HM Government

Options Stage Impact Assessment: Offsetting the impact of development on biodiversity

June 2011

Title:	Impact Assessment (IA)
Offsetting the Impact of Development on Biodiversity	**IA No:** Defra 1358
Lead department or agency: Defra	**Date:** 17/05/2011
Other departments or agencies: Natural England	**Stage:** Development/Options
	Source of intervention: Domestic
	Type of measure: Other
	Contact for enquiries: Claire Lewis, Defra

Summary: Intervention and Options

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

Biodiversity provides a range of non-market and non-economic values free of charge, leading to over-consumption and under-production of biodiversity. However, it may be possible to correct this "market failure" in the development sector, by ensuring developers secure action to re-create biodiversity lost through development. This would ensure decisions taken by developers include consideration of biodiversity impacts, without unduly preventing the development from taking place. Whilst planning policy already includes provisions on compensation for biodiversity loss resulting from development, there is no standard approach to use. This has led to continued losses in biodiversity beyond what is economically efficient.

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 straightforward approach to assessing the impact of the development, agreeing the compensation requirements and demonstrating compliance. It is hoped that greater certainty about how offsetting can work will lead suppliers of offsets to come forward, creating a market of supply and demand for biodiversity offsets. These actions are ultimately intended to increase the number and quality of bio-diverse habitats in England compared to the baseline.

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

Three options have been developed at this early stage, and a proposal to test the preferred option 2 has been designed to collect more evidence before a decision on the potential for wider application is taken.
Option 0: do nothing.
Option 1: roll-out a national scheme mandating the use of offsetting for all developments with an impact on biodiversity.
Option 2: roll-out national guidance on a voluntary offsetting mechanism: Local Planning Authorities would choose to offer the mechanism to developers as a way of meeting planning policy requirements.
Option 3: test the voluntary approach in some pilot areas over two years from April 2012. Local Authorities in the test areas will offer developers the choice of meeting their obligations under planning policy through offsetting, or through existing processes.

Will the policy be reviewed? It will be reviewed. **If applicable, set review date:** 04/2014	
What is the basis for this review? Not applicable. **If applicable, set sunset clause date:**	
Are there arrangements in place that will allow a systematic collection of monitoring information for future policy review?	Yes

Ministerial Sign-off For consultation stage Impact Assessments:

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 Minister: ---------- Date: ----------

Summary: Analysis and Evidence Policy Option 1

Description:

Roll out a national scheme mandating use of offsetting for developments impacting biodiversity

Price Base Year 2009	PV Base Year 2011	Time Period Years 20	Net Benefit (Present Value (PV)) (£m)		
			Low: 210	**High:** 595	**Best Estimate: 210**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	0		195	**2860**
High	0		375	**5545**
Best Estimate	0		195	**2860**

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

30% - 50% of costs from this policy are transfers from developers to offset providers, where the range reflects different insurance mechanisms. Note that ultimately, it may be land owners who bear the costs and capture the benefits of these transfers. Costs which are not transfers arise from the resources required to create/restore and manage habitats. Again, these are incurred by developers but we expect them to be passed on to land-owners.

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

Local Planning Authorities and developers will incur time burdens from drawing up offsetting agreements and, for local authorities, one-off costs for drafting strategies. However, if we relax the assumption that no biodiversity compensation currently takes place, this is not necessarily a new cost. Compensation for biodiversity loss should be taking place under current planning policy. Offsetting should provide a more systematic approach to managing the process, and may deliver cost savings.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0		210	**3070**
High	0		415	**6140**
Best Estimate	0		210	**3070**

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

Benefits arise from the improvements in ecosystem services that are a by-product of improving biodiversity. Furthermore, 30% - 50% of the costs identified above are transfers away from developers towards offset providers (although ultimately it may be land owners who bear the cost and capture the benefits of this transfer).

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

The assessment of biodiversity benefits is partial - including only 7 ecosystem services (adapted from Christie et al., forthcoming). There are likely to be efficiency improvements in the wider economy that result from the development sector better accounting for the value of biodiversity in their decisions. Relaxing the assumption that no compensation currently takes place, developers may find offsetting is lower cost than existing mechanisms because, for example, suppliers come forward pro-actively, reducing "search costs".

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

For simplicity, and for lack of robust evidence to the contrary, we assume no compensation currently takes place. A research project to gather information about current practice is underway which will allow us to refine the analysis presented here. The method of converting hectares of habitat lost into hectares created/restored is key: it defines the supply of offsets and the size of the transfer from developers to offset providers. A further assumption is that costs can be passed from developers to land owners. It is assumed that competition amongst providers will ensure none can charge more than the market price. This ensures that the transfer between development sector and offset provider is kept to a minimum. The degree to which these assumptions are justified, and the risks if they are not, need to be carefully tested.

Direct impact on business (Equivalent Annual) £m):			In scope of OIOO?	Measure qualifies as
Costs: 170	**Benefits:** 50	**Net:** -120	undecided	undecided

Enforcement, Implementation and Wider Impacts

What is the geographic coverage of the policy/option?			England		
From what date will the policy be implemented?			Undecided at options stage		
Which organisation(s) will enforce the policy?			Planning Authorities		
What is the annual change in enforcement cost (£m)?			£7.6m		
Does enforcement comply with Hampton principles?			Yes		
Does implementation go beyond minimum EU requirements?			N/A		
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)			**Traded:** negligible	**Non-traded:** negligible	
Does the proposal have an impact on competition?			No		
What proportion (%) of Total PV costs/benefits is directly attributable to primary legislation, if applicable?			**Costs:** 0	**Benefits:** 0	
Distribution of annual cost (%) by organisation size (excl. Transition) (Constant Price)	**Micro**	**< 20**	**Small**	**Medium**	**Large**
Are any of these organisations exempt?	No	No	No	No	No

Specific Impact Tests: Checklist

Set out in the table below where information on any SITs undertaken as part of the analysis of the policy options can be found in the evidence base. For guidance on how to complete each test, double-click on the link for the guidance provided by the relevant department.

Does your policy option/proposal have an impact on…?	**Impact**	**Page ref within IA**
Statutory equality duties[1] Statutory Equality Duties Impact Test guidance	No	44
Economic impacts		
Competition Competition Assessment Impact Test guidance	No	44
Small firms Small Firms Impact Test guidance	No	44
Environmental impacts		
Greenhouse gas assessment Greenhouse Gas Assessment Impact Test guidance	No	45
Wider environmental issues Wider Environmental Issues Impact Test guidance	Yes	45
Social impacts		
Health and well-being Health and Well-being Impact Test guidance	No	45
Human rights Human Rights Impact Test guidance	No	45
Justice system Justice Impact Test guidance	No	45
Rural proofing Rural Proofing Impact Test guidance	No	45
Sustainable development Sustainable Development Impact Test guidance	Yes	45

[1] Public bodies including Whitehall departments are required to consider the impact of their policies and measures on race, disability and gender. It is intended to extend this consideration requirement under the Equality Act 2010 to cover age, sexual orientation, religion or belief and gender reassignment from April 2011 (to Great Britain only). The Toolkit provides advice on statutory equality duties for public authorities with a remit in Northern Ireland.

Summary: Analysis and Evidence Policy Option 2

Description:

Roll out a national voluntary scheme encouraging the use of offsetting for developments impacting biodiversity

Price Base Year 2009	PV Base Year 2011	Time Period Years 20	Net Benefit (Present Value (PV)) (£m)		
			Low: 0	High: 595	Best Estimate: **105**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	0		0	**0**
High	0		375	**5545**
Best Estimate			98	**1430**

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

30% - 50% of costs from this policy are transfers from developers to offset providers, where the range reflects different insurance mechanisms. Note that ultimately it may be land owners who bear the costs and capture the benefits of these transfers. Costs which are not transfers arise from the resources required to create/restore and manage habitats. Again, these are incurred by developers but we expect them to be passed on to land-owners. Costs may be as low as 0 if no LPAs or developers choose to use the approach.

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

Local Planning Authorities and developers will incur time burdens from drawing up offsetting agreements and, for local authorities, one-off costs for drafting strategies. However, if we relax the assumption that no biodiversity compensation currently takes place, this is not necessarily a new cost. Compensation for biodiversity loss should be taking place under current planning policy. Offsetting should provide a more systematic approach to managing the process, and may deliver cost savings.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0		0	**0**
High	0		415	**6140**
Best Estimate			105	**1535**

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

Benefits arise from the improvements in ecosystem services that are a by-product of improving biodiversity. Furthermore, 30% - 50% of the costs identified above are transfers away from developers towards offset providers (although ultimately it may be land owners who bear the cost and capture the benefits of this transfer). Benefits may be a low as zero if no LPAs or developers choose to use the approach.

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

The assessment of biodiversity benefits is partial - including only 7 ecosystem services (adapted from Christie et al, forthcoming). There are likely to be efficiency improvements in the wider economy that result from the development sector better accounting for the value of biodiversity in their decisions. Relaxing the assumption that no compensation currently takes place, developers may find this scheme is lower cost than current processes, because, for example, suppliers of offsets come forward, reducing "search costs"

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

In addition to the assumptions, sensitivities and risks of the national mandatory scheme, the range of costs and benefits presented for option 2 reflects that, at the low end, there is a risk no developers use the approach. At the high end, we assume all developers who are asked to provide biodiversity compensation do so using biodiversity offsets. The "best estimate" is in fact an illustrative scenario, in which 50% of developments choose to use biodiversity offsetting. However, we have little evidence to suggest whether this is reasonable so all our assumptions need to be refined and carefully tested.

Direct impact on business (Equivalent Annual) £m):			In scope of OIOO?	Measure qualifies as
Costs: 85	**Benefits:** 25	**Net:** -60	No	NA

Enforcement, Implementation and Wider Impacts

What is the geographic coverage of the policy/option?			England		
From what date will the policy be implemented?			Undecided at options stage		
Which organisation(s) will enforce the policy?			Planning Authorities		
What is the annual change in enforcement cost (£m)?			£3.8m		
Does enforcement comply with Hampton principles?			Yes		
Does implementation go beyond minimum EU requirements?			N/A		
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)			**Traded:** negligible	**Non-traded:** negligible	
Does the proposal have an impact on competition?			No		
What proportion (%) of Total PV costs/benefits is directly attributable to primary legislation, if applicable?			**Costs:** 0	**Benefits:** 0	
Distribution of annual cost (%) by organisation size (excl. Transition) (Constant Price)	**Micro**	**< 20**	**Small**	**Medium**	**Large**
Are any of these organisations exempt?	No	No	No	No	No

Specific Impact Tests: Checklist

Set out in the table below where information on any SITs undertaken as part of the analysis of the policy options can be found in the evidence base. For guidance on how to complete each test, double-click on the link for the guidance provided by the relevant department.

Does your policy option/proposal have an impact on…?	**Impact**	**Page ref within IA**
Statutory equality duties[1] Statutory Equality Duties Impact Test guidance	No	44
Economic impacts		
Competition Competition Assessment Impact Test guidance	No	44
Small firms Small Firms Impact Test guidance	No	44
Environmental impacts		
Greenhouse gas assessment Greenhouse Gas Assessment Impact Test guidance	No	45
Wider environmental issues Wider Environmental Issues Impact Test guidance	Yes	45
Social impacts		
Health and well-being Health and Well-being Impact Test guidance	No	45
Human rights Human Rights Impact Test guidance	No	45
Justice system Justice Impact Test guidance	No	45
Rural proofing Rural Proofing Impact Test guidance	No	45
Sustainable development Sustainable Development Impact Test guidance	Yes	45

[1] Public bodies including Whitehall departments are required to consider the impact of their policies and measures on race, disability and gender. It is intended to extend this consideration requirement under the Equality Act 2010 to cover age, sexual orientation, religion or belief and gender reassignment from April 2011 (to Great Britain only). The Toolkit provides advice on statutory equality duties for public authorities with a remit in Northern Ireland.

Summary: Analysis and Evidence Policy Option 3

Description: Test out option 2, working with Local Planning Authorities and developers to refine and test the proposals for a voluntary approach

Price Base Year 2009	PV Base Year 2011	Time Period Years 2	Net Benefit (Present Value (PV)) (£m)		
			Low: 0	High: 10	Best Estimate: 5

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	0		0	**0**
High	0		30	**60**
Best Estimate	0		15	**30**

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

Costs are incurred for 2 years in a small number of planning authorities. 30% - 50% of costs from this policy are transfers from developers to offset providers, where the range reflects different insurance mechanisms. Note that ultimately, it may be land owners who bear the costs and capture the benefits of these transfers. Costs which are not transfers arise from the resources required to create/restore and manage habitats. These are incurred by developers but we expect them to be passed on to land-owners.

