grass-dominated and includes meadow foxtail (*Alopecurus pratensis*), sweet vernal grass (*Anthoxanthum odoratum*), English bluebell (*Hyacinthoides non-scripta*), stitchwort species (*Stellaria* sp.), red campion (*Silene dioica*), lords-and-ladies (*Arum maculatum*), yarrow (*Achillea millefolium*), lesser celandine (*Ranunculus ficaria*), wild garlic (*Allium ursinum*), meadowsweet (*Filipendula ulmaria*), common bistort (*Persicaria bistorta*) and hedge woundwort (*Stachys sylvatica*). (*TR3.TN155*)
Habitat condition criteria:	This should be an area of trees with complete canopy cover. TRUE Native species are dominant. Non-native and invasive species account for less than 10% of the vegetation cover. FALSE A diverse age and height structure of the trees. FALSE Free from damage [Bark stripping; Browse line; Damage shoot tips] (in the last five years) from stock or wild mammals with less than 20% of vegetation being browsed. TRUE There should be evidence of successful (i.e. not browsed off before it gets well established) tree regeneration such as seedlings, saplings and young trees. FALSE Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps. FALSE Wetland habitat if they exist within the wood has little sign of drainage or channel straightening. N/a The area is protected from damage by agricultural and other adjacent operations. TRUE There should be no evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction). TRUE Invasive non-native plants are below 5% (see list below). TRUE No signs of significant nutrient enrichment present. TRUE More than 3 different native trees and 3 shrub species in an average 10 m

	radius. FALSE
Habitat condition assessment:	Moderate
Strategic significance:	Within area formally identified in the local strategy (High)
	
UK Habitat Classification definition:	Woodland and forest - Other woodland; mixed (w1h)
JNCC Habitat definition:	Plantation mixed woodland (A132)
Map reference number(s):	03
Description:	Canopy including conifer species along with ash, oak species (*Quercus* sp.), alder, sycamore (*Acer pseudoplatanus*) and hazel. Variable understory including hawthorn (*Crataegus monogyna*) and holly (*Ilex aquifolium*). Ground flora including tufted hair grass (*Deschampsia cespitosa*), common nettle (*Urtica dioica*), cock's foot grass (*Dactylis glomerata*), bramble (*Rubus fruticosus* agg.), willowherb species (*Epilobium* sp.) and abundant mosses and lichens. There is abundant fallen deadwood and brash. Some small gaps in the canopy but generally closed. Some recent replanting is evident. (TR3.TN133).
Habitat condition criteria:	This should be an area of trees with complete canopy cover. TRUE Native species are dominant. Non-native and invasive species account for less than 10% of the vegetation cover. TRUE A diverse age and height structure of the trees. TRUE Free from damage [Bark stripping; Browse line; Damage shoot tips] (in the last five years) from stock or wild mammals with less than 20% of vegetation being browsed. TRUE There should be evidence of successful (i.e. not browsed off before it gets well established) tree regeneration such as seedlings, saplings and young trees. FALSE Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps. TRUE Wetland habitat if they exist within the wood has little sign of drainage or channel straightening. N/a The area is protected from damage by agricultural and other adjacent operations. TRUE There should be no evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction). TRUE

	Invasive non-native plants are below 5% (see list below). TRUE No signs of significant nutrient enrichment present. TRUE More than 3 different native trees and 3 shrub species in an average 10 m radius. TRUE
Habitat condition assessment:	Moderate
Strategic significance:	Within area formally identified in the local strategy (High)
No photographs.	
UK Habitat Classification definition:	Heathland and shrub – mixed scrub (h3h)
JNCC Habitat definition:	Dense/continuous scrub (A21)
Map reference number(s):	06 and 07
Description:	Dense scrub containing a mix of species including hawthorn, blackthorn (*Prunus spinosa*) and willow (*Salix* sp.).
Habitat condition criteria:	There are at least three woody species, with no one species comprising more than 75% of the cover (except common juniper, sea buckthorn or box, which can be 100% cover). FALSE There is a good age range – a mixture of seedlings, saplings, young shrubs and mature shrubs. FALSE Pernicious weeds and invasive species make up less than 5% of the ground cover. TRUE The scrub has a well-developed edge with un-grazed tall herbs. FALSE There are many clearings and glades within the scrub. FALSE
Habitat condition assessment:	Poor
Strategic significance:	Location ecologically desirable but not in the local strategy (Moderate)
	
UK Habitat Classification definition:	Grassland – Other neutral grassland (g3c)
JNCC Habitat definition:	Semi-improved neutral grassland (B22)
Map reference number(s):	07 to 12
Description:	Grassland adjacent to the River Hodder which is more species-rich and less intensively managed than the surrounding sheep-grazed fields. The grassland slopes down to the river and also contains herbs including meadowsweet, sedge species (*Carex* sp.), crosswort (*Cruciata laevipes*) and speedwell species (*Veronica* sp.). (TR3.TN154)

