Biodiversity Net Gain

Andrew Halcro-Johnston: Lead Senior Ecologist, Amey Consulting

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YORhub

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Life's better connected

Ecology at Amey

- UK Ecology team of over 25
- Ecology teams in Birmingham, Bristol, Cardiff, Exeter, Sheffield, Manchester, York and Glasgow
- Melanie Roxburth, National Ecology Lead – 07933 522249 melanie.roxburgh1@amey.co.uk
- Kayleigh Fawcett, Ecology Technical Director kayleigh.fawcett@amey.co.uk

GENERAL

Our Capabilities

- UK Habitat Classification surveys
- Habitat condition assessments
- Net Benefit for Biodiversity assessment
- Green Infrastructure Management Plans
- Biodiversity Net Gain (BNG) assessment
- National Vegetation Classification (NVC) surveys
- Badger – presence/likely absence, bait marking surveys, licensing and mitigation
- Otter – presence/likely absence, European Protected Species licensing and mitigation
- Bats – initial tree/structure assessments, emergence/re-entry surveys (including use of infra-red night vision aid equipment), transect surveys, backtracking surveys, bat data analysis, European Protected Species licensing and mitigation
- Dormouse – presence/likely absence, European Protected Species licensing and mitigation
- Great crested newt – Habitat Suitability Index surveys, eDNA, presence/likely absence, population assessment, European Protected Species licensing and mitigation
- Water vole – habitat suitability assessments, presence/likely absence, licensing and mitigation
- White clawed crayfish – habitat suitability assessments, presence/likely absence, mitigation
- Reptile – presence/likely absence, mitigation including translocation
- Breeding bird surveys
- Wintering bird surveys
- Barn owl surveys
- Preliminary Ecological Appraisal (PEA)
- Species survey reports
- Ecological Impact Assessment (EcIA)
- Habitat Regulations Assessment (HRA)
- Environmental Impact Assessment (EIA) and EIA coordination
- SSSI impact assessments
- Ecological constraints memos
- Ecological Clerk of Works (ECoW) – non-licensed and works under licences
- Protected species method statements
- Ecological management plans

GENERAL

Mandatory Biodiversity Net Gain: Two Years On

- What is biodiversity and why should we care about it?
- What is Biodiversity Net Gain and how does it work?
- Two years on – benefits of BNG
- Two years on – challenges of BNG
- Generating income from BNG
- Case studies
- Summary and questions

GENERAL

Why should we care about Biodiversity?

Ecosystems produce a flow of benefits to people and the economy known as **'ecosystem services':**

- **Provisioning services** – extraction, harvesting e.g. wood, medicines.
- **Regulating services** – using biological processes to maintain beneficial environmental conditions e.g. clean water, healthy soil, pollination, flood regulation.
- **Supporting services** – habitat functioning supports human life e.g. photosynthesis, water cycle.
- **Cultural services** – experiential, intangible benefits to people e.g. recreation.
- **Biodiversity enables ecosystems to be productive, resilient and able to adapt.**

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Top Five Threats to Biodiversity

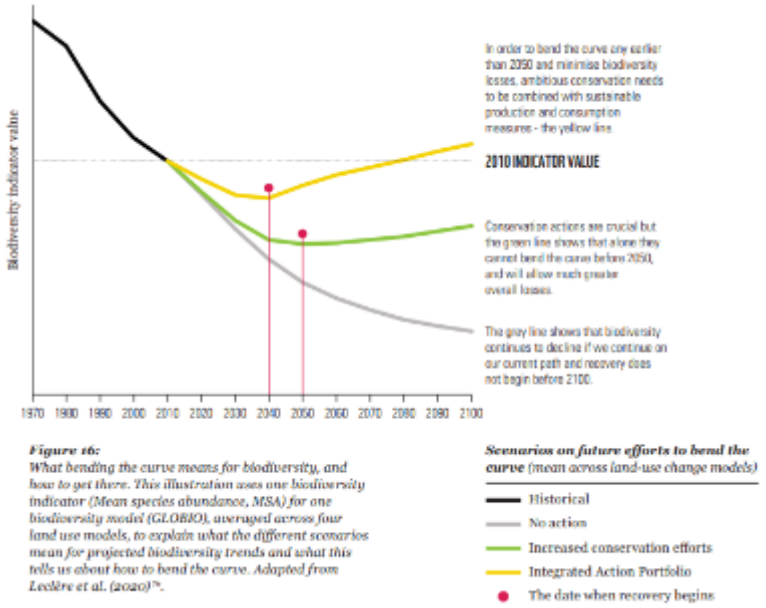
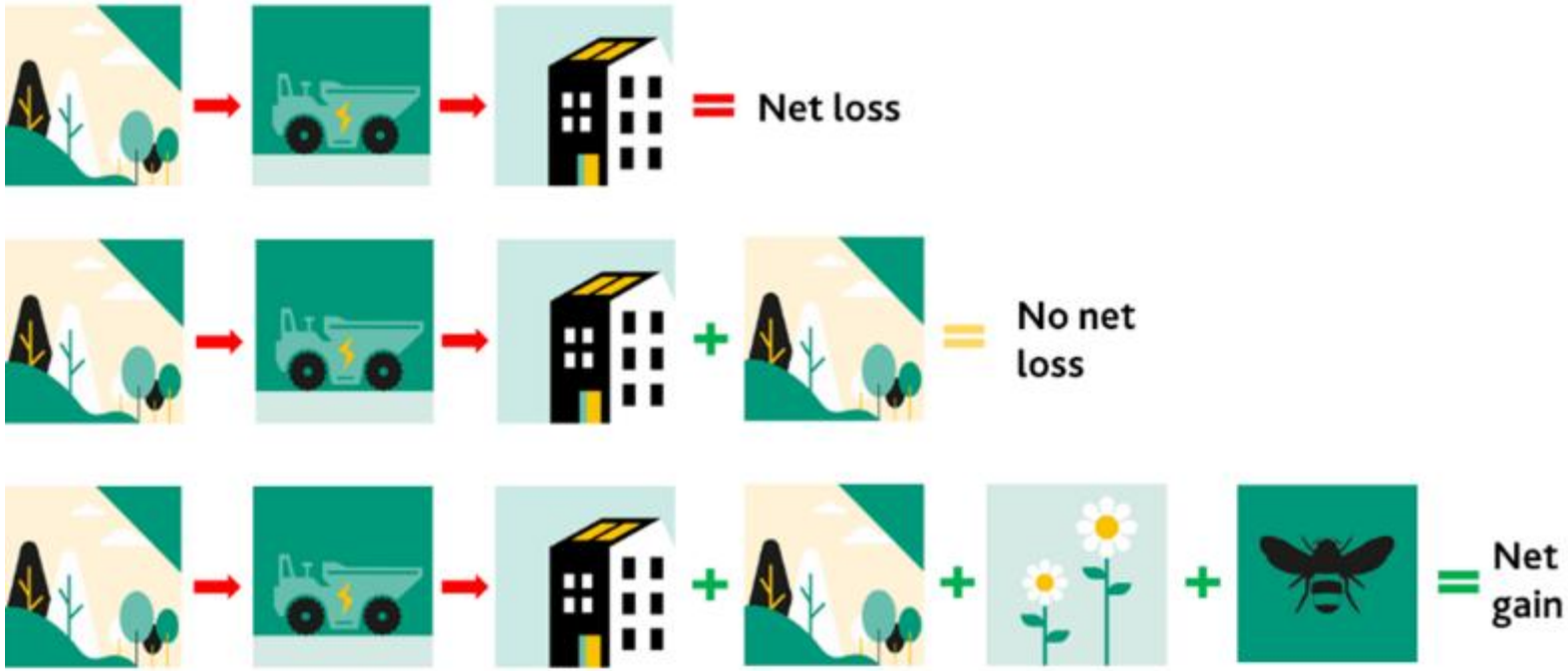


