Environmental Net Gain

Measurement, Delivery and Application

Findings of the CIWEM conference, October 2018

CIWEM Chartered Institution of Water and Environmental Management

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CIWEM is the leading independent Chartered professional body for water and environmental professionals, promoting excellence within the sector.

1. Summary

Environmental Net Gain (ENG) was proposed in the Government's 25 Year Environment Plan as a development to the increasingly established Biodiversity Net Gain (BNG). The Plan committed to embed ENG for development, including housing and infrastructure as a critical enabler of its headline pledge to deliver what Prime Minister May described as its *"simple"* goals: *"cleaner air and water; plants and animals which are thriving; and a cleaner, greener country for us all."*[1] The Plan re-commits Government to its 2017 Manifesto pledge to *"become the first generation to leave that environment in a better state than we found it"*.

So how realistic is this? With BNG still in its infancy, what are the challenges and opportunities in widening net gain principles to potentially the whole environment? This has to be a welcome aspiration, but it will be complex and if done badly could open the door to *less* sustainable development, not more. It is set against a background of reports of desperate levels of global habitat loss and species extinction, and a lack of international commitment to responsible conservation rather than extreme exploitation[2,3].

As the leading royal chartered professional body dedicated to sustainable management of the environment, globally, CIWEM is ideally placed to convene the range of practitioners and experts necessary to consider the challenges faced by expanding BNG into ENG.

The following is a summary of presentations and discussion held on 30th October 2018 at the CIWEM conference Environmental Net Gain: Measurement, Delivery and Application. These timely discussions should be considered by the Department for Environment, Food and Rural Affairs (Defra) ahead of its consultation on Net Gain. Summaries of presentations are provided in the following pages.

Discussion at the conference drew out a number of very clear themes, discussed in section 3 of this document. These may be summarised as the following headlines, which Government must act upon as it develops its Net Gain approach:

[1] HM Government, 2018. A Green Future: Our 25 Year Plan to Improve the Environment.

[2] The Guardian, 3rd November 2018. Stop biodiversity loss or we could face our own extinction, warns UN

[3] WWF, 2018. Living Planet Report.

Five priorities to achieve workable Environmental Net Gain

1) *Biodiversity Net Gain must be made mandatory* for all new development. Such is the scale of loss in recent decades associated with development and associated human activity, this must become a strict requirement with appropriate provisions made to this effect in the Environment Bill. Moreover, as BNG is developed into Environmental Net Gain, BNG must be sacrosanct within this. It must not be possible to 'trade' wider environmental or social components of an overall net gain for biodiversity gains. This is because biodiversity (nature) is the foundation of the environment that the Government is pledging to improve for future generations.

2) *Net gains achieved under BNG and/or ENG must be additional* to existing commitments to protect and enhance the environment, such as those driven by wildlife legislation and regulation and relating to protected sites (e.g. SSSIs or SPAs). This is essential in order to achieve gains, because existing protections are not sufficient to halt or reverse the decline in the overall health of nature.

3) *An appropriate balance between ensuring local, on-site and strategic, off-site gains is vital.* Some biodiversity and environmental gains may be achieved locally to, or on the actual site of a development, and this should be maximised in line with the mitigation hierarchy[4]. However, it must also be recognised that strategically important biodiversity gain may be delivered more effectively off-site, using compensation and habitat banking. In each instance, linking into existing networks and programmes is important to achieving optimal gain.

4) *ENG (or BNG) must not be represented by a single metric score.* Metrics (such as the Defra / Natural England Biodiversity Metric[5]) have achieved much in drawing the attention of a wide range of bodies to the concept of net gain and the fundamental contributions that biodiversity and the wider environment make to our economy and society. Yet it is far too simplistic to convert complex natural systems into a single headline score. Such scores are highly valuable as indicators and tools but must be deployed alongside expert knowledge in the field, particularly of qualitative evidence that is otherwise unaccounted for, to appropriately prioritise designs and approaches to development to optimise gains achieved.

5) *Effective delivery agreements for the long-term will be a vital component of net gain and require significant further work to mainstream.* Conservation Covenants, between unrestricted parties, would be a useful additional tool to achieve delivery but the most workable timescales for landowners and managers need to be identified. Experience of 'in perpetuity' agreements in Australia have shown that a more fixed timescale, possibly between 25 and 50 years, may be an appropriate balance between the needs of landowner and client.

[4] The mitigation hierarchy sequentially prioritises avoidance of negative impacts; minimisation of impacts; rehabilitation or restoration of habitats on-site; then finally offset by enhancing biodiversity elsewhere.

[5] Defra, Natural England, 2012. Biodiversity Offsetting Pilots Technical Paper: the metric for the biodiversity offsetting pilot in England.

2. Speaker presentation summaries

The following are summaries provided by CIWEM and not transcripts or abstracts provided by the speakers themselves.

Environmental Net Gain

Thanks to:

Marie Southgate, Deputy Director - Land Use Policy, Natural Environment Directorate, Defra

The development of biodiversity net gain (BNG) in the UK started with Defra's biodiversity offsetting pilots in 2012. Progress has been somewhat piecemeal since, but Government is keen to pull the various strands of work together and make net gain policy genuinely transformational. Fundamental to this is establishing a level playing field for those concerned, ensuring consistency in standards and delivery and minimising any associated regulatory burden. The 25 Year Environment Plan has ramped up Government's ambition levels and getting net gain right is important to achieve these ambitions and the targets in the plan.

The revised National Planning Policy Framework (NPPF) is less ambiguous than the 2012 version, now requiring the planning system to achieve BNG (and removing the "where possible" caveat). This mandate will be strengthened further, subject to outcomes of the forthcoming net gain consultation, to expand it into wider natural capital methods to deliver environmental net gain in the longer term with the development of appropriate metrics and ensuring spatial data is available where needed. Sensible and sensitive net gain approaches should be able to deliver good development in the volumes Government is seeking and is increasingly being pursued by developers and local planning authorities.

