Title:

Managing the future financial risk of flooding

IA No: Defra1446

Lead department or agency:

Defra

Other departments or agencies:

HM Treasury, Communities and Local Government, Environment Agency

Impact Assessment (IA)

Date: 24/05/2013

Stage: Consultation

Source of intervention: Domestic

Type of measure: Primary legislation

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Summary: Intervention and Options

RPC Opinion: Awaiting Scrutiny

Cost of Preferred (or more likely) Option				
Total Net Present Value:	**Business Net Present Value**	**Net cost to business per year** (EANCB on 2009 prices)	**In scope of One-In, One-Out?**	**Measure qualifies as**
n/a	n/a	n/a	n/a	n/a

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

To date, flood insurance has been widely *available* mainly due to agreements between government and insurers. Premiums have also been kept *affordable* because customers at risk have not been differentiated from those not at risk, as information on flood risk has been poor. With recent advances in flood mapping, insurers are increasingly able to set premiums more reflective of risk; this process has begun. Whilst ultimately, more risk-reflective premiums are economically efficient, if transition is too rapid those living at high flood risk may face increases in premiums which are not compensated by reductions in other costs (e.g. mortgages). There is a rationale to improve equity and reduce transitional costs.

What are the policy objectives and the intended effects?

To ensure the availability and affordability of flood insurance, without placing unsustainable costs on wider policyholders and the taxpayer. Doing so will provide assistance to those likely to be disadvantaged by a transition to more risk-based flood insurance pricing including any potential "unbundling" of flood risk cover. A successful implementation would entail insurance terms adjusting towards risk-reflective pricing at a pace that allows choices to be made by policyholders facing long-term increases in insurance costs unless action is taken, and avoids any risk of instability in insurance, mortgage and local housing markets.

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

Baseline (Option 0) - no intervention - allow free market to develop without transitional measures;
Option 1 – Do minimum: encourage within-industry measures and open a small fund for local authorities working with local partners such as civil society groups and businesses to bid to for funding for "community resilience" measures;
Option 2 – Set up a subsidised insurance pool for high-risk properties funded by an insurance levy;
Option 3 – Offer targeted, limited-duration direct subsidy of premiums for high-risk properties, funded by an insurance levy
Option 4 –Regulate for the availability of affordable flood insurance through a Flood Insurance Obligation.

A preferred option will be determined by Ministers in conjunction with consultation.

Will the policy be reviewed? It will be reviewed. **If applicable, set review date:** 06/2018

Does implementation go beyond minimum EU requirements?			N/A		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	**Micro** No	**< 20** No	**Small** Yes	**Medium** Yes	**Large** Yes
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)			**Traded:** n/a	**Non-traded:** n/a	

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

Signed by the responsible SELECT SIGNATORY: ..... Date: .....

Summary: Analysis & Evidence

Policy Option 1

Description: Do minimum: encourage industry measures and set up a community resilience fund for local authorities

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2013	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: n/a	**High:** n/a	**Best Estimate:** n/a

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	n/a		n/a	n/a
High	n/a		n/a	n/a
Best Estimate	n/a		**n/a**	**n/a**

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

We do not estimate costs for the do-minimum options, which are scalable. On the grounds of economic efficiency, costs should be kept proportionate to the exploratory nature of the approaches being taken with maximum costs set by the likely economic benefits from keeping households in insurance (see below). Based on early pilots however, around £5m over 3 years could fund up to 20 community resilience projects such as property-level protection, consumer advice, local subsidy schemes etc.

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

Costs will be the resources made available for any local authority "resilience fund" (to which LAs would bid for funding to address local flood risk management issues), plus administrative and staff costs to both government and the insurance sector from working on voluntary cross-subsidy measures.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	n/a		n/a	n/a
High	n/a		n/a	n/a
Best Estimate	n/a		n/a	n/a

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

Benefits will arise from keeping households in insurance in the transition to a free market, thereby avoiding excess housing and health costs where uninsured flood damage occurs. Under a "worst case" baseline, around 40,000 households might cease to insure. Option 1 would seek to prioritise the ~27,000 of those in the bottom three income quintiles, and could capture a proportion of an estimated annual benefit of £4-16m per year associated with keeping these properties in insurance. Impact is uncertain however, may only be local, and is dependent on currently untested approaches.

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

Households towards the bottom of the income distribution will value financial support (in terms of economic welfare) more highly than the "face value" cost would imply - this is known as "equity benefit" and arises because an additional £1 at the bottom of the income distribution is worth more than an additional £1 at the middle or top.

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

Benefit estimates are based on a "worst case" transtion under a do nothing scenario, whereby the insurance industry moves to fully risk-reflective pricing quickly. In practice there are a number of reasons why transition may be more gradual, though this could be monitored and the response scaled accordingly. Also assumes insurers will take account of household / community action to reduce flood risk when setting premiums.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 0	**Benefits:** 0	**Net:** 0	No	NA

Summary: Analysis & Evidence

Policy Option 2

Description: Subsidised insurance pool for high-risk properties ("Flood Re") funded by an insurance levy

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2013	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: -608	**High:** +217	**Best Estimate: -196**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	7	1	26	231
High	11		109	944
Best Estimate	9		68	588

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

Net costs of underwriting the separate pool liability are estimated to be up to £19-98m per year compared with covering the same risks under the baseline (where they would be pooled with non-flood risks). Administrative cost of setting up the pool (£7-11m), then running the pool (£6-10m per annum) plus costs of collecting a levy (~£1m per year), borne by government and industry.

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

Cost of levy excluded as this is a transfer payment. It is estimated that costs passed on to low-risk insurance customers to cross-subsidise the pool do not result in a net reduction in insurance of non-flood perils, after accounting for the fact that customers at flood risk returning to the market are also insured against these perils (if policies continue to remain "bundled" under the baseline). Some allocative inefficiency from market intervention, though this is a time-limited measure to reduce transitional impacts

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low			39	336
High			52	448
Best Estimate			46	392

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

Positive "equity" benefits to those in lower income groups from receipt of effective subsidy, net of negative equity benefits from providing subsidy to those in higher income groups: £35m per annum. "Participation" benefit from keeping people in the insurance market and avoiding the wider economic costs of non-insurance: £4-17m p.a. Best estimates are mid-points.

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

Receipt of effective subsidy is excluded as this is a transfer payment (but gives rise to equity impacts as monetised above). A pool would mitigate wider social impacts arising from any rapid increase in insurance premiums and the risks of instability from sharp adjustments in mortgage and local property markets were that to occur.

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

Key driver of relatively poor economic performance is the additional cost of covering the separate pool of high risk, which is uncertain. The option assumes the "worst case" (i.e. immediate) transtion to risk-reflective pricing under the baseline. If Flood Re is introduced and the actual baseline transition would have been more gradual and/or partial, benefits will be reduced although costs will remain the same. All estimates highly tentative, especially those of avoidance of economic costs of non-insurance.

BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 3.5	**Benefits:** 0	**Net: 3.5**	No	n/a

Summary: Analysis & Evidence

Policy Option 3

Description: Directly-subsidised insurance premiums for high-risk properties funded by an insurance levy

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2013	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: 122	**High:** 260	**Best Estimate:** 191

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	6	1	11	98
High	9		17	145
Best Estimate	8		14	122

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

Administrative cost of setting up (£6-9m) and running the direct subsidy scheme (£10-16m per year) and collecting the levy (£1m per year), borne by government and industry. This option would not involve any separation of flood risks into a distinct pool (as Option 2) and the associated potential for net economic costs of covering risks separately.