Figure 16:
What bending the curve means for biodiversity, and how to get there. This illustration uses one biodiversity indicator (Mean species abundance, MSA) for one biodiversity model (GLOBIO), averaged across four land use models, to explain what the different scenarios mean for projected biodiversity trends and what this tells us about how to bend the curve. Adapted from Leclère et al. (2020)[76].

Figure taken from WWF LIVING PLANET REPORT 2022

Figure taken from Guidance on the identification and assessment of nature-related Issues: The TNFD LEAP approach. Version 1.1 October 2023 by Taskforce on Nature-related Financial Disclosures.

What is Biodiversity Net Gain?



Mandatory Biodiversity Net Gain (BNG) is a provision in the Environment Act 2021 that requires development in England to result in **more or better-quality natural habitats than before.**

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BNG – Legislation

Environment Act 2021 made BNG of 10% mandatory for developments and small sites requiring planning permission under The Town and Country Planning Act.

Provision for Local Nature Recovery Strategies and strengthened statutory duty to conserve and enhance biodiversity.

Nationally significant infrastructure projects will fall under BNG legislation from May 2026.

Exemptions include:

- Urgent crown developments.
- Developments that are granted planning permission by a development order (including permitted development rights).
- High-speed rail transport network.

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Key aspects of mandatory BNG

Good practice for BNG is set out in ‘Biodiversity Net Gain: Good Practice Principles for Development’, a set of ten principles published by IEMA, CIEEM and CIRIA that provide a framework for developers to follow.

Principle 1. Apply the Mitigation Hierarchy

Principle 2. Avoid losing biodiversity that cannot be offset by gains elsewhere

Principle 3. Be inclusive and equitable

Principle 4. Address risks

Principle 5. Make a measurable Net Gain contribution

Principle 6. Achieve the best outcomes for biodiversity

Principle 7. Be additional

Principle 8. Create a Net Gain legacy

Principle 9. Optimise sustainability

Principle 10. Be transparent

A core principle of achieving BNG is to follow the Mitigation Hierarchy of first avoiding and mitigating adverse impacts on biodiversity from the development before compensating for residual impacts and achieving BNG by enhancing and creating wildlife-rich habitats.

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How does BNG work?

- BNG is part of an ecological assessment of a site which includes desktop study and fieldwork elements.
- Requires a competent Ecologist (look for CIEEM membership or other evidence of experience such as botany FISC level).
- UK Hab survey and condition assessment.
- Protected and priority species surveys.
- Arboricultural assessment.