Habitat condition criteria:	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site. TRUE The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation. TRUE Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat. TRUE Undesirable species and physical damage is below 5% cover. FALSE Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens). FALSE Cover of bracken less than 20% and cover of scrub and bramble less than 5%. TRUE
Habitat condition assessment:	Moderate
Strategic significance:	Within area formally identified in the local strategy (High)
	
UK Habitat Classification definition:	Grassland – Other neutral grassland (g3c)
JNCC Habitat definition:	Marshy grassland (B5)
Map reference number(s):	13 to 15
Description:	Soft rush (*Juncus effusus*) scattered within damp areas of species-poor semi-improved grassland and lining a small watercourse. (TR3.TN148).
Habitat condition criteria:	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site. TRUE The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation. FALSE Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for

	details of indicator species for specific habitat. FALSE Undesirable species and physical damage is below 5% cover. FALSE Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens). FALSE Cover of bracken less than 20% and cover of scrub and bramble less than 5%. TRUE
Habitat condition assessment:	Poor
Strategic significance:	Area not in the local strategy/no local strategy (Low)
No photographs.	
UK Habitat Classification definition:	Grassland – Modified grassland (g4)
JNCC Habitat definition:	Poor semi-improved grassland (B6)
Map reference number(s):	16 to 26
Description:	Sheep-grazed pasture.
Habitat condition criteria:	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site. TRUE The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation. TRUE Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat. FALSE Undesirable species and physical damage is below 5% cover. FALSE Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens). FALSE Cover of bracken less than 20% and cover of scrub and bramble less than 5%. TRUE
Habitat condition assessment:	Poor
Strategic significance:	Area not in the local strategy/no local strategy (Low)

UK Habitat Classification definition:	Grassland – Tall herb communities (g3c.16)
JNCC Habitat definition:	Tall ruderal (C31)
Map reference number(s):	27
Description:	Stand of common nettle on a mound of recently disturbed ground. (TR3.TN153).
Habitat condition criteria:	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site. TRUE The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation. TRUE Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat. TRUE Undesirable species and physical damage is below 5% cover. FALSE Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens). FALSE Cover of bracken less than 20% and cover of scrub and bramble less than 5%. TRUE
Habitat condition assessment:	Poor
Strategic significance:	Area not in the local strategy/no local strategy (Low)
5 Habitats - watercourses	
  	
UK Habitat Classification definition:	Rivers (priority habitat) (r2a)
JNCC Habitat definition:	Running water (G2)
Map reference number(s):	28

Description:	River Hodder. Width is a range of 10 to 15m with a variable depth. Steep to vertical banks on the outside of bends, with some shallower slopes were materials have been deposited on the inside of bends. Sections of the embankments are eroding. The channel within the survey area curves and meanders through the unconfined valley. The surrounding land use is mainly sheep-grazed pasture, however there are pockets of broadleaved and mixed woodland. There are some trees with root systems interacting within the channel. Unvegetated side bars are present within the channel. The channel substrate is dominated by gravel-pebble with additional sand and silt. (TR3.WC80).
Habitat condition criteria:	A morph river survey was not undertaken of this watercourse.
Habitat condition provisional assessment:	Good
Strategic significance:	Within catchment plans
	
UK Habitat Classification definition:	Headwater stream
JNCC Habitat definition:	Running water (G2)
Map reference number(s):	31
Description:	Slow flowing shallow stream which joins the River Hodder downstream. The substrate comprises silt and pebbles. The stream width is 0.75-1 m and depth is 3-5 cm. In-channel vegetation includes water mint (*Mentha aquatica*), occasional sedges and flotegrass (*Glyceria fluitans*). Steep sided earth banks, which are dominated by vegetation from the surrounding fields including hard rush (*Juncus inflexus*) meadowsweet, water mint, water avens (*Geum rivale*) and creeping thistle (*Cirsium arvense*). There is a narrow fringe of soft rush along the embankment edge.
Habitat condition criteria:	A morph river survey was not undertaken of this watercourse.
Habitat condition provisional assessment:	Moderate
Strategic significance:	Within catchment plans

No photographs.	
UK Habitat Classification definition:	Other rivers and streams (r2b)
JNCC Habitat definition:	Running water (G2)
Map reference number(s):	32
Description:	Small ditch joining the River Hodder at the downstream end which runs through grazed sheep fields.
Habitat condition criteria:	A morph river survey was not undertaken of this watercourse.
Habitat condition provisional assessment:	Moderate
Strategic significance:	Within catchment plans
5 Habitats – Line of trees and hedgerows	
 	