There are three stages to moving from BNG to ENG:

1) Consulting on and consolidating BNG, considering the impacts of habitat change for wildlife;
2) Developing natural capital (stocks) net gain, considering the impacts of habitat change for people (presently being developed using a range of new metrics and approaches to mapping), and
3) Developing ENG approaches to consider wider, indirect environmental impacts of habitat change. A whole range of factors may be measured under ENG, but it is hard to understand how these may be offset. Understanding ENG is a genuinely open question in Whitehall at present and Government is listening.

Practical delivery and refinement of net gain is now the challenge. The Defra metric is well accepted for habitats and biodiversity, but a wide range of tools and approaches are emerging to assess changes in natural capital but the wider this spreads the harder it will become to standardise. Nevertheless, major infrastructure programmes such as the Cambridge Oxford Arc are now being targeted to deliver biodiversity and natural capital net gains – they are a litmus test for the approach as it stands.

Industry Best Practice Guidance

Thanks to:

Owen Jenkins, Director, Ciria and Julia Baker, Biodiversity Technical Specialist, Balfour Beatty

Ciria has worked closely with IEMA and CIEEM to develop BNG guidance for development, currently undergoing peer review and likely to be published by December 2018. They have already published good practice principles:

Principle 1. Apply the Mitigation Hierarchy
Principle 2. Avoid losing biodiversity that cannot be offset by gains elsewhere
Principle 3. Be inclusive and equitable
Principle 4. Address risks
Principle 5. Make a measurable Net Gain contribution
Principle 6. Achieve the best outcomes for biodiversity
Principle 7. Be additional
Principle 8. Create a Net Gain legacy
Principle 9. Optimise sustainability
Principle 10. Be transparent

The guidance is structured in four sections, providing an overview of the BNG concept, demonstrating the benefits of delivering BNG (appropriate to local authorities and developers), providing detailed guidance on processes and a lifecycle approach, supported by technical notes and case studies.

Measurement has been the single biggest factor in getting net gain on boardroom agendas and has succeeded in achieving significant business buy-in. But it is important to clarify limitations of any metric and to avoid presenting a single project number or score; discussing as well specific project features. This, together with a measurement of hectares of habitat, tells the wider story but still, metrics will never remove the need for professional input on nature, on site.

Effective **delivery** is vital to achieving 25 Year Environment Plan and National Infrastructure Delivery Plan targets. Key to effective delivery is working with what's there; making best use of existing plans and planning to work together with existing nature conservation networks.

Judicious **application** is essential to achieve any wider environmental net gain. Fundamental to securing net gain is prioritising BNG within the overall ENG envelope. This reflects deployment of Principle 9 – Optimise Sustainability. This is because biodiversity is the foundation from which all other environmental benefits flow and thus from which sustainable society and economy is derived. Taking this approach safeguards BNG, whilst adding value to wider net gain outcomes which might, for example transform £60,000 worth of BNG into £300,000 of wider social value.

A new countryside: restoring biodiversity in the UK by creating a Restoration Economy

Thanks to:

David Hill, The Environment Bank

BNG is arguably the most significant policy development for the environment for a decade. It is vital as the UK has experienced serious decline in recent decades through industrialisation and infrastructure development. **Ethics and intrinsic values alone will not protect existing nor restore lost biodiversity – our love of wildlife has not stopped biodiversity loss, so we must look to other mechanisms to achieve it.**

There is a need for new approaches for funding – both public and private sector – because public sector funding is declining. BNG should be made mandatory in order to provide private investor confidence in the approach and in offsetting. This is vital to creating a 'Restoration Economy' through habitat banking, net gain and corporate natural capital accounting.

Funding needs to be targeted at interventions in the farmed environment that can deliver large-scale, significant improvements within as short a time as possible. Agriculture is crucial to achieving BNG as 75% of land in the UK is farmed and farming intensification has inflicted the greatest impacts on wider-countryside biodiversity. Agricultural innovation should lead to land sparing and land sharing. We must maximise innovations to spare land for restoration of biodiversity at scale in the UK.

There is a need for transformational change in the way we use land if we are to make a serious impact on restoring biodiversity in the UK. There has been a serious and significant decline in priority species since 1970 and this must be reversed. Farmland birds are in serious decline and farmland biodiversity losses are dramatic.

