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**EXPLORING LESSONS LEARNED FROM BIODIVERSITY OFFSETTING
MARKETS IN OTHER COUNTRIES THAT COULD INFORM APPRAISAL OF
OPTIONS FOR DELIVERING OFFSETS IN ENGLAND**

FINAL REPORT to DEFRA

5 March 2014



Forest Trends Association



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0. EXECUTIVE SUMMARY

1. The objective of this study was to gather evidence, from established offsetting markets in the US and Australia, through structured interviews and a limited review of literature, on (1) the range and extent of **costs and benefits to developers** arising from offsetting regimes, (2) the **effects of market design on offset prices**, (3) **conservation outcomes** of offsetting, and (4) **broader economic outcomes** of offsetting. The focus of the study was on (1) and (2); with regard to (3), it is important to note that this study did not set out to make a comprehensive study of conservation outcomes.
2. The study examined experience under the following offset regimes, in each case comparing conventional developer-led offsetting with 3rd party offsetting: **US: (a) wetland and stream mitigation** under the 2008 Final Compensatory Mitigation Rule; **(b) species conservation offsets** under the Endangered Species Act 1973. **Australia: (a) Victoria:** offsetting under the 2002 Native Vegetation Management Framework through the BushBroker scheme and in relation to a 15000 ha government-run grassland offset for Melbourne; **(b) New South Wales:** offsetting at the (master-) planning level (through 'Certification') and at the level of the individual development (through 'BioBanking'); **(c) Federal level:** offsetting in relation to threatened species, under the Environmental Protection and Biodiversity Conservation Act 1999 and related 2012 guidelines.
3. The following is a short synthesis of the evidence provided by interviewees (the main report also draws out potential implications of this evidence for offsetting in England).
4. **BENEFITS TO DEVELOPERS**
 - **Time savings.** Time-to-permit savings and savings arising from transfer of liability are the major drivers of developer demand for 3rd party offsets. They make 3rd party offsets the most economically advantageous, and therefore preferred, option. In the US, 3rd party mitigation banking (MB) offsets deliver on average c.5 months time-saving compared to permittee-responsible (PR) off-site compensation and c.50 days compared to PR on-site compensation. As regards offsetting for endangered species, aggregated offsets and 'programmatic consultations' generally reduce time-to-permit to a few weeks. In Victoria, the BushBroker scheme, creation of the large Melbourne grasslands reserve to offset a large development area in Melbourne, and fast-track facilities for lower-level impacts, have together delivered times-savings valued at A\$500 m (£294 m). In NSW, a study of 20 projects found that BioBanking halved average time-to-permit and delivered savings totalling A\$35 m (£20.6 m).
 - **Reduction in long-term liabilities.** In both the US and Australia, transfer of liability for compensation from the developer to a 3rd party delivers very significant savings, in particular to smaller developers.
 - **Unblocking of developments.** In the US and Australia, greater availability of offsets can help unblock developments where avoidance and minimisation is acceptable and where compensation has been blocked by inability to find a suitable site.
 - **Gain in net developable area.** In the US, while there is an increasing trend away from on-site compensation, empirical data on the value of this in terms of NDA gain is not available. In Australia, offset supply has delivered gain in NDA on some sites.
 - **Other benefits.** Other significant areas of benefit/savings to developers include: (1) offsetting enables development to be implemented sooner and, for a developer, this can make the difference between profit and bankruptcy; (2) 3rd party offsetting enables just-in-time mitigation; (3) a 3rd party offset typically has access to cheaper

land than does developer-led compensation; (4) MB offers economies of scale (by creating aggregated offsets), including reduction of fixed costs by 30-40%; (5) some developers may themselves generate additional income as 3rd party offset providers.

- **Route for developers to recover any net additional costs of 3rd party offsets.** In both the US and Australia, developers typically pass any net additional cost of a 3rd party offset (compared with developer-led compensation) to the landowner selling the land to be developed. However, there is some evidence that additional net costs may be passed to end-buyers, particular when there is strong (housing) demand.

5. **IMPACT OF MARKET DESIGN ON OFFSET PRICES**

- **Effect of like-for-like constraints.** Very strict like-for-like requirements (e.g. for threatened species or rare habitats) may result in high prices. In both the US (under wetland banking) and Victoria, recent changes to rules have taken a risk-based approach, loosening like-for-like requirements for impacts on habitats of lower conservation significance.
- **Effect of service area restrictions.** In the US, small service areas are a disincentive to the supply side and result in inadequate supply, while larger service areas can create thicker, more liquid markets. In Victoria, liquidity relates more to demand for and the rarity of an offset type than to the size of the service area. Credit prices will be particularly high if a small service area is set for a region with high land values.
- **Effect of liquidity of supply (related to market maturity).** Credit prices are (predictably) higher when there is only one supplier. Where there are multiple providers, costs equilibrate quickly, as developers have greater scope to negotiate price. In Victoria, data shows prices trending down as the market establishes.
- **Other key determinants of offset prices.** Other than where markets are very thin, the key determinants are land value, regulatory standards (e.g. requiring covenants and/or purchase of easements) and the costs of habitat creation/restoration/enhancement and long-term management. A choice of offset routes (1st party, 3rd party) helps put a 'natural cap' on 3rd party prices. In the US, 3rd party prices are often set through close relationships between bankers, developers and regulators and bear no relation to developers' opportunity costs. Conversely, an example from NSW demonstrates that, at least for the scarcer vegetation types, suppliers are very much setting prices according to what the market can bear.

6. **CONSERVATION OUTCOMES.** In the US, there is strong empirical evidence that developer-led on-site compensation gives poor ecological outcomes (only a 7% success rate). Off-site compensation performs considerably better than on-site. 3rd party MB offers ecological advantages of greater aggregation and reduced temporal losses. Anecdotally, the raising of performance standards and consequent costs of mitigation is encouraging developers to move back up the mitigation hierarchy, delivering more avoidance and minimisation, and hence improved conservation outcomes. In Australia, 3rd party offsets deliver better ecological outcomes than developer-led. In Australia as in the US, on-site compensation tends to deliver poor conservation outcomes over time.
7. **BROADER ECONOMIC BENEFITS.** In the US, the total market for 3rd party MB in 2011 was US\$2-3.4 bn and the main net economic benefit probably derives from the bringing forward of c. US\$60-102 bn of related development by an average of 5 months. A US study suggests every \$1 m spent delivers between 7 and 40 jobs, many in rural areas. This has spurred growth of a new ecological restoration/engineering industry in the US. The markets in Australia are smaller than in the US but have similarly stimulated a range of new businesses, notably in rural areas.

1. INTRODUCTION

Context and purpose

This research project was commissioned by Defra to assist with the development of policy on biodiversity offsetting, in particular to support more detailed economic appraisal of the policy options identified in the Green Paper on Biodiversity Offsetting in England (Defra 2013a, 2013b).

The Green Paper identifies 4 options: (1) a fully permissive approach, (2) a uniform approach, (3) a partially permissive approach, and (4) a Community Infrastructure Levy (CIL) approach. The uniform approach is divided into three sub-options (a), (b) and (c) which vary in terms of the threshold (expressed in terms of size of development, or quality/condition of habitat impacted) above which developers must comply.

In particular, Defra was interested to gather evidence to better understand costs and benefits to developers arising from these policy options. A uniform (i.e. mandatory) approach was advocated by the Ecosystem Markets Task Force (EMTF 2013). EMTF research (funded by Defra and NERC) suggested that this would enable the development of a large, liquid market, optimizing both benefits to business and outcomes for nature (Duke *et al.* 2013). The government, however, has expressed in the Green Paper a preference to take a voluntary approach. A key reason given for this is that there is as yet insufficient evidence to demonstrate, with sufficient confidence, that mandatory offsetting would not increase regulatory burden on business in general and on house builders in particular (a key government commitment). This report seeks to address this evidence gap by gathering relevant evidence from established offsetting markets in the US and Australia.

Much of the focus on the impact of offsetting on developers has, to date, been on the cost of the offset itself, which represents an internalization of environmental costs hitherto not fully captured in the development process. At face value, this suggests offsetting brings added cost to developers. However, developers may benefit from a number of savings arising from offsetting, which may together outweigh these new costs. These include savings related to: reduced permitting time (as offsetting provides transparency and a relatively simple method to resolve conflicting positions on compensation of residual impacts); the unblocking of some developments which may be blocked by the non-availability of suitable offsets under the current planning system; an increase in net developable area (where on-site offsetting, which may deliver poor conservation outcomes, may be substituted by off-site offset activities of delivering better conservation outcomes); and reduced long-term developer liabilities for offset measures.

Further, a larger, more flexible and more liquid market is likely to deliver lower costs and greater savings to developers than a smaller, less flexible and more illiquid market. The liquidity of offset markets may be affected by various factors, including the strictness of like-for-like requirements, the size of the region within which any development is allowed to site its offset, the maturity of the market, and barriers to market entry. Greater competition in supply should drive down offset costs and enhance savings, both to developers and planning authorities and regulatory agencies (such as Natural England). Greater supply should also offer larger-scale offsets at lower unit cost (due to economies of scale).

Evidence from the US and Australian markets should help elucidate the scale of these costs and savings under various market conditions, and can be related to the specific England context to inform appraisal of the policy options.

Concurrent research carried out for Defra (CEP 2013) examined baseline costs for developers under the current system. This, together with some 'ground-truthing' through

some limited research in England under the current project, has helped inform interpretation of the US/Australia findings in the England context.

Finally, evidence from the US and Australia may also usefully provide information on the wider environmental and economic benefits of permissive versus uniform markets, such as the delivery of larger, more ecologically viable compensation areas than delivered under the current system, and the stimulation of a range of businesses in the rural economy.

Objectives of the research

Drawing on evidence from established offsetting markets in Australia and the United States of America, the objectives of this research were to seek quantified evidence of:

1. Economic benefits to developers of access to offsets markets, in comparison with alternative mechanisms for providing compensation, for example this may include:
 - Time savings in securing development permission;
 - Time savings in securing compensation;
 - Unblocking of developments where conventional off-site compensation was considered unacceptable, too difficult to source, or too difficult to negotiate.
2. The impact of different market characteristics on the costs and benefits of offsetting. This may be through comparisons of different approaches to offsetting in different geographical locations, or the impact of changes in approach over time. Costs of offsetting should include not only costs of credits, but also the transactions costs of finding and securing credits. Issues of interest include:
 - Impacts of narrow offset markets driven by the non-fungibility of credits against more flexible approaches;¹
 - Impacts of systems requiring local offsets against more flexible approaches which allow the aggregation of offsets in larger more distant sites;¹ and
 - Impacts of access to well developed markets with competition between suppliers against scenarios where market are less well established.¹
3. Any environmental benefits of offsetting over alternative approaches to compensation.
4. Further areas where additional evidence / examples would be welcomed by Defra including:
 - Measurable impacts arising from the ability to use offset on the net developable area of development sites;
 - Measurable benefits to developers of the ability to avoid liabilities for onsite compensation management through the use of offsets;
 - Identifiable routes through which developers can recover any net additional costs of offsetting; and
 - Wider economic benefits of the introduction of offsets markets.

¹ These all essentially relate to the liquidity of the market, i.e. having many different types of offset credit that cannot be exchanged for each other would reduce liquidity in the market, as there could effectively be many small markets for each credit type. Similarly geographical restrictions on where offsets can be placed would reduce liquidity, as offset markets would be limited by geographical boundaries from which offsets could be drawn. Likewise more established markets with competition amongst suppliers are also likely to be more liquid than markets that are still developing.

5. Finally, any further evidence identified throughout the project on the costs and benefits of offsetting to developers (not identified above) that would help inform choices around the use of offsets in England.

For the purposes of the appraisal of policy options, Defra was particularly interested to gather further evidence in relation to objectives 1 and 5 (costs and benefits for developers) and, thereafter, objective 2 (effects of market characteristics on offset prices). While a key objective of offsetting is to enhance conservation outcomes, less emphasis was placed on gathering empirical evidence in this regard within the current study; this would be a very valuable area for a future study.

Research approach

This research was necessarily based on structured interviews with individuals having substantial experience in offsetting in the US and Australia, in order to seek lessons from their experience and evidence. The research also extended to structured interviews with a small number of individuals in England, aimed at helping to understand the implications of the findings from the US and Australia for the England context.

The research thereby extends the evidence base available to Defra beyond readily available published literature to evidence held by those directly involved in offsetting, the expert opinion of these individuals, and grey literature to which the interviewees refer.

We identified interviewees and designed a structured interview process to elicit evidence in relation to a set of key questions, including, in some cases, material that is commercially confidential.

Details of the procedure are provided below together with an overview of how the results are presented in this report. The key findings and implications for offsetting in England should be understood in this context.

Identification of interviewees

Initial interviewees in relation to biodiversity offsetting in the US, Australia and England were identified with the benefit of Defra's network of contacts, and the broader network of contacts of Forest Trends, which hosts the Business and Biodiversity Offsets Programme. Each interviewee was asked to suggest additional people who might be best placed to supply the evidence that we were seeking.

Given the focus of this study, we targeted in particular individuals with a high experience of offsetting whom we felt were best placed to address in particular the questions related to developers' costs and savings arising from offsetting, that is, developers themselves, planning consultants working closely with developers, and leading offset providers (who work closely with developers). While it proved difficult to find many developers willing to be interviewed, we found that offset providers and planning consultants in all three countries offered very good insight into developers' perspectives.

We also targeted key people in the US and Australian regulatory agencies with responsibility for offsetting, and those in think tanks or academia who had published relevant research on offsetting which might yield relevant economic evidence.

Interview procedure

We developed a background paper (Annex 2) providing an introduction, context and a list of key questions (based on the above-listed project objectives). An email was sent to each potential interviewee introducing the study and requesting an interview of 30-60 minutes. Once accepted, interviewees were sent the background paper in advance of their interview. Interviews were held by phone or Skype and focused on those questions each interviewee

was best qualified to address. A memo of each interview was subsequently drafted and then shared with the interviewee to correct any errors, fill gaps and seek additional evidence where this appeared to exist. These memos served as the basis for the current report.

In general, we carried out interviews in England only once we had completed most of the interviews in the US and Australia. The focus of the English interviews was to relate the findings from the US and Australia to the English context.

We interviewed 34 people in all, of whom 20 were in the US, 9 in Australia, 5 in the UK. The higher number of interviewees in the US reflects the fact that the US market has been longer established and therefore has generated more evidence.

Of the US interviewees, 4 were from government regulatory agencies (the Army Corps of Engineers and the US Fish and Wildlife Service), 2 were developers, 7 were offset providers and the remainder (7) was from academic, think tanks and/or the consulting industry. Of the Australian interviewees, 3 were from government (one each federal, Victoria and New South Wales), 2 were developers, 2 offset providers, and 2 from the consulting industry. Of the UK interviewees, 1 was a developer, 1 offset provider, 2 from planning consultancies that work closely with developers, and 1 from an economic consultancy.

Many additional possible interviewees were identified but could not be interviewed due to limited time and resources (the project was carried out in a 5 week period from late October to early December 2013). The research team, feel those interviewed provide a good cross-section of key players in the US and Australian markets, and helped relate the US and Australia evidence to the English context.

Review of source materials

All interviewees were asked to send any relevant source materials (or links thereto) to substantiate the evidence they gave in the interviews. We obtained a large number of source materials and these are listed in the bibliography. While, in general, the most pertinent evidence from these documents was mentioned by interviewees, and had therefore already been captured, we also scanned these source materials to cross-check what interviewees were telling us and extract any additional relevant evidence. However, it was not possible with the time and resources available to do a thorough review of the large volume of materials received. All source materials are being made available to Defra.

Analysis and reporting

This report presents the key findings in relation to each of the key questions listed in the annexed background paper (Annex 2), drawn out of the interviews and our scanning of related source materials referenced by interviewees.

For each question, we present (a) a summary of key findings, (b) detailed findings from the interviews (and from literature referenced by interviewees) and (c) our analysis of how the findings from the US and Australia might translate to an English context.

The 'key findings' and 'detailed findings' presented under each question seek to faithfully report evidence and expert opinion given by the interviewees or extracted from referenced literature, and we have not commented on or interpreted these, other than to clarify meaning where we felt it necessary.

Only in the sections sub-titled 'Interpretation of potential implications...' have we put forward our own views. In doing so, we build on our knowledge of the England context, the England interviews and other Defra research.

In general, it is clear that quantitative data are scarce, though there are more for the US (where markets are larger and longer-running) than for Australia. However, there is fairly

consistent expert opinion and/or anecdotal evidence in relation to many of the questions posed.

Interviews were held in accordance with the Chatham House Rule to enable a frank and open exchange. The current report therefore does not attribute content to named interviewees. All primary data from the interviews was destroyed on completion of the final report. We do attribute evidence to publications where these are already in the public domain.

2. FINDINGS ON BENEFITS TO DEVELOPERS OF ACCESS TO OFFSET MARKETS

Q1. Questions on benefits, to developers (in particular, house-builders), of access to offset markets.

Context

A key consideration in relation to the various questions under this heading is the nature of the offsetting regimes in the US and Australia and the nature of the respective baselines against which one is assessing any benefits to developers, and the extent to which these regimes and baselines may be comparable with the Green Paper options and the England baseline.²

- **US.** Offsetting regimes reviewed:
 - **National wetland and stream permittee-responsible (PR)** (on- or off-site) compensatory mitigation (essentially, bespoke, developer-led compensation for residual impacts) **mitigation banking (MB)** and **in-lieu fee (ILF)** 3rd party offsetting under the 2008 Final Compensatory Mitigation Rule (hereinafter, '**the 2008 Rule**'). For wetland/stream compensation, it is important to note that the 2008 Rule aims at levelling the playing field between MB, ILF and PR by applying the same performance standards to each; this increased costs under the PR baseline and consequently enhanced savings under the third-party options (MB, ILF).
 - **National species conservation banking** (3rd party) under the Endangered Species Act 1973. There is currently a requirement to compensate for several hundred species, but this is under review and the number of species to which it applies is likely to increase several-fold. USFWS are currently preparing guidelines (due 1/10/14) that will similarly level the playing field for species compensation.
- **Australia.** Offsetting regimes reviewed and their baselines:
 - **Victoria.** The 1989 regulation on native vegetation clearing requires a planning permit for such clearing, and the 2002 policy on the Native Vegetation Management Framework provides for offsetting. Conventional developer-led, bespoke compensation under the planning regulations was the norm until a 2006 initiative created an **offset market with 3rd party providers** (including through BushBroker) Victoria has also established a large (15000 ha) **government-run grassland offset** (a new National Park) for a large development in Melbourne.
 - **New South Wales.** Offsetting may be done by developer-led, bespoke (on- or off-site) compensation under the state Environmental Planning and Assessment (EP&A) Act 1979, alternatively at the (master-) planning level (through '**Certification**') or at the level of the individual development (through '**BioBanking**').

² National Planning Policy Framework (DCLG 2012) as currently applied through planning conditions and section 106 of the Town and Country Planning Act 1990.

- **Federal level.** Provision is made for offsets in relation to matters of national environmental significance, notably threatened species, under the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999. There is no formal market for offsets under the EPBC Act and, until 2012, they were individually negotiated with no set method. In 2012, new guidelines were issued with more robust method required.

Time-savings in relation to securing permission to develop, and in relation to securing compensation for residual impacts

- 1a. *To what extent, if at all, has the introduction of the offsetting regime delivered time-savings (or, on the contrary, delays) in relation to securing development permission, as compared with the previous/alternative approaches to compensation in your country? What is the range of these time-savings (or delays) across developments (days, weeks, months) and/or the average/typical time saving (or delay) per development? Can you provide any quantified evidence in this regard?*
- 1b. *To what extent, if at all, has the introduction of the offsetting regime delivered time-savings (or, on the contrary, delays) in securing compensation, as compared with the previous/alternative approaches to compensation in your country? What is the range of these time-savings (or delays) across developments (days, weeks, months) and/or the average/typical time saving per development? Can you provide any quantified evidence in this regard?*

Time-to-permit and time to fixing compensation often conflate, in that development is permitted only once compensation (either developer-led, or 3rd party offsetting) has been agreed with the regulatory authority. Emerging findings in relation to Q1a and Q1b are therefore considered here together.

Summary of key findings

Time-to-permit savings, together with savings arising from transfer of liability (see 'Reduction in long-term liabilities, below) are the major drivers of developer demand for 3rd party offsets in both the US and Australia. Taken together, they make 3rd party offsets the most economically advantageous to developers, and therefore the preferred option for most developments. In the US, over 50% of impacted wetland acres are now offset using 3rd party suppliers. Supply is growing very rapidly (despite high barriers to market entry) (Figure 1) to meet developer demand, and has risen to 1382 banks in mid-December 2013.

In the US, government analysis of official data on time-to-permit for developments impacting on wetlands and streams (c. 60,000 applications/year) shows that 3rd party MB offsets deliver on average c.5 months time-saving when compared to developer-led off-site compensation and c.50 days when compared to developer-led on-site compensation (Figure 2). It is not clear to what extent wetland/stream permitting is a key determinant in overall time-to-permitting (i.e. time savings from streamlined biodiversity permitting might be swamped by delays in getting planning permission for other reasons), but one well-informed mitigation banker stated 'with great confidence' that it was indeed the key determinant in c. 90% of applications. If this is so, 3rd party offsetting brings forward c. 54,000 developments per year by up to 5 months. These time-savings apply for both smaller and larger projects.

In the US, the reasons for the time savings are: (1) PR involves the developer in preparing, agreeing and securing his own compensation provision, while with 3rd party this is all

undertaken by the 3rd party supplier, generally in advance of the developer's project, thus reducing the time needed (by the developer) to secure the compensation outcome; and (2) PR is much more open to challenge than MB or ILF (because the use of metrics with MB and ILF provide a transparent solution as regards compensation proposals).

In the US, as regards offsetting for endangered species, aggregated offsets and 'programmatic consultations' generally reduce time-to-permit to a few weeks.