Desktop study - local context

- Location and ecological context of the site – Strategic Significance e.g. wildlife corridors
- Designated sites
- Priority habitats
- Irreplaceable habitats e.g. ancient woodland, ancient and veteran trees
- Buffer zones
- Protected and priority species records and potential habitat
- Local Nature Recovery Strategies - South Yorkshire Nature Recovery
- Constraints and opportunities

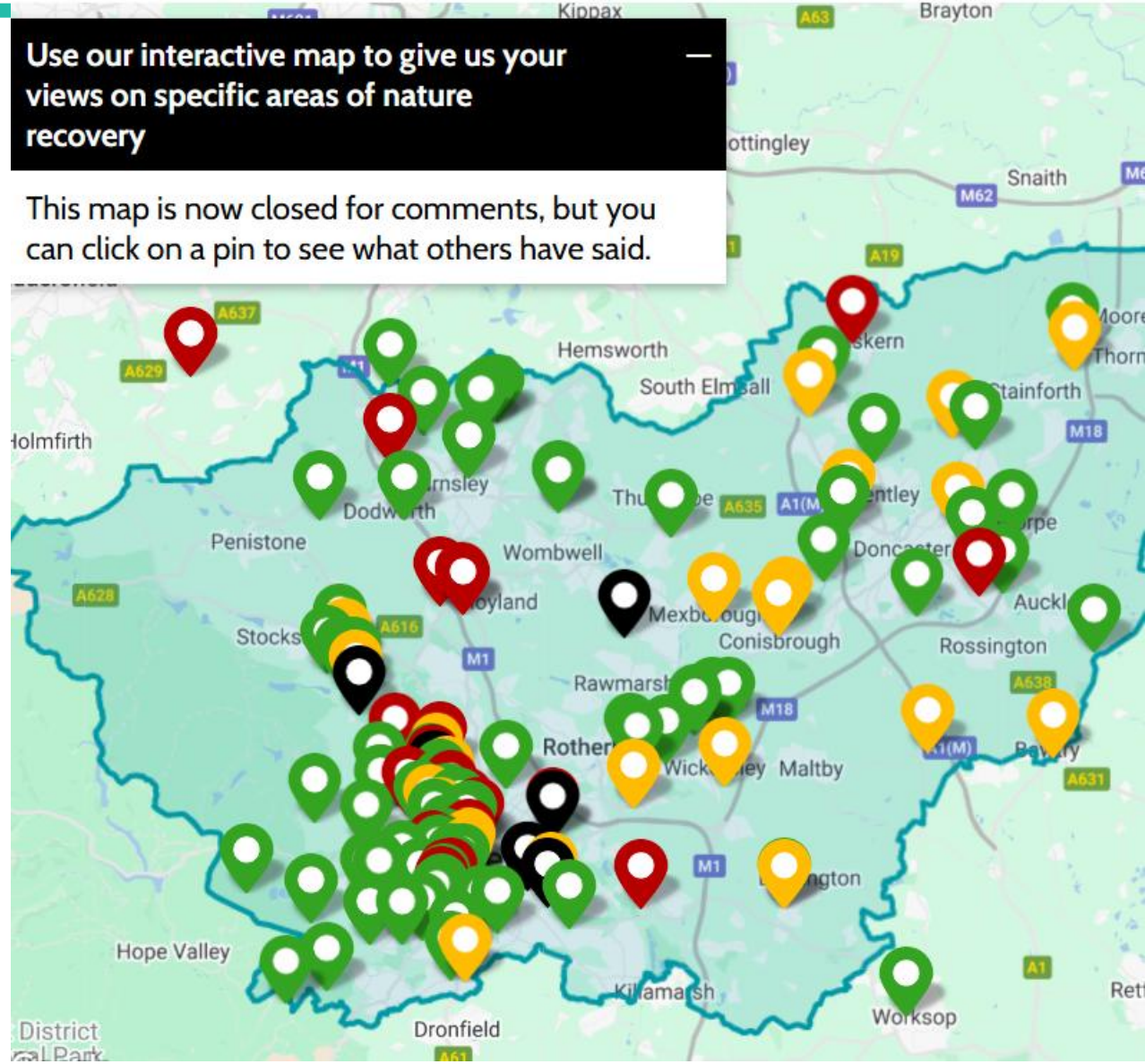

Figure taken from https://southyorkshirenaturerecovery.co.uk (2025)

Habitat baselines

- A BNG survey provides a detailed ecological assessment of the current habitat within a development site. A competent assessor (usually a CIEEM registered ecologist) measures the size, condition, and distinctiveness of existing features like ancient trees, woodlands, grasslands, ponds, and hedgerows. They then use the government's Statutory Biodiversity Metric tool to calculate a site's baseline value in biodiversity units. According to the metric: 'biodiversity units' are used to describe relative biodiversity value. The metric considers factors like habitat type, richness, age, connectivity, and rarity on a geographic scale.
- There are measures to prevent deliberate downgrading of habitat values prior to submitting planning applications.

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UK habitat classification

- Surveys should use UKHab V2 and have required condition assessment by an ecologist with suitable botanical knowledge. Usually Field Identification Skills Certificate (FISC) level 4.

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Habitat units

- Habitat units are measured in hectares (Ha)

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Linear units

- Hedgerow units are measured in kilometres (km)

Linear units

- Watercourse units are measured in kilometres (km)

- Watercourse habitat condition is assessed using the Modular River Survey (MoRPh) assessment method.
- Net gains in watercourse habitats can be required when a development project occurs within the riparian zone (as defined by the Statutory Biodiversity Metric User Guide ~ 10m).

