

Title: Biodiversity Offsetting IA No: DEFRA1126 Lead department or agency: Department for Environment, Food and Rural Affairs Other departments or agencies:	Impact Assessment (IA)		
	Date: 29/08/2013		
	Stage: Consultation (Draft)		
	Source of intervention: Domestic		
	Type of measure: Other		
Contact for enquiries: James Vause 0207 238 1035			

Summary: Intervention and Options	RPC Opinion: Awaiting Scrutiny
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Cost of Preferred Option			
Total Net Present Value	Business Net Present Value	Net cost to business per year (EANCB on 2009 prices)	In scope of One-In, Measure qualifies as One-Out?
-1.55	1.08	-0.11	No
			N/A

What is the problem under consideration? Why is government intervention necessary?

Without protection, habitat in England is being lost, fragmented and degraded as biodiversity suffers from market failure. As an unpriced externality it tends to be neglected in market-based transactions and is therefore over consumed and under produced. The planning system attempts to counter this for the impacts of development on biodiversity, but this is not always effective and can also create delays and uncertainty which impose costs on developers. A regulated biodiversity offsetting market offers a potentially efficient solution to both problems, helping to ensure biodiversity issues are dealt with more transparently and with greater certainty in the current planning system, to encourage growth and improve the environment.

What are the policy objectives and the intended effects?

The proposals intend to improve the delivery of planning policy requirements relating to biodiversity in a cost-effective way, by: providing a potentially faster and more consistent approach to assessing the impact of the development on biodiversity; agreeing the mitigation and compensation requirements; and demonstrating compliance using a standardised system. It is hoped that greater certainty about the use of offsetting will allow developers to routinely consider offsetting as part of their development planning, and lead potential offset suppliers to come forward. A strategic approach to offsets will allow them to be sited in places that increase the number, scale and connectivity of diverse habitats in England.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Option 0 - Do nothing: Current approaches to securing compensation for residual biodiversity losses remain with levels of monitoring / enforcement unchanged.

Option 1 - A fully permissive approach: Offset market infrastructure available for developers to use to deliver compensation on a voluntary basis.

Option 2.a. to 2.c. – Uniform approaches: Developers above different thresholds are required to use the offsetting approach to compensate for residual biodiversity losses. Offsetting optional below thresholds.

Option 3 - A partially permissive approach: Offsetting infrastructure available as 1, residual biodiversity losses uniformly assessed using offset metric, developers free to choose route to deliver compensation.

Option 4 - A Community Infrastructure Levy (CIL) approach: Aggregate offsetting provided through CIL.

The government preference is for a fully permissive approach (option 1) at this stage

Will the policy be reviewed? The proposals will be reviewed in light of this consultation					
Does implementation go beyond minimum EU requirements?				N/A	
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.		Micro No	< 20 Yes	Small Yes	Medium Yes
What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)				Traded: n/a	Non-traded: n/a

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible SELECT SIGNATORY: _____ Date: _____

Summary: Analysis & Evidence

Policy Option 1

Description: Fully permissive approach, developers can choose offsetting to deliver compensation

FULL ECONOMIC ASSESSMENT

Price Base Year 2009	PV Base Year 2013	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: -2.7	High: 185	Best Estimate: -1.6

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	4.7	0	4.7
High	4.7	0.1	5.9
Best Estimate	4.7	0	4.7

Description and scale of key monetised costs by 'main affected groups'

Transitional costs would be faced by central and local government and business to establish the market infrastructure required to support offsetting and understand how the system should be used in their contexts. Within this total the costs to business of familiarisation with offsetting are estimated at £2m. The high-end cost includes additional strategic offsetting to yield financial benefits assuming these offsets can be sourced competitively. Local authorities will face costs of checking offsets meet planning requirements.

Other key non-monetised costs by 'main affected groups'

The potential costs to local authorities of having to run dual systems for those wishing to offset and those wishing to use the current framework.

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0	0.4	3.1
High	0	22	189
Best Estimate	0	0.4	3.1

Description and scale of key monetised benefits by 'main affected groups'

Financial savings are delivered to developers who are already providing compensation under current planning decisions as offsets are estimated to deliver compensation more efficiently in this IA. The high end benefits include the business benefits of using offsets to bring forward additional development where compensation could not previously be sourced, and the potential benefits of relocating onsite compensation (£43m), small additional biodiversity gains are also secured through this investment (worth £0.6m to society)

Other key non-monetised benefits by 'main affected groups'

There are likely to be wider benefits to biodiversity as a result of the more strategic placing of offsets relative to compensation under current planning guidance.

Key assumptions/sensitivities/risks

Discount rate (%)

3.5

The best estimate assumes that no additional offsetting benefit to business would occur due to concerns about offset supply in the relatively small market delivering current compensation: if successful market support led to this then benefits would be greater (as highlighted in the high-end estimate).

Biodiversity benefits are assumed to be the same as those delivered by current compensation route in the baseline in the best estimate. This may not be the case in reality as offsetting accounts the risk of failure in habitat restoration / creation and therefore delivers biodiversity outcomes with greater certainty.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 0.2	Benefits: 0.3	Net: 0.1	No	N/A

Summary: Analysis & Evidence

Policy Option 2a

Description: Uniform approach with offsetting required for all development classed as small scale major developments and above

FULL ECONOMIC ASSESSMENT

Price Base Year 2009	PV Base Year 2013	Time Period Years	Net Benefit (Present Value (PV)) (£m)		
			Low: 68	High: 1101	Best Estimate: 338

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	4.7	27	233
High	4.7	47	410
Best Estimate	4.7	37	322

Description and scale of key monetised costs by 'main affected groups'

Major developers pay the costs of offsetting, though the burden is likely to ultimately fall on land owners selling land for development. Direct costs include management of the offset site as well as monitoring its delivery. Local authorities will face costs of checking offsets meet planning requirements but in place of imposing previous planning requirements. Transition costs would be faced by government and business to understand offsetting and establish market infrastructure (split as in option 1).

Other key non-monetised costs by 'main affected groups'

The potential costs to local authorities of running two systems for biodiversity in parallel.

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0	56	478
High	0	155	1333
Best Estimate	0	77	659

Description and scale of key monetised benefits by 'main affected groups'

Benefits to society from the access to ecosystem services that are associated with improved biodiversity. Developers may benefit if offsetting can deliver compensation for biodiversity loss more cost effectively. Biodiversity offsetting is also potentially a quicker and more certain mechanism for dealing with biodiversity in planning which may increase the land available for development. Illustrative estimates of these benefits (which equate to £57m) are included in the high end benefit estimate, but not others.

Other key non-monetised benefits by 'main affected groups'

The assessment for biodiversity benefits is partial - including only 7 ecosystem services (adapted from Christie et al. 2011). There are likely to be wider benefits to biodiversity as a result of the more strategic placing of offsets. The increased commercial management of land for biodiversity offsets and the support services around their provision might create opportunities for sustainable economic growth and more profitable economic activities in the rural economy

Key assumptions/sensitivities/risks	Discount rate (%)	3.5
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- 1) Amount of compensation activity taking place in the 'do nothing' scenario.
- 2) Impacts of offsetting in terms of increasing net developable area.
- 3) Potential savings for developers in the planning system as a result of the introduction of offsetting.
- 4) Extent to which compensation activities can be provided in areas where land / opportunity costs are low.
- 5) Costs of offsets & whether there are scale effects in a national system which could reduce unit costs.
- 6) Proportion of development that will be captured by major development.

BUSINESS ASSESSMENT (Option 2a)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 33.4	Benefits: 0	Net: -33.4	Yes	IN

Summary: Analysis & Evidence

Policy Option 2b

Description: Uniform approach with offsetting required for all developments classed as large scale major developments and above

FULL ECONOMIC ASSESSMENT

Price Base Year 2009	PV Base Year 2013	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: -149	High: 602	Best Estimate: 85

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	4.7	0.7	11
High	4.7	21	188
Best Estimate	4.7	8.5	78

Description and scale of key monetised costs by 'main affected groups'

Large scale major developers pay the costs of offsetting, though the burden is likely to ultimately fall on land owners selling land for development. These direct costs include management of the offset site as well as monitoring its delivery. Local authorities will face costs of checking offsets meet planning requirements but in place of imposing previous planning requirements. Transition costs would be faced by government and business to understand offsetting and establish market infrastructure (split as in option 1).

Other key non-monetised costs by 'main affected groups'

The potential costs to local authorities of running two systems for biodiversity in parallel.

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0	4.6	39
High	0	71	613
Best Estimate	0	19	163

Description and scale of key monetised benefits by 'main affected groups'

Benefits to society from the access to ecosystem services that are associated with improved biodiversity. Developers may benefit if offsetting can deliver compensation for biodiversity loss more cost effectively. Biodiversity offsetting is also potentially a quicker and more certain mechanism for dealing with biodiversity in planning which may increase the land available for development. Illustrative estimates of these benefits (which equate to £31m) are included in the high end benefit estimate, but not others.

Other key non-monetised benefits by 'main affected groups'

The assessment for biodiversity benefits is partial - including only 7 ecosystem services (adapted from Christie et al. 2011). There are likely to be wider benefits to biodiversity as a result of the more strategic placing of offsets. The increased commercial management of land for biodiversity offsets and the support services around their provision might create opportunities for sustainable economic growth and more profitable economic activities in the rural economy

Key assumptions/sensitivities/risks	Discount rate (%)	3.5
<ol style="list-style-type: none"> 1) Amount of compensation activity taking place in the 'do nothing' scenario. 2) Impacts of offsetting in terms of increasing net developable area. 3) Potential savings for developers in the planning system as a result of the introduction of offsetting. 4) Extent to which compensation activities can be provided in areas where land / opportunity costs are low. 5) Costs of offsets & whether there are scale effects in smaller markets which could raise unit costs. 6) Proportion of development that will be captured by major development. 		

BUSINESS ASSESSMENT (Option 2b)

Direct impact on business (Equivalent Annual) £m:	In scope of OIOO?	Measure qualifies as
Costs: 7.9	Yes	IN
Benefits: 0		
Net: -7.9		

Summary: Analysis & Evidence

Policy Option 2c

Description: Uniform approach with offsetting required for development which impacts land of higher biodiversity value than that classed as "low distinctiveness and poor quality in the offsetting metric"

FULL ECONOMIC ASSESSMENT

Price Base Year 2009	PV Base Year 2013	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: 97	High: 1299	Best Estimate: 452

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	4.7	37	321
High	4.7	64	554
Best Estimate	4.7	51	438

Description and scale of key monetised costs by 'main affected groups'

Developers pay the costs of offsetting, though the burden is likely to fall ultimately on owners of developable land. These direct costs include management of the offset and monitoring its delivery. All developers (including those smaller than major developments with a positive footprint) will need to assess land condition pre-development. As in previous options, planning authorities will face costs of checking offsets meet requirements. Transition costs would be faced by government & business split as in Option 1.

Other key non-monetised costs by 'main affected groups'

The potential costs to local authorities of running two systems for biodiversity in parallel if compensation may still be required below the threshold.

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0	76	651
High	0	188	1620
Best Estimate	0	103	889

Description and scale of key monetised benefits by 'main affected groups'

Benefits to society from the access to ecosystem services that are associated with improved biodiversity. Developers may benefit if offsetting can deliver compensation for biodiversity loss more cost effectively. Biodiversity offsetting is also potentially a quicker and more certain mechanism for dealing with biodiversity in planning which may increase the land available for development. Illustrative estimates of these benefits (which equate to £57m) are included in the high end benefit estimate, but not others.

Other key non-monetised benefits by 'main affected groups'

The assessment for biodiversity benefits is partial - including only 7 ecosystem services (adapted from Christie et al. 2011). There are likely to be wider benefits to biodiversity as a result of the more strategic placing of offsets. The increased commercial management of land for biodiversity offsets and the support services around their provision might create opportunities for sustainable economic growth and more profitable economic activities in the rural economy

Key assumptions/sensitivities/risks	Discount rate (%)	3.5
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- 1) Amount of compensation activity taking place in the 'do nothing' scenario.
- 2) Impacts of offsetting in terms of increasing net developable area.
- 3) Potential savings for developers in the planning system as a result of the introduction of offsetting.
- 4) Extent to which compensation activities can be provided in areas where land / opportunity costs are low.
- 5) Costs of offsets & whether there are scale effects in a national system which could reduce unit costs.

BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 45.6	Benefits: 0	Net: -45.6	Yes	IN

Summary: Analysis & Evidence

Policy Option 3

Description: A partially permissive approach, offsetting infrastructure is available as 1, residual biodiversity losses uniformly assessed using the offsetting metric, developers remain free to choose route to deliver compensation.

FULL ECONOMIC ASSESSMENT

Price Base Year 2009	PV Base Year 2013	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: -9	High: 291	Best Estimate: 31

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	4.7	5.5	52
High	4.7	8.7	80
Best Estimate	4.7	7.0	65

Description and scale of key monetised costs by 'main affected groups'

Developers pay the costs of offsetting where used, and of applying the metric, though the burden of these costs are ultimately likely to fall on owners of developable land. All developers (including those smaller than major developments with a positive footprint) will need to assess the impacts of their development on biodiversity. As in previous options, planning authorities will face costs of checking offsets meet requirements. Transition costs would be faced by government & business split as in Option 1.

Other key non-monetised costs by 'main affected groups'

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0	8.2	71
High	0	40	344
Best Estimate	0	11	96

Description and scale of key monetised benefits by 'main affected groups'

Benefits to society from the access to ecosystem services that are associated with improved biodiversity. Developers may benefit if offsetting can deliver compensation for biodiversity loss more cost effectively. Biodiversity offsetting is also potentially a quicker and more certain mechanism for dealing with biodiversity in planning which may increase the land available for development. Illustrative estimates of these benefits (which equate to £25m) are included in the high end benefit estimate, but not others.

Other key non-monetised benefits by 'main affected groups'

The assessment for biodiversity benefits is partial - including only 7 ecosystem services (adapted from Christie et al. 2011) . Wider benefits to biodiversity due to more strategic placing of offsets. The increased commercial management of land for biodiversity offsets and the support services around their provision might create opportunities for growth and more profitable economic activities in the rural economy. Better understanding of residual biodiversity losses through use of the metric will help biodiversity planning.

