Monitoring National Highways' biodiversity performance in RP2

Office of Rail and Road

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FINAL REPORT

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EXECUTIVE SUMMARY

ORR appointed CEPA to consider National Highways' biodiversity metric and the Company's performance in Road Period 2 (RP2). The purpose of the study is to provide advice to the ORR on its approach to monitoring National Highways' performance in delivering better biodiversity outcomes on the Strategic Road Network (SRN).

National Highways has a target to achieve 'No Net Loss' in biodiversity by the end of RP2. It has made a slow start raising concern within ORR about the likelihood of delivering the target within the period. ORR has commissioned this review of progress and specific issues to inform its monitoring. The review is based on information provided by National Highways as at the end of March 2022 and therefore it should be noted that the findings reflect a snapshot of National Highways' plans and performance at a point in time.

Positively, National Highways has established a new sustainability division that provides a pool of resource to oversee and coordinate its environmental activities. It also has a developing plan for delivery of the 'No Net Loss' target. The plan relies on a mix of enhancement projects delivering biodiversity units (BUs) as part of business as usual (BAU) activity, through biodiversity mitigations and improvements delivered as part of the core scheme design, as well as Designated Funds projects delivered by National Highways' Major Project directorate and by external third parties. The target is challenging not least as the operation of the network causes a deterioration in biodiversity each year, but National Highways has around £345m of Environmental and Wellbeing Designated Funds to support delivery, including through the regional Operations directorates.

Work is ongoing to embed activity that will meet the target of 'No Net Loss' – and the longer term management of biodiversity – in the business and the supply chain. Based on a review of evidence provided by National Highways and discussions with its staff and with ORR, we find that the Company's existing processes provide a good starting point but could be improved further; and we conclude that progress against its plan is currently slow, and there is insufficient momentum in delivery so far to provide confidence that the end of period target will be met as National Highways progresses towards the mid-point of the Roads Period. In more detail, we conclude that:

- National Highways plans for meeting the RP2 target are not yet robust, they are impacted by delay to the enhancements programme, and the Company has found it difficult to establish a large programme of Designated Funds projects that could be delivered early in the roads period. Taken together this compromises confidence in achievement of the 'No Net Loss' target by the end of RP2.
- National Highways currently has an insufficient pipeline of biodiversity projects to facilitate geographic or business case based scheme prioritisation. This has both current and future implications for the Road Investment Strategy 2 (RIS2) target and for the pipeline in RIS3 when a Net Gain is likely to be required.
- Based on the current starting point, actions to improve biodiversity (as measured using the existing biodiversity metric) have often been 'bolted on' to BAU. This needs to change both because the target is challenging and is unlikely to be delivered without radical thinking; and because the target and potentially the range of activities covered by the biodiversity metric, will harden in RIS3. National Highways recognises this point.
- Delivery of BUs is not yet fully embedded within National Highways activities though some progress is being made, for example on major projects where National Highways is challenging projects to deliver additional biodiversity improvements and is beginning to think about Net Gain requirements for projects which must submit Development Consent Order (DCO) applications. But more progress needs to be made on environmental asset data management systems – particularly so National Highways can monitor the maintenance of biodiversity by the supply chain.
- Engagement with third parties and local authorities is developing but is not yet systematically embedded in National Highways' practice. This route has the potential to extend the range of projects that National Highways might deliver, perhaps even in this Roads Period.

Other infrastructure providers face similar challenges to those that National Highways is addressing, and we include in the report a series of case studies. Drawing on observations from those case studies, ORR might encourage National Highways to think about the following:

- National Highways' Biodiversity Action Plan was last published in June 2015 – before it adopted the 'No Net Loss' target for RP2. Other organisations have subsequently, or will shortly, publish updated action plans that better reflect the growing urgency of the biodiversity agenda, and how they will embed it within their business.
- Whilst National Highways has developed a new Low Nutrient Grasslands policy, this is just one action that the organisation can take, and other policies will be required (or need to be updated) to ensure biodiversity is addressed in a holistic manner.
- We consider that there is potentially a shortage of guidance on how to design biodiversity into new schemes and BAU projects such as resurfacing schemes. National Highways could develop a range of guidance documents for green assets, that draws on the approach taken by e.g. Gloucestershire[1], Network Rail[2] and PlantLife.[3] ORR and National Highways should consider this further.
- National Highways might improve its 'organisational model' for the planning and delivery of biodiversity, to ensure that it is embedded into decision-making at all levels and across all operational areas. For example, Network Rail adopts route-level habitat and vegetation management plans that dictate what work should be done and contain time-bound actions that are reported annually.
- Drawing on the efforts that HS2 Ltd has made to work with its contractors and squeeze final biodiversity opportunities out of designs that are relatively mature, ORR should assure itself that National Highways has also conducted similarly challenging reviews of RIS2 scheme designs in light of the slow progress achieved against the biodiversity key performance indicator (KPI) target to date.

ORR asked us to consider whether the current biodiversity metric continues to be the most appropriate form of measurement going forward and whether National Highways is well prepared for changes to the current metric that are about to be implemented. At present we have not identified a fully developed alternative metric, though there is at least one option in development that might merit further consideration and move National Highways towards a more rounded Natural Capital measure: the 'Environmental Benefits for Nature' tool that is based on the concept of ecosystem services. But for the foreseeable future DEFRA's revised version of the current biodiversity metric seems the most likely basis for a biodiversity-specific metric in RIS3.[4]

National Highways has already started to review Version 3.0 of the metric to understand the implications of the changes that it drives and is requiring that all DCO schemes apply Version 3.0 (now 3.1) in support of the Environmental Statement submission. The Company should look to build on this progress to ensure that it is well prepared across the entire business (i.e. beyond Major Projects schemes) to deliver Net Gain going forward into RIS3 against Metric 3.0. We consider that there is value in developing its understanding further and in shadow running the old and new versions alongside each other in the later years of this Road Period.

Finally, we note that National Highways' metric approach assumes a 1% annual reduction to the BU baseline. But neither HS2 Ltd nor Network Rail assume any ongoing detrimental operational impact in their biodiversity metric. Consequently, National Highways faces a relatively greater challenge to achieve No Net Loss. We think it is right that National Highways recognises that the operation of the SRN has an ongoing negative impact on biodiversity and that this should continue to be reflected in the metric during RIS3. But National Highways should consider

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[1] Gloucestershire County Council (December 2019) "Gloucester Highways Biodiversity Guidance" available online.

[2] Network Rail (June 2021) "Railway Sustainability Design Guide" available online.

[3] PlantLife (2019) "Managing grassland road verges" available online.

[4] Biodiversity Metric version 3.1 will form the basis of the statutory biodiversity metric used to underpin future mandatory biodiversity net gain as set out in the Environment Act 2021.

whether the 1% assumption is achievable indefinitely and might develop alternative options for recognising the ongoing impact in the metric. ORR should ensure that any proposed changes to the metric in future continue to incentivise National Highways to mitigate biodiversity impacts beyond its programme of improvement schemes.

Table 1: Summary of recommendations to ORR

Section	Recommendations to ORR

2.1	• Require National Highways to produce a more developed plan by September 2022. ORR might request that the plan covers at a minimum:
	  ○ A fundamental rethink of the approach to achieving 'No Net Loss' and how National Highways might generate greater momentum before it is too late to be implemented in RP2. This could include options for scaling up third party delivery of biodiversity schemes where it is both feasible and economically rational to do so, accelerating and or expanding existing planned projects (particularly any not directly dependent on MPs) and consideration of whether doing this would increase the achievability of the RP2 'No Net Loss' target. In this context it is important to recognise that National Highways should be prepared for biodiversity targets that may be broader in coverage and more challenging in RP3 (Net Gain).
	  ○ Progress against National Highways' internal BU target for 2022/23, including confirmation that proposed biodiversity projects are in delivery or are contracted; and any actions it is taking to ensure that delivery does not slip into the subsequent reporting year.
	  ○ Improved visibility on projects in the pipeline for 2023/24 and 2024/25, including which are in the feasibility/options; design and development; and approved funding stages. The pipeline should include a detailed commentary on the timeline for projects maturing from feasibility stage to approval for funding; the major risks to the successful delivery of the overall programme; and mitigating actions.
	• Assure itself that National Highways has conducted a process to challenge mature RIS2 scheme designs; identify opportunities for realising additional biodiversity benefits where it is cost effective to do so; and require that National Highways report on whether it is possible to extend that process to RIS2 MP schemes where preliminary designs are complete, in light of slow progress against the KPI target to date.
	• Asking National Highways to provide an update on its processes for embedding biodiversity into decision-making at the regional and area levels – specifically, an update on how the Company will ensure that opportunities to improve biodiversity alongside BAU maintenance and resurfacing / renewals schemes in RP2 are not being overlooked. We understand that National Highways will be in a position to share further evidence with ORR by the end of April 2022.

3.1	Alongside ORR's review of the draft Strategic Business Plan for RIS3, it monitors National Highways' readiness to deliver Net Gain (at least on enhancements) from the start of RP3.
3.2	• That National Highways explores the feasibility of an internal set of annual biodiversity-related targets for each Area,[5] for which National Highways is not formally held to account by ORR, that would create useful management information to challenge itself and its supply chain to manage biodiversity for the long-term, and that biodiversity and/or vegetation management action plans are being implemented. • Where National Highways enters into an agreement with a third-party for the long-term management of the land / biodiversity mitigation site, that it requires the third-party organisation to submit periodic reports (i.e. annually where appropriate) assuring that it is carrying out the necessary activities to support continued environmental benefits. • That National Highways completes a medium and long term (e.g. 5 and 10 years after) evaluation of a sample of biodiversity schemes, similar to its POPE process, and publishes those reports. Because National Highways had biodiversity funding in RP1, the first such report could be

[5] Whether biodiversity fits with area-based or regional targets will depend on how National Highways contracts are structured.