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

Local Planning Authorities and developers will incur time burdens from drawing up offsetting agreements and one-off costs for drafting offsets strategies. However, if we relax the assumption that no biodiversity compensation currently takes place, this is not necessarily a new cost. Compensation for biodiversity loss should be taking place under current planning policy. Offsetting should provide a more systematic approach to managing the process, and may deliver cost savings.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0		0	**0**
High	0		35	**70**
Best Estimate			15	**35**

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

Benefits last beyond the end of the two-year trial, as any offsets created should be secured in perpetuity. Benefits arise from the improvements in ecosystem services that are a by-product of improving biodiversity. Furthermore, 30% - 50% of the costs identified above are transfers away from developers towards offset providers (although ultimately it may be land owners who bear the costs and capture the benefits of this transfer).

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

The assessment of biodiversity benefits is partial - including only 7 ecosystem services. The test phase may lead to changes in the design of any future national scheme, potentially steering the policy away from higher-cost options, or options that fail to deliver beneficial changes in biodiversity. As before, relaxing the assumption that no compensation currently takes place, developers may find this scheme is lower cost than existing processes, because suppliers of offsets come forward pro-actively, reducing "search costs".

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

For simplicity, and for lack of robust evidence to the contrary, we assume no compensation currently takes place. A research project to gather information about current practice is underway, which will help us to refine the analysis presented here. The method of converting hectares of habitat lost into hectares created/restored is key: it defines the supply of offsets and the size of the transfer from developers to offset providers. A further assumption is that costs can be passed from developers to land owners. It is assumed that competition amongst providers will ensure none can charge more than the market price. This ensures that the transfer between development sector and offset provider is kept to a minimum. The degree to which these assumptions are justified, and the risks if they are not, need to be carefully tested.

Direct impact on business (Equivalent Annual) £m):			In scope of OIOO?	Measure qualifies as
Costs: 15	Benefits: 5	Net: -10	No	NA

Enforcement, Implementation and Wider Impacts

What is the geographic coverage of the policy/option?			England		
From what date will the policy be implemented?			01/01/2010		
Which organisation(s) will enforce the policy?			Local Authorities and Natural England		
What is the annual change in enforcement cost (£m)?			£0.6m		
Does enforcement comply with Hampton principles?			Yes		
Does implementation go beyond minimum EU requirements?			N/A		
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)			**Traded:** negligible	**Non-traded:** negligible	
Does the proposal have an impact on competition?			No		
What proportion (%) of Total PV costs/benefits is directly attributable to primary legislation, if applicable?			**Costs:** 0	**Benefits:** 0	
Distribution of annual cost (%) by organisation size (excl. Transition) (Constant Price)	**Micro**	**< 20**	**Small**	**Medium**	**Large**
Are any of these organisations exempt?	No	No	No	No	No

Specific Impact Tests: Checklist

Set out in the table below where information on any SITs undertaken as part of the analysis of the policy options can be found in the evidence base. For guidance on how to complete each test, double-click on the link for the guidance provided by the relevant department.

Please note this checklist is not intended to list each and every statutory consideration that departments should take into account when deciding which policy option to follow. It is the responsibility of departments to make sure that their duties are complied with.

Does your policy option/proposal have an impact on…?	**Impact**	**Page ref within IA**
Statutory equality duties[1] Statutory Equality Duties Impact Test guidance	No	44
Economic impacts		
Competition Competition Assessment Impact Test guidance	No	44
Small firms Small Firms Impact Test guidance	No	44
Environmental impacts		
Greenhouse gas assessment Greenhouse Gas Assessment Impact Test guidance	No	45
Wider environmental issues Wider Environmental Issues Impact Test guidance	Yes	45
Social impacts		
Health and well-being Health and Well-being Impact Test guidance	No	45
Human rights Human Rights Impact Test guidance	No	45
Justice system Justice Impact Test guidance	No	45
Rural proofing Rural Proofing Impact Test guidance	No	45
Sustainable development Sustainable Development Impact Test guidance	Yes	45

[1] Public bodies including Whitehall departments are required to consider the impact of their policies and measures on race, disability and gender. It is intended to extend this consideration requirement under the Equality Act 2010 to cover age, sexual orientation, religion or belief and gender reassignment from April 2011 (to Great Britain only). The Toolkit provides advice on statutory equality duties for public authorities with a remit in Northern Ireland.

Evidence Base (for summary sheets) – Notes

References

No.	Legislation or publication
	CLG development control statistics: http://www.communities.gov.uk/publications/corporate/statistics/developmentcontrol200809
	CLG land use change statistics: http://www.communities.gov.uk/documents/planningandbuilding/pdf/150313.pdf
	GHK 2011. Costing potential actions to offset the impact of development on biodiversity (interim report). For Defra, forthcoming.
	GHK 2010. Cost of the UK Biodiversity Action Plan – Update http://randd.defra.gov.uk/Document.aspx?Document=NE0111_9411_ABS.docx
	NE 2011. Think piece on ecological equivalence in biodiversity offsetting.
	CLG GLUD 2010. Generalised Land Use Database. http://www.communities.gov.uk/publications/planningandbuilding/generalisedlanduse
	UK BAP 2007: http://www.ukbap.org.uk/library/UKSC/DEF-PB12772-ConBio-UK.pdf
	Crook et al 2010.The incidence, value and delivery of planning obligations in England in 2007-08 http://www.communities.gov.uk/documents/planningandbuilding/pdf/1517816.pdf
	Christie et al. Forthcoming, for Defra. Economic Valuation of the Benefits of Ecosystem Services delivered by the UK Biodiversity Action Plan.
	Tyldesley et al. Forthcoming for Defra. Planning policy and biodiversity.

Evidence Base

Ensure that the information in this section provides clear evidence of the information provided in the summary pages of this form (recommended maximum of 30 pages). Complete the **Annual profile of monetised costs and benefits** (transition and recurring) below over the life of the preferred policy (use the spreadsheet attached if the period is longer than 10 years).

The spreadsheet also contains an emission changes table that you will need to fill in if your measure has an impact on greenhouse gas emissions.

Annual profile of monetised costs and benefits* - (£m) constant prices

	Y_0	Y_1	Y_2	Y_3	Y_4	Y_5	Y_6	Y_7	Y_8	Y_9
Transition costs	0	0								
Annual recurring cost	17	15								
Total annual costs	17	15								
Transition benefits										
Annual recurring benefits	15	14								
Total annual benefits	15	14								

For non-monetised benefits please see summary pages and main evidence base section

1 Introduction

The policy behind this Options Stage Impact Assessment (IA) is at an early stage of development.

This impact assessment concludes that before any decisions are made about whether, and how, biodiversity offsetting could be an effective mechanism to use across England, we need further evidence.

A pilot, where local authorities choose to work with us to test offsetting and offer it as an option to developers in their area, is therefore the preferred option. This will allow us to test various elements of the offsetting mechanism, and refine some of the assumptions we have had to make in this analysis, before a decision about the next steps is made.

Whilst there is no requirement to publish an impact assessment at this stage, Defra believes it is useful to set out our initial assessment of the policy options and our assumptions, so that we can refine and develop them in a transparent way as we gather further evidence.

1.1 Summary

This IA sets out 4 potential options for offsetting the impact of development on biodiversity: do-nothing; implement a nationally-led mandatory offsetting scheme; implement a voluntary approach that encourages offsetting across England by providing guidance to local authorities and others; or, a pilot of this voluntary approach.

The do-nothing option reflects business as usual. Compensation for significant biodiversity loss is required under current planning policy, but discussions with interested parties suggest that the implementation of requirements is not always as effective as it could be.

At this early stage, the analysis suggests that greater use of biodiversity offsetting could deliver benefits. However, we do not have enough information to make the case for a particular course of action across the country right now, or to know that the approach as designed would work as well as it could and deliver the anticipated benefits. For that reason, we have included a pilot option, and this is our preferred approach at this stage.

The key action we intend to take is to design and test elements of a local, voluntary approach with the help of willing planning authorities. Local authorities in pilot areas would offer developers the option of meeting planning policy requirements relating to biodiversity through the offsetting mechanism, but would still allow the use of existing processes if preferred.

Other approaches to developing the evidence base may be possible and useful, for example, desk-based exercises could produce information to complement what we learn from pilot areas. The details of the test phase will be finalised with those who volunteer to work with us.

The test phase will begin in Spring 2012, to coincide with the planned launch of the National Planning Policy Framework.

We believe that offsetting has the potential to be a more cost effective way of delivering planning policy requirements than current practice, and will be working with partners to ensure that we test this in a pilot.

The information gathered during this test phase will be used to further develop the analysis of the options outlined in this Impact Assessment, firming up our assessment of the costs and benefits.

Because the policy is at such an early stage of development, in order to analyse the costs and benefits it has been necessary to make a number of assumptions about a range of issues, for example : who ultimately bears costs; how the price of land for offsetting will be set; the administrative costs; how providers will manage their risks; and, what the mechanism will mean in terms of the number of hectares of habitat re-created for offsetting as a result of the number of hectares of habitat destroyed by development.

We believe that a number of assumptions that we have used for option 3 – the preferred option of a voluntary pilot - make the costs, and associated benefits, look much higher than they potentially might be. Specifically, we have:

- estimated the total costs of providing biodiversity compensation, as opposed to the additional costs of biodiversity offsetting over and above current practice. This was necessary because we have no comprehensive evidence on the amount of biodiversity compensation that currently occurs. (A separate research project is looking at the application of planning policy for protecting biodiversity, and any barriers in its application. This will help improve our understanding of current practice)

- assumed that a very large number of developments will be asked to offset their impacts. Whether a development requires offsetting is a question for planning policy and we have erred on the side of over-estimating the number of developments that might be caught.

- assumed that all developers required by planning policy to act to address biodiversity loss will choose to use the offsetting mechanism, rather than use the existing approach to biodiversity compensation.

Our proposed approach of a pilot will help us to refine all these assumptions, and to produce a revised IA to inform a future decision on the next steps.

This Options Stage IA presents an illustration of what the costs and benefits might be if the voluntary approach was supported nationally. It also sets out the fraction of these costs and benefits that might result from testing elements of a voluntary offsetting scheme in a small number of planning authorities. Furthermore, this Options stage IA also presents an

illustrative analysis of the costs and benefits of a mandatory national scheme subject to all the assumptions above.

2 Problem under consideration

Biodiversity is not adequately considered when people take planning decisions.

Biodiversity is a vital constituent of our natural capital stock. It provides a range of economic (spanning both market and non market values) and non-economic values (values not easily expressed in economic terms at all). However as these values tend to be provided free of charge outside traditional markets, they are not ascribed a value in market transactions – they represent "externalities", sometimes referred to as market failures. Biodiversity and the services associated with it therefore tend to be over exploited and inefficiently used.

A recent study for Defra, Christie et al. (forthcoming), estimated the economic benefits of the current level of delivery of the UK Biodiversity Action Plan at £1.4bn per year. Current spending on the same level of provision has separately been estimated at £564m per year. Similarly, extending the coverage of the biodiversity strategy to meet current targets provided an estimated return of £750m for a cost of £273m, implying a positive return to further investments in biodiversity, whether maintaining or increasing current stocks.

Causes of biodiversity loss are multiple and often indirect, so a range of policies will be required to tackle the problem of over-exploitation and inefficient use. Therefore this exploration of biodiversity offsetting, which focuses on the impact of development, needs to be seen in a broader context.

The Government signalled in *The Coalition: our programme for government* its view that more needed to be done to protect biodiversity stating that "We will introduce measures to protect wildlife and promote green spaces and wildlife corridors in order to halt the loss of habitats and restore biodiversity". Similarly 2010 saw the UK agree new EU and global biodiversity targets for 2020 - both recognising the natural environment's important role underpinning our economy and contributing to our health and wellbeing

EU 2020 target	**Convention on Biological Diversity 2020 target**
To halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, restore them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss.	To take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planets variety of life, and contributing to human well-being, and poverty eradication.

A new England Biodiversity Strategy will build on the Natural Environment White Paper to set out how we plan to achieve this these goals in England.