In both the US and Australia, time-to-permit savings arising from the use of 3rd party offsetting can also deliver significant savings in administrative costs for the planning authorities, as much less regulator time is required to approve large aggregated offsets than numerous smaller developer-led offset proposals.

In Victoria (Aus), introduction of the offset market (BushBroker) in 2006, the creation of the large Melbourne grasslands reserve (2007) to offset a large development area in Melbourne, and fast-track facilities ('over-the-counter') for lower-level impacts, have delivered times-savings valued at A\$500 m (£294 m).

In NSW (Aus), a study of 20 projects found that BioBanking halved average time-to-permit and delivered cost-savings totalling A\$35 m. Average time-cost saving for smaller projects was A\$0.25-0.75 m (£0.14-0.45 m) and for larger projects A\$1.5-4.5 m (£0.88-2.65 m). When compared with developer-led compensation under the EP&A Act, if developers choose to participate in BioBanking 25% of the time, this would deliver total cost savings of A\$140 m (£82 m) to 2015, while 50% developer participation would deliver savings of A\$240 m (£141 m) to 2015. These cost savings relate to reduced time costs linked to selecting and researching an appropriate development approval pathway, site survey and required documentation, completion and submission of all paperwork, negotiation of biodiversity conditions and waiting for approval and appeals/ additional paperwork/renegotiation (under the EP&A Act developments were often delayed for 2+ years). The same study shows developers significantly underestimate the magnitude and relative contribution of time costs (compared with the direct costs of offset implementation) when assessing the total cost of biodiversity compensation approvals, and so overlook or downplay the substantive time cost savings associated with BioBanking.

Detailed findings from the interviews and from literature cited by interviewees

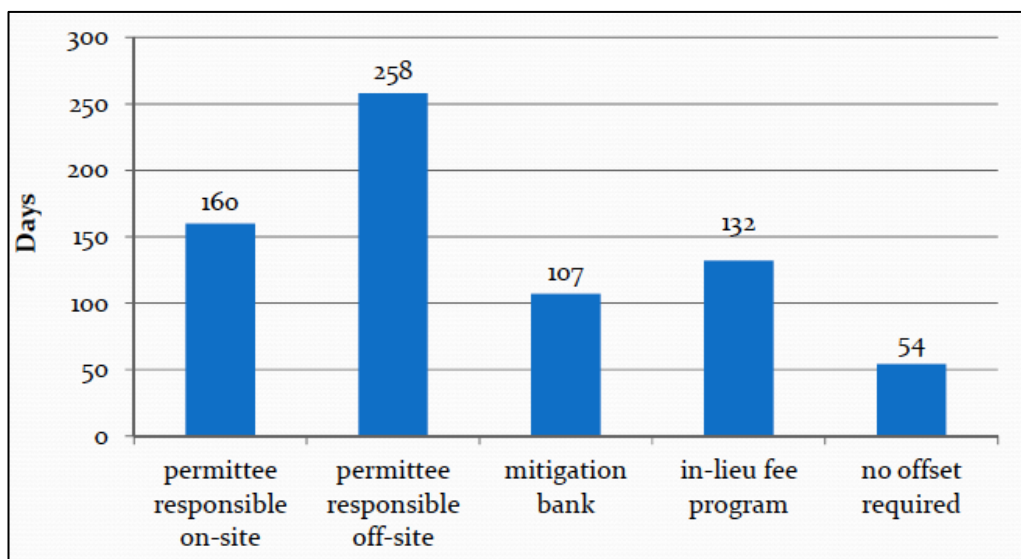
US

- (1) Reducing permitting time and providing more cost-efficient compensation solutions was one of the stated goals of the 1995 federal banking guidance (now superseded by the 2008 Rule). And indeed, ***there is strong consensus that 3rd party offsetting (MB, ILF) delivers considerable time-savings to developers, when compared with the developer-led alternative (PR).*** This view is held equally by bankers, regulators, academics and homebuilders.
- (2) Key to these savings is the considerable costs of compensation when undertaken by the developer itself (PR). Under the 2008 Rule, developers are now held to the same (heavy) performance standards for PR compensation as 3rd party (MB, ILF) providers. ***Cost savings arising from savings in time-to-permit (and transfer of liability) are particularly significant***, especially where habitat restoration/ enhancement is involved. This is in fact the case for the majority of projects, but is less so where the offset involves protection of existing wetlands/streams or species. These savings are such that, according to NAHB, developers (particularly those working on smaller developments) will usually choose a 3rd party offset, where it is

available, rather than PR. Indeed, we were told that developers are ‘clamouring for more mitigation banks’.

- (3) While in the US it has been known for a long time that banks save permit applicants’ time (and time is money for developers) it has only recently been demonstrated and quantified in an analysis of Army Corps of Engineers’ (ACE) data (Birnie 2013). This analysed the ACE data (obtained under a Freedom of Information Act request) on time-to-permit for 3rd party offsets (MB and ILF) in comparison with PR on-site and PR off-site. The study looked at data for the fiscal years 2009-2012 relating to c. 60,000 permit applications per year. This shows that **MB delivered an average 75 days (2011) and 115 days (2012) time-to-permit saving for developers** (ILF delivered savings of 51 and 99 days respectively). One possible explanation is that MB relates more to smaller impacts, but Birnie checked for any such skew in the data and found the **savings in time-to-permit held for both smaller and larger developments**. The finding is perhaps to be expected, as 3rd party offsets have completed up-front all the time-consuming work (at their own time and cost) for design and permitting of the offset, while with PR, the developer has to jump through 10-12 hoops to prove the compensation proposed is adequate to offset the impact. Further, with PR, a developer may have to establish the compensation site in advance of breaking ground on the development site introducing a delay of 3 months to 2 years; MB removes this delay. Birnie has recently applied to ACE for 2013 data and will re-run her analysis and report on this in spring 2014.

Figure 1. US wetland/stream compensation: days to permit decision, by offset source, 2012 (Source: USACE 2013)

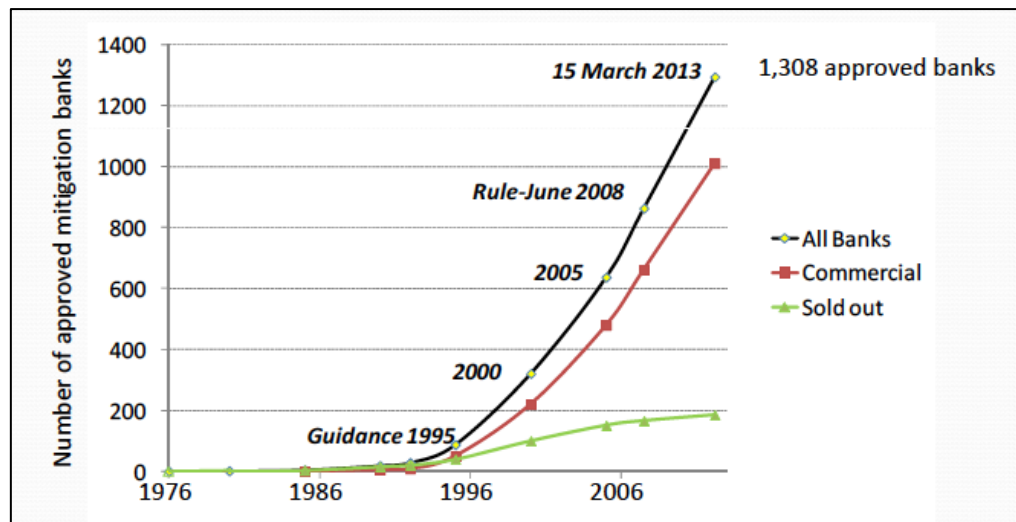


- (4) The ACE is working with the EPA on a more rigorous analysis (with enhanced data quality assurance/control) of the wetlands and stream permitting and compensation data held by the ACE and expect to report on this in early 2014. The ACE has provided us early sight of some of the results. These show, roughly in line with Birnie’s analysis, that MB gives fastest time to permit, followed by ILF, then on-site PR and finally, off-site PR (the slowest) (Figure 1). In 2010/2011/2012 respectively, MB was 95/127/151 days faster than off-site PR and -8/26/53 days faster than on-site PR. In other words, **3rd party MB offsets deliver on average c.5 months time-saving when compared to developer-led off-site compensation and c.50 days when compared to developer-led on-site compensation**. Over this period 2010-2012,

time-to-permit for MB has reduced from 125 to 107 days, while for PR off-site it has increased from 210 to 258 days and for PR on-site from 117 to 160 days. It is not clear to what extent wetland/stream permitting is a key determinant in overall time-to-permitting (i.e. time savings from streamlined biodiversity permitting might be swamped by delays in getting planning permission for other reasons), but one well-informed mitigation banker stated ‘with great confidence’ that it was indeed the key determinant in c. 90% of applications. ***If this is so, 3rd party offsetting brings forward c. 54,000 developments per year by up to 5 months.*** These time-savings apply for both smaller and larger projects. The increasing rapidity of MB-related permitting may reflect the rapid growth in MB supply (see #5 below), while the increase in PR delays may reflect the increased rigour applied to PR under the 2008 Rule and/or cuts to ACE resources.

- (5) In California, time-savings are frequently much more than the averages shown in the Birnie/ACE analyses, due to the additional layer of state protection resulting in a heavier regulatory environment.
- (6) ***Wetland/stream MB supply (Figure 2) has grown very rapidly (despite high barriers to market entry) to meet increasing developer demand (Figure 3),*** from under 100 banks at the time of issuance of MB guidance in 1995 to a little under 900 at the time of issuance of the 2008 Rule, to over 1300 in March 2013 (and 1382 at time of going to press).

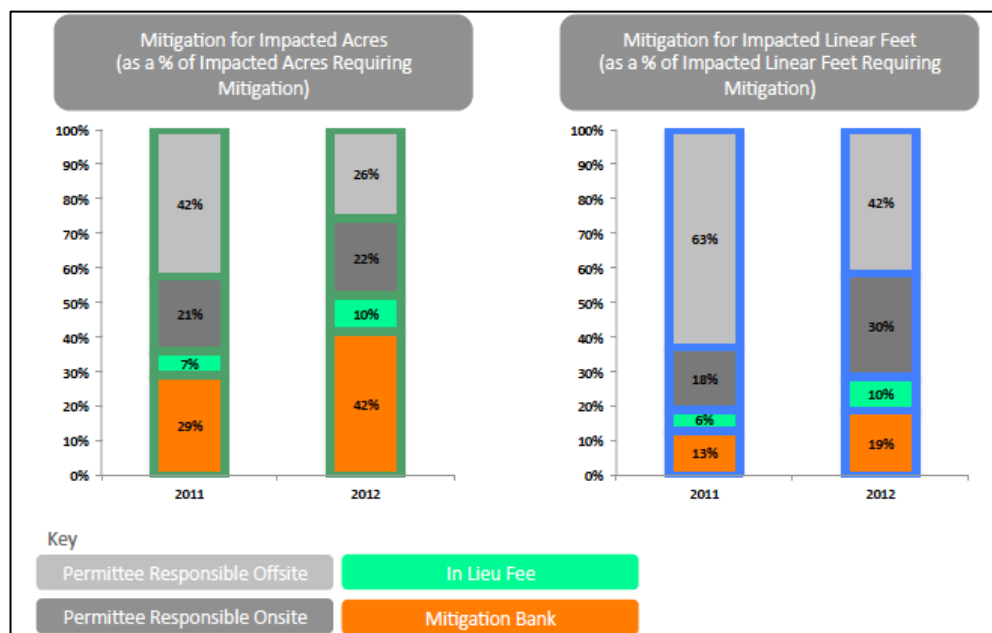
Figure 2. US – rapid growth in wetland/stream offset supply by mitigation banks (3rd party suppliers) (source: IWR 2013)



- (7) The continuing growth of banks is no doubt an effect of the preference given to MB over ILF and PR under the 2008 Rule. Developers chose MB for offsetting of 29% of impacted acres of wetland in 2011, rising to 42% in 2012, and for 13% of impacted linear feet of stream in 2011, rising to 19% in 2012. Over the same period, developers moved away from the use of PR, with PR being used for 63% of impacted acres of wetlands in 2011, falling to 48% in 2012, and for 81% of impacted linear feet of streams in 2011, falling to 72% in 2012. (Figure 3)
- (8) The US has complex environmental regulations, set at federal, state and local levels, often overlapping. State and local regulations can be more stringent than federal, but cannot be less so. There is substantial variation in state and local regulations making life difficult for developers. As one interviewee put it, ‘This is poorly

*coordinated and drives people crazy.’ Regulations requiring compensation for impacts on both wetlands and endangered species create a heavy burden for developers. The complex and stringent regulatory ‘baseline’ is a key factor in the way offsetting is perceived by developers; **offsetting through wetland and species banks is not perceived so much as an additional cost in these circumstances, but more as a relatively quick and cheap solution compared with developer-led compensation.** ‘Builders love having a bank’, said one interviewee. A bank is perceived as relatively quick and easy to use, involving no technicalities and no monitoring on the part of the developer (since the 3rd party provider takes on the monitoring role, with state oversight). Developers simply pay a fee. ‘Developers are slow to accept new rules or recognize where they may be a help rather than a threat – but most developers now look favourably on mitigation banking and indeed homebuilders are calling for more mitigation banks’, said one respondent. Developers, in particular smaller developers, need to take care of environmental (& other obligations) in order to close the permitting process ASAP, develop, and then move on to the next job. **3rd party offsets allow delays and uncertainties to be avoided and give a fixed price (whereas PR costs are open-ended).***

Figure 3: US – rapid growth in developer demand for wetland/stream mitigation banks, from 2011 to 2012 (source: Birnie 2013)



- (9) **With PR, the developer loses time in the iterative development, review and finalization of the compensation scheme (on- of off-site) whereas with banks or ILF, all this work is done up-front by the supplier.** PR may also be more frequently delayed by dispute over the developer’s mitigation and compensation proposals. Previously, there was considerable dispute with permit applicants (developers) focused around the compensation proposal. **With MB and ILF, the focus of dispute is now more upstream, on the nature of the impacts, avoidance and minimization, than on the compensation proposal itself,** at least for most projects. However, there can still be cases, typically very large developments where there are impacts on a range of habitats and species (and notably when MB/ILF options do not exist for some of these impacts, e.g. impacts on forests not subject to wetland trading), when there is still a lot of discussion around the compensation package.

- (10) **3rd party offsets offer significant time-savings in particular where the impacts are small.** Scrutiny of avoidance and reduction measures is much more limited for small impacts; the agencies routinely tell developers to go straight to a MB. With larger developments, there is much more lengthy scrutiny of avoidance and reduction, including public notices and hearings, and this applies regardless of whether the developer chooses PR or MB. For larger developments, on-site PR can be just as quick if the site lends itself to this.
- (11) **MB (and ILF) offer considerable administrative time-savings for the regulator,** as it is far easier to monitor delivery of these standards by a small number of larger, aggregated offsets than it would be to monitor many small and isolated offsets.
- (12) While there is a trend towards MB, PR (on- or off-site) is still chosen in around half of permitted developments. There are a number of explanations for this. Banks are not always available and the process of approving new banks can be very lengthy. This has been exacerbated by cuts to the ACE budget. Analysis of ACE data by Birnie shows that many ACE Districts have very limited MB supply, and that only in <25% of cases where the offset did not go to a bank might it have done so. It is likely that a much greater proportion of offsets would go to MB if supply were there. Off-site offsetting is not always an option. In W Virginia, all mineral rights are held by a coal company, so there is no guarantee that an offset site will not be mined. The city of Maplewood (Minnesota) prohibits any loss of wetland within its jurisdiction, preventing any developer from obtaining a permit for impacts on wetlands; this situation is quite widespread. Thus, there may be layer-upon-layer of pre-existing rights and/or controls, which reduce any local use of offsetting.
- (13) Further, the ACE is highly decentralised and Districts have considerable discretion as to how the rules are applied. In some districts there is an unwritten rule that MB is acceptable for smaller impacts, but PR is preferred for big impacts (despite the 2008 Rule). Some appear to feel that 'making money from nature' is not right and may discourage or slow down the emergence of MB, despite the 2008 Rule; e.g. Pennsylvania prefers to collect fees and build its own offsets using ILF. Implementation of the 2008 Rule depends on the culture of the ACE District.
- (14) While the 2008 Rule aimed at levelling the playing field, enforcement, in particular of PR mitigation, is rare. There remains much more transparency in respect of MB and ILF than for PR mitigation. **PR may still be cheaper where developers feel they can cut corners and that the regulators will not take enforcement action.** The ACE is reluctant to 'call' PR performance bonds. In these cases, PR is cheaper because implementation is partial and the offsets are effectively not based on full cost accounting.
- (15) A recent Supreme Court ruling (Koontz v St Johns River Water Management District) found that any mitigation required of a permittee must have an essential nexus and rough proportionality to the impacts. While in general this case is unlikely to affect ACE preference for MB as specified under the 2008 Rule, it could be invoked where the mitigation is out-of-kind or where MB prices are relatively high because of an effective monopoly (i.e. there is only one MB in the service area). This decision is likely to result in increased application of a functional approach to delivering mitigation to demonstrate that the credits are proportionate to the impacts.
- (16) As regards offsetting for endangered species, in California and Texas, **USFWS considerably sped up time to permitting by doing 'programmatic consultations' for listed species.** For example, programmatic consultations for two listed songbirds established the need for a minimum habitat area of 500 acres. A large aggregated

offset was established and all developments impacting these species and complying with the mitigation requirements established through the programmatic consultation obtained fast track (2 weeks) turnaround of permitting for these species.

AUS

- (1) Victoria. Prior to 2002, compensation was directly negotiated on a site-by-site basis between the developer and the local planning authority. This typically involved 'quick and dirty deals' with no process to assess residual impacts or to ensure appropriate ecological outcomes – they were not really offsets as now understood but were 'open slather' (free rein), easier and more certain because they generally involved a specific local piece of work. The 2002 Native Vegetation Management Framework introduced offset procedures that raised standards and this inevitably led to time delays for developers compared with the pre-2002 baseline.
- (2) Victoria. The approach to offsets from 2002-06 involved many small developments and protracted negotiations on compensation, with considerable related 'holding costs.' A broker cites cases where developers considered bespoke compensation (both 1st and 3rd party, before the offset market existed) and found these to be expensive, time consuming, and prone to being 'held over a barrel'; ***the introduction of the market eased this considerably***. Introduction of an offset market (BushBroker) in 2006 (first trade in 2007), and the creation of the large Melbourne grasslands reserve offset (in 2007) sped up offset provision, delivering time-savings for developers versus the 2002-06 baseline. ***The introduction in 2009 of Over-The-Counter offsets (for impacts on vegetation of lower significance) has resulted in further time-savings***. One interviewee estimated savings with 3rd party offsets compared with first party as 20-30%. A study by Deloitte for the state government has valued the ***time-savings to developers from using the Bushbroker offset market, as compared with finding their own offsets, at A\$500 m (£294 m)***.
- (3) Victoria. The state now operates ***a risk-based approach, which allows smaller impacts on areas of low ecological value to proceed through a simplified permitting process and go straight to offset***. Where the impacts are on higher value vegetation or species, there is considerable emphasis on avoidance and minimization of impacts, and permits can be refused if these measures are inadequate. Compared with previous arrangements, when all vegetation types were treated equally, this helps speed many lower-impact developments through the system.
- (4) Victoria case study: A 300 ha housing development in a coastal area of Victoria with significant native vegetation was held up for 8 years because of impacts on native vegetation and local opposition. The site was in a small coastal community of c. 5000 inhabitants (of which half the properties are seasonal holiday homes) and the case became quite a political issue. The planning authorities required an offset management plan as a condition of permitting, leaving the choice of on-site or off-site to the developer, and specifying that any off-site compensation must be secured prior to permitting. The developer spent 18 months developing the offset management plan, which involved 99% of the impact being offset on-site. The developer could have chosen to do more of the offsetting off-site, but found it cheaper to arrange the development to avoid/minimize impacts and to allow for on-site compensation. The presence of the offsetting regime requiring compensation for residual impacts encourages developers to move back up the mitigation hierarchy in order to avoid and minimize impacts. The developer initially tried direct

negotiation with a local landowner to secure the remaining 1% of the offset needed off-site, obtaining a letter from a local landowner offering suitable vegetation (coastal saltmarsh) at a cost of c. A\$100,000. This was enough to secure the permit to proceed with the development. However, securing this offset in the end proved too difficult (the owner was not comfortable with the in perpetuity restrictions on the title). BushBroker offered a way out of this impasse, providing a suitable 3-4 ha offset site, and proved a quick and cheap solution, taking 1 month to arrange and costing A\$50,000, half the sum the developer was willing to pay to the local landowner. ***The developer now typically undertakes all its off-site offsets through BushBroker for the same reason, namely that it is quicker and cheaper than trying to negotiate off-site offsetting itself.***

- (5) NSW. ***Offsetting at the planning level (via Certification) delivers very considerable time-savings.*** For instance, this has been done for a major growth centre in NW Sydney where 30 years of forward housing development has been planned. A biodiversity assessment of this plan has been completed and a total offset valued at A\$530 m has been fixed which will be paid for in tranches as the development proceeds. Similar planning-level certification offsets have been undertaken for regional urban centres of 50-70,000 people. A Regulatory Impact Statement for the proposed Biodiversity Certification Regulation (Gillespie Economics 2010) assessed benefits to developers in NW Sydney of addressing biodiversity assessment at planning stage as opposed to at the development stage (essentially rolling 70+ assessments in to a single procedure) and found ***a net benefit that accrued, in particular, to developers.*** This net benefit is higher where there is greater flexibility in offset location (and hence lower opportunity costs of offsets).
- (6) NSW. Compensation through offsetting of residual impacts was, prior to BioBanking, done on a site-by-site basis. There were principles, but no fixed framework/metric. Ratios were fixed in an arbitrary manner, different regulators taking different approaches, e.g. northern NSW required higher ratios, Sydney lower. In the absence of clear methodology, different consultants would 'take a punt' as to what might constitute an appropriate offset. This led in many cases to lengthy 'argy-bargy', considerable uncertainty for developers, and in some cases delays of 3-5 years. Now, with BioBanking, the system is robust with a standard, repeatable method, which delivers known offset ratios. ***This significantly reduces the scope for 'argy-bargy,' effectively removing unnecessary negotiations, and so delivers considerable time-savings.***
- (7) NSW. A recent study (E.H. 2013) shows that ***BioBanking halves average time (n=20) delivering a cost saving to developers of c. A\$35 million (£20.6 m) over 20 projects.*** Average time-cost saving for smaller projects was A\$0.25-0.75 m (£0.14-0.45 m) and for larger projects A\$1.5-4.5 m (£0.88-2.65 m). If developers were to choose BioBanking for 25% of impacted area, BioBanking would deliver total cost savings of A\$140m (£82.4 m) to 2015; and ***if developers were to choose BioBanking for 50% of the area impacted, BioBanking would deliver total cost savings of A\$240 m (£141.2 m) to 2015.*** These cost savings relate to reduced time costs linked to selecting and researching an appropriate development approval pathway, site survey and required documentation, completion and submission of all paperwork, negotiation of biodiversity conditions and waiting for approval and appeals/ additional paperwork/renegotiation. Under the EP&A Act developments were often delayed for 2+ years.
- (8) NSW. The same study shows ***developers significantly underestimate the magnitude and relative contribution of time costs when assessing the total cost of biodiversity***

compensation approvals, and so overlook or downplay the substantive time cost savings associated with BioBanking and, conversely, underestimate the costs of EP&A Act compensation. This suggests a need to communicate clearly the cost-benefits of offsetting to developers. BioBanking is cheaper than developer-led bespoke compensation as it is scalable, repeatable, more efficient.