Section	Recommendations to ORR
	carried out before RP3 commences. This reporting would provide lessons that National Highways could reflect on as it develops and refines its approach.
3.3	ORR requires an update from the Company on its progress in reviewing existing processes relating to engagement with local stakeholders, by June 2022. We also link this to our recommendation to ORR in Section 1.1 above, that it should require National Highways to explore whether there are further opportunities to fund work via local authorities / third parties, that is not based on MPs.
3.4	ORR should engage with National Highways as it prepares for RIS3, to understand what lessons it has learnt from the slow start to RP2; how it is implementing a different approach for RP3; and how it will better embed 'net gain' into future enhancement schemes, and biodiversity delivery and management into the planning of BAU activities more generally.
5	• We understand that National Highways has updated its guidance internally to require that all DCO schemes apply Metric 3.0 in support of the Environmental Statement submission; but has agreed that Metric 2.0 will continue to be the basis of corporate KPI reporting. ORR and National Highways should continue to engage with DfT and Defra to understand whether existing DCO schemes at the Pre-Application stage (e.g. A66, Lower Thames Crossing) will be formally subject to Metric 3.0 (now 3.1).[6] • In readiness for RP3, ORR supports National Highways plans to 'shadow report' biodiversity units using a Metric 3.0 approach. This might begin with schemes at the Pre-Application stage of the NSIP process, where (if additional survey work would be required) this would not delay Start of Works dates. But it should be extended over time to all schemes with funding in RP3. • ORR requires National Highways to explain how it plans to transition from Metric 2.0 to 3.0 (and beyond) more generally for RP3.
5	• ORR should engage with National Highways ahead of RIS3 to understand whether it plans to propose any changes to the assumption that the BU baseline deteriorates by 1% annually as part of the biodiversity metric. We think it is right that National Highways recognises the ongoing negative impact on biodiversity associated with the operation of the SRN and that this should continue to be reflected in the metric during RIS3. But ORR should encourage National Highways to consider whether the 1% assumption is appropriate indefinitely and whether it might develop alternative options for recognising the ongoing impact in the metric. • ORR should ensure that any proposed changes to the KPI metric in future (including but not limited to the 1% deterioration assumption) continue to incentivise National Highways to mitigate biodiversity impacts beyond its programme of improvement schemes (i.e. that the Company is still incentivised to mitigate and offset the ongoing impact of the SRN).

[6] National Highways told us that it is proactively responding to questions raised by stakeholders and the Planning Inspectorate at examination by making use of Metric 3.0, but that changes to the metric cannot be accommodated where designs have been substantially developed prior to the publication of Metric 3.0.

1. INTRODUCTION

This report is one of three commissioned by the ORR in relation to its independent monitoring of National Highways' management of the Strategic Road Network (SRN) in Road Period 2 (RP2) and beyond. These reports consider, respectively, National Highways' biodiversity performance; the potential content and coverage of National Highways' environmental performance framework in RP3; and the Company's engagement with non-user groups.

The purpose of the study is to provide advice to the ORR on its approach to monitoring National Highways' performance in delivering better biodiversity outcomes on the Strategic Road Network.

The scope of work includes a range of more specific considerations which are set out below:

- Whether National Highways' plans and processes for achieving its biodiversity target in RP2 are robust.
- How National Highways prioritises the location and type of scheme to deliver to maximise the benefits and/or minimise the damage to biodiversity.
- How National Highways' plans for the long-term maintenance of schemes, post-delivery, to support continued environmental benefits.
- How National Highways works collaboratively with local stakeholders and green infrastructure plans to ensure it delivers the best possible outcomes, within the constraints of funding and value for money.
- How the ORR should undertake its monitoring between KPI performance which is measured under Biodiversity Metric 2.0 and the next iteration Biodiversity Metric 3.0 that is being used in support of the Environment Act requirement for biodiversity net gain (BNG) in relation to Development Consent Order projects.[7]
- Whether the current metrics used to measure biodiversity are appropriate; if alternative metrics may be appropriate in the future; and how well-prepared National Highways is to adapt to the new metrics.
- How National Highways evaluates the success of biodiversity schemes and how it learns lessons to inform its future approach.
- How National Highways' approach compares to other infrastructure managers, nationally or internationally, and what lessons it can learn from best practice elsewhere.

Our approach to this review was to undertake an initial workshop with National Highways' biodiversity and environmental leads, followed by two rounds of information gathering where we submitted written questions which the Company responded to, supported by additional documents and case studies. It should be noted that our review is based on information provided by National Highways as at the end of March 2022 and that the findings reflect a snapshot of National Highways' plans and performance at a point in time. Our case studies of other infrastructure managers have been developed from publicly available material and CEPA's extant knowledge.

The remainder of this report is structured as follows:

- Section 2 describes National Highways' plans for meeting its Biodiversity KPI target in RP2 and considers whether its plans and processes are robust.
- Section 3 focuses on National Highways' progress on embedding biodiversity into the business more generally, focusing on the longer term management of biodiversity.

[7] Since the scope of work was written, it has been decided that Biodiversity Metric version 3.1 will form the basis of the statutory biodiversity metric used to underpin future mandatory biodiversity net gain as set out in the Environment Act 2021.

- Section 4 contains case studies of other comparable organisations and their approach to biodiversity, including key lessons from their experience that ORR and National Highways might consider further.
- Section 5 considers the implications for ORR's future monitoring of National Highways' biodiversity performance.

2. MANAGEMENT OF BIODIVERSITY IN RP2

In this section we consider whether National Highways' plans (as at the end of March 2022) and processes for achieving its biodiversity KPI target in RP2 are robust.

Summary of key findings:

National Highways has developed a biodiversity plan and believes it will deliver 75% of the programme which achieves a net position of +495 BUs at the end of RP2. Although National Highways has shown progress since ORR's last annual assessment, we conclude that the likelihood that National Highways will achieve its 'No Net Loss' target has deteriorated. This is for the following reasons:

- The BU calculations are very sensitive to the 75% delivered planning assumption. If National Highways delivers less than 70% of the Designated Funds programme it will miss the RP2 'No Net Loss' target.
- The limited time remaining in RP2 and the lack of momentum in the delivery of BUs to date, combined with the poor quality of National Highways' forward-looking plans.
- ~45% of its plan is delivered via Environmental and Well-Being Designated Fund (EWDF) contributions to MP projects. Several of these schemes are in delay via the DCO process. This puts the BUs delivered by these schemes at risk of delay into RP3.
- National Highways itself has "low confidence" in the delivery of ~3,140 EWDF BUs across the period – therefore we see a risk of slippage into RP3.

Our recommendations to ORR include:

- Requiring National Highways to produce a more robust plan by September 2022.
- In light of slow progress against the biodiversity KPI to date, assuring itself that National Highways has conducted a process for challenging mature RIS2 scheme designs and identifying opportunities for realising additional biodiversity benefits where it is cost effective to do so, and that National Highways reports on whether it is possible to apply that process to RIS2 MP schemes where preliminary designs are already complete.
- Asking National Highways to provide an update on its processes for embedding biodiversity into decision-making at the regional and area levels – specifically, obtaining an update on how the Company will ensure that opportunities to improve biodiversity alongside BAU maintenance and resurfacing / renewals schemes in RP2 are not being overlooked. National Highways has an ongoing trial within its Operations directorate, which we were not able to review, but on which ORR should engage with National Highways in the coming months to understand any emerging findings and results.

2.1. NATIONAL HIGHWAYS' PROGRAMME TO DELIVER 'NO NET LOSS' IN RP2

This report builds on ORR's Annual Assessment of National Highways' performance from April 2020 to March 2021. The ORR concluded that National Highways' biodiversity performance against its RP2 target was RAG-rated 'Amber'. At the time of ORR's assessment, National Highways' forward programme showed a shortfall of 3,878 BUs against its target to achieve 'No Net Loss' by the end of RP2.

National Highways has since made progress and developed a programme that they believe will deliver sufficient BUs to achieve their target by the end of the RIS. This includes setting individual BU targets for all projects within the RIS2 portfolio as a means of incentivising scheme managers internally to contribute to National Highways' biodiversity efforts. National Highways expects this programme, at full delivery, to deliver 2,939 BUs over the baseline at the end of RP2. However, the programme that we have reviewed currently lacks detail and is dependent on delivering most of the BUs at the end of the Road Period.[8] There are only three years remaining in RP2, and given the ongoing lack of momentum in BU delivery to date, we are concerned that the likelihood of National Highways achieving its biodiversity target has deteriorated since ORR's last assessment.

[8] Over half of Operations Directorate Designated Funds BUs are forecast to be delivered in 2024-25 – the last year of RP2. For Major Projects Designated Funds BUs the equivalent figure is around a third. In total, National Highways' plan shows that around 40% of BUs will be delivered in the last year of RP2.

Performance Target and Expected Delivery

National Highways is required to achieve 'No Net Loss' to biodiversity by the end of RP2. This is compared to a baseline of 130,848 BUs at the start of RP2. This baseline is assumed to deteriorate by 1% p.a. under the KPI approach, or -5,679 BUs by March 2025.[9] The assumption was agreed with Natural England as an approximate measure of the impacts of maintenance and pressure on habitat quality from normal operation of the SRN, but there was insufficient evidence to be confident of a precise estimate. National Highways estimated that if it made no effort to improve biodiversity, then around 6,261 BUs would be lost over RP2. This breaks down as:

- a loss for Major Projects (MP) of 1,632 from the 'core' scheme targets;[10]
- for Operations Directorate (OD) a loss of 5,654 – these figures include background degradation of biodiversity; and
- an increase of 1,025 for Lower Thames Crossing.