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

Cost of levy excluded as this is a transfer payment. It is estimated that costs passed on to low-risk insurance customers to cross-subsidise the scheme do not result in a net reduction in insurance of non-flood perils, after accounting for the fact that customers at flood risk returning to the market are also insured against these perils (if policies continue to remain "bundled" under the baseline). Some allocative inefficiency from market intervention, though this is a time-limited measure to reduce transitional impacts

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low			31	267
High			42	358
Best Estimate			37	313

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

Benefits similar in concept but assumed to be slightly lower than those for a similarly-scaled subsidised pool (Option 2) to account for the possibility that insurers would price more conservatively (i.e. with higher premiums) on the basis that they retain the risk rather than cede it to a pool. There is also likely to be more scope for insurers not to pass on benefits in full to consumers. At this stage, a 20% reduction in benefit has been assumed compared with Option 2.

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

Note that the receipt of subsidy per se is excluded as this is a transfer payment (but gives rise to equity impacts as monetised above). The scheme would mitigate wider social impacts arising from any rapid increase in insurance premiums and the risks of instability from sharp adjustments in mortgage and property markets were that to occur.

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

20% reduction figure is arbitrary at this stage. As before, the option assumes the "worst case" transition to risk-reflective pricing in the absence of action. If the subsidy scheme was introduced and the transition under the baseline would have been more gradual and/or partial, benefits will be reduced although costs may not decline.

All estimates highly tentative, especially those for avoidance of economic costs of non-insurance.

BUSINESS ASSESSMENT (Option 3)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 3.6	**Benefits:** 0	**Net:** 3.6	No	n/a

Summary: Analysis & Evidence

Policy Option 4

Description: Regulate for the availability of affordable flood insurance through a Flood Insurance Obligation

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2013	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: -46	High: 131	Best Estimate: **43**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	6		6	58
High	8		10	89
Best Estimate	7		8	74

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

Administrative cost of setting up (£6-8m) and running a flood insurance obligation (£6-10m per year), borne by government, regulator(s) and industry. This option would not involve the collection of an insurance levy as in Options 2 and 3. Neither is there any net economic cost associated with underwriting a separate insurance pool (as in Option 2). There would however be costs of regulating performance against the obligation.

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

There is no levy under this option. It is estimated that costs passed on to low-risk insurance customers to cross-subsidise the scheme do not result in a net reduction in insurance of non-flood perils, after accounting for the fact that customers at flood risk returning to the market are also insured against these perils (if policies continue to remain "bundled" under the baseline). Some allocative inefficiency from market intervention, though this is a time-limited measure to reduce transitional impacts.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low			5	43
High			22	189
Best Estimate			14	116

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

Benefits are those of "Participation" i.e. from keeping people insured in the transition to a free market. Assumed to be 85-90% of the maximum theoretical benefit of £6 – £24m per year (the economic cost of dropout from the market under the "do nothing" baseline). Scaling factor of 85-90% is arbitrary but accounts for the potential for mistargeting due to differences between insurers' and the regulator's risk models.

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

Any monetisable "equity benefit" to those on low incomes is uncertain. There is no income-based targeting within the regulatory approach – though insurers' pricing strategies may benefit those on low incomes. The scheme would mitigate wider social impacts arising from any rapid increase in insurance premiums and the risks of instability from sharp adjustments in mortgage and property markets were that to occur.

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

Prices of flood risk premiums are driven down by competition amongst insurers for the obligatory target group (to avoid penalties). Exact pricing impacts will depend on the targets set under the obligation, and how difficult these are in practice to meet. As with other options, we assume an immediate (i.e. worst case) transition to risk-reflective pricing in the absence of action. For this option, however, implementation can be held in reserve and the market situation monitored, so that it is only used when it is needed. All estimates highly tentative.

BUSINESS ASSESSMENT (Option 4)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 4.0	**Benefits:** 0	**Net:** 4.0	No	n/a

Evidence Base (for summary sheets)

Introduction

1. This consultation stage Impact Assessment sets out analysis performed by government of options to address the issue of availability and affordability of flood insurance during an anticipated period of change in the insurance market, primarily arising from improving flood risk information. All analysis is provisional and as part of consultation on the government's proposed direction, consultees are invited to comment on the analysis and provide any evidence which could seek to make it more robust. We would particularly welcome further evidence on:

    - The likely impact of insurance premium variation on property values (prices and rents), and the mortgage and local housing markets.

    - The speed and extent of adjustment to fully risk-reflective pricing under a 'do nothing' scenario and whether this will include widespread "unbundling" of flood cover from property insurance policies covering other perils like fire.

    - The extent of demand response from increasing insurance premiums for those at high flood risk;

    - The extent to which maintaining cross-subsidy in the market impacts on the uptake of insurance amongst those at low or no flood risk;

    - Risks and sensitivities surrounding the options' ability to deliver policy objectives and how these might be overcome: for example, potential difficulties in targeting intervention.

The problem under consideration

2. The property insurance market in the UK is unusual in the extent to which private insurance cover for floods is widely available as a standard peril covered by general property insurance without direct government involvement in the market (either through public insurance or ex-post compensation)[1]. This is largely the result of a succession of agreements made between governments and the insurance industry that started in the 1960s following a series of major flood events. Under these agreements, the industry broadly agreed to make flood cover a widely available part of household insurance, in return for an undertaking from government to provide adequate investment in flood management measures, particularly flood defences.

3. The inclusion of flood cover as a standard peril in property insurance is desirable in that it provides a single product that satisfies customers' and mortgage lenders' needs and avoids underinsurance for some risks.

4. Up until relatively recently, detailed information on the degree of flood risk affecting individual properties has not been available. Hence the insurance industry's side of the agreement was, in practice, to provide flood cover for all, and implies a measure of cross-subsidy from those not at risk to those who are, which has kept premiums at a reasonable level even for properties at very significant flood risk.

5. Since the 1990s, spatial information on the likelihood of flooding has become widely available and has been undergoing continuous improvement. Both public authorities such as the Environment Agency, and private companies servicing the insurance sector, have developed increasingly sophisticated flood risk models and maps.

6. The improvements in the understanding of flood risk now make it possible for insurers to differentiate premiums based on risk. There are benefits to insurers from risk-based pricing, namely more effective underwriting and more competitive premiums for "low" or "no" risk customers – though in practice it is estimated that universal pooling of flood risks only adds 2-3% to premiums for those at no or low risk. However, there are also costs - for example from increased investment in risk models. Insurers are already starting to set premium prices more reflective of

[1] For a survey of international approaches to flood insurance, see Annex 1.

flood risk and it is reported by the industry that around a fifth of policyholders in flood risk areas now pay a premium reflective of their risk[2].

7. The existing agreement, the Statement of Principles, between government and the Association of British Insurers (ABI) on behalf of the insurance sector came into force in 2000, was renewed with revisions in August 2008 and expires at the end of June 2013. There are separate but similar agreements for each of the other UK administrations. It commits ABI members to continue to provide flood cover for properties where the probability of flooding is below 1.3% (1 in 75 chance) per year, or there are plans to reduce risk to below this level within the next five years. Properties built since 2009 are not covered by the agreement. The full agreement is provided at **Annex 2**.

8. The Statement of Principles does not include any commitment to constrain the price of insurance. Indeed, the agreement states: "*the premiums charged and policy terms will reflect the level of risk presented and are not affected by this commitment*". But while ABI members have, in theory, been free to price according to risk within the current agreement, they have nevertheless stated that the agreement has encouraged a continuation of the price cross-subsidisation, perhaps reflecting a perceived spirit of the agreement, if not its letter. The ABI has been clear however that it does not see a renewal of the Statement of Principles as the long-term solution, for the following reasons:

    - The agreement distorts the market by preventing ABI members from withdrawing from their high-risk portfolio, while new market entrants or insurers who are not ABI members have no such restrictions;

    - A renewal of the agreement would not address the issue of rising premium prices and properties that insurers may deem uninsurable at any economic price without government intervention.

