M5 Junction 10 Improvements Scheme

Statutory Biodiversity Net Gain Metric Technical Note

TR010063 - APP 9.71

Gloucestershire
COUNTY COUNCIL

AtkinsRéalis

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Infrastructure Planning

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**The Infrastructure Planning
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M5 Junction 10 Improvements Scheme

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**Statutory Biodiversity Net Gain Metric
Technical Note**

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1. Introduction

1.1. Background

1.1.1. The Environment Act 2021 makes provision for Biodiversity Net Gain (BNG) to be required for most types of new planning applications via the Biodiversity Gain (Town and Country Planning) (Modifications and Amendments) (England) Regulations (2024).

1.1.2. The requirement for mandatory BNG does not apply to nationally significant infrastructure projects (NSIPs) at present, and is not due to apply to them until further Regulations are laid before Parliament and approved, expected to be in late 2025. Nevertheless, the Scheme has an objective of establishing BNG which is outlined in the Environmental Statement (Application document TR010063 / APP 6.2).

1.1.3. The Statutory biodiversity metric is the version of the metric which is required to be used by developers to support any Town & Country Planning Applications (TCPA) submitted after 12 February 2024.

1.1.4. The biodiversity metric has been through four iterations (referred to as: 2.0, 3.0, 3.1 and 4.0) prior to a Statutory biodiversity metric being issued by the Department for Environment, Food and Rural Affairs (DEFRA) on 12 February 2024 followed by a minor amended version published on 23 July 2024. Various changes took place with each iteration, so putting the same project baseline and design into different iterations can create different calculation results.

1.1.5. Guidance has been issued after each metric update outlining the action to take if previous versions of the metric have been used to date for a project. The advice published in April 2022 (when metric version 3.1 was issued to replace version 3.0) after the BNG feasibility study had been completed for the Scheme was 'If a project has already begun using a previous version of the Biodiversity Metric we do not recommend changing metrics mid-project, as this may result in discrepancies between calculations[1]'. This guidance was followed, and biodiversity metric version 3.0 has continued to be used and was used for the BNG assessment reported in Environmental Statement, Appendix 7.18 - Biodiversity Net Gain (Application document TR010063 / APP 6.15).

1.1.6. A summary of the headline results reported in Environmental Statement, Appendix 7.18 - Biodiversity Net Gain (Application document TR010063 / APP 6.15) are shown in Table 1.

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[1] (Natural England Joint Publication JP039 (April 2022) Biodiversity Metric 3.1 Frequently Asked Questions).

Table 1 – Summary of headline results from biodiversity metric version 3.0

	Total Habitat Units	Total Hedgerow Units	Total River biodiversity units (RBUs) for River and Streams	Total RBUs for Ditches
Baseline	656.58	138.25	7.67	19.45
Post-development including retention and creation	732.69	160.32	10.30	23.99
Total net unit change	76.11	22.06	2.62	4.55
Total net percentage change	11.59%	15.96%	34.19%	23.38%

1.1.7. Following Natural England's response to the Examining Authorities first written questions, the Applicant has re-run the BNG assessment[2] using the Statutory biodiversity metric. For reference, the relevant question from the Examining Authority and Natural England's response is provided in Table 2. This document summarises the results of this exercise and compares the results using metric 3.0 and the Statutory biodiversity metric. This document is provided for information only and does not replace the results set out in Environmental Statement, Appendix 7.18 - Biodiversity Net Gain (Application document TR010063 / APP 6.15).

Table 2 – Examining Authorities first written question on BNG and Natural England's response

Question reference	Examining Authority Question	Natural England's response
Q3.0.2	Biodiversity Net Gain (BNG) Para 7.4.65 to 7.4.71 of ES Chapter 7 [APP-066] confirms that the BNG assessment has been undertaken using Metric 3.0 – this was superseded by Metric 4.0 in March 2023 and the Statutory Metric in February 2024. While the ExA understand BNG is not mandatory for NSIPs at this stage and the BNG Guidance allows for projects to continue with earlier versions of the metric, both the Environment Agency and the Gloucestershire Wildlife Trust comment the latest metric has not been	The survey to inform the BNG calculations were conducted in May and June 2022. At this time version 3 of the metric was in force. It appears that the surveys were conducted in a way to be consistent with version 3 of the metric. In these circumstances, and taking into consideration that NSIPs are not obliged to deliver net gain, this action is acceptable. Having said that, if it was possible to update the calculations as an entirely desk-based exercise (i.e. without requiring further survey effort) this information would be helpful. Later versions of the metric are more

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[2] This has involved a desk-based exercise whereby the values within the biodiversity metric version 3.0 submitted as part of the DCO application have been entered into the Statutory biodiversity metric.

	used. Can NE advise whether the use of Metric 3.0 remains appropriate and acceptable.	accurate, but are not necessarily more stringent, so the final value could go up or down.