National Highways has forecast the BUs to be achieved under its current programme, which is risk adjusted to represent likely delivery. The following three scenarios are estimated:

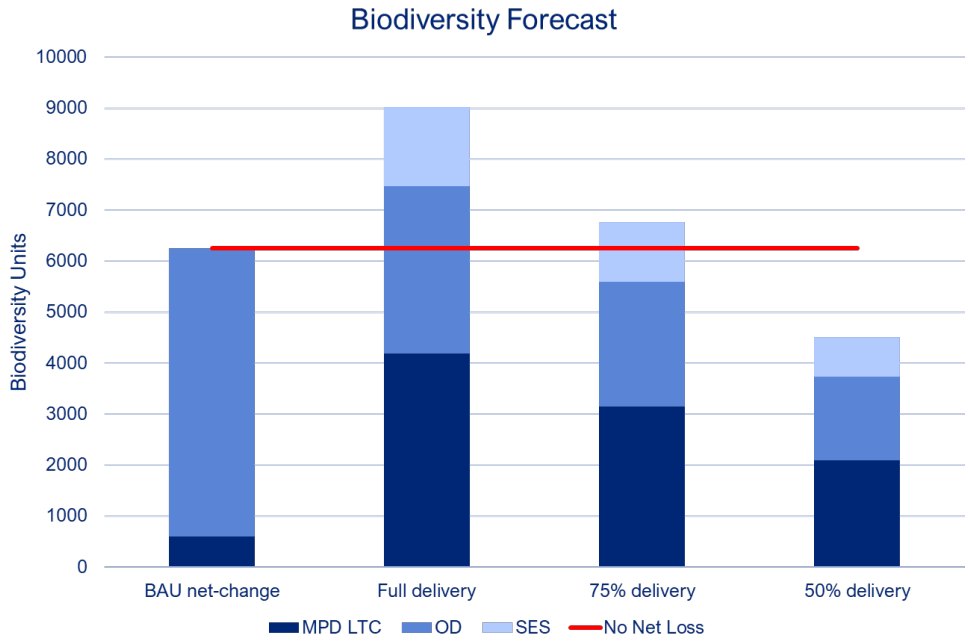
- **Full delivery** – this would account for 144% of the work needed to compensate for the BAU loss in BUs. This results in a net positive outcome of 2,939 BUs over the baseline at the end of RP2. However, National Highways recognises that full delivery of the programme is very optimistic due to various risks, uncertainty and potential error in the analysis.
- **75% delivery** – this would result in 495.5 BUs above the baseline at the end of RP2. National Highways considers this to be the likely scenario although it would require a significant increase in the current run rate (BUs delivered per year).
- **50% delivery** – this would result in a loss of 1759.8 BUs. This scenario is highlighted as pessimistic by National Highways.

Figure 1 shows the forecast biodiversity units across three delivery scenarios and BAU.

[9] 3 Sep 21 Biodiversity performance plan.docx

[10] National Highways claims that since the beginning of RP2 it has been able to reduce the forecast BU deficit associated with its core MP delivery by around 2,000 BUs. Exact figures were not provided for this review.

Figure 1: Biodiversity unit forecasts against target of 'No Net Loss'



Source: National Highways' Ministerial Briefing

Table 2 below shows the BUs delivered by the Designated Funds biodiversity programme, for each year of the road period, split across Major Projects, LTC, Operations and Safety Engineering and Standards (SES). We note that around 40% of BUs are expected to be delivered in the last year of RP2.

Table 2: Designated funds biodiversity programme (biodiversity units)

	2020-21	2021-22	2022-23	2023-24	2024-25	Total
MPD Designated Funds Projects	11.0	0	1330.4	1379.2	1349.9	4070.5
LTC Designated Funds Projects					122.3	122.3
OD Designated Funds Projects	104	370.3	753.5	254.7	1788.1	3270.6
SES Central Programme	0		342	783	430	1555
Totals	115	370.3	2425.9	2416.9	3690.3	9018.4

Source: National Highways' questionnaire response

Delivery Risks

National Highways emphasises that the delivery of 'No Net Loss' is subject to several delivery risks. These include the following:

- The programme includes projects with external organisations on third party land. Delivery is dependent on partners having the appetite, incentive and/or capacity to deliver and reaching agreement with landowners. National Highways will also want to technically assure itself that projects delivered by third parties are likely to deliver the expected BUs.[11]

[11] In discussions over a draft of this report, National Highways raised for ORR attention that there has been a significant increase in the costs for schemes delivered on third party lands since RP1 due to competition for schemes amongst developers; and that changes between Biodiversity Metric 1.0 and 2.0 reduced the benefits associated with such schemes. As a result, National Highways felt it prudent to review the pipeline of planned biodiversity schemes, and this was offered as a partial explanation for its slow start to delivery during RP2. ORR may wish to request additional evidence from National Highways to verify this claim.

- Many projects are in the feasibility stage, so there is uncertainty around how many BUs can be delivered by each scheme. National Highways' current estimates may change subject to the final approved designs and further understanding of any site-specific constraints. Table 3 shows National Highways' confidence in the calculation of biodiversity units within the programme. Low confidence is assigned to units that have not been technically assured and / or which are unlikely to be delivered before the final year of the RIS. These units are associated with projects in the early stages of development. National Highways has low confidence in 3,947.7 BUs.
- Biodiversity project delivery is linked to the wider major projects programme which is in delay – specifically, it is taking longer than expected to achieve DCO decisions on several schemes; two DCO decisions have been quashed; and the LTC application to the Planning Inspectorate has been withdrawn. If start of works on some schemes are delayed beyond the end of RP2, then biodiversity benefits cannot be delivered before the end of RP2 either.
- All projects seeking DCOs since 20th January 2022 have been delayed. This has resulted in start work dates for these projects being delayed to the end of RIS2 or start of RIS3. Nationally Significant Infrastructure Projects need DCOs, and these projects typically have a greater potential for biodiversity gain than smaller Highways Act schemes.[12] These projects being delayed to RIS3 could in isolation 'make the difference' between National Highways' achieving their KPI target or not.
- Projects in this programme are subject to technical assurance and validation. Around 40% of the programme has been assured to date.

Table 3: Confidence in the biodiversity units expected in programme delivery (biodiversity units)[13]

	High Confidence	Moderate Confidence	Low Confidence
Major Projects (Core)	213.6	-88.3	-740.6
Major Projects (DF)	1,018.7	1,690.9	1,349.9
LTC (Core)	-	-	-
LTC (DF)	-	-	1,147.3
Operations (Core)	-	-5,654	-
Operations (DF)	1,227.8	456.82	1,788.1
SES	342	783	430
Total	**2,802.1**	**-2,811.58**	**3,974.7**

Source: National Highways' Ministerial Briefing

In the context of the current programme, which is back end loaded, it is useful to reflect on what we have **not** seen in National Highways' plans.

- There is a lack of detail and the plan does not include named schemes with start and end dates;

[12] National Highways believe that there are various risks associated with Highway Act schemes which limit their ability to deliver BUs within the existing highway boundary. Improvements in the highway boundary must be able to be managed in a way where workers are not at a safety risk. Habitats delivered next to the highway can be negatively affected by environmental factors, such as nitrogen deposition.

[13] High confidence includes units that have been technically assured and are likely to be delivered before the end of financial year 2022-23, indicating the project is at a later stage of the design process. Moderate confidence includes units that have been technically assured and are likely to be delivered before the end of the financial year 2023-24, indicating some design work or survey is likely to have informed unit calculations.

- Overall, National Highways gives the impression that the BUs in Table 2 are heavily dependent on assumptions about the programme;
- Significant risk is attached to the BU delivery potential of individual schemes; and
- We have not seen evidence of urgency from National Highways to change its approach and consider wider, more innovative solutions or changes to BAU operations to accelerate progress towards the RP2 target.[14]

We have seen some evidence that National Highways is seeking support from Major Projects to deliver BU targets, alongside the creation of a designated funds based programme to be delivered via the operations directorate. Yet we have not seen any evidence that National Highways has systematically challenged renewals and resurfacing projects in operations to deliver biodiversity at the same time. As a result, it is not clear to us that delivery of 'No Net Loss' is embedded in the business or driving real, substantial change in the way that National Highways delivers the RIS.

Analysis of the key issues

Whilst National Highways' biodiversity plan represents progress since ORR's last annual assessment in July 2021, the Company's plans remain 'fluid' and are not yet robust because:

- The BU calculations are very sensitive to the 75% delivered planning assumption. If National Highways delivers less than 70% of the Designated Funds programme it will miss the RP2 'No Net Loss' target.
- After two years of RP2, National Highways is likely to have delivered between 500-700 BUs against a total requirement of 7,318 BUs. This means it must deliver ~6,700 BUs or more over the next three years.
- The total BUs gained in the first two years of RP2 is low (despite prior knowledge of the target and the development of plans to reach it in the run up to RP2). This makes ORR's ability to monitor National Highways' progress more challenging because the required BU delivery rate increases each year, and there is insufficient evidence of there being a robust plan in place to deliver this increase with confidence. The intensity of ORR's monitoring of delivery during the third year of RP2 should increase, as National Highways is fast approaching the 'make or break' point in terms of the required performance trajectory.
- ~45% of its plan is delivered via EWDF contributions to MP projects. Being able to deliver these BUs in a timely fashion requires that National Highways meets the Start of Works dates on those MP schemes. Several schemes are already in delay via the DCO process (e.g. A303 Amesbury to Berwick Down where the DCO has been quashed – it is due to deliver +135 BUs (net) in 2024/25) or have the potential to be challenged (e.g. A428 Black Cat to Caxton Gibbet which is due to deliver +326 BUs (net) in 2022/23).
- National Highways' current plan anticipates that ~40% of EWDF (MP + Operations) BUs will be delivered in 2024-25 – and it has "low confidence"[15] in the delivery of ~3,140 EWDF BUs across the period – therefore we see a risk of slippage into RP3.
- National Highways recognises that a lot of projects must move from initial options assessment through to an investment approval in a relatively short amount of time. We are concerned by the absence of a formal and detailed plan showing biodiversity project start and construction dates or how many have received financial approval. A plan such as this would begin to demonstrate that National Highways has a reasonable degree of control over, and confidence in, its plan to deliver BUs at the end of the period. National Highways has subsequently indicated to us that such detail would be made available to ORR upon request.

[14] National Highways confirmed via email that the latest BU targets for the Operations Directorate includes schemes delivered through the Maintenance & Renewals programme (which we refer to as 'business as usual') as well as EWDF from FY 2023-24.

[15] Units have not been technically assured and / or are unlikely to be delivered before the final year of the RIS, indicating that the design is at an early stage of development (concept design or option selection). See 'Jan 22 Baroness Vere Update + overprogramming.pdf'.

Conclusions

We conclude based on current progress and evidence provided to us that National Highways is unlikely to achieve its RP2 target of 'No Net Loss' because:

- There is limited time remaining in RIS2;
- The maturity of National Highways' plan as at the end of March 2022 (including National Highways' own assessment of the risks to that plan) is poor; and
- It will take time for biodiversity schemes currently at the feasibility stage to progress to delivery.