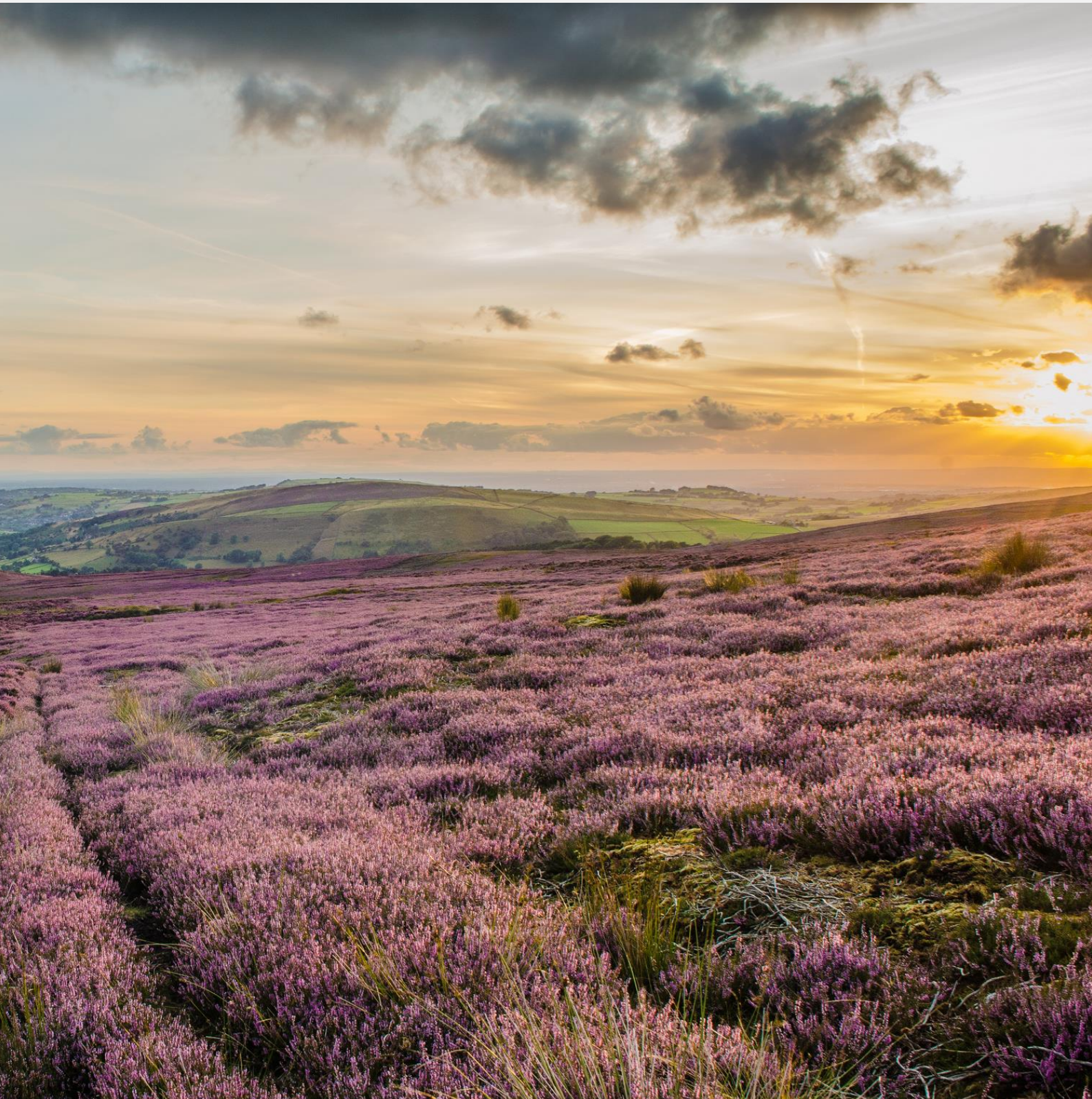
Local Planning Authorities (LPAs) have a duty to promote BNG through the planning system under the NPPF, but most are not delivering. It must be made mandatory to facilitate scale-up, and create, enhance and manage large areas of habitat for biodiversity conservation. LPAs should require the application of the biodiversity metric on **all** development to deliver net gain.

Broadly speaking, 20% of gain should be on-site and 80% off-site. Net gain should mostly be achieved off-site as on-site net gain is mostly about prettifying development rather than biodiversity net gain. Off-site net gain can be achieved through habitat banking. This provides developers with clarity and certainty and increased net developable area, LPAs with transparent, consistent, auditable net gain delivery, and landowners with long-term funding and realistic income. The Environment Bank acts as a broker in dealing with habitat banks – it signs legal agreements to purchase credits with developers and manages sites with land managers.

Corporate natural capital accounting is the least-near market funding option, but it has the potential to generate the most income. 40% of global GDP relies on natural capital, but it is not valued as it should be. Natural capital accounting should be required of corporates to

encourage provision of increased renewable resources stocks to balance the benefits they derive from non-renewable resources.

Corporate natural capital accounting represents the most practical way of delivering 500,000 hectares of Nature Recovery Network in a short period of time. Using habitat banking without corporate natural capital accounting and net gain it might be possible in 5.5 years, however including effective corporate natural capital accounting this could be delivered in as little as 2.5 years.



Design considerations – ensuring Environmental Net Gain delivers real environmental benefits

Thanks to:

Karen Ellis, Director of Sustainable Economy, WWF-UK

The concept of ENG could be wilfully misinterpreted as a replacement for the need for sustainable development that minimises environmental impacts. On-site mitigation of loss remains fundamental in protecting the environment and offsetting elsewhere should not lead to on-site complacency.

Key net gain design requirements are:

1. **Biodiversity net gain must be a pre-requisite.** Biodiversity is a foundation for delivery of further environmental benefits.
2. **Net gain must adhere to the mitigation hierarchy.** ENG should be about providing benefit above and beyond avoided loss.
3. **Robust baseline and metrics are needed.** This is an area which is currently lacking but may be provided through thorough natural capital assessments. Within the assessment of value delivered, the importance of considering the impact of the ENG project in the wider environment is essential, for example whether its position contributed to pathways for nature. Having a rounded understanding of value should help to prevent delivery of the cheapest or easiest solutions to the exclusion of those that provide most value to the environment.
4. **A decent multiplier.** A generous multiplier should be used to provide enough funding to contribute not only to environmental offsetting but to restoration. The multiplier set is the result of negotiations in each case, within which uncertainty surrounding the impact of the development should be considered.
5. **Proper monitoring and evaluation**. Delivery must be monitored and there should be a mechanism to enforce contracted benefits.
6. **Real additionality**. ENG should be separate from promised Government delivery and from legal obligations.
7. **Delivered in perpetuity.** England currently lacks a mechanism to ensure positive management obligations can pass with the title of land ensuring long-term delivery which is key to creating benefit. Conservation Covenants should be brought forward, with the ability for such covenants to be enforced by third parties.
8. **Embedded in an appropriate governance framework.** Resources must be allocated in accordance with society's priorities.
9. **Informed by a comprehensive spatial planning process**. Net gain must be delivered against a plan to ensure that both national and local priorities are met.
10. **Improved ecological expertise for local authorities.** The funding constraints local authorities face are concerning. However, for proper delivery of net gain, ecological expertise

must be improved, either through training, the introduction of national net gain standards or through private funding of local authority access to expertise.

