

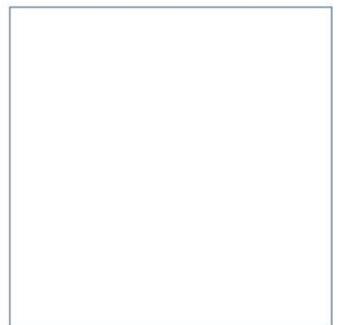
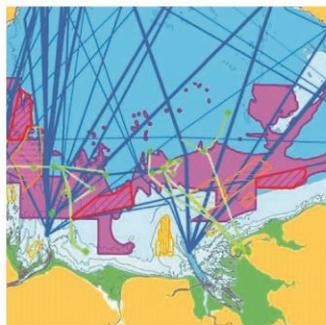
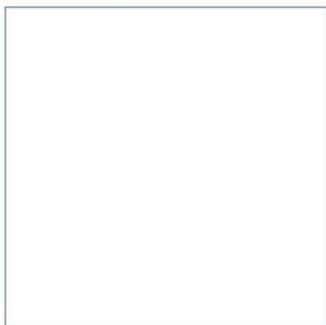
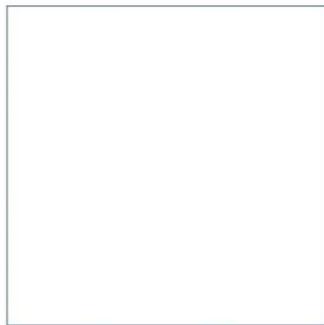
White Paper

Intertidal Net Gain – Are We Getting It Wrong?

Comparing habitat compensation in internationally protected sites with net gain requirements

September 2022

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Innovative Thinking - Sustainable Solutions



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Summary

Under Environment Act 2021, it will soon be mandatory for new planning proposals to deliver a net gain in biodiversity. Delivering Biodiversity Net Gain (BNG) following development is designed to leave the environment in a better state for future generations and secure wider benefits for people and the environment. These ambitions are in keeping with the aims of the Government's 25-year environment plan and are needed to address declines in biodiversity. This White Paper has been prepared by ABPmer to examine the requirements that the new BNG metric will impose against what is known about the real-world practicalities of habitat creation in the UK.

There is now a wealth of practical experience of intertidal habitat creation, both nationally and internationally. This is particularly the case for intertidal mudflat or saltmarsh habitat. In the UK alone, the last three decades have seen dozens of coastal wetlands created through the managed realignment of sea defences. While the main driver for these realignment projects has largely been to provide compensatory measures under the 'Habitats Regulations' (now enforced through the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and The European Union (Withdrawal) Act 2018), their successful delivery now provides a vital empirical evidence base for net gain.

Tested against past case examples, BNG metric 3.1 indicates that future restoration could be required at six times the areas of loss (6:1 gain to loss ratio)

In this White Paper we compare three examples of intertidal habitat creation which successfully delivered compensatory measures under the Habitats Regulations, with calculations made using Natural England's intertidal biodiversity metric 3.1 to estimate the scale of habitat creation requirements that might be needed to deliver a 10 per cent net gain. Our analysis demonstrates that, to deliver a 10 per cent net gain, substantially larger areas of habitat (by a factor of up to 6 times) would need to be created compared to what has been required to compensate for habitat loss under the Habitats Regulations.

Given that multipliers of 2:1 are generally seen as acceptable to offset impacts to intertidal features in our national network of European sites, this suggests that the intertidal metric 3.1 is being overly conservative in the assumptions it makes in generating BNG requirements. A much simpler and more evidence-based approach would be to require developers to deliver a ratio of 2.2:1 for intertidal habitat loss, embedding the 10 per cent net gain within the multiplier.

Excessive BNG requirements will not help UK development or support the levelling up agenda. In contrast, it could have a major effect on the scale, cost and feasibility of future enhancement measures and put additional pressures on farmland which is already under competing pressure for use. The further concern is not just that there might be problems with early-stage implementation in this form but, more seriously, a problematic start now might stymie our ability to achieve greater ambitions for net gain in the future.

A ratio of 2.2:1 would be simpler and more evidence-based than the overly conservative 6:1

Our key recommendation is that, as a minimum, the metric needs to be revisited, tested and audited against a wide range of case examples, expanding on the examples presented within this White Paper before it is considered for implementation.