9. Movement towards more risk-reflective pricing for flood risks in the property insurance market should lead to more efficient insurance provision allowing insurers to select their optimum portfolio of risk. This could allow the development of specialist insurers and reinsurers (which are already emerging) able to cover the riskier end of the market, expanding customer choice and allowing insurers to optimise costs and compete better within their own market segment.

10. Risk-reflective pricing also provides important signals within the property market incentivising management of flood risk. For example, a high premium for a property at flood risk could increase awareness of the risk and encourage consideration of property-level protection measures, where that was economically efficient. The history of cross-subsidisation has, up to now, blunted such incentives, arguably contributing to a "moral hazard" for properties built before 2009 (the Statement of Principles does not apply to properties built since then).

11. In addition, if the current market direction towards more risk-reflective pricing continues, eventually we might expect:

    - High insurance premiums to incentivise risk reduction activities, where efficient, which would then be "rewarded" by adjustments to premiums. The total Present Value of premium savings would need to be greater than the cost of risk reduction for this to be economically efficient;
    - Properties in very high risk situations, if neither insurance nor risk reduction (including making properties flood resilient) is efficient, could be recognised as such and action taken.

    - Possibly some adjustment in the housing market, such that housing costs (prices and rents) reflect flood risk and associated insurance premiums, to a degree. High insurance premiums would tend to be at least partially offset by correspondingly lower house prices and rents. It should be noted however that the empirical evidence for differences in house values following flooding or variations in bills (e.g. council tax) is mixed at best.

12. Whilst such an insurance market is likely to be economically efficient and arguably desirable, there may be some impacts in the transition to this state:

[2] ABI Research Brief: Under-pricing of the flood element of home insurance for domestic customers at significant risk. Association of British Insurers. Sept 2010

- Increases in insurance premiums (which are not offset by reductions in other costs such as mortgage repayments or rents) may prompt withdrawal by policyholders from the property insurance market as a whole, or from cover against the risk of flooding. This could compromise households' ability to deal with the financial impacts of a major loss, not just from flooding but from other perils covered by property insurance such as burglary or fire, and in the case of mortgagees, could mean contravention of mortgage conditions, with knock-on impacts for mortgage lenders.
- As the market develops we may observe insurers changing the products they offer to allow customers to opt out of flood insurance while still having other risks insured, This "unbundling" is typical for other markets such as health insurance but also for building insurance in some other countries. The "unbundled" element would likely be priced at risk – or potentially at a higher level if competitive pressures for such unbundled products were less than for equivalent cover in a "bundled" package. That said, ABI and other stakeholders have not so far argued that this will be the direction of the flood insurance market and we do not observe this occurring so far. As such, we assume in this impact assessment that policies will remain "bundled" under the baseline. However, more evidence on this is invited as part of consultation. The implications of this assumption do not change many of the conclusions regarding availability and affordability of insurance (even if unbundled, flood insurance in principle remains available albeit at a risk-reflective cost). That said, unbundling may limit adverse impacts for flood risk customers under the baseline if it means they can, at least, continue to afford cover for non-flood perils.
- To the extent that property values do tend to decrease (though as above, evidence for this is mixed) there may be impacts for existing occupiers at high flood risk due to increased insurance premiums. Specifically:
    - Existing owners of mortgaged property in high-flood risk areas may see their property adjust downwards in value to account for the increased insurance premiums. There may be difficulties in selling the property unless at a discount, or unless steps are taken to make the property resilient;
    - Existing owners of properties in flood risk areas without mortgages may also have to bear costs associated with increases in insurance premiums and any offsetting reduction in property value. For example, homeowners relying on property values for income (e.g. in old age) or a subsequent investment may face a reduction in the capital sum available to them on disposal.
- For those seeking to buy properties in flood risk areas, mortgage lenders may be wary of offering loans where there may be concerned about the impact of increased insurance premiums on borrowers' financial position, especially if house prices are slow to adjust downwards to compensate. However, where property markets do adjust (and potential lack of mortgagability should in theory hasten this), then the sums borrowed would be less, which might mitigate lenders' concerns.

Rationale for intervention

13. Whilst risk-reflective pricing may be economically desirable, the transitional impacts set out above imply that there could be significant negative short to medium-term impacts for existing occupiers at high flood risk. The potential for this group having to incur such impacts when they could not be foreseen when decisions about where to live were made prompts an *equity* rationale for intervening to ease transitional burdens. This would facilitate an orderly transition to the long-term economically efficient outcome. There is also a potential *economic* rationale for intervention to minimise the consequences of transitional non-insurance in high flood risk areas as a result of increasing premiums, which could imply certain resource costs on the wider economy (such as health impacts and potential increased demands for temporary re-housing).

14. In practice, there will be a range of impacts on existing high-flood risk occupiers. For many, the impact will be small. For others, impacts may be more significant, particularly for those who find themselves in areas of high flood risk with few resources to deal with rising insurance costs and little prospect of bearing the risk without insurance (see later analysis of the "do nothing" scenario).

15. There may be a rationale for intervention to assist businesses as well as households, though evidence gathered to date suggests that property insurance products for business are more bespoke with less historic cross-subsidy of flood risks across high and low risk groups. As such, there may be less of a transitional issue. Even if this is not true however, some types of business may be better placed to respond to insurance cost increases than households, due to greater capital resources, allowing adjustments such as relocation or flood management. Where businesses need to be located in the floodplain (e.g. because of access to water bodies for abstraction, discharges or transport), there may also be scope to pass on costs to customers especially where competitors are also similarly constrained. That said, businesses comprise a varied group – most are Small and Medium Sized Enterprises (SMEs) - and there will be some kinds of business sectors (e.g. small start-ups) which will be more vulnerable than others. As part of consultation and in developing the detail of any proposed intervention, we will be considering further evidence on the impacts on small business of any changes in flood insurance terms and the extent to which this prompts a rationale to include such businesses in any intervention. Although the focus of the rest of this Impact Assessment is on household customers, discussion could also be applicable to at least some kinds of businesses.

16. For landlords of rented residential property, we understand that insurance is generally bespoke and already takes flood risk into account. As such, the exclusion of landlords from potential interventions targeted at households is not expected to lead to adverse impacts for tenants (where insurance costs are passed on into rent). Though the mobility of tenants will tend to lessen impacts in any case (e.g. potential for "lock in" due to negative equity would not apply). However, we would welcome firmer evidence on the likely impact of market developments on landlords and tenants, to determine if there is a rationale for intervention.

Policy objective

17. To ensure the availability and affordability of flood insurance, without placing unsustainable costs on wider policyholders and the taxpayer. Doing so will provide assistance to those likely to be disadvantaged in a transition to more risk-based flood insurance pricing. A successful implementation would entail insurance terms adjusting towards risk-reflective pricing at a pace that allows choices to be made by policyholders facing long-term increases in insurance costs unless action is taken.

The Do-Nothing Option ("Baseline" case)

18. Under a "do nothing" scenario, the current Statement of Principles is not renewed and the insurance market can be expected to continue to develop so that insurance premiums increasingly reflect flood risk. This process has already begun. According to ABI estimates[3], 22% of policyholders at flood risk already pay a premium which reflects actual risk. This leaves 78% of policyholders for whom policies are what the ABI would term "underpriced" – that is, paying a premium that does not fully reflect the flood risk with implicit cross-subsidisation from other policyholders.

19. Increasing insurance premiums in high risk areas is likely to heighten awareness of local flood risk and provoke additional flood prevention activity by individual households and businesses, and by public bodies. As the exact response is uncertain, no additional risk prevention is assumed under any of the options.