- (9) NSW. The same study notes that a key concern of developers with BioBanking is the up-front financial cost. Deferring BioBanking payments to respond to these concerns by allowing equal payments over a period of 3-5 years would make the upfront financial costs of BioBanking comparable with those of the EP&A Act.

England

- (1) A leading planning economist stated that, under the current system, there are significant time costs involved in securing rights to develop (see, e.g. Ball 2009, Ball et al. 2011), so **anything speeding up planning permission and thus reducing this time cost is likely to deliver highly significant benefits to developers**.
- (2) The return on investment that investors seek for development is, under the current system, significantly raised to cover the uncertainties and blocked/failed investments (where rights have been purchased but permission refused). **If offsetting reduces uncertainties and reduces the number of failed investments, this will bring forward developments that are already being planned, and will also expand the pool of land available to developers by reducing the costs associated with time and uncertainty related to this land.**
- (3) Environmental groups may object to almost any loss of habitat/species since this appears to be the only way to slow the loss of nature to development. It was suggested that part of the reason for this is that there is no grand plan for conservation in England. If there were **a plan and a delivery process for No Net Loss with the necessary mechanisms** (including financial mechanisms), there would be less reason to fight in this way on a case-by-case basis. Offsetting in this context, with a plan, may be more welcomed than if it is perceived as an ad hoc, case-by-case tool.
- (4) **The greatest delays and costs at present tend to relate to protected species**, e.g. great crested newt (GCN), reptiles. These can cause significant post-consent costs and delays. E.g. consider the case of a development with 50 dwellings, with a matrix of existing ponds within and without the site with a low population of GCN. Guidance from the authorities was to obtain a license to ensure (by removal) that there were no GCN within the site, and to assure habitat for the species. This caused at 15-18 month delay due the seasonality of GCN ecology/work, before the developer could break ground, and several £10,000's costs of trapping and fencing. In the end, only one GCN was found on-site. Similar cases occur with reptiles.
- (5) Without clearer guidance on mitigation and offsets, and **given the emphasis on priority habitats and species in the National Planning Policy Framework (NPPF) (DCLG 2012), it is likely that these will cause a stumbling block for the anticipated growth in house building** (in response to government schemes and demand).
- (6) Under the planning system in England there is often a professional tussle between developers, LPAs and third parties (wildlife groups, individuals). Indeed, this is becoming more and more frequent. According to one planning consultant, the replacement of PPS9 by the NPPF (DCLG 2012) has (1) arguably introduced a requirement for net gain, and (2) increased protection for priority habitats and

species (e.g. para. 117 of the NPPF³), i.e. ***the NPPF has made development more challenging in relation to several hundred priority habitats and species*** (not just GCNs and SSSIs). NPPF has helped reduce delays on other grounds, but made planning permission more difficult on ecological grounds that can lead to reasons for refusal of permission. Mindful of judicial review (LPAs pay the costs if they lose), ***LPAs are very wary of making an incorrect decision in relation to these habitats and species*** and so tend to defend every scrap of habitat and each individual newt, particularly if under pressure from third parties. There is little scope to focus on conservation outcomes, e.g. accepting the loss of a small and non-viable and low-condition areas of habitat (even priority habitat) in exchange for the long-term management of a larger, better quality and more viable area of the same habitat elsewhere.

- (7) A key area of tension relates to priority habitats under the NERC Act (HMG 2006). ***A main area of disagreement is on the definition of priority habitat.*** For instance, one planning consultant is dealing with 4-5 sites where there is disagreement over whether the habitat is arguably of sufficient quality to be priority habitat. The definitions are too weak and lacking in detail. This leads to delays when dealing with habitats and the need for mitigation/compensation.
- (8) Under the current regime, there are typically many ecological surveys involving lots of quantification, but this is then followed by very qualitative use of the data. This leads to conflict over residual impacts and the appropriate amount of compensation needed. ***An offsetting metric (coupled with clear exchange rules) would make the residual impact transparent and reduce the need to debate the matter on every occasion.*** However, many issues contribute to delays in development permits and it is difficult to forecast how less protracted debate over biodiversity compensation would speed up overall development permitting in England.
- (9) Ecological considerations associated with development permitting currently entail counting individuals of protected species, newts, dormice, etc. Often, development grinds to a halt pending the need to do a seasonal survey; this can mean a delay of many months, after which the survey may find no or very few individuals of the expected species. This can be a disproportionate approach that is not related to the level of risk for biodiversity. According to one interviewee, ***a more robust, risk-based approach could in some circumstances save up to a year.***
- (10) Without a system of offsetting involving a thriving number of third party suppliers, developers may tend to avoid any potential development site that is likely to lead to an off-site compensation requirement, as in such cases they may fear being “held hostage” by a landowner offering the compensation site. ***With a thriving market in***

³ NPPF #117: To minimise impacts on biodiversity and geodiversity, planning policies should: plan for biodiversity at a landscape-scale across local authority boundaries; identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation; ***promote the preservation, restoration and re-creation of priority habitats***, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan; aim to prevent harm to geological conservation interests; and where Nature Improvement Areas are identified in Local Plans, consider specifying the types of development that may be appropriate in these Areas. #118: When determining planning applications, local planning authorities should aim to conserve ***and enhance*** biodiversity... (bold italics added to highlight relevance)

third party offsetting, there is much less risk of a developer being 'held hostage'.

Further, when properly systematised offsetting (including 3rd party supply) is an option, developers can make more informed judgments on likely compensation requirements (due standardized metrics and a registry of fully-costed offset supply) and are more likely to take a more precautionary approach wherever there is possible priority habitat, in order to avoid any possible appeal situation (delays/costs) and proceed straight to offsetting.

- (11) One interviewee argued that offsetting is unlikely to reduce the amount of up-front work on environmental assessment leading to permitting, but ***a habitat and risk-based approach can significantly reduce costs and delays post-permitting to secure the compensation*** where it is required/necessary.
- (12) Offsetting (with an improved standard metric) should deliver time-savings. Under the current regime in England (where the available metric is rarely applied) there can often be disagreement over the impacts and the avoidance, reduction and compensation needed. An early indication (in a thorough impact assessment process) of the availability of offset options could ***help to avoid dispute and reduce delays***. Biodiversity issues not only cause delays to permitting, they also cost time and effort. Developers are sometimes 'up-against-it' in delivering schemes on time so if offsetting can save time by delivering conservation outcomes needed for permission more speedily, greater confidence in being able to deliver projects on time is likely to be of great benefit to developers.
- (13) One interviewee noted that a colleague is working on 100 schemes, many with various biodiversity issues – mostly protected species (e.g. great crested newt) rather than habitats. Many of their developments are pipelines, long narrow corridors with potential to affect numerous species' populations. However, it would be difficult to separate out how much of the time and effort spent on biodiversity issues relates to the compensation end of the mitigation hierarchy compared with avoidance and minimisation.
- (14) Under the current system, ***anticipated impacts on both protected and non-protected biodiversity can lead to delays to permitting***. While species with a higher degree of protection present a greater challenge, one interviewee asserted that it would be going too far to say that planning mitigation for unprotected biodiversity never causes delays. This person explained that the key legal basis for challenge is not biodiversity legislation, but the EIA Directive, which encompasses impacts on both protected and non-protected biodiversity.⁴ The requirement for an EIA is not triggered by presence of protected or non-protected species, but by the type of development. Challenge is generally related to the inadequacy of the impact assessment or to the correct application of the mitigation hierarchy, or to the clarity of the report, or arguments that the planning authority did not have adequate information to judge whether the mitigation and compensation are acceptable or not.
- (15) From the interviews, it is not clear whether new requirements and guidance on offsetting would really reduce the overall time to secure planning permission when

⁴ The 2012 proposal to amend the EIA directive (EC 2012) states: 'The measures to be taken to avoid, reduce and, if possible, offset significant adverse effects on the environment should contribute to avoiding any deterioration in the quality of the environment and any net loss of biodiversity, in accordance with the Union's commitments in the context of the Convention and the objectives and actions of the Union Biodiversity Strategy up to 2020.'

compared with the delays and uncertainties faced in the English planning system presently, though it seems probable that a standard metric would give more certainty and less scope for debate in relation to assessing and compensating residual impacts. However, one interviewee suggested that there would still be discussion and negotiation associated with the impact assessment, the acceptability of the avoidance and minimization measures and the scale of the residual impact. This would include the assessment of habitat classification and condition, the calculation of the offset requirement, and the terms of the s106 agreement or other planning condition securing the compensation. And discussions might still occur over what is acceptable as a suitable offset both in terms of character/condition and in terms of location (e.g. how close to the impact must it be) and assurance of the long-term management on the offset site. For example, where developers currently challenge Natural England assessments of habitat significance, they may continue to challenge under an offsets regime; the assessment of habitat distinctiveness and condition will be key.

- (16) Our interviewees felt that England is a 'hotbed' of third party challenge to development applications (notably from NGOs, but also sometimes from Natural England), and ***the need to protect biodiversity is the easiest way to challenge development consent under the current system***. There was mixed opinion as to whether an offsetting system would reduce this element of challenge. Offsetting might help save the time to permit for developers if it could reduce challenge to proposed developments by providing a consistent and clear basis for assessing mitigation measures including offsets, i.e. if the developer could plan measures based on methods that were scientifically and socially accepted and independently verifiable.
- (17) Some interviewees felt that a better overall outcome could be obtained for biodiversity as well as considerable savings through the development process ***if the strict sequential approach to the mitigation hierarchy (i.e. first avoid, then minimise, then restore and only then consider offsets) could be relaxed for impacts on lower value biodiversity***, so that a joint package of mitigation measures to obtain the optimum results for biodiversity could be considered simultaneously. Offsetting might in this sense trigger a re-think of the mitigation hierarchy with a view to better conservation outcomes.
- (18) There is already a very high bar set for impact assessment and mitigation in relation to Natura 2000 sites and offsetting is unlikely to reduce delays in such cases.
- (19) ***It is easier to foresee time-savings in the period between planning permission being granted and construction commencing***, when the availability of 3rd party offsets can reduce the time to secure compensation and can indeed unblock development. Some developments will become more feasible as a result. For example, a planning consultant cited a current case where one of the compensation requirements involves off-site work on water channels and where the only current option is to do this on adjacent land belonging to another landowner who is holding the developer hostage. This could be resolved more quickly and cheaply if a wider range of suitable 3rd party offsets were available.

Interpretation of potential implications for benefits to developers in England

The US and Australian experience of significant savings to developers arising from time-to-permit and time-to-compensation savings with 3rd party offsetting is likely to apply also in England. Under the current system in England, there are significant time costs involved in

securing rights to develop, so measures that reduce uncertainty, challenge, conflict and delay and so reduce the time cost element of planning permission are likely to deliver highly significant benefits to developers. Under the current system in England, developers' return on investment is significantly lowered by their need to provide for the uncertainties and blocked/failed investments (where rights have been purchased but permission refused). If the offsetting system reduces uncertainties and lowers the number of failed investments, this will bring forward developments already being planned, and will also expand the pool of land available to developers by reducing the time/uncertainty costs associated with this land.

The greatest delays and costs at present tend to relate to protected species, such as great crested newt, which can often halt developments for many months. Without clear guidance on mitigation measures including offsets, priority habitats and species may well become an increasing source of delay, given the protection afforded to them in the NPPF. This is already leading to an increase in what is often, already, a protracted tussle between developers, planning authorities and third party (local and wildlife) groups. Mindful of judicial review, LPAs are very wary of making an incorrect decision in relation to priority habitats and species. Lengthy administrative and legal proceedings often result in the absence of clear, science-based guidelines on mitigation and offsets. There is little scope in the current system to focus on conservation outcomes.

Under the current system, non-protected biodiversity can also lead to delays to permitting. According to one interviewee, this is because the key legal basis for challenge is not biodiversity legislation, but the EIA Directive, which encompasses impacts on both protected and non-protected biodiversity (but which is unclear on the specific expectations in relation to mitigation and offsets by developers). For this reason, we were told, challenge on biodiversity grounds is a common cause for developments under the current system to be held up or blocked.

If there were clearer guidance on mitigation and a strategic plan for conservation together with offsetting (and other) mechanisms to deliver the Net Gain outcome set out in the White Paper, there would be less likelihood of every development becoming the subject of protracted negotiations and even disputes (though it has been suggested that developers and third parties may still challenge the way in which the metric is applied). A good offsetting metric and exchange rules would make the residual impact transparent and should reduce the need to debate compensation. In some cases, this clarity and public confidence in the system's ability to protect valuable biodiversity might remove the motivation to challenge and block development. The corollary is that, in other cases, this clarity would reveal at the earliest planning stages when biodiversity impacts are too severe to be offset and the developer will save time and money by not pursuing unviable propositions. A risk-based approach to dealing with biodiversity could also result in substantial time-savings. Developers may benefit from a reduction in the time to permit, but even if the absolute time to permit was not reduced (because of delays caused by factors other than biodiversity), establishing the mitigation measures and biodiversity offset quicker than in the past could offer developers considerable savings in terms of reduced staff time and costs, including those associated with hearings.

Unblocking/expediting development

1c. To what extent, if at all, has the introduction of the offsetting regime helped to unblock any developments which may previously have been blocked where conventional off-site compensation was considered unacceptable, too difficult to source, or too difficult to negotiate? Can you provide any quantified evidence in this regard? On the contrary, do you believe there is evidence that the offsetting regime has actually blocked developments that may otherwise have gone ahead?

Summary of key findings

In both the US and Australia, adherence to the mitigation hierarchy means that developments must first avoid and minimise impacts. Applications rejected on the basis of unacceptable avoidance and minimisation cannot be unblocked by consideration of compensation proposals. However, there are often cases where avoidance and minimisation is acceptable but where compensation is blocked by the inability to find a suitable compensation site. **More ready availability of offsets can help unblock such developments.** Indeed, the need to source compensation sites to enable developments whose impacts could be mitigated but for which compensation was not available was a key driver for creation of the offsets market in Florida in the US. In Victoria (Australia), a major expansion of Melbourne could not have happened without creation of the Melbourne grassland reserve offset, while BushBroker has found the needed offsets for many smaller developments having an impact on native vegetation, which would not otherwise be able to proceed. We were cited also a specific example of BioBanking finding suitable offsets for a stalled large housing development in NSW, thus enabling it to proceed.

Detailed findings from the interviews and from literature cited by interviewees

US

- (1) **There is limited evidence that the availability of offsetting has helped unblock developments that were previously blocked** due to wetland, stream or endangered species reasons. Indeed, 99.93% of all development applications impacting wetlands/streams are anyway approved in the US⁵ – the system is very much weighted towards the developer. Permitting relates to the avoidance and minimisation stages of the mitigation hierarchy; the choice of the compensatory mitigation (PR, MB or ILF) does not affect whether a development is permitted to go ahead or not. Standards do not allow offsetting to justify developments deemed unsuitable in terms of their impacts on wetlands/streams and/or endangered species.
- (2) However, we have been given **some cases where development has been unblocked/expedited by MB**. E.g. (a) In the 1990s, there were cases in Florida of developments waiting 3-4 years to find appropriate compensation sites. This log-jam was a big driver for the creation of the offset market in Florida. The creation of the market helped clear this block on development; (b) Development of an airport in California was unblocked by a MB stepping in and using credits to resolve dispute with the agencies over appropriate compensatory mitigation.

⁵ Not 99.93% of all applications, but 99.93% of those applications that are not withdrawn; this probably equates to around half of all applications.

AUS

- (1) Victoria. One interviewee felt there is ***no doubt that the offsetting system has helped unblock some developments***, in particular under the EPBC Act (Commonwealth regulations). For example, the Melbourne urban boundary expansion and related Western grassland reserve could not have happened without the offsetting regime. Similarly, many other urban development projects affecting threatened species (e.g. golden sun moth) would not have proceeded without the offsetting regime.
- (2) Victoria. 3rd party offsetting offers to developers time-savings but, more importantly, offers options for developers. ***Without the ability to offset, many developments in Victoria could not proceed at all.*** The BushBroker scheme has found the offsets needed, in particular for many smaller developments with an impact on natural vegetation, enabling them to proceed.
- (3) In NSW, ***BioBanking has helped unblock developments.*** BioBanking offers a 'statement' option – used by developers to obtain approval of environmental impact – which is non-appealable and not subject to a 'merits assessment' by the regulator. This has been used in development cases where long-standing dispute has blocked development, as a means to unblock development. e.g. in the case of Forresters Beach⁶, the retirement homes developer initially followed the EP&A Act approach to dealing with ecological issues, but was blocked in court by local groups objecting on ecological grounds. The developer then undertook a BioBanking assessment and obtained a statement, and the development was authorised on this basis. The interviewee believed this was not a 'licence to trash' – arguing that, in reality, there was very little of any ecological value at the site. The interviewee (a regulator) argued that opponents of developments may chose to object on ecological grounds even though their true objections have little to do with ecology in the knowledge that this type of objection often blocks development more effectively than others. The interviewee stated that the transparent methodologies involved in BioBanking reduce the risk of unfounded ecological claims blocking development, since the ecological impact has been assessed by a certified assessor using the prescribed metric and checked by the regulatory authority and a suitable offset has been secured. There remains the possibility of appeal and judicial review in cases of gross misconduct in determining the offset. The interviewee argued that BioBanking offers greater ecological security than the EP&A Act and, in recognition of this, benefits from much a reduced scope for appeal on ecological grounds. Local campaigners can still object on other grounds (e.g. local space/amenity), but ecological issues can no longer block the development.
- (4) NSW. On the contrary, BioBanking has introduced some 'red flag' issues where, e.g., the presence of a rare species blocks development. However, there is provision to 'turn off' this block if the development is 'in the public interest.'

England

- (1) No specific evidence supplied, but see evidence under Q1a and Q1b above, some of which relates to stalled projects and situations where being unable to source compensation has blocked development.

⁶ http://en.wikipedia.org/wiki/Forresters_Beach,_New_South_Wales

Interpretation of potential implications for benefits to developers in England

In England, developers are likely to benefit similarly from being able to proceed with some developments that may be blocked by the inability to source a suitable site for compensation. One interviewee told us of a development that could not proceed because a single landowner was demanding a very high price for a compensation site (in the absence of a competitive offset market). Without a reliable, high quality supply of offsets, barriers to projects proceeding because suitable offsets are not readily available are likely to become more frequent, in particular as local planning authorities, Natural England and environmental groups pay increasing attention to priority habitats and species under the National Planning Policy Framework.

Gain in net developable area (NDA)

1d. To what extent, if at all, has the introduction of the offsetting regime resulted in an increase in the net developable area (NDA) within development sites (e.g. as a result of a greater proportion of the mitigation/compensation being located off-site)? What is the range of any increase in NDA across developments (in % increase in NDA) and/or the typical % increase in NDA per development? What value does this increase in NDA have to the developer?

Summary of key findings

In the US, ACE data reveals an increasing trend away from on-site compensation, though empirical data on the value of this in terms of NDA gain is not available. In both Victoria and NSW (Australia), offset supply has delivered gain in NDA on some development sites, with regulators less inclined to require retention of lower-value biodiversity when offsets could be shown to deliver higher-value biodiversity outcomes. While not relating to a gain in NDA within specific development sites, offsetting in Victoria has given developers greater access to developable areas of the territory by allowing impacts on lower significance native vegetation in exchange for offsets on higher value biodiversity.

Detailed findings from the interviews and from literature cited by interviewees

US

- (1) ***There appears to be mixed opinion as to whether the availability of 3rd party (MB, ILF) offsets delivers NDA gains to developers but this does seem likely in some cases [US2GK, US3GR].*** In general, the 2008 Rule has moved dramatically away from the pre-2008 tendency of the ACE to prefer on-site compensation in favour of off-site, and now gives preference to MB. This has ***"put a stop to the ACE requiring 'punitive' compensatory measures on-site, and results in higher density development."*** Obtaining empirical data on the extent of any NDA gain (for developers) is however not easy.
- (2) The US system applies the mitigation hierarchy so gain in NDA through the use of offsets is not frequent. The mitigation hierarchy is first to avoid, then minimize and only then to compensate/offset, but there are different interpretations of this; it is very subjective, and some districts are much more rigorous than others, e.g. Ohio is very rigorous. Avoidance does not necessarily mean that the avoided wetland is well protected; it may be isolated in the middle of a development area and unsustainable over time. In such cases, avoidance is not always the best conservation outcome. In negotiating the permit, the ACE may in some cases allow

the developer to encroach on wetlands/streams and gain development space if a suitable offset can be found. Even PR is increasingly moving from on-site to off-site.