Biodiversity accounting: Applying metrics in practice to deliver gains for the environment

Thanks to:

Louise Martland, Conservation Director, Environment Bank

The first step in net gain is determining the impact of development, which is essential to define the No Net Loss standard or baseline. Historically compensation has been a subjective exercise and hence often ignored and/or underestimated. The Defra metric is a standardised and quantified approach, but it is still based on subjective assessments of biodiversity type and presence. However, it has been shown to be a robust and fair tool to assess land change. It's being used by planning authorities across the country.

A habitat baseline is defined by a combination of distinctiveness and condition, considered across the site. This adds to the value of the metric output, which may be qualified by a requirement for compensation (either on or off-site) to be of a particular type, guarding against the trading of one habitat type for another. Factors which should be considered when assessing compensation include whether it should be delivered on or off-site, whether site conditions or future management requirements would constrain success, what habitat type and condition might be achievable and factors such as the time requirement to achieve target condition.

Schemes should always seek to engage with existing local offset strategies in order to maximise potential for success, otherwise a larger offset is likely to be required. Consideration should also be given to whether habitats are irreplaceable, or priority habitats which need to be replaced like-for-like.

Best practice in offsetting is now assessed using metrics in terms of both losses and gains and delivers biodiversity value (gain). Offsets can be put in place before on-site development commences and offer long-term certainty (now 25 years rather than the previous 5-10 years which was common), are monitored and enforceable. Specific species targets should where possible be factored in at the local level but otherwise should be integral to any offset scheme.

BNG now needs a consistent approach within planning; ideally it should be applied at all development scales, not just the biggest and most damaging sites. In practice, offsetting using well managed habitat banks has been driving up standards of on-site mitigation. Early developer engagement with local planning authorities is vital to achieving good outcomes. Progress is being made in terms of the number of local authorities engaging with biodiversity accounting and offsetting, but something of a step change is required to deliver on the potential of BNG to both deliver for wildlife and against local development plans.

Natural England's new Eco-Metric approach to growing natural capital

Thanks to:

Alison Smith, Senior Research Associate, University of Oxford, Environmental Change Institute

BNG is increasingly supported amongst many organisations, and as a result of the 25 Year Environment Plan and the NPPF.

The aims of the Eco-metric are to:

- Capture the non-monetary value of environmental goods and services from BNG;
- Optimise natural capital gains;
- Be biodiversity led – BNG is a pre-requisite because biodiversity underpins the quality of the natural assets that support the long-term delivery of multiple ecosystem services and their benefits
- Be simple and easy to use
- Be scientifically robust

Eco-metric is an extension of the Defra biodiversity metric, which uses a simple scoring approach, making losses and gains transparent. In order to calculate an individual ecosystem services metric, several factors about the habitat must be known and considered including: Distinctiveness x condition; spatial factors; years to target condition; and delivery risk. Different ecosystem services have different scores, factors and multipliers.

The tool includes a matrix of scores, applied to habitat maps before and after delivery. Units for each land parcel and ecosystem service before and after development are compared to demonstrate if there will be a loss or a gain. If there will be a biodiversity loss, the tool requires project redesign until there is a gain. It's very important to factor in condition of habitat, but this is difficult to assign a numerical value to.

Eco-metric could be effectively used in land use change development, to help planners and developers to optimise natural capital benefits and make a business case for biodiversity investments. It allows comparison of alternative options for site design, assessing habitat and spatial configuration.

There are certain limitations to Eco-metric however. Importantly, it does not replace expert assessment such as flood risk, and it will not replace more detailed ecosystem services. The tool demands that BNG is a pre-requisite, and it should be used within the mitigation hierarchy as a support tool.

The Eco-metric development project is now moving into to Phase 2. The project team are currently reviewing preliminary scores and the draft scoring matrix and will attempt to turn condition and spatial factors into numerical values. It will undergo testing on 20 pilot projects. A stakeholder workshop and webinar will be held in Spring 2019, with the publication of the final eco-metric in the Summer if testing is successful.

Delivering Biodiversity Net Gain on site – opportunities and challenges

Thanks to:

Nick White, Senior Adviser – Net Gain and Green Infrastructure, Natural England

Biodiversity Net Gain is defined as, "development and land management that leaves biodiversity in a measurably better state". Currently legally compliant development can result in net loss to biodiversity.

Since the 2010 Lawton report, *Making Space for Nature*[6] we have known how to improve the environment; actions which could be delivered through proper application of an ENG requirement.

There is debate over the respective merits of on-site versus off-site ENG delivery. Whilst off-site delivery contributes to strategic environmental priorities, this presentation focused on on-site delivery.

On-site delivery is often too quickly overlooked and with it the possibility of providing local benefits removed. This is a social justice issue highlighting that deprived areas have the least access to green space. Ciria's good practice Principle 3 provides that net gain "be inclusive and equitable". On-site delivery also has the benefit of more strongly supporting use of the mitigation hierarchy.

Developer benefits of on-site ENG delivery are: potentially reduced local opposition; contribution to place making; reputation enhancement and cost control through inclusion of the design in their proposals from the outset.

There are three main challenges to on-site delivery:

1. **Design**. Design issues can be overcome through early inclusion in plans, a multi-disciplinary approach and co-designed solutions.
2. **Measuring on-site gains**. There isn't really a sufficiently suitable metric for this though this is being addressed by work to improve DEFRA's biodiversity metric, as well as work by others including BREEAM.
3. **Maintenance**. This is the biggest challenge. A lack of oversight for maintenance responsibility including a management plan, contracts for delivery and standards to assess performance, means many projects may not reach the stage of providing the meaningful benefits envisaged. Open availability of plans to allow third parties to hold developers to account is desirable. Ownership and access issues can prove problematic and end up preventing effective maintenance.

[6] Defra, 2010. Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network.

