

What are the opportunities and challenges of Biodiversity Net Gain in Surrey?

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Victoria Webster ^{1,2}

Sarah Papworth ¹

Ben Siggery ²

Rebecca Thomas ¹

Mike Waite ²

A collaboration between ¹Royal Holloway, University of London
and ²Surrey Wildlife Trust





Contents

| | |
|---|----|
| What is Biodiversity Net Gain (BNG)? | 2 |
| How is BNG measured?..... | 4 |
| What are the opportunities BNG creates? | 7 |
| Potential for nature recovery..... | 7 |
| Nature Markets..... | 9 |
| Emphasises the importance of ecology in planning | 9 |
| What are the challenges of BNG? | 10 |
| Ethics..... | 10 |
| Lack of government guidance | 11 |
| LPA Resources | 12 |
| Nature Markets - Pricing biodiversity units and combining funding schemes | 13 |
| Monitoring and evaluation..... | 15 |
| How effective will BNG be? | 15 |
| Conclusions..... | 17 |
| Research Questions from Interviews..... | 18 |
| Ecology - monitoring the impact of BNG on biodiversity..... | 18 |
| Economics - monitoring how the nature market evolves..... | 19 |
| Innovation - potential for new technologies and new perspectives..... | 19 |
| Communication and policy development..... | 20 |

What is Biodiversity Net Gain (BNG)?

Biodiversity Net Gain (BNG) is a new planning policy within the UK Environment Act 2021 that aims to prevent or even reverse biodiversity loss from new building developments. To receive planning permission after November 2023, all new developments through the Town and Country Planning Act 1990 (with some exceptions¹) will need to provide a plan for how they will avoid, mitigate or compensate for any biodiversity losses, and increase the biodiversity value of the site by at least 10% through the creation or improvement of defined habitats (Figure 1). Mandatory BNG is

in addition to existing legal protection for important habitats² which means that habitat creation and enhancements such as remediation under environmental damage regulations do not count towards the 10% biodiversity increase and irreplaceable habitats such as Ancient Woodland may not be destroyed for developments. This 10% is the national minimum although several local planning authorities (LPAs) across England have opted for a higher threshold – up to 20% in some areas. The amount of new or improved habitat required to increase the biodiversity value of

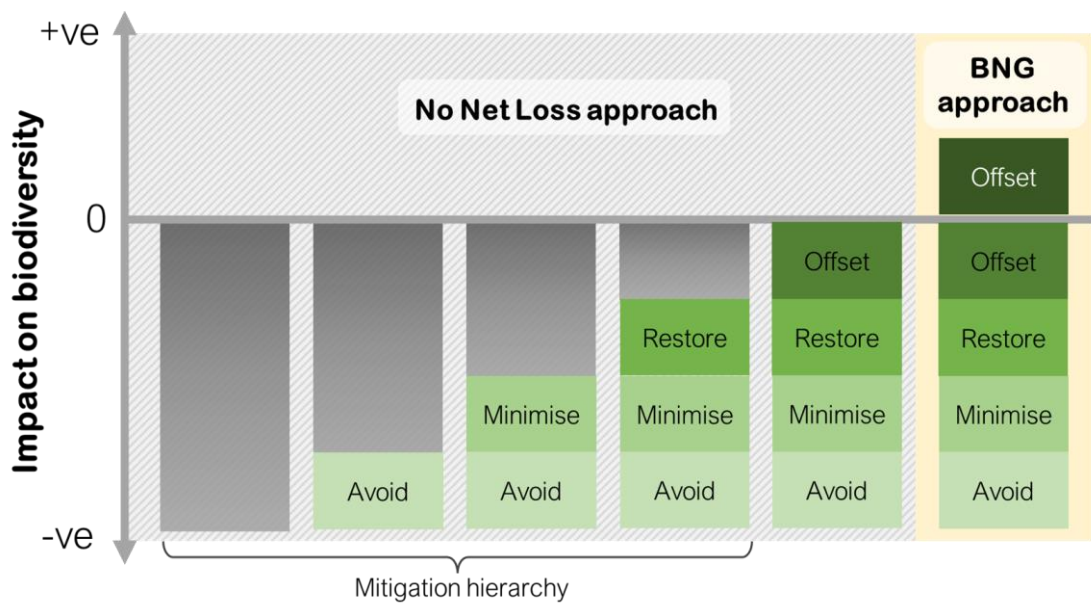


Figure 1: An illustration of the difference between the previous policy of No Net Loss and the new BNG approach to mitigating biodiversity loss during development

¹ “Biodiversity Net Gain will apply to small sites from April 2024 and Nationally Significant Infrastructure Projects (NSIPs) from November 2025. BNG will not apply to marine development.” - Consultation outcome Government response and summary of responses, updated February 2023

² Statutory designates sites include: Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SAC), Special Protection Area (SPA), National Nature Reserve (NNR), National Parks (NP) and Areas of Outstanding Natural Beauty (AONB) - English National Parks and the Broads: UK Government Vision and Circular 2010

the development will depend on the value, condition, distinctiveness, and strategic significance of the initial development site which is quantified by a nationally standardised biodiversity accounting tool³. If it is not possible to achieve net gain on-site, then developers may need to pay for the creation and maintenance of new wildlife habitats beyond the boundaries of the development. This off-site offsetting is through the sale of biodiversity units created by landowners who commit to dedicate a portion of their land to create, improve, or re-establish a habitat. Habitat sold as biodiversity units must be secured for at least 30 years via planning obligations or a conservation covenant between the landowner and a responsible body (a local authority, public body or conservation charity, or a private sector conservation organisation) (Environment Act 2021). All off-site offsetting must be recorded on the national register maintained by Natural England⁴. As an absolute last resort if there is no availability for on-site or off-site offsetting, developers may also purchase statutory biodiversity credits from the government in order to reach their BNG target. The government will then invest the money from these sales into new or existing

local nature recovery schemes.