AUS

- (1) Victoria. There is an opportunity cost (in terms of loss of NDA) to developers who do on-site compensation compared with those who offset. ***There has been a trend away from small areas of retention of vegetation on-site, to larger, consolidated offsets*** (the 15000 ha grassland reserve outside Melbourne is a particular example).
- (2) Victoria. One developer stated that ***offsetting probably does deliver gains in NDA in some situations*** – this will vary from development to development. The developer needs to weigh up the up-front costs of offsetting off-site against the costs of offsetting on-site (which can be to the detriment of the development master-plan, by reducing the area available for development and/or placing constraints on the design and/or construction). The developer also has to consider that the planning authority may not accept proposing to move all offsetting off-site, and is likely to want to retain native vegetation in the neighbourhood. Generally, the developer being interviewed found it best to retain native vegetation on-site, where this works for the development. In the case cited above, the placing of the majority of the offset on-site helped secure the permit. In another development site, the same developer had to work around some old native trees, but this probably delivered a better development outcome; on-site offsetting can involve a loss of NDA, but can also add value to the development.
- (3) Victoria. ***Another developer, on the contrary, does not believe there has been a change in NDA*** – the company has always tried to retain native vegetation as far as possible.
- (4) Victoria. There is a strong case in Victoria that ***offsetting under the BushBroker programme has enabled development access to a bigger area of the state territory*** than was the case before it was introduced. The Melbourne grassland reserve offset, which has enabled significant development around Melbourne, is the main example of this. This is not so much about gains in NDA on specific development sites, but more about making a larger area of land available for development by permitting impacts on native vegetation of lower significance where offsets could deliver a better conservation outcome.
- (5) Victoria. The systematic supply of offsets has enabled clearance of native vegetation on development sites (except for Very High Significance vegetation) where offsets could be shown to deliver higher-value biodiversity.
- (6) NSW. ***BioBanking undoubtedly delivers gain in NDA***. Prior to BioBanking, regulators tended to fight more to retain small patches of low or moderate quality habitat on-site. This happens less now, though regulators still seek to protect larger and higher quality habitats that occur on-site.
- (7) Federal EPBC Act offsets. Compensation for threatened species has almost always been offsite so there has been no gain in NDA with use of offsets.

England

- (1) A planning consultant was involved in 2009 in a 900 dwelling scheme on the Buckinghamshire/Bedfordshire border, a typical urban extension on an area of grassland, not of national note but a priority habitat under the NERC Act. They looked at options to minimize impact and compensate on-site but this was rejected as insufficient by the LPA. Retention of larger areas on-site would have constrained

transport through the site and made the development non-viable, so they then looked at offsetting. The developer worked with a broker to calculate the required offset, and found there to be 3.5 ha of grassland to offset plus 8.5 ha of lower interest habitat (so potential to deliver 12 ha gain in NDA) and calculated a need for 11-17 ha of offset site (at an estimated cost of c. £500,000). The development did not go ahead because it was dismissed on other grounds but the proposed offset project was accepted by the Inspector at appeal. If the development had been permitted, a significantly larger area of priority habitat would have been created/restored and specifically managed for that purpose in the long-term than would have been lost as a result of the development.

- (2) One interviewee noted that gain in NDA would be unlikely to apply as their developments tend to be without public access or, in the case of pipelines, on private land which is returned to its original condition, so regulators do not require public green space, and therefore offsetting is unlikely to reduce any such on-site requirement (in favour of offsetting) on the sites. The interviewee suggested however that housebuilders might gain NDA.
- (3) Under the current system, there is a general preference for on-site compensation. Planning authorities are generally guided by Natural England and national and local wildlife/habitat groups, who tend to prefer on-site measures. Yet on-site measures frequently fail to deliver conservation outcomes, unless there are very strong covenants on the land. ***Gain in NDA is a logical consequence if more compensation is moved off-site.*** However, a developer will not always necessarily build on land freed-up by moving compensation off-site. One argument made to us was, that if the developer builds on a higher percentage of the site, the impact will increase, so the compensation requirement will increase, and this would reduce to some extent the gain to the developer. Moreover, some of the best development schemes are those that retain green/nature space and these schemes can have a higher commercial value, as this is what many people now want. Thus, on-site compensation can be beneficial to the developer.

Interpretation of potential implications for benefits to developers in England

As was experienced in the past in the US and Australia, under the current regime in England, in the absence of widespread offsetting opportunities, planning authorities, Natural England and interested third parties (e.g. national and local wildlife groups) feel obliged to advise on-site compensation, reducing NDA. Further, the reduced development density means that more land elsewhere must be brought under development, possibly affecting land of higher biodiversity value and exacerbating fragmentation of habitats. As in the US and Australia, a well-supplied 3rd party offsetting market is likely to encourage a shift to a preference for off-site compensation, enabling denser development on land of lower biodiversity value and more viable conservation in more strategic locations. This can therefore help improve landscape-level planning to enhance biodiversity outcomes, while delivering valuable gains in NDA and development density for developers. Developers will however need to balance a possible gain in NDA with considerations related to amenity and green space, so will not always take up the densest development options.

Transfer of long-term liability for compensation measures

1e. To what extent, if at all, can offsets reduce developers' costs (direct costs, financial assurances, etc.) related to long-term liability for mitigation/ compensation measures? (For instance, being able to obtain offsets from 3rd party suppliers who take on liability may reduce developers' long-term liabilities.) Can you provide any quantified evidence in this regard or suggest where we could get it?

Summary of key findings

In the US, transfer of liability for compensation from the developer to a 3rd party (which takes on the long-term compensation obligations) delivers very significant savings, in particular to smaller developers. Together with time-savings, **transfer of liability is a major driver of the strong trend in the US towards 3rd party offsetting**. While 3rd party MB sells offset credits, from the developer's perspective, the more valuable outcome is speed through the permitting system and transfer of liability. These liabilities include financial assurances to cover the long-term management and monitoring of the offset site, and responsibility to make good any shortfall in delivery of the agreed offset outcomes (against a set of performance standards). Maintaining these liabilities gives rise to significant risk and unpredictability for developers, while the financial assurances have a negative impact on their underwriting capacity. It is attractive to developers that third parties who specialise in delivering long-term conservation outcomes take on these responsibilities, and the evidence shows that these third parties have a better ecological track record than developers with the successful implementation of the offsets.

In Australia (both Victoria and NSW) similar savings arise from transfer of liability, and this can be particularly attractive for smaller developers whose model is to develop and move on (with a mechanism in place to ensure specialist third parties assume responsibility for the long-term conservation obligations).

Detailed findings from the interviews and from literature cited by interviewees

US

- (1) As regards wetland/stream mitigation, the 2008 Rule makes it clear that developers retain responsibility for PR compensation (on- and off-site). Developers are required to meet performance standards, put in place financial assurances, secure long-term protection (through real estate instruments), and carry out and finance long-term management (in partnership with the end buyer of the development). The extent of this liability will depend on how stringently the agencies apply the 2008 Rule. While they can take formal enforcement actions, this has rarely happened to date. There is an example in Florida where mitigation conditions were judicially enforced; the developer had chosen to do PR, but did not deliver on the performance standards, got fined, and ended up having to buy third-party credits.
- (2) Given the enhanced liabilities with PR pursuant to the 2008 Rule, there is **strong consensus that transfer of liability (through MB/ILF), in relation to both wetlands/ streams and endangered species, offers (compared to PR) very significant savings to developers** and that this factor, together with time-to-permit savings, is the major driver of developer engagement in third-party offsetting. From the developer's perspective, he is not so much purchasing a credit as purchasing speed through the regulatory system and transfer of liability. This is particularly so for wetlands/streams following the 2008 Rule, which seeks to level the playing field

between PR and 3rd party approaches (effectively, requiring PR to meet the same standards as MB and ILF and thereby increasing long-term liabilities under PR). US law holds the developer liable for PR compensation in perpetuity, while the business model for most developers is 'build and move on', so developers are not well placed to handle long-term liability. MB/ILF offer cost certainty, whereas, with PR, costs are less certain and can snowball; it is thus more difficult to underwrite a business pursuing the PR approach than one pursuing the MB/ILF approach.

- (3) Birnie's analysis reveals a rapid trend towards 3rd party offsetting and away from PR between 2011 and 2012. While the rules express a preference for MB, **this trend is thought to be in large part a reflection of the combined cost savings to developers arising from reducing time-to-permit and transferring liability**. Under PR, the developer is liable for a wide range of costs related to any on- or off-site compensation, including: finding and securing the compensatory site, planning and permitting of compensation measures, implementation, long-term adaptive management, delivery to performance standards, monitoring and reporting, and, importantly, financial assurances. The developer has to do none of these if he chooses MB or ILF – he simply writes a cheque.
- (4) Birnie's analysis also shows that suitable MB offsets were available in only 25% of cases and that in relatively few cases where the compensation was provided by PR or ILF could it have been provided by MB. In other words, shortage of MB supply limits MB uptake, and MB uptake can be expected to increase, at the expense of PR, wherever supply is made available.
- (5) Developers using PR risk sanctions if they do not meet the performance standards – they have to fix their errors, or buy credits in addition to their own investments. One such case was cited in Florida where PR failed and the developer had to buy credits – effectively paying twice. In another case in California a mining company had to buy US\$1 m of credits having already spent US\$1 m on PR. A developer who builds up a portfolio of PR compensation sites accrues a portfolio of financial assurances that affects the balance-sheet dynamic of the developer and ties up underwriting capacity.
- (6) For the developer, **the key benefit in this respect is avoidance of risk** (risk of sanction if the developer fails to meet performance standards, and ultimately risk of losing license to operate).
- (7) **Discharge of long-term liabilities is particularly attractive to smaller developers** who are less able to bear the long-term financial burden of PR (whereas larger developers have the financial and legal resources needed).
- (8) USFWS experience is that, if a species conservation bank is available, developers will always opt for the bank (except some very large developments) in order to discharge liability.
- (9) A developer stated that a particular drain on resources is the requirement to set aside endowments for long-term management. An endowment is intended to pay for management in perpetuity. It involves putting aside a significant pot of cash in order to deliver a small annual return to pay for the management. According to this particular developer, this is a very economically inefficient way to use money. The interviewee suggested there are better ways to pay for long-term management, which do not involve setting aside large sums of cash, such as by using ongoing revenues (e.g. a partial tax on development, or as part of the property tax on

developed properties). The interviewee argued that the requirement for endowments drives up the cost of offsetting unnecessarily.

AUS

- (1) Victoria. ***There is a cost saving to developers through discharge of long-term liabilities*** through Bushbroker offsetting as compared with developer-led compensation.
- (2) Victoria. Long-term liability is less of a problem for larger developments where the developer is on-site for construction for a long period and can implement offsetting work alongside this. ***Long-term liability is more of a problem for smaller and shorter-term developments*** where the developer wants to develop and move on without remaining liabilities.
- (3) NSW. ***The ability to pass on long-term liability to a third-party supplier is seen as a huge benefit by developers.*** Prior to BioBanking, developers sought to offload offset liabilities, but it was difficult for developers to find a taker for the offset site. Many more suppliers are now coming forward, in part because provisions of BioBanking limit the long-term liabilities, reducing risk. For instance, if the offset is damaged by fire, allowances are made in terms of time to deliver conservation outcomes.
- (4) Federal EPBC Act offsets. Most of these relate to larger-scale developments, e.g. an offset for a mine involved an A\$30 m land purchase plus long-term management costs. The government is seeing some very large offsets (e.g. 5000 ha, worth A\$10s millions) and many for several A\$100k (small-scale offsets are constrained by the capacity of smaller developers to participate in the market). Both developers and the government would like to see more of these offsets being supplied by 3rd party suppliers. Long-term management may extend well beyond the life of the development (e.g. a mine) and developers prefer to outsource up-front.

England

- (1) Under the current system, long-term liabilities vary according to what is being managed. There are 2 typical mechanisms: (1) responsibility for open/nature space on-site is transferred to the local authority and the developer makes a commuted payment under the s106 agreement to cover the long-term management costs; (2) long-term management is funded by the end-owners/occupiers of the development. E.g. a 500 dwelling development in Oxfordshire generated a c. £250,000 commuted sum payment to the LPA to manage the nature space in perpetuity. The long-term management is also part-funded from Council Tax payments from the dwellings.
- (2) Under the current system, ***wherever a development gives rise to off-site compensation, there are significant long-term liabilities for the developer.*** Developers often seek to reduce the development impacts on-site to avoid these liabilities. This is sometimes seen as a poor compromise by developers.
- (3) ***Most developers prefer to transfer long-term liabilities to 3rd parties;*** e.g. an interviewee was aware of a case where a developer is paying a local wildlife trust to deliver long-term management over 100 years. The interviewee thought this approach would reduce costs and allow companies to focus on their core business.
- (4) ***Under the current regime, developers are quite often responsible for management and monitoring for 15-20 years.*** A planning consultant mentioned a case where a waste facility has identified an offset site on land belonging to a coal authority and has entered in to a long-term management agreement involving

payments to the Forestry Commission for long-term management of the coal authority's land over 15-20 years.

- (5) A 3rd party offset would involve up-front payment instead on the developer having the long-term liability on its books. The question arises as to whether the developer can afford the up-front costs. The developer's income from a development often comes through part-selling a scheme. Consequently, it may be easier for the developer to pay for the offset in phased schedule of payments, perhaps starting once the planning permission is granted and building to a final payment once the units are sold. However, payment for the offset should ideally be in advance of the impact.

Interpretation of potential implications for benefits to developers in England

In England, one might expect a similarly significant benefit to developers from the transfer of liability to third parties. Under the current system, wherever a development gives rise to off-site compensation, there are significant long-term liabilities, though these are often addressed through commuted payments to local authorities or by passing the responsibility on to the end-owners/occupiers, with mixed results for biodiversity. The use of 3rd party offsetting would involve the discharge of these liabilities and could place the conservation activities in the hands of professionals. However, this relies on stronger enforcement of long term conservation obligations; under the current system there would be little benefit to developers from transfer of liability since there is often very little or no long-term liability. As in the US and Australia, the benefits of transfer of liability are greatest where developers are held to the same performance standards and liabilities for developer-led compensation, as are 3rd parties undertaking offsets.

Route to recovery of any net additional costs arising from offsetting

1f. *If developers have experienced net additional costs as a result of the introduction of offsetting, have they been able to recover these costs and how (e.g. by reducing the amount paid for the land to be developed, of charging more for the end product)? What factors influence how this has been achieved (e.g. perhaps developers are less inclined to charge more for the end product, such as housing, in a very competitive market, and are more able to reduce the amount they pay for the land)?*

Summary of key findings

In the US and Australia the first choice for developers, where the costs of offsetting are foreseen up-front, will be to ***pass any net additional cost of a 3rd party offset up the chain to the landowner selling the land to be developed***. That is, developers will simply work it in to their budgeting, as a relatively very small incremental cost, together with all the other permitting-related costs already budgeted for. However, there is some evidence that additional net costs may be passed down the chain to end-buyers, particular when there is strong (housing) demand.

Detailed findings from the interviews and from literature cited by interviewees

US

- (1) A developer stated that land buyers tend to deduct the costs of mitigation from the price offered for the land, and land sellers try to pass the costs on to buyers. In theory, buyers have the upper hand in a weak market and sellers in a strong market.

In reality, most development projects are only feasible when the market is strong so the costs are typically passed on to the buyer. Over time, as the market adjusts, the cost of mitigation (whether it is PR or MB) will be passed on to the end-client (the home buyer). Permitting costs vary considerably across the US, e.g. developments are more expensive in California than in Texas, and a big part of this relates to mitigation costs. This is reflected in higher housing costs in California.

- (2) A mitigation banker related that a big developer in the Sacramento, California area had stated that mitigation in the late 1990s and early 2000s increased a house sale price by \$20,000 (new homes at that time were selling for \$300,000 to \$600,000 and the relative increase was acceptable due to high demand and limited supply of new homes).

AUS

- (1) Victoria. Offsetting may have resulted in net additional costs. Generally, the recovery route depends on the relative power of the three key players – the landowner selling land for development, the developer, and the end client. There are big competitive pressures on house prices, and developers will not bear the costs, so it has to be passed back to the landowner selling land for development. With offsetting, developers can estimate the costs in advance and work this in to budgeting.
- (2) Victoria. A developer stated that they tend to factor the cost of offsetting in to the amount paid for the development land – this is the first place to recoup the cost. Generally the offset cost is small in the wider scheme of things. In the Victoria coastal area housing development case study cited above (Q1a & Q1b), an A\$50,000 payment (together with the overall offset management plan and on-site offsets) secured the development permit.
- (3) Victoria. Developers can on occasion profit from the system. E.g. a developer negotiated the purchase of a large area of land in Melbourne's north containing some native grassland. The developer was able to achieve an A\$7million reduction on the price because of the environmental risk. The offset subsequently cost A\$2million.
- (4) NSW. During the 2012 consultation on the new federal offsetting guidelines, the government was told that it would add A\$10-12,000 (£5880-7060) to a housing lot.

England

- (1) ***Developers will probably pass any additional costs up the chain to the landowner selling land for development. [UK1DH, UK4CG, UK5RG].*** Developers will work the anticipated cost of offsetting in to their due diligence when assessing the residual value of the land in advance of purchase, in the same way that they already factor in other anticipated s106 and planning condition-related costs (e.g. affordable housing, CIL). Landowners selling to developers do very well from windfall gain, especially in the south east of England; it appears that there is greater margin for the developer to absorb the costs here than downstream by charging on to the end-buyer.
- (2) ***The cost of offsetting may not be borne solely by the landowner selling land for development. It depends on the market structure, the number of players, their size, demand, etc.*** Bigger developers often sit on banks of land and thus there are no separate landowners to whom to pass the costs. In this case, if there is an additional cost, it has to be recouped in some other way (e.g. passing on to the end-client). Where developers have already bought developable land, their due diligence should

already have accounted for anticipated costs of compensation. However, if these have been under-estimated, for example if offsetting proves more costly than anticipated in a hasty assessment, then adaptation will be needed (this is why clear offset rules and methods are helpful, since they remove the risks of underestimation of costs). Developers may end up seeking to negotiate down other s106 costs, such as affordable housing.

- (3) For current developments and those already planned, where offsetting has typically not been built in to developers' costings, due diligence and/or viability assessments, offsets are typically perceived as an additional cost and can affect the viability of existing schemes. ***A large up-front cost is in particular perceived as an additional burden. Developers tend not always to see the flip-side benefits in terms of certainty and unlocking development. It is important to make this visible to developers.***
- (4) ***In order for developers to systematically build in offset costs upfront, interviewees felt that the use of the metric to calculate residual impacts should be mandatory.*** If not, compensation costs will not be taken in to account by developers until it is too late to recoup these costs in other ways. However, one interviewee warned that a mandatory basis could be seen as an additional burden to development unless this is balanced with reforming other burdens, e.g. improving the current approach to great crested newt mitigation and compensation.

Interpretation of potential implications for benefits to developers in England

The findings from the US and Australia are likely to apply also in England, that is, developers are likely to factor any foreseen additional cost up-front into their calculation of residual land value, and consequently pay a little less for the land to be developed. Landowners selling to developers do very well from windfall gain, especially in the south east of England; there is greater margin for the developer to charge the costs here than downstream to the end-buyer. However, bigger developers often sit on banks of land and have no landowner to whom to pass the costs. In this case, any additional cost would be recouped in some other way (e.g. passing on to the end-client, or negotiation against other planning/s106 conditions).

Other costs and benefits/savings of offsetting for developers

1g. Can you provide (or suggest where we can get) any other evidence on the costs and benefits/savings of offsetting for developers, which might help inform choices about the use of offsetting in England.

Summary of key findings

A number of other significant areas of benefit/savings to developers were mentioned during interviews. First, and consistent with time-savings, is that offsetting enables development projects to be implemented sooner than would be the case without offsets. At the individual developer level, the bringing forward of a development by five months can be the difference between profit and bankruptcy.

Second, one developer interviewee in the US reported that 3rd party offsetting enables just-in-time mitigation, notably for larger, multi-phase developments, which can purchase the appropriate number of offset credits at the start of each phase of the development, whereas this may be more difficult with developer-led compensation.

Third, a 3rd party offset typically has access to cheaper land on which to deliver the compensation than does developer-led compensation. This is because, in the competitive 3rd party offset markets of the US and Australia, offset sites tend to be located where land costs are relatively low. By contrast, if a developer undertakes 1st party compensation on-site, this takes up what is often very valuable developable land. And if the developer seeks to do 1st party compensation off-site, he frequently has a limited choice of sites and the land values at these few sites (obtained case-by-case) is likely to be higher than the land value of competitive 3rd party offset sites.

Fourth, MB offers economies of scale (by creating aggregated offsets), including reduction of fixed costs by 30-40%, consolidated monitoring and enforcement, and tried-and-tested processes and techniques for restoration/enhancement.

Fifth, some developers may themselves generate additional income as 3rd party offset providers. This applies in particular to companies with substantial land holdings, such as some water companies, mining and minerals and aggregates companies.

While not specifically a benefit to the developer, MB has lower administrative costs than PR and in lieu fees; in some jurisdictions, planning authorities implement full cost recovery of these costs.