Key assumptions/sensitivities/risks	Discount rate (%)	3.5
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- 1) Amount of compensation activity taking place in the 'do nothing' scenario.
- 2) Impacts of offsetting in terms of increasing net developable area.
- 3) Potential savings for developers in the planning system as a result of the introduction of offsetting.
- 4) Extent to which compensation activities can be provided in areas where land / opportunity costs are low.
- 5) Costs of offsets & whether there are scale effects in smaller markets which could raise unit costs.

BUSINESS ASSESSMENT (Option 3)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 6.5	Benefits: 0	Net: -6.5	Yes	IN

Summary: Analysis & Evidence

Policy Option 4

Description: Community Infrastructure Levy (CIL) approach – planning authorities secure offsets sufficient to compensate for aggregate biodiversity impact, offset supply funded through CIL.

FULL ECONOMIC ASSESSMENT

Price Base Year 2009	PV Base Year 2013	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: -4.8	High: 121	Best Estimate: 33

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	2.6	5.5	50
High	2.6	8.4	75
Best Estimate	2.6	7.0	63

Description and scale of key monetised costs by 'main affected groups'

Developers pay the costs of offsetting, though payment of the CIL, where planning authorities choose to include biodiversity infrastructure. Planning authorities bear the cost of assessing potential biodiversity losses. Developers do not face transition costs of understanding the offset market as this role is taken on by planning authorities through aggregate offsetting.

Other key non-monetised costs by 'main affected groups'

The administrative costs of coordinating offset purchases under CIL are assumed to be the same as the administrative costs of developers securing offsets individually. Any additional costs (or savings) that local authorities may face through making coordinated purchases are not monetised at this stage.

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0	8.2	71
High	0	20	171
Best Estimate	0	11	96

Description and scale of key monetised benefits by 'main affected groups'

Benefits to society from the access to ecosystem services that are associated with improved biodiversity. Developers may benefit if offsetting can deliver compensation for biodiversity loss more cost effectively. Biodiversity offsetting is also potentially a quicker and more certain mechanism for dealing with biodiversity in planning which may increase the land available for development. Illustrative estimates of these benefits (which equate to £6m) are included in the high end benefit estimate, but not others.

Other key non-monetised benefits by 'main affected groups'

The assessment for biodiversity benefits is partial - including only 7 ecosystem services (adapted from Christie et al. 2011). There may be wider benefits to biodiversity as a result of the more strategic placing of offsets. The increased commercial management of land for biodiversity offsets and the support services around their provision might create opportunities for sustainable economic growth and more profitable economic activities in the rural economy

Key assumptions/sensitivities/risks	Discount rate (%)	3.5
1) Amount of compensation activity taking place in the 'do nothing' scenario. 2) Impacts of offsetting in terms of increasing net developable area. 3) Potential savings for developers in the planning system as a result of the introduction of offsetting. 4) Extent to which compensation activities can be provided in areas where land / opportunity costs are low. 5) Costs of offsets & whether there are scale effects in smaller markets which could raise unit costs. 6) Assumption that a share of CIL revenues for biodiversity offsets are spent and deliver relevant benefits.		

BUSINESS ASSESSMENT (Option 4)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 4.9	Benefits: 0	Net: -4.9	Yes	IN

Evidence Base (for summary sheets)

Summary

This IA sets out five potential options for offsetting the impact of development on biodiversity:

- **Do-nothing.** Current approaches to securing compensation for residual biodiversity losses remain with levels of monitoring / enforcement unchanged. Offsite compensation for residual biodiversity losses based on negotiations between developers and planning authorities.
- A **fully permissive** approach where developers could choose whether to use the offsetting metric to assess their project's impacts and choose the means of securing compensation (i.e. through a section 106 agreement or by obtaining an offset).
- A **uniform** approach where developments that exceed a certain threshold would be required to use the offsetting metric to assess their project's impacts and to obtain an offset as the mechanism for compensation. Developments below the threshold would be able to opt-in to using offsetting. The impact of different thresholds is assessed in option 2a-c.
- A **partially permissive** approach where developers might be required to use the offsetting metric to assess their project's impacts and then be free to choose the means of securing compensation (i.e. through a section 106 agreement or by obtaining an offset).
- A **Community Infrastructure Levy** based approach. Under this approach developers would not directly secure offsets. Instead the charging authority, usually the planning authority, would purchase offsets sufficient to compensate for the aggregate impact on biodiversity of developments in their area. The offsets would be funded by the levy collected by the planning authority and so would need to be built into their charging schedule. The funds need not be ring-fenced for biodiversity but could be part of the general levy receipts to be used to fund infrastructure.

The do-nothing option reflects business-as-usual and the additional costs and benefits of the other options are assessed against this baseline. Compensation for significant residual biodiversity loss is required under current planning policy, but research for Defra¹, suggests that the implementation of requirements is not always as effective as it could be: biodiversity impacts are not always taken into account and at the same time the planning system can be slow and uncertain.

The analysis suggests that greater use of biodiversity offsetting to deliver compensation could address both these issues and deliver benefits for both business and the environment. It seems likely that the delivery of some of these benefits may rely on a large visible offset market being created (to ensure the market is readily accessible and potential suppliers have incentives to come forward) however, it is clear we need to better understand the impacts of market size on both the costs and benefits of offsetting, as is highlighted in the evidence base, and consultation questions in the evidence base below.

This assessment does not cover the costs and benefits of applying offsetting methods to European Protected Species.

Problem under consideration

¹ Offsetting Phase III report reference below:

A key element in the Government's policy of increasing economic growth is supply-side reform which will help business create jobs and deliver lasting prosperity. New infrastructure, more industrial and commercial premises and more homes are all needed to strengthen the supply-side.

The Government also has ambitious plans to halt overall biodiversity loss over the next decade as part of its Biodiversity 2020 strategy. The strategy responds to the way in which the last 50 years has seen large areas of habitat in England being lost, fragmented and degraded, as a result of intensification of land use for development and agriculture. This has long-term economic implications as biodiversity is a vital constituent of our natural capital and provides a range of economic and non-economic goods and services such as food, pollination and water management.

England's planning system is intended to help deliver both these objectives. However evidence suggests it could do better in both regards:

- The planning regime can be slow and uncertain: the Impact Assessment accompanying the National Planning Policy Framework (NPPF) estimates that complying with the planning regime can cost businesses £2.7bn a year. This means infrastructure, premises and homes are not being built as quickly as they could and may come at a higher price.
- Impacts on biodiversity are not appropriately or consistently addressed unless protected sites or species are affected. Defra "Offsetting Phase III" report² (Phase III report) looked at the application of Planning Policy Statement 9 or PPS9 (replaced by the NPPF but embodying similar tests) in 46 cases. The majority (85%) showed residual biodiversity losses which were not compensated for.

Background to offsetting

Offsetting fits into the current planning framework as a way to deliver existing planning requirements around residual biodiversity loss. For example, the NPPF requires that biodiversity impacts are prevented where possible, where this is not possible they should be mitigated and where they cannot be prevented or mitigated, then compensation should be provided. Offsetting is a potential mechanism to help improve how this compensation is agreed and delivered.

The use of offsets addresses the concerns set out above by putting in place a transparent and consistent framework for considering biodiversity impacts and ensuring compensation is put in place for residual harm from development. This is possible because offsets use quantified, measurable outcomes – the key feature that distinguishes them from other forms of ecological compensation. This is achieved by using a "metric" which converts an assessment of overall biodiversity into "biodiversity units" – the focus is on biodiversity per se rather than the value of the benefits that flow from this, as in reality they are likely to be highly geographically specific and difficult to measure. The environmental objective of this offsetting is to ensure the overall stock of biodiversity is not impacted by development. The system achieves "no net loss" by ensuring offsets are provided in a ratio that gives one "biodiversity unit" for every "biodiversity unit" lost. It should be noted that some biodiversity impacts, where losses are irreversible or habitats irreplaceable offsetting as defined above may not be possible, but such sites (e.g. ancient woodlands) are generally protected and not generally subject to development.

In practice a biodiversity offsetting system would work as part of the planning system and require a developer using it to:

² <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17831>

- Undertake an assessment of the biodiversity on the sites and use the “metric” to value this in terms of “biodiversity units”.
- Set out as part of their planning application the steps they will take to avoid or mitigate the loss of “biodiversity units”, and the residual loss of “biodiversity units” for which they will provide an offset.
- If planning permission is granted, obtain an offset which provides at least the same number of “biodiversity units” as the residual loss on the site.

On the offset provision side, the same metric is used to assess the environmental gain from actions taken to restore or recreate a habitat. The offset provider then enters into an agreement with the developer securing the offset that requires them to undertake the restoration or recreation activity, and ensures the offset site will be managed to maintain the gain on an ongoing basis. I.e. the liability for provision of compensation for residual biodiversity loss is passed to the offset provider.

Any offsetting system in England is likely to use a metric similar to that currently being applied in six pilot schemes. Under this metric the value of a given habitat is calculated in “biodiversity units” based on three factors:

- The distinctiveness of the habitat is assessed as low, medium or high. Distinctiveness reflects, amongst other factors, the rarity of the habitat concerned (at local, regional, national and international scales) and the degree to which it supports species rarely found in other habitats. Guidance has been provided alongside the pilot setting out the distinctiveness rating for different habitat types:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/166035/12_04-bio-offset-pilot-appendix.pdf.pdf

- The quality of the habitat is assessed as poor, moderate or good. This assessment is based on a standard framework. In the pilots this has been Natural England’s “Higher Level Stewardship: Farm Environment Plan (FEP) Manual³”
- The area of the habitat in hectares

Having assessed the habitat against these factors, its value in “biodiversity units” can be calculated using the following table:

Value of 1 ha in “biodiversity units”		Habitat distinctiveness		
		Low (2)	Medium (4)	High (6)
Habitat quality	Good (3)	6	12	18
	Moderate (2)	4	8	12
	Poor (1)	2	4	6

Source: NE 2011

³ <http://publications.naturalengland.org.uk/file110011>

The same system is used to calculate the value of offsets that are provided with three additional factors taken into account:

- The risk associated with habitat restoration or recreation as not all activities will achieve the desired outcome. An offset provider may need to restore or recreate a larger area to have confidence the required number of “biodiversity units” will be created. For the offset pilots, restoration and recreation activities have been classified in four bands from low to very high difficulty. For low difficulty sites no uplift in area is required. For very high difficulty restoration or recreation activity 10 times as much area will need to be improved to generate the same number of “biodiversity units”.
- The time it will take to restore or recreate the habitat. In this period society will experience a net loss of biodiversity so the system can require the offset provider to do more to compensate for this temporary loss. In the pilots this is handled by applying a 3.5% discount rate as set out in HM Treasury’s Green Book
- The location of the offset. In the pilots local authorities have set out strategies on where to locate offsets to create maximum environmental gain. Larger offsets need to be provided if they are outside the area identified for offset provision. This factor is not included in this impact assessment, assuming that a national approach will help coordinate offset provision and avoid the need for such penalties.

Offset providers can avoid these uplifts by “habitat banking”, that is restoring or recreating habitat in advance of need. If the uplift in “biodiversity units” has already happened – and can be shown to be additional – it could provide an offset at its full value.

A worked example of this is included in annex 2.

To give context to the figures in this impact assessment, output from the construction sector in 2012 was estimated at £98bn⁴, and current levels of developer contributions to the local authorities to help counter the external impacts of development (e.g. on local roads, schools etc) have been estimated at around £5bn a year, although this also includes contributions linked to affordable homes targets.

Policy objective

The policy aim of introducing of a clear and consistent approach to the use of biodiversity offsetting in the planning system is based on three objectives, to:

- Improve the delivery of requirements in the planning system relating to biodiversity so it is quicker, cheaper and more certain for developers.
- Achieve net gain for biodiversity by: ensuring that the number of biodiversity units lost at a development site is equally matched by the number of biodiversity units replaced at an alternative site (ensuring “no net loss”); and seeking to locate offsets in a way that enhances ecological networks (achieving “net gain”).
- Avoid additional costs to businesses. This will ensure it is consistent with Government’s commitments: not to increase net burdens on housing developers over the Spending Review 2010 period; and to one-in, two-out on all regulatory burdens.

Biodiversity offsetting is a market-based mechanism which would allow developers to meet existing planning requirements more effectively. However, it is evident that any policy and its

⁴ http://www.ons.gov.uk/ons/dcp171778_314390.pdf (Table 2 XLS download)

implementation must be well designed to ensure it delivers the desired outcomes and avoids new costs for developers.

The potential benefits of offsetting are expected to be derived from the certainty and transparency of offsetting which would allow developers to estimate in advance the costs of compensating for any residual biodiversity losses and embed this in their development plans.

It has the potential to take away the *ad hoc* and uncertain discussions over compensation requirements. It would replace these with a comparatively simple check that a protocol for offset use and the metric has been followed and the offsets proposed are supplied by an accredited supplier.

In some circumstances, where compensation has been the only remaining option (i.e. the avoid and mitigate tests have been applied) and it has been ecologically feasible, supply difficulties have prevented development. In such circumstances offsets may have the potential to bring forward development. Likewise, environmental and economic gains may be feasible in some cases if poor quality onsite compensation (for example disconnected and unmanaged pockets of habitat) can be replaced with better offsite compensation. This would allow a more strategic use of land on site for development and enable strategic environmental gains such as delivering ecological networks.

The scope of the impact assessment is compensation for residual biodiversity habitat loss outside protected areas. It does not cover European Protected Species.

Description of options considered (including do nothing)

This is a consultation stage Impact Assessment. It sets out at a high level, the potential options for offsetting the impact of development on biodiversity and what we know about the potential costs and benefits of those approaches at this stage. It then proposes a way forward for gathering further information to inform decisions.

The options considered are:

Do-Nothing (Option 0)

Under this option there would be no change to current planning guidance or legislation. Current levels of compensation would continue. Over time local authorities may develop their own models of offsetting to help address residual losses of biodiversity in the absence of further central government guidance.

Fully permissive approach, developers can choose offsetting to deliver compensation (Option 1)

This option would effectively set up the market infrastructure for offsetting, should a developer select to use it. That is government would provide: a single national metric, rules on offset trades and system for securing offsets.

This same rules would need to be applied by all local authorities. Compensation through the use of offsetting will be voluntary for developers, but the rules will be consistent across the country and the protocols as to when and how offsets could be used will be clearly set out. This would give developers certainty about how they could use offsets to deliver on their planning commitments with respect to residual impacts on biodiversity.