2.1 Current position of biodiversity within the planning system

The best examples of the UK's flora, fauna, or geological or physiographical features are designated as Sites of Special Scientific Interest, and subject to particular management measures and protections. There are over 4,000 Sites of Special Scientific Interest (SSSIs) in England, covering around 7% of the country's land area. More than 70% of these sites, (by area) are internationally important for their wildlife, and designated as Special Areas of Conservation (SACs) or Special Protection Areas (SPAs) under the EU Habitats Directive, or as Ramsar sites.

In addition to providing protection for designated areas as described above, current planning policy encourages decision-makers to avoid harm to biodiversity:

Planning Policy Statement 9: Key Principles
(vi) The aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests. Where granting planning permission would result in significant harm to those interests, local planning authorities will need to be satisfied that the development cannot reasonably be located on any alternative sites that would result in less or no harm. In the absence of any such alternatives, local planning authorities should ensure that, before planning permission is granted, adequate mitigation measures are put in place. Where a planning decision would result in significant harm to biodiversity and geological interests which cannot be prevented or adequately mitigated against, appropriate compensation measures should be sought. If that significant harm cannot be prevented, adequately mitigated against, or compensated for, then planning permission should be refused.

There is a clear hierarchy in this statement with developers asked to avoid first, then mitigate and finally, if impacts on biodiversity remain, to compensate for losses by providing new or improved habitats elsewhere.

PPS9 also states that:

"*Networks of natural habitats provide a valuable resource. They can link sites of biodiversity importance and provide routes or stepping stones for the migration, dispersal and genetic exchange of species in the wider environment. Local authorities should aim to maintain networks by avoiding or repairing the fragmentation and isolation of natural habitats through policies in plans. Such networks should be protected from development, and, where possible, strengthened by or integrated within it*."

The principle vehicles for ensuring compliance with PPS 9 are planning obligations and conditions, whereby planning permission is granted subject to the developer meeting specific obligations. These obligations can be contained within a "Section 106 agreement" (S106) and can cover a range of requirements, including issues such as local greenspace, social

housing and transport. S106 agreements can also include requirements to compensate for biodiversity impacts, in line with PPS9.

Research by Sheffield University for CLG (Crook et al 2010) showed that s106 agreements were present in around 7% of planning applications in the period 2007-08. This includes coverage of around 85% of developments with between 15 and 50 dwellings and 50% of developments with more than 10 dwellings – S106 is more widely used for larger housing developments.

Crook et al also report that Local Planning Authorities (LPAs) rated advice on formulae and standard charging as being "crucial" and "very important" in changing their practices. Such advice on how biodiversity offsetting could be used is currently lacking for obligations relating to habitat compensation.

Reaffirming those earlier findings in the context of biodiversity impacts, in a report for Defra titled ***Scoping Study for the Design and Use of Biodiversity Offsets in an English Context,*** Treweek et al. (2009) concluded:

"The situation in England lends itself to the greater use of biodiversity offsets for a number of reasons, but current practice is patchy and there is inadequate guidance to enable developers to determine whether and when a biodiversity offset is appropriate and required and what is the necessary nature, scale and location for any such offset."

This variation in application of compensation requirements means that developers face inconsistent signals with regard to ways, to act in order counter their impact on biodiversity.

There is anecdotal evidence that, whilst some local authorities have robust policies for biodiversity and apply them rigorously, others appear not to and permit development in circumstances where PPS9 would either envisage consent being withheld or subject to requirements for compensatory measures.

In other cases, although compensation is required, it is either token, piecemeal and small scale (and therefore not an effective use of funds), not commensurate to the harm done by the development or is simply not enforced. It is this situation that a framework for biodiversity offsetting can help address.

3 Biodiversity offsets

Biodiversity offsets are conservation activities designed to deliver biodiversity benefits in compensation for losses, in a measurable way. They are distinguished from other forms of ecological compensation by this requirement for measurable outcomes.

Biodiversity in its entirety is impossible to measure, so offsetting schemes use a 'metric' to represent overall biodiversity. The metric allows the biodiversity impact of a development to

be quantified so that the offset requirement, and the amount of compensation being provided, can be clearly defined.

Figure 1 below illustrates the type of metric that would be used in England.

In this metric habitats have been pre-assigned to one of three tariff bands, based on their distinctiveness. 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.

The bands each have a number of units associated with them – this is the number of biodiversity units per ha that would be needed to offset for the loss of that habitat.

It is then possible to refine the number of biodiversity units required as an offset, by assessing the condition of the habitat concerned.

The units of biodiversity shown in this table have been developed with Natural England. They reflect an estimate only of the ecological value of the biodiversity associated with different habitats in different conditions and therefore suggest a rate at which habitats could theoretically be "exchanged" whilst maintaining the overall level of biodiversity.

In reality there are other factors which may also need to be considered in order to ensure an equivalent amount of biodiversity is secured to compensate for any losses due to development.

For example, temporal issues: in the absence of a mature biodiversity banking market (i.e. where the offsets are created in anticipation of developer need), it is unlikely ready-made offset habitats will be available. Therefore the time lag between the impact on biodiversity and an offset reaching the required quality or level of maturity will represent a biodiversity loss over time, which can be compensated for by increases the eventual overall offset area. To cover this point, in this work a standard approach to time discounting has been applied, using HM Treasury's discount rate of 3.5%.

Uncertainty in the effectiveness of restoration or habitat creation techniques also creates an issue which could be dealt with by multipliers e.g. to reflect the probability that a restoration or expansion project will fail. This is effectively insurance for the delivery of the offset. Requiring extra habitat creation to cover this is likely to be an expensive approach to this issue. However we use it in this work to illustrate the potential impact delivering future habitat with certainty could have on the cost.

Multipliers and metrics are discussed in more detail in NE 2011 and their application is demonstrated in GHK 2011.

Figure 1: A metric for biodiversity offsetting

		Biodiversity Distinctiveness		
		Low (2)	**Medium (4)**	**High (6)**
Condition	**Optimum (4)**	8	16	24
	Good (3)	6	12	18
	Moderate (2)	4	8	12
	Poor (1)	2	4	6

Source: NE 2011.

Specific guidance on using the metric to calculate the level of compensation required as a result of development, and using it to calculate how many units an offset project is worth, is being drafted. It will be finalised with those interested in participating in a pilot, to ensure that it is clear and meets their needs, and will be available before the pilot begins in 2012.

On the developers' side, we expect there to be no additional information-gathering requirements over-and-above what is collected for an average site assessment.

The application of any multipliers needed to ensure delivery of the required number of units will be an issue for the offset provider.

A consistent approach to using biodiversity offsetting can provide a range of benefits for those involved, including clarity for developers on what's expected of them, measurable conservation outcomes and greater consistency of practice. Clear, consistent guidance on how to use offsetting to provide compensation for lost biodiversity should result in providers of offsetting projects coming forward. This would make it easier for developers to find someone able to provide the compensation they need. If offsetting is widely used in an area, the demand can drive the creation of a "market place" for developers looking to find suppliers.

A fuller analysis of the benefits that might arise from making greater use of such an approach in England is set out later in this IA.

As we do not have a comprehensive evidence base on current practice, Defra is looking to assess the application of current planning policy more systematically in a piece of research called "Planning Policy and Biodiversity Offsets" which is due to report in early in 2012. This research will provide an objective and robust analysis of the effectiveness of current planning policies in protecting biodiversity. It is assessing a representative sample of English Local Planning Authorities (LPAs). It will examine how they have applied planning policy as set out in Planning Policy Statement 9 for protecting biodiversity, and any barriers

in its application. This will help inform future policy decisions on biodiversity policy, and information from it will feed in to future, revised versions of this IA.

In the meantime, we believe there is sufficient anecdotal evidence of a problem to explore options around how to support local authorities in securing compensation for biodiversity loss, in line with the requirements of planning policy as currently set out in PPS9, in a more effective way.

Exploring reforms to PPS9 and other planning documents is outside the scope of this IA.

This work meets the commitment in Defra‟s business plan to “assess the scope for actions to offset the impact of development on biodiversity”.
http://ww2.defra.gov.uk/corporate/about/what/business-planning

4 Objectives

1. To improve the delivery of requirements in the planning system relating to biodiversity in a cost-effective way, by providing a straightforward approach for assessing the impact of the development, agreeing the compensation requirements, and demonstrating compliance.

2. Areas of habitat that are already subject to specific legal protection, such as SSSIs and areas of habitat protected under EU legislation are not in scope of this work: the existing protection and compensation mechanisms will remain in place.

3. The government has committed not to increase the overall burden of regulation on house builders over this spending review period. Biodiversity offsetting is not a new regulatory burden: it is a mechanism which would allow developers to meet existing planning requirements more effectively. However, it is evident that any policy and its implementation must be well designed to ensure it delivers the desired outcomes without imposing unnecessary or disproportionate costs.

5 Options

This is an "options" stage Impact Assessment, reflecting the stage we are at in policy development. 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 a decision.

5.1 The options considered are:

0. Do nothing: the planning system recognises biodiversity. If Local Authorities wished to improve compliance with the policy, central Government is not prohibiting this, though there may be some perceived barriers.

1. Introduce a mandatory national scheme for offsetting the impacts of development on biodiversity. All developments with an impact on biodiversity would be required to purchase offsets in order to obtain planning permission. This option could be developed in a number of directions using different institutional mechanisms with various degrees of compulsion. However, for this analysis we assume that it is enforced through LPAs and uses Section 106 agreements as its legal basis.

2. Roll out a national voluntary approach for offsetting the impacts of development on biodiversity, inviting LPAs to offer the offsetting mechanism as an option to developers required to compensate for biodiversity loss under planning policy. Again, this could be developed in a number of directions with varying degrees of guidance and support from central Government.

3. At this stage, our analysis of the potential costs and benefits of offsetting is based on a range of assumptions. Until we have tested further tested these assumptions, and have a better understanding of how an offsetting mechanism might work in practice, it is not possible to take a decision on whether, and how, we should support greater use of offsetting in England. The analysis does suggest that greater use of a consistent framework for offsetting, which local authorities and developers could choose to use, has the potential to deliver benefits for biodiversity. The final option is therefore a proposal to test elements of the voluntary option with a small number of willing LPAs during a 2-year pilot.

5.2 Details of the options

This section provides an account of how each option might work, and what it would mean for the different actors involved, and for the amount of land covered. The costs and benefits of each option are considered in subsequent sections.

5.2.1 Do nothing (option 0)

In this option there would be no change to how current planning policy is implemented, and there would therefore be no change to current behaviour in relation to compensation for damage to biodiversity.

The current process is as follows:

1. Developers submit proposals to Planning Authorities together with any necessary environmental assessments.

2. In some cases, issues will be discussed between the developer, LPA and/or statutory consultees.

Planning authorities consider and decide on applications, taking into account any representations from interested parties and statutory consultees as well as both national and local planning policies. Where consent is granted it may be subject to planning conditions or obligations.

In 2007-08, the average number of new planning agreements per district level planning authority was 30, representing 7% of the 488 applications granted on average per district level planning authority that year (based on 179,000 applications granted in England for major and minor developments3, across 367 district-level planning authorities. Source: CLG Development Control Statistics 2008.).

Crook et al (2010) report that these planning agreements were worth around £4.9bn in 2007-08, of which £2.6bn was for affordable housing and £900m was for land contributions for uses other than affordable housing. The paper does not report whether any of these land contributions might have been used for habitat compensation.

With over 330 planning authorities in England, all of whom have differing levels of biodiversity within their areas and all of whom face differing levels of economic activity from the development sector, it is unlikely that biodiversity will be dealt with in a uniform manner throughout England.

Added to that, even where development impacts on biodiversity are significant for development proposals, biodiversity may not be the only issue that will determine whether or not a planning authority finds the application to be acceptable.

There is anecdotal evidence that, whilst some local authorities have robust policies for biodiversity and apply them rigorously, others appear not to and permit development in circumstances where PPS9 would either envisage consent being withheld or subject to requirements for compensatory measures.

In other cases, although compensation is required, it can be token, piecemeal and small scale (and therefore not an effective use of funds), not commensurate to the harm done by the development or is simply not enforced.

Under Option 0 this situation would continue.

This inconsistency of application will maintain the lack of clarity as to what is required of developers with regard to biodiversity. In some cases this will contribute to delays in planning applications and decisions. In others, the lack of clarity may mean that

compensation which should be happening will not be delivered, or will not be delivered as well as it could be.

"Planning Policy and Biodiversity Offsets" will examine how a representative sample of local planning authorities have applied planning policy as set out in Planning Policy Statement 9 for protecting biodiversity, and any barriers in its application. This will inform future, revised versions of this IA.