<u>The current situation</u>

20. Average UK insurance premiums for buildings and contents cover are currently £176-232 and £90-117[4] respectively (note however that these products are often bought together at a discount, which complicates the picture). A significant uncertainty in any assessment of how the market will develop is the speed and extent to which insurers will move to fully risk-reflective pricing – and the precise nature of the latter (which may include a combination of higher premiums, higher excesses and flood insurance being "unbundled" from other perils and sold as an add-on to policies). A

[3] ABI Research Brief: Under-pricing of the flood element of home insurance for domestic customers at significant risk. Association of British Insurers. Sept 2010.

[4] <u>Source: AA</u> British Insurance Premium Index , January 2013. Ranges are based on "shoparound prices" vs. "market average quoted premiums". www.theaa.com/newsroom/bipi/201301-bipi.pdf

further uncertainty is the extent to which some households, who would otherwise want to take up flood insurance, have already been priced out of the market by the current partial move towards risk-reflective pricing. It could be argued that as there has been nothing to stop insurers pricing according to risk already (the Statement of Principles does not constrain insurers on price), the experience in recent years is indicative of the likely future pace of adjustment. If true, this suggests price increases may be relatively slow (perhaps 2% of high-flood risk policies each year moving to risk-based terms). There are theoretical reasons to suggest that any adjustment towards risk-reflective pricing may be either slow or even partial:

- Assessing flood risk for each property involves a cost to assess the risk and determine terms;
- Even where insurers do make assessments, the science of predicting flood damage at individual property level, whilst improving, is still uncertain. This is especially the case for surface water flood risk. The reputational damage from over-inflating premiums may lead companies to decide that it may not be worth a move to full risk-reflective pricing in many cases;
- Insurers may decide that making a loss on the flood component of household insurance is worthwhile if a customer's business is profitable overall, and the alternative is the loss of the customer altogether.
- More generally, at least one study of the competitive structure of the insurance industry suggests that there may be incentives for companies not to depart radically from established pricing conventions, though this has not been empirically tested[5]

21. The extent to which the above considerations might make any move to risk-reflective pricing relatively gradual is difficult to determine, since insurers' pricing strategies are necessarily commercially sensitive. The likely speed of adjustment if the market is allowed to operate freely is a key uncertainty affecting choices about policy interventions in flood insurance. If the market would actually be subject to a relatively orderly natural transition for the reasons above, then intervening would be inefficient and could even hasten an artificially rapid adjustment by insurers, which in turn could heighten transitional costs if the policy response turns out to be less than effective. In other words, intervening runs the risk of making matters worse. The issue of how the fundamental uncertainty in a free market transition affects costs and benefits of potential approaches is discussed further throughout this IA.

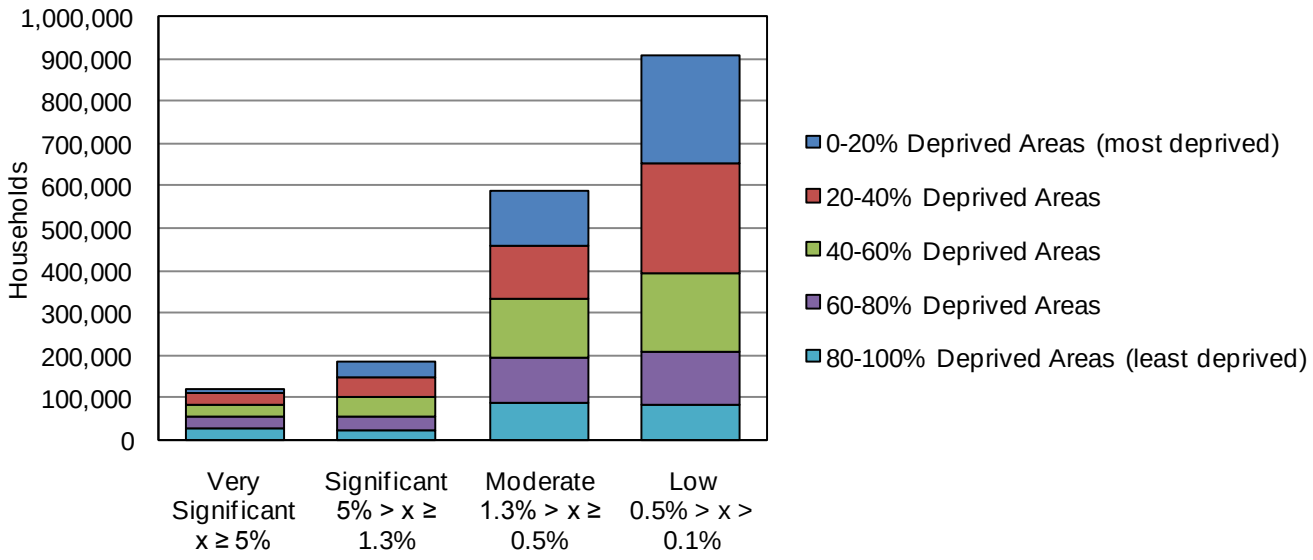
The scale of flood risk and deprivation in England

22. As a first step, we estimate the total population of English households within river and coastal flood risk (probability) bands, and how these break down into quintiles (blocks of 20%) of the Index of Multiple Deprivation scale. The results of this analysis are shown in Figure 1 below. In summary, 2.4 million properties in England are at some risk from river and coastal flooding. Of these ~1.8 million are households. Of these, ~900,000 are at "low" risk[6], ~600,000 households are at "moderate" risk[6], just under 200,000 are at "significant" risk[6] and ~120,000 households are at "very significant" risk[6]. Of the latter, ~12,700 are in the most deprived quintile. These initial descriptive statistics are based on modelling of river and coastal flood risk only, and do not include properties at surface water flood risk. It is estimated that the total number of properties (households and non-residential buildings) at *some* risk of surface water flooding is ~3.8 million, giving a total population of properties at some risk of any type of flooding of ~5.2 million. (2.4m from rivers and the sea, plus 3.8m from surface water, less 1m at risk from both sources). About 4m of these 5.2m properties are estimated to be households.

[5] Kesternich and Schumacher "On the Use of Information in Repeated Insurance Markets" Discussion Paper No. 280, Discussion Paper Series of SFB/TR 15 Governance and the Efficiency of Economic Systems. University of Munich, Germany 2009

[6] "Low" risk in the EA's National Flood Risk Assessment is defined as an annual probability of flooding of 0.5% (1 in 200) or less. "Moderate" risk is greater than 0.5% (1 in 200) but less than 1.3% (1 in 75). "Significant" is greater than 1.3% (1 in 75) but less than 5% (1 in 20). "Very significant" risk is an annual probability of flooding greater than 5% (1 in 20). Modelling validated most robustly at the 'significant' level of risk. Source: Environment Agency National Flood Risk Assessment (NaFRA) for England, 2009 and Index of Multiple Deprivation (IMD) for England, March 2011.

Figure 1: Households at river and coastal flood risk by deprivation band. Source: Environment Agency National Flood Risk Assessment (NaFRA) for England, 2009 and Index of Multiple Deprivation (IMD) for England, March 2011.



Worst-case scenario: financial impacts on households

23. Analysis has been conducted based on data from a leading insurer and other industry sources to estimate the impacts on households of a "worst case" do-nothing scenario that entails a rapid move by insurers to risk-based pricing. Industry data has been subject to independent review commissioned jointly by government and the ABI[7]. The analysis assumes, based on evidence from markets like Germany which are close to being "free", that insurers are mostly able to continue to make insurance *available*[8], including through the use of measures such as commercial reinsurance, but at a price reflective of the risk, which may or may not be *affordable*. The do-nothing option does not include any behavioural response to increased premiums e.g. activity to reduce risk and hence reduce insurance costs. This analysis, reported below:

    - Is based on current and risk-reflective (technical) insurance premiums for UK households at flood risk, including from surface water;
    - Uses data on insurance take-up by income decile (blocks of 10%) to account for existing non-insurance. 28% of the bottom income decile have buildings insurance compared to 87% in the top decile largely due to home ownership rates;
    - Links premium increases with income estimates to calculate the proportionate impacts on household incomes (accounting for non-insurance);
    - Assumes an immediate move to fully risk-reflective pricing by insurers (i.e. worst-case).