Detailed findings from the interviews and from literature cited by interviewees

US

- (1) A key benefit of 3rd party offsetting is that, consistent with the time-saving, it enables development projects to be implemented sooner than would be the case without such offsets. ***In 2012, 42% of the US\$3 bn offset market in the US probably brought forward c. US\$40 bn of development by an average of up to 5 months.*** This represents both a considerable saving in development financing costs, and a considerable boost to GDP. At the individual developer level, the bringing forward of a development by five months can be the difference between profit and bankruptcy. A developer told us that, in California, MB can help bring forward development by a year or more. This concerns more than just the cost of (borrowing) money; it is about being able to deliver housing in a timely fashion when the market is strong. Bringing forward development by a year or more can make the difference between financial success and bankruptcy.
- (2) According to one interviewee, another key benefit to developers is that ***3rd party offsets allow 'just-in-time' mitigation.*** PR involves laying out a lot of money even before the developer knows whether the project will need mitigation. Much of this money may be wasted. MB allows the developer to pay for the mitigation at the moment it is needed, and allows it to be phased with the development (e.g. if a development proceeds in 10 phases, MB credits can be bought in 10 phases). Such just-in-time spending can significantly reduce borrowing costs and allow more efficient use of available capital.
- (3) Another significant benefit raised by an interviewee is that MB ***allows the developer to buy precisely the number of credits he needs and no more.*** PR, on the other hand, often results in the developer creating more credits than he needed in relation to the impact; the extra credits are a waste of money from the developer's perspective.
- (4) ***An offset system in which farmers and landowners may offer credits where they have the potential to supply an offset (without the requirement to 'bank' mitigation up-front) was described by one interviewee as 'a great idea'.*** In such a

system, it is easy to adjust ratios to account for the time lag risk. This would help avoid the problem of MB supply experienced in the US. MB also is not 'just-in-time' – it is not easy to turn on and turn off the supply. Bankers often have considerable sunk investment and wait years for a return.

- (5) If residual impacts have not been fully addressed in the baseline (PR) scenario, 3rd party offsetting will imply additional costs – 'you can't have your cake and eat it'. However, **offsets can be implemented in such a manner as to control costs and provide cost-efficient solutions.**
- (6) One interviewee argued that the market should (more) fully internalize the cost of addressing impacts and show how expensive the damage is. If costs are in line with the full costs of effective compensation, then this will drive developers further towards avoidance and minimisation.
- (7) **MB offers economies of scale, in particular in relation to smaller developments. Fixed costs for arranging compensation can be reduced by 30-40% by the use of large aggregated offsets.** Costs of monitoring and enforcement are also lower per acre for larger sites. Further, as one interviewee from the US system made clear, if one establishes a business model with MB companies skilled in habitat restoration in perpetuity, this delivers cost benefits as compared with PR, due to scale and approach.
- (8) **MB is generally a cheaper option than PR, in particular where restoration or enhancement of wetlands is involved** (but not, however, when the offset involves preservation of existing wetlands); most wetland offsets in the US are restoration or enhancement. E.g. if a developer impacts wetland in Ohio, MB credit prices range from US\$25,000-40,000/acre; the PR alternative is likely to exceed this as average land costs for offset sites are US\$12,000/acre and costs for restoration/monitoring/reporting are US\$20,000/acre, and then the developer needs to take into account time-savings and longer-term liabilities. Thus, with PR one soon passes the cost of MB. Most developers conclude that it is easier and cheaper to buy 3rd party credit. ACE may also demand higher offset ratios for PR to effectively discourage this option on the basis that MB is the preferred route.
- (9) **ILF generally has higher administrative costs than MB.** MB prices are increased by the need for the provider to add a profit margin, but this is mitigated by the efficiencies of companies that specialise in MB. ILF generally cannot compete in districts where MB is well established.
- (10) **Some developers themselves create banks on-site and sell the credits.** E.g. one developer building a warehouse complex was required to do a small amount of wetland mitigation on-site; he built a larger wetland and sold the extra credits for \$650,000/credit.
- (11) **Some relevant history in the US:** Offsetting was not fully fleshed out until the early 1980s – initially, it was felt too costly to ask developers to go off-site. Developers at that stage opposed what they perceived to be additional costs. However, this position was difficult to sustain. USFWS started publishing inventories in the 1980s documenting the massive scale of wetland loss (e.g. half of all wetlands lost in the lower 48, 90% lost in state of California)⁷ and there was increasing recognition of the importance of wetlands. Arguments about cost and regulatory burden were trumped by this national narrative. A forum in 1988 proposed a no net loss policy,

⁷ See <http://www.fws.gov/wetlands/Status-and-Trends/>

which was eventually replaced by a net gain policy, which captured the public imagination and gained bipartisan support (e.g. from hunting/fishing interests). This was also a time of strong economic growth. **GW Bush announced a no net loss policy in 1989.** The ACE and EPA put the no net loss policy in to wetland mitigation guidance in 1990. The use of off-site compensation, which had been increasing through the 1980s, continued to increase in the 1990s under the new no net loss policy. **Mitigation banking exploded in the 1990s and helped sell the new policy to the developer community by offering time-savings and severance of liability for the developer.** The 2008 Rule (which raised the performance standards for PR) was issued during the second Bush administration. The mitigation banking community argued hard for a level playing field between MB and PR and **the concept of harnessing an entrepreneurial market was attractive to Republicans and Democrats.** The 2008 Rule created the space to harness this market force. There was not much resistance from the developer community. There were some sobering studies of the very poor performance of PR, notably a 2001 study of the National Academy of Sciences, which showed pretty resoundingly that PR was not delivering on the no net loss goal, and 'it is difficult for developers to argue for crappy standards.'

- (12) One interviewee argued that delivering savings to developers has been the entire focus of the US market – the aim has been to avoid hindering development. The system is heavily weighted to deliver all the benefits to the developer. However, the interviewee argued that England should not follow such an approach, rather that the point of a market should be to distribute risks and benefits equitably. The developer should pay a premium to shift liability to a 3rd party supplier, as this is delivering significant benefits to developers that they are currently 'getting on the cheap.'
- (13) Dennis King (University of Maryland) has looked at scale economies in ecosystem restoration and found that **larger sites deliver cheaper restoration.** Larger sites are also easier to monitor and enforce.

AUS

- (1) Federal level. The federal government carried out extensive consultation in preparing the 2012 policy on offsets. Some development sectors were opposed but most appreciated the need, as offsetting is a well-established practice in Australia. **A key concern for developers was predictability in decision-making, allowing them to plan accordingly.** Prior to the 2012 policy, there was no fixed methodology and this led to upward creep in the offset ratios from 1:4 to 1:5 and above, which drew objections from the development community.
- (2) Victoria. **3rd party offsets are generally cheaper than on-site first party offsets due to land management efficiencies and cheaper land** (where the offset can be located well outside urban areas). 3rd party offsets can reduce developers' costs considerably - especially with regard to small offsets; flagfalls (fixed fees) and economies of scale apply, and rural landowners (farmers) doing offset management generally have lower costs than contractors doing urban on-site compensation management. Savings with 3rd party offsets were estimated by one interviewee to be 25-50 % compared to the developer doing a first party offset; however, a developer was not sure that 3rd party offsets are cheaper than first party and suggested that 3rd party prices have increased, though transaction costs are down.
- (3) Victoria. There is a benefit to developers from offsetting in that it is now estimated in advance and developers therefore know the cost when budgeting. Additionally,

some developers themselves profit as offset suppliers. And many developers see a benefit in promoting their environmental credentials by reference to their offsets.

- (4) NSW. There are many values attached to land, which can be used for multiple purposes. The provision of developer-led on- or off-site compensation under the EP&A Act typically involves land purchase. This is logically more costly than payment for BioBanking credits as, with the latter, the owner may continue to enjoy other benefits, such as low intensity agricultural use, amenity and recreational access. In other words, ***BioBanking involves payment for certain options on the land, whereas compensation under the EP&A Act usually involves outright land purchase, and is therefore more costly.*** While a developer may in some cases have the option not to buy land for the offset, this does not offer much security and/or control over the long-term management so carries a risk for the developer. (A final option for the developer under the EP&A Act is to pay a commuted payment to the local authority to discharge its liability.)
- (5) NSW. BioBanking is also generally cheaper than first-party 'bespoke' or 'boutique' offsetting because it is scalable, repeatable, and more efficient.

England

- (1) ***Many developments affect sites of relatively low habitat distinctiveness and condition where, under the current system, there is little or no obligation to compensate for residual impacts. Offsetting might be perceived by developers as an additional 'tax' in such cases.***
- (2) However, such sites frequently involve costs to the developer associated with avoidance and reduction of impacts and the retention of green space. In order to make offsetting attractive to developers for such sites (which are probably a large proportion of all developments, and therefore key to generating more biodiversity outcomes and a move towards no net loss), ***one option would be to relax the mitigation hierarchy and allow more of the mitigation effort to go off-site.*** In Leicestershire and Northamptonshire, LPAs often look for net gain on-site, reducing NDA. E.g. one interviewee mentioned the case of a development of 900 dwellings on the north edge of Northampton on 'intensively managed arable land with scrappy hedgerows and a few dried up ponds'. The LPA and the consultant ecologist required new grasslands, aquatic habitats and hedgerows on-site thereby decreasing developable area while the ecological benefits of integrating such habitat into the development were also questionable (in terms of functionality and long term viability). Such an outcome is a constraint on the development configuration. The interviewee explained that this is not to say developers don't want any open space (they still need to build an attractive development to sell it) but ***instead of placing additional ecological constraints on-site, a better ecological gain could be achieved off-site, preferably by quick and easy over-the-counter offsets, leading to enhanced conservation outcomes.*** In such sites (i.e. the majority of developments), the interviewee felt that developers will need to see clear time-savings/cost-benefits and NDA gains if they are to be won over by offsetting. Offsetting should be part of the ecologist's "toolbox" for any development.
- (3) As regards the question of the threshold, in terms of the size of a development, beyond which offsetting should apply to residual impacts, a planning consultant suggested that wherever an impact assessment indicates a residual impact on biodiversity, the development should qualify for offsetting. If the developer can avoid and minimize to the extent there is no residual impact, then no compensation

is required. So, there is no need to set a threshold. The trigger would instead be the identification of residual impact by the impact assessment.

Interpretation of potential implications for benefits to developers in England

Each of the above benefits observed in the US and Australia should similarly accrue to developers with the introduction of clear and unambiguous offset requirements in England, coupled with widespread and competitive offset provision, especially through 3rd parties.

3. FINDINGS ON IMPACT OF MARKET DESIGN ON OFFSET PRICES

Q2. Questions on the impact of different market characteristics on the price of offsets and related transaction costs.

Context

Different market characteristics prevail in the US and Australia:

US

- (1) A range of in-kind (like-for-like) requirements exist for wetland and stream offsets, though the 2008 Rule provided for more flexibility in trading up from wetlands/streams of lower ecological value (quite a significant part of the US market) to those of higher value.
- (2) Species offsets are subject to stricter like-for-like requirements, particularly for listed species.
- (3) Market size and liquidity is constrained by limiting offsets to 'service areas' which, for wetland and stream offsets, tend to be based on watersheds, and for species offsets are typically based on species' ranges and/or species recovery plans. Larger supply tends to emerge where demand is higher. Regulators typically negotiate service areas with suppliers (bankers and ILF providers) to balance ecological considerations with recognition that overly tight constraints (in-kind and/or service area) can render MB and ILF non-viable.
- (4) Offset supply is concentrated where there is high demand (development permitting activity) so demand drives the market.

AUS

- (1) NSW. In some cases involving the need for very strict like-for-like requirements (e.g. threatened species), offsetting can become too difficult. NSW is developing a structured approach to deal with these cases.
- (2) Victoria. The state offers over-the-counter, fixed price, pre-prepared credits for smaller impacts on vegetation of lower value. The developer can buy these in the same offices issuing the development permit. Transaction costs are very low. These are very popular with developers. Impacts of medium scale and significance (and higher) have to follow a more demanding process.
- (3) Victoria. One interviewee (a developer) was not convinced that 3rd party offsets are cheaper than first party; 3rd party offset prices seem to have increased in recent years, though transaction costs are down.
- (4) Victoria. Very high significance offsets (e.g. golden sun moth) are of higher price, offsets for impacts on low and medium value biodiversity are cheaper. This is a proper price signal as it relates to rarity and vulnerability and encourages avoidance.
- (5) Federal EPBC Act offsets. Cost/price data is commercially confidential, and there is no obligation to share this information with the regulator (private financial transactions are outside the realm of government), so it is difficult to analyse how market characteristics affect price. Prices are not credit-based but based on absolutes – such as land acquisition and management costs.

Impact of like-for-like constraints on offset prices

2a. Do you have any evidence of the impact, on the price of offsets and of related transaction costs, of narrow offset markets driven by strict like-for-like requirements (i.e. non-fungible credits), compared with more flexible approaches (e.g. less strict like-for-like, out-of-kind offsets)?

Summary of key findings

In both the US and Australia, there is very limited availability of price data for 3rd party offsets so it is not possible to get an overview of the impact of like-for-like requirements on credit prices. Anecdotally, **very strict like-for-like requirements (e.g. for threatened/ listed species or rare habitats) may result in high prices**. In both the US (wetland banking) and Victoria (Australia), recent changes to the rules have taken a risk-based approach, loosening like-for-like requirements for impacts on lower quality habitats and maintaining them for impacts on higher quality habitats.

Detailed findings from the interviews and from literature cited by interviewees

US

- (1) In the US, there is a general preference for in-kind offsets. However, in-kind requirements (for wetland and stream mitigation) vary considerably across the US. In some places, there are many specific wetland credit types, in others fewer and more generic credit types, offering greater fungibility.
- (2) The 2008 Rule express a preference for like-for-like as this is more likely to replace lost wetland/stream functions. There are also strict like-for-like requirements for listed species. However, in the US, many developments affect wetlands/streams of low/moderate ecological value. In these cases, the US system does not accept provision of a low/moderate quality offset, but requires trading up. This is a large part of the US market.
- (3) It is hard to separate out the impact of in-kind constraints on credit price.. We have however been cited one or two cases where **very strict in-kind requirements have resulted in very limited or sole supplier who can then hike prices**. However, this risk is reduced in US by the fact that developer can choose either PR or 3rd party.

AUS

- (1) Victoria. The state has moved to a risk-based approach over the last 2 years, **loosening like-for-like requirements for impacts on sites of lower ecological significance** (but conversely tightening up like-for-like requirements in relation to biodiversity of higher conservation significance). Strict like-for-like was previously driving some 'crazy' credit prices. The total market for Victoria is not big – c.100 ha impact per year, but with loosening of in-kind requirements, expecting to drive prices down at lower end of market. Trade prices range in value depending on where the offset is required and what type of offset is being sought. Clearly there is a correlation between rare types of offsets such as grasslands, which have higher management costs, especially in bioregions where there are only one or two providers. An example was given of one landowner who received nearly A\$2 m/ha in a bioregion where he was the only supplier with the type of offset being sought. At bottom end of market, Victoria now offers fixed price 'over-the-counter' transactions; local authorities can sign up an offset site and sell credits at a fixed

price.

- (2) Victoria. Strict like-for-like (for 'Very High' classifications of vegetation/species significance) offsets are at a higher price than those for less strict requirements (for 'Low' vegetation/species significance); there are more supply options for the latter. Over-the-counter offsets aside, transaction costs are similar between strict and less strict like-for-like.
- (3) NSW. There is a lot of anecdotal evidence and modelling on what one would expect to result from various market characteristics, but no empirical evidence.
- (4) NSW. **Credit prices are higher for species or ecosystems for which there is a more limited supply.** E.g. there is a limited amount of Cumberland Plain woodland⁸, mostly located in the periphery of urban areas outside Sydney. Such woodland is listed as an 'endangered ecological community'. Some affected councils see this listing as a constraint on development, but are coming to recognize that the high value of the woodland in the BioBanking market represents a significant income-generating opportunity for peri-urban landowners.
- (5) NSW. **Prices can be very high for the scarcest vegetation types and this can create significant value for landowners who invest in these vegetation types.** For example, an historic property in the Campbelltown area, was purchased in 2010 by the NSW Historic Houses Trust, for A\$2 m (£1.176 m). With establishment of a BioBank, the property was valued down at A\$1.4 m (£824,000), a loss of A\$600,000 (£353000). However, the BioBank generated 184 credits of Cumberland Plain Woodland and 342 credits of Shale Sandstone Transition Forest, both scarce types. The total value of these credits is estimated to be c. A\$5.9 m (£3.47 m). The landowner would need to deposit A\$1.03 m (£606000) for the long-term management of the offset. Thus, in this case, if the landowner retains the property, establishes the BioBank site and sells the credits, his gain from his original \$2 m investment in the property = A\$1.4 m (adjusted value with BioBank site) + A\$5.9 m (credit value) – A\$1.03 m (fund deposit) – A\$2 m (purchase price) = A\$4.27 m (£2.51 m). There is clearly a large discrepancy in this example between the cost that the market will bear (\$5.9 m) and the landowner's cost price of supplying the credits (A\$600,000 + A\$1.03 m = A\$1.63 m).
- (6) NSW. One interviewee relayed that where constraints are very strict, such as for endangered species, NSW does in certain circumstances allow for a structured 'breaking of the rules.' This let-out was developed to provide the flexibility required for the pragmatic delivery of the program by Ministers charged with delivering a balanced social, economic and environmental outcome.
- (7) Federal EPBC Act offsets. **Threatened species offsets are strictly like-for-like and therefore non-fungible. This does drive up prices, especially where there are several species to be offset.**
- (8) Federal EPBC Act offsets. This non-fungibility does limit developers' options, but then the Act deals with threatened species and there is no scope for trading across species. **There is however an element of flexibility in terms of how the offset is delivered, so long as this is consistent with the recovery plan for the species;** e.g. if a developer clears a patch of quol (*Dacyurus* sp.) habitat, the offset might restore/enhance/ protect quol habitat elsewhere and/or finance quol captive

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<http://www.environment.nsw.gov.au/determinations/CumberlandPlainWoodlandEndComListing.htm>

breeding or reintroduction, etc., i.e. the offset does not always involve finding suitable habitat for an offset site.

- (9) Federal EPBC Act offsets. There are only 80-100 project approvals per year across Australia requiring EPBC Act offsets, though these tend to be high value. Each transaction can keep consultants and suppliers busy for years. Some are developer-led, so there is no 3rd party supplier involved.
- (10) Federal EPBC Act offsets. It should be noted that there is a floor in the offset price because of unavoidable management costs and the threshold cost required to persuade the landowner to place a covenant on the land.

England

- (1) No specific evidence gathered as no established market.

Interpretation of potential implications for price of offsets in England

Significant impact of like-for-like requirements on offset prices can be avoided by taking a **risk-based approach** (sometimes termed a 'graduated approach', in which there is a looser like-for-like requirement for species and habitats of lower conservation priority and a stricter one for species and habitats of higher conservation priority).

Impact of 'service area' constraints on offset prices

2b. Do you have any evidence of the impact, on the price of offsets and of related transaction costs, of market systems requiring local offsets (i.e. small 'service areas' defined by species' ranges or watersheds, etc.) against more flexible approaches that allow the aggregation of offsets in larger more distant sites?

Summary of key findings

In the US, **service area size is set with consideration for both ecological validity and market viability**. It is not so much that small service areas increase prices (though this does happen when service areas are very small), more that small service areas are a disincentive to the supply side and result in inadequate supply. Moreover, larger service areas can create thicker markets, enhancing supply. Small service areas can also result in banks being unable to sell their credits and recoup sunk costs and a return on investment. In Victoria (Australia) liquidity relates more to demand for, and the rarity (and therefore supply) of, an offset type, than to the size of the bioregion within which offsetting is allowed. Credit prices will also be high if a small service area is set for a region with high land values.

Detailed findings from the interviews and from literature cited by interviewees

US

- (1) ***The ideal geographic scope for mitigation trading requires careful consideration of ecological-economic tradeoffs*** to promote both adequate market activity and environmental conservation. The size of geographic service areas (in the US, the area within which an offset provider may sell credits to developers) has significant implications for the economic viability of markets and the ecological quality of their offsets. ***Geographic trading limits should promote thick markets to the extent that they incentivize market participants to supply high-quality restoration.*** When geographic trading restrictions preclude selection of amenable restoration sites, it

may be appropriate to prioritize restoration quality above spatial proximity to impacts (Womble & Doyle 2012).

- (2) The US approach generally avoids there being a bank from which nobody wants to buy credits. Bankers undertake market analysis to ensure there is sufficient demand, and develops appropriate supply to meet that demand. ***Strict like-for-like and small service areas will drive up prices and limit credit supply, so there is a need to take care in setting these constraints.*** If credit types are too specific, the system collapses under its own weight. However, if service areas are too large, the offset may be too far away for communities on the losing end to see any benefit. ***There is a need to strike a balance between ecological specificity, service areas and market viability.*** There is no one-size-fits-all – local regulators work with bank sponsors to find a reasonable solution that recognizes local factors. In general, banks want like-for-like requirements to be as generic as possible, so they can sell credits quickly, cover sunk costs, pay back loans and generate return on investment. Service area requirements are a challenge as this drives economic viability – but from an ecological viewpoint there is a need to ensure offsets are reasonably local.
- (3) ACE seeks to balance a preference to keep (wetland and stream) offsets as near as possible to the impact with increasing attention to optimising ecological functionality and with market viability. Service areas (the area around a mitigation bank within which developments may purchase that bank's credits) are negotiated based upon an application by the bank in question, which is informed by the bank's own market research. Bankers do a lot of market research before applying for ACE approval of a MB – to make sure there is demand sufficient for a decent return on investment. MBs involve significant up-front costs – so bankers target areas of heavy demand (substantial development pressure on wetlands) where they think they can do well. It is not in the ACE's interest to require too tight a service area that ends up causing the bank to be non-viable economically. Service areas typically range from 300-1000 sq miles.
- (4) It has been pointed out that ***if service areas are set too small, banks become unviable.*** So the problem is less that small service areas (i.e. a strict requirement to offset very locally) result in high prices, and more that such small service areas result in no or very limited supply, particularly when small service areas are combined with strict in-kind requirements.
- (5) ***Small service areas can be a constraint on the willingness of mitigation bankers to invest in banks.*** E.g. a bank in N Carolina has 400 acres available at \$30,000/acre and cannot find a buyer within the service area, while it is very difficult to sell outside the service area. This crops up a lot in the SE of the USA. Service areas can present barriers to market development and have been the grounds for various lawsuits in the US.
- (6) In some cases in California, the authorities split up the species range in to 'recovery units' and required the offset to take place within the same unit as the impact. This drove up land prices for the available offset sites.
- (7) Too large a market (e.g. the single US market for SO₂ offsets) delivers strong price competition but risks creating 'pollution hotspots,' whereas many small markets prevent hotspots but can push up prices. There is a need therefore to find the optimal service area size for a specific market. In the US, they have done modelling work on this for, e.g. wastewater treatment markets. In general, small service areas risk monopolies, which increase price, reduce quantity and therefore reduce welfare (public goods) outcomes.