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Condition assessment

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Condition Sheet: GRASSLAND Habitat Type (low distinctiveness)

	Condition Assessment Criteria	Criterion passed (Yes or No)	Notes (such as justification)
A	There are 6-8 vascular plant species per m^2 present, including at least 2 forbs (these may include those listed in Footnote 1). **Note - this criterion is essential for achieving Moderate or Good condition.** Where the vascular plant species present are characteristic of medium, high or very high distinctiveness grassland, or there are 9 or more of these characteristic species per m^2 (excluding those listed in Footnote 1), please review the full UKHab description to assess whether the grassland should instead be classified as a higher distinctiveness grassland. Where a grassland is classed as medium, high, or very high distinctiveness, please use the relevant condition sheet.		
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.		
C	Any scrub present accounts for less than 20% of the total grassland area. (Some scattered scrub such as bramble *Rubus fruticosus* agg. may be present). Note - patches of scrub with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.		
	Physical damage is evident in less than 5% of total grassland area. Examples of physical		

4B.DITCH | 5A.GRASSLAND LOW | 5B.GRASSLAND LOW | 6A.GRASSL

- Importance of botany skills and season
- Method of data collection
- Can require mix of field and desk-based observations
- INNS important in condition assessment
- Good, moderate or poor condition

Condition Sheet: POND Habitat Type

	Core Criteria - applicable to all ponds (woodland[1] and non-woodland):		
A	The pond is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution. Turbidity is acceptable if the pond is grazed by livestock.		
B	There is semi-natural habitat (moderate distinctiveness or above) completely surrounding the pond, for at least 10 m from the pond edge for its entire perimeter.		
C	Less than 10% of the water surface is covered with duckweed *Lemna* spp. or filamentous algae.		
D	The pond is not artificially connected to other waterbodies, such as agricultural ditches or artificial pipework.		
E	Pond water levels can fluctuate naturally throughout the year. No obvious artificial dams[2], pumps or pipework.		
F	There is an absence of listed non-native plant and animal species[3].		

17A.ORCHARD | 17B.ORCHARD | 18A.POND | 18B.POND | 19A.ROCKY SHORE | 19B.ROCKY SHORE

Ecological baseline

- Wildlife corridor in LNRS to northwest
- Ancient or veteran trees – irreplaceable habitat
- Woodland and scrub
- Grassland
- Ponds
- Hedgerows
- Ditches
- Invasive and non-native species (INNS)
- Great crested newts
- Reptiles
- Bats
- Breeding birds

Apply Mitigation Hierarchy

- The Biodiversity Gain Hierarchy is a material consideration for Local Planning Authorities (LPAs) when determining whether to approve a Biodiversity Gain Plan. Developers must describe application of the Biodiversity Gain Hierarchy, and doing so at the planning application stage follows good practice and adheres to government guidance.

Considerations for BNG design

- Habitats to be created or enhanced need suitable soils and environmental conditions, sufficient space to grow and establish, and resilience measures to buffer extreme weather events, as well as other considerations such as public use – **BNG habitats must be realistic**.
- Ecologist needs support from landscape professionals and experienced grounds maintenance contractors to agree on habitat creation and enhancement that considers immediate aftercare, long term management and monitoring needs, access and likely costs over 30 years. Design is a **team effort.**
- Temporary loss and restoration may count as permanent loss and re-creation in the metric – important to consider **construction space required.**
- Where **design change** occurs, any change can have a large effect on the biodiversity units and BNG %.

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The Statutory Biodiversity Metric (SBM)

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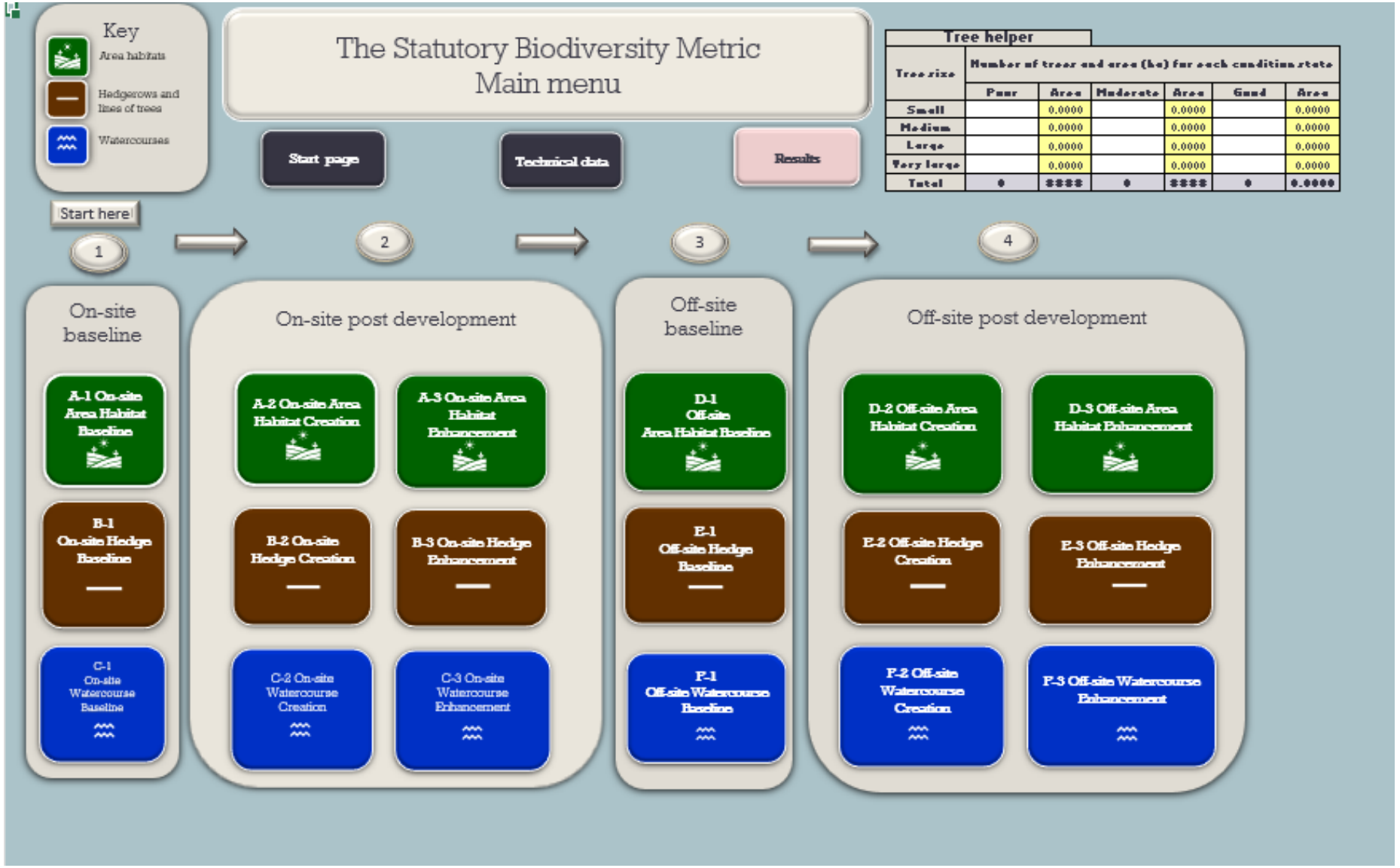