Uniform approach with offsetting required for development classes as small scale major developments and larger (Option 2a)

A single national metric with rules on offset trades and a system for securing offsets would be established. However in this case the metric and offsetting would be used to deliver compensation

for residual losses of biodiversity for all major development. The metric would be used (and applied) consistently across all planning decisions. The consistency of application is important to ensure certainty for developers and a level playing field.

Current guidance would continue to apply with regard to residual impacts of developments on biodiversity for development decisions below this threshold, though developer could use offsets on a voluntary basis as the same market infrastructure would need to be developed, and therefore be available.

Major development is defined by DCLG Planning Application Statistics Guidance Notes⁵ (i.e. ten units or more for residential development or for other development with upwards of 1000m² floor space or a one hectare site size)

Uniform approach with offsetting required for developments classed as large scale major developments and larger (Option 2b)

This option would be equivalent in all respects to option 2a. However, offsetting will only apply to “large scale major developments”. As above, the metric would be used (and applied) consistently across all planning decisions above the threshold. Current guidance would continue to apply with regard to residual impacts of developments on biodiversity for development decisions below this threshold. As above, developments which fall below the threshold could use offsets on a voluntary basis as the same market infrastructure would need to be developed, and therefore be available, as in option 2a.

Large scale major development is defined by DCLG Planning Application Statistics Guidance Notes as 200 units or more for residential development or for other development with upwards of 10,000m² floor space or a two hectare site size)

Uniform approach with offsetting required for development which impacts land of higher biodiversity value than that classed as "low distinctiveness and poor quality" in the offset metric (Option 2c)

Whilst it is difficult to define an environmental threshold, this option sets out an exemplar based on the offsetting metric, where land which falls into the category of low distinctiveness and is also of low quality would not require offsets due to the comparatively low (though not zero) biodiversity value per hectare.

As above, developments which fall below the threshold could use offsets on a voluntary basis as the same market infrastructure would need to be developed, and therefore be available, as in option 2a&b.

A partially permissive approach where residual biodiversity losses are assessed under the offsetting metric, developers are free to choose route to deliver compensation. (Option 3)

In this approach, all developments (over a *de minimis* new footprint) are required to apply the offsetting metric to appraise the residual impact of the development on biodiversity, but are not required to use the offset market to provide compensation. The use of offsets would be available on a voluntary basis with consistent rules across the country as in Option 1.

A Community Infrastructure Levy based approach (Option 4)

⁵ DCLG, Planning Applications Statistics Guidance. See “definitions”. P14
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/184968/Planning_Applications_October_To_December_2012_England.pdf

A Community Infrastructure Levy based approach. Under this approach developers would not directly secure offsets. Instead the charging authority, usually the planning authority, would purchase offsets sufficient to compensate for the aggregate impact on biodiversity of developments in their area. The offsets would be funded by the levy collected by the planning authority and so would need to be built into their charging schedule. The funds need not be ring-fenced for biodiversity but could be part of the general levy receipts to be used to fund infrastructure.

Monetised and non-monetised costs and benefits of each option (including administrative burden):

Option 0 “do-nothing”

The do-nothing scenario focuses on what would happen if the current situation remained unchanged i.e. no new offsetting policy were to be introduced. There is also assumed to be no change in the enforcement regime for current planning guidance.

For reference however, a scenario where the biodiversity mitigation hierarchy is fully applied across all sectors is also examined. Here the cost of funding compensation for all residual biodiversity losses (on a unit payment per area basis) is included following the approach taken in the Defra Offsetting Phase III report – described in more detail in Box 1.

Compensation is referred to differently to offsetting in this context. Compensation – in the Defra Phase III study is assumed to simply require a one to one replacement of a hectare of habitat loss for a payment to cover restoration or re-creation of another hectare, irrespective of what type of habitat is damaged and what is provided to replace it. Offsetting through the application of the metric described above takes a more sophisticated approach to measurably demonstrate no net loss of biodiversity, in this way offsetting is more precisely defined (and costed – annex 2 provides more detail here) option.

Costs to business under “do-nothing”

Under this option current levels of compliance with planning will continue. An approximate estimate of current spending on offsite compensation for residual biodiversity loss of £4.8 million per year is used in this impact assessment based on two sources:

- The RSPB report, “financing nature in an age of austerity”⁶ estimated the amount currently spent on ecology and nature conservation through section 106 agreements⁷ (s106) and voluntary contributions, the main vehicles through which offsite compensation can be funded. This report states that of the approximate £5 billion raised by s106 agreements each year, a small amount of funds were used for nature conservation, with the majority of funds being used for affordable housing provision. Of the £490 million allocated to direct payments under s106 in the year studied, £4.8 million was allocated to “Ecology and nature conservation, countryside management and community forests”. Similarly, within in-kind support only £1.9 million out of £144.5 million was allocated to nature conservation. The report highlights that some of this expenditure is related to compensation requirements around European Protected Species and sites which are not covered in this impact assessment, hence expenditure on providing compensation for residual losses of habitat will be lower than these numbers.
- In 2011 Policy Exchange identified £9.3 million of offsite compensation that had already occurred, based on an FOI request to all local authorities (to which they received at 94% response rate). However, as above FOI request did not reference a particular time period and also covered compensation relating to protected sites and species, which are beyond the scope of this assessment.

As both of these estimates seem likely to over-estimate the annual expenditure on compensation for residual habitat loss outside European Protected Areas and species, the

⁶ http://www.rspb.org.uk/Images/Financingnature_tcm9-262166.pdf

⁷ Section 106 agreements relate to monies paid by developers to Local Planning Authorities under the Town and Country Planning Act 1990. Agreements are made to address the costs of the external effects of development. For example, if a developer were to build a large number of new homes, there would be effects on local schools, roads etc, which the Local Authority would have to deal with. In that situation, there might be a Section 106 agreement as part of the granting of planning permission. Section 106 agreements also tend to be used to deliver developer contributions to affordable homes.

lower monetary value of compensation of **£4.8m** per year with no additional in-kind support is used as a tentative estimate of total current of the compensation in the baseline. Although it should be noted, that this focuses on sectors covered by the National Planning Policy Framework, we do not know the baseline level of compensation in other sectors covered by, for example, the Highways Act and the Planning Act. A conservative assumption that compensation tends not to be provided for residual biodiversity losses is therefore taken. However, this is explored in Box 3.

The National Planning Policy Framework states that if “significant harm to biodiversity resulting from a development proposal cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused”. The Defra Offsetting Phase III study highlights that not all residual biodiversity losses from development are compensated for. In this context and based on the same research, Table 1 looks at the alternative scenario where all sectors are fully compensating for residual biodiversity losses. This suggests that the offsite compensation costs would be in the region of £47m to £78m if the mitigation hierarchy were to be fully adhered to and if a zero-loss approach were taken. The derivation of this number is explained in box 1.

Table 1.

Estimated cost of full compensation	By sector (£m p.a.)					Total (£m p.a.)
	Industrial & Commercial	Residential	Transport & Utilities	Community Services	Minerals, Landfill & Defence	
Assuming total footprint of development offset	10	38	15	8	7	78
Assuming proportion of developments are offset according to data from Phase III report	3	29	9	2	4	47

Should compliance with the mitigation hierarchy, and connected to this offsite compensation increase over time (e.g. through more voluntary use of offsetting following the pilot phase) we may expect the baseline to increase towards these levels of compensation over time. Some local authorities such as Warwickshire, Somerset and Gloucestershire are already introducing their own variants on a system of offsetting so we might expect such schemes to expand under the “do-nothing” scenario. This poses a risk as it may allow the introduction of numerous different models of offsetting throughout the country. However, this increase in compensation is not modelled at this stage; the implication is that the additional direct costs to business of offsetting may be over estimated, the avoidance of the cost of dealing with multiple offsetting systems is also excluded.

For simplicity throughout the impact assessment the baseline used for comparison is simply estimated current expenditure on compensation which we have put at £4.8m per year based on the discussion above.

As identified in the Green Paper further evidence on baseline compliance across difference sectors would be useful to inform our future work.

Box 1: Calculating the cost of compliance with current planning guidance

The estimates of the cost of compliance with current planning guidance are based on the Defra Phase III report which looked at the relative costs of applying PPS-9 compared to using offsets building on 46 real life case studies. The first step in the cost calculations was to estimate the costs of offsetting at a national level (details in option 2 below). The costs of achieving PPS9 compliance through conventional compensation at a national level were then estimated using the relationship between offsetting costs and compensation costs per development established in the Phase III report. The Phase III report calculated offsetting costs with zero administrative costs so a comparable national estimate has to be calculated so that the estimated ratio between costs remain consistent.

The upper bound estimates assume the entire footprint of a development site requires offsetting reflecting the fact that the levels of development used to estimate the costs of offsetting are based on land use change data. The lower bound assumes developments are offset according to the residual level of offsite compensation required in the case study evidence from the Phase III report (i.e. after onsite efforts to prevent, mitigate and compensate biodiversity impacts have taken place). The derived ratios of compensation required per hectare of development for different development types are presented in the table below.

In reality the actual level of compensation required will probably be between the two depending on how much of a development (as defined by its planning permission) is captured under definitions of a change in land use, as well as how the significance of residual harm is determined. The Phase III study looked at the entirety of sites covered by planning permission, which may (when looking at residual losses proportionately and applying this to land use change data – used in the offset cost modelling) underestimate the need for compensation. For example, if a site with a large area of natural habitat is subject to planning permission, but only a small part is built on, it is unlikely that the whole site, although covered by one planning application, will change from being statistically undeveloped to developed. Thus looking at the residual loss in proportion to the full size of the site and applying this to land use change data may underestimate offset requirements. Likewise, it seems unlikely that 100% of habitats will be lost in many types of development which would be caught. However, as we don't know where in that range the true cost is likely to be, the whole range is presented for each option.

Residual number of hectares of habitat lost post onsite mitigation and compensation efforts and therefore requiring offsite compensation per hectare of development based on case studies in Defra Offsetting Phase III Report

0.77	For housing developments - based on specific housing case studies in Defra Offsetting Phase III Report
0.30	For Industrial and Commercial developments - based on specific case studies in Defra Offsetting Phase III Report
0.56	<i>For transport and mineral schemes - Defra assumption based on the average of all case studies in the Defra Offsetting Phase III Report given an absence of specific case study evidence.</i>

These ratios are used throughout this impact assessment to give the lower bound estimates of the amount of offsetting required.

Value of biodiversity benefits delivered by compensation in the “do nothing” scenario

The Defra Phase III study provides an average cost per hectare of compensation delivered of £15,800 based a broad review of experience, and particularly data from Brighton and Hove Borough Council. If current spending on compensation is estimated at £4.8 million per year we can impute that around 300 hectares per year are effectively already being offset through compensation (assuming that it delivers the habitat as intended). The biodiversity benefit calculations below are based on this assumed current compensation activity.

An average per hectare value (£29,850) for the benefits that investments in biodiversity deliver to society is used in this impact assessment. Box 2 overleaf describes the source of this value and highlights some of its limitations. However, applying this average value to the quantity of habitat estimated to be delivered by current compensation activity in this baseline scenario we

can estimate that around **£9m** of environmental benefits are achieved annually. However it should also be noted that option 2 estimates that over 6,000 hectares of development require offsetting so it is clear significant amounts of land with positive biodiversity value, and associated benefits to society will continue to be lost uncompensated in this scenario.

Box 2: Benefits to society of investing in biodiversity

The biodiversity benefits in this impact assessment are based on a study by Christie et al* which assessed the public's willingness to pay for ecosystem services delivered by different habitats when they are managed for biodiversity purposes. The study only considered the benefits from seven ecosystem services that people surveyed could readily relate to:

- Wild Food (e.g. blackberries, elderflowers and chestnuts)
- Non-food products (e.g. firewood)
- Climate regulation (Carbon dioxide sequestration)
- Water regulation (Reduced flood risk)
- Sense of place
- Charismatic species (species we know)
- Non-charismatic species (species we don't know, but may have ecological benefits)

It is therefore clear that this provides an under-estimate of the true value as significant services like recreation and pollination are not fully captured.

However, using the values from the study we can provide a lower bound estimate that the benefits of managing an average bundle of habitats will deliver a flow of services worth around £29,850 per hectare over the same management period as the costs. This benefit per hectare value of biodiversity is used throughout the impact assessment. As the value relates to the UK Biodiversity Action Plan which covers hundreds of thousands of hectares of land, assuming a linear per hectare benefit over the range of hectares of offset provision in this impact assessment is not unreasonable.

The impact assessment assumes that the biodiversity benefits of offsetting are entirely additional as the values in this study relate to the incremental value of managing habitat for biodiversity purposes, so the additional benefit of investing in a site which may already have some biodiversity value. With respect to habitat creation as opposed to recreation this may therefore represent an underestimate.

More details on how this value was generated are provided in the Options Stage Impact Assessment for the offsetting pilots which developed this approach**.

* Christie et al. (2011)

<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17272>

** <http://www.archive.defra.gov.uk/environment/natural/documents/newp-ia-offsets-110607.pdf>

Option 1- Fully permissive approach, developers can choose offsetting to deliver compensation

The use of offsetting is one of the options available nationally for developers in delivering their planning requirements. As such we can assume it will occur where it offers developers efficiency gains and with national consistency in metrics and guidance this could provide confidence and assurance for wider uptake. The potential wider benefits of offsetting to developers are discussed below (in terms of avoided planning delay and increases in land coming forward for development) however, they are not included in the best estimate of this option as we are unsure whether these would be revealed in a market where offsetting is voluntary and where demand will be market-led and therefore uncertain. However to illustrate the potential gains if developers can use offset strategically, an illustrative example of the potential gains is added. We also look at the relative costs of delivering the same level of compensation through offsets and through current planning regimes and thus assess the

potential savings as our modelling suggests offsetting has the potential to deliver offsetting more cheaply than the revealed costs of compensation identified in the Defra Phase III study.

Costs to business

The level of compensation is established in the baseline. As noted above, a voluntary system may lead to a greater use of offsetting by businesses to meet existing requirements, if it offers a cheaper and simpler way for them to do so. However, given uncertainties in the evidence at this stage, a conservative assumption has been made that the level of offsetting remains constant i.e. developers are not induced to carry out more compensation as a result of the availability of offsets, this option simply looks at the relative cost of providing the same 300 of hectares of compensation (which costs £4.8m in the baseline) through an offsets market.

The average unit cost of offsetting is derived from the model used in option 2a-c (originally developed for Defra's Options Stage Impact Assessment published in June 2011 which established the offsetting pilots) with the assumptions within this updated and reflected in Box 4⁸.