Introduction

Biodiversity Net Gain (BNG) is the concept which ensures that, in addition to guaranteeing that development has no significant environmental impact, there is a positive move to improve or add to biodiversity value as part of the development process. This aims to leave the environment in a better state following development, and to secure wider benefits for people and the environment. This concept is fundamentally welcome. Our natural environment is in crisis, and we need to start contributing to the restoration of natural habitats to reverse biodiversity decline.

BNG requirements have been introduced under the Environment Act 2021 and will become a mandatory part of the planning system in England from November 2023, thereby including land down to the Mean Low Water mark, i.e., intertidal habitats. Whilst the BNG framework for developments on land is generally well established the metric that is applied for intertidal environments is newer, and has received limited scrutiny and testing.

Natural England has recently circulated its latest version of the intertidal BNG metric (version 3.1) and there is an ongoing consultation requesting feedback on the revised version¹. This is anticipated to be the last consultation on the metric before a finalised version is published in November 2022, following which there will be no revisions for at least 3-5 years.

At ABPmer we are wholly supportive of the concept of BNG. As specialists in coastal habitat creation, we place a great deal of emphasis on understanding the methods and value of habitat restoration to address the declines in coastal ecosystems. However, ABPmer, along with a range of interested parties and sector representatives, have significant concerns about the proposed methods of accounting for BNG in the intertidal environment. The metric, in its current form, is profoundly conservative in its approach, which is likely to make it impractical to implement. This would be an unfortunate own goal.

We find the current BNG metric to be profoundly conservative, and is likely to be impractical to implement as a result.

For many years, protections have been in place through the Habitats Regulations to ensure damage to our protected habitats is minimised, and where damage through development is unavoidable and must proceed on the grounds of Imperative Reasons of Overriding Public Interest (IROPI) that this is appropriately compensated for. Developers have worked with these regulations for many years to design schemes in a sympathetic way and to compensate for lost habitat where required.

Numerous reviews conclude that these approaches have successfully delivered sites for nature, including Defra's own research (Morris *et al.*, 2016)². As a result, we now have a wealth of positive case studies and approaches to follow. As such, this White Paper compares the latest BNG metric with

¹ Technical Consultation on the biodiversity metric closes 27 September 2022. Available at: https://consult.defra.gov.uk/defra-net-gain-consultation-team/technicalconsultation_biodiversitymetric/

² Morris *et al.*, 2016. Evidence on appropriate compensation to facilitate and direct infrastructure development: effectiveness of Natura 2000 sites compensation measures in coastal sites. Available at: <http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=18861&FromSearch=Y&Publisher=1&SearchText=compensation&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description>

examples of compensation delivered under the Habitats Regulations, with the aim of clearly highlighting the current issues, and providing both a sensitivity and reality check for the approach and for the assumptions underpinning the metric parameters.

Compensation as an evidence base

When it comes to practical approaches to intertidal habitat creation, there is now a wealth of real-world experience both nationally and internationally. This is particularly the case for intertidal mudflat or saltmarsh habitat. In the UK alone, the last three decades have seen dozens of coastal wetlands created through the managed realignment of sea defences. ABPmer's online database of these projects (www.omreg.net) records at least 100 that have been implemented across Northern Europe, of which the majority are in the UK.

While the main driver for these realignment projects has largely been to provide compensatory measures under the Habitats Regulations, their successful delivery now provides a vital empirical evidence base for net gain. These projects demonstrate that marsh and mudflat creation can be done effectively as well as showing how much they cost (ABPmer, 2017) and how much societal benefit they provide (NCC 2015).

The scale of compensation required is influenced by the nature and timing of the development project. A ratio is typically applied to understand how large the habitat creation site needs to be relative the extent of the habitat losses being compensated for.

In general, for coastal defence projects where the potential intertidal habitat losses arising are from coastal squeeze, a ratio of 1:1 (habitat loss: habitat gain) has been applied. Typically, this is to offset predicted intertidal habitat losses over the next 50 years. This 1:1 ratio was applied, for example, within the Humber Estuary Coastal Habitat Management Plan (CHaMP). It was also applied in the Solent for the large-scale Medmerry managed realignment (on the Selsey Peninsula) which was implemented to offset coastal squeeze effects.