We understand that ORR has recently raised the risk of achieving the RP2 Biodiversity target onto its regulatory escalator, recognising its concern about deliverability of the KPI target. **Therefore, our recommendations to ORR are that it should:**

- **Require National Highways to produce a more developed plan by September 2022. ORR might request that the plan covers at a minimum:**
    - A fundamental rethink of the approach to achieving 'No Net Loss' and how National Highways might generate greater momentum before it is too late to be implemented in RP2. This could include options for scaling up third party delivery of biodiversity schemes, accelerating and or expanding existing planned projects (particularly those not directly dependent on MPs) and consideration of whether doing this would increase the achievability of the RP2 'No Net Loss' target. In this context it is important to recognise that National Highways should be prepared for biodiversity targets that may be broader in coverage and more challenging in RP3 (Net Gain).
    - Progress against National Highways' internal BU target for 2022/23, including confirmation that proposed biodiversity projects are in delivery or are contracted; and any actions it is taking to ensure that delivery does not slip into the subsequent reporting year.
    - Improved visibility on projects in the pipeline for 2023/24 and 2024/25, including which are in the feasibility/options; design and development; and approved funding stages. The pipeline should include a detailed commentary on the timeline for projects maturing from feasibility stage to approval for funding; the major risks to the successful delivery of the overall programme; and mitigating actions.
- **Assure itself that National Highways has conducted a process to challenge mature RIS2 scheme designs; identify opportunities to realise additional biodiversity benefits where it is cost effective to do so; and requires that National Highways report on whether it is possible to extend that process to RIS2 MP schemes where preliminary designs are complete, in light of the slow progress towards the KPI target to date.**
- **Asking National Highways to provide an update on its processes for embedding biodiversity into decision-making at the regional and area levels – specifically, an update on how the Company will ensure that opportunities to improve biodiversity alongside BAU maintenance and resurfacing / renewals schemes in RP2 are not being overlooked.** National Highways has an ongoing trial with its Operations directorate, which we were not able to review, but on which ORR should engage with National Highways in the coming months to understand any emerging findings and results.

3. NATIONAL HIGHWAYS' PROGRESS ON EMBEDDING BIODIVERSITY INTO THE BUSINESS

In this section we consider the following questions raised by ORR:

- How does National Highways prioritise the location and type of scheme to deliver to maximise the benefits and/or minimise the damage to biodiversity?
- How does National Highways plan for the long-term maintenance of schemes, post-delivery, to support continued environmental benefits?
- How does National Highways work with local stakeholders and Green Infrastructure plans to ensure it delivers the best possible outcomes, within the constraints of funding and value for money?
- How does National Highways evaluate the success of biodiversity schemes and how does it learn lessons to inform its future approach?

Summary of key findings:

Evidence gathered from National Highways' existing approach via Designated Funds suggests that biodiversity has been 'bolted on' rather than embedded as BAU. This should change going forward and we make the following recommendations:

- ORR should engage with National Highways as it prepares for RIS3, to understand what lessons it has learnt from the slow start to RP2; how it is implementing a different approach for RP3; and how it will better embed 'net gain' into future enhancement schemes, and biodiversity delivery and management into the planning of BAU activities more generally.
- Where National Highways enters into an agreement with a third-party for the long-term management of the land / biodiversity mitigation site, that it requires the third-party organisation to submit an annual report providing assurance that it is carrying out the necessary activities to support continued environmental benefits.
- ORR should require National Highways to explore whether there are further opportunities to fund work via local authorities / third parties, that is not based on MPs.

3.1. HOW NATIONAL HIGHWAYS PRIORITISES THE LOCATION AND TYPE OF SCHEME TO MAXIMISE THE BENEFITS AND/OR MINIMISE THE DAMAGE TO BIODIVERSITY

There are two aspects to this:

- How National Highways manages the RIS2 scheme options and design phases to ensure that its major enhancement projects are designed to avoid and mitigate biodiversity losses where possible, and seek to maximise the potential to deliver biodiversity improvements alongside the scheme; and
- How National Highways uses its Designated Funding to deliver projects which improve biodiversity and/or offset reductions in biodiversity.

In respect of the first point:

- National Highways told us that all schemes use biodiversity metrics to quantify outputs to support the environmental impact assessment process (where that is required). It has a standard which sets out the requirements for assessing and reporting the effects of its schemes on biodiversity.[16]
- We have seen evidence that all RIS2 Major Projects have been set internal biodiversity performance targets to contribute towards National Highways' corporate 'No Net Loss' target. These internal targets contain a

[16] DMRB Sustainability & Environment Appraisal LA 108: Biodiversity, available online.

'core' element and a 'EWDF' element, such that the total target incentivises the scheme to deliver more BUs relative to a BAU position.

- We have also seen evidence that National Highways considers the biodiversity impact during the scheme options and design phases. For example:
    - National Highways uses the Early Assessment and Sifting Tool (EAST) to supplement the option appraisal process with additional information regarding potential policy conflicts for environmental topics. Where this process has been applied, it is detailed in the scheme environmental assessment reports. National Highways' view is that this method strengthens the weight given to environmental topics in option selection.
    - It is developing an improved Preliminary Environmental Risk Assessment (PERA) dashboard document, which is used for schemes in early stages of development (options selection).
- Amongst other things, the PERA document requires that there is consideration of the potential for the scheme to deliver 10% net gain based on the data available, which should inform the option selection process. The document also requires the following information on biodiversity:
    - What (essential) mitigations will be required, and by when.
    - Any physical issues which may make mitigation measures more difficult to implement.
    - Any changes in route alignment that may be required.
    - Potential land purchase implications.
    - Any bespoke or non-standard mitigation that could have implications on cost, programme or deliverability over and above BAU.

However, in respect of the second point, National Highways told us that it is not actively 'prioritising' the location and type of EWDF biodiversity schemes. It explained that this is because it is currently focused on generating momentum in the development and delivery of a programme of schemes; and that it has not yet reached the point where it needs to 'trade-off' between schemes. Instead, projects which meet the necessary criteria for funding and pass the technical appraisal process are approved as they become ready to proceed.

National Highways' focus for the remainder of RP2 is likely to be on generating momentum behind the implementation of as many biodiversity schemes as possible to meet the RP2 'No Net Loss' target. But our recent engagement with DfT (on the Environmental Framework) suggests that biodiversity targets are likely to get tougher going forward into RIS3 and may cover a wider range of projects / activities. In in our view National Highways should be preparing to start RP3 with a 'Net Gain' target for enhancement, which would require a more substantial pipeline of schemes ready to go from the start.

Therefore, our recommendation to ORR is that, alongside its review of the draft Strategic Business Plan for RIS3, it monitors National Highways' readiness to deliver Net Gain (at least on enhancements) from the start of RP3.

3.2. How National Highways plan for the long-term maintenance of schemes, post-delivery, to support continued environmental benefits

National Highways told us that to claim biodiversity outputs, it needs to have evidence that the habitats delivered can be maintained in the long term. It also told us that it ensures routine and cyclical maintenance activities required to deliver and maintain habitats at the level of diversity and condition claimed are reported and captured in its maintenance and renewals contracts.

For MP schemes this information is reported in the Environmental Management Plans (EMPs) that are produced by the lead contractor during the PCF process. A first iteration of the EMP is produced during the design phase, it is then refined in advance of construction, and a third iteration is produced at the end of the construction phase, prior

to handover. Dependent on stage of delivery, most National Highways' major schemes also have a Landscape and Ecological Management Plan (LEMP) which details these actions.

Projects funded via the Designated Funds are required to have a supporting Delivery, Monitoring and Establishment Report (see Section 1.7 below), which confirms the long-term maintenance actions which are required.

Each regional operations directorate has a team of Environmental Inspectors which monitor the soft estate and assess habitat condition in line with the requirements in the Asset Data Management Manual (ADMM).[17] The ADMM requires the management of an environmental data inventory that records the composition of the soft estate (by habitat), what condition those habitats are in and how they should be managed. We understand that the soft estate is surveyed by the Environmental Inspectors on a cyclical basis, where that programme is developed regionally.

We also asked National Highways how it monitors the performance of its supply chain with respect to its management of biodiversity, and the conduct of maintenance and management of activities that are related to biodiversity (e.g. management of roadside vegetation (grass cutting) and treatment of weeds and other invasive species). National Highways told us that "*following establishment of the new Environment and Sustainability division, National Highways is investing resource in proactively reviewing its strategy for management of the soft estate,* [including] *reviewing existing processes relating to contract management associated with management of our operational estate and will be seeking improvements to these processes over the forthcoming months*."

Although we see evidence that National Highways plans for the long-term maintenance of schemes post-delivery, in that it requires documented plans to be produced as part of the PCF process, we are concerned about the relative lack of evidence to demonstrate that these plans are being implemented via the Company's supply chain.

We would therefore recommend:

- **That National Highways explores the feasibility of an internal set of annual biodiversity-related targets for each Area (i.e. not 'monitored' targets[18]), that would create useful management information to challenge itself and its supply chain to manage biodiversity for the long-term.**

  National Highways is best placed to propose and justify a set of metrics and should have the flexibility to set metrics that it thinks is most appropriate for its business. Options that the Company might consider include, but are not limited to:

  - % of the soft estate in 'good' condition;
  - X hectares of habitat conserved or enhanced.

- **Where National Highways enters into an agreement with a third-party for the long-term management of the land / biodiversity mitigation site, that it requires the third-party organisation to submit periodic reports (i.e. annually where appropriate) assuring that it is carrying out the necessary activities to support continued environmental benefits.**

- **That National Highways completes a medium term and longer-term evaluation (e.g. 5 and 10 years after) of a sample of biodiversity schemes, similar to its POPE process, and publishes those reports. Because National Highways had biodiversity funding in RP1, the first such report could be carried out before RP3 commences.**

[17] National Highways (October 2021) "Asset Data Management Manual – Part 2 – Requirements and Additional Information" see Part 2.2 Section 9, p115, available online.

[18] By which we mean that ORR would not formally hold the Company to account for the achievement of these targets in the same way as it would for targets associated with KPIs, PIs and Commitments in the Performance Specification.