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The metric

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Project Name: Map Reference:

#VALUE!

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

Area habitat summary	
Total Net Unit Change	41.89
Total Net % Change	13.02%
Trading Rules Satisfied	Yes ✓

	Existing area habitats			Distinctiveness		Condition		Strategic signif
Ref	Broad Habitat	Habitat Type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance
1	Urban	Artificial unvegetated, unsealed surface	0.94	VLow	0	N/A - Other	0	Area/compensation not in local strategy/ no local strategy
2	Heathland and shrub	Bramble scrub	0.25	Medium	4	Condition Assessment N/A	1	Location ecologically desirable but not in local strategy
3	Cropland	Cereal crops	50.11	Low	2	Condition	1	Area/compensation not in local strategy/ no

Trading Summary Hedgerows | Trading Summary WaterC's | Off-site gain site summary | A-1 On-Site Habitat Baseline | A-2 On-Site Habitat Creatio

Proposed habitat	Area (hectares)	Distinctiveness		Condition		Strategic significance	
		Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance
Sustainable drainage system	0.43	Low	2	Good	3	Location ecologically desirable but not in local strategy	Medium strategic significance
Reedbeds	0.17	High	6	Moderate	2	Formally identified in local strategy	High strategic significance
Developed land; sealed surface	15.205	V.Low	0	N/A - Other	0	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance
Sustainable drainage system	1.55	Low	2	Good	3	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance
Other neutral grassland	4.2	Medium	4	Good	3	Formally identified in local strategy	High strategic significance
Other woodland; broadleaved	0.77	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance
Mixed scrub	0.17	Medium	4	Good	3	Location ecologically desirable but not in	Medium strategic

A-1 On-Site Habitat Baseline | A-2 On-Site Habitat Creation | A-3 On-Site Habitat Enhancement | D-1 Off-Site Habitat Baseline | D-2 Off-Site Habita

The metric – what doesn't it cover?

- Wildlife corridor in LNRS to northwest
- **Ancient or veteran trees – irreplaceable habitat**
- Woodland and scrub
- Grassland
- Ponds
- Hedgerows
- Ditches
- **Invasive and non-native species**
- **Great crested newts – EPS licence**
- Reptiles
- Bats
- Breeding birds

Offsetting

Onsite (units)

Offsite (units)

Statutory Credits

Potentially in full or combination

Only if units not available

Delivered via habitat creation/enhancement via landscaping/green infrastructure

Delivered through new habitat creation/enhancement on land holdings or via habitat banks

Delivered through landscape-scale strategic habitat creation delivering nature-based solutions

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Requirements

- On-site habitat creation and enhancement and all offsite BNG provision must be legally secured for a minimum 30-year duration, and subject to a Habitat Management and Monitoring Plan (HMMP).

- A HMMP is a detailed plan that describes how the land will be managed over at least 30 years to create and enhance habitats for BNG and manage and monitor the BNG.

- Natural England has published a template for HMMPs.

- The legal agreement for the minimum 30-year maintenance period for BNG starts the date it is signed. Government guidance states that, for on-site BNG, the 30-year maintenance period starts when the development is completed and, for off-site BNG, the 30-year maintenance period starts when the habitat enhancement work is completed.

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Planning applications

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Good practice is to submit the following with a planning application:

- A statutory biodiversity metric calculation for the proposed development.
- On-site BNG design and HMMP (and any relevant information in the Landscape and Ecological Management Plan; LEMP).
- Details of any impacted protected sites and/or species (on-site and off-site) – EcIA or BIA report.
- A BNG design stage report clearly setting out application of the Biodiversity Gain Hierarchy and describing any on-site significant enhancements.
- If off-site BNG provision is required as a minimum, the requirements should be modelled in biodiversity metric calculation with information on any initial discussions with off-site providers.
- A draft Biodiversity Gain Plan.

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Post consent

- After planning permission has been received, developers submit a Biodiversity Gain Plan to the LPA. The LPA has eight weeks to approve or refuse a Biodiversity Gain Plan.
- Although mandatory BNG is a post-consent requirement, demonstrating that a proposed development can deliver the required 10% BNG is a material consideration during the planning process.
- Developers should submit sufficient information on BNG with a planning application that gives the LPA confidence that BNG will be achieved if planning is granted.
- Under mandatory BNG, where a developer relies upon a significant increase in onsite habitat biodiversity value to meet mandatory BNG, these habitats being created and/or enhanced must be subject to a planning condition, Section 106 agreement, or conservation covenant requiring them to be maintained for at least 30 years after the development is completed.

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BNG two years on

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Local Planning Authorities checklist – lots of extra work for LPA Ecology Team!