BNG builds on existing legislation for biodiversity in the National Planning Policy Framework (NPPF)⁵ which was in response to the publication of the 25-year Environment Plan⁶. This guidance stipulates that new developments must ensure there is no net loss (NNL) of biodiversity. Plans should also integrate opportunities to improve biodiversity into their design, especially where this can secure measurable net gains. Before BNG there was no regulation on the percentage of biodiversity gained, how that percentage should be calculated, and exactly how to offset biodiversity loss, which led to insufficient mitigation for biodiversity loss. A review of the effectiveness of NNL strategies globally revealed their inefficacy⁷ and the most recent review of UK Biodiversity Indicators showed the status of threatened habitats and species, and UK priority species, is still deteriorating in the long-term⁸, meaning the current policies are insufficient. Mandatory BNG attempts to nationally standardise the process for assessing the status of biodiversity and define the requirements to achieve net gain to improve upon current policies.

³ Expected to be released by the government in November 2023

⁴ Expected to be released by Natural England in November 2023

⁵ Section 2 and Section 15 of the National Planning Policy Framework (NPPF) - revised July 2021

⁶ 25 Year Environment Plan – Defra, published January 2018, updated February 2023

⁷ Ermgassen *et al.* 2019 “The ecological outcomes of biodiversity offsets under “no net loss” policies: A global review” *Conservation Letters* 12(6):e12664

⁸ UK Biodiversity Indicators 2022 Summary Booklet – JNCC published 2022



How is BNG measured?

The biodiversity value of a site will be calculated through a nationally standardised biodiversity accounting tool. Currently this is in the form of Natural England's Biodiversity Metric version 4.0⁹ which has been in development since 2012. There may be slight changes to this when the statutory biodiversity metric is published by the Secretary of State November 2023. Metrics provide a rigid structure to measure biodiversity and allow comparisons between different habitats using biodiversity units.

The number of biodiversity units for a particular area of land is a product of the condition, distinctiveness, and extent of wildlife habitats within the geographical boundaries, weighted by the strategic significance of the site (Figure 2). A competent person¹⁰ will determine the condition and type of habitat through a site condition assessment which the other values in the metric are calculated from. The assessor for a River Condition Assessment (RCA) - if applicable - has more defined requirements. RCAs must be completed by an accredited assessor in River Condition methodology (Biodiversity Metric 4.0 – User Guide). The metric can then be used to forecast what the impact of a new

development or a change in land management will have on the biodiversity value of the site.

The benefits of the metric are that it ensures a consistent and standardised approach. Ecological assessors, planning authorities, landowners, and local communities can all access the metric which allows for more transparency across interested parties. Standardising the calculation also makes it easier to verify the accuracy of ecological assessments and to compare the ecological impact of developments within and across different sites. This ensures that developers can consider their environmental impact from the very beginning of their plans. For example, the increased cost of offsetting the biodiversity units for a development on a rare habitat may influence developers to change the geographic location as the metric makes it cheaper to develop land that has less biodiversity value. Local planning authorities (LPAs) can also use the biodiversity metric to quantitatively assess the difference in biodiversity value before and after developments and ensure that the correct percentage of net gain is achieved. A template for these assessments is expected to be released by Defra imminently. This

⁹ The Biodiversity Metric 4.0 (JP039) – Natural England, updated April 2023

¹⁰ "Competency is aligned with the British Standard 'Process for designing and implementing biodiversity net gain: BS 8683:2021'. A competent person is someone who can

demonstrate they have acquired through training, qualifications or experience, or a combination of these, the knowledge and skills enabling that person to perform specified tasks in completing and reviewing metric calculations." - Biodiversity Metric 4.0 User Guide

gives LPAs an additional tool to justify decisions in planning applications through the lens of nature conservation based on the biodiversity potential of sites.

The downfall of any standardised system is when the system is exploited. Habitats in worse condition have more potential for improvement and therefore require less investment to generate biodiversity units than enhancing already well-managed areas. Consequently, landowners could purposefully neglect or destroy habitats to lower the net gain obligations for developers or increase the amount of biodiversity units they could obtain to sell. The Environment Act (2021) included legislation to prevent this¹¹ but without current monitoring schemes in place it will be difficult to prove that the condition of a site has been

intentionally altered and factor that into estimations. Another potential problem with the metric is if the trading regulations are not used within a wider ecological context. The trading rules in the Biodiversity Metric 4.0 specify what can replace particular habitats. For example, a bracken habitat needs to be replaced with a habitat that has the same distinctiveness score or higher. One concern with this method is that without the proper ecological context this could lead to destruction of habitats that support priority species because habitat is being used as a proxy for species diversity. In this example, bracken and green roofs have the same distinctiveness score of 2. Developers may therefore create green roofs to offset removing bracken from the site. The unintended side effect of this trade could be the further fragmentation of specialist habitat