3.3. How National Highways works collaboratively with local stakeholders and Green Infrastructure plans to ensure it delivers the best possible outcomes, within the constraints of funding and value for money

National Highways told us that, following the creation of the new Environment and Sustainability division, it will invest resource in "*proactively reviewing its strategy for managing the relevant change required within the business to respond to the requirements of the Environment Act and to better engage with third parties on biodiversity delivery.* [It] *will be reviewing existing processes relating to engagement with bodies, such as local authorities and will be seeking improvements to these processes over the forthcoming months*."[19]

We have seen some evidence of collaborative working with local stakeholders – particularly The Wildlife Trusts on specific projects and on the 'Networks for Nature' programme which covers several (but not all) National Highways regional Operations directorates. We also know that the Designated Funds team engages proactively with third party organisations through its Designated Funds Advisory group to seek opportunities to develop programmes of biodiversity projects on and off National Highways land (see Box 1 and 2 below).

Box 1: Network for Nature

This scheme involves a series of projects to create, enhance and restore 690 ha of habitats within 500m of the SRN in every region in England. This case study is delivered in partnership with local Wildlife Trusts and managed by the Royal Society of Wildlife Trusts (RSWT).

The feasibility phase estimated at least 1,579 BUs could be gained from the programme. The majority of BUs delivered on The Wildlife Trusts' or partners' estates and 128 BUs delivered on the SRN in partnership with the local Wildlife Trust. Some projects will engage third party landowners to deliver habitat improvements on their landholdings. An evaluation programme will be carried out in the feasibility stage to assess wider environmental, social and economic benefits of the programme to National Highways, local communities and road users.

RSWT will undertake the following:

- Produce a 30 year management plan for each project.
- Monitor project progress and provide reports to National Highways.
- Undertake a consolidated programme of monitoring and evaluation.

National Highways estimate that the programme will attract roughly £1.1 million of external funding from external sources, such as labour costs provided by local Wildlife Trusts and cash funding from organisations such as the Environment Agency.

One limitation is that the Biodiversity Net Gain calculations were a strategic desktop exercise. Habitat surveys may revise the BUs estimated when the projects are in preliminary design phase.

Box 2: Natural Flood Management Pilot Fund

This scheme seeks to understand whether natural flood management (NFM) measures are an effective 'tool' for managing flood risk on the strategic road network (SRN). This also involved a pilot 'NFM Fund' to support landowners and managers implement NFM measures to address flood hotspots on the SRN. There are likely to be benefits to biodiversity from this scheme, however National Highways recognises that it does not understand the full value of this gain.

National Highways followed a multi-stakeholder approach. The Principal Partners included:

- National Highways as 'Fund holders'.
- Rivers Trusts (Mersey and Don Catchment) hosting the scheme alongside landowners.

Supporting Partners included:

- Sylva who provided the reverse auction platform – 'Nature Bid'.

[19] National Highways response to Round 2 questionnaire.

- Atkins supported the process with application of bespoke tools, GIS and providing supporting guidance, contract framework and review of fund applications.

Results:

- There were 26 bids submitted from landowners, of which 20 were funded at a value of £651,830.
- NFM Fund delivered ~5,800 m³ of water storage.
- The River Trusts will monitor the NFM sites one year after implementation.

National Highways may look to apply the NFM Fund more widely if results continue to be positive. National Highways recognises the need to understand the full value of environmental co-benefits, such as biodiversity. Realising the benefits could provide a stronger case for wider application of this approach.

We have also seen evidence of monthly training events delivered by National Highways, which the supply chain and other third parties are permitted to attend. The training aims to improve attendees' understanding of biodiversity, net gain and biodiversity metrics, and the Company presents case studies that help attendees to better understand its processes and the practicalities of delivering biodiversity projects with National Highways, including how to complete an EWDF application.

However, we surmise from National Highways' response and a shortage of other, broader examples that National Highways' approach to engaging with local stakeholders is currently ad-hoc; encouraged by central teams but not yet well embedded; and likely to be based on the strength of existing relationships with local partners, or by an imperative created by consultation on major schemes (e.g. local authority engagement on the LTC).

Given that National Highways has a Licence commitment to "*where appropriate, work with others to develop solutions that can provide increased environmental benefits over those that the Licence holder can achieve alone, where this delivers value for money*"[20], **we recommend that ORR requires an update from the Company on its progress in reviewing existing processes relating to engagement with local stakeholders, by June 2022. We also link this to our recommendation to ORR in Section 1.1 above, that it should require National Highways to explore whether there are further opportunities to fund work via local authorities / third parties, that is not based on MP led enhancement projects.**

We note that National Highways' biodiversity metric allows the post-construction 'distinctiveness' score to be improved if the area is covered by a local Green Infrastructure Plan – so National Highways has an incentive via its corporate KPI to deliver projects that feature in local Green Infrastructure Plans.

3.4. How National Highways evaluate the success of biodiversity schemes and how it learns lessons to inform its future approach

We find two main aspects to National Highways' approach to evaluating the success of biodiversity schemes:

- During the appraisal stage it considers the number of biodiversity units generated per pound spent and compares this against a 'tariff cost' per unit (~£15k). Although National Highways did not tell us explicitly that this is the case currently, we assume that this analysis could be extended to outturn costs to evaluate the relative success of each scheme against the benchmark tariff cost; and
- Each project must produce a Project Delivery, Monitoring and Establishment Report. This report contains several metrics which measure aspects of 'success', including:
    - Whether scheme outputs were completed as per detailed designs; and
    - Whether the KPI related target (number of biodiversity units gained) was achieved.

[20] DfT (April 2015) "Highways England: Licence" see para 5.23(d), available online.

We consider that this approach is an important first step that helps National Highways to monitor whether, on a scheme-by-scheme basis, it is funding the expected outputs at a reasonable cost. However, in due course it will need to extend this approach to evaluate whether:

- Opportunities to create new habitats and/or mitigate biodiversity loss were missed during scheme design and delivery, and what lessons it might learn from this to prevent such opportunities being missed in future schemes.
- Its business-as-usual (including newly adopted) standards for biodiversity and vegetation management are working, and to consider from time-to-time whether they could be updated to better protect biodiversity, including trialling new approaches ahead of RP3.
- Newly created habitats have become successfully established over the longer term (recognising that in some cases this commitment will need to be reflected in the agreements put in place with the external organisation responsible for ongoing management of the land).

We therefore recommend that ORR should engage with National Highways as it prepares for RIS3, to understand what lessons it has learnt from the slow start to RP2; how it is implementing a different approach for RP3; and how it will better embed 'net gain' into future enhancement schemes, and biodiversity delivery and management into the planning of BAU activities more generally.

4. CASE STUDIES OF OTHER INFRASTRUCTURE MANAGERS

ORR asked us to consider how National Highways' approach to biodiversity compares with other infrastructure managers, nationally or internationally, and what lessons it can learn from best practice elsewhere.

To answer this question, we developed a series of case studies and based on those, highlight lessons that ORR and National Highways might consider further. These case studies are intended to stimulate further consideration and are not intended as direct comparisons of organisational performance.

Summary of key findings:

Alongside HS2, National Highways was one of the first UK infrastructure managers to adopt a 'No Net Loss' target. But National Highways faces arguably the biggest biodiversity challenge in the transport infrastructure sector due to the ongoing 1% reduction in biodiversity units that is a feature of its KPI metric.

Although National Highways has a relatively challenging target, we are concerned that this ambition is not yet matched in its implementation and suggest the following actions to be taken, learning from best practice elsewhere:

- National Highways' Biodiversity Action Plan was last published in June 2015 – before it adopted the 'No Net Loss' target for RP2. Other organisations have subsequently, or will shortly, publish updated action plans that better reflect the urgency of the biodiversity agenda, and how they will embed it within their business.
- Whilst National Highways has developed a new Low Nutrient Grasslands policy, this is just one action that the organisation can take, and other policies will be required (or updated) to ensure biodiversity is addressed in a holistic manner.
- We consider that there is potentially a shortage of guidance on how to design biodiversity into new schemes and BAU projects such as resurfacing schemes. National Highways might develop a range of guidance documents for a range of green assets, that draws on the approach taken by e.g. Gloucestershire[21], Network Rail[22] and PlantLife.[23] ORR and National Highways should consider this further.
- National Highways might improve its 'organisational model' for the planning and delivery of biodiversity, to ensure that it is embedded into decision-making at all levels and across all operational areas. For example, Network Rail adopts route-level habitat and vegetation management plans that dictate what work should be done and contain time-bound actions that are reported on annually.
- Drawing on the efforts that HS2 Ltd has made to work with its contractors and squeeze final biodiversity opportunities out of designs that are relatively mature, ORR should assure itself that National Highways has also conducted similarly challenging reviews of RIS2 scheme designs in light of the slow progress achieved against the biodiversity KPI target to date.

4.1. NETWORK RAIL

Summary of key themes emerging from this case study:

- Network Rail developed a Biodiversity Action Plan in December 2020. Its goal is 'No Net Loss' by 2024 and 'Net Gain' by 2035. This is five years earlier than National Highways' goal of 'Net Gain'.[24]
- Network Rail use satellite imagery to map the type and size of habitats in the network. They also frequently assess satellite remote sensing to observe changes in habitat condition. The use of cutting-edge technology can also predict where animals and plants are likely to be present.
- Network Rail has created its own best practice guidance with the lineside management toolkit. This is a database available to all managers responsible for the lineside.

[21] Gloucestershire County Council (December 2019) "Gloucester Highways Biodiversity Guidance" available online.

[22] Network Rail (June 2021) "Railway Sustainability Design Guide" available online.

[23] PlantLife (2019) "Managing grassland road verges" available online.

[24] Highways England (June 2015) "Our plan to protect and increase biodiversity" available online.

Network Rail published its Biodiversity Action Plan in December 2020.[25] Network Rail's biodiversity target is 'No Net Loss' by 2024 and 'Net Gain' by 2035. The plan outlined steps Network Rail will take to manage biodiversity. These included: a stocktake of environmental assets, measuring the impacts of Network Rail's management on biodiversity and developing route level actions plans.

Stocktake of environmental assets:

- Network Rail will firstly assess the type and condition of biodiversity assets across the rail network, as well as predicting future biodiversity. This involves modelling where species are likely to occur on the trackside, for now and also in the future with climate change. This helps inform local management plans on how to conserve these species and how to manage the land.
- Network Rail map the type and size of habitats using satellite imagery, including the European Space Agency's Sentinel 2 satellite multi spectral images of the land every five days. LiDAR, Light Detection and Ranging, is then used to measure heights of features on the earth's surface. This will provide Network Rail with information on the shape of the land surface and vegetation height.
- Network Rail look to work with partners on adjacent land to re-connect habitats across the network, similarly to National Highways' plan.