5.2.1.1 What would be the impact on areas of biodiversity habitats under option 0?

As option 0 involves no change in current behaviour with regard to biodiversity, to understand what might happen to biodiversity in the future, it is helpful to look at what has happened in the past, and what this suggests for the future.

Over the last decade, the number of planning applications and the number of hectares of new development have fluctuated significantly. In the first half of the decade, the number of decisions on planning applications increased by around 30%, and has subsequently fallen back to where it started. The drop from almost 600 to below 500 planning decisions taken in England between 2007-08 and 2008-09 reflects the lower number of applications received in 2008-09.

There is a similar story in the statistics for land use change: the first half of the decade saw more land changing to "developed use" than the latter half. Consistently more hectares of "previously developed" land were converted to "developed use than "undeveloped" land.

Table 1 and Table 2 record these trends.

Table 1: Number of decisions taken by district-level planning authorities

Year	**1999 -2000**	**2000 - 2001**	**2001 - 2002**	**2002 - 2003**	**2003 - 2004**	**2004 - 2005**	**2005 - 2006**	**2006 - 2007**	**2007 - 2008**	**2008 - 2009**
Decisions (thousand)	479	498	534	586	625	645	599	587	595	489

Note: method of collecting these statistics changed in the years 2002/03, 2003/04 and 2007/08. Source: CLG development control statistics

Table 2: Hectares of new development annually, by previous use

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Previously developed land (Ha)	8,540	9,490	8,280	11,030	6,050	8,920	4,680	4,740	3,080
Previously undeveloped land (Ha)	7,530	7,110	5,850	8,190	4,070	5,780	4,270	3,940	2,800
Total (Ha)	16,070	16,600	14,130	19,220	10,120	14,700	8,950	8,680	5,880

Source: CLG land use change statistics

Looking at how this picture might change over the next 20 year, GHK 2011 (forthcoming, for Defra) presents projections of the numbers of hectares of land from both previously developed and previously undeveloped sources.

Table 3: Projected future hectares of new development annually, by previous use

Year	2011	2015	2020	2025	2030
Previously developed land (Ha)	5,171	6,051	5,760	5,492	5,155
Previously undeveloped land (Ha)	4,450	5,218	4,960	4,751	4,481
Total (Ha)	9,621	11,269	10,720	10,243	9,636

Source: GHK 2011 (forthcoming, for Defra)

The UK's Biodiversity Action Plan (UK BAP 2007) identifies priority habitats in England. There are currently 1.4m hectares of these habitats, which represent around 12% of all undeveloped land in England (based on CLG GLUD, 2007). However, a large number of priority habitats are found on land which is unsuitable for development.

Following a number of assumptions developed in GHK 2011, it is possible to calculate that 5.2% of undeveloped land is potentially priority habitat at risk of development.

Table 4 records what this might mean for losses of BAP habitats in England in the future, based on the projections in Table 3:

Table 4: Projected annual loss of priority habitats under baseline Option 0

Year	2011	2015	2020	2025	2030
Annual loss of priority habitats (Ha)	231	271	258	247	233

These figures relate only to expected direct loss of habitat, and do not include the impacts of losing habitat for the wider ecological network within which they sit.

Overall, in Option 0 there would be no reduction in the rate of loss of biodiversity due to development and we would expect development to continue to be a source of future losses. This leaves a liability for the taxpayer or other sectors if we are to meet our objectives for biodiversity . It may be expected that any losses in priority habitats that result from the activities of developers will have to be replaced using public money if we are to achieve our objectives for biodiversity.

5.2.2 Option 1: introduce mandatory national scheme for offsetting the impact of development on biodiversity

In this option, offsetting would be compulsory for all developments with a significant impact on biodiversity that would require compensation under planning policy.

A mandatory approach has been used in other countries that have adopted offsetting, with offsetting required in certain circumstances and central mechanisms established to manage the process. Annex A includes a brief overview of some of these offsetting schemes.

This option would require a specific regulation or a change in planning policy, to require offsetting in particular circumstances.

For this Impact Assessment, we assume that the mechanism used to implement mandatory offsetting would be Section 106 of the Town and Country Planning Act 1990 (hereafter referred to as a S106 agreement), as this is an existing mechanism that could be used to implement such an approach.

If a decision was taken that a mandatory approach should be introduced, there would need to be a thorough analysis of how well S106 had worked and whether a new mechanism was needed.

The roles in this option for central government, local authorities, developers and providers of biodiversity offsets could be broadly as follows:

Central government would:

- require offsetting to be used in relation to all developments with a significant impact on biodiversity, either through a new regulation or through revised national planning requirements.

- provide central guidance and information on offsetting, including:

    - a standard metric for calculating the impact of a development. This would allow developers to assess the impact of their development and calculate the number of biodiversity units required to offset the impact.

- guidance for offset providers on how to use the metric to calculate how many units they could sell from particular habitat expansion / restoration project.

- ensure standards, that could be assessed in some way. These standards could be managed by a central government body, or a third party.

Local authorities would:

- not be able to issue planning consent to a development with an impact on biodiversity unless the developer had made acceptable arrangements to offset their impact

- where the developer had chosen to pay a third party to provide the offset, manage this transaction as appropriate, for example, as part of implementing a planning decision using a Section 106 agreements

As noted above, if offsetting was mandatory, there would be a choice to be made about the appropriate mechanism to use. Here we have suggested S106, as it is an existing mechanism that could be used. But there would be alternatives. For example, a national body could manage any payments being made to offset providers, and be responsible for monitoring and evaluation.

Developers would:

- use central guidance on the metric to assess how many biodiversity units they need to provide to compensate for the impact of their development. They would then have a range of options available for delivering the required compensation. They could provide compensatory habitat themselves or they could find an offset provider able to provide the right number of units, and negotiate a price with them.

Offset providers would:

- identify where they could provide offsets

- develop management plans for those areas, in line with central standards, and use the metric to calculate how many units they are able to sell

- obtain appropriate certification, in line with any central standards set

- then be able to sell units of biodiversity.

5.2.2.1 What would be the impact on areas of biodiversity habitats under option 1?

Not all developments have significant impacts on biodiversity. We believe it is reasonable to assume 75% of the land changing from previously developed use each year has very low biodiversity value and is unlikely to require offsetting (See GHK 2011 for how these assumptions were developed).

Table 5 presents the expected number of hectares of new development that might require offsetting – note that these numbers maintain the assumption that no habitat compensation currently occurs.

Table 5: Hectares of development annually expected to require offsetting in England

Year	2011	2015	2020	2025	2030
Development area requiring offsets (Ha)	5,743	6,731	6,400	6,124	5,770

Whilst Table 5 shows how many hectares of development might require offsets, the ratio of hectares of habitat destroyed to offset created would not necessarily be 1:1.

Making an offset to replace the biodiversity lost as a result of development will involve either expansion (establishing habitat on land where it is not present) or restoration (restoring areas of degraded habitat to better condition).

As discussed above, a range of factors mean that we might expect a larger or smaller number of hectares of offset to be created than the area of biodiversity that is destroyed. This is because the measure used in offsets is biodiversity value (units of biodiversity) rather than land area.

For example, if the offset provided involved the restoration of some habitat judged to be more valuable (i.e. a higher priority) than that destroyed by the development, a smaller area might be able to make good the loss in biodiversity value.

GHK 2011 assesses the likelihood of each habitat type being subject to development pressure, and then makes an assessment of the average difference in condition and distinctiveness of the development area and the offsetting habitat. This was done in consultation with ecologists from Natural England.

In this impact assessment we present two sets of costs for each option. One set of costs is based on the assumption that that the average condition of pre-developed land is 'moderate'. In this scenario, offsetting might seek to create or restore around 0.8 hectares of new habitat for every 1 developed on. If on the other hand the the assumption was that the average condition of pre-developed land was optimum, the ratio would be somewhat higher – around 1.6.

Table 6: Expected hectares of offsets created annually in England

Assumed condition of land pre-development (England average)	Year	2011	2015	2020	2025	2030
Moderate	Development area requiring offsets (Ha)	4,621	5,420	5,151	4,952	4,637
Optimum	Development area requiring offsets (Ha)	9,243	10,840	10,301	9,850	9,274

The same numbers of hectares of biodiversity habitat would be lost in this option as under option 0, but this loss would be compensated for in a measurable way by improvements in habitat across the land area suggested in Table 6. Note that the numbers in Table 6 maintain the assumption that no habitat compensation currently occurs.

5.2.3 Option 2: Roll out of national voluntary approach to offsetting the impact of development on biodiversity

This option involves facilitating the greater use of offsetting as a mechanism to deliver planning policy requirements, by providing local authorities, developers and other organisations with the information and tools they need to be able to use the approach.

Local authorities would choose whether they wanted to offer the mechanism to developers as a way of implementing planning policy requirements in their area.

The roles of the various actors would be as follows:

Central government would:

- provide central guidance and information on offsetting, including:
    - a standard metric for calculating the impact of a development. This would allow developers to assess the impact of their development and calculate the number of biodiversity units required to offset the impact.
    - guidance for offset providers on how to use the metric to calculate how many units they could sell from particular habitat expansion / restoration project.
    - ensure standards, that could be assessed in some way. These standards could be managed by a central government body, or a third party.

Local authorities would:

- decide to offer offsetting in their area as a way of delivering planning policy requirements on biodiversity, and work with their partners to develop a strategy for using offsetting to deliver their biodiversity priorities.

- offer developers that needed to provide compensation under planning policy the option of using the offsetting mechanism and then securing that action through the planning mechanisms (e.g. through Section 106 agreements) .

Developers would:

- use central guidance on the metric to assess how many biodiversity units they need to provide to compensate for the impact of their development. They would then have a range of options available for delivering the required compensation. They could provide compensatory habitat themselves or they could find an offset provider able to provide the right number of units, negotiating the price for this service with them.

Offset providers would:

- identify where they could provide offsets, in a way that would match the local authorities' strategy.

- develop management plans for those areas, in line with central standards, and use the metric to calculate how many units they are able to sell

- obtain appropriate certification, in line with any central standards set

- then be able to sell units of biodiversity.

The key differences between this option and option 1 are that:

- this option focuses on providing a more effective way of implementing planning requirements, rather than introducing a new requirement to deliver planning policy requirements in a particular way.

- local authorities and developers choose whether offsetting is a mechanism that can deliver planning policy requirements more effectively for them, rather than having to use it.

A further difference between the two approaches could be the extent to which the approach proposed in Option 2 leads to the creation of a market in biodiversity offsetting projects. A regulatory requirement would be likely to drive the creation of such a market. Without a greater understanding of the level of demand that a voluntary approach would create, it is

difficult to estimate the impact it would have on the offsets market as it would depend on the scale of uptake.

5.2.3.1 What would be the impact on areas of biodiversity habitats under option 2?

The area of biodiversity habitats impacted under this option depends on how many LPAs and developers choose to use the approach. At this stage we have very little information on how many LPAs and developers would chose to use it. At the extremes, option 2 could lead to as much habitat restoration and creation as option 1, or none at all. Without more information we can say little more than this, but for illustrative purposes only we calculate what impacts there might be if all local authorities chose to offer offsetting, and if 50% of all development voluntarily used biodiversity offsetting under option 2.

With 50% uptake in the voluntary scheme under option 2, in 2015 there might be 2,710 hectares of offsets created/restored if land used for development starts in moderate condition, or 5,420 hectares if land starts in optimum condition. These figures are precisely half the size of numbers presented in Table 6.

5.2.4 Option 3: test elements of option 2 with small number of willing LPAs and developers during a 2 year pilot

At this stage we believe Option 2 is preferable to Option 0 and Option 1. Option 0 would not allow us to improve our approach to providing compensation for biodiversity lost as a result of development. There is no evidence at this stage that a mandatory approach, as set out in Option 1, is justified.

However, we believe that it would be sensible to test the approach proposed in Option 2, to see if it can deliver benefits expected of offsetting, and if so, how it can be improved before making a final decision on if, and how, its use should be promoted.

As noted above, it is difficult to estimate the costs and benefits facilitating greater voluntary use of offsetting, and a pilot could help develop our understanding and analysis.

We propose therefore to invite a small number of LPAs to work with us to test the approach and evaluate its operation on the ground.

We propose to work with a number of willing local planning authorities (LPAs) for up to 2 years, to test and evaluate aspects of offsetting e.g. the framework for ascribing biodiversity values to habitats and calculating appropriate compensation.

In the test period:

- LPAs will express an interest in participating in the pilot. According to a list of criteria (for example, level of development expected) Defra will select local authorities to work with to finalise the approach to a pilot.