24. More information on the methodology underlying the analysis of premium and household affordability impacts is at in **Annex 3**.

25. Results by income group are presented in **Table 1** below. The results suggest that under a "worst case" transition, around 600,000 households may see *some* upward adjustment in "technical premium" (i.e. that calculated actuarially before considering other pricing factors) during a move to risk-reflective pricing. This compares with the total estimated number of households at some flood risk from any source of about 4 million (see Paragraph 22). Two-thirds of these 600,000 households will face price rises as a proportion of their disposable income of below 2% (~400,000 households). A further ~173,000 households are estimated to face price rises of between 2-5% as a proportion of income. The group of householders facing price rises of 5% or more of their income are estimated to be ~28,000.

[7] Independent review of flood insurance analysis, Prof Stephen Diacon, May 2013.

[8] Based on the German market, risks up to a 10% annual chance of flooding would appear to be commercially insurable. See Annex 1.

Table 1: Number of households experiencing impacts on their disposable income in a move to fully risk-reflective pricing (worst-case rapid adjustment). Data disaggregated by income quintiles. Source – Insurance industry data on flood premium costs and HMT data on household income.

Impact as % of income	Income quintiles: Bottom (0-20%)	Second (20-40%)	Third (40-60%)	Fourth (60-80%)	Top (80-100%)	Total
x < 2%	19,000	48,000	90,000	126,000	118,000	401,000
2% <= x < 5%	33,000	48,000	39,000	14,000	39,000	173,000
5% <= x < 10%	17,000	11,000	0	0	0	28,000
Total	**69,000**	**107,000**	**128,000**	**140,000**	**158,000**	**601,000**
of which 2% or more	50,000	59,000	39,000	14,000	39,000	201,000

Note: figures are rounded to nearest 1,000 given significant uncertainties in the analysis

Worst-case scenario: impacts on insurance take-up

26. As insurance premiums increase, there will be a tendency for insurance take-up to reduce, following the normal relationship between price and demand. This effect may be constrained by the requirement imposed by mortgage lenders for buildings to be insured. Nevertheless, not all properties are mortgaged and even where they are, there may be property owners who choose not to continue insuring (which would be in breach of mortgage conditions).

27. The proportion by which the quantity demanded of a good declines for a given proportionate increase in price is called the *price elasticity of demand* (PED). PEDs can be estimated empirically using econometric techniques and those for many goods and services are reported in the academic economics literature. For insurance products however, the extent of evidence is fairly modest and we are not aware of any studies from the UK insurance market. Much of the literature on PEDs for insurance products relates to health insurance in the United States. However, three estimates of PED for household insurance have been found as part of a literature review. One[9] relates to flood insurance in the United States, which is highly price "inelastic", with a PED of -0.32. This means that for every 1% increase in price, take-up can be expected to decline by only 0.32%. Another US study[10] estimates the PED of private household insurance (including catastrophe cover) at between -0.86 (New York, moderately inelastic) and -1.08 (Florida, slightly elastic). Finally, an Australian study[11] differentiates between buildings and contents insurance and gives PEDs of -0.1 (highly inelastic) and -0.75 (moderately inelastic), respectively.

28. So whilst there is uncertainty in estimates of PED in the literature, there is reasonably strong evidence that insurance is a relatively price-inelastic good. We use the Australian estimates from Tooth (2007) to inform an approximate estimate of the possible extent of reduced insurance take-up under the "do nothing" scenario, in the absence of knowing the true demand function for property insurance in the UK (see Box 1).

[9] Browne and Hoyt (2000), as cited in Grace et al. (2004) – see next footnote.

[10] Grace, M. F. et al (2004), *Homeowners insurance with bundled catastrophe coverage*, Journal of Risk and Insurance, Vol. 71 No. 3.

[11] Tooth, R (2007), *An analysis of the Demand for House and Contents Insurance in Australia (A report for the Insurance Council of Australia)*, reported in the Council's *Submission to the Review of Australia's future tax system*, October 2008

Box 1 Price elasticities for insurance

The *Price Elasticity of Demand* is defined as the proportionate change in the quantity demanded for a product per proportionate change in its price. For "normal" goods and services, quantity demanded declines as price increases so elasticity estimates are negative. A figure of greater than -1 (e.g. -0.5) indicates "inelastic" demand – that is, for a 1% increase in price, demand declines by less than 1% (0.5% in this example). A figure of less than -1 (e.g. -1.5) indicates "elastic" demand, where quantity demanded changes by more than the proportionate change in price. Price elasticities are typically different at different price levels (points on the "demand curve" which describes the relationship between price and quantity demanded).

Estimating price elasticities for insurance products is less straightforward than for some other products. Insurance is a service, often simply taken or not (e.g. buildings insurance), so the "quantity demanded" is not always easy to define. There is also debate in the literature about what constitutes the "price" of insurance – given policies will have a package of terms including premium, excesses and so on. Any differences in the degree of "bundling" of different risks (flood, fire, theft, legal protection, loss of income etc) together in one product also complicates the picture. These issues suggest general caution is needed when considering the "price elasticity of insurance".

In forming a view of the possible responsiveness (elasticity) of demand for home insurance to price changes, we have started with the Tooth (2007) estimates for the following reasons:

a) there is a differentiation in the Tooth study between buildings and contents insurance. For this impact assessment we have focussed on the impacts of reduced holding of buildings insurance, since this would seem to have the most material wider economic impacts (as distinct from a lack of contents cover);

b) estimates reflect a high degree of compulsion over the holding of buildings insurance for mortgage purposes, which is also the case in the UK;

c) Tooth differentiates elasticities for take up (yes/no decision), versus deciding on expenditure levels, in a two stage decision framework. We are most interested in the decision on whether to insure or not irrespective of the quantity purchased (which is not so relevant to buildings cover where repair or reinstatement can largely be viewed as either covered or not), and assessing this at the aggregate level – i.e. how many households across the country might choose not to insure if prices increase;

d) the Australian model for flood insurance is broadly a free market one similar to that of the "do-nothing" scenario in this impact assessment. Clearly however, key differences between Australia and the UK remain – notably the underlying nature and extent of flood risk – which should be noted.

The basic Tooth estimate of elasticity of -0.1 for buildings insurance has been varied by income band using results from an econometric analysis conducted by Defra of UK household insurance data taken from the 2010 ONS Living Costs and Food survey. This analysis has derived an indicative UK-specific demand function with associated price elasticities by income band. Whilst the average demand elasticity from this analysis (around -0.4) requires further validation, at this stage we have retained the average Tooth figure as a central estimate, but used the Defra analysis to inform proportionate variation in elasticity by income band. Sensitivity analysis is then applied. Further analysis will be undertaken during and after consultation to determine the robustness of the Defra analysis, with a view to developing a full demand function for insurance. Note that issues such as unbundling further c Further review of the literature will also be undertaken for any new evidence on insurance demand and elasticities.