- Has the biodiversity hierarchy been applied?
- Is there evidence of competent assessment in baseline survey at the right time of year? Have the habitats been identified properly?
- Is the condition assessment valid or has baseline condition been undervalued?
- Do they agree with strategic significance applied to baseline and created habitats?
- For enhanced or created habitats, has the type or condition of habitats been overstated or is it achievable?
- Have irreplaceable habitats been included? Have trading rules been applied appropriately?
- Have significant on-site habitat units been covered by a HMMP? Is there proof that off-site habitat units can be secured?
- Is EPS mitigation double-counted?
- Is the management proposed likely to achieve the habitat type and condition proposed?
- Will the proposed monitoring be adequate?

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BNG two years on

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Benefits

- Retain more habitat through avoidance
- Ecologist involved earlier in design process
- Considers biodiversity on a strategic / landscape level – bigger, better, more joined up
- Consistent measure of habitat value and replacement ratios
- Prevents trading down on habitat distinctiveness

Challenges

- Burden on LPA Ecologists / lack of available expertise
- Designs may be metric-led rather than what is best in a local context
- Ease of understating baseline and overstating condition and habitat types achieved
- Larger burden on smaller sites – issues with small site metric
- Availability of off-site units for certain habitat types

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Generating Income Through Biodiversity Net Gain

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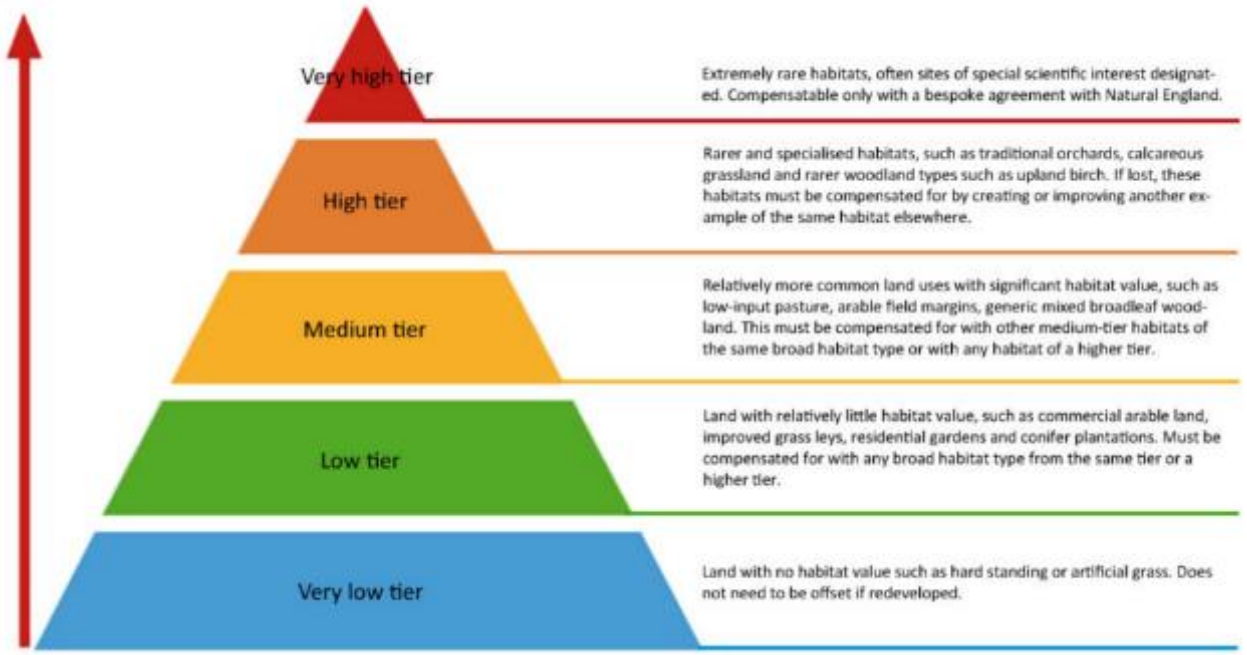
- Strategies for generating income through BNG
- Creating richer, more diverse ecosystems can open new revenue streams.
- Internal BNG credit market – “Selling” units to offset current or future developments (advance generation has benefits in the calculations)
- External BNG credit market – selling units to external purchasers directly or via a brokerage.
- The value of the units will depend on local demand and the type of habitat created. They vary massively across the country and can range from £15K - £50k per unit.