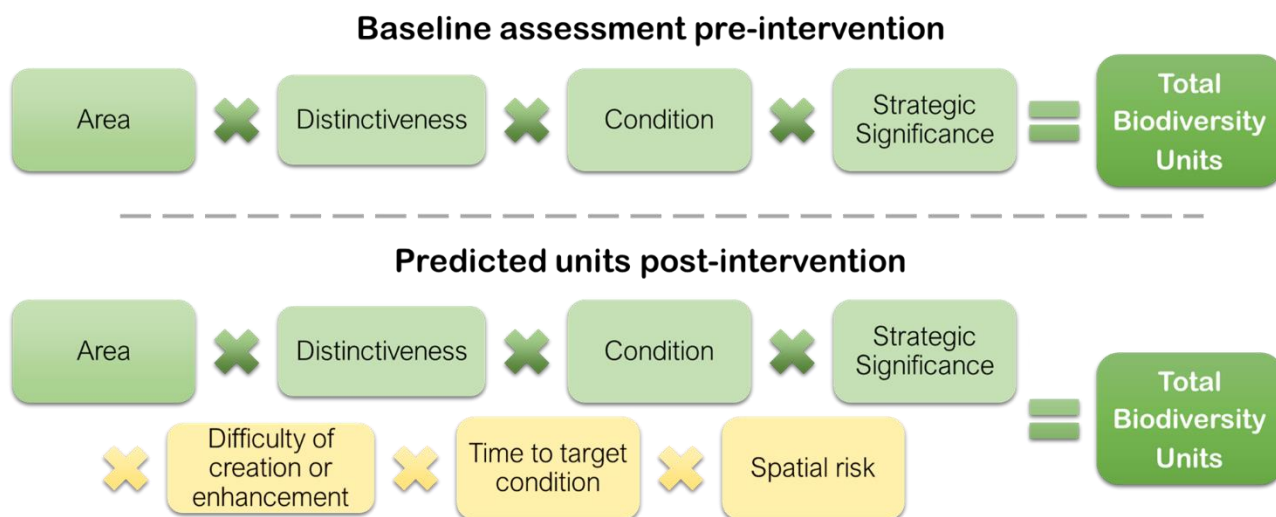


Figure 2: Overview of how the metric calculates the number of biodiversity units for pre- and post-intervention sites

¹¹ "If a person carries on activities on land on or after 30 January 2020 otherwise than in accordance with planning permission, or any other permission of a kind specified by the Secretary of State by regulations, and as a result of the activities the biodiversity value of the onsite habitat referred to

in paragraph 5(1) is lower on the relevant date than it would otherwise have been, the pre-development biodiversity value of the onsite habitat is to be taken to be its biodiversity value immediately before the carrying on of the activities." - Environment Act, Schedule 14, paragraph 6

for the Pearl-bordered Fritillary. This butterfly has been identified as a species of principal importance under the NERC Act in England and it requires a specific combination of violets under a light bracken cover in a sheltered area for caterpillars to thrive. If the condition assessment and subsequent metric calculation did not take this into account then this may lead to further declines, although habitat has been created to

support other species. Similarly, the difficulty and cost of establishing habitats with higher ecological value may result in a difference between financially optimal and ecologically optimal biodiversity offsetting. The metric addresses this by incorporating a “difficulty” multiplier for establishing or enhancing each particular habitat although how effective this will be is yet to be seen.

Interviews about Biodiversity Net Gain in Surrey

The sections below contain a summary of the opinions gathered through 52 interviews of interested parties. The results of these interviews have been anonymised but the backgrounds of the interviewees can be broadly categorised into NGOs, landowners, developers, local planning authorities, executive non-departmental agencies, researchers, and others. The interviewees were asked a series of prompt questions and then encouraged to elaborate on their responses. The responses were transcribed by hand and collated into the graphical summary (Figure X).

These were the prompt questions:

- **How will Biodiversity Net Gain impact your role?**
- **What do you see as the biggest challenges of BNG?**
- **What is the biggest opportunity BNG presents for you?**
- **Are there any research questions on BNG which, if answered, could help it's implementation?**
- **What would be helpful to include in a workshop on BNG or in my report?**

The results of these interviews were used to inform a workshop in Surrey on the challenges and opportunities of Biodiversity Net Gain in Surrey. The sections below also summarise potential solutions suggested by the 53 attendees for that workshop.

It should be noted that these interviews were completed by a PhD student working on a collaboration between conservation ecologists at Royal Holloway, University of London, and Surrey Wildlife Trust. We acknowledge that the interviewer therefore is implicitly bias towards conservation efforts and that may reflect in the results of the interviews.



What are the opportunities BNG creates?

Potential for nature recovery

The most obvious benefit of BNG is the potential for positive impact on biodiversity. One of the largest factors for biodiversity loss from urbanisation is habitat fragmentation¹². The habitats created or enhanced because of BNG present a large opportunity to increase connectivity if they are coordinated at a regional level. Surrey is in an opportune position to orchestrate this as the priority areas for habitat management interventions have been identified as Biodiversity Opportunity Areas (BOAs). The Surrey Nature Partnership have already mapped these BOAs across the county and published them for public access (see Figure 3)¹³. This has the potential to be further coordinated as part of another policy introduced by the Environment Act 2021 – Local Nature Recovery Strategies (LNRS). The LNRS are regional strategies for nature and environment improvement which LPAs are required to contribute to. BNG has been proposed as the financial mechanism behind the LNRS because the “strategic significance” multiplier in the metric is intended to incentivise offsetting in regionally valuable sites. Each LNRS must have a statement of biodiversity priorities, a local habitat map of

the most valuable existing areas for nature, and proposals for creating or improving habitats for nature¹⁴ – all of which can feed into BNG plans.