For each hectare of habitat delivered under offsetting a greater number of hectares of habitat are invested in to allow for some failure of restoration and recreation efforts. To ensure this is accounted for the average cost per guaranteed hectare of habitat is used i.e. offsetting requires investment in more than 300 hectares to ensure 300 hectares of habitat is supplied, where as the compensation model simply assumes success, so only funds 300 hectares of habitat in total. In spite of this, assuming a competitive market in offsets (or a market supplied by the conservation sector with an incentive to keep costs low) the costs of offsetting⁹ are assessed to be marginally lower than the costs of compensation under the current planning system¹⁰ assessed in the baseline at an estimated £4.4m p.a. This seems feasible, as current compensation is likely to be delivered indirectly either by developers themselves or local authorities as opposed to specialists in habitat restoration/creation as we may expect to operate in a professional offsetting market. As such we have suggested developers currently delivering compensation will use offsets and make a small saving of around **£0.4m** per year.

As mentioned in the do-nothing scenario, we found no available estimates of the current level of compensation for residual biodiversity loss in some sectors where development is outside the National Planning Policy Framework, and have assumed therefore that no offsite compensation currently occurs. Box 3 below explores the impact of relaxing this assumption.

Scope for business benefit from a well functioning offset market

The potential business benefits of offsetting are not readily quantified and monetised and hence are a key area we are seeking more information on through this consultation. Defra will also consider whether further research could deliver useful insights into this issue.

As stated above, we do not analyse the potential wider benefits to business in the best estimate of the benefits of offsetting throughout this impact assessment, and particularly in this option given the potentially conservative assumption made that businesses might be unable to undertake privately beneficial offsetting if the market were to be of a small scale. However, if businesses were to identify the chance to secure these benefits (discussed in table 2 below) and offset providers were readily identifiable and willing and able to enter a market at this small scale of investment offsetting markets may expand from this on a voluntary basis, as there are potentially significant gains.

⁸ The ratios established between the costs of offsetting and the costs of compensation under current planning guidance in the Defra Phase III study are used for this calculation as we have developed out assumptions around offsetting costs following the publication of Phase III study. (As explained in box 1 a comparable estimate of the national cost of offsetting was however used to generate the potential costs of full compliance with current guidance referenced in the do nothing scenario).

⁹ calculations under options 2a-c

¹⁰ identified in the Defra Phase III study

Appreciating the scale of these benefits is difficult and no sufficient evidence has yet been available to allow them to be quantified. Table 2 below provides an illustrative account of the order of magnitude we might expect by using comparatively small gains.

Table 2: Potential business benefits from offsetting

Cost to business around the current planning system	Potential value of benefits if offsetting can reduce these costs
Negotiating compensation is slow and uncertain.	<p>The Impact Assessment for the NPPF estimated the annual costs of risk and delay in the planning system as £2.7 billion. For every 1% reduction in average delay across all cases the economy would save £27m a year.</p> <p>It is hard to know how much of this is the result of biodiversity issues, especially as many issues with planning applications may be resolved in parallel. A potential order of magnitude for saving of 0.5% of this total is used in this assessment, which would save developers approximately £14m a year</p> <p>To explore whether this is a plausible scale, a comparison based on baseline compensation expenditure (in option 0) and a uniform market offsetting all residual impacts (established prior to options 2a-c) suggests about 7% of the residual biodiversity losses from development are offset.</p> <p>If we assume the requirement to compensate at present is an indicator of biodiversity impacts sufficient to slow planning processes, offsetting that could accelerate discussions around biodiversity compensation requirements would need to deliver planning decisions in these 7% of cases 7% more quickly to deliver an aggregate saving of 0.5% of overall planning delays. If savings in the planning system were more widespread, obviously reductions in delays for each application would need to be much lower.</p>
Onsite compensation reduces the net developable area, and potentially fails to deliver the biodiversity benefits targeted.	<p>Approximately 2,250 hectares of undeveloped land that is developed for residential purposes each year. If one percent of this which could be freed from use as (potentially poor quality) onsite compensation through offsetting this could save around £40m each year (Valuation Office Agency value of residential land c.£1.8m/ha applied to 22.5 hectares).</p> <p>If we assume 0.5% of the undeveloped land used for residential purposes a year is made available this would free up land worth roughly £20m each year to developers to use as they see fit.</p> <p>A recent study by Drayson et al 2013¹¹ suggests that onsite compensation is currently not delivered to a standard that would secure its biodiversity goals and only 30% of onsite mitigation measures are ever fully implemented, suggesting – if delivered – this could also yield environmental benefits.</p>
The current planning regime means some land is unavailable for development	<p>If 5 average-sized major housing developments were unblocked each year (roughly 0.5% of rejected major housing development planning applications) this could bring forward an additional 230 housing units worth around £55m each year.</p> <p>Assuming the value of bringing forward these developments to developers is midway between the cost of acquiring the land (assumed the value of residential land above) and the value of the houses on the land once sold (land costs relate to the average area of a major development, assuming 30 dwellings per hectare, the average number of houses in a major development is assumed to be 46, the average house price is taken as £235k). This suggests a potential benefit to developers of allowing new development in the region of £23m each year.</p>

¹¹ Drayson and Thompson (2013) "Ecological Mitigation Measures In English Environmental Impact Assessments" Journal Of Environmental Management, April 15, 119, 103-110 <http://www.ncbi.nlm.nih.gov/pubmed/23474334>

It has not currently been possible to base the scale estimates on any evidence. However the analysis above suggests that if 0.5% of the costs of compliance with the planning system and planning application refusals were avoided by introducing offsets, direct benefits to business and the wider economy worth around £57m a year could be generated (NB. this is not assuming any change to the operation of the requirements of national planning policy). As an order of magnitude this suggests at least net benefits to developers of widespread offset use could be plausible. If realised, some or all of this additional value may be passed on as a higher windfall land value uplift for those newly enabled to undertake development.

We are particularly keen to understand how we can quantify these benefits better and whether the orders of magnitude of the benefits identified are likely to be experienced on the ground. Case studies which illustrate where such benefits may have been realised would be welcome alongside aggregate estimates and comments on the methodology. Finally, we wish to strengthen the evidence base around the extent to which these benefits would only arise under a system where offsetting is universally required or whether developers could also be enabled to secure these benefits under a permissive approach.

As stated above, we do analyse in detail the potential wider benefits to business in this option given the small scale of the market. However, to illustrate the potential business benefits of strategic use of offsets by developers, the following scenario provides a high end estimate of the benefits of offsetting in this option.

Table 2 shows that the largest financial benefits from strategic use of offsetting may be derived where they allow the better use of development sites or allow developers to source compensation for biodiversity loss where this was previously impossible.

The land area required to deliver these benefits may be relatively small.

For example, 5 average sized major developments could cover just over 7.5 hectares of land, and 0.5% of the area of greenfield sites expected to be developed each year (on average) is equivalent to 11.25 hectares. Unlocking this land to be used for development through offsetting these specific hectares could cost just £0.3m, whereas it could deliver benefits worth around £43m as identified in table 2. This would deliver limited gains to biodiversity with benefits to society worth just over £0.5m as compared to the £110m estimated value of offsetting all residual biodiversity loss from development.

In this illustrative example, we assume developers are only able to use the offset market to exploit half the potential business benefits outlined above, yielding a potential gain of around £22m per year. Whether such potential gains are readily identifiable and whether the benefits could be secured at the low offset costs presented (which are more likely to be representative of a large competitive market) would also need to be examined¹².

The potential benefits of more efficient planning in table 2 are not included in this illustrative analysis as they seem likely to be more dispersed and accrue to developers as they are able to go about their day to day business with regard to biodiversity commitments more quickly and easily, so are less connected with the more strategic use which may be more likely to be exploited under a permissive system.

These costs and benefits of additional strategic offsetting provide an illustrative high end estimate for a potential in the summary sheet on the IA, which reveals the potential benefit of permissive approaches to business, if it can be made to work.

As such use of offsetting is not prevented in the options 2a-c and option 3 these are also assumed to be the minimum business benefits available in the high end analysis in each of these options. Where offset requirements mean a certain level of participation in the market is guaranteed, a similar portion of the benefits of more efficient planning are also assumed to be

¹² In the absence of evidence on the impact of market size on offset cost however, unit costs are not varied across options.

accrued. Additional benefits associated with bringing development forward and allowing better use of developable land are also accrued, as it is assumed that greater experience of the market allows more benefits to be recognised.

There is a key question with regard to the permissive use of offsets which we wish to improve evidence on through consultation. That is the extent to which offsetting might increase beyond current levels in a market where use is voluntary. We would welcome evidence on the characteristics of a market which would help bring forward investments that are likely to yield benefits for both the environment and the economy, and whether these characteristics can be fulfilled under the government preferred option of a permissive regime. For example, is there a minimum efficient scale below which offset suppliers will come forward? How can a voluntary system best be designed to make participation attractive for developers as a means to meet current requirements? How could potential suppliers be identified and encouraged to join the market as it grows and develops? How easy is it to identify the potential for offsets to help development happen more quickly and efficiently where residual biodiversity impacts are 'offsettable'?

Box 3: Development outside of the National Planning Policy Framework (NPPF)

The impact assessment is predominantly based on information linked to Local Planning Authority decisions. In the options where offsetting is required however it is the intention that it should apply to development from all sectors, i.e. including those covered by the Highways Act and the Planning Act etc.

As indicated in Box 1 we have no case study evidence on current levels of onsite compensation provision in the cases of transport schemes and mineral production. Further to this, as previously highlighted, we also have no evidence of current levels of offsite compensation which we would expect to see if the biodiversity mitigation hierarchy were fully applied.

As such, to remain conservative we have assumed no current offsite compensation, and an average level of onsite compensation to counter residual biodiversity loss for such schemes.

Anecdotally, however this seems likely to overstate the additional costs of offsetting. For example, transport schemes, as often ultimately publicly funded and subject to significant public scrutiny, seem more likely to be fully compliant with guidance. (Network Rail, as an example, has been looking into using biodiversity offsets as part of the major upgrade of the Brighton to Bedford Thameslink line).

As a result, they may be more likely to be in a situation where they are looking at the use of offsets to provide compensation for residual damages more cost effectively than to face new costs of offsetting.

In terms of the options analysis, if the 'transport and utility' sector fully compensated for biodiversity losses (costs estimated in table 1), there could be up to £15m more compensation in the baseline.

This would generate additional savings to this sector in Option 1 which could be up to £1.14m.

It would also reduce the level of offsets required and therefore the costs of offsetting in subsequent options. As roughly 20% of the land developed that will need offsetting is expected to be from this sector, assuming this is proportionately impacted by the thresholds in options 2a-c for example, we could expect the direct costs to developers overall to fall proportionately (i.e. by around 20%) as additional offsetting would no longer be required for these developments.

Whilst the additional cost of offsetting would fall by around 20% in options 2a-c. The business benefits of offsetting would not fall in this analysis, as again they are built around data on housing development, so no benefits to sectors outside the NPPF have been assumed.

Similar analysis could also apply to the minerals sector, if by improving the state of nature on sites post mining they are effectively meeting offset requirements already. Whether such restoration is sufficient would need to be confirmed using the offsetting metric, especially if there is a large gap in time between the impact and the offset.

Evidence on current levels of compensation for residual biodiversity losses from developments taking place outside the NPPF would be welcome to help understand better the net additional impact of the availability of offsets on other sectors.

Costs to other parties

To deliver the annual savings from offsets outlined above there will also be fixed costs in establishing an offsets market; these will fall on business as well as central and local government. These are the one-off costs which include developing a national offsetting strategy, accrediting offset suppliers, developing an offsets registry, understanding the offsetting system etc. These are discussed in more detail in the subsequent sections, but, given the small scale of the offsets market in this option the fixed costs of establishing a market are relatively large. We have assumed the fixed costs are of the same scale as a full national market as we assume that it will be required for offsets to be provided as an option for developers universally, so the market infrastructure and familiarisation with offsets as a tool will be required across the board.

These one-off costs sum to approximately £4.7m (the sources of this estimate are explained in option 2 and detailed in table 4). If there were to be no increased uptake in offsetting, as is currently cautiously assumed in the best case, this would lead to a relatively slow payback period for the investment in the offset market in this option.

Benefits from biodiversity

The biodiversity related benefits of offsetting are assumed to be the same as the baseline because the same level of compensation is delivered. In reality the benefits of compensation in the baseline may be lower compared to this option, as the risk of failure in habitat restoration is not picked up in the estimates of the cost of current compensation, and suppliers are less likely to be specialists in this kind of work. In addition, the offsets metric and guidance provides assurance that the long term biodiversity benefits of an offset will be delivered.

A summary table for this option is provided below.

Option summary table 1:

		£m	
		Costs	One-off costs of establishing national offset market for developers to use
1. Fully permissive approach, developers can choose offsetting to deliver compensation	Benefits	Annual savings to developers currently providing compensation through access to offset market	0.4
	Average annual net benefits to society (excluding one-off costs, net of costs and benefits of baseline compensation and excluding potential benefits to business) - £m/yr		0.4

Option 2a-c: Uniform approaches with offsets required by developments above different thresholds

The assessment of costs and benefits for these option are the basis from which the costs and benefits of all other policy options are estimated and are based on research for Defra by GHK “Costing potential actions to offset the impact of development on biodiversity in England”¹³ which was used to inform the Options Stage Impact Assessment for the offsetting pilots.

As this is the case the costs and benefits are established first for an offsetting system capturing all residual impacts of development on biodiversity with variations on this deriving the costs and benefits summarised for options 2a-c.

Since the publication of the options stage impact assessment a number of assumption made in this work have been updated. These are described in Box 4 below.

¹³ Available with annexes at <https://www.gov.uk/biodiversity-offsetting#biodiversity-offsetting-information-and-research>

Box 4: Updates to the core national model assumptions since the Option Stage Impact Assessment was published in 2011

The costs in the options stage impact assessment were designed to be conservative in order to establish whether a clear case could be made at a societal level for action to redress the cumulative residual losses of biodiversity from development. Whilst a clear net benefit was demonstrated, research since then suggests some of the assumptions made were not necessarily realistic with the implication that a stronger benefit cost case than previously presented can be made. The key changes in assumptions are described below:

The need for land purchase to secure offsets: Land purchase was assumed as this was the more expensive and conservative assumption for offset delivery. However the model which delivered these costs also includes a model where current landowners are simply paid for incomes foregone and management costs for delivering offsets. Based on international experience and our own experience of the Higher Level Stewardship (HLS) agri-environment scheme, it seems this model of paying current land owners to change their management practices may be more realistic. HLS already covers over 1.1m hectares of England showing significant willingness on behalf of landowners to accept payments to manage their land for biodiversity alongside other uses.