In the meantime the **general uncertainty surrounding elasticity estimates – and their use to approximate a fully-specified demand function over large price changes - is highlighted.** (See the main text for further discussion of analytical uncertainties)

29. The assessment of the impact of a "worst-case" move to risk-reflective pricing on the take-up of buildings insurance, by income quintile, is presented in **Table 2** below (after paragraph 37). The

analysis has been restricted to buildings policies as withdrawal from these policies is felt to involve the most significant economic impacts (see later sections). However, withdrawal from contents policies would also be expected (indeed the evidence (e.g. the Tooth study) suggests that contents cover is likely to be more price sensitive). **Table 2** is based on average buildings premium estimates from industry sources, consistent with the affordability analysis presented earlier in this section. Based on ABI (2010), we assume 78% of households are currently paying an average premium (i.e. not reflecting flood risk), and the average increase in premiums under the do-nothing scenario will be around 100%[12]. Based on buildings insurance price elasticities which average -0.1 across the income distribution, there may be a decline in take-up of insurance of around 7% amongst high risk households.

30. It should be noted that if the general price elasticity estimate is doubled (made more elastic) – a small change in absolute terms - the range of reduction in take-up also doubles. This shows that estimates of reduction in take-up are quite sensitive to changes in estimated elasticities. One further caveat with this analysis is that price elasticities are generally only calculated in respect of fairly small changes in price, and for a "normal" (convex) demand relationship, will tend to overestimate response for large changes in price[13]. For all these reasons, the estimates should be viewed with caution.

Worst-case scenario: impacts of non-insurance

31. Systematic evidence on the net impacts of suffering flooding whilst uninsured (compared with a situation where insurance is held) is difficult to come by. It is assumed for this consultation stage Impact Assessment that the impacts felt by a flooded household without insurance are likely to be:

    i Lack of habitable living accommodation for an extended period. Observation from flood events shows there is variation in the time people are out of their homes depending on issues such as access to good quality clean-up and building services and we assume that holding insurance will facilitate access to these services;

    ii. Adverse health impacts, notably from stress. Studies such as RPA (2004)[14] highlight the variation in health and stress effects arising from different flood experiences;

    iii. Potential loss of employment due to i) and/or ii).

32. These are impacts which can be mitigated (though in the case of i) and ii), probably not completely eliminated) by the availability of insurance (particularly buildings cover). Where insurance is not available to the household, there is likely to be a cost to the state from:

    i. Provision of alternative accommodation for those made homeless (local authorities)

    ii. Provision of healthcare (National Health Service)

    iii. Unemployment-related benefits (Department for Work and Pensions)

33. The provision of alternative accommodation and healthcare include real resource costs to the economy, as the need for these resources is exacerbated by not having insurance for flood events (e.g. alternative housing is likely to be needed for longer than if insurance is held). We assume that any loss of employment is a transfer payment so, whilst a cost to government, it is not a net economic cost to the nation. The rationale being that since loss of employment in these circumstances is likely to be made up by others, there will be no net change in activity within the economy[15].

34. Other resource costs may arise which are not borne by the state. For example, costs associated with not dealing with flood damage promptly or effectively (e.g. the rotting or corrosion of building fabrics due to ineffective drying). Arguably these are unlikely to translate into national economic

[12] See the table after paragraph 55 for more details of estimated current prices and those under a worst-case risk-reflective scenario.

[13] This is one reason why we have erred on the side of using the more inelastic central demand elasticity from Tooth (2007) rather than adopt the more elastic (but not yet fully validated) Defra central estimate of -0.4.

[14] *The Appraisal of Human Related Intangible Impacts of Flooding*, FHRC and Risk and Policy Analysts, 2004 (Defra R&D report FD2004/TR)

[15] It might be argued that the cost of actually raising the public finance to meet transfer payments like unemployment benefits implies a cost on the economy (opportunity cost of public funds), but this effect has not been included. To the extent this applies, the costs of non-insurance could be higher.

costs, unless they increase the likelihood of a property becoming uninhabitable again in the future, or more permanently.

Monetising the impacts of drop-out from the insurance market

Requirement for alternative accommodation over longer periods

35. According to the leading industry manual *The Benefits of Flood and Coastal Management* (the "Multi-Coloured Manual", Flood Hazard Research Centre 2005 as updated), 64% of households who experience flooding seek alternative accommodation for an average of 22 weeks. For households not managing flood risk through insurance (or having resources to self-insure), it is assumed that the period for which alternative accommodation is required is longer. Assuming the national average rental value for a dwelling (Source: CLG statistics), and that the extra period of time for which accommodation was required (over and above the "average" case) is one year, the additional cost of alternative accommodation for each non-insuring household would be ~£6,000. The time period of one year is based on anecdotal evidence, in particular that one year on from recent major floods, there has remained a number of households who have not yet been able to return to their homes, some of whom remain out of them for some further period. Alternatively, given that conventional temporary accommodation is often in short supply after flood events, local authorities often use caravans to accommodate displaced families (often in their own gardens where possible). Authorities tend to purchase new caravans and then dispose of them on the second-hand market once they are no longer required. A web survey[16] of new and used prices for larger caravans (4-6 berth) suggests new caravans average around £20,000 and used ones (of good quality and only a year or two old) about £10,000. So the net cost to a local authority might be in the region of £10,000 per "non-managing" household. Taking an average of the fixed building and caravan costs (in the absence of firm evidence on the relative uses of the two types of accommodation, and erring towards being conservative) suggests a cost per household of **£8,000**.

Health

36. In *The Costs of the 2007 floods in England* (EA Evidence Reports 2010), the Environment Agency summarise results from an earlier study[17] of the *willingness to pay* (WTP) to avoid the health and stress effects of flood events, which suggest that the per-household WTP to avoid infrequent flooding (e.g. the residual risk implied by a typical urban flood defence scheme) is about £200 per year, or £4,700 as a capitalised present value sum, calculated over the typical life of such a flood defence scheme (taken to be 50 years). Note that "health and stress effects" here are those arising from factors such as anxiety and post-traumatic stress, which may be influenced by different degrees of insurance, and do not include injury or death arising directly from flood events (which are not). Assuming a typical standard of protection of an urban flood defence scheme is up to 1% (i.e. it provides protection against events more probable than the "1 in 100 " annual chance flood), the figure of £4,700 can be loosely regarded as the Willingness to Pay to avoid, on average, "half a flood" (1/100 x 50)[18]. In turn this means that average WTP to avoid one flood event is double this amount, or £9,400. However, this estimate relates to the avoidance of a "normal" flood experience, which is likely to involve insurance. Without insurance, health impacts will potentially be greater. Using a similar scaling-up factor as for accommodation costs (52/22, in that case relating to weeks[19]), an estimate for the implied extra cost of health impacts in an uninsured situation (over and above an "insured" one) would be **£12,800**. This is calculated as (£9,400 x 52/22) - £9400. The health and stress impacts included in this assessment relate only to flood events actually occurring, and not the anxiety associated with the anticipation or threat of events. Such anxiety is likely to be exacerbated in the absence of having insurance cover. As such, the assessment of health costs from non-insurance may be understated. On the other hand, it could be argued that anxiety associated with anticipating flooding is already embodied in the price elasticity for insurance – i.e. it is the threat of not being covered which contributes to insurance being fairly price-inelastic.

[16] Using the new and used caravan search facility at www.chichester-caravans.co.uk, accessed 29/3/2012.

[17] *The Appraisal of Human Related Intangible Impacts of Flooding*, FHRC and Risk and Policy Analysts, 2004 (Defra R&D report FD2004/TR)

[18] This is a highly simplified assessment which assumes there is only one "above design" event, which has a probability of 1%: in reality there will be a distribution of flood events less probable than 1:100 years. This means the actual expected "fraction of a flood" will tend to be higher; this makes the assessment of do-nothing health impact conservative at this stage.

[19] See paragraph 34. With insurance, households are out of their homes for an average of 22 weeks; the assumption without insurance is that they would be out for one year (52 weeks).