- LPAs in the pilot areas will, where compensation for biodiversity loss is required under planning policy, ask developers if they would like to use the offsetting approach to deliver the required compensation. Developers will be able to choose whether they would prefer to meet their obligations by using the offsetting mechanism, or by using existing processes.

- LPAs, and other parties involved, will be able to provide feedback to Defra at a number of stages.

- LPAs will have access to a forum for sharing and logging experiences of what works and what does not.

- Even if, following the 2 year test period, offsetting is not continued by the LPAs or rolled out nationally, those offsets that have been created will continue to be maintained according to the management agreement.

As noted above, in addition to pilots involving live planning decisions, other approaches may provide the information that can further develop our evidence base and inform future versions of this IA. Defra will be open to all expressions of interest in helping to develop our evidence base on offsetting from a range of organisations.

Piloting the voluntary approach means that we will not get involvement from a fully representative sample of planning applications that might be covered by any mandatory approach. However, we believe that it will provide useful information about issues that would be relevant to the design of a mandatory approach if that was an option considered at a future point. For example, a pilot would test the metric and its ease of use.

Because developers will be able to choose whether to use the new approach during this testing phase, and we believe that the approach could be a more effective way of implementing current policy, it is possible that the costs and benefits of this testing phase will effectively be zero. Our discussions with LPAs following expressions of interest will give us a better handle on this.

5.2.4.1 What would be the impact on areas of biodiversity habitats under option 3?

Following conversations with a number of LPAs, we are working on the assumption that on-the-ground testing of the approach may take place on an area equivalent to around 4 county-level authorities in England. In this impact assessment, for simplicity and in order to gain an understanding of the highest likely costs and benefits, we are assuming that all developers within these test areas choose to use the offsetting mechanism.

A biodiversity offsetting area could be the county and the district authorities in a particular county working together, it could be a unitary authority, or it could be a cluster of District level authorities (not necessarily in the same county) working together where they cover a coherent geographic area, for example, a catchment.

We will not know the size of the areas involved, or where the areas might be, until we have asked formally for expressions of interest. The calculations in this Impact Assessment are therefore based upon a fictitious cluster of LPAs with typical characteristics, and assume no habitat compensation currently occurs in these LPAs.

Table 7 summarises what one such typical LPA might look like.

Table 7: characteristics of a "typical" District Planning Authority (various years, based on median values)

Greenspace (Ha)	Existing Development (Ha)	Land changing to developed use from previously developed land (Ha per year)	Land changing to developed use from previously undeveloped land (Ha per year)
184,087	30,708	13	10

Source: CLG land use change statistics 2010; CLG Generalised Land Use Database 2007

The typical LPA experienced 23 Ha of new development per year on average between 2005 and 2009, or 0.01% of the total area of land changing to developed use.

As there are 48 counties in England, if pilots were to cover broadly the area of 4 counties, the aim might be to cover roughly one twelfth of the land area of England – about 11m hectares, or the area equivalent to 48 “typical” District-level planning authorities.

Assuming development is shared equally across the country, this would imply that testing across the equivalent of 4 counties could be expected to represent approximately 8% of total development. Table 8 shows the implications of this for the number of hectares of development that could require offsetting (similar to Table 5 above). The slight reduction in 2012 is due to a slight reduction in the expected rate of development in the GHK 2011 report.

Table 8: hectares of development in the test areas expected to require offsetting

Year	2011	2012
Development area requiring offsets (Ha)	479	453

Applying the metric developed with NE and summarised in figure 1, Option 2 is expected to yield 385 Ha of new habitat in 2011 and 363 Ha in 2012, if we assume that the average condition of habitat pre-development is moderate.

The precise nature of these habitat*s* will depend on the individual LPAs involved in the pilots, and for the purposes of the Impact Assessment it would not make sense to look for an "average" make-up of habitats within our typical LPA.

6 Costs and benefits

6.1 Where do costs arise?

Based on discussion above, there are 5 main sources of costs arising from offsetting:

- **Administration costs, for example:**
  - using the standard metric to assess units of biodiversity lost as a result of development,
  - time setting up and negotiating S106 agreements (noting that a standard approach should mean that negotiations relating to biodiversity should be relatively straightforward; and that whilst we have assumed in the IA that S106 will be the mechanism used, the pilot will help us explore whether a different mechanism could work better),
  - work by the offset provider to demonstrate that they meet a particular standard.

- **Direct actions undertaken to create/restore the habitats.**
  Because of the long-term nature of offsets, in some cases this may also include the cost of buying land, in others the cost of setting up a long term management agreement.

- **Site management to maintain habitats**
  Offsets should exist in perpetuity once created. (The calculations in this IA are modelled based on maintenance over 100 years).

- **Monitoring** to ensure that the habitat is delivering as required.

- **Insurance**
  Offset providers will be contractually obliged to deliver an area of habitat that provides a certain number of biodiversity units. There will be a risk of failure, and one way to manage this would be to create additional habitat, to give a better chance of successful delivery.

6.1.1 Assumption about current practice

The analysis throughout this impact assessment considers the actions which are additional to *current practice,* taking the extreme assumption that no compensation for biodiversity lost as a result of developed is currently implemented. In effect, it estimates the gross cost (and benefits) of offsetting. The forthcoming research project on current practice will allow us to refine this analysis as we will have an improved understanding of what happens now.

As offsets are proposed as a mechanism to deliver planning policy, whilst options 1, 2 and 3 appear to result in increased costs to developers, these costs are not necessarily additional. Developers already following best practice for habitat compensation would not face any additional costs. Using offsetting has the potential to be a lower cost way of meeting requirements, particularly in a more developed market where specialist offset providers could be competing for business. In such a market, developers would incur lower costs in looking for suitable suppliers of habitats than currently, competition between suppliers could be expected to drive down costs and greater certainty over what is required could reduce planning delays. Thus, for those developers who already undertake compensatory habitat creation, we would expect costs to fall under each of the options.

We note this, but do not explore it any further because we have insufficient information on how many developers this might apply to.

6.1.2 Passing the cost to land owners

At first glance, it seems that all costs will be reflected in the price of an offset, and borne by the developer.

However, the costs are ultimately likely to be borne by the owner of the land on which the development is planned, rather than being absorbed by the developer or passed on to the consumer. New developments typically compete with existing development, so extra costs cannot be passed to potential buyers through higher prices. Land owners are typically in a position to persuasively bargain for a high price for their land because they know that, without the land, the development cannot go ahead. Land owners consequently have the opportunity to make a significant profit from development and are well placed to absorb additional costs.

There are of course situations in which the above does not hold:

- Where development is a one-off piece of infrastructure which must be strategically located (perhaps a new railway or major road), developers will not face competition from existing suppliers and will be able to pass costs on to the buyer. This seems most likely the case for major public infrastructure projects.

- Where there are a large number of costs to developers, from developer contributions and other planning obligations, which mean that the developer is not in a position to earn their required return and pay a price which would allow the landowner to benefit from the sale of the land for development. In this case, the overall burden of meeting planning policy requirements might make the development unprofitable, in which case it would not go ahead.

In relation to the second point above, a well-designed offsetting mechanism would keep the costs to developers of meeting planning policy requirements relating to biodiversity to a minimum.

It is more difficult to assess the likelihood and the potential increase in costs to the exchequer that could occur if the former situation, but it is worth noting that if the cost of offsetting were passed on it would simply represent a payment (or transfer) from government to the private sector for the purposes of biodiversity conservation – accounting for the wider impact of the development on society.

6.1.3 Who gains and who loses?

There will be costs incurred by the development sector, whether landowners or developers. However, where the requirements of planning policy are already being enforced, this will not be a new cost.

In addition, the price paid for an offset can also be seen as revenue for offset providers. Some proportion of this will be spent on the resources needed to create or restore and manage the habitat, but like any other business some of the price could represent profit. This profit from the sale of offsets is a transfer from the development sector to the offset provider; it is only the resource costs of creating/restoring and managing the habitat that leads to improved biodiversity.

There is therefore an important question around how much of the price paid by developers is directly contributing to the creation of biodiversity.

In the case of a national mandatory scheme (Option 1), we expect that, once the market is mature, competition pressure between offset providers will maintain incentives for them to keep prices low, which in turn will minimise the transfer from developers to the offset providers.

In addition to competition, there are other factors that might affect the price offset providers would charge.

The following factors will exert downwards pressure on prices:

- Currently there is excess demand for funding through higher level stewardship (HLS) schemes. Some of this willingness to participate in HLS could be expected to translate into supply of offsets.

- Some offset providers will be conservation organisations that will not be profit driven; whilst looking to cover costs, they will not be looking to achieve the highest possible price.

- Offset provision will not necessarily require land purchase. For example, the developer may be able to provide the offset required on land they already own. The offset provider may already own the land but lack the funds to expand or restore the habitat. Or they may enter into long-term management agreements with landowners who wish to retain their land but who would welcome funding and support to allow them to improve biodiversity in a way they wouldn't otherwise be able to. Offset providers buying land will need to compete with providers who do not need to buy land. They will therefore face a strong incentive to seek out lower value land on which to site offsets, and are less likely to be able to demand high prices.

- At the earliest stages of an offsetting scheme, the lowest price offsets are likely to come forward – business imperatives are likely to mean that the easier to create/restore habitats, with low risks, will go on the cheapest land.

There are also factors which might result in higher prices:

- Development, and housing development in particular, is known to yield substantial profits that offset providers might want to tap into if their aim was to make a profit – they could attempt to bargain on price in the same way land owners do when they are granted planning permission for development.

- Whilst there may be many offset providers nationally, local restrictions on how close offsets are to their associated development could restrict competition, and again give offset providers greater power to demand higher prices.

- In the early stages, few offset providers may come forward until there is more certainty in the long term nature and demands of participation in the market. This could mean developers have to go looking for offset providers rather than having them already available on a market. This could afford an offset provider significant bargaining power, leading to a higher price.

In spite of a desire on behalf of profit-motivated offset providers to maximise their returns, providers should face a strong incentive not to drive up prices to the extent that the price of offsetting prevents a development from being financially viable, because this effectively entirely removes the offset providers' market opportunity.

However, beyond concern about the level of development, particularly in the current economic climate, the Government has a commitment to ensure that burdens on the house-

building sector (including land owners) do not increase overall between 2010/11 and 2014/15, so it is still important to consider the scale of the transfer which will occur from the development sector to the offset sector.

6.2 Estimating the costs of option 1

We assume no habitat compensation currently takes place and it is against this baseline that we compare options 1 and 2 and 3.

The following calculations are based on GHK 2011 and the paragraphs below briefly recap their methodology.

6.2.1 GHK Methodology

Previous work for Defra by GHK estimated the resource costs involved in restoring or expanding habitat, by hectare of each type of priority habitat, as defined in the UK's Biodiversity Action Plan (see GHK 2010). These costs have been developed in GHK 2011 to be applicable to the context of a biodiversity offsetting scheme.

Table 9 reports the cost per hectare of expanding or restoring a habitat, and managing it in perpetuity. The calculations are technically only based on 100 years of costs. However, due to the declining management costs and the discounting process used to provide a present value equivalent of the expenditure over time, this is a reasonable proxy of the costs of maintaining the offset in perpetuity.

Table 9: Present value costs per hectare of restoring or creating priority habitat (£ per ha)

	Restoration under a 100 yr management agreement	Creation under a 100 yr management agreement	Restoration with land purchase	Creation with land purchase
Upland habitats	2,151	7,382	15,444	18,475
Lowland heathland	8,530	11,791	17,359	18,337
Lowland grassland	10,168	11,293	18,997	19,391
Woodland	7,776	7,436	19,503	17,849
Wetlands	9,435	11,072	18,713	19,089
Coastal	4,509	48,758	17,068	42,901

Table 9 presents two scenarios.

Firstly, the shaded columns show the cost per hectare if there is a 100 year management agreement in place, so land purchase is not necessary. (Note that the offset is expected to last in perpetuity). Secondly, the unshaded columns show the costs of offsetting if the land is bought at the average price of agricultural land. (In GHK 2011 the price of land is allowed to vary regionally – an England-wide average is presented here for simplicity).

This second scenario is most similar to the information on cost per hectare provided to Defra in response to our engagement material, so the costs of offsetting when land purchase (assumed to be rural agriculturally valued land) is necessary are used to calculate the costs of option 1.