¹² Theodorou, P. (2022) The effects of urbanisation on ecological interactions *Current Opinion in Insect Science* 52:100922

¹³ Biodiversity Opportunity Areas: the basis for realising

Surrey’s ecological network (Surrey Nature Partnership 2019 (revised))

¹⁴ Environment Act 2021 Part 6, Sections 104 to 108

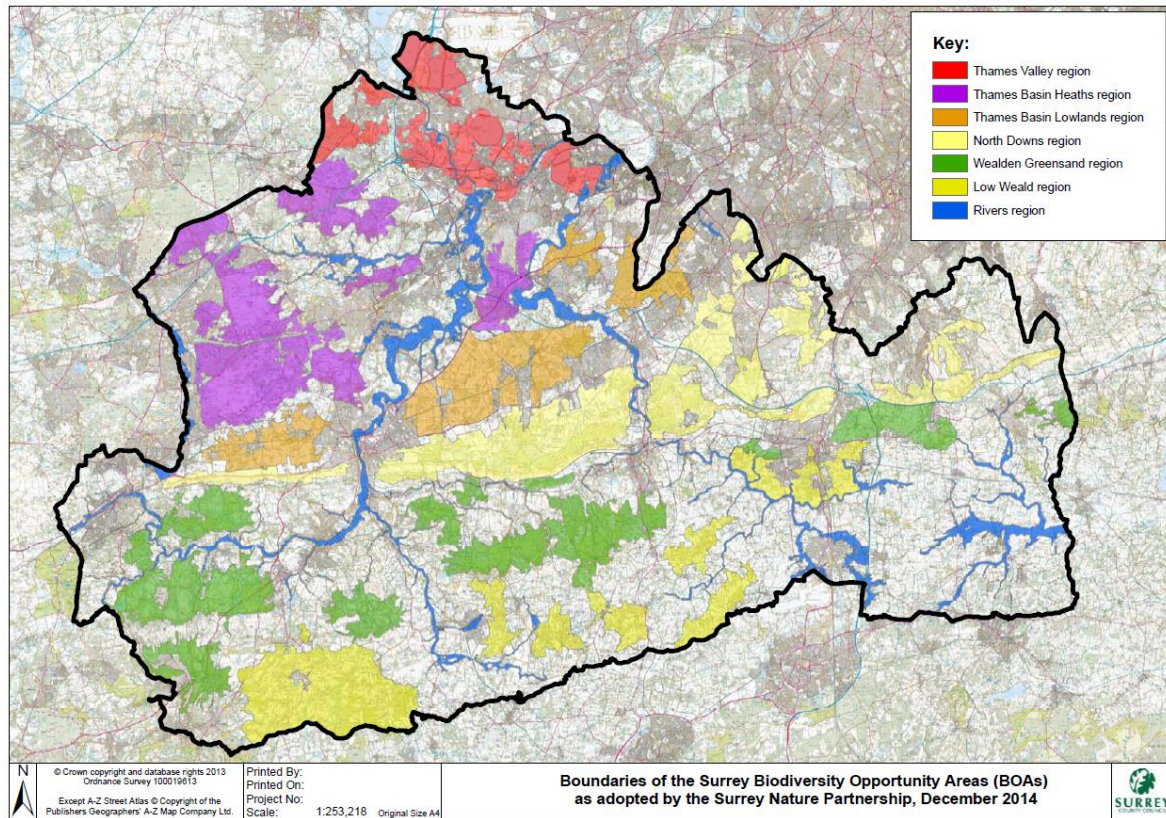


Figure 3: Map of the Biodiversity Opportunity Areas (BOAs) from the Surrey County Council website

The requirement for regular reporting through BNG and LNRS incentivises LPAs to devise monitoring schemes which could lead to the establishment of a regularly updated local biodiversity evidence base. This provides opportunities for different interested parties to collaborate in monitoring efforts and increases the funding opportunities to perform this kind of ecological monitoring. In addition, the need for increased monitoring incentivises innovation in monitoring technologies to reduce costs and improve accuracy and reliability. As the responsible authority for the region, Surrey County Council has been generating new maps of current and potential nature hotspots using a locally-developed mapping tool – the Land App.

These maps will be useful for planners in assessing the strategic significance value of proposed offsetting. In addition to this, many Surrey farmers and landowners already use the Land App to map their land to use in applications for government subsidies, so they are familiar with how it works and could be more likely to engage with BNG as a result. As a by-product of this, BNG could fund environmental management changes which improve air quality, flood management, and soil stability as it combines with other environment targets for LPAs (addressing the climate emergency, place-making, green infrastructure, access to greenspace and nature, etc.).

Nature Markets

BNG has the potential to provide a valuable income source for landowners. Existing nature markets will be forced to rapidly grow as BNG introduces compulsory trading of biodiversity units. Farmers were previously subsidised as part of the Basic Payment Scheme (BPS)¹⁵. This is in the process of being phased out since the UK left the European Union and so farmers are increasingly looking to supplement their income with environmental land management schemes. Landowners can combine multiple government schemes such as nutrient neutrality, Sustainable Farming Incentive (SFI), Environmental Stewardship (ES), Landscape Recovery (LR), and many of the 250 actions available through Country Stewardship, provided they can create or enhance further habitats beyond the other agreement and sell the resulting credits individually or as a bundle. BNG may also be 'stacked' with carbon credits if they can enhance the habitat without impacting the carbon value, although it is still unclear how landowners will be able to prove this. Sites which over-deliver on their habitat creation or enhancement can also sell the excess units on top of their original agreement. Similarly, if one scheme runs out before another on stacked land (e.g. a 30-year BNG plan with a 125-year nutrient neutrality agreement) then the same land can still generate new biodiversity units - providing the habitat can be further enhanced.

As nature markets expand, landowners should be able to engage with a wider market of private investors to get more competitive prices for their land. Surrey already has a good network of farming cluster groups which could be utilised here to spread information about the current value of biodiversity units and the considerations behind that price. Mandatory BNG provides an opportunity to make stronger connections across landowners and empower them to drive the system. This private sector investment into nature can have secondary benefits for developers and landowners, such as funding flood mitigation strategies through habitat management schemes. Increasing nature around developments can increase the sale value of houses and provides a PR opportunity for private sector companies that wish to be seen as more environmentally conscious. BNG also opens funding streams for NGOs through brokering deals or facilitating conservation covenants.