UK Habitat Classification:	Line of trees
Map reference number(s):	33
Description:	Line of mature ash trees at field boundary
Habitat condition criteria:	Good – Mature trees with continuous canopy ▪ A mature tree in this context is one that is at least 1/3 expected fully mature height ▪ Gaps make up <10% of total length and there are no canopy gaps >5m Moderate – continuous canopy ▪ Trees <1/3 expected fully mature height ▪ Gaps make up >10% and / or gaps are >5m in length Poor – broken canopy ▪ Gaps make up >10% and / or gaps are >5m in length
Habitat condition assessment:	Moderate



UK Habitat Classification:	Line of trees
Map reference number(s):	34
Description:	Line of mature sycamore along field boundary
Habitat condition criteria:	Good – Mature trees with continuous canopy ▪ A mature tree in this context is one that is at least 1/3 expected fully mature height ▪ Gaps make up <10% of total length and there are no canopy gaps >5m Moderate – continuous canopy ▪ Trees <1/3 expected fully mature height ▪ Gaps make up >10% and / or gaps are >5m in length Poor – broken canopy ▪ Gaps make up >10% and / or gaps are >5m in length
Habitat condition assessment:	Moderate

UK Habitat Classification:	Line of trees
Map reference number(s):	35
Description:	Line of mature ash along field boundary

Habitat condition criteria:	Good – Mature trees with continuous canopy ▪ A mature tree in this context is one that is at least 1/3 expected fully mature height ▪ Gaps make up <10% of total length and there are no canopy gaps >5m Moderate – continuous canopy ▪ Trees <1/3 expected fully mature height ▪ Gaps make up >10% and / or gaps are >5m in length Poor – broken canopy ▪ Gaps make up >10% and / or gaps are >5m in length
Habitat condition assessment:	Moderate
No photographs.	
UK Habitat Classification:	Line of trees
Map reference number(s):	36
Description:	Line of mature ash / sycamore along field boundary
Habitat condition criteria:	Good – Mature trees with continuous canopy ▪ A mature tree in this context is one that is at least 1/3 expected fully mature height ▪ Gaps make up <10% of total length and there are no canopy gaps >5m Moderate – continuous canopy ▪ Trees <1/3 expected fully mature height ▪ Gaps make up >10% and / or gaps are >5m in length Poor – broken canopy ▪ Gaps make up >10% and / or gaps are >5m in length
Habitat condition assessment:	Moderate
No photographs.	
UK Habitat Classification:	Line of trees
Map reference number(s):	37
Description:	Line of mature ash / sycamore along field boundary
Habitat condition criteria:	Good – Mature trees with continuous canopy ▪ A mature tree in this context is one that is at least 1/3 expected fully mature height ▪ Gaps make up <10% of total length and there are no canopy gaps >5m Moderate – continuous canopy ▪ Trees <1/3 expected fully mature height ▪ Gaps make up >10% and / or gaps are >5m in length Poor – broken canopy ▪ Gaps make up >10% and / or gaps are >5m in length
Habitat condition assessment:	Poor

UK Habitat Classification:	Line of trees
Map reference number(s):	38
Description:	Mature ash trees along a field boundary
Habitat condition criteria:	Good – Mature trees with continuous canopy ▪ A mature tree in this context is one that is at least 1/3 expected fully mature height ▪ Gaps make up <10% of total length and there are no canopy gaps >5m Moderate – continuous canopy ▪ Trees <1/3 expected fully mature height ▪ Gaps make up >10% and / or gaps are >5m in length Poor – broken canopy ▪ Gaps make up >10% and / or gaps are >5m in length
Habitat condition assessment:	Moderate

UK Habitat Classification:	Line of trees
Map reference number(s):	39
Description:	Line of mature alder, sycamore and beech lining entrance road and field
Habitat condition criteria:	Good – Mature trees with continuous canopy ▪ A mature tree in this context is one that is at least 1/3 expected fully mature height ▪ Gaps make up <10% of total length and there are no canopy gaps >5m Moderate – continuous canopy ▪ Trees <1/3 expected fully mature height ▪ Gaps make up >10% and / or gaps are >5m in length

	Poor – broken canopy ▪ Gaps make up >10% and / or gaps are >5m in length
Habitat condition assessment:	Good
No photographs.	
UK Habitat Classification:	Line of trees
Map reference number(s):	40
Description:	Mature ash trees between two hedges at the field boundary
Habitat condition criteria:	Good – Mature trees with continuous canopy ▪ A mature tree in this context is one that is at least 1/3 expected fully mature height ▪ Gaps make up <10% of total length and there are no canopy gaps >5m Moderate – continuous canopy ▪ Trees <1/3 expected fully mature height ▪ Gaps make up >10% and / or gaps are >5m in length Poor – broken canopy ▪ Gaps make up >10% and / or gaps are >5m in length
Habitat condition assessment:	Moderate
	