Aggregate monetary estimate of the impacts of non-insurance under the "worst case" baseline

37. The above monetary estimates suggest that the economic cost per "non-managing" household (i.e. one neither insuring nor able to self-insure) of a significant flood event might be in the region of £21k (£8k + £12.8k, rounded)[20]. Combining this estimate with the earlier figures for potential reduction in insurance take-up, and numbers of households likely to experience flooding, a broad-brush estimate of the aggregate "UK plc" cost from declining insurance affordability has been assembled. This is set out in **Table 2** below. It should be noted that this is only in relation to a decline in buildings policies – there may also be economic costs associated with not having contents cover (particularly for items such as furniture, domestic appliances etc). In addition, the more general caveats from the analysis of reduction in take-up (see Paragraph 30) should be recalled.

Table 2: Indicative aggregate annual economic cost of a decline in insurance affordability

	Income Quintile:					
Impact as % of income	**Bottom (0-20%)**	**Second (20-40%)**	**Third (40-60%)**	**Fourth (60-80%)**	**Top (80-100%)**	**Total**
Households facing some **buildings** premium increase	62,100	93,480	116,190	139,620	157,770	569,150
PED	-0.17	-0.10	-0.09	-0.08	-0.07	
Decrease in households taking up buildings insurance	-11,230	-9,100	-6,730	-4,690	-8,470	-40,230
Proportion of those properties flooding p.a. *	1.4%	1.4%	1.4%	1.4%	1.4%	
Extra uninsured homes flooded each year	160	130	90	70	120	560
Aggregate "UK plc" cost p.a. @21k/household (£m)						**~12**

* Average probability of flooding for those 600,000 homes seeing some increase in their buildings premiums is estimated to be 1.4%. This is based on an analysis of risk-reflective premiums for a sample of these households (from industry) and an industry estimate of the average size of a buildings insurance claim after flooding of £40,000.

38. Out of the 570,000 households expected to face some increase in their buildings premium[21] (though the majority of these will be small increases), we estimate that around 40,000 households may decline to take up buildings insurance cover under a worst-case transition. Out of these, around 27,000 are in the bottom three income quintiles. Using an estimate that around 1.4% of the households facing some increase in premiums may experience flooding each year (see footnote to Table 2) this suggests that a little under 600 households that choose not to insure might be expected to flood in any given year. At an economic cost of £21k each (Paragraph 37), this suggests an annual UK cost of about **£12 million**.

39. This estimate of the economic cost of households not insuring is based on a number of assumptions, particularly with respect to the proportion of households ceasing to insure, and the proportion of these likely to flood each year. In particular, the latter could feasibly range from 0.7%-2.8% given differences in parameters affecting the annual probability calculation (notably the average claim assumed within risk-reflective premiums used to derive it – see the footnote to Table 2).

40. As such, a plausible range in estimate might be **around £6-24m** for the annual "UK plc" economic cost of households no longer being insured for flooding. This estimate, which relates only to buildings policies, does not include any costs of non-insurance arising from other perils which

[20] This is about the same as the typical damage to property fabric and contents from a significant flood event (around £20k per household flooded).

[21] Out of a total number of households facing some increase in buildings and/or contents premiums of about 600,000.

would also no longer be covered where buildings policies are no longer held e.g. fire and burglary. Around two-thirds of the range of impact **(i.e. £4-16m, or £8m as a central estimate)** arises due to households in the bottom three income quintiles.

41. In principle, the impacts of a reduction in insurance demand from households at flood risk may need to be offset by any benefits of an increase in demand from households at no (or very low) flood risk, if the cessation of cross-subsidy of flood premiums leads to a material reduction in premiums for the latter group. Industry sources have estimated the value of the cross subsidy for the 500,000 households at highest-risk of flooding to be broadly £180m, which equates to 2-3% of total premiums or about £10 per combined buildings and contents policy for the low/no risk group. At the average price elasticity of -0.1, a 2-3% reduction in total premium would equate to an increase in demand of 0.2-0.3%. There are about 17 million owner-occupied households in the UK (Source: ONS). Excluding the 600,000 at measureable flood risk and assuming (say) 90% of these have home insurance, the current base level of demand would be around 14.8 million policies. The increase in demand might therefore be somewhere between 30,000-44,000 households taking out policies. These households are not at flood risk (or at least not at flood risk significant enough to result in a detectable increase in premiums under "do nothing"), so there is no benefit in terms of avoided economic costs of non-insurance for floods, but they are at other risks (such as fire, theft, subsidence etc). So there may be some economic benefit associated with these households being covered for these risks. However, at the same time as these households enter the insurance market, about 40,000 high flood-risk households leave it (as estimated above) and these are also subject to the non-flood perils (fire, theft, subsidence etc). Assuming that such risks are evenly distributed amongst homes at flood risk and those not, then the net impact is broadly offsetting (perhaps a small net reduction in "other perils" cover taking a mid-point estimate). In addition, there is the reduction in cover for the flood risks of 40,000 homes. For the analysis in this Impact Assessment, we therefore assume that the "other perils" impacts are broadly offsetting under the do nothing option and therefore also under the "do something" options which broadly seek to re-formalise the cross-subsidy under the Statement of Principles. We accept though that this calculation is based on a number of high-level assumptions[22] and will seek to refine this in parallel with consultation.

Accounting for existing investment plans and new properties moving into risk

42. The analysis of the "do nothing" scenario assumes that flood risk remains the same over time. It does not take account of plans by flood risk management authorities (notably the Environment Agency) to invest in new or replacement flood defences and other management measures. Neither does the analysis take account of changing flood risk due to deterioration of existing flood defences, climate change or development in flood risk areas. Investment in flood risk management will create the conditions for insurers to revise premiums downwards in the light of reduced risk. Offsetting this effect will be the fact that any "new" households shifting into flood risk (or experiencing greater flood risk) may see upward pressure on premiums. The significant uncertainties in these factors and the short term transitional nature of measures being considered (modelled over 10 years) suggest that the assumption of no change in flood risk is a reasonable one for comparing options against the "do nothing" scenario.

Summary of "do nothing" (baseline) case

43. A summary of the analysis of the "do nothing" option, under a worst case scenario where insurers move immediately to a position of full risk-reflective pricing, is given in Box 2 below.

[22] One assumption is that policies remain "bundled" under the do nothing option. To the extent that flood cover is "unbundled" from other perils, then there may be a net increase in cover for other perils if those priced out of the market for flood insurance nevertheless continue to insure other perils with a separate policy. As highlighted at the beginning of this IA, we invite evidence on the extent to which policies may "unbundle" under a do nothing scenario.

Box 2: Summary of the "worst case" do-nothing option (immediate transition)

- Against a backdrop of 4 million households at risk of flooding (from all sources) in England, some 600,000 households might be expected to experience *some* increase in insurance premium, in a situation where transition to risk-based pricing is full and immediate. For some 400,000 of these households however, increases are likely to be *relatively* small (below 2% as a proportion of income), reflecting the proportion at low or moderate flood risk.

- Households facing increases in insurance premiums likely to amount to 5% or more of income could number around 28,000. All of the households in the latter category are likely to be in the bottom 40% of the income distribution.

- Across all households facing some increase in premium, take-up of **buildings** insurance policies might be expected to decline by about 7% on average but perhaps by 18% among the lowest income households. These estimates are based on price elasticities of demand for insurance products and are highly uncertain. There would also tend to be withdrawal from **contents** cover.