Emphasises the importance of ecology in planning

The introduction of BNG has made ecology more of a national priority. LPAs are required to report on the BNG plans they receive and monitor their implementation. The metric increases transparency and accountability for biodiversity-impact mitigation plans. A

¹⁵ The Agricultural Transition Period 2021 to 2024 (Defra 2020)

standardised metric should make it easier to judge the legality of ecology-based arguments against planning applications, although this requires officers in the planning authority to fully understand the different component measurements that make up the number of units. This has forced LPAs to learn more about the ecological impact of developments and drawn attention to the national shortage of government ecologists. BNG may present an opportunity to correct this as the 'increased burden' funding which the government is giving to LPAs may fund in-house ecology positions in response to this increased need. Similarly, many private sector 'green job' opportunities have been created in the lead up to mandatory BNG from ecological consultants to environmental contract lawyers to specialist brokers. Developers are being forced to consult with

ecologists from the earliest stages of planning to consider their environmental impact. If the baseline assessment of a potential development site is too difficult or expensive to offset for example, then developers may be forced to relocate to less environmentally impactful locations or off-site offset in potentially more strategically significant areas which would have more of an impact than if they could enhance the habitats on their site. Conversely, if they are able to achieve the 10% minimum, there is evidence to suggest that increasing to 15 or 20% net gain is an almost negligible cost¹⁶. This could incentivise developers to increase their offsetting from the minimum net gain as they are able to sell on the additional credits.



What are the challenges of BNG?

Ethics

There is a general concern around the ethics of environmental organisations supporting development through BNG, especially when the group benefits financially from the decision. Similarly, there are ethical concerns around manipulation of the metric. There is the potential for developers to 'greenwash' their biodiversity plans by promising on-site gains they never

intend to deliver. This is compounded by the uncertainty around how on-site offsetting is going to be monitored and recorded as well as the lack of government guidance on what enforcement will look like if a site is found to have not achieved sufficient gains. There is also the potential for landowners, developers, and ecological consultants to manipulate the system to maximise profits at the detriment to

¹⁶ Viability Assessment of Biodiversity Net Gain in Kent – Kent Nature Partnership, published June 2022

biodiversity. If a site is neglected prior to the baseline assessment, then the condition could be classified as poorer which would make it easier and cheaper to accrue credits on the site than if the interested party was trying to enhance a good quality habitat. Similarly, if a site is misclassified as a less distinctive habitat, then it would allow much more flexibility to replace the habitat with another type under the trading regulations within the metric. This could lead to the destruction of valuable habitats for biodiversity without the promise that they will be replaced in the future.

*"If there is nothing to say
"this what happens if you
get caught", the integrity
of the whole system
collapses" – LPA Officer*

Lack of government guidance

There is a lot of uncertainty around the practicalities of BNG, and this is reducing the confidence people currently have in the system. In the interim period before the BNG legislation is produced, communication between Defra and other organisations has been confusing. Questions around how BNG will combine with other environmental schemes such as carbon credits, for example, have had different answers from different people in Defra. This example was clarified in February 2023 when Defra published written guidance on their website which described how environmental payments and nutrient

mitigation can be combined with BNG. It was not sufficiently detailed, however, to explain how a landowner can prove that payments from a combination of environmental projects from different nature markets (termed 'stacking') are allocated to each separate project and not that they are being 'double-funded' for the land – i.e. multiple schemes should be paying for different environmental enhancements rather than the same improvement receiving additional funding. It is also currently unknown what the enforcement procedure will be for BNG, and what will happen if the promised net gain on a site has not been delivered or if a site is found to be double-funded. This is leading some people to believe BNG will be exploited for financial gain without delivering results for UK biodiversity and leading others to disengage with the scheme for fear of being punished for doing the wrong thing. Many LPAs are also awaiting further guidance on what exactly their new responsibilities will be, i.e. the level of monitoring and reporting required from LPAs and the level of expertise required from planning officers to evaluate the validity of BNG assessments. Presumably these questions will be answered when the secondary legislation is published but the delay makes it difficult for LPAs to assess how prepared they are for BNG.

LPA Resources

A major concern for LPAs is that they lack the resources and the necessary ecological knowledge to inform planning approval. A survey of local planning authorities published in June 2022 revealed a huge lack of ecological expertise – 26% of the participating LPAs had no access at all to ecological expertise, and only 55% of those

that did were through an ‘in-house’ ecologist¹⁷. Only 5% of the 192 LPAs that took part in the study believed that their current ecological resources were adequate to scrutinise all applications that might affect biodiversity, 85% said they will require additional professional staff to support their new responsibilities from BNG. To illustrate the increased burden BNG will place on