UK Habitat Classification:	Line of trees
Map reference number(s):	41
Description:	Mature and semi-mature sycamore located on a dismantled stone wall on a slightly raised bank.
Habitat condition criteria:	Good – Mature trees with continuous canopy ▪ A mature tree in this context is one that is at least 1/3 expected fully mature height ▪ Gaps make up <10% of total length and there are no canopy gaps >5m Moderate – continuous canopy ▪ Trees <1/3 expected fully mature height ▪ Gaps make up >10% and / or gaps are >5m in length Poor – broken canopy ▪ Gaps make up >10% and / or gaps are >5m in length
Habitat condition assessment:	Moderate

	
UK Habitat Classification:	Line of trees
Map reference number(s):	42
Description:	Small number of dead trees on the riverbank.
Habitat condition criteria:	Good – Mature trees with continuous canopy ▪ A mature tree in this context is one that is at least 1/3 expected fully mature height ▪ Gaps make up <10% of total length and there are no canopy gaps >5m Moderate – continuous canopy ▪ Trees <1/3 expected fully mature height ▪ Gaps make up >10% and / or gaps are >5m in length Poor – broken canopy ▪ Gaps make up >10% and / or gaps are >5m in length
Habitat condition assessment:	Poor
No photographs.	
UK Habitat Classification:	Line of trees
Map reference number(s):	43
Description:	Line of mature alder lining the river
Habitat condition criteria:	Good – Mature trees with continuous canopy ▪ A mature tree in this context is one that is at least 1/3 expected fully mature height ▪ Gaps make up <10% of total length and there are no canopy gaps >5m Moderate – continuous canopy ▪ Trees <1/3 expected fully mature height ▪ Gaps make up >10% and / or gaps are >5m in length Poor – broken canopy ▪ Gaps make up >10% and / or gaps are >5m in length
Habitat condition assessment:	Good

No photographs	
UK Habitat Classification:	Line of trees (scrub)
Map reference number(s):	44
Description:	Line of hawthorn shrubs separate from the nearby hedgerow
Habitat condition criteria:	Good – Mature trees with continuous canopy ▪ A mature tree in this context is one that is at least 1/3 expected fully mature height ▪ Gaps make up <10% of total length and there are no canopy gaps >5m Moderate – continuous canopy ▪ Trees <1/3 expected fully mature height ▪ Gaps make up >10% and / or gaps are >5m in length Poor – broken canopy ▪ Gaps make up >10% and / or gaps are >5m in length
Habitat condition assessment:	Poor
	
UK Habitat Classification:	Native species-rich hedgerow with trees
JNCC Habitat Definition:	Species-rich intact hedgerow (J211)
Map reference number(s):	45
Description:	Roadside hedgerow approximately 1.5 - 2 m tall and 1 m wide with eight associated gaps and eight associated mature trees. The dominant woody species is hawthorn with additional alder, hazel, ash and blackthorn. ground flora recorded include dog's mercury (*Mercurialis perennis*), wood avens (*Geum urbanum*) and common sorrel (*Rumex acetosa*). There is a parallel hedgerow within 15 m on the opposite side of the road, along with an additional connecting hedgerow.
Habitat condition criteria:	A1 Height: >1.5 m average along length TRUE A2 Width: >1.5 m average along length FALSE B1 Gap – hedge base: Gap between ground and base of canopy <0.5m 90% of length (unless 'line of trees') TRUE B2 Gap - hedge canopy continuity: Gaps make up <10% of total length and no canopy gaps >5m FALSE C1 Undisturbed ground and perennial vegetation: >1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length measured from outer edge of hedgerow, and is present on one side of the hedge (at

	least) FALSE C2 Undesirable perennial vegetation: Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground FALSE D1 Invasive and neophyte species: >90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species TRUE D2 Current damage >90% of the hedgerow or undisturbed ground is free of damage caused by human activities FALSE
Habitat condition assessment:	Poor
No photographs.	
UK Habitat Classification:	Native hedgerow
JNCC Habitat Definition:	Species-poor intact hedgerow (J212)
Map reference number(s):	46
Description:	Line of mature hawthorn and blackthorn along a field boundary.
Habitat condition criteria:	Height: >1.5 m average along length TRUE Width: >1.5 m average along length FALSE Gap – hedge base: Gap between ground and base of canopy <0.5m 90% of length (unless 'line of trees') FALSE Gap - hedge canopy continuity: Gaps make up <10% of total length and no canopy gaps >5m FALSE Undisturbed ground and perennial vegetation: >1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length measured from outer edge of hedgerow, and is present on one side of the hedge (at least) FALSE Undesirable perennial vegetation: Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground FALSE Invasive and neophyte species: >90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species TRUE Current damage >90% of the hedgerow or undisturbed ground is free of damage caused by human activities FALSE
Habitat condition assessment:	Poor

References

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