In contrast to these coastal defence strategies, a ratio of at least 2:1 has more typically been applied where the required habitat compensatory requirements are associated with an identified development, such as a port facility. This ratio was applied first for the Cardiff Barrage compensation work (Burton, 2006). However, it has often been used subsequently, especially where there is a need for additional assurances that no adverse effect would occur due to differences in the type and timing of the compensatory delivery.



For instance, a 2:1 ratio was applied for the compensation measure that the UK Government undertook for the Lappel Bank and Fagbury Flats habitat losses (ABPmer, 2003). This was justified by the large delay that occurred between the losses in that case (arising from port developments in the 1980s and early 1990s) and the delivery of the compensation habitats (from the Allfleet's Marsh realignment on Wallasea Island (Crouch Estuary) in 2006).

Higher ratios of loss to gain have been applied for other developments in some rare instances with a ratio of replacement to loss of around 4:1 although this is atypical. This has been done, for example, where the required functionality cannot be assured by smaller ratios and where there is a need to compensate for losses at a different *internationally designated* site much further afield.

For example, the 4:1 ratio was applied to the Morecambe Town coastal defences and associated habitat mitigation works which affected around 11 ha of sandflat habitat. There was deemed to be no opportunity for implementing compensatory managed realignment measures in close proximity to where the habitat losses occurred (i.e., within Morecambe Bay) and especially none that would create sandflat specifically. Therefore, the Hesketh Out Marsh West realignment was progressed on the Ribble Estuary to deliver saltmarsh habitat.

Comparing Compensation and Net Gain

To test how BNG might apply in the future and compare it with past experiences of compensation, this section examines some real-world examples of compensation delivered under the Habitats Regulations. It then determines what might be required for the same proposal using the latest BNG metric to understand how past requirements for compensation compare against future requirements for delivering BNG.

Case studies

Morecambe defences

This project involved the construction of rock armour breakwaters to protect vulnerable sections of Morecambe town. This project extended into the intertidal and resulted in a loss of, or change to, around 11 ha of sandflat within the Morecambe Bay SPA. Around 7 ha of sandflat was lost under the footprint of the breakwaters and new sea wall while a further 4 ha was changed from sandflat to skear habitat as mitigation (Young Associates, 2001).

While sandflat was lost, the Hesketh Out Marsh West project created/restored predominantly high saltmarsh habitat. Lancaster City Council contributed to the cost of 52 ha of managed realignment at this site (of the wider 180 ha site; RSPB, 2009). This area approximately corresponds to a 4:1 ratio and this high ratio value has been attributed to the distance away from the impact (Tony Baker, RSPB Hesketh Project Manager, Pers. comm.).

Habitats regulations compensation summary

- Extent of area lost: 11 ha
- Extent of habitat created: 52 ha
- Compensation ratio: 4:1

Net gain calculation using Metric 3.1

Table 1. Morecambe Bay on site baseline

Habitat type	Area (ha)	Habitat distinctiveness	Habitat condition	Strategic significance	Total biodiversity units
Littoral Sand	11	High	Moderate	High	101.20

Table 2. Morecambe Bay on site creation

Habitat type	Area (ha)	Habitat distinctiveness	Habitat condition	Strategic significance	Years' habitat created ahead (+) or behind (-) development	Total biodiversity units
Skear habitat (entered as features of littoral rock)	4	High	Moderate	Low	0	13.74
Artificial hard structure (breakwater)	7	Low	Poor	Low	0	9.05

Table 3. Offsite baseline

Habitat type	Area (ha)	Habitat distinctiveness	Habitat condition	Strategic significance	Total biodiversity units
Cereal crop	46.8	Low	N/A	Low	93.6
Arable field margin ³	5.2	Medium	N/A	Low	20.8

Table 4. Offsite creation

Habitat type	Area (ha)	Habitat Distinctiveness	Habitat Condition	Strategic Significance	Years habitat created ahead (+) or behind (-) development	Total Biodiversity Units
Saltmarsh	52	High	Good	High	0	208.16

Overall net gain summary

Description	Losses and gains of biodiversity units
Net change in on-site biodiversity units	- 78.41
Off-site baseline biodiversity units	114.40
Off-site habitat creation	208.16
Net change in off-site biodiversity units	+ 93.76
Total net gain in biodiversity units	+ 15.35
Overall net % gain/loss of biodiversity units	+ 15.17 %

³ Assumed that 5 per cent of total field area would constitute field margin

Welwick, Chowder Ness and Doig’s Creek

This project involved the construction of a Roll-on/Roll-off (Ro/Ro) terminal at Immingham and Lift-on/Lift-off (Lo/Lo) berths at Hull. In consultation with regulatory bodies and local nature conservation groups, an acceptable compensation/ mitigation package for the two developments was identified. This comprised two managed realignment schemes (Welwick and Chowder Ness), habitat enhancement at Doig’s Creek and the creation of additional roosting areas at Green Port Hull and Queen Elizabeth Dock Extensions.