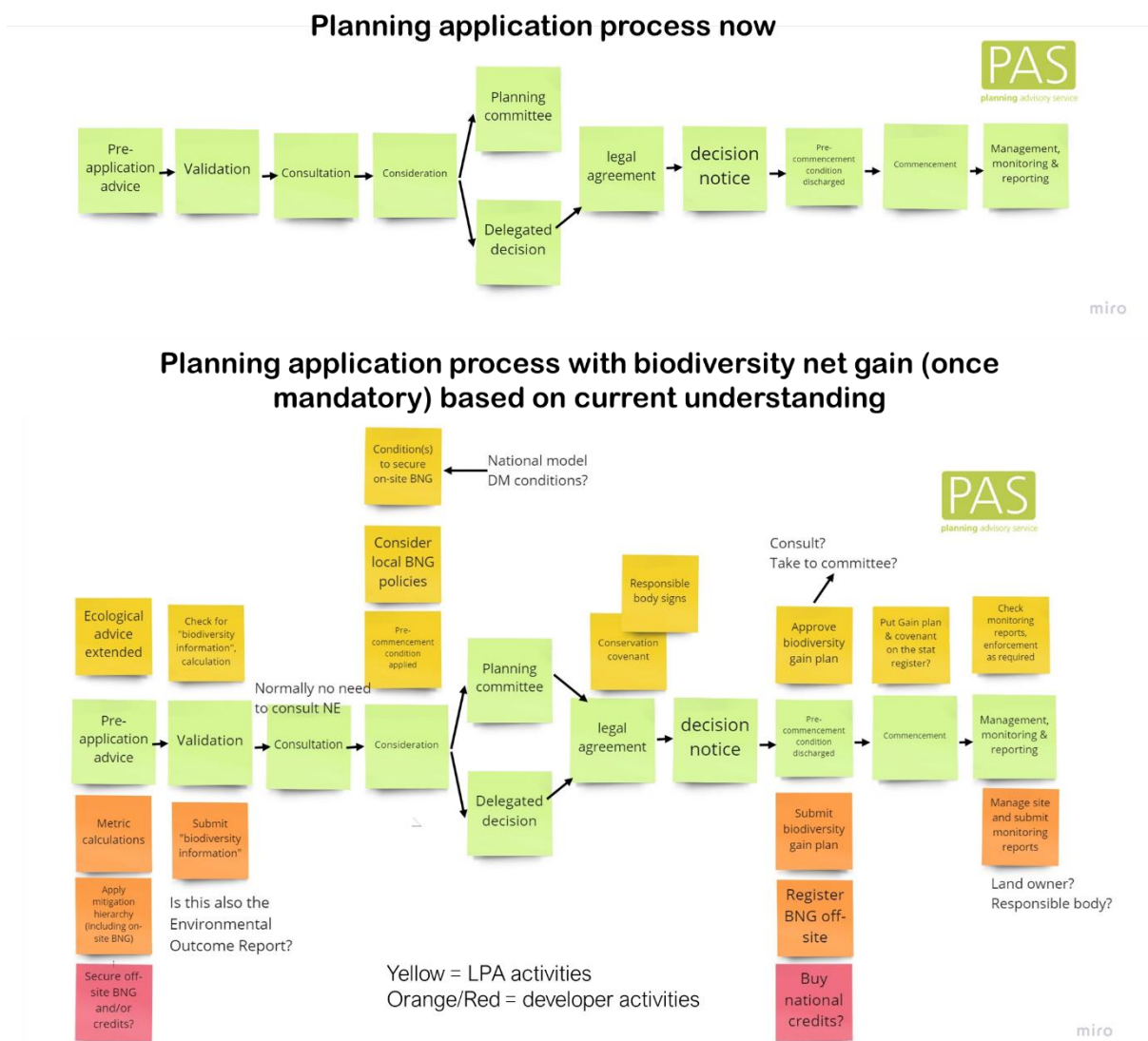


Figure 4: Predicted change in the planning application process after BNG becomes mandatory. ‘NE’ refers to Natural England

¹⁷ Survey of Local Planning Authorities and their ability to deliver Biodiversity Net Gain in England – Association of Local Government Ecologists (ALGE), published June 2022

LPAs, the Planning Advisory Service (PAS) has created a diagram of the planning application process now and what they predict the planning application will look like after BNG is instated (Figure 4).

The government awarded LPAs across the UK £4.18 million in January 2022 and an additional £16.71 million in February 2023 in an attempt to address this concern¹². It is currently unclear how this money has been used by LPAs and whether the money was enough to prepare them for November. There is an additional unknown amount released to LPAs after BNG commences in November to assist with the 'additional burden created by the reforms, primarily in the form of demand for additional ecologist and monitoring resources', although it is again unclear whether this will be adequate funding to increase the capacity and expertise of LPAs to implement BNG. Surveys by the Association of Local Government Ecologists (ALGE) in 2013 and 2020 revealed ~80% of LPAs would prefer to have a full-time 'in-house' ecologist over shared, outsourced, or part-time expertise¹³. It is currently unknown whether the future government funding will be sufficient to support mass recruitment of ecologists, or indeed cover consultation fees to outsource the expertise.

Nature Markets - Pricing biodiversity units and combining funding schemes

There is currently no regulation or government centralisation for the market for biodiversity units. This was an intentional move from the government to allow markets to self-regulate. An early concern during the conception of BNG was that the policy would prevent development in the north of England (where land is often cheaper than in the south) as the cost of offsite offsetting would negate the value of the development¹⁸. By not regulating the market, the value of biodiversity credits will presumably be subject to regional differences which would naturally mitigate for this issue. These differences could present a problem if a company chooses to buy a large area of land in the north which they use to generate all of the biodiversity units they require to develop in the South. Similarly, if landowners under-price their units to be competitive it may leave them vulnerable if they can subsequently not deliver on their promised net gain. The government has released guidance for how landowners should price their units with consideration to the associated long-term financial burden (costs of: insurance, management of the land for 30 years, monitoring and reporting net gain, inflation, legal fees, etc.)¹⁹, although they have not yet published any figures. Natural England will be operating the statutory biodiversity credit

¹⁸ PAS Natural England Biodiversity Metric Training for Planners – Webinar October 2021

¹⁹ Guidance, Sell biodiversity units as a land manager – Defra, published February 2023, updated May 2023

sales platform on behalf of the Secretary of State and stated that they would publish an indicative credit price 6 months before BNG becomes mandatory²⁰, so should be released imminently. The price of statutory credits will be set intentionally high to encourage on-site or local off-site offsetting, and the price will be reviewed every 6 months. There is no current guidance on whether the price of these credits will vary with habitat type, or how the credit price is determined.