The management agreement scenarios do not require land purchase, but instead involve payments for income foregone being made. For simplicity we report only variations on the land purchase method of estimating costs for the remainder of this Impact Assessment. The risks and assumptions section discusses the risks associated with higher land prices, and how these can be mitigated through design of the approach.

All costs in Table 9 include up-front capital costs; 10 years of costs associated with creating or restoring the habitat; and either average agricultural land price or annual payments for managing it for 100 years. All costs are discounted at the Treasury's recommended rate of 3.5% so after 100 years, present value management costs are negligible. Administrative costs are assumed to be 40% of total costs following the discussion in GHK 2011.

Whilst we might expect that the total costs of a management agreement would be identical to the total costs of offsetting with land purchase, the quite significant difference between the two might be explained because under a management agreement, the land owner retains the option to sell his land for some other more valuable use at a later date, and offset any biodiversity loss that results. Because land owners do not give up this option under a management agreement, they demand a lower return.

The costs per hectare in Table 9 are subsequently applied to the expected number of hectares of offsets required in that year as described in Table 6 to arrive at estimates for the total PV costs of offsetting (Table 10).

Note that in the GHK analysis coastal habitat creation was revealed as a particularly expensive activity so it was assumed that developers would not select offsets involving this habitat, as they would be more expensive. As a result, this is only used where priority coastal habitats are impacted and hence like-for-like replacement may be expected.

The cost of offsetting development at a national level could be in the range of £138m - £264m per year (based on 2015 figures and the average price of agricultural land). This range arises from applying different ratios for converting hectares of development lost into hectares of habitat to expand/restore: the range is due to the variations in the multipliers that might be applied by offset providers.

Table 11 reports how these annual figures vary over time for the top end of this range (Table 10 reports the lower end and a regional breakdown).

Note that throughout this IA, the present value is calculated for a specified number of years of an offsetting scheme (20 years for options 1 and 2; 2 years under option 3). However, the funding generated over this period is assumed to be sufficient to cover management costs for 100 years. Furthermore, we maintain the assumption that no habitat compensation currently occurs.

Table 10: Total PV costs of offsetting future developments (including land purchase, restoration and expansion/recreation costs) £m

PV in year	2011	2015	2020	2025	2030	Total over 20 yrs (PV 2011)
North East	4.4	5.8	5.3	5.0	4.7	77.2
North West	12.4	15.1	14.0	12.9	11.9	201.1
Yorkshire and the Humber	13.1	15.6	14.4	13.8	13.1	210.7
East Midlands	13.4	16.2	15.2	14.6	13.5	220.7
West Midlands	9.6	12.4	11.7	11.0	10.3	166.0
East of England	19.7	21.7	21.1	20.3	19.1	303.5
London	7.9	8.4	8.3	8.0	7.8	117.7
South East	21.3	24.0	23.4	22.6	21.5	335.0
South West	15.9	18.8	18.0	17.3	16.2	260.1
England	**117.8**	**138.1**	**131.3**	**125.5**	**118.1**	**1,892**

Table 11: Total PV costs of offsetting future developments (based on biodiversity potential of original habitats)

PV in year	2011	2015	2020	2025	2030	Total over 20 yrs (PV 2011)
Costs if assumed condition of land pre-development (England average) is optimum	**224.8**	**263.5**	**250.5**	**239.4**	**225.4**	**3,610**

It is worth noting how these costs compare to the total value of existing S106 agreements: in 2007-08, S106 agreements were worth an estimated £4.9bn (£5.2bn, 2009 prices), of which £900m was for land contributions for uses other than affordable housing (Crook et al. 2010). The highest estimate of the costs of offsetting presented here, £264m in 2015, represents a 5.1% increase in the value of agreements. The central estimate of £138m represents a 2.7% increase in the value of these agreements. Again, the assumption is that no S106 agreements currently include funding for biodiversity compensation. This is however not the case. So offsetting may not result in an actual increase in value of S106 agreements.

The calculations above assume that habitat recreation occurs with certainty, i.e. that expansion or restoration of habitat will always be successful. This may not be the case. This chance of failure can be accounted for in a number of ways. It could involve the offset provider investing in additional habitat as a buffer against failure, or paying for alternative insurance. This is likely to be reflected in the cost of offsetting.

Estimating the scale of this is difficult. However, analysis suggests that up to 20% of habitat restoration and up to 55% of habitat creation might fail, which leads analysis in GHK 2011 to conclude that investing in additional habitat to compensate for this could add up to around 50% to the total scheme costs each year. This is one way of managing the risk, but not the only way. An important element of the pilot will be to test how providers manage this aspect of their business.

Adding this risk-adjustment to the figures above gives a total present value cost over 20 years of £2.9bn (with land purchase at the average price of agricultural land, with the assumption that the average condition of land pre-development is moderate).

GHK 2011 present some sensitivity analysis around these cost figures, looking at the implications of variations on offset requirements for developments on brownfield land, and the implications of greater offsetting on coastal land.

With long term certainty in the offset markets, habitat banks may establish themselves. These would anticipate the need for offsetting and expand or restore habitats in advance of development. Banked offsets could be sold without the need for insurance costs or adjustments to account for time preferences, as the habitat will already be present. At this stage of the impact assessment process, we have not attempted to estimate the extent to which this would occur, or the impact it would have on costs and benefits

One of the risks in adopting a mandatory approach without a good understanding of how it might work is that if offsetting is insufficiently flexible, prohibitively expensive offsetting could be demanded. For example, an approach which forced offsets into an area which required the purchase of land designated for residential use would increase the costs by up to 45 times.

6.3 Estimating the costs of option 2

The key difference between a voluntary and a mandatory national scheme is simply that, if voluntary, some proportion of LPAs may choose not to use the approach, and some proportion of developers within areas offering the approach may choose not to us it.

It is difficult to assess the costs of option 2 without a better understanding of what factors may be important in whether local authorities decide to offer the approach to developers in their area, and when developers might choose to use the mechanism to deliver their planning policy requirements. Option 3, the preferred option of a testing phase, will allow us to develop our understanding of the motivations for using the mechanism, and any barriers.

We are confident that the costs of option 2 will be no higher than those for the mandatory scheme presented in option 1. A low-end estimate of the costs of a national voluntary approach could be that no-one uses the new scheme, so costs are effectively zero. Without more evidence on how likely it is that LPAs and developers will take up the scheme voluntarily, we present an illustrative scenario to show what costs would be if 50% of developments use the new scheme. It is important to recognise that this is not a “best guess” of what will happen; it is purely illustrative. The result is simply that costs are half as large as under option 1, the mandatory scheme.

6.4 Estimating the costs of option 3

A testing phase is difficult to cost as an established offsets market is difficult to replicate at a smaller scale.

For this reason, rather than using direct estimates from the GHK work we use a price of £30,000 per hectare of offsetting – representing an estimate of the current revealed price of offsetting in the absence of a competitive markets.

This figure is in the middle of the range provided by GHK 2011. In addition, one example provided in response to Defra's engagement material on biodiversity offsetting in November 2010 had a cost per hectare of providing alternative natural green space to mitigate impacts of a development on a Special Protected Area (SPA) of around £30,000 per hectare, including land purchase. This gives an indicator of the realised costs of acquiring land to developers and therefore the potential scale of the transfer to offset providers.

The developer will choose whether to use existing mechanisms for habitat compensation or the new biodiversity offsetting mechanism. Therefore, there will be no imposed additional costs during the testing period.

However, consistent with the conservative assumption in the rest of this IA that no habitat compensation currently takes place, this analysis shows that testing the scheme will impose additional costs.

The test period will have an important role to play in developing our understanding of the potential costs and benefits of options 1 and 2.

Following the 2 year pilot we will revisit this Impact Assessment and assess how many LPAs might decide to offer offsetting as an option if it was promoted and encouraged at a national level. The evidence gathered will also help to identify further alternatives to options 1 and 2.

Table 12 reports total present value costs for the two year testing period, assuming that all developers elect to use the offsetting mechanism.

In the headlines on the summary sheets at the start of this document we recognise that there is a chance that the costs and benefits of this testing phase could be effectively zero because developers have the choice of this scheme or existing processes, and LPAs may not necessarily require more biodiversity compensation than before.

As with option 1 we also consider the implications of various ratios for converting hectares of development into hectares of offset habitat.

Table 12: Total PV costs of offsetting future developments (various multipliers)

	2011	2012	Total PV over 2 yrs
Assumed condition of land pre-development (England average) is moderate	11.6	10.9	22.1
Assumed condition of land pre-development (England average) is optimum	23.1	21.8	44.1

Note this estimate (like that for options 1 and 2) is based on a model in which extra habitat is invested alongside each formal offset to the potential for the habitat recreation measures to failure. (Here we estimate this could increase costs by up to 55%, leading to total present value cost of £34.4m over the two years.) This is an assumption, and the pilot will have an important role to play in improving our understanding of how offset providers manage their

risks, and what the costs involved are. However, it seems likely that a developed market would be able to provide a lower cost solution to this.

6.5 Who benefits, and how?

This section presents a discussion of who might benefit from offsetting, and in what way under the different options. Having identified the benefits to look out for, we subsequently attempt to place monetary values on these for each option.

6.5.1 The benefits of more biodiversity

Biodiversity provides a wide range of benefits: it both supports ecosystem functionality, and is enjoyed directly for its aesthetic and cultural appeal. Biodiversity is also protected for its intrinsic value, which is outside the human-centred framework used to estimate money values below.

Biodiversity valuation is therefore complex. However, a recently completed report for Defra "Economic Valuation of the Benefits of Ecosystem Services delivered by the UK Biodiversity Action Plan" (Christie et al, forthcoming) can provide some useful insights. The project looked at the various different habitats covered by the UK Biodiversity Action Plan (BAP) from an ecosystem service perspective (www.defra.gov.uk/environment/natural/ecosystems-services/).

It was a partial assessment, covering only seven services, hence is likely to be an underestimate of the true value of habitats. However it did focus on those services which the study revealed to be most readily understood by the public.

Whilst the study did attempt assess the benefits of different types of habitat within the BAP, the authors recommended caution in disaggregating the results due to the uncertainties in the survey of ecological experts that was required to allow this. Therefore this impact assessment uses only the aggregate benefits reported.

The study also focussed on the marginal benefit of spending money to manage habitats and the returns to this in terms of ecosystem services, rather than the total value of the habitat as a whole, as its aim was to establish the value for money of expenditure in this area.

The overall benefit of current delivery of the UK BAP was estimated at £1.4bn/yr. Within this the benefit of expenditure on the Habitat Action Plan (HAP) - that which is most similar to the type of investment expected biodiversity offsetting - was £1.2bn/yr. The impact of extending coverage of the UK BAP to meet current targets was also discussed. This increased the value of the BAP and the HAP by £747m/yr and £651m respectively.

As the measure in this IA and its broader context within the Natural Environment White Paper is one where we are aiming to improve the protection of biodiversity, the most appropriate comparison is with the aim to meet BAP targets. In this case the BAP habitats would cover roughly 2m hectares of the UK, which would imply a gross average value of the additional services provided by expenditure on the HAP of £921/ha/yr.

Alternatively if the benefits are delivered in perpetuity (using 100 as a proxy for this like management agreements in the costs) this is equivalent to £29,850/ha as a net present value using the Treasury's standard discount rates.

For example, this implies that an estimate of the benefit of investing in offsets on 5,000 hectares should be worth in the range of £150m. In terms of comparing these benefits with cost, this reflects the benefits of managing habitats, so should be compared to these specific costs.

6.5.2 The public sector benefits

One of the aims of this policy is to provide local authorities and developers with guidance and mechanism for offsetting to simplify negotiations over how and how much compensation to provide. This could yield time savings for local authorities and Natural England as a statutory consultee, as well as for the developers.

6.5.3 Wider benefits

Whilst not quantified in this assessment, alongside contributing to the overall goal of reducing biodiversity loss. the potential benefits from greater, more consistent use of offsetting include:

- combining compensation provided as a result of different development projects to deliver strategically located, larger areas of compensation, rather than creating several, unlinked, small areas. Offsetting in this context could also help provide ecological infrastructure with wider societal benefits, for example flood alleviation and climate change adaptation.

- greater use of the expertise in wider society in delivering biodiversity benefits. With a clear framework in place, third party actors including conservation and community groups will be encouraged to set themselves up as offset providers. This will:

    - help ensure the long-term management of sites; anecdotal evidence suggests that compensation, when it is provided, is not always actively managed for the long term and the benefits are therefore not delivered. This means that the money spent is wasted.