Securing a Net gain Legacy: Practicalities and Legal Mechanisms

Thanks to:

Charlie Russ, Principal Environmental Consultant - Environmental Economics, Policy and Appraisal, AECOM

Practitioners often think about they want to achieve from net gain but forget about the practicalities of delivering it. Landowners are central to this. Amongst the BNG Principles, Principles 3 and 8 emphasise the importance of stakeholder engagement and landowners are potentially the most critical of these. Legally they are *parties* to an agreement (to deliver net gain). Practical solutions must therefore be based on legal agreement, as these parties are effectively third-party suppliers.

Once opportunity areas have been identified to deliver net gain, it's necessary to secure the land rights to do so. Whilst this may be easy when dealing with conservation organisations such as wildlife trusts, in practice there might be a whole range of other landowners and managers, such as local authorities, institutions, private landowners, trustees, corporate landowners, mortgagees, owner occupier farmers, short-term agricultural tenants, secure agricultural tenants or graziers. The wishes and interests of these will vary considerably.

A major challenge with offsetting is safeguarding land use in the long-term. Options might include freehold purchase, long leasehold purchase, a long-term management agreement or other, more complex workarounds. There are challenges with all these options and there is no off-the-shelf solution. It was for this reason that in 2014 the Law Commission proposed the creation of Conservation Covenants and there is now a 25 Year Environment Plan commitment to take this forward.

Even with Conservation Covenants though, there is a multitude of issues which need to be considered, from the length of the term, management of any disputes, the amendment of obligations and conditions, etc. It is highly unlikely that an agreement would go unchanged over a period of 100 or 200 years and it would be incredibly difficult to achieve agreement for such periods of time. Fixed terms of 25-50 years may be far easier to agree, and whilst this may not seem like a lengthy period in the context of biodiversity conservation (particularly given the length of time some habitats take to establish), often once land use has existed for such a period it becomes entrenched and endures. Thus, achieving a subsequent term for the same use is likely to be relatively straightforward.

Critical factors are costing the long-term management obligations, understanding transaction costs (such as land agent and/or brokerage costs) and dealing with risks and uncertainties (e.g. pest, disease or fire). There are also issues with current agricultural land use rules and taxation which mitigate against change of use, so here the proposals for a new post-Brexit land management system based on public money for public goods presents opportunities. Even with development of Conservation Covenants, this will remain a complex area and there will always be a role for specialist advisers who can unravel the complexities for all parties.

Developing a metric for biodiversity net gain, rivers and streams

Thanks to:

Sarah Jane Scott, Biodiversity Technical Specialist, Environment Agency

Whilst well-regarded, the original Defra metric didn't have the ability to consider rivers and streams well, given that it was based on biodiversity factors, whilst rivers and streams are linear and defined by habitat type. Rivers and streams are also typically very diverse by nature and thus score very highly in terms of distinctiveness such that almost all would be classified as of high importance (salmonid rivers would be the only type to be set above this score).

There was therefore an aspiration to include a specific rivers and streams component into the revised Defra Metric which could consider the 22 commonly recognised different river types. The tool would also need to assess the riparian zone, channel, bank face and marginal habitat, as well as processes.

Whilst there are a range of assessment methods for assessing rivers, the open source, citizen science Modular River Physical Survey (MoRPh - https://modularriversurvey.org) fits the simplicity principle of '*what you see, not what you know*'. It considers 15 channel features including observed biological habitat features (such as overhanging trees) and applies to 95% of rivers in the UK.

For the purposes of generating a metric, it was necessary to 'professionalise' MoRPh to fit a consultant-led application, thus Modular River Survey Pro was created. This classifies river type at the reach scale, assesses processes at the sub-reach level, defines the hydro-geomorphological character and then with further human input generates a condition classification.

Given the importance of the riparian zone to the overall condition of a river or stream, consideration of 10m of riparian zone has been factored in to account for the loss of functionality of the river corridor. This enables riparian improvements as well as in-channel enhancements to be considered in assessing net loss / gain.

Connectivity is vital in rivers and streams and will be a development of the tool in 2019 as it is trialled. There is significant potential for offsets to be delivered via schemes identified in Catchment Plans but as with other applications of BNG, additionality cannot be claimed where there are existing statutory responsibilities to deliver improvements e.g. on designated sites, but it is considered that measures in Catchment Plans to deliver against the Water Framework Directive may be used as mechanisms to achieve Net Gain.

Measuring Biodiversity Net Gain

Thanks to:

Rosemary Waugh, Thames Water and Joe Franklin, AECOM

Thames Water have a land holding of around 5,000 individual sites of varying sizes. This includes 253 which are classified as Sites of Biodiversity Interest (SBI), 12 SSSIs, and 5 which have AONBs within the catchment. They have been running a Site Enhancement for Biodiversity and Access programme for 20 years but have not measured any biodiversity net gain since starting this.

The Thames Water board understand they have a large land holding and great opportunity to protect and improve biodiversity at scale. Thames are working on a project to measure biodiversity on their land holdings, set a baseline and then work to improve it – achieving BNG. Customer support for the Thames Water BNG plan is high, even when presented in the context of potential bill increases.

In its next business plan, Thames has a new performance commitment to deliver a BNG target on landholdings by cumulative 5% over the course of the next business plan period and 1% per year.

AECOM has previously collected Phase 1 habitat data for the 253 SBI sites and used the Defra metric to calculate baseline biodiversity. Thames will report on progress on net gain annually to Ofwat. They acknowledge that it may take several years following management interventions at a site for an increase in condition to be measurable, therefore it's important that action is taken early in the investment cycle, and to target the "easy wins" first relating to improvements in condition that will yield significant uplift in biodiversity units, e.g. Grass mowing regime. 10 sites have been identified for further study in 2019.

At Hogsmill Sewage Treatment Works the landscape has been reprofiled for better visibility from an educational viewing platform, 540 tonnes of low nutrient sandy loam soil spread, and wildflower seed mixture at 6-8g per m^2, and 2 ponds created and planted with native aquatic plant species. These works were put through the Defra metric, and achieved BNG by 6.5 units.