Measuring the impact of Network Rail's management on biodiversity:

- Network Rail use frequent satellite remote sensing to identify changes in habitat condition alongside ground surveys on the lineside to assess the biodiversity of species.
- Network Rail's biodiversity accounting method assigns numeral values to different areas of habitat based on habitat type, condition, distinctiveness and difficulty to recreate. The overall score is based on habitat areas retained, lost or degraded, plus areas enhanced or created through mitigation, compensation or offsetting.

Route level action plans:

- Network Rail covers five regions with fourteen routes. Route level action plans will be developed in consultation with stakeholders, neighbours and local communities.
- Route level action plans will include: habitat management plans, vegetation management plans and sectional asset plans. Each will identify biodiversity goals and be accompanied by technical guidance to ensure consistent and effective biodiversity delivery across all routes. The progress of each plan will be reported on annually.
- These actions and goals will show how railway management is contributing to wider conservation initiatives, such as the National Pollinator Strategy and Nature Recovery Network.

Progress to date:

Network Rail is collaborating with The Tree Council to complete a four-year £1m tree planting pledge.[26] This plan involved working with community groups, parish councils and schools to plant more than 80,000 trees and hedgerows by March 2021.

Network Rail has started several projects to help improve biodiversity on the rail network.[27] These include the following:

[25] Network Rail (December 2020) "Biodiversity Action Plan" available online.

[26] Network Rail (December 2020) "Our commitment to helping biodiversity" available online.

[27] Network Rail (September 2021) "Seven times we improved biodiversity around the railway" available online.

- Four hectares of undisturbed habitat in Northamptonshire – Network Rail worked with Amey and Freshwater Habitats Trust to transform the previous work compound site which was used during the upgrade to the Midland Main Line. This land will not be open to the public so that the wildlife can thrive. The habitat will contain ponds, grassland, wetland areas and open woodland. Network Rail have committed to looking after the new habitat for 30 years.
- Protecting rare species after diverse weather events – Network Rail rebuilt embankments in Sussex and Kent that had failed due to bad weather. Ecological surveys revealed there were protected species at each site, such as great crested newts and bats. Environmental specialists worked with Natural England and local authorities to ensure the engineering work created minimal disturbance to the species. This also involved the relocation of newts.
- Timber harvesting for habitats – it has been normal practice in the forestry sector to chip trees alongside the railway. The chips would then be spread out on the ground and hinder plant regrowth. In Scotland, Network Rail now stores this material as habitat piles. They are used by red squirrels for storing food and birds can nest on them.

Network Rail is also committed to educating their workforce on biodiversity.[28] This includes how to identify wildlife so they can record sightings and report to an environmental specialist. Network Rail ecologists have created checklists and awareness briefings.

Other points of interest

A network of sites is identified for each route of the rail network where the impacts of vegetation management on biodiversity are monitored in detail. These are used to demonstrate best practice, provide opportunity to trial new management approaches before implementation across the whole network and to train staff in best practice. A **Network Rail Biodiversity Steering Group** has been established to support route level planning, ensure consistency, share best practice and gather annual progress reports.

Network Rail's plan also set out to create a **lineside management toolkit**. This is a database available to all managers responsible for the lineside and includes information on best practice management.

4.2. HIGH SPEED 2

Summary of key themes emerging from this case study:

- HS2 Ltd has not yet published a Biodiversity Plan, but has committed to do so in 2022. This has not prevented the company from gradually making progress towards its 'No Net Loss' target – including challenging existing designs to eke out further opportunities. However, further progress is needed if HS2 Ltd is to meet its target for Phase 1.
- The cost of delivering 'No Net Loss' will be absorbed within HS2 Ltd's overall budget for Phases 1 and 2a. Any additional funds that have been created specifically for biodiversity and environmental projects (e.g. HS2 Biodiversity Fund; Community and Environment Fund) are for projects proposed by third parties, that will help HS2 Ltd deliver over and above its statutory commitments and 'No Net Loss' target.
- Relative to HS2, National Highways faces the additional challenge of offsetting the ongoing detrimental impact of the network on biodiversity over time. In our view, this suggests that National Highways will need to go further than HS2 Ltd in adopting innovative approaches to offsetting biodiversity losses.
- HS2 will be a completely new network, which the SRN is not. But National Highways could start planning to create 'green corridors' over multiple Road Periods, as it delivers BAU activities (e.g. via pavement renewal and resurfacing) alongside its enhancement schemes.

[28] Network Rail (accessed March 2022) "Sharing our railways with wildlife" available online.

High Speed 2 Limited (HS2 Ltd) – the government-owned company which is managing the delivery of the HS2 project – has adopted similar biodiversity targets to National Highways:

- Achieving 'No Net Loss' of biodiversity on Phase 1 (London to the West Midlands) and on Phase 2a (West Midlands to Crewe) to secure biodiversity gains moving beyond 'No Net Loss'.[29] We understand that this commitment was formalised sometime around 2016, but ambition was formed several years earlier (HS2 Ltd had considered it in the preparation of the November 2013 Environmental Statement).
- Achieving a 10% net gain of biodiversity on Phase 2b (Crewe to Manchester).[30]

HS2 Ltd measures progress towards these objectives using a modified version of Defra's biodiversity offsetting metric, which was developed in consultation with Defra. The main differences are that (i) HS2's biodiversity metric has a broader distinctiveness scale, to take account of habitats of principal importance, and that (ii) the Biodiversity Metric 2.0 has an extended coverage of habitat types, which includes green infrastructure and rivers. HS2 Ltd will determine the feasibility of updating the HS2 metric following the publication of Biodiversity Metric 3.0 – but, at the time of writing, no public decision on updating the metric has been made. Phases 1 and 2a are exempt from mandatory net gain because "*adding processes at this advanced stage of design maturity would cause significant delays and cost.*"[31]

To deliver 'No Net Loss' (alongside other environmental objectives) HS2 Ltd will create a "green corridor" alongside the railway that will conserve and enhance habitats, while designing mitigations that will integrate into the character of the landscape.[32] The green corridor will include:

- Creation of over 33 square kilometres of new woodland and wildlife habitats;
- New woodland and hedgerow planting that will amount to an increase of around 30% compared to what was there pre-construction;
- New planting designed to provide better connection to other existing features and habitats;
- 16 specially designed 'green bridges' covered in planting and 25 miles of tunnel;
- A £7m HS2 Woodland Fund that has so far supported 34 woodland projects that will deliver approximately 126 hectares of new woodland and restore a further 70 hectares of ancient woodland.[33]

To monitor and oversee its progress towards these objectives – as well as the delivery of its environmental policies and wider commitments – HS2 Ltd has established an Environmental Sustainability Board Sub-Committee.[34] HS2 Ltd is committed to publishing a Biodiversity Plan during 2022.[35]

Progress to date

At the start of the HS2 project, the biodiversity baseline for Phase 1 was a 10% biodiversity loss (the change in biodiversity units of area habitats between the pre-construction and postconstruction stages, measured according to its adapted HS2 metric). By 2017, HS2 Ltd had improved this to –7.14% and this has now improved further to –3.17% by December 2020. This improvement is due to reducing land take; and improvements in distinctiveness of

[29] HS2 Ltd (June 2018) "Factsheet: Ecology" available online.

[30] HS2 Ltd (January 2022) "Phase 2b Western Leg Information Paper E2: Ecology" available online.

[31] Defra (January 2022) "Consultation on Biodiversity Net Gain Regulations and Implementation" available online.

[32] Like many large, complex infrastructure projects, HS2 is controversial on environmental grounds and many environmental stakeholders have raised challenges about the quality of HS2 Ltd's mitigation plans and procedures, including the adequacy of the 'green corridor' proposals. Reviewing the arguments raised by these stakeholders is outside the scope of this project.

[33] HS2 Ltd (updated 11 January 2022) "HS2 Environmental Facts" available online.

[34] HS2 Ltd (January 2022) "Environmental Sustainability Vision" available online.

[35] HS2 Ltd (January 2022) "Environmental Sustainability Progress Report: April 2020 – March 2021" available online.

habitats provided and targeted areas of biodiversity gain such as at the Colne Valley Western Slopes in Hillingdon. The design here includes creating 127 hectares of species-rich calcareous grassland, wood pasture and wetland habitat across an area dominated by arable fields. HS2 Ltd states that it continues to work to close the gap towards its 'No Net Loss' target.

HS2 Ltd has already created over 60 new wildlife habitats between Hillingdon and North Warwickshire, including diverse grassland, ponds and native tree and shrub planting, to support a broad number of species including newts, reptiles, badgers, birds, and bats. At Finham Brook in Warwickshire, six new ponds have been created for great crested newts to breed in, extensive grassland has been planted to support local wildlife, and over 6,200 new trees have been planted featuring native species to the area such as oak, hazel, hawthorn and holly.

Under a contract (awarded in 2017) to plant trees and shrubs at sites along the Phase 1 line of route, HS2 Ltd has successfully delivered over 270,000 trees and shrubs during 2020/21, delivering landscape and ecology benefits. This brings the total plantings to date to more than 700,000, although it has suffered some tree losses due to adverse weather conditions. The company states that all trees lost were replaced in the same location.[36]

With a focus on delivering against the objectives of the Water Framework Directive, HS2 Ltd has also been working with designers and the Environment Agency to ensure that design elements of the project that interact with surface waters maximise the opportunities for net gain in biodiversity, using the latest tools that link design and ecological benefit in a quantifiable way. Resulting mitigation measures such as improvements in channel form (i.e. creating watercourses that do not follow straight lines and by varying the profiles of banks and beds) should benefit the dependant ecology and also provide enhancement to the overall landscape.[37]

Other points of interest

HS2 Ltd creates ecology site management plans for every area of habitat creation along the route. Each of these is monitored so it can track progress against bespoke ecological site objectives to ensure they hit their targets. Every new habitat is targeted at achieving maximum value and 'habitat of principal importance' status.

In addition, HS2 Ltd's contractors are required to meet specified and "rigorous" technical standards for all aspects of ecological work associated with HS2, such as habitat creation, and monitoring their progress. HS2 Ltd state that in many cases this goes beyond what is required by legal mandates such as protected species licensing.