AUS

- (1) Victoria. Liquidity relates more to the demand for, and the rarity (and therefore supply) of, an offset (vegetation) type in the bioregion (service area), than to the size of the bioregion within which offsetting is allowed.
- (2) Victoria. ***Service area is not generally a strong driver of price in Victoria***, but there is one specific case where local council has required offsets within its boundaries (over and above the state's bioregion requirement); land value in the council area is much higher than in rural parts of the bioregion and offset prices much higher as a result, e.g. A\$5-10,000 for a large old tree versus A\$1500-2500 in rural areas. This is more about the land prices in the council area than the service area size.
- (3) Federal EPBC Act offsets. The service area is a function of the species' distribution and ecology. Many of the species concerned are small, with small ranges, resulting in a requirement for local offsets.

England

- (1) No specific evidence gathered as no established market.

Interpretation of potential implications for price of offsets in England

In England, significant impacts of service area (i.e. the area within which an impact must be offset) on offset price can be minimised by ***giving consideration to market liquidity when drawing service area boundaries***. The metropolitan and non-metropolitan counties, which average 1590 sq km in area, may be a suitable starting point for the consideration of service areas, and compare with a typical range of 300-1000 sq km for wetland banking service areas in the US. Thought will however need to be given to the underlying ecology (i.e. do habitat types and thus natural service areas for 'like for like' offsets coincide with political boundaries).

Impact of market maturity on offset prices

2c. *Do you have any evidence of the impacts, on the price of offsets and of related transaction costs, of access to well developed markets with strong competition between suppliers, compared with scenarios where market are less well established?*

Summary of key findings

Credit prices are predictably higher when there is only one supplier. ***Where there are multiple providers, costs equilibrate quickly***, as developers have greater scope to negotiate price. In Victoria (Australia), data shows prices trending down as the market establishes. Suppliers' costs put a floor on prices. In the US, despite rapid growth nationally in MB supply, many ACE Districts still have very low supply. States such as Georgia and Virginia have demonstrated the benefits of significant supply. The US MB model, which requires credits to be banked up-front, and therefore significant up-front investment from both bankers and regulators, is partly responsible for this. In some Districts, ACE culture continues to favour PR at the expense of MB (BenDor & Riggsbee 2011). The Australian model, in which providers can express an interest and ability in principle to undertake offsets and only proceed with the planned activities if and when a developer that wishes to buy them comes forward, reduces the risk of up-front investment for offset providers.

Detailed findings from the interviews and from literature cited by interviewees

US

- (1) There has been a rapid increase in the number of mitigation banks in the US, from under 100 when guidance was first issued in 1995, to almost 900 at the time of the 2008 Rule being issued, to over 1300 in March 2013 and 1382 as at mid-December 2013. As more suppliers enter the market, developers have greater scope to negotiate price. As supply increases, MBs may have brought costs down, though developers sometimes complain about bank prices (however, when developers take in to account all the associated costs, and the transfer of liability, they often agree that the MB prices are bearable). States such as Georgia and Virginia have demonstrated the benefits of significant supply.
- (2) It is generally known where most development will take place, i.e. where the demand for compensatory mitigation will be high. Supply tends to be better in such areas.
- (3) ***The market however remains somewhat illiquid in the US and in many areas, there is very limited supply. This can lead to higher prices***, e.g. the normal rate for stream restoration in montane W USA is \$1m/mile; in Montana, where there is a single provider, the price is 2-3x higher. Where there are multiple providers, costs do equilibrate quickly.
- (4) ***The US model, which requires the up-front development of mitigation banks, requires significant investment – there is a huge market entry barrier***. Where there are no or very few banks, the state and/or environmental not-for-profits can step in to fix this market failure by offering ILF. The preference in the 2008 Rule for MB is likely to 'do away with' the ILF model in most regions.

AUS

- (1) Victoria. The state has a fairly thin market as not much clearing of native vegetation is permitted each year (c. 100 ha/yr). Historically, prices have fluctuated. The data tends to show extremes in prices from very low to very high in the early years of the program (which was dominated by developer-led, bespoke offsets). Bearing in mind that the government does not influence trade prices, the market has been volatile at times. ***It appears to be going through a trend of flattening prices at the moment*** (ES Link 2012). This is attributed to a range of influences including: landowners signing up with external brokers which seems to bring some sort of natural order to the prices that are set; DEPI publish trade prices, thus providing a greater level of transparency to pricing; and a maturing of the market where there are returning customers who know what they paid last time and will be less likely to pay more than that on future arrangements. On the landowner side, there are landowners who have now made multiple trades and seem more relaxed about recouping their cost base and a little more flexible than in their first round of offset negotiations.
- (2) Victoria. There is not a lot of competition because there are few suppliers for any given transaction. Unavoidable management costs put a floor on prices and most suppliers are working to the same costing formulae. There is also a threshold cost required to persuade a landowner to put a covenant on the land. ***Large, strategic 'offset banks' offered by 3rd parties have lower unit costs and significantly lower transaction costs than developer-led offsets*** (ES Link 2012).
- (3) Victoria. The market has developed because specialists moved into areas of the market, particularly offset supply. ***Brokers brought benefits through streamlining***

transactions, advising landowners on demand and flushing out potential supply.

Market signals also started to work. For example, when the price of grassland offsets reached high levels many new suppliers entered the market with the result that there is now plenty of supply and prices have fallen.

- (4) Victoria. The market was established in 2007; **prices have dropped as suppliers have entered the market.**
- (5) NSW. Most offset transactions are relatively small, with the majority of the market made up of one single large transaction.
- (6) NSW. In areas with high demand, e.g. Sydney, Hunter (which is a big mining area), there is a market that is operating well. For instance, a dairy farmer in the Hunter area has shifted to BioBanking and is buying up neighbours' land to generate and sell more credits. Some industrial developers are themselves becoming suppliers, creating credits on spare land.

England

- (1) No specific evidence gathered as no established market.

Interpretation of potential implications for price of offsets in England

In England, a model more akin to that applied in Australia, where offset supply is ex-post (i.e. farmers and landowners make a credit 'offer' without the need for significant up-front investment until the developer decides which credit to buy, prior to securing planning permission) rather than ex-ante (as with MB in the US) would ensure lower barriers to market entry and **ensure ready supply** once there is clear demand. Unlike MB in the US, such a supply model, which is already beginning to operate in England, is also able to **adjust rapidly to changing demand**. Moreover, **a model in which 3rd party offsets are supplied (via brokers) by farmers and landowners (rather than mitigation bankers) is likely to deliver lower cost offsets.**

Key determinants of offset prices

2d. Are the above key determinants of offset price, or are other factors (e.g. land value) more important?

Summary of key findings

Liquidity, as affected by like-for-like and service area constraints and market maturity, is not generally the key determinant of offset prices. There appears to be a strong consensus in both the US and Australia that **land value, regulatory standards (e.g. requiring covenants and/or purchase of easements) and the costs of (ecological) production (i.e. habitat creation/restoration/enhancement and long-term management) are the key determinants**, except where markets are extremely thin (as a result of very strict like-for-like or service area constraints), when a single supplier or very small number of suppliers may be in a position to hike prices substantially.

The costs of funding for long-term management may be regulated. One interviewee pointed out that endowments may not always be the most cost-effective approach as they tie up large sums of cash for small annual returns.

A choice of offset routes (1st party, 3rd party) helps put a 'natural cap' on 3rd party prices (but it is essential that both 1st party and 3rd party are held to the same standards; if

developers choosing 1st party can more easily break the rules or 'play dirty', then 1st party becomes the cheaper option).

In the US, 3rd party prices are often set through close relationships between bankers, developers and regulators and bear no relation to developers' opportunity costs; it is a '**cost+**' **approach to pricing** rather than a 'what is it worth to you?' approach. Conversely, an example from NSW (Australia) demonstrates that, at least for the scarcer vegetation types, suppliers are very much setting prices **according to what the market can bear**.

Detailed findings from the interviews and from literature cited by interviewees

US

- (1) Liquidity is not the key factor in the variation in credit prices across the US. As most offsets in the US involve land or easement purchase, **land values are the main determinant (for wetlands more than for streams), comprising perhaps 60-70% of the offset price**. In California, for instance, vernal pool offset credits are far less costly in the Central Valley where land prices are relatively low, and far more costly in the San Francisco Bay area, where land prices are high.
- (2) **Long-term management costs are a second significant determinant of price. A third important determinant of cost relates to the protection requirements on the offset**. The need to purchase any easements (3rd party rights) on the offset land to remove risks to the offset may imply significant additional costs, e.g. acquiring the mineral rights.
- (3) Compensating for residual impacts is mandatory, but developers have three options as to how they achieve this – MB, ILF and PR. **The availability of PR puts a 'natural cap' on 3rd party (MB, ILF) offset prices**. If 3rd party offsets are too costly, developers will choose the PR route.
- (4) Indeed, EPA sees having a choice between first and third-party as beneficial as it helps keep all three (MB, ILF, PR) 'honest', prevents any one approach holding a monopoly, promotes competition and helps keep costs down. Moreover, if the US were to make the use of MB mandatory, there would remain large areas in the US with very limited or no supply. Supply is a function of demand – banks pop up where there is high development pressure on wetlands/stream and species. E.g. in N Dakota, a road project requires compensatory mitigation, but there is very little other demand; no banker will set up a bank to sell a few credits to the road project with very little prospect of return on investment for the next 20 years. If the US were to permit offsetting only through MBs, these might hike prices (in the absence of PR competition) – hence the 2008 'preference' for (but not exclusivity to) MBs.
- (5) **MB in the US is not what we would think of as a classic market. Price appears to be influenced by a close network of relationships**. The marketplace is often made up of people who know each other well; sellers have a deep background in the regulatory agencies and/or with developers (buyers). The market works due to networks of trust. The bankers are known to the agencies and the developers, and the bankers know what the agencies and developers want. There is a triangle of interests – MB solves the developer's problem (liability, permitting delays), the regulator's problem (compliance assurance, ecological outcomes [aggregated offsets are probably better]), and the banker's problem (return on investment). It also solves the ecological problem (aggregated offsets are probably better). One expects credit prices to fluctuate with demand. But when demand dropped around Chicago (as a result of a Supreme Court decision which effectively removed protection of certain

wetland types common near Chicago), there was no drop in price – again due to the close network of contacts that integrates bankers in to the development network – the price was ‘the arrangement’ between the two sides.

- (6) ***There is no relation between credit price and the developer’s opportunity costs.***
E.g. in one case, ACE required compensatory mitigation either on-site or off-site. The opportunity cost of the on-site mitigation would have been US\$400,000 (the value of the developable land) whereas the cost of the off-site MB credits was US\$70,000. So the developer made a ‘gain’ of US\$330,000 (a gain in NDA). To this gain can be added also the time-savings and savings in long-term liability. Thus, the price of the offset is completely unrelated to the developer’s opportunity costs, but set by cultural practices and relationships between people who know each other well. In the US, bankers set a fixed price for their credits – the price is not varied depending on who comes to their door. ***It is a ‘cost+’ approach to pricing, rather than a ‘what is it worth to you?’ approach.*** As the example shows, this can deliver considerable gain (‘consumer surplus’) to the developer.
- (7) Much of the demand is driven by big public sector developments and this can provide a life-line to bankers during downturns in private sector development.
- (8) The US model of entrepreneurial banking as an adjunct to the development industry does not translate well to all contexts, one interviewee felt. Rather than the current US model, ***the England context may be more similar to how things started in Minnesota where banking was considered part of the agricultural support programme, a means of augmenting farm income.*** (This is not the dominant approach in the US and the approach of farmers supplying offsets does not seem to have kept pace with the spread of MB). Individual farmers do not have close relationships with developers. They are typically low-cost suppliers and the price is again unhitched from the developer’s opportunity cost.
- (9) There are many approaches to the assessment of compensatory mitigation requirements, with many differing rapid assessment methodologies in use across the US. The more complex and strict the methods, the higher the transaction costs of offsetting (and the higher the long-term monitoring costs) and this can affect market liquidity and viability. ***The level of complexity is a policy decision aimed at balancing market viability with conservation outcomes.*** Monitoring costs also vary between states – e.g. Ohio ACE requires detailed monitoring.
- (10) A change in demand does not necessarily lead to a large change in the price of the good (in this case, 3rd party offsets). If the supply curve is relatively flat, then a decrease in demand will only lead to a very small decrease in price. Supply curves tend to be flat when it is easy for suppliers to increase or decrease production. ***If, in the UK, 3rd party offsets are supplied by farmers and land-owners (as opposed to the US model of large investors creating banks up-front), then it should be easy to increase or decrease production and therefore one would expect a flat supply curve.***
- (11) At a recent ELI workshop on the Koontz case (see previous mention in relation to time-savings), some participants quoted rather extreme prices for offsets due to more-or-less monopoly position of MBs in some areas, especially where the ACE is giving preference to MB.
- (12) One banker in California reported reducing credit prices for vernal pools by 18% in response to reduced demand during the economic crisis. MB’s may also discount credits if they remain on their books for a long time.

(13) The regulators do not track credit prices.

(14) **ILF is generally more costly than MB** and seen as a last resort where the regulator agrees that on-site offsets or MB are impracticable.

AUS

- (1) Victoria. **The main drivers of offset price are: land value (in particular), the starting quality of the offset site, the conservation significance (and related strictness of like-for-like) of the vegetation type being impacts, the scarcity of the vegetation type affected, offset restoration/management costs (e.g. grasslands and riparian ecosystems are expensive to manage) and the need to put a covenant on the land.**
- (2) Victoria. **Smaller offsets have a higher price/ha than larger offsets** and this can confound the trend in prices between strict like-for-like offsets (higher price) and less strict like-for-like (lower price). Government sets the credit prices for the single large offset 15000 ha outside Melbourne.
- (3) NSW. **In BioBanking, one element of the price, the net present value for management of the site for 30 years, is regulated. Otherwise, the price is set by the market.** Land value is a key determinant, e.g. in Sydney developable land is worth hundreds of thousands of A\$ per hectare, whereas in rural areas, the price is a few tens of thousands of A\$ per hectare. Different suppliers will set different prices. E.g. the first sale in NSW was by a church and was priced relatively low (the church was seeking sufficient income to maintain its buildings, and no more). A more recent sale was by a dairy farmer who 'high-balled' it and obtained A\$750,000 for loss of land production value.
- (4) NSW. **In some cases, the cost of first-party offsetting can be reduced by 'plan busters' where a powerful developer does a deal at the political level,** e.g. a case in NSW where one developer received a 50% discount on an agreed offsetting payment. For such developers, BioBanking cannot offer savings. However, for mid-tier developers who do not have such clout, BioBanking will typically be the cheaper route.
- (5) Federal EPBC Act offsets. Key costs are land values, restoration/management costs, and the costs of related expertise.

England

- (1) **One interviewee felt that, in general, there can be too much concern about the liquidity of an eventual offset market;** plenty of markets are bespoke or have few sellers. Some markets are very homogeneous with a (more-or-less) single price and very competitive. Others are very heterogeneous offering a widely varying bundle of goods at varying prices. There is no reason why the latter cannot function. Clearly, transaction costs are higher in the more bespoke kinds of market. There is a need to keep the rules as simple as possible, and only make them more complex where there is good reason to do so. Transaction costs can be forecast. In some cases, they can be 1% or less. In a worst-case example (a packaging scheme) they were one third of total compliance costs. But in general, there is no need to worry if the rules are reasonably complex. There will be a big range of prices due to the different assets on offer and the varying risks to the supplier.
- (2) Ideally, individual **offset sites should be above a minimum size, e.g. 10 ha, to achieve economies of scale.**
- (3) One UK interviewee felt that Conservative ministers are likely to prefer a few simple rules, and let the market get on with it. However, it may be less costly (for both

developers and authorities) if the government were to get more involved and get the market up and running properly. Are we aiming to build a strategic network of aggregated offsets with economies of scale and reduced transaction costs, or do we allow an unstructured supply? Can we design a market that aggregates offsets on those areas of land that can deliver the best conservation outcomes? This will push up market entry costs.

- (4) The current planning system is quite highly discretionary. An offsetting system would be more formulaic, providing greater clarity of the outcome from the outset due to fixed rules.

Interpretation of potential implications for price of offsets in England

In England, **land prices, regulatory standards and the costs of ecological restoration/enhancement and long-term management are, as in the US and Australia, likely to be the key determinants of offset prices.**

The evidence from the US and Australia suggests that, **so long as consideration is given to market liquidity when setting like-for-like and service area requirements, these will not have a significant impact on price**, except for the rarest habitats and species (for which high price should incentivize developers to avoid impacts).

There is a need to **keep the rules as simple as possible**. There will be a big range of costs due to the different assets on offer and the varying risks to the supplier. Ideally, **individual offset sites should be above a minimum size, e.g. 10 ha, to achieve economies of scale** (and enhance ecological effectiveness). Consideration should be given to designing a market that aggregates offsets but this will push up market entry costs.

Retention of an option for developers to use 1st party compensation may help keep a natural cap on 3rd party offset prices, but it will be essential to hold developers to the same standards as 3rd party offset providers.

Effects of market characteristics on administrative costs

2e. How do market characteristics affect the administrative costs of sourcing offsets?

Summary of key findings

3rd party offsets significantly reduce administrative costs for planning authorities and regulatory agencies. A particular saving arises where 3rd party offsets are aggregated. A single large offset is much cheaper to administer and monitor than hundreds of small offsets. Some jurisdictions in both the US and Australia operate full-cost recovery, charging fees to mitigation bankers (who recoup these costs through working them in to their credit prices). Administrative costs in the US remain comparatively high due to many overlapping laws and jurisdictions.

Detailed findings from the interviews and from literature cited by interviewees

US

- (1) The creation of 3rd party offset markets through regulation has delivered efficiencies with resulting savings in administrative costs for the regulatory authorities. Notably, **banks offer aggregation of offsets. This delivers considerable savings in relation to permitting and subsequent monitoring of compensatory**

mitigation sites. For example it is much less costly to administer a single large offset than 100 small offsets.

- (2) **ILF generally has higher admin costs than MB** (MBs are more specialized in offsets and hence have created greater efficiencies) and so cannot compete with MB – there have been instances of ILFs folding when MBs come in.
- (3) If we want a successful market and wish to limit any economic downsides, the rule is, create rules that are stringent, strong, well defined and understood, minimize transaction costs, and leave the market to operate. If there is any need to change the rules, do so slowly and deliberately.
- (4) The State of California operates **cost recovery for administration costs in relation to all MBs** wishing to sell credits for state species offsets, charging fees for prospectus review (US\$10,000), review of bank agreement package (US\$25000), review of any applicant's changes to the package (US\$10000), review of amendments required by the state (US \$7500 or \$17500) and administrative implementation and compliance costs (US\$60,000) .
- (5) **There are 6-7 possible roles to be performed in an offsetting market and the state can perform all or none.** In the US, the state sets standards and certifies the credits. In Europe there is generally significantly more state involvement – though England may be nearer to the US than other European countries.

AUS

- (1) Victoria. Data are available on administrative costs – they have developed a cost-recovery model for the credit market which prices the administrative costs at around A\$20,000 per offset agreement (however, there are no comparative administrative costs data for the developer-led on-site baseline).

England

- (1) No specific evidence gathered as no established market.

Interpretation of potential implications for price of offsets in England

3rd party offsets should reduce the costs of planning authorities and other agencies involved in permitting related to impacts on biodiversity, in particular if an approach is adopted which encourages aggregation of offsets. There may be scope to introduce full-cost recovery for administrative costs related to offset approvals. **Keeping the system as simple as possible** (while sophisticated enough to deliver the required net gain or, at least, no net loss) can help reduce administrative costs. So, too, can **limiting the role of government in implementation by encouraging members of civil society to provide offsets** within a framework of well-designed market rules.

4. FINDINGS ON CONSERVATION OUTCOMES OF OFFSETTING

Q3. Questions on the environmental benefits of offsetting, compared with previous/ alternative approaches to compensation in your country.

3a. Does offsetting deliver better conservation outcomes than the alternative approaches to compensation in your country? Can you provide quantified evidence of this?

Summary of key findings

In the US, while there is still mixed evidence about the overall success of the wetland mitigation framework in delivering no net loss, there is strong empirical evidence that **conventional PR (developer-led) on-site compensation gives poor ecological outcomes** (only a 7% success rate) (NRC 2001). **Off-site compensation performs considerably better than on-site**. Studies tend to show little significant difference in the ecological quality of MB, off-site PR and ILF sites of comparable age, but **MB offers advantages of greater aggregation and reduced temporal losses**. Indeed, a major review carried out and published by the National Academy of Sciences asserted that, by allowing for aggregation of offsets, mitigation banking should deliver the best ecological outcomes. The 2008 Rule, which raises performance standards in particular for PR, should improve PR performance, but it is too early to evaluate the effects of the Rule. Anecdotally, the raising of PR performance standards and consequent costs of mitigation is **encouraging developers to move back up the mitigation hierarchy, delivering more avoidance and minimisation, and hence improved conservation outcomes**. An expert in the administration of species conservation banks in the US felt that outcomes were 'fairly good.'

In Australia (both Victoria and NSW) evidence suggests that net gain policies have only been partially successful (DSE 2008) but that **3rd party offsets deliver better ecological outcomes than developer-led**, including higher offset ratios, larger more viable sites, and less risk of future development impact. In NSW 3rd party offsets were found to deliver 30% more area at ⅓ of the cost compared with developer-led compensation under the EP&A Act. In Australia as in the US, on-site compensation tends to deliver poor conservation outcomes over time.