The next steps in delivering and reporting of the performance commitment are to:

- Identify Sites of Biodiversity Interest for cost-effective habitat restoration or creation projects
- Target key sites for cumulative effect with pooling of resources and create larger and higher quality areas with better connectivity rather than isolated projects
- Report annually – using social media, before and after pictures etc, not just dry data, as it's important to make information accessible for customers
- Identify further sites – undertake baselines surveys and improve their condition, not limited to larger sites, and on development projects
- Establish a 'habitat bank' of land that could be enhanced by anyone working on our behalf to provide biodiversity units as part of biodiversity offsetting schemes.

From perspective to practice: What we need to know and how to get there

Thanks to:

Jenny Merriman, Natural Capital Lead, WSP

Measurement: ENG is "a mechanism to reverse the trend of declining biodiversity and ecosystem degradation in order to provide benefits to society". Key components of ENG projects are BNG, locally relevant ecosystem services, a balance between benefits, and net losses to be disclosed and addressed.

Measurement of delivery needs to make use of existing niche assessments then bring information together to give an overview of what has been achieved. Benefits should not be expressed through a single number as this masks the detail of where gains are delivered. There is no one-fits-all tool and thus assessments within a framework works best.

In designing delivery and assessing progress, the credibility of scientific evidence relied upon is very important. Stakeholder participation and engagement in these processes, which could also ensure local benefit through place-making, is also highly important.

Breaking down discipline and sector silos and using thought leadership to embed ENG early on in projects were noted as challenging but important for providing best results. Jenny highlighted Anglian Water, Warwick Council and Yorkshire Water as organisations which had all showed good leadership in ENG projects.

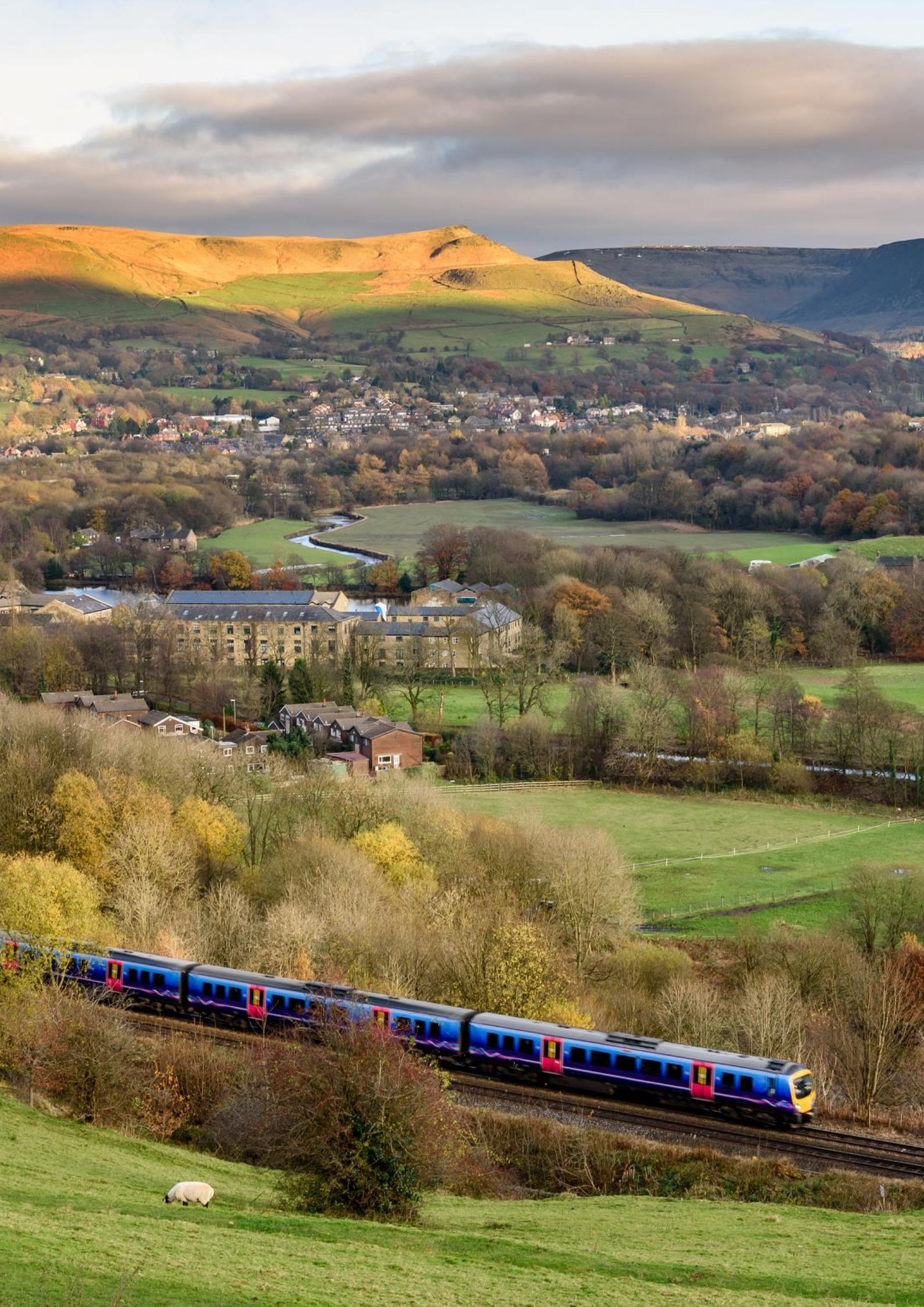
Application: Consistency of local authorities' ENG understanding and delivery is vital to effective application. This may be facilitated through increased cross authority working and mechanisms for cooperation at a catchment or landscape scale across local authority boundaries.

Housing development should not be the only source of finance for ENG. Other potential sources include infrastructure development, the replacement for the Basic Payment Scheme post-Brexit, and private businesses where a clear case can be made. The swell of public awareness and support for the importance of biodiversity is a factor that should drive increasing engagement with ENG.