The projects were predicted to result in the direct loss 26 ha of intertidal mudflat within the development footprints, potential indirect loss of 5 ha intertidal mudflat and 0.4 ha saltmarsh. Within the two realignment sites the areas were predominantly grazing fields but there was also 4 ha of coarse false-oat grassland, 100 m² of stone parsley on the flood bank at Welwick and 150 m length of hawthorn-dominated scrub at Chowder Ness.

The compensation/mitigation across the sites was expected to result in 56 ha of new intertidal habitat across Welwick (45 ha) and Chowder Ness (11 ha), creating at least 31 ha of intertidal mudflat and at least 8 ha of saltmarsh, and enhancement of 3 ha of intertidal mudflat at Doig’s Creek. In addition, 15 ha of new grassland were included to offset losses, include two saline pools, plus transplantation of stone parsley (100 m²) to the Welwick flood bank and replacement of hawthorn scrub at Chowder Ness.

Habitats regulations compensation summary

- Extent of area lost: 31.4 ha
- Extent of habitat created: 59 ha
- Compensation ratio: 2:1

Net gain calculation using Metric 3.1

Table 5. On site baseline

Habitat type	Area (ha)	Habitat distinctiveness	Habitat condition	Strategic significance	Total biodiversity units
Intertidal Mudflat	31 ha	High	Moderate	High	427.80
Intertidal saltmarsh	0.4 ha	High	Moderate	Medium	5.28

Table 6. On Site Creation

Habitat type	Area (ha)	Habitat distinctiveness	Habitat condition	Strategic significance	Years’ habitat created ahead (+) or behind (-) development	Total biodiversity units
Artificial hard structure	31.4 ha	Low	Poor	Low	0	40.60

Table 7. Offsite baseline

Habitat type	Area (ha)	Habitat distinctiveness	Habitat condition	Strategic significance	Total biodiversity units
Cereal crop (arable land)	46.775	Low	N/A	Low	93.55
Arable field margin ^{*3}	5.2 ha	Medium	N/A	Low	20.80
Other neutral grassland (False-oat grassland + stone parsley)	4.01 ha	Medium	Moderate	Low	32.08
Hawthorne Scrub ⁴	0.015 ha	Medium	Moderate	Low	0.12
Doig's Mudflat	3 ha	High	Moderate	High	41.40

Table 8. Offsite enhancement

Habitat type	Area (ha)	Habitat distinctiveness	Habitat condition	Strategic significance	Year's habitat created ahead (+) or behind (-) development	Total biodiversity units
Doig's - Mudflat	3	High	Good	High	0	53.43

Table 9. Offsite creation

Habitat type	Area (ha)	Habitat distinctiveness	Habitat condition	Strategic significance	Year's habitat created ahead (+) or behind (-) development	Total biodiversity units
Intertidal mudflat	31	High	Moderate	High	0	126.86
Saltmarsh	8	High	Moderate	High	0	28.39
Other neutral grassland	16.5	Medium	Moderate	Low	0	110.46
Hawthorne scrub	0.5	Medium	Moderate	Low	0	3.35

Overall net gain summary

Description	Losses and gains of biodiversity units
Net change in on-site biodiversity units	- 392.48
Off-site baseline biodiversity units	187.95
Off-site habitat creation	322.49
Net change in off-site biodiversity units	+134.54
Total net gain in biodiversity units	- 257.94
Overall net % gain/loss of biodiversity units	- 59.56 %

⁴ Hawthorn scrub assumed to be 150m² for calculation, exact area unclear.