In partnership with its main works contractors, HS2 Ltd has also developed an "environmental opportunities realisation process" to identify additional biodiversity opportunities in existing designs. For example, the main works contractor on the West Midlands section of the Phase 1 route (a Balfour Beatty–Vinci joint venture) used the environmental opportunities realisation process to find opportunities to increase biodiversity or expand the quality of green space in existing designs, rank those with the most positive environmental impact and assess whether they were subject to time constraints. The opportunities are being further investigated, including exploring the possibility of further cultivating road and railway verges with low-maintenance grassland.[38]

Separately, HS2 Ltd is actively supporting innovation and new developments in ecology through programmes such as its Innovation Accelerator. For example, it is funding an innovation project that uses an environmental DNA measurement technique to research the success of ancient woodland translocations, in which materials and species are moved to new sites. HS2 Ltd is also using drone technology to map habitats and monitor the success of rare nesting birds and using biodegradable materials in the design of tree guards and badger setts.

In January 2021, HS2 Ltd launched a £2 million Biodiversity Investment Fund (BIF) for Phase 2a.[39] HS2 Ltd is using the fund to engage with the HS2 Ecology Review Group (whose members include Natural England, the Forestry

[36] HS2 Ltd (January 2022) "Environmental Sustainability Progress Report: April 2020 – March 2021" available online.

[37] HS2 Ltd (January 2022) "Environmental Sustainability Progress Report: April 2020 – March 2021" available online.

[38] National Highways told us that HS2 Ltd has adopted its low nutrient grassland policy.

[39] We are not aware of the creation of any similar funds for Phase 1.

Commission and the National Trust) and encourage projects that go beyond its existing policy commitment of 'No Net Loss'. The BIF looks beyond the immediate construction footprint and allow HS2 Ltd to work with conservation groups to create both new habitats and maximise the value of existing ones. Similarly, the £7m HS2 Woodland Fund can fund projects which aim to create or restore woodland sites within a 25 mile zone of the new railway.[40]

4.3. UK Housebuilders

Summary of key themes emerging from these case studies:

Both Redrow and Berkeley Group have the target of Biodiversity Net Gain on their developments. Key features from the Redrow case study include:

- Collaboration with third parties – Redrow worked in partnership with The Wildlife Trust to develop their Biodiversity Net Gain strategy.
- Biodiversity is at the forefront of decision making – before purchasing land Redrow will assess the wider potential impacts on habitats and design developments to contribute to existing, or potential, nature recovery networks.
- Efficient long-term biodiversity management – Redrow collaborates with management companies to design plans that focus on biodiversity and long term gains for nature. Management organisations are also expected to measure and share information of outcomes which facilitates learning.

Key features from the Berkeley Group case study include:

- Ambitious target of Environmental Net Gain by 2030. This considers wider environmental benefits at sites beyond biodiversity, such as soil and air quality.
- Berkeley Group collaborated with The Ecology Consultancy to develop a set of nine overarching design principles that can be applied to help achieve net gain. This is considered by project teams at every site and facilitates a holistic approach to managing biodiversity.

4.3.1. Redrow

In 2020 an ecologist from the Wildlife Trust was seconded to Redrow to develop their biodiversity strategy.[41] This resulted in a partnership between The Wildlife Trust and Redrow where they both collaborated on a new strategy for Biodiversity Net Gain.

Redrow have set out a series of commitments for new developments under three key themes: creating **nature gains**, **rewilding lives** and creating a **flourishing legacy**.[42]

Nature Gains:

Redrow, like National Highways, uses a best practice approach following the mitigation hierarchy. This means first avoiding losses, then minimising impact and lastly compensation for losses that are unavoidable. Redrow follow a 'landscape led' approach. Before purchasing land, Redrow will assess the wider potential impacts on habitats and design developments to contribute to existing, or potential, nature recovery networks. This shows how biodiversity is at the forefront of decision making.

Redrow uses DEFRA's metric for measuring biodiversity and aim to exceed government requirements of a 10% biodiversity net gain on new developments.

Rewilding Lives:

[40] HS2 Ltd (January 2022) "Environmental Sustainability Progress Report: April 2020 – March 2021" available online.

[41] Redrow Homes PLC (July 2020) "Redrow's biodiversity strategy – from a Wildlife Trust perspective" available online.

[42] Redrow Homes PLC and The Wildlife Trusts (accessed March 2022) "Nature for People: Creating Thriving Communities for Nature and People" available online.

Each development has a Community and Nature Management Plan which addresses long-term management of habitats and has requirements for community engagement, such as volunteering programmes. Redrow provides opportunities for the communities to learn about nature and biodiversity, for example through homeowner information and interpretation boards.

Redrow provides bird, bat or bug boxes to new homeowners to support them creating wildlife friendly gardens.

Flourishing Legacy:

Redrow collaborates with management companies to design plans that focus on biodiversity and long term gains for nature. Management plans will include clear information for those carrying out the work on the development. New home customers will receive their own version of the plan. This helps residents understand how the management companies will be maintaining the space.

Management organisations are also expected to measure and share information of outcomes which facilitates learning. Redrow also complete post-completion ecological monitoring and post-occupancy studies. This provides customers and local communities an opportunity to provide feedback on how Redrow Homes can improve its approach. This shows that Redrow ensures that their biodiversity plan is clear and transparent with homeowners and manage the long-term biodiversity of the sites.

Progress to date:

Examples of Redrow biodiversity efforts include:[43]

- Chaul End (Caddington, Luton) – this is an example development where Redrow is working with expert organisations, RSPB and Bumblebee Conservation Trust. Two existing ponds have been expanded and new species rich grassland and native shrub planting through the development. Due to achieve net gains of 64% for biodiversity.
- Kent – Redrow worked with Kent County Council, civil engineering consultants and ecologists to create an environment that could drain surface water run-off generated by the new development. This balanced rainwater, newts and new homes.
- North Wales – a clay pit has been transformed into a new community of 300 homes and 45 new ponds. Redrow's initial investment and annual Heathlands residents' payments provides a full time warden for the site along with a charity which implements the long term management plan. This pond has helped reverse the decline in Great Crested Newts.

Other points of interest:

- Redrow is working on strengthening links between Redrow regional teams and their local Wildlife Trusts to build close relationships at the regional level.
- Redrow is a case where biodiversity is central and considered at the start of decision making. Redrow choose developments with biodiversity in mind, rather than increasing biodiversity as much as possible once a development has started.
- Redrow also show effective management by collaborating with management companies to design plans that focus on the long-term management of biodiversity.

[43] Redrow PLC "Nature for People" available online.

4.3.2. Berkeley Group

In 2017, Berkeley Group set a goal of achieving Biodiversity Net Gain on every site by 2030.[44] Since then Berkeley Group have set more ambitious targets:[45]

- Short-term targets by 2023 – achieve a 10% net gain on every new development, partner with a water company to undertake a water neutrality trial and upskill managing agents to ensure biodiversity gains are maintained for the long term.
- Medium-term target by 2025 – develop, and trial, an approach for environmental net gain.[46]
- Long-term target by 2030 – achieve an overall environmental net gain on all developments.

Berkeley Group's approach to achieving Biodiversity Net Gain follows three steps. Firstly, measure the existing biodiversity on site, then design the site to create a Net Gain and, finally, ensure that implementation of the recommended measures occur.[47]

Measurement with the Berkeley Group Biodiversity toolkit:

The toolkit is used by teams to monitor and manage biodiversity through a project. Baseline habitats on site can be estimated and determine how net gain can be created. The toolkit is used by project teams and their appointed ecologists on every new site.

Design principles for Net Biodiversity Gain:

Berkeley Group take a holistic approach to achieving biodiversity. To help project teams understand biodiversity concepts, Berkeley Group collaborated with The Ecology Consultancy to develop a set of nine overarching design principles that can be applied to help achieve net gain. Berkeley Group state that it is not always necessary to apply all nine concepts and each project will differ.[48] The nine concepts include: green infrastructure; connectivity; buildings and hard landscaping; links to the community; local ecological character and distinctiveness; habitats and vegetation types; seasonality and maturity; species diversity and adaptiveness; and management.

Implementation and next steps to achieve Biodiversity Net Gain:

Berkeley Group now applies the toolkit to every new site which ensures consistency between developments. When these sites move into construction, Berkeley Group will continue to work with contractors and local stakeholders to ensure net gain delivery.

Progress to date:

Berkeley Group has used its Net Biodiversity Gain Toolkit in planning 40 sites since May 2017 which, combined, will create more than 480 acres of new or improved natural habitats.

Examples of Berkeley Group's projects include:

- Kidbrooke Village, Greenwich - in partnership with London Wildlife Trust, HTA, Landscape Architecture and the Royal Borough of Greenwich. This project looked to rewild the Cator Park, with wildlife meadows, grassland and wetland habitats. The project is forecast to deliver a net gain of more than 258% once it has grown to maturity.

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[44] Berkeley Group (accessed March 2022) "Our Vision: Nature" available online.

[45] Berkeley Group (2021) "2021 Annual Report Extract" available online.

[46] Berkeley Group have broadened their approach from biodiversity net gain to environmental net gain. Berkeley Group will provide even more environmental benefits on every site, such as biodiversity, water resources, flood resilience, soil quality and air quality.

[47] CIRIA (2018) "Berkeley Group's Approach to Net Biodiversity Gain" available online.

[48] Berkley Group (accessed March 2022) "The Nine Concepts: Making space for nature and beauty" available online.

- Woodberry Down, Hackney - in partnership with Woodberry Down Community Organisation, Hackney Council and Notting Hill Genesis. The project aims to regenerate one of London's social housing estates. Berkeley Group also worked with Thames Water to transform the neighbouring reservoir into the Woodberry Wetlands Nature Reserve.

4.4. THEMES EMERGING FROM THESE CASE STUDIES

National Highways faces one of the most stretching biodiversity challenges amongst UK infrastructure managers, largely due to the ongoing 1% reduction in biodiversity units that is a feature of its KPI metric, that in total requires National Highways to achieve 7,138 BUs by March 2025. Although they are not directly comparable metrics, previous metric calculations for HS2 (Phase One) estimated a post-construction baseline of 1,575 biodiversity units to needed achieve No Net Loss (or 10% of the pre-construction baseline). As at Q1 2021, HS2 Ltd has been able to reduce the deficit to 555 units[49]

We also recognise that, along with HS2, National Highways was early to adopt a 'No Net Loss' biodiversity target – particularly one that is based on Defra's own biodiversity metric calculator. We note that Network Rail subsequently adopted a 'No Net Loss' target which must be achieved by 2024 (moving to biodiversity net gain by 2035), and that several UK water companies are further developing corporate environmental targets, including on biodiversity, but have not yet adopted 'No Net Loss' / 'Net Gain' based targets.