2. Updates to the metric

2.1.1. This section presents the key changes between biodiversity metric version 3.0 and the Statutory biodiversity metric, focusing specifically on those that are likely to influence the current net gain calculations for this individual Scheme. Various other changes have also been made to the metric spreadsheet and supporting guidance, but only those relevant to this project are listed below.

2.2. Area-based habitats module

2.2.1. The following changes have been identified:

- The habitat units associated with 'Individual trees' are calculated slightly differently in the Statutory biodiversity metric as updates to the tree helper have been made.

- In both biodiversity metric version 3.0 and the Statutory biodiversity metric, unit losses of very high distinctiveness habitats (VHDH) are 'cancelled out' and removed from the metric calculation where there is bespoke compensation agreed; however, units retained and enhanced still contribute to the baseline and post development calculation. In biodiversity metric version 3.0, areas of VHDH that are lost, but for which bespoke compensation has been agreed, are also excluded from the baseline value for that habitat whereas in the Statutory biodiversity metric the value for this lost habitat is now included in the overall baseline. This has the effect of appearing to increase the habitat units for lowland meadow in the baseline column, but on review the overall habitat units for lowland meadow remained the same in both metrics.

- Minor changes to condition assessment criteria for woodland, individual trees and lines of trees have occurred.

2.3. Hedgerow module

2.3.1. There has been a change to the condition that can be assigned to ornamental hedgerows in the Statutory biodiversity metric, which automatically assigns this type of hedgerow to 'poor' condition. However, in the biodiversity metric version 3.0, it was possible to assign 'moderate' condition.

2.3.2. A new trading summary tab for linear hedgerows was created in biodiversity metric version 4.0 (published 28 November 2023) along with updated trading rules for the hedgerow module. This change has been reflected in the Statutory biodiversity metric also. Trading rules were not highlighted for hedgerows specifically in previous versions of the biodiversity metric (2.0, 3.0 or 3.1) although column M in biodiversity metric version 3.0 provided 'suggested actions to address habitat losses' for linear hedgerow habitat types.

2.4. Watercourse module

2.4.1. River biodiversity units were the units calculated through the Rivers and Streams module of the biodiversity metric version 3.0 calculation tool. In the Statutory biodiversity metric calculation tool, this module has been renamed to the watercourse module, and the term for river biodiversity units (RBUs) has changed to watercourse units (WUs) for this module. RBUs and WUs do not equate to one another, due to differences in how encroachment, strategic significance and risk multipliers are applied.

2.4.2.   The changes between the biodiversity metric version 3.0 and the Statutory biodiversity metric for the watercourse module are as follows:

- Encroachment updates:
- The definition for riparian encroachment has expanded to describe encroachment within the context of an existing baseline development, as recorded in the River Condition Assessment[3,4]. This includes buildings or hardstanding, structures which may prevent wildlife from accessing the watercourse, and management practices such as agriculture. These features or interventions should be included in the baseline calculation as riparian encroachment. However, established features such as existing towpaths and river crossings, or any small features which occupy less than 5% of the riparian zone area should not be considered to be riparian encroachment within the baseline calculation of watercourse units, where they were previously considered in biodiversity metric version 3.0.
- The levels of riparian encroachment have been amended to include a measure for both banks of a watercourse (e.g., 'Minor/Minor' where both banks have minor levels of encroachment). The multipliers for encroachment have subsequently been amended, which can alter the overall watercourse units in the baseline and/or post-development scenario.
- The categories for watercourse and riparian encroachment have been amended for culverts, with the Statutory biodiversity metric automatically defaulting to 'N/A – Culverts', which applies multipliers of '0.68' and '1', respectively. Previously in biodiversity metric version 3.0, the multiplier for watercourse encroachment was '1', and for riparian encroachment the multiplier was between '0.75' and '1', dependant on the level of encroachment in the riparian zone adjacent to the culvert.
- The update between biodiversity metric version 3.0 and the Statutory biodiversity metric means that VHDH are considered differently, where losses of habitat units of VHDH (including watercourses) cannot always be adequately accounted for through the Statutory biodiversity metric calculation tool, where bespoke compensation may be required. Within the watercourse module Priority habitat is the only watercourse habitat type that is considered to be a VHDH. Bespoke compensation for loss of watercourse units of Priority habitat should be discussed and agreed with the relevant planning authority to determine how the biodiversity net gain objective for the Scheme should be met. This is agreed on a case-by-case basis and should be removed from any biodiversity net gain calculation if bespoke compensation is required. Priority should be given to replacing losses with watercourse units of the same habitat type, where compensation should be on a section of watercourse with similar habitat features (were it in a natural state). It should be of similar size, function and stream order (for river habitat types).
- There have been amendments to the risk multipliers applied to account for the difficulty of creation for ditches and canals. In biodiversity metric version 3.0, the difficulty multiplier applied for creating habitat was '1', whereas in the Statutory biodiversity metric calculation tool, the difficulty multiplier applied is '0.67'.
- The strategic significance guidance has changed in the Statutory biodiversity metric user guide, which include the addition of 'Local Nature Recovery Strategies' (including those in draft) as a source to determine the strategic significance of a watercourse. Strategic significance options have also been amended for culverts.