Allfleet's Marsh

The UK Government had to compensate, retrospectively, for port developments that were completed in the 1990s at Lappel Bank and Fagbury Flats (ABPmer, 2003). A 2:1 ratio was applied for the compensation because of the large delay between the losses and the delivery of the compensation habitats. Compensation was delivered through the Allfleet's Marsh Managed Realignment on Wallasea Island in 2006.

In 1993, the Medway Estuary was classified as an SPA, however, the Government excluded 22 ha of mudflat at Lappel Bank from the designation on the grounds that it was deemed to be essential for the continued viability of the port of Sheerness. This exclusion was challenged by the RSPB on the grounds that the ability to exclude habitat from a SPA on economic grounds was unlawful. In 1997, the House of Lords, after referring the matter to the European Court of Justice, found against the Government.

As a result, the UK Government committed to providing compensation measures to offset the environmental impacts from the exclusion of Lappel Bank from the SPA and at Fagbury Flats, where a similar situation occurred. These developments resulted in the cumulative loss of 54 ha of intertidal habitat including 22 ha mudflat at Lappel Bank and 32 ha of both mudflat and saltmarsh at Fagbury Flats⁵ (ABPmer, 2004).

To offset for these losses, it was agreed that 115 ha intertidal habitat; 92 ha of mudflat and 23 ha of saltmarsh would be created at Allfleet's Marsh (ABPmer/Jacobs, 2012). The habitats present at Allfleet's prior to the works were primarily arable agricultural land with cereal margins and rough grassland.

Habitats regulations compensation summary

- Extent of area lost: 54 ha
- Extent of habitat created: 115 ha
- Compensation ratio: 2:1

Net gain calculation using Metric 3.1

Table 10. On site baseline

Habitat type	Area (ha)	Habitat distinctiveness	Habitat condition	Strategic significance	Total biodiversity units
Intertidal Mudflat	38 ha	High	Moderate	High	524.40
Intertidal saltmarsh	16 ha	High	Moderate	High	220.80

⁵ Assumed to be an equal split of saltmarsh and mudflat, exact split unknown.

Table 11. On site creation

Habitat type	Area (ha)	Habitat distinctiveness	Habitat condition	Strategic significance	Year's habitat created ahead (+) or behind (-) development	Total biodiversity units
Artificial hard structure	54	Low	Poor	Low	0	69.83

Table 12. Offsite baseline

Habitat type	Area (ha)	Habitat distinctiveness	Habitat condition	Strategic significance	Total biodiversity units
Cereal crop (arable land)	103.5 ha	Low	N/A	Low	207.00
Arable field margin	11.5 ha	Medium	N/A	Low	46.00

Offsite creation

In this case study there was a delay in habitat creation between the completion of the port developments in the early 1990s and the creation of Allfleet's Marsh, a higher compensation ratio was therefore employed to compensate for the delay. Two options have been presented for comparison; Option A – if no delay had occurred between the development and the creation of the offsite habitat, Option B – accounts for the 13-year delay between port development, here considered to be 1993, and the offsite creation which commenced in 2006.

Table 13. Option A – No delay in creation

Habitat type	Area (ha)	Habitat distinctiveness	Habitat condition	Strategic significance	Year's habitat created ahead (+) or behind (-) development	Total biodiversity units
Intertidal mudflat	92	High	Moderate	High	0	376.50
Saltmarsh	23	High	Moderate	High	0	81.62

Table 14. Option B – Delay in habitat creation

Habitat type	Area (ha)	Habitat distinctiveness	Habitat condition	Strategic significance	Year's habitat created ahead (+) or behind (-) development	Total biodiversity units
Intertidal mudflat	92	High	Moderate	High	-13	236.93
Saltmarsh	23	High	Moderate	High	-13	51.36

Overall Net Gain Summary

Description	Losses and gains of biodiversity units	
	Option A: No delay	Option B: 13 yr delay
Net change in on-site biodiversity units	-675.35	-675.35
Off-site baseline biodiversity units	253.00	253.00
Off-site habitat creation	458.12	288.29
Net change in off-site biodiversity units	+205.12	+35.29
Total net gain in biodiversity units	- 470.25	- 640.08
Overall net % gain/loss of biodiversity units	- 63.10 %	- 85.89 %

How much would be needed?