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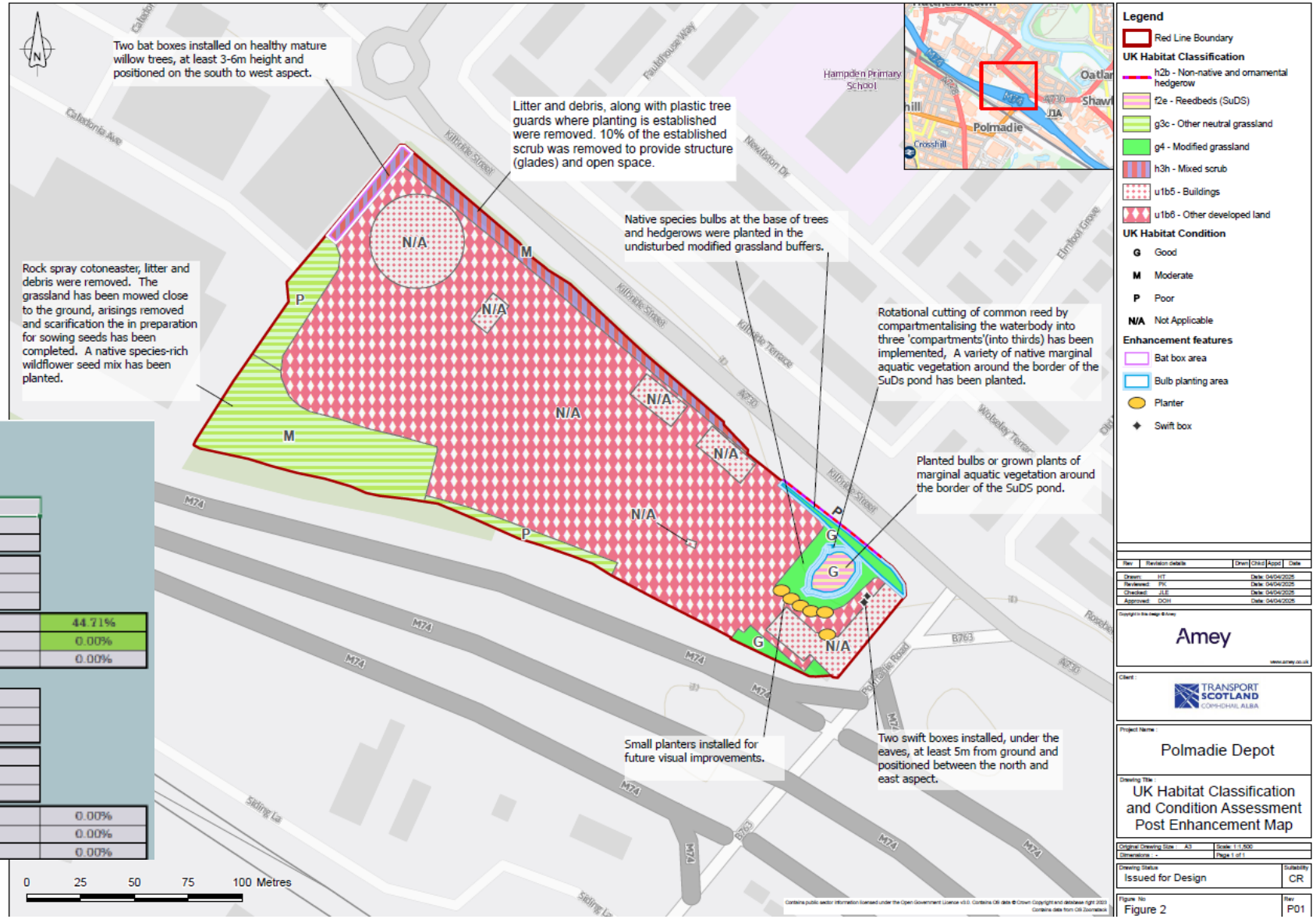
Opportunities to fund biodiversity enhancements within public green space

- Revenue stream for LPAs to cover cost of biodiversity enhancement and management of public green space including removal of INNS.
- Potential for maintenance savings and community involvement along with bringing BNG credits to market.
- LPA land may be suitable for small biodiversity off-site units which are harder to purchase for habitat banks.
- Riparian corridors and open-mosaic habitat on previously developed land especially valuable.

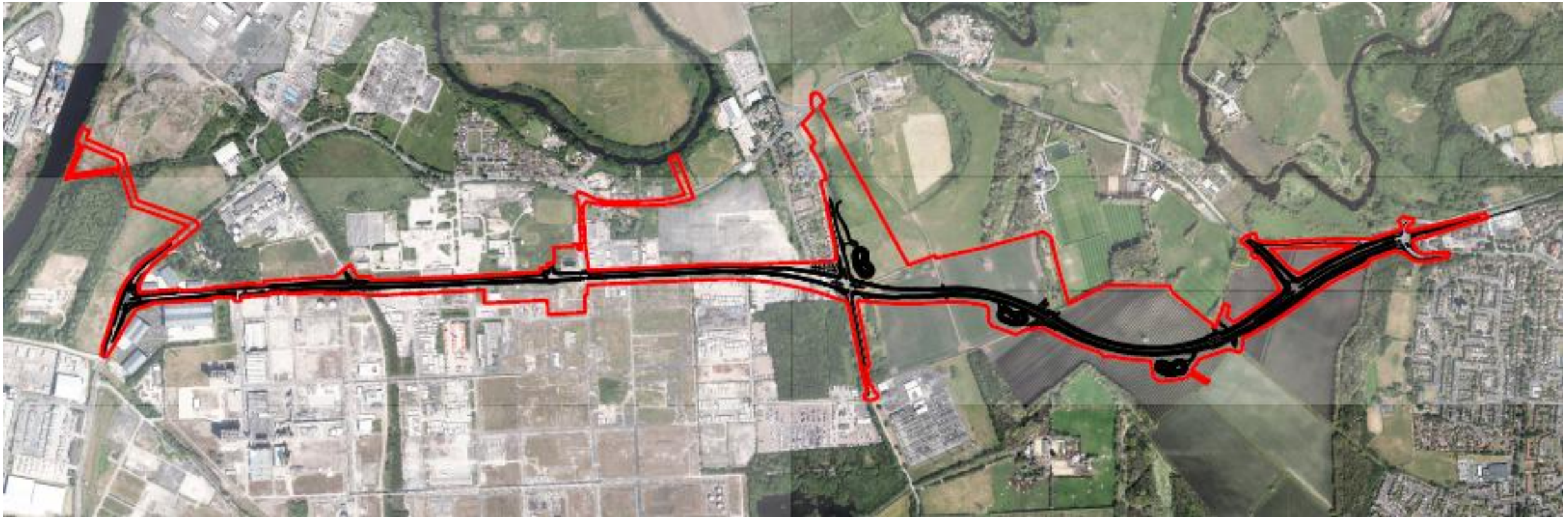
GENERAL

Case Study – Polmadie Highways Depot

Polmadie Depot			
Headline Results	Return to results menu		
Scroll down for final results ⚠			
On-site baseline	Habitat units	3.72	
	Hedgerow units	0.06	
	Watercourse units	0.00	
On-site post-intervention (including habitat retention, creation & enhancement)	Habitat units	5.39	
	Hedgerow units	0.06	
	Watercourse units	0.00	
On-site net change (units & percentage)	Habitat units	1.67	44.71%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%
Off-site baseline	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site post-intervention (including habitat retention, creation & enhancement)	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site net change (units & percentage)	Habitat units	0.00	0.00%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%