Delivery of benefits in perpetuity: Moving to a model without land purchase requires in perpetuity benefits to be tackled. Payments under HLS are time limited, whereas biodiversity offsets would aim to secure benefits indefinitely. The scale of offsetting is much smaller than HLS – up to around 5,000 hectares a year, which suggests supply of land should not be an issue. How much needs to be paid for in perpetuity benefits should be considered though. An evaluation of the Australian Environmental Stewardship Programme showed a 47% price premium needed to be paid to secure agreements with conservation covenants placed over land when compared to 15 year management agreements*. To allow for this, management costs in the GHK developed model are over 100 years. Defra have also added 25% to the management, capital and income foregone costs of providing offsets as a premium to secure offsets in perpetuity. (Note: This remains conservative, as assuming constant unit costs of management and a 3.5% discount rate, the cost of a 100 year agreement + 25% is roughly double the cost of a 15 year agreement + 47%. In spite of this the premium is maintained to ensure a cost of restricting land owners potential future uses of the land is accounted for even if, in theory, this should be covered by other payments over the 100 years as modelled).

The inefficiency of using land purchase to secure conservation benefits is also highlighted by the Law Commission in their recent consultation on conservation covenants which states “*Many public and voluntary sector conservation bodies seek to acquire land that has conservation value and is currently in private ownership. Their aim may be to preserve the land in its present state, to carry out improvement work or to ensure that a part of a site is protected from development. Outright acquisition of the freehold or a long leasehold is sometimes the only workable way of achieving their objectives. However, this can often be an “over-investment”; it may be more cost-effective to negotiate a conservation covenant, allowing the landowner to retain ownership and a degree of use of the land. If ownership is thought of as a “bundle of rights” in land, then it is generally more efficient to transfer to the conservation organisation only those rights that it actually needs for its purposes*”**. This supports the idea that payments for land management are likely to be a better general solution for offsetting although appreciating there may be specific contexts where land purchase is appropriate.

Administration Costs: The GHK study “Costing potential actions to offset the impact of development on biodiversity in England” looked at a range of existing environmental markets, selecting the administrative costs towards the top of the range (40%) as the conservative assumption to add to the costs of offsetting. An examination of the costs of agreeing offsets in Australia*** which is added to the costs of administering, monitoring and enforcing HLS in England**** generates an estimate of 15% total administrative costs which are added to the costs of providing the offset on the ground. This is used as a central estimate in this IA, though additional evidence would be welcomed.

* www.nrm.gov.au/resources/publications/stewardship/pubs/esp-review.doc

** http://lawcommission.justice.gov.uk/docs/cp211_conservation_covenants.pdf

*** table 10.1, p93 <http://archive.defra.gov.uk/evidence/economics/foodfarm/reports/documents/estimatingthewildlife.pdf>

**** <http://www.ehp.qld.gov.au/management/environmental-offsets/offset-payments.html>

Costs to business

A detailed explanation of how the costs of biodiversity offsetting are calculated is included in Annex 2. The basic aim of the model however is to connect development pressures with the type of land expected to be developed (Greenfield, Brownfield, priority habitats outside protected areas) in order to establish an estimate of offset requirements which are then costed on a per hectare basis. The offset requirement is calculated based on a metric developed by Defra, described in the introduction to this impact assessment, which determines the equivalency between residual biodiversity loss and offset requirements to secure no net loss of biodiversity.

The direct costs to business are assumed to be the total cost of supplying the hectares of offsets required to offset all residual losses of biodiversity (i.e. delivering zero biodiversity loss) given the assumptions discussed in table 1 and 2 above. As discussed in Box 1, this cost also includes the administrative costs of sourcing offsets and ensuring their delivery is monitored and enforced. Through paying for offsets the developer can effectively hand over the liability for delivering the compensation required to offset the residual impacts of their development.

At a national level this central case assumes offsets are required for developments on 1,403 hectares of Brownfield sites, 4,596 hectares of non-priority habitat Greenfield sites and 257 hectares of priority habitats on Greenfield sites (6,256ha in total).

This translates to an offset requirement of 5,034 hectares (as the metric allows for smaller areas of more distinctive habitats to replace less distinctive habitats as this still preserves the biodiversity value). However, the metric also takes into account the difficulty of habitat restoration and creation efforts so the costs relate to investments in 7,854 hectares of offsets to allow for this. The benefits on the other hand relate to the hectares of successful restoration and creation efforts that are expected to be delivered (the 5,034 hectares required to deliver no net loss of biodiversity through the metric).

There is a question as to whether a large market could guarantee offset delivery more cheaply (e.g. through pooling risks rather than simply investing in greater quantities of habitat restoration and creation) but this is not examined at this point.

Table 3 below presents the estimated cost of delivering both this offset requirement (the upper bound) and a lower offset requirement based on the Phase III study case study evidence that not all habitat is lost with development. The total additional cost of offsetting in this option (above the baseline) is estimated at £41m to £70m per year. The mid-point in this range provides 4,040 hectares of offsetting as highlighted under the “no threshold” scenario in the Green Paper.

Note, these numbers are similar, but different, to the costs of fully compensating for residual biodiversity losses estimated in table 1. We may expect this, as both deliver similar outcomes (although offsetting is likely to deliver any outcomes more measurably and with more certainty as discussed above). The figures are net of the estimated level of baseline compensation, which in this example is assumed to be shared in proportion to the expected residual impacts on biodiversity from different sectors.

Table 3: Additional costs of offsetting all residual impacts of development by sector

Costs of offsetting under different scenarios		By sector (£m p.a.)					Total (£m p.a.)
		Industrial & Commercial	Residential	Transport & Utilities	Community Services	Minerals, Landfill & Defence	
With offsets secured by payments to current landowners to compensate for income foregone and management actions + an additional 15% administrative costs and an additional 25% increase in the non-admin payment to securing offsets to deliver benefits in perpetuity	Assuming total footprint of development offset	9	34	14	7	6	70
	Assuming proportion of developments are offset according to data from Phase III report	2	26	7	2	3	41

Where the burden of these costs will eventually fall may depend on both the nature of the offset market and the final market for the development. In the options where offsetting is required and a large transparent market exists, it seems likely that developers will be able to pass on the costs of offsetting by paying marginally lower prices for land secured for development. The rationale for this and a wider discussion of this issue is provided in Box 5 below.

Box 5: The incidence of the direct costs of offsetting

In a market where it is known that offsetting is required, offset requirements are readily measurable and the cost of provision can be easily estimated in advance, it is likely that developers will be able to pass this cost on to the land owner.

As developers will know the cost of offsetting they can take it into account in the price they are willing to pay for land for development, effectively reducing the windfall gain received by land owners that comes with permission to develop.

This will not impact on the level of development, provided the cost of offsetting does not change the land owners decision to sell the land, i.e. it will not entirely erode potential planning gains and they are still able to make their desired return. On aggregate this seems unlikely given the significant difference in land values between agricultural land and residential land which remains at roughly £1.8m per hectare. For comparison, the expected cost of offsetting an average hectare of development in this IA is less than £15,000 or less than 1% of the difference in land values reported here.

Whether the developer can pass on any of the direct costs of offsetting to the final purchaser may depend on the competitiveness of the final market for the development. For example, as new build houses have to compete with sales in the current housing stock, it may be difficult for house builders to pass on the costs of offsets to house buyers.

This assessment assumes that the potential benefits of offsetting to developers are not realised – if overall, offsetting can raise the profitability of development, it is equally possible a share of the gains from offsetting will be passed through in terms of a greater windfall to landowners selling land for development. A broader discussion of links to land values is provided in annex 1.

Potential benefits to business

As presented in table 2 in option 1, offsetting offers a range of potential benefits for developers. If we assume the full benefits of offsetting are delivered where a market offsetting all residual biodiversity losses is in place, the potential savings - based on this illustrative values in table 2 - are estimated at £57m per year.

Whilst, due to the uncertainty around the estimates, these values are not included in any of the best estimate values for options, it is clear that for offsetting to deliver both net benefits to business and benefits for the environment, benefits to developers from offsetting need to be realised. Excluding business benefits shows that there is still a net benefit to society of increasing the level of compensation for losses of biodiversity, but it is clear this is delivered at a cost to developers.

One-off costs to business, central and local government

The Ecosystem Market Task Force Report¹⁴ highlighted the need to invest upfront to develop a well functioning offset market with credible offset supply and optimal environmental benefits. The components and estimated costs of the market infrastructure required are summarised in table 4 below.

Note, there are also variable costs of delivering a well functioning market, for example the costs of inspecting and monitoring offset sites. However these are assumed to be covered by the administrative costs associated with offset provision which is included within the cost of offsetting to businesses. As with the other costs of offsetting the incidence of these costs is discussed in Box 5.

¹⁴ <http://www.defra.gov.uk/ecosystem-markets/files/EMTF-2nd-Phase-Research-Final-Report.pdf>

Table 4: Upfront costs of establishing a functioning offset market

Action required	Estimated costs (assume faced in the first year of offsetting only)
<i>Costs currently allocated to local and national government</i>	
Natural England design of national offset strategy	£0.25m (NE estimate - likely to fall on central government)
Establishing an offset registry	Likely to be covered in variable administrative costs. (Natural England HLS administration costs used as a basis for part of the offsets administrative costs include significant IT expenditure for tracking spend and impact, although there are likely to be some small upfront costs the main costs of the registry are expected to be met in running and updating it)
Development of training and capacity building materials	£0.06m (based on the cost of a project implementation officer for the woodland carbon code – likely to fall on central government)
Accrediting suppliers	£0.7m (Based on estimated costs of scheme certification under the woodland carbon code, at £1000 per scheme. Assume 700 suppliers c.2 per local authority - likely to fall on central government)
Establish brokers	Large developers may be able to source offsets directly, whereas smaller developers may rather use brokers – private sector entities are likely to establish themselves to meet this need, the administrative costs assumptions for agreeing offsets should cover this.
Costs to planner of understanding offset system	£1.64m costs to planners Assumptions: 3 working hours taken to understand guidance, 14,400 town planners in local government - wage rate per hour £37.92 (including non-wage staff costs) Source: NPPF Impact Assessment, the NPPF IA estimates were used for consistency with the potential benefits of offsetting based on the same assessment.
<i>Costs falling directly on business</i>	
Costs to developers of understanding offset system	£2.04m costs to developers Assumptions: 3 working hours taken to understand guidance, 13,000 developers - wage rate per hour £52.21 (including non-wage staff costs). Source: NPPF Impact Assessment, as above, the NPPF IA estimates were used for consistency with the potential benefits of offsetting based on the same assessment.
Total	£4.68m

In the current analysis we assume developers face only the cost of understanding the offsetting system themselves (£2.04m). The other costs above are assumed to be borne by those parts of government delivering them, though this is not necessarily the case, as costs could be recovered if required, for example.

Benefits from biodiversity

Depending on the level of offsets required for each hectare of land developed, approximately between 3,000 and 5,000 hectares of offsets will be created each year. The lower bound

monetary value of the increase in flow of benefits this secures to society as a whole, as a result in the increased level of habitat provision above the baseline, is between £82m and £141m.

As discussed above this does not cover the full range of benefits of the habitats concerned, and also makes no assumption about the placement of offsets. Assuming offsets are delivered as part of an overall nature conservation strategy as promoted in the Lawton Review “Making Space for Nature”¹⁵ it is feasible that, if well coordinated, offsets could lead to benefits for biodiversity (and people) that are greater than the sum of the parts, by for example, joining up fragmented parcels or providing corridors between habitats to allow biodiversity to move in the wider countryside and improve ecological resilience.

Benefits to business and biodiversity from new sustainable growth opportunities in the rural economy

Spending on offsets is not necessarily lost to the domestic economy and could stimulate activity elsewhere. An offsetting system, particularly if it meets Government’s requirement of reducing costs to development, could reduce the costs of the planning system for developers whilst increasing payments (primarily to rural areas) for further provision of biodiversity services. This may bring some consequential benefits.

Potential benefits to biodiversity arise from the creation of a market for biodiversity offsetting as the increase in investment in the sector will potentially help to deliver economies of scale, as well as bring in new entrants who may drive innovation. Both of which could reduce the costs of biodiversity conservation, helping all sectors to deliver biodiversity outcomes more efficiently.

A summary table of the costs and benefits in this central scenario are presented below:

¹⁵ Lawton, Making Space for Nature. <http://archive.defra.gov.uk/environment/biodiversity/documents/201009space-for-nature.pdf>

Summary table: Uniform offsetting in a no biodiversity loss scenario (this is not a specific option in the IA, but provides the basis for the calculations of options 2a-c, 3 and 4.

Cost and benefits of offsetting all residual impacts of biodiversity on business	Costs	£m in first year of operation		Net annual costs (£m per year)		
		Estimated one-off costs of establishing offset market infrastructure and promoting understanding of regime		Estimated direct cost of delivering no net loss of biodiversity through use of offsets for developments covered (replacing compensation in baseline where appropriate)		
				Low	High	
		4.7		41	70	
	Benefits	<i>Hectares</i>		Net annual benefits of offsetting over and above those provided by baseline compensation (£m per year)		
		<i>Habitat established through offset market</i>		Partial ecosystem service value of habitat created		
		<i>Low</i>	<i>High</i>	Low	High	
		3,046	5,034	82	141	
		<i>Additional potential savings</i>	<i>0.5% efficiency gain in planning for housing developers</i>		14	
			<i>Additional development brought forward; 0.5% of land for housing on undeveloped land freed from ineffective onsite compensation</i>		21	
<i>Additional development brought forward; value of land for 5 new major housing developments brought forward</i>			23			

Option 2a: Uniform approach with offsetting required for development classed as small scale major developments and larger

The assessment above assumes all residual impacts on biodiversity are offset, however current planning guidance only seeks compensation for significant residual biodiversity loss. Local authority planning officers tell us the decision to request developer contributions to compensate for residual biodiversity loss often hinges on how the term “significant residual impact” is interpreted.