Guidance and support in the form of R&D, information distribution and sharing of experiences and learning are also important additional facilitators of an effective ENG approach.

Delivery: There is a need for:

- An overarching framework with principles underpinned by science.
- The ability not only to deliver but also to confidently show delivery through measurement.
- Learning from experiences and sharing that learning to improve practices more widely.



3. Discussion points and emerging consensus

Biodiversity Net Gain mandatory and at the heart of Environmental Net Gain

If there was a single message echoed most frequently, it was that BNG must be made mandatory within the planning system, with local authorities required to ensure it is delivered through their planning policies and supplementary planning documents.

The National Planning Policy Framework goes some way to providing this direction, with its 2018 revision removing wriggle room in its predecessor associated with terminology such as "where possible". It states that *"Planning policies and decisions should contribute to and enhance the natural and local environment by… minimising impacts on and providing net gains for biodiversity"* and *"To protect and enhance biodiversity and geodiversity, plans should… identify and pursue opportunities for securing measurable net gains for biodiversity"*[7]. It also promotes development whose primary aim is to conserve or support biodiversity and incorporation of measures to enhance biodiversity within developments, particularly where this could help deliver net gains for biodiversity.

However, this improved direction alone was considered insufficient on the grounds of the extent of biodiversity loss in the UK and the need for strong and urgent action to ensure no net loss and deliver net gain.

Delegates recognised that under the Government's 25 Year Environment Plan, there are commitments to establishing metrics and ensuring that these are monitored, with performance scrutinised and reported on regularly. It was considered vital that such metrics and monitoring cover biodiversity net gain and that they underpin statutory duties placed on local authorities to ensure that their plans and policies deliver measurable BNG.

The context of BNG within the wider envelope of ENG was the subject of much discussion. The concept of ENG was strongly welcomed by delegates as the ultimate goal, but it was recognised that this is a big step on from BNG in terms of measurement, monitoring and assessing optimal approaches to achieving net gains.

It was agreed that biodiversity is the cornerstone of our environment's health. Biodiversity, above all else, would be the critical factor in delivering wider ENG in that without BNG, ENG delivery will be impossible. Thus, BNG is the component of ENG which is sacrosanct, and which requires the underpinning of law via the Environment Bill.

This was not to negate the potential of wider ENG including social gains. However, there was a risk expressed that given the breadth of potential components within ENG, it may be possible to achieve ENG without achieving any BNG, or even preventing no net loss of biodiversity by 'downtrading' certain factors for others (for example education provision, transport or recreational greenspace).

[7] Ministry of Housing, Communities and Local Government, 2018. National Planning Policy Framework.

This issue was illustrated by the clear agreement that whilst metrics to measure net gains associated with developments are vital tools in the overall process, a score is an indicator and not a substitute for expert professional knowledge and judgment on site.

There will be a need to teach the skills in both habitat assessment and habitat restoration within further education so that new professionals are equipped with the skill sets that a "restoration economy" requires.

BNG must lead the way and provide the basis for other natural capital asset classes to be developed in the future as part of ENG, using the BNG framework for delivery.

Consistent national standards, metrics and sharing of best practice

There is a growing range of metrics and tools being developed to measure net gain, although it was strongly recognised that the Defra / Natural England Biodiversity Metric is a well-regarded and the most widely used tool.

With the range of tools and approaches in existence, there is scope for differing degrees of robustness of decisions and outputs. This translates to varying effectiveness in achieving net gains together with varying implications for developers in terms of the undertakings they may be required to deliver to achieve net gain.

It was widely agreed that national consistency in approach would help in mainstreaming BNG in the first instance and then, with the ongoing development of Ecometric, ENG. Consistency should be applied to the percentage gain which should be required of developers (gains of 10% or 20% above baseline were discussed), together with the tools and approaches used to assess and evidence the net gains achieved.

The need for use of robust baseline data was widely recognised, with these critical for determining the extent of net gains and the effectiveness of approaches. Developments in the use of monitoring techniques, for example using drones, were seen as vital alongside robust use of scientific methods to ensure approaches are transparent and replicable. Lessons from the Defra pilots are important in this context.

There was concern expressed that certain measures being deployed on site, such as landscaping, may be claimed as biodiversity conservation measures when they are manifestly not. Consistent, robust and enforced national standards would go a long way to ensuring that such poor practice is avoided, and measures are put in place which genuinely enhance biodiversity in a properly considered way.

Strong concern was expressed regarding the lack of resource within local planning authorities, to ensure that planning policies are sufficiently well developed, applied and enforced. Pressures on such resources are translating into inconsistent delivery of a range of environmental measures across the country. Whilst Government has clearly stated ambitions regarding ENG, to prevent its delivery becoming a 'postcode lottery', the issue of resource pressure within local authorities will need to be resolved.

On-site vs off-site, balancing winners and losers

Net gain (particularly wider ENG) is achievable through deployment of an appropriate mix of on-site and off-site provision. On-site BNG is constrained by factors such as disturbance and available space and will not achieve biodiversity restoration in the UK on its own, though opportunities for net gain should be taken forward locally where beneficial.

Likewise, gains in greenspace and nature for communities affected by developments as opposed to strategic biodiversity gains at the landscape level is likely to be critical for public acceptability and avoiding accusations of compensation being a 'licence to trash'. Moreover, delivery of on-site measures reflects appliance of the mitigation hierarchy and delivers social benefit. Several presenters raised the idea of splitting delivery between both on and off-site projects in varying proportions.

The issue of who wins and who loses when thinking about the location of net gain sites was considered important. It is common for in the region of 80% of BNG to be delivered off-site given the constraints noted above. However, there is real risk that some communities will experience most of the adverse impact of development while others will receive the benefits.

There is undoubtedly sound reasoning behind the '80% rule' and split delivery was broadly supported as a realistic approach to achieving effective BNG. However, the need for more transparency about where communities win and lose in terms of access to biodiversity resulting from development was emphasised, alongside the importance of ensuring good delivery of social and environmental mitigation (e.g. greenspace and access to nature) for all developments irrespective of BNG.