The case examples above show that the compensation delivered at both Welwick, Chowder Ness and Doig's Creek and Allfleet's Marsh are well below the requirements for BNG. They did not reach a 10 per cent net gain, and delivered significant losses (approximately 60 per cent) according to the latest biodiversity metric. Whereas, in reality, these were perceived to be successful examples of compensation delivering positive environmental benefits.

These case examples were therefore re-assessed to calculate the size of the compensation which would have been needed to meet proposed BNG requirements based on intertidal metric 3.1. The results are presented in Table 15 through Table 18 below. For both examples the offsite baseline habitats and the offsite habitats created were not changed, i.e., they were assumed that the same scheme would be delivered but at a larger scale to create a fair comparison.

Welwick, Chowder Ness and Doig's Creek

In this scenario only the off-site baseline area of cereal crop (arable land) was amended to reach the required size of site to meet the 10 per cent BNG requirement. Cereal crop is the lowest scoring habitat of the offsite baseline habitats present and therefore creates the lowest possible offsite loss for this scenario. To meet the required 10 per cent uplift the amount of cereal crop lost had to increase from 46.775 ha to 190.775 ha.

In terms of offsite creation, the aim of the scheme was to create new intertidal habitat. Of the two intertidal habitats created, mudflat and saltmarsh, mudflat creates the higher biodiversity unit value per ha. For ease of calculation, and to assess the lowest possible area required to meet the 10 per cent BNG requirement all additional habitat created was assumed to be intertidal mudflat. This resulted in 175 ha of mudflat being required as opposed to the 31 ha produced during the actual scheme (i.e. a 144 ha increase from the actual scheme requirements).

Table 15. Compensation v BNG requirements: losses and gains of biodiversity units

Description	Losses and gains of biodiversity units	
	Original compensation	Required to meet BNG
Net change in on-site biodiversity units	- 392.48	-392.48
Off-site baseline biodiversity units	187.95	475.95
Off-site habitat creation	322.49	911.79
Net change in off-site biodiversity units	+134.54	+ 435.84
Total net gain in biodiversity units	- 257.94	+ 43.36
Overall net % gain/loss of biodiversity units	- 59.56 %	+10.01 %

Overall, the results show that to meet a 10 per cent increase in biodiversity, as calculated by the Natural England biodiversity metric 3.1, a total of 203 ha of offsite land would be required to offset the 31.4 ha lost during the development. This equates to a ratio of **6.5:1 in comparison to the 2:1** delivered compensation under the Habitats Regulations.

Table 16. Compensation v BNG requirements: ratio of site area gains: losses

Description	Losses and gains habitat area (ha)	
	Original compensation	Required to meet BNG
Extent of area lost:	31.4 ha	31.4 ha
Extent of habitat created	59 ha	203 ha
Compensation / BNG ratio	2:1	6.5:1

Allfleet's Marsh

As with the example above, in this scenario only the off-site baseline area of cereal crop (arable land) was amended to reach the required size of site to meet the 10 per cent BNG requirement. This was tested against the two options presented above: A) where there was no delay in habitat creation; B) the real-world scenario where habitat creation was employed 13 years following the completion of the development.

To meet the required 10 per cent uplift the amount of cereal crop lost had to increase from 103.5 ha to 365.5 ha under Option A and to 1350.5 ha under Option B.

In terms of offsite creation, of the two intertidal habitats created, mudflat and saltmarsh, mudflat creates the higher biodiversity unit value per ha. As per the above example, for ease of calculation, and to assess the lowest possible area required to meet the 10 per cent BNG requirement all additional habitat created was assumed to be intertidal mudflat. This resulted in 354 ha of mudflat being required under Option A as opposed to the 92 ha produced during the actual scheme. Under Option B, 1339 ha of mudflat would be required.

Table 17. Compensation v BNG requirements: losses and gains of biodiversity units

Description	Option A: No delay		Option B: 13 yr delay	
	Original compensation	Required to meet BNG	Original compensation	Required to meet BNG
Net change on-site	-675.35	-675.35	-675.35	-675.35
Off-site baseline	253.00	777.00	253.00	2747.00
Off-site habitat creation	458.12	1530.32	288.29	3499.71
Net change off-site	+205.12	+753.32	+35.29	+752.71
Total net gain	- 470.25	77.95	- 640.08	+77.34
Overall net % gain/loss	- 63.10 %	+10.46 %	- 85.89 %	+10.38 %

The results show that to meet a 10 per cent increase in biodiversity, as calculated by the Natural England biodiversity metric 3.1, a total of 377 ha of offsite land would be required to offset the 54 ha lost during the development if there was no delay in habitat delivery. This equates to a ratio of **6:1 in comparison to the 2:1** delivered under compensation. In contrast, under the real-world scenario (Option B) where there was a 13-year delay between development and habitat delivery 1362 ha of offsite land would be required, equivalent to a **24:1 ratio**.