It is possible to apply a threshold whereby some developments are not required to offset, thus determining by proxy a significance threshold. A simple approach might be to look at the size of development which is taken here. This may not be perfect as damage to biodiversity is not necessarily correlated with the size of development, as it is likely to be spatially specific – an environmental threshold though difficult to define is examined in option 2c.

Costs to business

A size threshold may be desirable from an economic perspective as it can help to limit the impact of an offsetting system on small businesses, or to limit exposure to the costs of agreeing offsets where impacts on biodiversity are small. This is mirrored in international experience

where tiered systems have sometimes been used with for example small developments simply contributing to an offset fund rather than procuring their own offsets.

To examine the potential impact of a threshold, using readily available data a theoretical threshold which only applies offsets to major development (as defined previously) is examined here.

Using an average size of major and minor developments¹⁶ we can estimate 71% of the land-take of new developments would result from major developments. Therefore the amount of land requiring offsets and the offset requirement that results is reduced proportionately.

It is clear however that this threshold will disproportionately affect the number of developments that are affected by the offsetting regime as, for example, (for housing developments) around 33,300 minor developments were approved in 2012 against 4,300 major developments. By including a threshold of major development then, around 29% of the land developed will be exempt, but around 90% of the total number of development projects are removed from the requirement to offset.

Looking in more detail at the administrative costs assumed in the model, it is clear that some aspects of these costs relate directly to the number of hectares of offsets (e.g. registration, inspection, monitoring etc.) whereas others are more fixed costs associated with engagement with the offsetting market irrespective of whether an offset needs to be purchased (e.g. assessing biodiversity impacts of development, assessing offset requirements etc).

As such these two aspects of administrative costs are treated differently both within, and between, options.

Of the 15% administration costs added to the costs of delivering offsets on the ground, 12 percentage points of the costs identified were clearly related to the scale of the habitat restoration/creation taking place so were varied with the number of hectares of offsetting.

The remaining 3 percentage points of the costs of administering offsets however related to more fixed aspects interacting with the offsetting system and hence were applied as a recurring fixed annual cost applied and varied with the expected number of project captured by any scheme as opposed the number of hectares of offset that might be delivered. This assumption applies to options 2a-c, 3 and 4.

The additional annual direct costs to business in this option are estimated in the range £26m to £47m. The mid-point of this range delivers 2,870 hectares of offsets as identified in the Green Paper. We expect the costs of offsetting to be passed through to landowners if they are not absorbed by the developer given the potential benefits accrued elsewhere. These costs are unlikely to be borne by micro-businesses as the threshold means only major developments are covered. The impact on micro-business of all options is discussed in the final summary.

It is assumed that the unit costs of offsets do not increase as the scale of the market is still reasonably large.

Potential benefits to business

It is assumed that the benefits to business of offsetting will mainly fall to developers working with major developments so the illustrative potential benefits are not altered for this option in the scenario where they are realised. The best estimate and lower bound benefits in this option assume no business benefits arise.

¹⁶ Defra estimate extrapolated from DCLG planning application statistics and internal assumptions that the average minor development is equivalent to 2.4 dwellings, whereas the average major development is equivalent to 46 dwellings.

Benefits to business and biodiversity from new sustainable growth opportunities in the rural economy

The benefits to the new offsetting sector will be as above, though reduced with the scale of the market.

Benefits from biodiversity

The benefits provided by biodiversity are expected to vary proportionately with the number of hectares of new habitat created. Therefore, as the calculations above suggest 71% of the amount of offsetting calculated in the scenario which offsets all residual biodiversity impact of development will be required, it is expected that 71% of the benefits from biodiversity in the same scenario will be received. Above and beyond the benefits of compensation in the baseline this is expected to provide benefits valued in the range £56m to £98m per year.

One-off costs to business, central and local government

It is assumed that the fixed costs of establishing the market will be the same as established in the scenario where all residual impacts of development are offset as the market still has national coverage. Some smaller developers may no longer need to be familiar with offsetting, so the cost to business here could be reduced, but as they may still wish to use offsets, for simplicity this factor is left unchanged for now.

A summary table of the costs and benefits of this option is provided below.

Option summary table 2a

2.a. Uniform approach with offsetting required for development classed as small scale major developments and larger	Costs	£m in first year of operation		Net annual costs (£m per year)			
		Estimated one-off costs of establishing offset market infrastructure and promoting understanding of regime		Estimated direct cost of delivering no net loss of biodiversity through use of offsets for developments covered (replacing compensation in baseline where appropriate)			
		4.7		Low	High	26	47
	Benefits	<i>hectares</i>		Net annual benefits of offsetting over and above those provided by baseline compensation (£m per year)			
		<i>Habitat established through offset market</i>		Partial ecosystem service value of habitat created			
		<i>Low</i>	<i>High</i>	Low	High		
		2,164	3,577	56	98		
		Additional potential savings to developers	0.5% efficiency gain in planning for housing developers		14		
			Additional development brought forward; 0.5% of land for housing on undeveloped land freed from ineffective onsite compensation		21		
	Additional development brought forward; value of land for 5 new major housing developments brought forward		23				
Average annual net benefits to society (excluding one-off costs, net of costs and benefits of baseline compensation where appropriate, assuming potential benefits to developers are not realised) - £m/yr				40			

Option 2b: Uniform approach with offsetting required for developments classed as large scale major developments and larger

Costs to business

As above a threshold which only requires offsetting for major developments would reduce the amount of offsetting required in proportion to the amount of land taken for development (assuming residual impacts on biodiversity are evenly spread).

Estimates of the proportion of large scale major development within the overall category of major development vary, both over time and how they are measured. For example, the most recent data DCLG hold from Glenigan¹⁷ — estimated that in 2011/12, of all major housing developments where planning applications were submitted, 8% of the housing units were in development above the threshold for large scale major developments (the statistical definition of a “large” residential development is 200 units). A similar estimate (also from Glenigan) based on planning approvals for the calendar year 2012, suggested roughly 41% of housing units in approved development were in large scale major development. To allow for this variation, and

¹⁷ Glenigan is private firm that supplies the Department for Communities and Local Government with information on the status of planning applications for internal use. Information from Glenigan is commercially available for a fee, details at <https://www.glenigan.com>.

the expectation that patterns of development may change with economic conditions, we use both estimates to provide a range of the potential impact of this option.

Assuming a constant footprint per unit of housing, and a similar pattern of development between the residential and other sectors, this suggests a threshold of large scale major development, would reduce the amount of land developed where offsets are required by 92% and 59% relative to option 2a dependent on the range identified above. As major development is expected to capture 71% of the land take of development (estimated in option 2a), a threshold for large scale major development, capturing 8% to 41% of this, would pick up 6% to 29% of the total land take of development.

The Glenigan data set also reported the number of projects alongside the number of units covered by projects. As large scale major developments are by nature disproportionately large, the projects capturing 8% and 41% of the units above were covered by just 4% and 7% of major projects respectively. As major projects cover around 10% of minor and major projects, it is clear then that large scale major projects are likely to represent less than 1% of these projects. A large scale major development threshold could therefore remove over 99% of planning applications from any offsetting system.

Assuming the unit costs of offsetting per hectare do not change, the reduction in market size reduces the annual costs of offsetting proportionately (excluding the impact of administrative costs that vary with the number of projects rather than the size) which gives a range of costs of offsetting with a threshold of large scale major development of £1m to £21m. The wide range reflects the both the range in offset requirements as in 2a and the range in the potential share of large scale major development as discussed above. The average cost across all potential combinations, before additional voluntary offsetting, is around £8.5m per year, which covers 710 hectares of offsetting as identified in the Green Paper.

Particularly at the lower end of this scale, an offset market to serve this sector, may struggle to be as competitive as the markets in option 2a. Therefore if such an option were preferred we may need to look at the minimum efficient scale of a market to deliver offsets competitively. How likely or not this is, is addressed to an extent in Box 6 overleaf which suggests that suppliers may not be as readily able to reap economies of scale at the market size in this option. Even if they do so, at the larger end of the potential market size, there would be relatively few suppliers in the market; the potential impact of this is not assessed at this stage.

As this option only covers large scale major developers it is likely these costs will fall on large businesses, it is also likely that they will be able to pass these costs on to the land owners supplying land for development.

When comparing this option to the baseline it is assumed that some compensation will still be demanded from non-large scale major developments where they are judged to have significant impacts on biodiversity. As a result, corresponding to the share of large scale major development in the category of major development as a whole we assume 8% to 41% of the baseline is replaced by offsetting. The remaining 92% / 59% correspondingly is left in, though it is recognised if the offset market is successful then smaller developers may wish to use it to deliver compensation more cheaply. Similarly, such developers also retain the freedom to make strategic investments in offsets as in option 1. To mirror this potential, in the high end scenario, a proportion of such opportunities (assuming they are evenly dispersed across developments, so 59% to 92% of opportunities remain) are also included as described in the benefits below. For comparability with the potential business benefits of other options the costs and benefits of this strategic offsets use is included in Option summary table 2b, though it is not included in the best estimate values in the summary table. The impact on the figures presented is small with the exception of business benefits estimates of the direct cost to business and benefits to society of strategic offsetting are less than £0.5m/yr.

Box 6: The benefits of a large competitive market

A large competitive market for offsets will help keep the costs of offsetting down, drive innovation in the provision of biodiversity benefits, and increase the predictability of the costs of securing offsets.

It is difficult to assess the minimum efficient scale of a market, however evidence in a European Commission research report on 'The use of market-based instruments for biodiversity protection: the case of habitat banking'* suggests there are significant economies of scale in habitat provision. Citing evidence from the RSPB it suggested significant economies of scale in habitat provision above 100 hectares, with management costs per hectare roughly halved as sites increased in size from 100 hectares to 250 hectares in size.

A number of factors would affect the scale of the market. A uniform scheme, by requiring participation, would ensure provision of around 2000+ hectares per year and could potentially support such large scale sites. A voluntary market option instead needs to be designed to be attractive to participants to drive uptake. If this failed, current levels of compensation of around 300 hectares of offsetting a year would be delivered and larger scale offsets sites would be unlikely to materialise. The scale of the market could be limited by rules that reduced its liquidity. If offsets were required to be provided locally or to compensate similar habitat classes, the market would be fragmented, with lower potential to drive down costs.

It should be noted that the management costs of offsetting in the Impact Assessment are based on the costs of Higher Level Stewardship agri-environment schemes in England, the average scale of which was just over 100 hectares in 2010/11 and just under 100 hectares in 2011/12**, suggesting further potential for costs of offsetting to fall over time if a large market does develop.

* p72, http://ec.europa.eu/environment/enveco/pdf/eftec_habitat_technical_report.pdf

Potential benefits to business

In option 2a the potential business benefits were ascribed to major development. It seems likely that if only large scale major developments are included in a market, some of these benefits of the offsetting market, previously accruing to small scale major developed will be missed.

Assuming the potential for business to enjoy the potential benefits of the offset market identified above, are correlated with the area of land their developments cover, and using the calculation above which suggests large scale major development account for 8% to 41% of the land take by all major development, we can suggest that large scale major developers in this option will accrue 8% to 41% of the business benefits in option 2a. In addition to this however, in the 59% to 92% of major developments where offsetting is not required, it is assumed developers – proportionately, take up the potential strategic benefits of offsetting illustrated in option 1, thus a small amount of incremental offsetting above that which is required is added as discussed above. This offsetting is included in the option summary table below for comparability, but excluded from the calculation of the lower bound and best estimates where the business benefits are excluded.

For the high end estimate of the benefits for this option the illustrative potential benefits to business are presented in the order of £24m - £37m per year.

Benefits to business and biodiversity from new sustainable growth opportunities in the rural economy

The benefits to the new offsetting sector will be as above, though reduced with the scale of the market.

One-off costs to business, central and local government

We assume that the same fixed costs of establishing the market will be required as in option 2a as the market still has national coverage. Some smaller developers may no longer need to be familiar with offsetting, so the estimated costs to business could be reduced. However, as they may still wish to use offsets, for simplicity this cost is left unchanged for now, especially as small scale major developers may see some of the wider benefits of using offsets if these are revealed in the market developed by large scale major developers.

Benefits from biodiversity

The benefits provided by biodiversity are expected to vary proportionately with the number of hectares of new habitat created. Therefore, as the calculations above suggest 6% to 29% of the amount of offsetting calculated in the scenario where all residual biodiversity loss is compensated will be required, it is expected that 6% to 29% of the benefits from biodiversity in the same scenario will be generated. The benefits of offsets secured for strategic business purposes are also added as detailed above.

Above and beyond the benefits of compensation in the baseline this is expected to provide benefits valued in the range of £5m to £40m. A summary table of the costs and benefits of this option is provided below.

Option summary table 2b

2.b. Uniform approach with offsetting required for development classed as large scale major developments and larger	Costs	£m in first year of operation		Net annual costs (£m per year)			
		Estimated one-off costs of establishing offset market infrastructure and promoting understanding of regime		Estimated direct cost of delivering no net loss of biodiversity through use of offsets for developments covered (replacing compensation in baseline where appropriate)			
		4.7		Low	High	1	21
	Benefits	<i>hectares</i>		Net annual benefits of offsetting over and above those provided by baseline compensation (£m per year)			
		<i>Habitat established through offset market</i>		Partial ecosystem service value of habitat created			
		<i>Low</i>	<i>High</i>	Low	High	5	41
		<i>195</i>	<i>1,488</i>				
		<i>Additional potential savings to developers</i>	<i>0.5% efficiency gain in planning for housing developers</i>		1 to 6		
			<i>Additional development brought forward; 0.5% of land for housing on undeveloped land freed from ineffective onsite compensation</i>		11 to 15		
	<i>Additional development brought forward; value of land for 5 new major housing developments brought forward</i>		12 to 16				
	Average annual net benefits to society (excluding one-off costs, net of costs and benefits of baseline compensation where appropriate, assuming potential benefits to developers are not realised) - £m/yr				10		

Option 2c: Uniform approach with offsetting required for development which impacts land of higher biodiversity value than that classed as "low distinctiveness and poor quality" in the offset metric

This is an illustrative example to show the potential impact of an environmental threshold. Whilst this is difficult to model without more precise information on the types of land subject to development pressure, we know the amount of currently undeveloped land which is forecast to be developed and that is not priority habitat. In the offsetting metric we assume this is not defined as "highly distinctive". This leaves 6 alternative brackets for habitat to fall into: low or medium distinctiveness in high, medium or low quality. If we assume undeveloped land subject to development is spread evenly across these remaining categories, this would give roughly 600 hectares of land that no longer requires offsetting (about 12% of the non-priority habitat currently undeveloped land that is developed in option 2). Given its relatively low biodiversity value removing 600 hectares of non-priority Greenfield habitat from the offsetting model reduces the offset requirement by approximately 7%.