"Farmers may be locked out as developers with spare land can undercut their unit prices" – Local farmer

It is still unclear how the local market value of biodiversity units will be determined and how that information will be shared among landowners. The various opportunities for landowners to receive income for making improvements that benefit nature are referred to as 'nature markets'. The government released guidance on which environmental projects can be 'stacked' with BNG in February 2023²¹ although many landowners remain uncertain about the details. Generally, in order to stack BNG with another nature market a landowner must demonstrate that they are fulfilling the requirements of the agri-environment

schemes they commit to and then further enhancing the habitat beyond this. Payments from other environmental schemes cannot go towards BNG and work towards creating biodiversity credits cannot impact the outcomes of the other schemes. This stacking presents an opportunity for landowners to maximise the environmental revenue for a piece of land, but also increases the risk of participating in these schemes. The landowners are legally responsible for fulfilling these commitments. If unavoidable circumstances prevent the requirements of the agri-environment scheme, it is unclear how that will impact the BNG agreement. The landowners must therefore choose schemes with complementary land management practices to ensure they deliver on all their commitments. Nature markets are continually expanding, and many schemes are still in development (e.g. Agroforestry Carbon Code, Hedgerow Carbon Code) which adds a level of uncertainty for landowners. Environmental land management schemes require a commitment from landowners that can be up to 125 years in some cases (e.g. nutrient mitigation²¹). Anecdotally, several landowners have paused plans for environmental developments until more guidance is released from the government or the market price for biodiversity credits has been established to determine what the best

²⁰ Consultation outcome Government response and summary of responses, updated February 2023

²¹ Combining environmental payments: biodiversity net gain (BNG) and nutrient mitigation, Guidance (Defra February 2023)

possible price will be for their land. There is a related concern that landowners will not engage with BNG as they cannot enhance habitat beyond their baseline requirements. If that is the case, there may not be enough land for off-site offsetting. Similarly, the government has specified that landowners are able to sell more biodiversity units after the end of an existing BNG agreement, but only through creating or enhancing habitat beyond the current condition of the land. This means that there is a cap to the number of biodiversity units that can be created in the UK. If landowners do not have the capacity to enhance the habitat beyond the improved state at the end of their BNG agreements, it will reduce the supply of biodiversity units available. This balance of supply and demand may be a challenge for BNG as an economic system. These Nature Markets will need to be monitored for integrity to prevent double-funding – i.e. selling biodiversity units that are already committed to schemes which do not stack (restocking trees or remediation under the environmental damages regulations for example) but they represent an enormous opportunity to fund nature restoration.

Monitoring and evaluation

Natural England has committed to running a monitoring and evaluation program for BNG on a 'macro-level' for the next five to six years at a minimum, but it is unknown whether this will continue after that point. Furthermore, this program will not comment

on BNG plans or biodiversity metric submissions or undertake site-level monitoring. On the local scale, LPAs are expected to evaluate the feasibility of proposed habitat enhancements, monitor their own BNG developments over the 30-year period and report back to a responsible authority for each region. The government has promised to provide a template habitat management and monitoring plan (HMMP) to provide consistency for developers, ecologists, and LPAs¹² although it is currently unknown when this will be made available.

How effective will BNG be?


It is impossible to fully anticipate the impact BNG will have on the distribution and diversity of UK wildlife. A potential downfall of the biodiversity metric is that it may incentivise the creation of mediocre habitats, despite the measures taken to prevent this. The problem with any standardised system is the potential for exploitation. The definition of the competency of the assessor is not clearly defined¹⁰, and the quality of the initial condition assessment will determine the reliability and applicability of the metric. It is possible that local, financially optimal habitats will emerge which could lead to a more homogenous landscape that reduces UK biodiversity. Similarly, there may be cumulative effects of development in a particular region that is underestimated or not evaluated. Several new developments in the same area that all legally fulfil the requirements of BNG may severely reduce

the coverage of a previously common habitat, for example. Natural England have committed to review the metric every three to five years, but it is possible for ecosystems be irreversibly damaged within this timescale. This type of problem can be mitigated if trained ecologists review all initial planning applications and interpret the metric within the evolving local ecological context. This also highlights the importance of an appropriately trained ecologist doing the condition assessments, as the quality of the initial condition assessment will determine the reliability and applicability of the metric.

It is also not known whether the effect of loss in habitat at development sites will outweigh the promise of future gains in habitat quality elsewhere. If the development fails to implement their approved mitigation plans then biodiversity would be lost at the site. Likewise, if a landowner is unable to fulfil their BNG commitment then there is no recompense for the loss caused by the development. The impact of BNG on UK biodiversity will therefore rely upon the quality and frequency of monitoring efforts, the adaptability of the metric, and the reaction speed to any unforeseen problems.



Figure 5: Overview of the challenges of BNG in Surrey



Conclusions

Overall, biodiversity net gain will be an important tool for balancing the ever-growing need for housing and infrastructure with the current biodiversity crisis. Concerns about how BNG will be monitored over the 30-year commitment and how the market for biodiversity units will be regulated may be addressed in the government guidance that will be published over the next few months, or may be resolved over time. It is important to note that although there will be teething problems at the start, this legislation is another step towards recognising the importance of safeguarding UK biodiversity across corporate and domestic settings and giving LPAs the means of implementing local

nature recovery strategies. The next steps before BNG implementation in November are to ensure that LPAs are equipped to handle the additional burden to their planning offices, ensure the assessments are being done by competent people, and ensure that landowners are being paid a fair price for their credits so that they can deliver on their commitment. BNG alone will not be enough to reverse the biodiversity crisis in the UK, even with higher minimum thresholds than 10%, but the successful uptake of the policy continues to build a foundation for future green legislation.