Noting that this shift is partly driven by the UK government's planning and environmental policies, we find that the level of ambition shown by National Highways compares well to other infrastructure managers.

However, we are concerned that National Highways' ambition is not yet matched in its implementation and suggest that there are lessons that the Company can learn from good practice elsewhere. Several of the UK's major construction companies have been working on embedding biodiversity into their development strategies for several years (e.g. Berkeley Group's 'Nine Concepts' which are considered in the earliest stages of planning of each site).[50]

Practical lessons National Highways might consider include:

- National Highways' Biodiversity Action Plan was last published in June 2015 – before it adopted a 'No Net Loss' target. Other organisations have subsequently, or will shortly, publish updated action plans that better reflect the urgency of the biodiversity agenda, and how they will embed it within their business.
- Whilst National Highways has developed a new Low Nutrient Grasslands policy, this is just one action that the organisation can take, and other policies will be required (or updated) to ensure biodiversity is addressed in a holistic manner.
- Whilst National Highways points to biodiversity best practice design principles developed by CIEEM, there is potentially a shortage of guidance on how to design biodiversity into new schemes and BAU projects such as resurfacing schemes. National Highways might develop a range of guidance documents for a range of green assets, that draws on the approach taken by e.g. Gloucestershire[51], Network Rail[52] and PlantLife.[53]
- It might improve its 'organisational model' for the planning and delivery of biodiversity, to ensure that it is embedded into decision-making at all levels. For example, Network Rail adopts route-level habitat and

[49] Email from HS2 Ltd to CEPA, dated 11 April 2022. The equivalent figure for Phase 2a is 1,342 biodiversity units.

[50] Berkeley Group (accessed March 2022) "Nature" available online.

[51] Gloucestershire County Council (December 2019) "Gloucester Highways Biodiversity Guidance" available online.

[52] Network Rail (June 2021) "Railway Sustainability Design Guide" available online.

[53] PlantLife (2019) "Managing grassland road verges" available online.

vegetation management plans that dictate what work should be done and contain time-bound actions that are reported on annually.

- Drawing on the efforts that HS2 Ltd has made to work with its contractors and squeeze final biodiversity opportunities out of designs that are relatively mature, ORR should assure itself that National Highways has also conducted similarly challenging reviews of RIS2 scheme designs in light of the slow progress achieved against the biodiversity KPI target to date.

5. IMPLICATIONS FOR THE FUTURE MONITORING OF BIODIVERSITY PERFORMANCE

In this section we focus on the following questions which ORR asked us to consider:

- How should ORR undertake its monitoring between National Highways' KPI performance – which is measured using Biodiversity Metric 2.0 – and the next iteration Biodiversity Metric 3.0 that has been developed in support of the Environment Act requirement for Biodiversity Net Gain in relation to enhancement schemes which require Development Consent Orders.
- Whether the current metrics used to measure biodiversity are appropriate; if alternative metrics may be appropriate in the future; and how well-prepared National Highways is to adapt to the new metrics.

Summary of key findings:

In our view ORR and National Highways should expect to move toward Metric 3.1 for both DCO schemes (where BNG will be mandated) and the corporate Biodiversity KPI. The timeframe for this transition is currently undecided but, whilst this would need to be agreed between DfT and National Highways, it may apply from the start of RP3.

Defra / Natural England's 'Biodiversity Metric', for now, remains the most appropriate measure for National Highways to use. But DfT told us that they retain an interest in a 'Natural Capital' approach and are not yet ready to discount this for RIS3. We suggest ORR and National Highways prepare to continue using a Biodiversity Metric but recognise there may be benefits of using a 'Natural Capital' or 'ecosystem services' approach once that is better established.

We find that National Highways has made early progress to adapt to Metric 3.0 and should look to build on this progress to ensure that it is well prepared. We would recommend that:

- ORR engages with National Highways, DfT and Defra to understand whether DCO schemes at the Pre-Application stage are likely to be subject to Metric 3.0. We understand that National Highways has updated its guidance internally to require that all DCO schemes apply Metric 3.0 in support of the Environmental Statement submission; but has agreed that Metric 2.0 will continue to be the basis of corporate KPI reporting.
- To prepare for RP3, ORR supports National Highways' plans to 'shadow report' BUs using Metric 3.0.
- ORR requires National Highways to explain how it plans to transition to Metric 3.0 for RP3.

ORR needs to consider its own readiness for Metric 3.0 to ensure that it acknowledges the extent to which the transition to Metric 3.0 has practical implications for National Highways' ability to generate biodiversity projects. ORR also must recognise when reviewing the Strategic Business Plan for RP3, that Metrics 2.0 and 3.0 are not directly comparable. ORR will be able to use approximate 'tariff costs per unit' as a broad yardstick and it could consider pricing evidence from the emerging biodiversity offsetting market.

Our engagement with DfT in support of our work on this project and on Workstream 2 ('RIS3 development – Environmental performance Framework review') suggests that over time it anticipates that biodiversity targets may be extended to a wider range of projects / activities, and to become more challenging. Whilst 'Net Gain' may only apply to DCO schemes currently, DfT does not expect a position where biodiversity targets / requirements differ depending on their consenting route to be sustainable in the longer term. It highlighted a possibility that future legislation may address this. Therefore, in line with the Environment Act and to reflect the latest habitat values, ORR and National Highways should anticipate a move toward Metric 3.1 for both DCO schemes (where BNG will be mandated) and the corporate Biodiversity KPI, although the timeframe for this transition has not been agreed and/or decided.

Our research also suggests that, for now, the Defra / Natural England 'Biodiversity Metric' remains the most appropriate metric to measure the impact of National Highways' projects. But DfT also told us that they retain an interest in a 'Natural Capital' approach and – based on analysis prepared to date – is not yet minded to discount this

for RIS3. We note that Defra has developed the Environmental Benefits from Nature Tool (EBN)[54] which is designed to help developers value changes in 'ecosystem services' resulting from an intervention and can be used in conjunction with Biodiversity Metric 3.0. The EBN Tool is currently available in Beta and will be evaluated later this year before Defra decides whether and when to release a final version.

We suggest that ORR and National Highways prepare for RIS3 on the assumption that a Biodiversity Metric will continue but recognising that there could be benefits in a 'Natural Capital' or 'ecosystems services' approach (which recognises that the soft estate is not managed purely for biodiversity reasons, i.e. water quality and human wellbeing are also important outcomes), and that a wider measure might better align with the objectives of the EWDF. National Highways might consider commissioning research on the EBN Tool and whether it can be adapted for their purposes.

With regards to Biodiversity Metric 3.0 (version 3.1 is expected later in 2022), we have seen evidence that National Highways is beginning to think about and understand the impact that this would have on scheme and Company performance. For example, it has estimated the difference in BU outcomes that can be achieved from typical grassland, woodland and lake-based interventions, by using Metric 3.0 compared to Metric 2.0. National Highways has also thought about the practical implications of a transition to Metric 3.0. It highlights that:

- Outputs calculated using Metric 3.0 are not directly comparable to Metric 2.0.
- Metric 3.0 can require additional survey data comparative to Metric 2.0 so some schemes may incur an additional cost. There is an opportunity for schemes where surveys have not already been completed to collect sufficient data to respond to Metric 3.0 if suppliers are instructed. We understand this has been done for some schemes but not all.
- The condition criteria in the Metric 2.0 guidance are ambiguous and could be considered open to interpretation. The condition criteria in Metric 3.0 are less so, making data input more consistent and accurate.
- National Highways argues that transitioning to Metric 3.0 will make it more challenging to develop a stable pipeline of future biodiversity schemes, because it may need to re-commission surveys and analysis to understand exactly how many BUs each scheme will deliver. However, we would counter this argument by suggesting that any pipeline that is vulnerable to changes in metric version is not 'robust' and can be addressed through 'overprogramming'.

We also understand that National Highways has updated its guidance internally to require that all DCO schemes collect the necessary survey data and apply Metric 3.0 in support of the Environmental Statement submission; but has agreed that Metric 2.0 will continue to be the basis of corporate KPI reporting.

Based on the available evidence, we find that National Highways has made early progress to adapt to Metric 3.0 and it should look to build on this progress to ensure that it is well prepared across the business as a whole (i.e. beyond Major Projects schemes). **We would recommend that:**

- **ORR engages with National Highways, DfT and Defra to understand whether existing DCO schemes at the Pre-Application stage (e.g. A66, Lower Thames Crossing) are likely to be subject to Metric 3.0. There may not be a final position on this yet, but ORR and National Highways should prepare on the assumption that there is a strong possibility that Net Gain will be mandated.**
- **In readiness for RP3, ORR supports National Highways' plans to 'shadow report' biodiversity units using a Metric 3.0 approach. This might begin with schemes at the Pre-Application stage of the NSIP process, where (if additional survey work would be required) this would not delay Start of Works dates. But it should be extended over time to all schemes with funding in RP3.**

[54] Natural England (July 2021) "The Environmental Benefits from Nature Tool - Beta Test Version" available online.

- **ORR requires National Highways to explain how it plans to transition from Metric 2.0 to 3.0 more generally for RP3.**

ORR also needs to consider its own readiness for Metric 3.0, which would mean:

- Challenging National Highways' readiness to deliver biodiversity improvements in RIS3, including ascertaining the extent to which the transition to Metric 3.0 has practical implications for the Company's ability to generate a programme of biodiversity projects which can be delivered from year one; and
- Recognising that Metric 2.0 and 3.0 will not be directly comparable, it may be appropriate to place less weight on comparisons with National Highways' historical performance when assessing what 'efficient' looks like in reviewing the draft Strategic Business Plan for RP3. But ORR will still be able to use approximate 'tariff costs per unit' as a broad yardstick, and it could consider pricing evidence from the developing biodiversity offsetting market.

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