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[3] A GUIDE TO ASSESSING RIVER CONDITION Part of the Rivers and Streams Component of the Biodiversity Metric Watercourse Module for calculating Biodiversity Net Gain: https://prod-files-secure.s3.us-west-2.amazonaws.com/e27d957a-2c91-4d53-bcaa-a20f1af2fc57/cdce7012-6d19-43a4-b69a-f564d45ba51f/A_GUIDE_TO_ASSESSING_RIVER_CONDITION_Jan2024.pdf?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Content-Sha256=UNSIGNED-PAYLOAD&X-Amz-Credential=AKIAT73L2G45HZZMZUHI%2F20240801%2Fus-west-2%2Fs3%2Faws4_request&X-Amz-Date=20240801T160131Z&X-Amz-Expires=3600&X-Amz-Signature=46cab2bbacd1dc016b1829109e962451679400c2b0fb6e04f43e69ec8ede5a3d&X-Amz-SignedHeaders=host&x-id=GetObject [Accessed: August 2024].
[4] The Statutory Biodiversity Metric User Guide
https://assets.publishing.service.gov.uk/media/669e45fba3c2a28abb50d426/The_Statutory_Biodiversity_Metric_-_User_Guide__23.07.24_.pdf [Accessed: August 2024].

- Culverts have been removed from the enhancement tab of the watercourse module as an enhancement option.

3. Impact of using the Statutory biodiversity metric for the Scheme

3.1. Terrestrial habitats

3.1.1. The 0.17 ha of lowland meadow appeared to equate to 1.12 habitat units in biodiversity metric version 3.0. However, there was an apparent increase in the habitat units for lowland meadow when the calculation was updated using the Statutory biodiversity metric to 2.72 habitat units, an increase in 1.6 units. This had the effect of increasing the total habitat units reported from 656.58 in biodiversity metric version 3.0 to 658.18 in the Statutory biodiversity metric. The guidance documents that have accompanied each update to the metric do not account for this change specifically, but these changes were noted when the baseline BNG data was transferred from biodiversity metric version 3.0 to the Statutory biodiversity metric for this comparison exercise. This difference has been reviewed, and is purely due to the way the metric spreadsheet treats loss of VHDH. In biodiversity metric version 3.0, areas of VHDH that are lost, but for which bespoke compensation has been agreed, are excluded from the baseline value for that habitat whereas in the Statutory biodiversity metric the value for this habitat is included in the overall baseline.

3.1.2. Similarly, in biodiversity metric version 3.0, the area of VHDH lost is removed from the 'area lost' in column W, whereas in the Statutory biodiversity metric the area is included. This has resulted in a difference in the total area of habitat lost. It is reported as 132.85 ha in biodiversity metric version 3.0 and 132.95 ha in the Statutory biodiversity metric. This difference of 0.1 ha relates to the area of lowland meadow habitat that is lost. As a result, the total area of habitat created does not equal the total area of habitat lost in the Statutory biodiversity metric, and there is an error message in the 'headline results' tab and the 'on-site habitat creation' tab stating 'Error – Area created does not equal area lost'. The total units lost in column X of the habitat creation tab match in both metrics (393.80 units) as both biodiversity metric version 3.0 and the Statutory biodiversity metric remove the units associated with loss of VHDH once it is confirmed that bespoke compensation has been agreed.

3.1.3. In biodiversity metric version 3.0 the urban tree helper suggested that 257 medium trees equals 1.0458 ha, and this was the area entered into biodiversity metric version 3.0. However, the tree helper in the Statutory biodiversity metric has been updated and 257 medium trees equals 4.1855 ha. Entering this increased area (whilst keeping the tree condition as moderate) into the Statutory biodiversity metric has increased the habitat units delivered from Individual trees – Urban from 3.29 units to 13.22 units.