Detailed findings from the interviews and from literature cited by interviewees

US

- (1) The National Academy of Sciences published a major study (NRC 2001) that reviewed the available literature (mostly relating to on-site PR) and concluded that **PR (notably on-site PR) was not delivering 'no net loss' and that MB delivers better ecological outcomes in particular where it allows for larger sites**. This study was instrumental in leading to the 2008 Rule that gives preference to MB. Banks (mitigation, species) are considered less risky in terms of ecological outcomes than PR and allow clustering of compensatory mitigation in larger more ecologically viable sites.
- (2) **NRC (2001) found that PR had only a 7% success rate**, and this 'on paper'; the actual success rate is probably even lower. PR sites tend to be smaller than 3rd party offsets and located closer to the impact and consequently more vulnerable to subsequent

development impact. However, there are some examples of very good off-site PR compensation – e.g. the Disney Wilderness Preserve done in partnership with The Nature Conservancy.

- (3) In the past, there was a heavy preference among regulators to require compensatory mitigation on-site, due to a flawed presumption that on-site is better. **Now, the EPA prefers third-party MB, which it sees as less risky in terms of conservation outcomes** (and offering efficiencies of scale, transfer of developer liability and velocity through the regulatory process). Reflecting this, the 2008 Rule sets a hierarchy, which gives preference to MB, then ILF, then PR; the regulator can require the developer to use MB or ILF wherever it is a 'practicable solution'.
- (4) The 2008 Rule gives preference to MB over PR off-site, based on the argument that conservation outcomes are better under MB, but empirical evidence for this is lacking. There have not been any large-scale studies comparing ecological outcomes under off-site PR, MB and ILF since the 2008 Rule.
- (5) The Environmental Law Institute and EPA have developed a science-based framework to evaluate the ecological performance of MB, ILF and PR compensatory mitigation and pilots have been carried out in N Carolina and Ohio. The Ohio pilot (PG Environmental 2012) found that the **conservation outcomes from off-site PR and MB are fairly similar** and that for many sites, the outcome is not that bad with most in the fair to good range. MB delivered a higher percentage (30%) of good to excellent outcomes. The sites studied largely pre-date the 2008 regulations and improvement may be expected as a result of the provisions of these regulations, including those relating to performance standards, long-term management and funding.
- (6) The above studies must be qualified; a lot of the development impact is on relatively low quality wetland, so it is perhaps not reasonable to judge the offsets in relation to higher-functioning natural wetlands. Moreover, it should be borne in mind that most MBs are only a few years old and it can take a long time to develop the same functions and composition as natural wetland. It may be 'too soon to tell if the 2008 Rule is working for nature.'
- (7) A recent comprehensive evaluation of mitigation projects across North Carolina reported marked improvements in mitigation success rates. Hill et al (2013) assessed 82 wetland mitigation projects and reported a **success rate of 70% of** restoration/enhancement projects (i.e. excluding preservation projects) ('success' was defined as meeting regulatory requirements); the study found no significant difference in success rates between the various providers' types (MB, PR). Another recent study of 30 restored wetlands in North Carolina found that **a majority of wetlands scored medium or higher quality** under rapid assessment methods with only 2 sites rated as low quality (Fernandez et al. 2013). A study of 29 MB sites in Florida found that most could be deemed successful according to permit criteria and compliance considerations, although permit criteria were not explicitly tied to ecological considerations (Chinners Reiss et al. 2009).
- (8) An EPA study of mitigation banks in Ohio in 2006 (i.e. pre-dating the 2008 Rule) found a relatively low rate of success in delivering conservation outcomes. However, this study relates to projects implemented before the 2008 Rule and does not necessarily reflect current standards and outcomes.
- (9) While it appears clear that off-site mitigation delivers better conservation outcomes than on-site, various studies suggest **wetland mitigation still falls short of the no**

net loss goal (e.g. Kihlslinger, 2008). Such studies argue that **mitigation success can be improved through taking a watershed or landscape-scale approach**, as promoted by the 2008 Rule. A recent study of stream mitigation similarly argued the need for a broader landscape-scale approach than the current approach, which focuses on reach-scale channel restoration/modification, and that this can be facilitated by more flexibility, *inter alia*, as regards mitigation location (Doyle and Shields 2012).

- (10) A number of studies note the **importance of time lag** to achieving conservation outcomes. Delays in initiating and completing restoration activities mean that frequent, temporary wetland losses can easily contribute to a consistent and considerable net functional loss over time (BenDor 2009). For example, a study found it takes a median of 33 years in Ohio and 13 years in Colorado for a mitigation wetland to achieve full functional equivalency of floristics and soils (Gutrich & Hitzhusen 2004). Another recent study of 7 Ohio MB sites, ranging in age from 3 to 18 years, found that floristic quality, net primary productivity and species richness were higher in reference sites than in the MBs (Stefanik & Mitsch 2012). MB is generally better than ILF and PR at addressing temporal loss in that a significant proportion of the restoration/enhancement takes place in advance of impacts at the development site (Robertson, 2008; BenDor 2009).
- (11) One mitigation banker interviewed noted that his company often supplies (MB) credits to developers who have chosen on-site PR and then failed; in these cases, the developer has had to pay twice.
- (12) **MB can be a risky business for bank sponsors and this risk can affect conservation outcomes.** Many banks have faced severe problems during the economic downturn due to reduced demand for credits. ACE has seen a definite downturn in credit sales and a related slowdown in ecological progress due to reduced maintenance and monitoring. It is important to make offsets as maintenance-free as possible, using natural processes, to reduce this risk.
- (13) ACE and EPA leverage on compliance is mostly up to the point when the permit is issued. Once it is issued, they have very little more bargaining power, and there is therefore very little they can do. They have formal powers for long-term monitoring, but not much in the way of back up powers for this. Consequently, ACE and EPA front-load compliance assurance as much as possible. This involves early screening of applicants and the rejection of those that are unlikely to make it through the permitting process due to unacceptable impacts on wetlands/streams. People cite a figure of 99.96% of permit applications (to the ACE) being approved as demonstrating that the mitigation hierarchy is not working. But this is misleading. The figure actually relates to those applications that are not withdrawn by the developer. In fact, many applications are withdrawn at an early stage, following screening, because the ACE only wants to proceed with those applications likely to be approved. Such **front-loading of compliance assurance is a key contributor to conservation outcomes from the permitting system** and is (at least in theory) irrespective of the proposed compensation route (PR, MB or ILF).
- (14) **Where farmers are the main 3rd party offset provider (as in Minnesota), this is unlikely to deliver one of the key conservation benefits of MB, namely aggregated offsets.** Offsets will rather be scattered randomly depending on which farmers come forward. One solution suggested by the interviewee might be for the state to set a minimum offset size, e.g. 10 acres, or ten times the average 1st party (developer-led) offset size.

- (15) A developer told us that avoidance and minimization often means that the developer has to avoid small patches of wetland on-site; strict adherence to the mitigation hierarchy does not allow one to consider whether mitigation off-site might deliver a better conservation outcome. The development of strategic conservation plans for a District would allow a more constructive approach where only high quality nature gets avoided and the rest is offset off-site (delivering gain in NDA). It is 'silly economically' to construct expensive economic services (utilities, etc.) on a piece of land and then leave patches undeveloped, and it is 'silly from a conservation viewpoint' to leave little patches of not very valuable habitat in the middle of a development.
- (16) ***The creation of entrepreneurial interest in (3rd party) offsetting may prove a risk to long-term conservation outcomes in that it generates a group in civil society who argue for relaxation of standards/metrics, relaxation of like-for-like requirements, and expansion of service areas.*** In the US, bankers have formed a lobby group (NMBA) which talks to agencies, submits draft regulatory proposals, etc. Such a group will naturally push for rules that work for bankers and developers and less so rules which work for nature. E.g. NMBA has recently written to Congress to argue for an increase in the EPA monitoring budget (the EPA has never before had an industry group support it on the Clean Water Act in this way) and at the same time for larger service areas. It is hard for the EPA to say no to an industry that comes bearing gifts. ***On the other hand, in the US, many environmental groups (e.g. TNC) are themselves 3rd party offset providers.*** Many of these are likely to spin off MB businesses. Similar developments might be expected with bodies like RSPB in the UK.
- (17) According to one interviewee, ***USFWS gets 'fairly good reports' from species conservation banks.*** USFWS has no tracking of ecological outcomes for PR but these are 'likely to be pretty dismal'. It is far easier for USFWS to keep track of a few larger 3rd party offsets than many small scattered PR compensation sites.
- (18) ***MB and ILF typically provide greater assurance of conservation outcome,*** including land protections, 3rd party oversight of easements, funding for management, more rigorous monitoring and reporting, etc. There are less compliance concerns in relation to MB and ILF (compared with PR) because credits are largely released on performance.
- (19) ***Evidence suggests that MB and ILF, which both allow for the creation of larger aggregated offsets, deliver both economies of scale (i.e. cheaper credits, cheaper monitoring and control) and enhanced ecological outcomes*** (reduce edge effects, enhanced population viability, enhanced ecological functionality, ecosystem services including flood protection, nutrient retention, temperature regulation, etc.). Small offsets, whether PR or MB, are vulnerable to edge effects and future development impacts. It is generally agreed now that the aggregation of offsets in larger sites (through MB) is much more sustainable. In Ohio, the average development impacts 0.4 acres of wetland, with an average offset ratio of c.1:2; it is not ecologically viable to deliver numerous 0.8 acre offsets, and aggregation is therefore necessary. However, in order to obtain large offsets, the market needs to allow a certain degree of fungibility and larger service areas.
- (20) Wetland/stream restoration tends to be rather uniform and is possibly not delivering appropriate diversity in composition and function. This is apparently a result of the fixed structure of the ACE offset application package and the limited

number of wetland/stream restoration design firms. In this sense, MB is little different from PR.

- (21) ***MB can perform less well in an economic downturn*** – as reduced demand for MB credits can lead to reduced maintenance and reduced monitoring, especially where a bank has sold only a small portion of the credits. Equally, large MB sites may sell only a part of their credits; ecological restoration/enhancement may then be suspended pending sale of more credits, creating extensive temporal lags, which compromise conservation outcomes.
- (22) ***Market design also has a considerable impact on ecological outcomes.*** Where service areas are too generously drawn, this can lead to displacement of wetlands from more developed areas (where land values are higher) to marginal rural areas (where land values are lower). Some bankers counter that this delivers better long-term ecological outcomes, as more marginally located offsets are less likely to suffer development impact themselves in the long-term.
- (23) Anecdotally, ***the raising of performance standards and consequent costs of mitigation is encouraging developers to move back up the mitigation hierarchy, delivering more avoidance and minimisation, and hence improved conservation outcomes.***
- (24) One interviewee argued that the US wetland market is a ‘worst case’ – complex, with a huge number of actors, a huge regulatory bureaucracy, a spatially sensitive resource being traded, and the wrong government structure (lack of inter-departmental interaction and the wrong agency overseeing the system). Another interviewee similarly highlighted the fact that the US has lots of overlapping laws and jurisdictions at federal, state and local levels and lots of conflicting regulations written in isolation each from the others. There is no efficient process for coordination and addressing inherent conflicts. This has created lots of problems. There is a need to use permitting better to deliver quality and quantity of environmental uplift, rather than pay for administrative and other transaction costs. There is scope to reduce transaction costs, increase charges to (bank) suppliers and increase prices to developers, in return for accelerated permitting for both developers and suppliers. One element of transaction costs relates to the way in which impacts are measured. Agreeing on transparent and appropriate metrics is easier said than done. In the US there are hundreds of differing assessment techniques. But it may not be appropriate to settle on one alone, given the regional variation in ecology, differences between permanent and temporary impacts, etc.
- (25) ***Some interviewees argued for offsetting to be done within the context of larger-scale conservation planning to enhance conservation outcomes.***
- (26) A key issue for success of long-term management (of all kinds of offsets) is how much money should be put in the fund. In some cases, an endowment is created up-front, in others it is created over time as credits are sold. The latter approach presents a risk that not all credits are sold and therefore the endowment is not fully-funded (and the impacts not fully offset). What if the endowment is too high, or (as is more likely to be the case) too low?
- (27) One interviewee (a lawyer) indicated that financial assurances are not always solid and can be undone by legal accounting practices.

AUS

- (1) Victoria. There is no doubt that, ***in relation to development impacts on sites of low/moderate ecological value, offsetting is delivering better ecological outcomes.*** Small, on-site compensation within development sites get trashed over time – there is no empirical but plenty of anecdotal evidence for this.
- (2) Victoria. ***Generally, larger and more strategically placed offsets with greater ecological value (e.g. less edge effects, more viable populations) are more likely where there is greater market liquidity*** with ability to aggregate many small impacts in a single large offset. This cannot happen in an illiquid market where there are strong like-for-like or very limited geographical constraints.
- (3) Victoria. Offsetting has made developers more aware of the environmental issues involved. One developer interviewed now seeks to retain native vegetation on (developable land) subdivisions, where possible (i.e. avoid/minimise impacts as far as possible, to avoid need to offset) and other developers are doing this too.
- (4) Victoria. Some Councils in Victoria have set up in lieu fee schemes – in most cases, the money collected is still sitting in the trust fund, and has not resulted in offsets.
- (5) Victoria. A developer stated that it is clear ***there will tend to be more impacts, over time, on on-site offsets than on 3rd party off-site offsets.*** E.g. the developer had problems at the Victoria coastal development site cited above (Q1a & Q1b), with dieback of native vegetation in the on-site offsets due to waterworks affecting water tables, and due to increasing salinity as a result of spraying (to keep construction dust down). There will always be a risk of impacts during construction reducing the effectiveness of minimisation measures and on-site offsets. 3rd party offsets such as those via BushBroker may therefore offer greater security of long-term conservation outcomes, due also to the fact that they tend to be run by businesses whose reputation (and income and liabilities) depend on these outcomes.
- (6) NSW. A recent review of the cost-effectiveness of the BioBanking scheme in comparison with the EP&A Act shows finds that ***BioBanking delivers 30% more conservation area at ⅓ costs to the developer*** (BioBanking delivers 6.1:1 ratio of offset to impacted area, EP&A delivers 4.8:1), delivers compensation of more comparable ecological value to impacted site, and delivers better security and on-going management of threats.
- (7) NSW. The experience with on-site compensation is one of ‘drift’ – i.e. the conservation outcome is lost over time.
- (8) Federal EPBC Act offsets. There are no data comparing conservation outcomes of developer-led compensation with 3rd party offsets. This would require long-term monitoring. Time-lag is an important issue, notably for long-lived species (e.g. cockatoos).

England

- (1) It is really important to allocate the risk to the person best able to bear the risk. Liability for delivery of conservation outcomes should not be transferred to persons not competent to deliver, or where there is an unreasonable risk of their going bankrupt. In many development-related issues (e.g. transport infrastructure, utilities), liability is transferred to competent actors through a commuted sum payment, which covers both the initial works and the longer-term management.
- (2) Responsibility for long-term management of on-site nature conservation is frequently transferred to the LPA or end-owner/occupier. However, LPAs (and owner/occupiers)

may be good at managing green space, but are less good at managing biodiversity.

Offsetting is likely to give better conservation outcomes as (1) they involve better sites/location for nature that are typically larger; (2) they are specifically established for conservation outcomes, and managed by competent land managers and experts to that end; (3) they experience less disturbance.

- (3) Under the current system, monitoring and enforcement of mitigation and compensation measures is generally limited (except perhaps where European protected species are at stake). As a consequence, implementation can be mediocre, the reasons for the management 'disappear into the mists of time' and the ecological outcomes can be poor.
- (4) A developer interviewee noted that the current situation is not working for conservation (or for LPAs or local people). Developers have an interest in the status quo but it is unsustainable. 3rd party offsets should deliver better conservation outcomes, as offset providers should be more competent in habitat management. Some developers however, such as the interviewee's company, are well equipped to deliver compensation.
- (5) Like-for-like in terms of quality is a minimum, but one interviewee favoured loosening of like-for-like where possible, allowing for trading up; the focus should be on a good overall outcome for nature. However, with protected species, there is a stronger reason to create the specific habitat.
- (6) **Each county is required to develop a green and blue infrastructure strategy and this could guide offsets and allow for more flexibility in trading up.** LPAs should work out how developers can contribute to these strategies (including through offsetting) and at the same time deliver attractive places to live. Ecological connectivity/function is important so smaller but more strategically placed offsets may be worth more than single large offsets.
- (7) For a company operating across regions, it would be easier to have a regional (rather than county) approach. Different regions may need to treat habitats differently - e.g. raised bogs are much rarer in the South East and therefore more important there than in the North. However, the regional tier of planning has been removed by the current government.
- (8) **Offsetting could deliver better conservation outcomes for some species.** E.g. at one site, a water utility spent £30,000 to reduce impacts on great crested newts (fencing to keep newts off-site). Would this sum be better spent on compensation, by creating GCN habitat elsewhere? Offsetting, as with the mitigation hierarchy, should encourage more focus on the overall health of the population, rather than on individual newts. Such solutions would generate greater support for the mitigation hierarchy and for offsetting and secure better outcomes for both developer and conservation.
- (9) **Conservation outcomes are likely to be considerably improved with off-site compensation, particular where offsets are aggregated;** such sites will be much harder to damage or destroy in future than are on-site compensation areas. This is not to say that there can't be some good examples of on-site compensation; e.g. a planning consultant mentioned a development that is creating an on-site buffer zone adjacent to an important nature area.

Interpretation of potential implications for the environmental benefits of offsetting in England

Evidence in England shows that developer-led compensation is generally delivering poor conservation outcomes (Withers 2001). There is ***significant scope for 3rd party offsetting to deliver better conservation outcomes***, if, as in the US and Australia, it delivers: (1) better site/location for nature; (2) larger, aggregated offsets; (3) reduced temporal losses; (4) conservation outcomes that are specifically established and managed by competent land managers and experts; (5) less disturbance; (6) the necessary legal and financial assurances; (7) effective monitoring and enforcement. To ***encourage a landscape-scale approach***, offsets might be strategically located with reference to County green and blue infrastructure plans. Outcomes for species can be enhanced by focussing on the overall species population rather than individual specimens/populations.

Research for the UK Ecosystem Markets Task Force suggested that if all residual impacts of development are offset, this could deliver ***108,000-338,000 ha of offset area in England over 20 years*** (the latter is an area approximately the size of Essex).

It will also be vital to ***ensure a level playing field in terms of the performance standards applied to 1st party and 3rd party approaches*** to delivery of compensation.

The certainty of costs to offset residual impacts will also ***encourage developers to do more to avoid and minimise impacts***, in particular on higher-value biodiversity which is more costly to offset.

5. FINDINGS ON BROADER ECONOMIC BENEFITS OF OFFSETTING

Q4. Question on the broader economic benefits of offsetting, compared with previous/ alternative approaches to compensation in your country.

4a. Has the introduction of offsetting delivered wider benefits to the economy, such as the stimulation of new businesses, jobs and economic growth? Which kinds of businesses benefit most? Can you provide any quantified evidence of this (e.g. total scale of the offset market per year)?

Summary of key findings

In the US, the total market for 3rd party mitigation banking in 2011 was US\$2-3.4 bn. ***The main economic benefit may derive not from this spend, but from the value of the development this brings forward (c. US\$60-102 bn) by up to 5 months.*** This represents both a considerable saving in development financing costs, and a considerable fillip to GDP.

A US study suggests ***every \$1 m spent delivers between 7 and 40 jobs, many in rural areas.*** This has spurred growth of a new ecological restoration/engineering industry in the US. Important co-benefits included flood protection to cities.

The markets in Australia are much smaller than in the US (Victoria, c. A\$100m market turnover since start-up; NSW much smaller, though a A\$530 m offset is planned in relation to a growth centre in western Sydney) but have similarly ***stimulated a range of new businesses, notably in rural areas.***

In the US, one interview said that many 3rd party offsets eventually end up as protected areas in state or NGO ownership, giving ***better 'public goods' outcomes*** compared with PR offsets.

Detailed findings from the interviews and from literature cited by interviewees

US

- (1) The 2008 Rule was accompanied by a regulatory analysis of the impact of the new rule and the burden on developers. However, the analysis is largely theoretical, with little empirical data available.
- (2) ELI (2007) calculated total spend of US\$3.8 bn/year (£2.77 m/year) on compensatory mitigation for impacts on fish and wildlife habitat, mostly for wetlands. This includes MB, ILF and PR spend. This gives a feel for the absolute scale of the market. However, it is not clear to what extent this is simply shifting resources from one place to another (PR to 3rd party), as opposed to generating additional economic growth.
- (3) Forest Trends' 2011 State of Biodiversity Markets reported a figure of \$2-3.4 bn (£1.46-2.48 m) for the US wetlands and species compensatory mitigation programmes (MB only).
- (4) A key benefit of offsetting is allowing development to be brought forward. ***While US spend on wetland and species MB is US\$2-3.4 bn/year, this helps bring forward***

development worth c.30 times this value (US\$60-102 bn/year). An example was given of a natural gas processing project worth US\$500 m; mitigation cost US\$400,000 (<0.1% of total project cost) allowed to bring this development forward, i.e. the big economic benefit is the accelerated development.