Case Study – Carrington Relief Road



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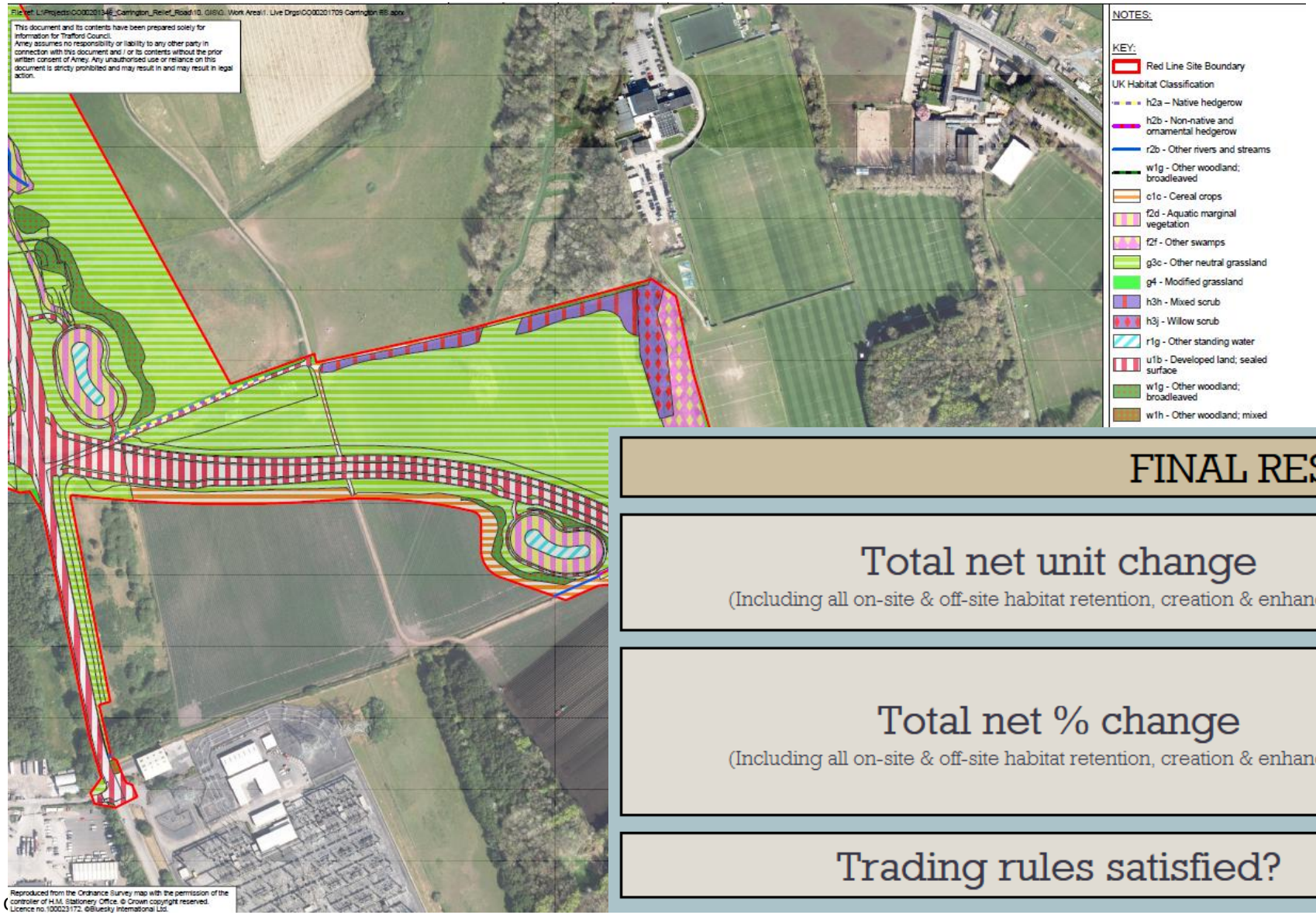

FINAL RESULTS

Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Area habitat units*	101.79
	Hedgerow units	60.89
	Watercourse units	0.70
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Area habitat units*	77.04%
	Hedgerow units	614.15%
	Watercourse units	29.39%
Trading rules satisfied?		Yes ✓

Summary

- Biodiversity is essential for ecosystems to function and provide services essential for humans to survive and thrive.
- BNG requires development to provide more or better-quality natural habitats than before.
- Local Nature Recovery Strategies essential tool to maximise benefits of BNG.
- Biodiversity / mitigation hierarchy an essential first step.
- Baseline data collection by competent ecologists will reduce risk of planning delays or refusal.
- BNG is one aspect of ecology assessment required.
- Onsite and offsite biodiversity units require 30-year management and monitoring.
- BNG brings benefits and drawbacks – consider extra burden on LPA ecology teams.
- BNG provides opportunities for revenue streams.

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