    - help deliver cost effective compensation – in a mature market different providers will be able to compete for the developers' business which could

lead to the development of more cost-effective methods of creating, restoring and managing habitats.

- By simplifying the process for the developer, more consistent use of offsetting would provide a straightforward way to assess the impact of a development, a straightforward way to agree the requirements, and a straightforward way to demonstrate compliance. Developers already undertaking compensation might therefore find their costs fall if they use a biodiversity offsetting mechanism.

6.6 Estimating the value of the benefits of option 1

6.6.1 Biodiversity benefit

In order to calculate the environmental benefits of offsetting, we use the assumption above that on average an additional hectare of BAP habitat delivers a flow of benefits with a present value of £29,850/ha. For simplicity and to avoid being spuriously accurate we have not attempted to estimate how this present value of benefits might vary over the 100 year time frame of the management costs. Benefits are therefore assigned to the year in which their associated costs are accrued.

Table 13: Benefits from better biodiversity under option 1

	2011	**2015**	**2020**	**2025**	**2030**	**NPV (20 yrs)**
Hectares (Average assumed condition of habitats lost to development is moderate)	4,621	5,420	5,151	4,952	4,637	-
Benefits (£m)	138	162	154	147	138	**2,216**
Hectares (Average assumed condition of habitats lost to development is optimum)	9,243	10,840	10,301	9,850	9,274	**-**
Benefits (£m)	**275.9**	**323.6**	**307.5**	**294.0**	**276.8**	**4,432**

6.6.2 A new industry

The discussion of who gains and who loses argued that some proportion of the price of an offset will not directly contribute to the creation of biodiversity; it will represent a profit to the offset providers. If this were not the case, providers would not come forward and biodiversity offsetting could not take place. This profit from the sale of an offset is a transfer away from the development sector towards the offset providing industry – because we have included it in our estimates of the costs to the development sector, it must also be included as a benefit to this new industry.

This transfer is calculated based on the difference between the cost of offsetting when land purchase is required and the cost of offsetting on land which the provider already owns. We believe this is an appropriate comparison because the cost of offsetting with land purchase includes the price of agricultural land, which itself includes a profit margin.

Table 14: Profit of / transfer to offset providers under option 1

	2011	2015	2020	2025	2030	NPV (20 yrs)
Average assumed condition of habitats lost to development is moderate (£m)	53.0	62.3	59.1	56.5	53.1	852.5
Average assumed condition of habitats lost to development is optimum (£m)	105.9	124.7	118.3	112.9	106.3	1705.0

6.7 Estimating the value of the benefits of option 2

To maintain consistency with the estimates of the costs of option 2, we present an illustrative case where 50% of developments use the new biodiversity offsetting scheme. This leads to benefits half the size of the mandatory scheme.

6.8 Estimating the value of the benefits option 3

6.8.1 Biodiversity benefits

Similar to estimating the benefits of option 1, we use the assumption above that on average an additional hectare of BAP habitat delivers a flow of benefits with a present value of £29,850/ha. For simplicity and to avoid being spuriously accurate we have not attempted to estimate how this present value of benefits might vary over the 100 year time frame of the

management costs. Benefits are therefore assigned to the year in which their associated costs are accrued.

As the testing period will only last for 2 years and only include a fraction of the total area of land expected to be developed in England over those 2 years, the benefits are correspondingly smaller than under option 1 and 2.

Table 15: Benefits from better biodiversity under option 3

	2011/12	2012/13	NPV (2 yrs)
Hectares (Average assumed condition of habitats lost to development is moderate)	385	363	-
Benefits (£m)	**11.5**	**10.8**	**22.0**
Hectares (Average assumed condition of habitats lost to development is optimum)	770	726	-
Benefits (£m)	**23.0**	**21.7**	**44.0**

6.8.2 A new industry

In line with the discussion around the incidence of costs, there will be some transfer of developer profits from the owner of land for development to the owner of land used for offsetting. Under option 3, the smaller number of planning authorities and the lack of a long term incentive to join the offsetting industry could mean that fewer offset providers come forward. This is the reason we elected to use a higher estimate of the cost of offsetting. However, whilst this assumption raises the price faced by developers, it also means offset suppliers make a corresponding increase profit, with the net effect being zero. The discussion of who gains and who loses considers this in depth.

Table 16: Transfer to offset providers under option 2

	2011	2012	NPV (2 yrs)
Average assumed condition of habitats lost to development is moderate (£m)	6.1	5.8	11.8
Average assumed condition of habitats lost to development is optimum (£m)	13.2	12.0	25.2

6.8.3 The benefits of learning

We expect to learn valuable lessons from the testing period, which we will take forward and use to revise the proposals for any national scheme, whether mandatory or voluntary. Thus, if the testing phase provides us with information to further minimise the costs of a national scheme, or to increase the benefits, then it is possible to argue that these are attributable to the testing phase. However, it is not possible to assess the magnitude of such benefits in advance, so we note this as an important non-monetised benefit of option 3.

6.9 Switching values

In the overall cost benefit analysis of biodiversity offsets, the costs of offsetting that are not directly associated with providing the offset effectively cancel out, as they are transfers of profit from one sector to another.

Therefore the drivers of the benefit cost ratio are the resource costs of providing biodiversity offsets (most similar to the costs of delivery through management agreements - table 10) and the benefit estimated from the forthcoming report to Defra "Economic Valuation of the Benefits of Ecosystem Services delivered by the UK Biodiversity Action Plan". In option 1 the present value to the benefit of offsetting is estimated at £2.2bn, which is delivered to society in return for a present value cost of roughly £1050m to business (including an adjustment for risk).

A switching analysis would need to consider factors that could either triple the costs of providing biodiversity, or reduce the benefits by two thirds.

This seems unlikely; however, the testing phase of the policy will be key to ensuring any offsetting mechanism can deliver cost effectively.

An alternative approach to assessing whether this proposal makes economic sense is to look at what the costs and benefits would look like if the current system were already delivering biodiversity benefits – i.e. how does the current system, if fully and correctly applied, compare to the proposed system of biodiversity offsets? In this case, benefits of the new system would arise if it were less costly than the existing one, and costs would correspondingly arise if biodiversity offsetting were more expensive than the current system. We believe there are three strong reasons to believe that biodiversity offsetting will be less costly than the current system:

- Providing a measurable "product" – units of biodiversity offsets – should encourage suppliers to come forward, recognising the potential gains to be had from selling offsets. This will reduce costs to developers in sourcing their compensatory habitats, because suppliers will wish to be visible in order to attract trade.
- Competition between suppliers of biodiversity offsets should lead to lower prices

- Greater certainty over what is required of developers should reduce delays in meeting planning obligations, which would otherwise have been costly.

We chose not to examine the above cost savings in detail because we currently lack evidence on how many developments this might apply to. However, we believe this line of argument is sufficient to demonstrate that even if a substantial number of developments are already undertaking high-quality habitat compensation, they could still find the proposed system of biodiversity offsets beneficial.

6.10 Summary of costs and benefits

Table 17 (in 3 parts) presents a summary of the costs of options 1 and 2, and 3 and Table 18 (also in 3 parts) presents the benefits. These numbers assume that no habitat compensation currently takes place so all costs and benefits are additional; the research project on the implementation of current practice.

TABLE 17

17a Cost summary for option 1

Actor	**Cost Element**	**Annual Costs (2011)**		**Present Value Costs**	
		Best estimate	**High**	**Best estimate**	**High**
Planning Authorities	Draft offsets strategy	7.6	15.3	122.7	245.5
Planning Authorities	Agree offsetting requirements as part of planning permission				
Developers (land owners)	Pay for the offset (incl creation/restoration, management and monitoring)	34.2	57.7	548.5	923.4
Developers (land owners)	Pay for the land/opportunity cost	53.0	106.0	852.5	1705.0
Developers	Agree offsetting requirements as part of planning application	22.9	45.9	368.2	736.4
Developer (land owner)	Insure against failure of habitat restoration/creation activities	60.4	120.8	967.3	1934.7

17b Cost summary for option 2

Actor	Cost Element	Annual Costs (2011)			Present Value Costs		
		Low	Illustrative 50% of Option 1	High	Low	Illustrative 50% of Option 1	High
Planning Authorities	Draft offsets strategy	0	3.8	15.3	0	61.4	245.5
Planning Authorities	Agree offsetting requirements as part of planning permission						
Developers (land owners)	Pay for the offset (incl creation/restoration, management and monitoring)	0	17.1	57.7	0	274.3	923.4
Developers (land owners)	Pay for the land/opportunity cost	0	26.5	106.0	0	426.5	1705.0
Developers	Agree offsetting requirements as part of planning application	0	11.5	45.9	0	184.1	736.4
Developer (land owner)	Insure against failure of habitat restoration/creation activities	0	30.2	120.8	0	483.7	1934.7

17c Cost of option 3

Actor	Cost Element	Annual Costs (2011)			Present Value Costs		
		Low	Best estimate	High	Low	Best estimate	High
Natural England	Informal certification of offsets	0	0.6	1.3	0	1.2	2.4
Planning Authorities	Draft offsets strategy						
Planning Authorities	Agree offsetting requirements as part of planning permission						
Developers (land owners)	Pay for the offset (incl monitoring)	0	2.9	4.8	0	5.4	9.2
Developers	Agree offsetting requirements as part of planning application	0	6.1	1.6	0	11.8	3.2
Developers	Insure against failure of habitat restoration/creation activites	0	1.9	3.8	0	3.7	7.3

TABLE 18

18a Benefits of option 1

Actor	Benefit Element	Annual Benefit (2011)		Present Value Benefit	
		Best estimate	High	Best estimate	High
Civil Society	Biodiversity improvements	137.9	275.9	2216.0	4,432.0
Offset providers (land owners)	Receipt of payment for land/opportunity costs	53.0	106.0	852.5	1705.0
Developers	Faster, less costly negotiations	unknown		unknown	
Planning Authorities	Faster, less costly negotiations	unknown		unknown	

18b Benefits of option 2

Actor	Benefit Element	Annual Benefit (2011)			Present Value Benefit		
		Low	Illustrative 50% of Option 1	High	Low	Illustrative 50% of Option 1	High
Civil Society	Biodiversity improvements	0	69.0	275.9	0	1,108.0	4,432.0
Offset providers (land owners)	Receipt of payment for land/opportunity costs	0	26.5	106.0	0	426.3	1,705.0
Developers	Faster, less costly negotiations	0	unknown		0	unknown	
Planning Authorities	Faster, less costly negotiations	0	unknown		0	unknown	

18c Benefits of option 3

Actor	Benefit Element	Annual Benefit (2011)			Present Value Benefit		
		Low	Best estimate	High	Low	Best estimate	High
Civil Society	Biodiversity improvements	0	11.5	23.0	0	22.0	44.0
Offset providers (land owners)	Receipt of payment for land/opportunity costs	0	6.1	13.2	0	11.8	25.2
Developers	Faster, less costly negotiations	0	unknown		0	unknown	
Planning Authorities	Faster, less costly negotiations	0	unknown		0	unknown	

7 Summary of risks and assumptions

The analysis in this IA is based on a range of assumptions.

One of the aims of the test phase will be to revise and refine these assumptions, to inform an updated impact assessment that would be used to make future decisions on whether, and how, to make greater use of biodiversity offsetting in England.

Assumption 1: The current costs of implementing planning policy on biodiversity

Compensation for biodiversity loss is required under current planning policy. There are examples of compensation being provided, and also examples of it not being provided when it should be, or of compensation being ineffective. There has been no systematic gathering of information about what happens or how much it costs.

The costs in this Impact Assessment therefore assume that nothing happens at the moment. They are absolute, rather than representing a change from current practice. This means that any costs identified **may not be additional**.

Defra is assessing the application of current planning policy on biodiversity more systematically in a piece of research called "Planning Policy and biodiversity offsets" which is due to report early in 2012.

Assumption 2: Land Price

In some cases, offset providers may need to buy the land the offset will be on. For the calculations presented here we have used regional averages of the price of agricultural land (although as noted above the IA presents the England-wide average to avoid over-complicating the discussion). The test phase will help us to better understand how often land purchase is likely to be a part of an offset, what this means for the price, and the impact of other factors (such as the offset provider's motivations and what this means for the prices they want to charge).