Nevertheless, BNG is most effectively achieved at scale, whether through one sector such as agriculture, or through companies with large land holdings working strategically across sites. Habitat banking was proposed as the preferred and most cost-effective delivery mechanism which contributes to the restoration economy and creates biodiversity habitat and associated species, at scale.

Alongside a move by Government to make BNG mandatory, accreditation of habitat banks and brokers by Government would facilitate rapid development of a market in BNG (compensation) sites and enable significant private investment to come forward into the natural environment.

The importance of additionality

A clear concern was identified that net gain could be undermined through double counting of existing mandatory obligations for habitat restoration, such as those associated with designated sites.

It was universally agreed that net gain must not be pursued at the expense of lowering protection, that priority habitats affected by development should be compensated like for like and that net gain should be additional to existing statutory protections and initiatives, not a method for fulfilment of these Government obligations.

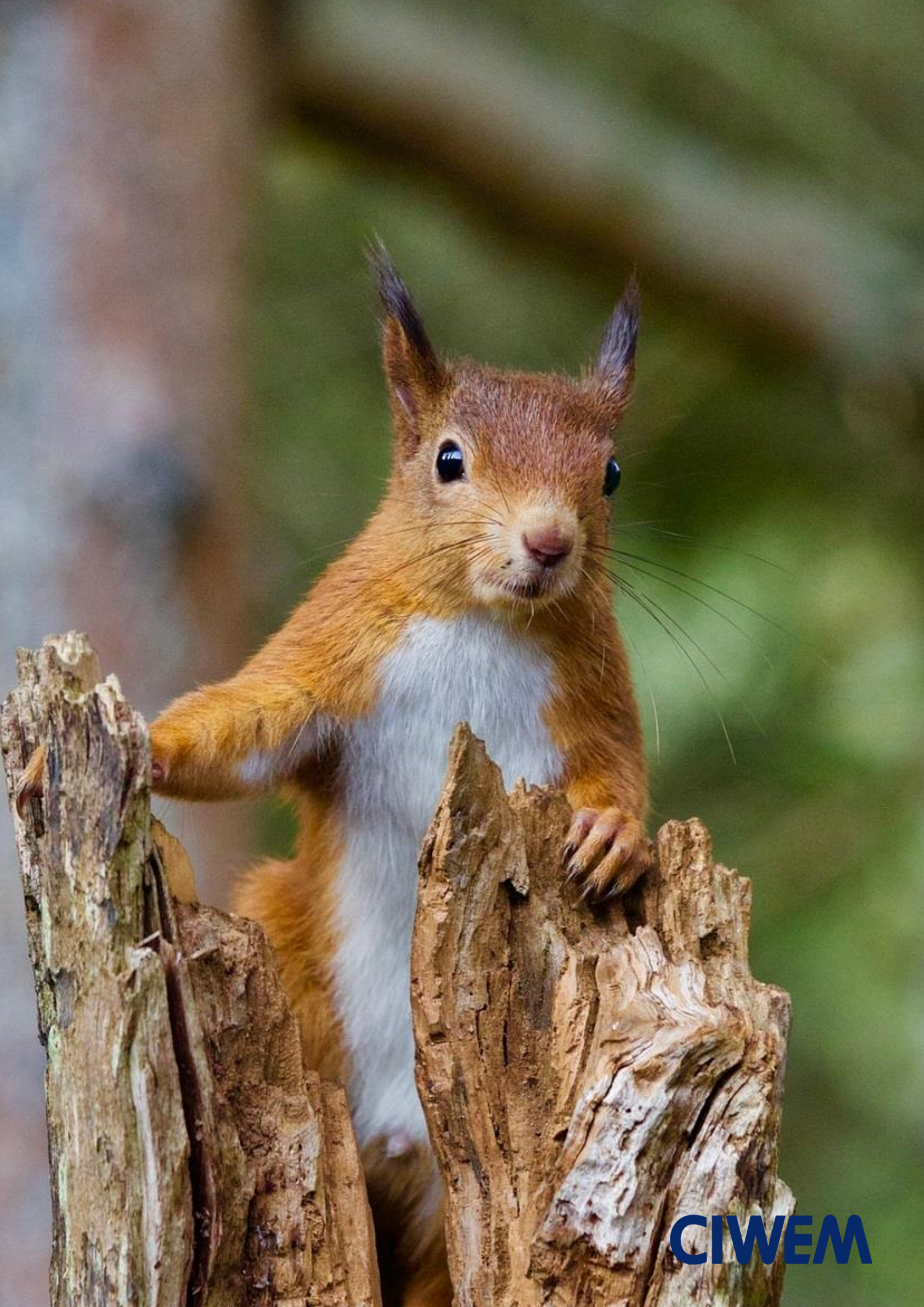
Ensuring effective long-term delivery

Developing offset agreements with landowners with ecologically meaningful timeframes was recognised as one of the more challenging components of mainstreaming net gain.

Though opinions on the optimum length of delivery agreements varied, it was agreed that better legal mechanisms for enforcing positive management obligations were needed. Conservation Covenants were viewed positively and the 25 Year Environment Plan commitment to consider their introduction was welcomed.

It was proposed that delivery of such mechanisms should be done in a way which encourages a vibrant offsetting market in the first instance, rather than imposing rules that risk dampening the enthusiasm of potential suppliers. At the same time, a robust approach which meant that delivery was not effectively on developers' terms was a key concern.

It was proposed that with timescales in the region of 25-50 years, it should be possible to meet the needs of offset suppliers (landowners and managers) whilst minimising the risk of change of use at the end of the management term, where a further term is offered, because of land use entrenchment over such timescales. Yet the risk of potential to change use was a concern to many delegates, particularly in the context of the length of time which some habitats take to reach maturity. Considerable further work is needed to establish how such risks can be mitigated whilst at the same time making offset provision an attractive proposition for landowners.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