Costs to business

Reducing the direct costs to business which vary with the number of hectares of offsets in line with the 7% identified above (relative to the scenario where all residual impacts of development on biodiversity are offset) gives annual direct costs to business in the range £37m to £64m. The full costs of assessing offset requirements etc (i.e. the 3 percentage points of the administrative costs that varied with the number of projects rather than the number of hectares of offsets identified in option 2a) remain at the full scale of the scenario where all residual impact of development of biodiversity are offset as all developments will still need to assess the condition and distinctiveness of the land being developed. As above it is assumed that if required, the developer could pass these costs through to landowners supplying land for development.

Potential benefits to business

It is assumed that potential benefits to businesses from offsetting would not significantly change under this option compared to the scenario where all residual impacts of development on biodiversity are offset. This is because an environmental threshold would only remove low value biodiversity habitat from an offsetting scheme, so the contentious cases where business can benefit from more efficient processes and better supply of compensation would remain in scope. As such the illustrative potential business benefits remain in the region of £57m.

Benefits to business and biodiversity from new sustainable growth opportunities in the rural economy

The benefits to the new offsetting sector will be similar to those identified in the scenario where all residual impacts of development on biodiversity are offset, though slightly reduced with the scale of the market.

One-off costs to business, central and local government

It is assumed that the same fixed costs of establishing the market will be required as in option 2a as the market still has national coverage. As all developments will still need to assess biodiversity value of the land that the development is intended to be built on. It is assumed a universal market with general understanding of the principles of offsetting will still be required, so the costs associated with this are maintained.

Benefits from biodiversity

Reducing the benefits we derive from investments in biodiversity in proportion to the reduction in offsetting as discussed above gives a minimal estimate of the value to society of the remaining level of habitat restoration/creation of between £85m - £140m each year.

A summary table of the costs and benefits of this option is provided below.

Option summary table 2c

2.c. Uniform approach with offsetting required for development which impacts land of higher biodiversity value than that classed as "low distinctiveness and poor quality" in the offset metric	Costs	£m in first year of operation		Net annual costs (£m per year)			
		Estimated one-off costs of establishing offset market infrastructure and promoting understanding of regime		Estimated direct cost of delivering no net loss of biodiversity through use of offsets for developments covered (replacing compensation in baseline where appropriate)			
		4.7		Low	High	37	64
	Benefits	<i>hectares</i>		Net annual benefits of offsetting over and above those provided by baseline compensation (£m per year)			
		<i>Habitat established through offset market</i>		Partial ecosystem service value of habitat created			
		<i>Low</i>	<i>High</i>	Low	High		
		2,839	4,692	76	131		
		Additional potential savings to developers	0.5% efficiency gain in planning for housing developers		14		
			Additional development brought forward; 0.5% of land for housing on undeveloped land freed from ineffective onsite compensation		21		
			Additional development brought forward; value of land for 5 new major housing developments brought forward		23		
Average annual net benefits to society (excluding one-off costs, net of costs and benefits of baseline compensation where appropriate, assuming potential benefits to developers are not realised) - £m/yr				53			

Option 3: A partially permissive approach where residual biodiversity losses are assessed under the offsetting metric, developers are free to choose the route to deliver compensation.

Costs to business

In this approach, all developments (over a *de minimis* new footprint) are required to apply the offsetting metric to appraise the residual impact of the development on biodiversity, but are not required to use the offset market to provide compensation.

As highlighted in option 1 it is difficult to estimate how much having the market infrastructure (and in this case requiring use of the metric) may stimulate the market. It could help developers identify whether or not offsetting is likely to achieve the potential savings identified in option 1 by providing offsets to help them through biodiversity aspects of the planning system. If this were the case, as in option 1, at least the business benefits highlighted here would be secured. However, if this is not the case i.e. the potential for offsets to deliver business benefits is harder to identify than it might at first seem, likewise, understanding the residual impacts of development on biodiversity may encourage local authorities to request more compensation.

As an illustrative example, in this case, for a central case we have assumed a market covering 10% of the market identified in the scenario where all residual losses of biodiversity are offset is established – either through voluntary business use of offsets or through planning authorities demanding greater effort. As a result the cost of securing offsets in the scenario where all residual biodiversity impacts are offset are adjusted proportionately.

This is carried out with the exception of the costs of assessing the residual impact of the development on biodiversity still apply to all developments, and hence are included at the level of full coverage as in option 2c.

As with option 2b above, developers not involved in any market that evolves (for example if market development is driven by planning authorities) also retain the freedom to make strategic investments in offsets as in option 1. To mirror this potential, in the high end scenario, a proportion of such opportunities (assuming they are evenly dispersed across developments, so 90% of opportunities remain) are also included as described in the benefits below. For comparability with the potential business benefits of other options the costs and benefits of this strategic offsets use is included in Option summary table 3, though it is not included in the best estimate values in the summary table. The impact on the figures presented is small with the exception of business benefits estimates of the direct cost to business and benefits to society of strategic offsetting are less than £0.5m/yr.

This gives a range of annual costs for offsetting above and beyond that in the baseline of £4m to £7m per year to those providing additional offsets. It also imposes costs of around £2m per year which are attributed to adding the use of the simple offsetting metric into environmental impact assessment. This does not seem unreasonable, as the Warwickshire pilot suggests applying the metric takes an additional 20 minutes per case, so it is unlikely to create a large additional burden.

A note of caution should apply to the offsetting costs as with scenario 2b, as the market gets relatively small it may be difficult for offset suppliers to secure economies of scale, or there may be limits to competition, if the market were not attractive enough to also lead to additional voluntary participation.

Potential benefits to business

As in the illustrative scenario in option 1, strategic use of offsets would be available, so all the £22m of benefits, if accrued in the purely permissive option, should also be accrued here. Further to this, a share of the potential benefits of more efficient planning decisions around residual biodiversity loss would be accrued where offsetting was taken up. As with options 2a-c experience of the market may help developers identify potential for wider strategic use of offsets, therefore for the 10% of the market where offsetting is taken up, 10% of the full illustrative benefits of offsetting are assessed to accrue to developers in this option. For the remaining 90%, the same proportion of the illustrative business benefits from option 1 are added assuming that strategic offset use remains at the same level, though even applying the metric may help identify further strategic use benefits, so this may represent an underestimate.

For the purposes of the high end estimate of the benefits of this option the potential benefits to business are estimated at £25m per year. The costs and benefits of acquiring the offsets required to deliver this are included in Option summary table 3 below for comparison with other options, but they are excluded from the calculation of the lower bound and best estimate of the cost and benefits of the option in the summary sheet. As highlighted above the impact of this on the reported figures is small.

Benefits to business and biodiversity from new sustainable growth opportunities in the rural economy

The benefits to the new offsetting sector will be as above, though reduced with the scale of the market.

One-off costs to business, central and local government

It is assumed that the fixed costs of establishing a market will be the same as those established in the scenario where all residual impacts of development are offset as the potential market still has national coverage. All planners will need to be familiar with the offsetting regime and all developers will have the option to use offsets. Some developers may choose not to familiarise themselves with offsetting, so the cost to business here could be reduced, but as the option remains open and they still need to understand the metric, for simplicity this factor is left unchanged for now.

Benefits from biodiversity

Reducing the benefits we derive from investments in biodiversity in proportion to the reduction in offsetting, and adding the benefits of offsets secured for strategic business purposes, as discussed above gives a minimal estimate of the value to society of the remaining level of habitat restoration/creation of between £9m - £15m each year.

A summary table of the costs and benefits of this option is provided below.

Option summary table 3

<p>3. Partially permissive approach – use of the offsetting metric is required to assess biodiversity impact, the use of offset to provide compensation is voluntary</p>	<p>Costs</p>	£m in first year of operation		Gross annual costs (£m per year)				
		<p>Estimated one-off costs of establishing offset market infrastructure and promoting understanding of regime</p>		Estimated direct cost of delivering no net loss of biodiversity through use of offsets for developments covered (replacing compensation in baseline where appropriate)				
				Low	High			
				4	7			
				Administrative costs of adding metric to impact assessments				
	4.7		2					
	<p>Benefits</p>	hectares		Gross annual benefits (£m per year)				
		Habitat established through offset market		Partial ecosystem service value of habitat created				
		Low	High	Low	High			
		322	520	9	15			
		<p>Additional potential savings to developers</p>	0.5% efficiency gain in planning for housing developers		1			
			Potential local share of additional development brought forward; 0.5% of land for housing on undeveloped land freed from ineffective onsite compensation		11			
Relative share of additional development brought forward if offsetting were widespread; value of land for 5 new major housing developments brought forward			13					
<p>Average annual net benefits to society (excluding one-off costs, net of costs and benefits of baseline compensation where appropriate, assuming potential benefits to developers are not realised) - £m/yr</p>				<p>4</p>				

Option 4: A Community Infrastructure Levy (CIL) based approach.

Under this option developers do not directly secure offsets. Instead the charging authority, usually the planning authority, would purchase offsets sufficient to compensate for the aggregate impact on biodiversity of developments in their area. The offsets would be funded by the levy collected by the planning authority and so would need to be built into their charging schedule. The funds need not be ring-fenced for biodiversity but could be part of the general levy receipts to be used to fund infrastructure.

Effectively biodiversity could be treated as ‘green infrastructure’ and integrated into the community infrastructure levy (CIL).

Costs to business

As above, it is difficult to forecast whether or not additional compensation for residual biodiversity losses will be generated through a CIL based model. If it was simply used as a mechanism to deliver current levels of compensation, the aggregate analysis of annual costs and benefits may look similar to option 1. The distribution of the costs may vary, as the levy could spread the costs of offsetting biodiversity losses across more developers. Developers would also need to be less familiar with the offsetting regime, but the potential benefits of this are picked up in the one off costs to business below.

For comparison with the option above however, and taking the demand to pilot biodiversity offsetting as an indicator of interest in securing additional compensation for biodiversity losses, like option 3, this option is appraised for illustrative purposes, a scenario assuming planning authorities elect to secure offsets equivalent to 10% of the potential market identified if all residual losses of biodiversity are offset. The assumption here might be that not all planning authorities decide to use CIL for biodiversity infrastructure in this way and perhaps that in some places, securing compensation for all residual biodiversity loss is not a priority, so some losses are accepted. However, we do not have evidence to support this, so as with option 3 this is purely illustrative.

As discussed above the cost of securing offsets in this example, though coordinated by the planning authority is borne by developers – passed on through the CIL. As in option 3, as the same amount of offset provision is assumed, the additional cost of offsetting to business is assumed to be in the range of £4m to £7m. This assumes that planning authorities face the same administrative costs of establishing offsets, it is feasible however, that through pooling demand they could reduce these costs.

There is also a question of the costs of assessing the residual impact of all development on biodiversity using the offsetting metric – the cost of this is estimated in option 3 above at £2m. Whether or not a planning authority could make an aggregate assessment of the level of offsetting they require to meet their aims with respect to maintaining the local biodiversity infrastructure more cheaply than this is not resolved in this assessment. It is also unclear whether or not the costs of this assessment could be passed on to developers as part of the CIL.

In this IA we assume the costs of assessing the residual impact of development on biodiversity are the same as in option 3, however, in this case they are absorbed by planning authorities rather than businesses.

The same note of caution with regard to market size for offset supply would apply as in option 3, however planning authorities may be able to better plan potential offset locations and identify potential offset suppliers outside of a pure market framework if required.

Potential benefits to business

It seems plausible that a CIL based approach could deliver at least some of the potential benefits to developers that may arise with offsetting, as through pre-planning compensation, planning authorities may be able to reduce demands for onsite compensation, remove delays associated with negotiating compensation, and approve development where they know compensation has already been accounted for. The benefits may not be as large as in a market based approach, as developers will not face as clear a price signal and have the flexibility to use offsets for strategic business purposes. However, if for simplicity we assume the benefits to business arise (if they are realised in this model) in proportion to offset provision, as above, perhaps assuming only 10% of local authorities embed biodiversity infrastructure into CIL. The potential high end benefits would be as presented in option 3, at around £6m per year (after rounding when the individual components are summed).

Benefits to business and biodiversity from new sustainable growth opportunities in the rural economy

The benefits to the new offsetting sector will be as above, though reduced with the scale of the market.

One-off costs to business, central and local government

In all previous options the one-off costs of establishing a market have included an estimate of the costs to business of familiarising themselves with the offset regime. In this option this is not required, as planning authorities take on the role of estimating residual impact of development on biodiversity, and securing offsets to compensate for this in line with their local strategies. As such, the one-off costs of establishing the market fall by roughly £2m to £2.6m. The costs that remain are borne by central and local government and allow for the costs of establishing the market infrastructure and planning authority familiarisation with the new regime. Some of these cost could be scaled back where planning authorities decide not to use CIL for this purpose, but to allow for the need to understand the offsets, regardless of whether they are used, the costs are left in for now.

Benefits from biodiversity

As above, reducing the benefits we derive from investments in biodiversity in proportion to the reduction in offsetting as discussed above gives a minimal estimate of the value to society of the remaining level of habitat restoration/creation of between £8m - £14m each year. This assumes that planning authorities decide to spend on offsets as planned, as funds from the levy are not ring-fenced, actual delivery of offsets could be higher or lower depending on priorities. For this IA, we assume offsets will be purchased in accordance to the cost added to the levy, so the offsets delivering these benefits are assumed to be secured.

A summary table for this option is provided below:

Option summary table 4

4. A Community Infrastructure Levy (CIL) based approach	Costs	£m in first year of operation		Gross annual costs (£m per year)		
		Estimated one-off costs of establishing offset market infrastructure and promoting understanding of regime		Estimated direct cost of delivering no net loss of biodiversity through use of offsets for developments covered (replacing compensation in baseline where appropriate)		
				Low	High	
				4	7	
				Administrative costs of adding metric to impact assessments		
	2.6		2			
	Benefits	hectares		Gross annual benefits (£m per year)		
		Habitat established through offset market		Partial ecosystem service value of habitat created		
		Low	High	Low	High	
		305	503	8	14	
		Additional potential savings to developers	0.5% efficiency gain in planning for housing developers		1	
			Potential local share of additional development brought forward; 0.5% of land for housing on undeveloped land freed from ineffective onsite compensation		2	
			Relative share of additional development brought forward if offsetting were widespread; value of land for 5 new major housing developments brought forward		2	
	Average annual net benefits to society (excluding one-off costs, net of costs and benefits of baseline compensation where appropriate, assuming potential benefits to developers are not realised) - £m/yr				4	

Overall summary

The assessment of the options presented above considers the estimated annual costs and benefits of an offsetting market and the one off costs of establishing a market where appropriate. A comparison of the options, with discounted costs over 10 years, is provided in the summary sheets.