Assumption 3: Administrative costs

We have assumed that administrative costs (i.e. anything that is in addition to what it costs to deliver the biodiversity on the ground) add 40% to the other costs. This figure is based on surveys of other schemes, and further details are provided in the GHK Report. This includes the:

- Developers costs: the time taken to assess the site, find a provider, and agree a way forward with the local authority
- Local authority costs – time spent in drawing up an agreement
- Offset provider costs – drawing up the appropriate management plans and activity needed to demonstrate they meet a standard

Assessing the experience of people in the test areas will enable us to better understand these administration costs, and how they compare to the costs of current approaches.

Assumption 4: Insurance

A gap in our knowledge is around insurance. Offset providers will be contractually obliged to deliver an area of habitat that provides a certain number of biodiversity units. There will be a risk of failure, and one way to manage this would be to create additional habitat, to give a better chance of successful delivery. This would be a relatively expensive option, adding around 50% to the total scheme costs each year. There are other possibilities – e.g. taking out insurance, which should have a lower cost.

A key aim of a test phase will therefore be to better understand how offset providers would look to manage this risk, and what the costs of the different choices they would make would be,

Assumption 5: Location of offsets

As noted above, the calculations presented here have used regional averages of the price of agricultural land, as part of our assumption that relatively low value land will be used for offsets. We are assuming that this type of land will be available in all areas, but the test phase (both "live" pilots and perhaps some further desk-based research) will allow us to understand better whether this is the case.

8 Specific Impact Tests

8.1 Statutory equality duties

8.1.1 Race Equality

Defra concludes that the proposed designations will not impact on race equality.

8.1.2 Gender Equality

Defra concludes that the proposed designations will not impact on gender equality.

8.1.3 Disability Equality

Defra concludes that the proposed designations will not impact on disability equality.

8.2 Justice system

8.2.1 Legal Aid Impact Test

The suggested approach to offsetting does not create any new criminal sanctions or civil penalties

8.2.2 Human Rights

Offsetting does not have a disproportionate impact on people of a different age, ethnicity, gender, disability, religion or belief, or sexual orientation and is consistent with the Human Rights Act 1998.

8.3 Competition Assessment

Applying the competition filter suggested that there shouldn't be any significant competition effects. The costs of offsetting should be proportionate to the scale of developments and a competitive open market for offset provision should limit any advantage to incumbent developers. Offsets should not reduce the ability or incentive for developers to compete.

8.4 Small firms impact assessment

The impact on small firms will depend firstly on whether planning policy is applicable to small firms, and also on how local authorities decide to use offsetting. The cost of securing offsets (the major cost of the policy) should not be disproportionate (as the scale of offsetting required will vary with the scale of the development). Local authorities may wish to apply thresholds within their application of the policy to reduce any disproportionate administrative burdens. This is addressed in the Defra discussion material on offsetting which suggests for small, low impact developments, local authorities could ask developers to make a payment in lieu to a fund administered by the local authority, or by a trust, or community group on the local authority's behalf, to deliver offsetting biodiversity conservation projects in the area. Alternatively, small and low-impact developments could be exempt. The testing phase will allow us to explore these different approaches in practice with LPAs and developers.

8.5 Environmental Impacts

8.5.1 Greenhouse gas assessment

Whilst investment in habitats is likely to increase carbon storage the impact is not likely to be significant at a national level.

8.5.2 Climate Change adaptation

Where offsetting helps establish networks of habitats across the country it could aid adaptation to climate change.

8.5.3 Wider environmental issues

Offsetting is a policy aimed directly towards conserving the natural environment and as a result will have a positive environmental impact.

8.6 Social Impacts

8.6.1 Health and well-being

It seems unlikely that there will be adverse health impacts of offsetting. There a detailed health impact assessment has not been carried out. Well being benefits of biodiversity are in part picked up in the benefit estimates through a public survey.

8.6.2 Rural proofing

Offsetting will not have a significant adverse impact on rural communities. As offsets provision is likely to occur in rural areas there is potential for rural businesses to benefit.

8.7 Sustainable development

Offsetting will positively contribute towards sustainable development. Protecting biodiversity is an investment that benefits both present and future generations within the UK and within a broader international context.

Annex A: Offsetting schemes in other countries

Australia – New South Wales, Biobanking	Under the **Environment Planning and Assessment Act,** clearance of native vegetation has to be offset.	Landowners enter into biobanking agreements with the Minister for Climate Change and the Environment. BioBanking Assessors are individuals accredited under the Threatened Species Conservation Act and are authorised to prepare assessments and surveys of biodiversity values under the BioBanking Scheme. Money from selling credits goes into a Biobanking Trust Fund, and payments are made to land managers, managing credits, from this. (Funds are invested in the stock market). It's managed by a Trust Fund manager appointed by the Minister. Owners of biobank sites will report compliance information to DECC for review and assessment and DECC collect further information through a range of compliance activities.
Australia – Victoria, Bushbroker	Since 1989, landholders wanting to clear native vegetation must have a planning permit from their local council. Local councils also need to consider in "Victoria's Native Vegetation Management: A Framework for Action**"** in any planning decision, which specifies a primary goal of achieving a **'net gain'** in the extent and quality of native vegetation.	Bushbroker Project Officers, employed by the Department of Sustainability and Environment visit sites to assess the credit potential. The landowner signs a Landowner Agreement with DSE (or the Responsible Authority). Credits can then be entered on the Bushbroker database. Developers can find credits through the database; they agree a price with the landowner. The Secretary of DSE, on behalf of the State of Victoria will receive, and hold in trust, the price for subsequent progress payments to the landowner. The landowners have to complete annual reports for each of the 10 years of their agreement.
USA – wetland banking	The **Clean Water Act**, Section 404, allows for the establishment of a mitigation bank in order to provide compensation for unavoidable	Mitigation banks (note that bank here means an area of land that can receive offsets) must be recognized by the appropriate regulatory agencies with jurisdiction over wetlands activities before they can become

	(but permitted) impacts to aquatic resources. Permits are issued by the Army Corps of Engineers or an approved State.	fully operational. The Permits are issued by the Army Corps of Engineers or an approved State. In each Corps district where a mitigation bank is proposed, a Mitigation Banking Review Team, or MBRT, is established to "facilitate the establishment of mitigation banks through the development of mitigation banking instruments." The MBRT process and permits the bank, and evaluates it for credits. Wetland mitigation banks may also be used to compensate for impacts to wetlands not regulated by the Corps. In these cases, banks may be established through an enabling instrument other than a formal banking instrument.
USA – Conservation Banking	In 2003 the US Fish and Wildlife Service (FWS) promulgated federal guidance for the establishment, use, and operation of conservation banks. Aims to mitigate adverse impacts to species listed as endangered or threatened under the Endangered Species Act (ESA) of 1973.	Because of the history, most banks are in California. The Resources Agency of California has published the State's Official Policy on Conservation Banks. It provides formal policy guidance on the appropriate location, mechanisms for permanent protection of the habitat, and the basic elements necessary for the Department of Fish and Game to approve a conservation bank.

Annex B: Example of how a developer might assess the impact of a development, and how an offset provider might calculate what they can offer

The developer carries out a site assessment using standard Environmental Impact Assessment methodology (see for instance http://www.ieem.net/ecia.asp). This assessment would work out all the environmental losses that result from the development, as well as any potential gains. This provides all the information necessary to identify the changes in distinctiveness and condition of biodiversity that result from the development. Figure 1 above can then be used to translate this change into a number of units of biodiversity.

Illustrative example: A bypass is planned for a small country town. The road is 7 kms long and 40 m wide. Verges around the road will be created that can host some biodiversity, so after this has been taken into account the impact of the site and the offset requirement is:

Habitat lost	**Score per Ha**	**Ha**	**Offset requirement (biodiversity units)**
Lowland mixed woodland (not ancient)	24	8	192
Arable land	8	13	104
Arable field margins	24	2	48
Rough grazing - non-BAP	16	5	80
Total			**424**

The offset requirement is therefore the purchase of at least 424 units worth of conservation actions. The developer could provide this compensation on their own land, or they could source the number of units required from an offset suppler.

With sufficient certainty about the demand for offsets, and clarity over what counts as an offset, it is likely that suppliers will come forward pro-actively and will compete to provide offsets to developers.

In this example, the developer has chosen to use a supplier to deliver their offset requirement. The offset supplier might chose to provide these 424 units through a habitat creation project that created lowland woodland (worth 24 units per hectare) on previously arable land (worth 8 units). With a 16 unit increase in the value of this land, the offset provider would need to find 26.5 hectares of land for the work (16x26.5 = 424). There could be a negotiation about the price, but assuming the provider could deliver the habitat immediately, at a accepted price of £30,000 per hectare, the developer might then face a total cost of £795,000.

However, in this simplistic example we do not account for the need for offset providers to use multipliers to reflect, for example, the fact that it may take some time to create the 26.5 hectares of lowland woodland. This may have an impact on the costs. In the calculation of costs and benefits above we have taken advice from Natural England that habitat creation

can take up to 20 years, and found that using HM Treasury's discount rate of 3.5% per year, this could double the costs. Working with local authorities, developers, and offset providers in a pilot will enable us to better understand how these issues will be managed.

Specific guidance on how developers should use their site assessment in conjunction with Figure 1, and how offset providers should use it to calculate how many units they can sell, is currently under development. We will finalise this guidance with participants in a pilot, to make sure it is fit for purpose. This will be made available before the pilot begins.

Annex C: Post Implementation Review (PIR) Plan

Basis of the review: At this early stage it is useful to plan how we will collect and evaluate information arising from the testing phase. This will inform decisions on whether, and how, a national approach has potential, and if so in what form. As such this is not a "post-implementation review", but a plan for the evaluation of the early testing phase.

Review objective:
Overall the objective is to assess whether to support biodiversity offsetting nationally, and if so on what basis (with LPAs and developers opting in, as per the test phase, or with some degree of compulsion). Sub-objectives include:

- To assess whether using offsetting to deliver the compensation provided to meet planning policy requirements will deliver improved biodiversity outcomes (actual improvements are unlikely within the 2 year pilots, but there should be evidence of moving in the right direction)
- To assess whether costs to developers have increased or decreased (including time spent gaining consent and money spent on offsets)
- To assess whether costs faced by those involved in pilots could be reduced
- To assess whether an "opt-in" approach for LPAs is likely to result in wide-spread adoption of biodiversity offsetting

Review approach and rationale: We will look to assess trends in the development sector both inside and outside the pilot areas in order to isolate changes that result from using biodiversity offsetting, as opposed to changes that result from the wider context of the planning system and the development market.

We will employ a range of techniques to gather information, including:

- Before the pilots start, surveys of current practice in a sample of representative LPAs (Tyldesley et al, forthcoming).
- During the pilots, a forum for LPAs to share best practice and log experiences
- At various points during and after the pilots we will seek views from developers and offset providers as well as the wider community in order to assess their experiences in more detail.

Information gathered will be both qualitative and quantitative and we will make use of formal statistical techniques as well as case studies, exemplars of best-practice and desk-based research as appropriate.

Further information may be gathered from the experiences of offsetting projects in other countries to provide a comparator for the early success of the pilots, although it is

recognized that parallels to the current policy are limited.

Baseline: Information on current practice will be provided by the forthcoming report for Defra "Planning Policy and Biodiversity Offsets" (Tyldesley et al.), expected to report early in 2012, and by a survey of participating LPAs at the start of the trial period.

Success criteria: Pilots will be considered successful if they provide information to allow a decision on whether, and how, to proceed with supporting greater use of biodiversity offsetting in England. As part of this, the pilots could: highlight previously unidentified risks, provide effective strategies for mitigating the risks identified in this analysis, or provide better information to refine assumptions made in our analysis. They will also have been useful if they demonstrate that a national approach is feasible, allowing Defra to explore different scheme designs in the subsequent stages of policy development.

More generally, biodiversity offsetting will be considered worth pursuing further if pilots demonstrate:

- Costs to developers can be kept low and offset providers do not have undue market power
- The potential for improvements in biodiversity – actual improvements are unlikely to be visible after 2 years because of the time delay in restoring and creating new habitats, but there should be significant evidence that the right measures are being taken to secure new/better habitats in the future.
- Offset providers are coming forward to offer their services without being actively sought – providing a supply side of the offsets market and distinguishing the scheme from the current ad-hoc searches for compensation sites.

Monitoring information arrangements:
There will be a forum for LPAs to share best practice and log experiences; the survey carried out at the start of the trial period will be repeated at the end to assess what has changed. We will also we will seek views from developers and offset providers as well as the wider community in order to assess their experiences in more detail.

Reasons for not planning a review: N/A. Note that the above is not a "post implementation review", but an evaluation of the 2 year period of testing elements of the proposal with a small number of LPAs.