Table 18. Compensation v BNG requirements: ratio of site area gains: losses

Description	Losses and gains habitat area (ha)		
	Original compensation	Required to meet BNG Option A: No delay	Required to meet BNG Option B: 13 yr delay
Extent of area lost	54 ha	54 ha	54 ha
Extent of habitat created	115 ha	377 ha	1362 ha
Compensation / BNG Ratio	2:1	6:1	24:1

Conclusion

ABPmer wholeheartedly support the adoption of BNG. We are excited and inspired by the potential it offers to address declines in biodiversity and provide the impetus needed to deliver more coastal habitat restoration. This is restoration which can, in addition to improving biodiversity, achieve multiple benefits for society and local coastal communities.

We do, however, have significant concerns about the current application of BNG, more specifically regarding the multipliers/ratios behind the metric. When we look at the proposed BNG metric compared to what has been delivered in historic compensation arrangements, we find that BNG requirements under metric 3.1 are significantly higher than those required under compensation.

This analysis suggests that some of the key case studies (that are considered successful examples of compensation delivering positive environmental benefits) would fall far short of satisfying BNG requirements. This is contrary to Defra's own research, which concluded that these approaches have successfully delivered sites for nature (Morris *et al.*, 2016).

The Habitats Regulations are indeed more complex and require a lot of negotiation to reach agreement and we acknowledge that BNG needs to provide a simpler and more easily applied approach, standardised across multiple developments. However, the Habitats Regulations are designed to protect our most precious sites and the compensation sites are intended to ensure the network of *internationally designated* sites remains functioning and intact. Given this, it seems these processes would be useful for BNG to learn from.

Our concern is that the BNG metric is requiring standards at a higher level than our designated sites; thus seriously 'gold plating' the BNG process. Industry is understandably concerned that such high levels of compensation to achieve BNG will render developments unviable and bring the intertidal BNG regime into disrepute. That would be a terrible own goal for conservation, given that responsible industry supports the principle of BNG⁶.

Excessive BNG will not support the levelling up agenda

Given that multipliers of 2:1 are generally seen as acceptable to offset impacts to intertidal features in our European sites, it suggests that the intertidal metric 3.1 is being overly conservative in the assumptions it makes in generating BNG requirements. A much simpler and more evidence-based approach would be to require

⁶ Task and Finish Group (2021) Strategic Net Gain Targets for Coastal and Marine Environments

developers to deliver a ratio of 2.2:1 for intertidal habitat loss, embedding the 10 per cent net gain within the multiplier.

Excessive BNG requirements will not help with sustainable UK development or support the levelling up agenda. In contrast it could have a major effect on the scale, cost and feasibility of future enhancement measures and put additional pressures on farmland which is already under competing pressure for use. The further concern is not just that there might be problems with early-stage implementation in this form but, more seriously, a problematic start now might stymie our ability to achieve greater ambitions for net gain in the future.

Our key recommendation from this White Paper is that, as a minimum, the metric needs to be revisited, tested and audited against a wide range of case examples before it is considered for implementation. Such a review should expand on the examples presented within this White Paper. More broadly, we continue to advocate for a more strategic approach to the application of intertidal net gain.

In conclusion, the concept of BNG is a fundamentally and universally welcome one. Our natural environment is in crisis, and we need to start contributing to the restoration of natural habitats to reverse biodiversity decline. However, there are wealth of real-world examples of projects which have successfully delivered positive benefits for the environment. These examples provide a vital empirical evidence base for which net gain should build upon.

The metric needs to be revisited and tested before it is considered for implementation

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Abbreviations

BNG	Biodiversity Net Gain
CS	Coastal Squeeze
EMS	European Marine Site
EU	European Union
IROPI	Imperative Reasons of Overriding Public Interest
NCC	Natural Capital Committee
OMReg	ABPmer's Habitat Creation Scheme Database
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
UK	United Kingdom

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