The analysis is limited by a number of factors, most particularly:

- The difficulty of providing precise estimates of the potential benefits to business of offsetting;
- The potential limits of universally using estimated costs of offsetting based on a reasonably competitive and liquid market especially in contexts where the market is limited in scale or scope. We need to understand better the impact of the size of the

offset market on the costs of delivery, and the minimum required size for an offset market to work effectively for developers; and

- The cost implications of other design choices discussed in the consultation document. We have not at this stage developed strong methods to quantify the impacts of decisions on how to secure long-term environmental benefit, how to apply the standard of avoiding significant harm to biodiversity, whether and how to require offsets to be provided locally, and several other design decisions. All of these might have a significant impact on the cost of offsetting. This would have consequences in the permissive options for the level of uptake and in the uniform options for the regulatory burden imposed.

As this is a consultation stage impact assessment we have provided illustrative estimates and flagged these risks and assumptions and would welcome feedback on the approaches taken. Where the potential benefits to business are included, to allow for the chance that they may not be realised, in the lower bound estimate of the benefit of offsetting in the summary sheets, these benefits are excluded.

The table overleaf provides a high-level summary of the different options and their relative costs and benefits. Options 2a and 2c (which retain a relatively large market) are quite similar, with option 2c having the greatest environmental benefits as it captures most residual biodiversity losses from development.

The smaller markets bear the risk associated with a less liquid and competitive market above and are disproportionately burdened by set up costs as these are relatively generic no matter what the scale of the market.

The annual net benefit to society figures (in bold), use mid points for the direct costs and biodiversity benefits of offsetting without any additional voluntary strategic use of offsets for financial gain. They represent the best estimates for this IA and are, as such, presented without the potential value of any benefits to business. For comparison however, the illustrative estimates of the potential business benefits (included in the high-end estimate of the costs and benefits in the IA summary sheets) are also presented in the final column¹⁸.

It is clear from this data that if the benefits to developers are not realised, offsetting still delivers net benefits to society (through the additional provision of compensation for losses of biodiversity) although this is funded through an additional burden on developers.

Comparing the best estimate of the costs to business with the potential high-end illustrative benefits to business from offsetting (a comparison not in the summary sheets) suggests options 1, 2a, 2b, and 3 could all deliver similar net benefits to business in the order of £20m per year¹⁹ if a new market could encourage the use of offsetting as modelled. Without securing business benefits, the direct costs to business of options 2a in particular are significantly higher.

The net cost to business per year (EANCB on 2009 prices) figure reported on the impact assessment cover sheet refers to option 1. They were calculated based on the numbers reported in the evidence base in the version of the impact assessment calculator with the expiry date 27/09/2013.

¹⁸ The Option summary tables throughout this IA include both the costs and benefits of strategic offset acquisition though the differences are small as highlighted below.

¹⁹ assuming the costs of voluntary strategic offsetting not included in the best estimate are relatively low as estimated in option 1. Here the cost of securing voluntary strategic offsets was £0.3m per year – this is similarly the maximum amount of developer spending on voluntary offsetting in all other options.

Option	One off costs (£m in first year of operation)	Best estimate			Illustrative potential benefits to business (£m p.a.)
		Additional average direct costs to business (£m p.a.)	Additional average benefits derived from biodiversity (£m p.a.)	Net annual benefits to society over and above baseline (£m p.a.)	
1. Fully permissive approach, developers can choose offsetting to deliver compensation	4.7	-0.4	0	0.4	22
2.a. Uniform approach with offsetting required for development classed as small scale major developments and larger	4.7	37	77	40	57
2.b. Uniform approach with offsetting required for development classed as large scale major developments and larger	4.7	9	19	10	31
2.c. Uniform approach with offsetting required for development which impacts land of higher biodiversity value than that classed as "low distinctiveness and poor quality" in the offset metric	4.7	50	103	53	57
3. Partially permissive approach – use of the offsetting metric is required to assess biodiversity impact, compensation through offsetting is not.	4.7	7	11	4	25
4. A Community Infrastructure Levy (CIL) based approach	2.6	5*	11	4*	6

* an £2m per year administrative cost of offsetting faced by local authorities subtracted to show net benefit to society in line with description of option 4

Winners and Losers

Of relevance to the spending review target not to increase burdens on house-builders, on average this IA expects around 56% of the direct costs of offsetting to fall on the residential development sector. Box 5 explores the eventual incidence of this cost, and the same sector will also benefit should the potential business benefits of offsetting be realised, so the net impact is unclear. The direct costs to the sector as a whole would be around 56% of the numbers in the second column below for each option.

If developers act rationally then none would face additional costs under permissive options. Under the uniform options where offsetting is required, if the potential business benefits are revealed, there are likely to be some distributional impacts within the development sector. For example, as in option 1 those developers currently providing compensation may benefit from access to lower cost options. They may also benefit from a level playing field with regard to compensation. Developers not currently providing compensation may face additional costs of offsetting (depending on the option and the threshold), but likewise may benefit from more efficient treatment of biodiversity in the planning process, and if they can use their development sites more strategically. A small number of developers may yield significantly benefits should easy access to compensation through an offset market allow them to bring forward development that previously might not have been possible.

Any new offsetting sector will benefit from a new market, and the public as a whole will benefit from the maintenance of natural capital and the benefits we derive from slowing the loss of biodiversity at a national level.

Potential Impacts on micro-business / small business

This consultation stage impact assessment assumes offsetting will come into practice as soon as practical. However, if a regulatory option is selected, it may be the case that the regulation will not come into force until 2015. As such, the Final Impact Assessment associated with this policy will need to complete a full small and micro business assessment. The results of an initial examination which we would welcome responses to, are presented below.

Small scale operations with no new physical footprint e.g. extensions, loft conversions etc will not be captured by offsetting. Also a small or micro business employed as a sub-contractor on a build would not be captured. The nature of finance required for building developments with a new footprint large enough to be captured by either a *de minimis* or environmental threshold is also likely to effectively exempt a large proportion of any small/micro businesses which are involved in building with a new physical footprint.

While there will be familiarisation costs for small and micro businesses with option 1 (to understand the offsetting scheme and whether this would be beneficial to them) it is purely voluntary and they can continue with the existing planning scheme, so it can be assumed that there will be no additional burden here. The impact of offsetting should always be proportionate to the scale of the impact of the development on biodiversity as this is captured in the offsetting metric. Small and micro businesses will be exempt from options 2b and 2c as they only target major developers.

Looking at the structure of the construction sector in ONS construction statistics²⁰, the industry's employment seems to be bi-modal with large number of workers in smaller and micro businesses and a similarly large number of workers in larger business likely to be the major developers.

Micro businesses and many small businesses are also unlikely to be captured by options 2a and 2d given the nature of their work and the nature of developments likely to be captured by offsetting under the thresholds in these options.

Small and micro businesses will be able to use the consultation to explain the impacts of options which may affect them (2a and 2d), so this can be reflected in the design of the offsetting threshold and scheme, as well as any associated guidance. We will also use stakeholder comments and results of the previous offsetting pilot to determine whether a large part of the intended benefits of the measure can be achieved with small and micro-businesses being exempted from new regulatory measures (i.e. option 2a and 2b).

Small and micro businesses are likely to benefit from the new opportunities in the market for offset provision.

²⁰ <http://www.ons.gov.uk/ons/rel/construction/construction-statistics/no--13--2012-edition/art-construction-statistics-annual--2012.html#tab-Chapter-3---Structure-of-the-Industry> (table 4)

Annex 1: Potential risks associated with the introduction of an offsetting market

Issue	Summary of evidence and analysis to date
<p>Level of supply of land for offsetting</p> <p>A ready supply of land will be needed for offset sites. Offsetting must be in keeping with the incentives for offset suppliers.</p>	<p>The CLA's 2009 Private Solutions to Public Problems report²¹ highlights "growing numbers of landowners are coming to view endangered species or wetlands on their land as a set of conservation opportunities rather than obligations or costs on their businesses".</p> <p>This is not however guaranteed as the Policy Exchange's "Nurturing Nature" (2012)²² report notes international experience that, "high compliance costs risk putting off potential offset providers, who may prefer simpler schemes". Some landowners have also told Defra that in contrast to time limited High Level Stewardship schemes they are concerned about providing offset sites in perpetuity.</p>
<p>Impacts on the value of land</p> <p>We have assumed that the costs of offsetting will ultimately be borne by the landowner, implying the costs of offsetting may be capitalised into lower land prices. Here we assess wider land price impacts.</p>	<p>Whilst initially it may seem that the value of developable land may fall marginally if there were a mandatory offsetting requirement (and the costs of offsetting were passed through to landowners), this is only one impact of the potential offsetting market.</p> <p>If we deploy as similar argument on cost pass through to the potential business benefits of offsetting, it is clear that should the profitability of development increase with the capacity to use offsets (due to more efficient planning etc) the value of developable land could also rise rather than fall.</p> <p>It is equally plausible that the value of land suitable for offsetting will rise due to the land's increased potential to raise revenue (through supply of offsets). This seems particularly likely for marginal farmland, where alternative revenue streams from agricultural production will be low. The price increase seems likely to be capped by the relative availability of this type of land suitable for biodiversity investments as revealed by the breadth of coverage of higher level stewardship agri-environment schemes. However an increase would still be anticipated.</p> <p>A counter argument to this is that restrictions in the future use of land devoted to offsets (for example if it is subject to a conservation covenant) should be expected to reduce its value. However, the revenue that landowners receive from offsetting would compensate for this as it would need to be at least equal to the loss of land value related to the restriction in future land use.</p>
<p>Flexibility of trade in the system</p> <p>Constraints on the type and location of an offset could be tightened or loosened with different</p>	<p>BirdLife International (2010) express a concern that a system in which all biodiversity is tradable would provide little or no disincentive to avoid loss or damage in the first place. That is, the relative cost of offsetting would no longer help provide a price signal to steer developers away from high biodiversity value sites.</p> <p>However, too tightly constrained a metric would divide the market geographically and by habitat type. This is likely to push up costs and reduce supply. The potential cost of constraining the geographical</p>

²¹ <http://www.cla.org.uk/pdf/Private%20Solutions%20to%20Public%20Problems.pdf>

²² Newey and Less, (2012) "Nurturing Nature". Policy Exchange.

<http://www.policyexchange.org.uk/images/publications/nurturing%20nature.pdf>

consequences.	location of offsets can be estimated from data on regional land prices.
<p>Potential for offset value to change with offset location</p> <p>Strategic planning of offset locations has the potential to create net gains for biodiversity by helping to deliver the recommendations of the Lawton Review.</p>	<p>The options described in this paper make no attempt to show how biodiversity benefits might change with location. The restricted range of ecosystem services valued also meant some of the potentially larger social and wellbeing benefits of access to nature were not fully considered. These values are likely to be highly dependent on proximity to people whereas offsets seeking to protect biodiversity alone would not.</p> <p>Additional protected sites could be created when offsets are provided through restoring or creating more distinctive habitat types. Adding to existing protected sites so they are larger would increase their resilience. Locating offsets so they connect existing protected sites would increase the resilience of England's network of protected sites as a whole.</p>
<p>Social and cultural values associated with biodiversity</p> <p>Connected to above, the restricted range of ecosystem services valued also meant some of the potentially larger social and wellbeing benefits of access to nature were not fully considered. These values are likely to be highly dependent on proximity to people whereas offsets seeking to protect biodiversity alone would not.</p>	<p>In some places, communities will place significant value on local biodiversity and this may be lost if biodiversity is offset. Conversely, it may be possible to choose new locations partly to maximise social value, thus increasing the overall value of the scheme.</p> <p>The biodiversity offsets evaluation sheds some light on these issues and demonstrates that social and cultural values are being considered in some pilot areas. For example, in the North Devon sub-pilot, it is the intention that 'cultural ecosystem services' are maintained in a "like for like" way. However, this refers to access for enjoyment, which may not be directly related to the biodiversity value itself. With biodiversity offsetting more generally, it might be possible to 'transfer' some values of a current site to alternative areas for access and recreational benefits, but it might be difficult to transfer other social and cultural benefits if local communities value the biodiversity itself in its existing local context.</p> <p>Looking forward, the National Ecosystem Assessment follow on project is developing cultural ecosystem services indicators as part of its work package 4, which might enable social and cultural values to be taken into account more effectively at local level.</p>
<p>Inclusion of species within the system</p> <p>The metric currently used for biodiversity offsetting is based on habitats but not species. Broadening the scope of offsetting could provide benefits to business where they offer more efficient solutions.</p>	<p>Evidence from developers suggests the greatest scope for a gain from including European protected species into the offsetting system is likely to be from protected Great Crested Newts. Natural England issue approximately 600 licenses for disturbing or modifying Great Crested Newt Habitat a year. Natural England will continue to gather evidence on this and will report later in 2013.</p> <p>Limited natural science evidence, and the application of the precautionary principle where the value and role of species is not known is likely to increase the difficulty of establishing and agreeing a metric.</p>

Annex 2 - How are the estimated direct costs of offsetting modelled?

The annual costs of offsetting in this impact assessment are based on the research which was commissioned to inform the Options Stage Impact Assessment which established the piloting of biodiversity offsets in England²³. The research was carried out by ICF-GHK and includes full details of the approach taken²⁴; the direct costs of offsetting numbers in this impact assessment are based on average figures estimated over the period 2011 to 2030 in the GHK work average out the impact of variations in forecast development.

The flow chart below summarises at a very high level the process deployed in the report. The metric used here is that described in the introduction to this IA.



²³ <http://www.archive.defra.gov.uk/environment/natural/documents/newp-ia-offsets-110607.pdf>

²⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/166042/110714offsetting-technical-costing-potential.pdf.pdf
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/166043/110714offsetting-technical-costing-potential-annex.pdf.pdf (second link contains annexes to the report)