- (5) The Department of Interior is examining the market and barriers to market growth of species conservation banking. The first phase of this study, recently concluded, involved a survey of USFWS staff (DOI 2013). This found 57% of respondents indicating that additional species and habitats could benefit from banking. Key barriers to banking cited by staff include economic uncertainty, weak economic development, unwillingness of landowners to sell land or easement, and institutional delays.
- (6) Example: one mitigation banker has invested \$50-70 m to establish wetland/stream and species banks in California. This pays for contractors, biologists, hydrologists, geologists, permit fees, nurseries, etc.
- (7) The 2008 Rule increased surety of a reliable market for bankers and has encouraged rapid growth of banks – to date a near exponential curve. There are very few federal dollars involved in this growth, nearly all the investment coming from private sector entrepreneurs. Public funds are involved where public sector developments create demand, a good case of public funds leveraging private sector investment.
- (8) BenDor et al (2013) have recently completed a review of the literature on ecosystem restoration. They cite a number of studies that show **the creation of from 6.8 to 39.7 jobs created for each \$1 m invested in ecological restoration.** This has spurred growth of a new ecological restoration/engineering industry in the US. This is a very fast-growing sector worldwide so also offers export potential. Following the BP Gulf of Mexico spill, much of the technical expertise brought in came from the US offset community. There has however been no research to examine where the money for offsetting is actually coming from (the landowner selling the land, or the developer's bottom line, or the end client of the development) or to examine the macro-economic impacts.
- (9) Wetland/stream offsetting is critical to flood protection in cities – e.g. Chicago suffered US\$0.5 bn damages from floods in 1992; so, **protecting wetlands can protect the economy.**
- (10) MB's typically buy land and, when the bank has been delivered and sold out, pass this land on to not-for-profits or a government agency. This land then gets added to the protected areas system. So **there is a welfare economic gain**, with enhance public access and use. PR sites (on- or off-site) tend to remain in private ownership so there is less welfare benefit.
- (11) **Offsetting could be shifting some jobs towards rural areas** but, in the US, there is not a great shift in terms the distance of any such shift, due to the relatively small size of service areas (e.g. even a 1000 sq m service area is only c.30 km across).
- (12) The placing of easements (covenants) on offsets means that these properties are no longer taxable – this can reduce the tax base for local authorities. Some local communities/authorities oppose large offset sites for this reason.
- (13) One interviewee argued that it is more important to recognize that development has impacts and decide whether we wish to deal with those impacts than to ask whether offsetting generates growth and jobs.

AUS

- (1) Victoria. The market is relatively small. The program is managing c. 120 security arrangements (offset sites), which vary in size from 0.2 to 90 ha, average c. 17 ha with a total state-wide offsets area of c.6600 ha. The total number of trades so far is c.450 (including over-the-counter) with a total value of A\$30 m. End-to-end it involves hundreds of jobs. In addition to this there is the large Melbourne offset worth several A\$100 m over 15 years. One broker has turned over A\$18 m since start-up and estimates A\$60-100m turnover across the market since start-up.
- (2) Victoria. Offsetting has led to **development of a range of regional businesses servicing the market** – habitat management (nurseries, fencing suppliers and contractors, pest and weed control, chemical suppliers, assessors, brokers) and offset suppliers (landowners, investors).
- (3) Victoria. Offset management plans and assured funds for long-term management give certainty and allow businesses to plan and invest.
- (4) Victoria. **Most business opportunities are in rural areas** where additional jobs can otherwise be difficult to generate.
- (5) NSW. BioBanking commenced in July 2008 within the framework of the 1995 Threatened Species Conservation Act and supported by the Threatened Species Conservation (Biodiversity Banking) Regulation 2008.⁹ BioBanking is voluntary and has consequently seen a much lower number of transactions than the compulsory offsetting regime in Victoria. There is not yet sufficient mass to see significant economic impact.
- (6) NSW. Biodiversity Certification is now delivering offsets of significant scale. An example is a growth centre in West Sydney where 30 years of forward housing development has been planned. A Biodiversity assessment of this plan has been completed and a total offset requirement valued at A\$530 m (£312 m) has been fixed which will be paid for in tranches as the development proceeds. Similar planning-level certification offsets have been done for regional urban centres of 50-70,000 people. The methodology for calculating the offset requirement is the same under Certification and site-level BioBanking offsetting.
- (7) EPBC Act offsets. The policy is designed to encourage social and economic co-benefits. This includes benefiting landowners/farmers including indigenous communities, who may benefit from long-term management revenue and diversification of income. A lot of consultants are employed in EPBC Act offsetting, e.g. the department ran 10-11 training sessions on the new rule and all were sold out. There is no data on total size of the market (data is commercial in confidence) or economic contribution, but there are some very large individual offsets costing several A\$10 millions.

England

- (1) The Treasury measures growth by looking at GDP. ***If the offsetting market in England were to be £500 m/yr, this would increase GDP (and not simply involve a transfer of resources) if this amount leads to higher investment and consumption***, e.g. if it led to accelerated building and sale of houses, which it could do if it were to reduce uncertainty and delays. But if offsetting is simply a big cost, with no benefits in terms of accelerated development, investment brought forward, and increased

⁹ www.environment.nsw.gov.au/biobanking/biobankframework.htm

consumption, then it will not help GDP (although it might have ecological benefits). It might be helpful to do some back-of-the-envelope economic calculations of the possible effect of this £500 m/yr market on GDP.

- (2) If however one takes a welfare economics approach, then one needs to take into account the non-market goods and services, such as enhanced conservation outcomes. If these are better than those delivered under the current system, e.g. a move towards no net loss or even net gain, then there is a gain to the economy.
- (3) If offsets will essentially be paid for by developers passing the cost on to the landowners selling land for development, then offsetting effectively redistributes funds from these landowners to other landowners supplying offsets and to a range of businesses servicing the offset market. ***This is likely to make such money 'work harder' and generate additional GDP.*** At the same time, this money will help deliver on the NEWP, enhancing public goods. Where payments to farmers to supply offsets replace agri-environment measures, they are replacing subsidies, which is 'a good thing.'
- (4) Offsets, especially aggregated offsets, would tend towards the quality of protected areas, and offer similar co-benefits (access, amenity, health, etc.). ***Various studies have shown a range of co-benefits of protected areas and these will apply also to many offsets.*** E.g. see studies of socio-economic impacts of (a) Great Fen (PACEC 2004) and (b) RSPB study of conservation and local economies (RSPB 2012).

Interpretation of potential implications for the broader economic benefits of offsetting in England

Research conducted for the UK Ecosystem Markets Task Force suggested the scale of the market for offsets in England would be between ***£90 and £470 million per year***. This would increase GDP (and not simply involve a transfer of resources) if it led to higher investment and consumption, e.g. accelerated building and sale of developments. If, as is suggested, offsetting effectively redistributes resources from landowners selling land for development (via developers) to other landowners supplying offsets and to a range of businesses servicing the offset market, then this is likely to ***make such money 'work harder' and generate additional GDP.***

As in the US and Australia, spend on offsets would support the ***growth of small rural enterprises and farmer income***. An interviewee felt that farmers would find it attractive to be able to sell credits in to a market rather than the alternative of receiving subsidies under an agri-environment scheme.

If the US ratio (\$1 m = £730,000 generates 7-40 jobs) were to hold for England, then spend of £90-470 million per year would generate 860 to 25750 (average 13300) jobs per year, to which can be applied an employment multiplier of 2 to 3 (BenDor *et al* 2013), thus ***creating on average an estimated 26600-39900 jobs/year***. However, it is not clear what proportion of the £90-£470 million is additional spend (after subtracting current spend on compensation) so it is not clear how many of these jobs would be additional jobs.

By analogy to the US, spend of £90-470 m on offsets has the potential to ***bring forward, by several months, development worth £2.7-14.1 bn*** representing a considerable boost to the economy.

The direct investment would also generate significant indirect economic benefits. Aggregated offsets in particular would provide considerable ***co-benefits such as amenity and public health benefits***. If one takes a welfare economics approach, taking into account non-market goods and services such as enhanced conservation outcomes, then a system of

offsetting should deliver a broader gain to the economy than the status quo.

6. SUGGESTIONS FOR FURTHER WORK

- (1) Consider a companion study to this one (which has focused on developers' costs and benefits and market prices), to focus predominantly on the ecological effectiveness of different offset systems, in relation to the ecological effectiveness of current approaches to compensation for impacts on biodiversity under the National Planning Policy Framework (and, previously, PPS9).
- (2) Consider extending this study to: (a) Literature: a more thorough review of the literature on the costs and benefits of the US and Australia offset systems, including of the many source materials gathered by, but not fully reviewed (due to lack of time) by this study; and (b) England: a more thorough assessment of the implications of the evidence from the US and Australia for offsetting in the English context, involving a larger body of structured interviews and evidence gathering in England, and building on and qualifying as appropriate recent Defra studies of the likely costs and benefits of offsetting in England, where possible disaggregating costs and benefits by sector and scale of development and by type of biodiversity impacted (protected, unprotected).

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ANNEX 1

TERMS OF REFERENCE

Drawing on evidence from established offsetting markets in Australia and the United States of America, the objectives of this research are to seek quantified evidence of:

1. Benefits to developers of access to offsets markets, in comparison with alternative mechanisms for providing compensation, for example this may include:
 - Time savings in securing development permission
 - Time savings in securing compensation
 - Unblocking of developments where conventional off-site compensation was considered unacceptable, too difficult to source, or too difficult to negotiate.
2. The impact of different market characteristics on the costs and benefits of offsetting. This may be through comparisons of different approaches to offsetting in different geographical locations, or the impact of changes in approach overtime. Costs of offsetting should include not only costs of credits, but also the transactions costs of finding and securing credits. Issues of interest include:
 - Impacts of narrow offset markets driven by the non-fungibility of credits against more flexible approaches.
 - Impacts of systems requiring local offsets against more flexible approaches which allow the aggregation of offsets in larger more distant sites¹
 - Impacts of access to well developed markets with competition between suppliers against scenarios where market are less well established¹
3. Any environmental benefits of offsetting over alternative approaches to compensation.
4. Further areas where additional evidence / examples would be welcomed by Defra including:
 - Measurable impacts arising from the ability to use offset on the net developable area of development sites
 - Measurable benefits to developers of the ability to avoid liabilities for onsite compensation management through the use of offsets
 - Identifiable routes through which developers can recover any net additional costs of offsetting
 - Wider economic benefits of the introduction of offsets markets

Finally, any further evidence identified throughout the project on the costs and benefits of offsetting to developers (not identified above) that would help inform choices around the use of offsets in England.

ANNEX 2

BACKGROUND PAPER FOR STRUCTURED INTERVIEWS

CONTEXT AND KEY QUESTIONS FOR INTERVIEWEES

INTRODUCTION

Forest Trends has been contracted by the UK Department for Environment, Food and Rural Affairs (Defra) to gather evidence on the costs and benefits arising from biodiversity offsetting markets in the US and Australia, in order to inform the appraisal of policy options for the expanded use of offsetting in England.

This research is being carried out between 28 October and 30 November and involves interviews and a review of relevant literature. The focus is on gathering quantified evidence and, where this is not available, any relevant, solid anecdotal evidence and expert opinion.

We will be seeking to interview a range of players in the US and Australia and also in England. In the US and Australia, this will include developers, offset suppliers, brokers, planning consultants and regulators. In England, our focus will be on developers and planning consultants.

We will focus on the key questions listed below. These questions cover the scope of the Defra research, but would be interested in any other economic evidence you may have and may think more apposite.

We are in particular keen to obtain quantified evidence, where possible relating to the market as a whole, but also relating to specific cases. We also welcome robust anecdotal evidence and expert opinion where quantified data are not available.

Not all questions will be relevant for all interviewees. We will be happy to focus on those questions for which you feel best qualified to respond.

The questions are phrased in particular for interviewees in the US and Australia where there are established offsetting markets. We will explore the same issues in England with a view to what the impacts might be expected to be if offsetting is introduced.

Where requested, we are happy to anonymize evidence to respect information that is commercial in confidence.

KEY QUESTIONS

1. Questions on benefits to developers (in particular, house-builders) of access to offsets markets:

- a. To what extent, if at all, has the introduction of the offsetting regime delivered time savings (or, on the contrary, delays) in relation to securing development permission, as compared with the previous/alternative approaches to compensation in your country? What is the range of these time savings (or delays) across developments (days, weeks, months) and/or the average/typical time saving (or delay) per development? Can you provide any quantified evidence in this regard?
- b. To what extent, if at all, has the introduction of the offsetting regime delivered time savings (or, on the contrary, delays) in securing compensation, as compared with the previous/alternative approaches to compensation in your country? What is the range of these time savings (or delays) across

developments (days, weeks, months) and/or the average/typical time saving per development? Can you provide any quantified evidence in this regard?

- c. To what extent, if at all, has the introduction of the offsetting regime helped to unblock any developments which may previously have been blocked where conventional off-site compensation was considered unacceptable, too difficult to source, or too difficult to negotiate? Can you provide any quantified evidence in this regard? On the contrary, do you believe there is evidence that the offsetting regime has actually blocked developments that may otherwise have gone ahead?
- d. To what extent, if at all, has the introduction of the offsetting regime resulted in an increase in the net developable area (NDA) within development sites (e.g. as a result of a greater proportion of the mitigation/compensation being located off-site)? What is the range of any increase in NDA across developments (in % increase in NDA) and/or the typical % increase in NDA per development? What value does this increase in NDA have to the developer?
- e. To what extent, if at all, can offsets reduce developers' costs (direct costs, financial assurances, etc.) related to long-term liability for mitigation/compensation measures? (For instance, being able to obtain offsets from 3rd party suppliers who take on liability may reduce developers' long-term liabilities.) Can you provide any quantified evidence in this regard or suggest where we could get it?
- f. If developers have experienced net additional costs as a result of the introduction of offsetting, have they been able to recover these costs and how (e.g. by reducing the amount paid for the land to be developed, or charging more for the end product)? What factors influence how this has been achieved (e.g. perhaps developers are less inclined to charge more for the end product, such as housing, in a very competitive market, and are more able to reduce the amount they pay for the land)?
- g. Can you provide (or suggest where we can get) any other evidence on the costs and benefits/savings of offsetting for developers, which might help inform choices about the use of offsetting in England.

2. Questions on the impact of different market characteristics on the price of offsets and related transaction costs:

- a. Do you have any evidence of the impact, on the price of offsets and of related transaction costs, of narrow offset markets driven by strict like-for-like requirements (i.e. non-fungible credits), compared with more flexible approaches (e.g. less strict like-for-like, out-of-kind offsets)?
- b. Do you have any evidence of the impact, on the price of offsets and of related transaction costs, of market systems requiring local offsets (i.e. small 'service areas' defined by species' ranges or watersheds, etc.) against more flexible approaches that allow the aggregation of offsets in larger more distant sites?
- c. Do you have any evidence of the impacts, on the price of offsets and of related transaction costs, of access to well developed markets with strong competition between suppliers, compared with scenarios where market are less well established?
- d. Are the above key determinants of offset price, or are other factors (e.g. land value) more important?

- e. How do market characteristics affect the administrative costs of sourcing offsets?

3. *Questions on the environmental benefits of offsetting, compared with previous/alternative approaches to compensation in your country:*

- a. Does offsetting deliver better conservation outcomes than the alternative approaches to compensation in your country? Can you provide quantified evidence of this?

4. *Question on the broader economic benefits of offsetting, compared with previous/alternative approaches to compensation in your country:*

- a. Has the introduction of offsetting delivered wider benefits to the economy, such as the stimulation of new businesses, jobs and economic growth? Which kinds of businesses benefit most? Can you provide any quantified evidence of this (e.g. total scale of the offset market per year)?

5. *Contacts and sources:*

- a. Who else would you suggest we might speak with, in relation to any of the above, and can you kindly provide contact details?
- b. Can you kindly provide any relevant publications and/or links to relevant data?

POLICY BACKGROUND (FOR INFORMATION)

The current research is aimed at gathering evidence in support of impact assessment of the policy options identified in the UK government's Green Paper on biodiversity offsetting.¹⁰

The Green Paper identifies 4 options: (1) a fully permissive approach, (2) a uniform approach, (3) a partially permissive approach, and (4) a Community Infrastructure Levy (CIL) approach. The uniform approach is divided into three sub-options (a), (b) and (c) which vary in terms of the threshold (expressed on terms of size of development, or quality/condition of habitat impacted) above which developers must comply.

Defra is interested in gathering evidence, the better to understand costs and savings to developers arising from these policy options, the impact of the market characteristics on offset costs, broader environmental costs and benefits, and the broader economic impact including on jobs and growth.

A uniform (i.e. mandatory) approach was advocated by the UK Ecosystem Markets Task Force (EMTF)¹¹; EMTF/Defra-commissioned research¹² suggested that this would enable the development of a large, liquid market, optimizing both benefits to business and outcomes for nature. The government, however, has expressed in the Green Paper a preference to take a voluntary approach. A key reason for this is that there is as yet insufficient evidence to demonstrate, with sufficient confidence, that mandatory offsetting would not increase regulatory burden on business in general and on house builders in particular (a key government commitment). The current research seeks to address this evidence gap by gathering relevant evidence from established offsetting markets in the US and Australia.

Much of the focus on the impact of offsetting on developers has to date been on the cost of the offset itself, which represents an internalization of environmental costs hitherto not

¹⁰ https://consult.defra.gov.uk/biodiversity/biodiversity_offsetting

¹¹ <http://www.defra.gov.uk/ecosystem-markets/files/Ecosystem-Markets-Task-Force-Final-Report-.pdf> - see Priority Recommendation 1, p 11

¹² <http://www.defra.gov.uk/ecosystem-markets/files/EMTF-2nd-Phase-Research-Final-Report.pdf> - see chapter on Biodiversity Offsetting, pp 18-37

captured in the development process. At face value, this suggests offset brings added cost to developers. However, developers may benefit from a number of savings arising from well designed systems of offsetting, which may together outweigh these new costs. These include savings related to: reduced permitting time (as offsetting provides transparency and a relatively simple method to resolve conflicting positions on compensation); the unblocking of some developments which would be blocked by problems in sourcing compensation under the current planning regime; an increase in net developable area (where some on-site mitigation/ compensation of little conservation value may be substituted by offset compensation of higher conservation value); and reduced long-term liabilities for on-site mitigation/compensation measures.

Further, a larger, more flexible and more liquid market is likely to deliver lower costs and greater savings to developers than a smaller, less flexible and more illiquid market. For example, greater competition in supply should drive down offset costs and make it easier to source compensation reducing delays and reducing the frequency of blocked developments. Greater supply should also offer larger-scale offsets at lower unit cost (due to economies of scale).

Evidence from the US and Australian markets should help elucidate the scale of these costs and savings under various market conditions, and can be related to the specific England context to inform the policy impact assessment.

Other research being carried out for Defra by Collingwood Environmental Planning is examining baseline costs for developers under the current system. This, together with some 'ground-truthing' through some limited research in England under the current project, will help inform interpretation of the US/Australia findings in the England context.

Finally, evidence from the US and Australia may also usefully provide information on: the wider environmental benefits of permissive versus uniform markets, such as the delivery of larger, more ecologically viable compensation areas than delivered under the current system, and; the wider economic impacts of the introduction of offsetting regimes, such as the stimulation of a range of businesses, creating jobs and growth.

ANNEX 3

LIST OF INTERVIEWEES AND THEIR AFFILIATIONS

USA

- **Todd BenDor**, Associate Professor, Department of City and Regional Planning, University of North Carolina, Chapel Hill, North Carolina
- **Katherine Birnie**, Director of Markets, Ecosystem Investment Partners, Baltimore, Maryland
- **Nathaniel Carroll**, Associate Director, Forest Trends, Washington, D.C.
- **Martin Doyle**, Professor of River Science and Policy, Division of Environmental Sciences and Policy, Duke University, Durham, North Carolina
- **Mark Gallagher**, Vice President, Princeton Hydro, Ringoes, New Jersey
- **Roy Gardner**, Professor of Law and Director, Institute for Biodiversity Policy and Law, Stetson University College of Law, Gulfport, Florida
- **Travis Hemmen**, Business and Market Development, Westervelt Ecological Services, Sacramento, California
- **Palmer Hough**, Environmental Scientist, Wetlands Division, US Environmental Protection Agency, Washington, D.C.
- **George Kelly**, Director, EDX, Owings Mills, Maryland
- **Rebecca Kihslinger**, Science and Policy Analyst, Environmental Law Institute, Washington, D.C.
- **Steve Martin**, Environmental Planner, Institute of Water Resources, US Army Corps of Engineers, Norfolk, Virginia
- **Deblyn Mead**, National Conservation Banking Coordinator, US Fish and Wildlife Service, Arlington, Virginia
- **Vince Messerly**, President, Ohio Wetlands Foundation, Lancaster, Ohio
- **Steve Morgan**, CEO, Wetlands Inc, Rocklin, California
- **David Olson**, Regulatory Programme Manager, US Army Corps of Engineers, Washington, D.C.
- **Morgan Robertson**, Assistant Professor, Department of Geography, University of Wisconsin-Madison, Madison, Wisconsin
- **Glyn Rountree**, Environment, Labor and Land Development, National Association of Home Builders, Washington, D.C.
- **Bob Shattuck**, Director of Community Planning, LENNAR, California
- **Jessica Wilkinson**, Senior Policy Analyst Mitigation, The Nature Conservancy, Arlington, Virginia
- **Andrew Yates**, Assistant Professor Environmental Economics, Economics Department, University of North Carolina, Chapel Hill, North Carolina

AUSTRALIA

- **Michael Crowe**, Independent Consultant, Victoria

- **Paul Dettman**, Director, Cassinia Environmental, Kyneton, Victoria
- **Tom Grosskopf**, Director Metropolitan Branch, Office of Environment and Heritage, NSW Department of Premier and Cabinet, Sydney South, NSW
- **Nick Lewis**, Director, ES Link Services Pty Ltd., Castelmaine, Victoria
- **Andrew Morison**, Managing Director, EcoLogical Australia, Sutherland, NSW
- **Teresa Maguire**, Development Manager, Stockland, Victoria
- **Warwick McGrath**, Director Regulatory Strategy and Design, Environment and Landscape Performance, Department of Environment and Primary Industries, State Government Victoria, Melbourne, Victoria
- **Vanessa Shotten**, Regional Finance Manager, Villawood Properties
- **James Trezise**, A/g Assistant Director, Policy Innovation and Reform Section, Regulatory Reform Branch, Environment Assessment and Compliance Division, Department of Sustainability, Environment, Water, Population and Communities, Canberra

ENGLAND

- **Chris Gerrard**, Anglian Water Services Ltd, Huntingdon
- **Richard Griffiths**, Partner, Pinsent Masons, London
- **David Hill**, The Environment Bank Ltd, Ripon
- **Rob Rowlands**, Partner, Environmental Dimensions Partnership, Shrewsbury
- **Robin Smale**, Director, Vivid Economics, London
- **Tom Tew**, The Environment Bank Ltd, Ripon