3.1.4. Both of the changes discussed above have affected the overall total net unit change and net percentage change for area habitats.

3.1.5. Table 3 presents a summary of the headline results for area habitats for the Scheme using the Statutory biodiversity metric.

Table 3 – Summary of headline results for terrestrial habitats using Statutory biodiversity metric

	Total habitat units (area habitats)
Baseline	658.18
Post-development including retention and creation	744.23
Total net unit change	86.05
Total net percentage change (%)	13.07%

3.2. Hedgerows

3.2.1. The calculation for the 'onsite hedge baseline' module of the biodiversity metric version 3.0 concluded that there was a total baseline hedgerow unit for the Scheme of 138.25. There was a slight decrease in the total baseline hedgerow units for the Scheme when the calculation was updated using the Statutory biodiversity metric (to 138.17 units). This is due to the habitat condition assigned to the 0.07 km of 'Hedge Ornamental Non Native', which is automatically set to 'poor' within the Statutory biodiversity metric but which was assigned a moderate condition in the BNG assessment presented in the Environmental Statement Appendix 7.18 Biodiversity Net Gain (TR010063 – APP 6.15) using biodiversity metric version 3.0. This resulted in 0.16 hedgerow units for this type of hedgerow using biodiversity metric version 3.0, compared to 0.08 hedgerow units using the Statutory biodiversity metric.

3.2.2. In addition, the biodiversity metric version 3.0 did not automatically highlight when trading rules were not met for the hedgerow module (as it does in the area habitats module), instead it provides (in column M) 'suggested actions to address habitat losses'. As the Scheme was resulting in a loss of 0.04 km of VHDH (Native Species Rich Hedgerow with trees – associated with bank or ditch) Natural England were consulted to seek advice on what 'like for like' compensation should consist of. They responded stating that *'High distinctiveness hedgerows are dealt with differently within the metric than area habitats and as such no bespoke compensation is required to account for their loss. To meet the trading rules, high distinctiveness hedgerows must be replaced by another hedgerow of the same distinctiveness level on a like for like basis. As native species rich hedgerows are of a lower distinctiveness, their creation would not be sufficient to account for the loss in Native species rich hedgerow with trees – associated with a bank or ditch and would result in a breach of trading rules.[5]'*

3.2.3. Use of the Statutory biodiversity metric has flagged an error message that trading rules for linear hedgerow habitat are not being met for the Scheme. However, while the trading rules within the Statutory biodiversity metric are not fully met, the compensation package for hedgerows has been discussed and an approach agreed with statutory consultees and metric 3.0 indicates that trading rules are satisfied.

3.2.4. Table 4 presents a summary of the headline results for hedgerows for the Scheme using the Statutory biodiversity metric.

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[5] Email from Natural England's metric support team (biodiversitymetric3@naturalengland.org.uk) to AtkinsRéalis ecologists dated 2nd February 2023.

Table 4 – Summary of headline results for hedgerows using the Statutory biodiversity metric

	Total hedgerow units
Baseline	**138.17**
Post-development including retention and creation	**160.32**
Total net unit change	**22.14**
Total net percentage change (%)	**16.03%**

3.3. Watercourses

3.3.1.   Using Biodiversity Metric 3.0, the net gain calculation for the Rivers and Streams module were split between the watercourse types: one calculation for Priority habitat (the River Chelt) and Other Rivers and Streams (the Leigh Brook), and one calculation for Ditches. The net gain calculations for watercourses were undertaken in accordance with the principles and rules set out in the Biodiversity Metric 3.0 User Guide[6].

3.3.2.   The BNG calculation in biodiversity metric version 3.0 accounted for losses of RBUs of the River Chelt due to the reduction in condition associated with the new Link Road Bridge, loss of length/RBUs of the Leigh Brook due to the Leigh Brook Culvert extension, and loss of ditch length/RBUs associated with the footprint of the Scheme.

3.3.3.   The calculation has also been undertaken using the Scheme design as previously assessed and using the enhancement/creation of watercourse habitats as described in the Environmental Statement Appendix 7.18 Biodiversity Net Gain (TR010063 – APP 6.15).