Research Questions from Interviews

Prompt question: *“Are there any research questions which, if answered, would help the implementation of BNG?”* - Direct quotes from the interviews have been grouped into overall themes:

Ecology - monitoring the impact of BNG on biodiversity

- “Can academia play a role in monitoring as the planning system does not have the resources for this?”
- “Can masters students play a role in monitoring?”
- “Ongoing monitoring and evaluation of the effectiveness of the scheme. What’s causing this to work well or not?”
- “Has BNG worked? (enough work for 10+ PhDs)”
- “Is net gain doing what it needs to be doing for biodiversity loss?”
- “Are we seeing holistic ecosystem benefits to net gain?”
- “What is BNG actually trying to achieve? Are you getting what you want?”
- “What do we mean by biodiversity?”
- “What are we trying to deliver when we say biodiversity?”
- “BNG uses habitat as a proxy for species. Could academics do proper species surveys to see whether expected species are using habitats created through BNG?”
- “How much truth is there in habitat being a proxy for biodiversity? Some habitats are more biodiverse for birds rather than pollinators or botanicals, can we assess this?”
- “What is the correlation between the habitat metric and directly-measured biodiversity?”
- “The concept is ‘build habitats and the species will come’ - do they?”
- “Other questions around particular habitats. Some values in the metric are as evidence-based as possible, some are assumptions. How can we increase the confidence in the metric being correct?”
- “Can we take an application and follow all the way through? Who is speaking for biodiversity? Which species are having their needs represented? Which species aren’t? Need to highlight which needs are not being met”
- “How does BNG support solitary species of bee?”
- “To what extent does moving these habitats around affect local populations? Will the species be able to move with the habitats?”
- “Can we update the State of Nature report for Surrey after BNG? I would be interested to see

- if BNG has had an impact on wider nature and wildlife correlations across the country”
- “Would be great to have a biodiversity plan for Surrey. There are lots of little pockets and initiatives without an overall plan. What do we need to do for biodiversity? What is achievable?”
 - “Need a higher-level aggregation of data at a national level. The treasury is reporting on the state of nature to the EU, how is BNG feeding into this?”
 - “How much offsite offsetting will go to statutory credits? How will this impact local versus national biodiversity?”
 - “How will climate change impact delivery of a 30-year commitment?”
 - “Question of ecological connectivity. Is this being abused in the metric?”
 - “How will we do reporting and monitoring on onsite offsetting? Can academia come up with an answer for this? A role of academia could be to assess how well monitoring and implementation is going, especially on-site”
 - “Assess the effectiveness of implementation of net gain onsite and offsite separately”
 - “How are other sectors affecting delivery of BNG? Developers are often blamed for biodiversity loss when farming is far more impactful”

Economics - monitoring how the nature market evolves

- “Researching market integrity and market development. What is the role of the BNG market? Evaluating delivery”
- “We have lots of questions around stacking, is there a research question in there?”
- “Will there be a change in the proportion of on-site to offsite offsetting over time?”
- “How will natural capital develop over time?”
- “How is this feeding into blended and stacked nature finance over time? Will BNG evolve to include all aspects of Nature Markets? How can we as a nation reinvest into our natural capital?”
- “Market monitoring research would be useful”

Innovation - potential for new technologies and new perspectives

- “Could monitoring efforts link in to Space4Nature?”
- “What is the potential of AI technology and satellite images to help give large landscape-scale data?”
- “Could the baseline assessment be provided through an OS map with satellite verification? - How can you ensure landowners can get a baseline assessment easily? Can we make autosuggestions of interventions to get the best habitat in the best place?”
- “Can we measure how consistent habitat classification actually is? How can we make habitat

classification less subjective?"

- "We are missing knowledge on soil health. How does the amount of topsoil, which microbiota are present etc. affect carbon sequestration? How do we regenerate soil health? Soil health forms the foundation for biodiversity"

Communication and policy development

- "It would be great to have a research summary of where we are, what the next steps are, how we solve some issues, and what the possibilities of BNG are"
- "How does BNG end up feeding into other targets? E.g. flood risk areas?"
- "What are the main challenges of BNG in Surrey? How have they done strategic solutions to habitat regulations? This is particularly good in Surrey, very linked into BNG, are there solutions there that can be applied to other places?"
- "What does the relationship between BNG and the LNRS actually end up looking like? The strategic significance in the metric is supposed to emphasise this, does that actually work?"
- "Can academics help engagement side? E.g. farming cluster groups, could academics help educate on LNRS"
- "Is the message of what a lack of biodiversity means getting through to the average person?"
- "Can we monitor how the policy changes over time? Will BNG evolve fully into environment net gain (ENG)? Will Scotland take a different approach?"
- "It would be good to have a scan of all local planning authorities. What are the different approaches to BNG across the local planning authorities? What is the evidence of BNG outcomes across the country at an LPA level? What different models are out there?"
- "Challenges, risks, development over years - all opportunities for research that can feed into policy development"
- "Ongoing development of the BNG metric"
- "Could we have a recreational disturbance factor in the metric?"
- "To what extent can you integrate nature with people? Some habitats can do this, others definitely can't"
- "Net gain was intended to not create blockages within the planning system. Does it take conflict out? Does it cause blockages?"
- "Would be useful to have case studies that analyse 'this was the site, this was the BNG credits, this is the process it went through'"

Photo Credits

We would like to thank Ben Hall for the photo on the title page, Terry Whittaker for the photos in the headers for the Contents page and “What is Biodiversity Net Gain”, and Diana Farina for the photos used on the “How is BNG measured?” and “What are the opportunities BNG creates?” title sections.