3.3.4.   A summary of the headline results of the Watercourse module calculation and subsequent WUs for the Scheme using the Statutory biodiversity metric are presented in Table 5, including the final net gain result as a percentage. As for the BNG calculation undertaken using biodiversity metric version 3.0 (described in Section 3.3.1 and presented in Table 7Table 7), two calculations have been undertaken for different watercourse habitat types; Priority habitat and Other Rivers and Streams (the River Chelt and the Leigh Brook respectively) and another calculation for Ditches.

3.3.5.   Using the Statutory biodiversity metric the Scheme design has resulted in a **31.95% net gain** in WUs for Rivers (Priority habitat/Other Rivers and Streams and Culvert) and a **15.36% net gain** for Ditches, which equates to a **net gain of 21.27%** for the Watercourse module. These net gains are a slight reduction compared to the use of biodiversity metric version 3.0 (as presented in Table 7).

3.3.6.   Bespoke compensation for the River Chelt (which is Priority habitat and therefore considered VHDH) is not required, as loss of watercourse units associated with reduction in condition due to the new Link Road Bridge are compensated for within the Order limits and in line with the rules and principles, as per the guidance[7].

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[6] Biodiversity Metric 3.0 User Guide: https://n-somerset.gov.uk/sites/default/files/2022-02/CD12%20-%20Biodiversity%20Metric%203.0%20user%20guide.pdf [Accessed: August 2024].
[7] The Statutory Biodiversity Metric User Guide
https://assets.publishing.service.gov.uk/media/669e45fba3c2a28abb50d426/The_Statutory_Biodiversity_Metric_-_User_Guide__23.07.24_.pdf [Accessed: August 2024].

Table 5 – Summary of headline results from the Watercourse module using the Statutory biodiversity metric

	Total WUs for Rivers	Total WUs for Ditches	Total WUs
Baseline	8.18	14.72	22.90
Post-development including retention and creation	10.79	16.98	27.77
Total net unit change	2.61	2.26	4.87
Total net percentage change	31.95%	15.39%	21.27%

3.3.7.   The Statutory biodiversity metric calculated lower WUs, particularly for Ditches, at both baseline and post-development compared to biodiversity metric 3.0. This is due to the fact that the multiplier applied for 'Major' riparian encroachment has decreased to 0.75 in the Statutory biodiversity metric, whereas in biodiversity metric 3.0 it had a value of 1 (as described in Section 2.4.2). This means that the units for Ditches have a lower value in the Statutory biodiversity metric.

4.   Conclusion

4.1.1.   When comparing the biodiversity net gain results of the biodiversity metric version 3.0 and the Statutory biodiversity metric there are some differences which are driven by the version updates. Whilst there are differences in how VHDH such as lowland meadow are presented in the metrics, the value of habitat lost in units does not change between the metrics. The difference in the biodiversity net gain results for habitats is largely down to updates to the urban tree helper. For hedgerows, the difference in biodiversity net gain results is largely down to the change in condition for the stretch of ornamental hedgerow. Whilst the Statutory biodiversity metric flags that trading rules are not met for hedgerows, the bespoke compensation for VHDH has been discussed and agreed with consultees. Table 6 provides a comparison between the total net percentage change for habitat and hedgerow habitat types.

4.1.2.   The comparison between the Rivers and Streams module (biodiversity metric version 3.0) and Watercourses (Statutory biodiversity metric) is presented in Table 7. For the Priority habitat and Other Rivers and Streams calculations there is a 2.24% reduction in the net gain resulting from the use of the Statutory biodiversity metric. Coupled with this is a more notable reduction in net gain for Ditches of approximately 7.99%, which is primarily driven by changes to the encroachment multipliers between the metric versions (as described in Section 3.3.7). These changes result in an overall reduction in total net gain of 5.17% from 26.44% to 21.27%.

Table 6 – Comparison of total net percentage change using biodiversity metric version 3.0 vs the Statutory biodiversity metric

	Habitat Units	Hedgerow Units
Net percentage change – biodiversity metric version 3.0	11.59%	15.96%
Net percentage change – Statutory biodiversity metric	13.07%	16.03%

Table 7 – Comparison of total net percentage change using biodiversity metric version 3.0 (Rivers and Streams) vs the Statutory biodiversity metric (Watercourses)

	Priority habitat and Other Rivers and Streams Units	Ditch Units	Total Units
Net percentage change - biodiversity metric version 3.0	34.19%	23.38%	26.44%
Net percentage change - Statutory biodiversity metric	31.95%	15.39%	21.27%

4.1.3.   As shown in Table 6 and Table 7 the changes resulting from application of the Statutory biodiversity metric are relatively minor. The Scheme exceeds 10% net gain for both the area and linear (hedgerows and watercourses) habitats when applying the Statutory biodiversity metric.

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