- For those people who cease to take household insurance, there is likely to be significant hardship if a flood or other adverse event (fire, theft etc.) occurs. At a national level, the impact of "non-insuring" households could be felt through increased temporary housing, health and possibly unemployment benefit costs (though the latter is a transfer payment and loss of work will tend to be taken up by others). The national economic cost from flooding of an increase in non-insuring households is tentatively estimated in the region of £12m per year (central estimate), based on withdrawal from buildings cover, though this is based on limited evidence and is uncertain. Around £8m (central estimate) of this arises because of withdrawals from the market in the bottom three income quintiles.

- The worst-case "do nothing" option could also lead to wider impacts which are not easily monetisable. Individual insurers may withdraw from flood cover and although others (e.g. specialist insurers) are likely to fill the gap, there may be temporary perceptions of widespread removal of cover which could cause some localised instability in housing markets, potentially including property "blight", at least for a period. Properties may not be saleable if mortgage lenders serving buyers also have perceptions of lack of availability of cover, or are concerned about the impact of high premiums on buyers' finances. However, where housing markets adjust (property prices fall – note evidence for this is mixed), then buyers will be commensurately better off though vendors may have to sell at a loss.

Alternative transition scenarios

44. The "worst case" do-nothing option implies immediate transition from the current level of risk-reflective pricing (22% of households already pay a risk-reflective price) to full risk-based pricing. Given the factors set out in paragraph 20, notably that risk-based pricing is neither a costless nor certain activity for insurers, such an assumption is likely to exaggerate the extent and urgency of the problem in the absence of action. At the other end of the scale, extrapolating the trend in the evolution of risk-based pricing in recent years would involve about 2% of at-risk properties being added to the population of those facing fully risk-reflective premiums each year. This approach suggests that a transition to full risk-based pricing might take nearly 40 years. This also seems unlikely given anticipated improvements in flood risk information.

45. The likely rate of transition is a fundamental uncertainty. In the analysis which follows, options are assessed in cost-benefit terms against the "worst case" baseline set out above, but in reaching conclusions on options, the impact of slower transition under the baseline is assessed.

Options for intervention

46. To consider potential responses to developments in the insurance market and the ending of the Statement of Principles, three working groups of Defra, HM Treasury and stakeholders were set up in 2010. *Working Group 1* considered options for managing the financial risks of flooding after 2013. The Group agreed a set of common principles and tested strategic options against those principles. It gathered evidence, listened to perspectives from community groups, insurers, local government and other experts. The report of the three working groups was published in December 2011[23].The analysis presented here builds on the work of Working Group 1, which identified two "do something" approaches: the setting up a of a risk pool to enable subsidisation of high-cost flood insurance; and/or the facilitation of transition to a free market through targeted assistance and information provision. Here we present a longer list of options, building on those developed by Working Group 1.

47. The following four options have been considered in detail, including an assessment of their costs and benefits compared to the "do nothing" option. Additionally we discuss other options which have been considered but have not been developed further.

    Option 1 – Do minimum: encourage industry measures, set up a "community resilience" fund for local authorities and improve information provision;

    Option 2 – Set up a subsidised insurance pool for high-risk properties;

    Option 3 – Directly subsidise insurance premiums for high-risk properties;

    Option 4 – Regulate for the availability of affordable flood insurance through a "Flood Insurance Obligation".

Option 1 – Do minimum

48. Following the Working Group recommendation of pursuing facilitation approaches, a number of "do-minimum" options have been explored:

    - **Improving provision of advice and information** to households at high flood risk and so encourage the growth of specialist brokers and insurers. Through awareness raising of: a) the level of flood risk; b) options available to households to mitigate that risk c) ways to improve the communication with insurers on households' flood risk; and d) the benefits of shopping around. These approaches could be combined for example if an insurer offered discounts to customers who have installed property-level protection.
    - **Encouraging the insurance industry to develop its own, new and innovative ways of maintaining some level of cross-subsidy for customers at most risk**. Insurers have asserted a reluctance to voluntarily maintain a cross-subsidy citing the risk of competitors undercutting them at the low-risk end of their portfolio. However as noted above in paragraph 20, insurers also have reasons to maintain some degree of cross-subsidy, and decisions on whether and if so how quickly to unwind the cross-subsidy are entirely within the control of the insurance industry.
    - **Facilitate community-led actions**. Twelve local authorities contain around 54% of households at significant risk of river and coastal flooding and a larger number have pockets of housing at flood risk. By facilitating community-led actions, government could provide a proportionate amount of funding to local authorities on a competitive basis to develop projects to demonstrate local solutions that reduce flood risk and help ensure the availability of affordable insurance within the community. Authorities would work with civil society, businesses and other local groups, to develop approaches that if successful, other authorities could adopt (and fund). Solutions might include funding for property-level protection, insurance-with-rent schemes for those in social housing, specialist advice to households to enable them to get better insurance terms, contributions to allow the development of local community flood defence schemes, detailed local risk mapping or installation of equipment such as gauges to improve community flood readiness.

[23] See http://www.defra.gov.uk/publications/files/pb13684-flood-risk-insurance.pdf

Costs

49. The "do minimum" Option 1, by definition, involves relatively limited outlay. Improving information provision and encouraging at-risk communities to work with insurers to develop voluntary approaches would involve some administrative cost. The most significant cost would be associated with providing funding to local authorities for community resilience. Costs are scalable, but for economic efficiency should be kept proportionate to the exploratory nature of the approaches being taken. Defra initiated a £5 million Community Resilience Pathfinder Scheme in December 2012, to begin trialling of potential approaches[24]. Thirteen Local Authorities are taking forward pilot projects, the results of which will be evaluated to inform any wider approach.

Benefits

50. Benefits of any do-minimum approach are difficult to predict and, in the case of local authority-led projects will depend on the effectiveness of currently unproven approaches. Ultimately, locally-determined solutions may not have national level benefit (and may even cause displacement at the national level), but could improve local understanding of risk, empower communities to take action to address their flood risk, improve the resilience of communities in the aftermath of flooding and enable more households to take-up insurance as an effective means of risk management. Nationally, the absolute maximum economic benefit to be gained might be £6-24m per year, or £50-210m as a Present Value over an assumed 10-year policy life, if all costs associated with households withdrawing from the insurance market are overcome (see the analysis of the "do nothing" option). In practice, the scale of benefit is likely to be considerably smaller given the likely scale of costs and uncertainty about whether insurers would reflect any local action taken to reduce flood risk in setting premium levels. Assuming that those at the lower end of the income distribution would be prioritised under a do minimum approach, then from **Table 2** earlier, the bottom three income quintiles account for about 67% (27,000 out of 40,000) of households estimated to withdraw from the insurance market. So a more realistic maximum benefit would be two-thirds of the £6-24m per year range. **This equates to £4-16m per year, or £35-140m Present Value over 10 years as a potential maximum benefit**, though this still assumes 100% effectiveness from targeting priority households with currently unproven approaches.

51. The above maximum benefit range also assumes a "worst case" immediate adjustment would have happened under the baseline "do-nothing" option, with costs of non-insurance then accruing every year for ten years; if transition is more gradual under the baseline then the benefits would not accrue at the same rate. However if transition was monitored then costs and response could be scaled accordingly. In addition there would be monetary benefits in terms of welfare to householders; largely these would be classed as "transfer payments" rather than real resource impacts, except to the extent there is additional welfare from redistributing resources from the middle or top of the income distribution to the bottom of the distribution, which could be valued using the HM Treasury *Green Book* "equity weights" (as has been done for some other options – see later sections).

52. Significant benefits would accrue if the insurance industry implemented a voluntary cross-subsidy to manage premium costs for customers in high-risk areas. This could achieve the objective of easing the transition for the target group without government expenditure. There should be no additional costs for customers in general (compared with the current situation) as any voluntary agreement should replicate the historic cross-subsidisation and so perpetuate a cost already met by the wider customer base.

53. In summary, whilst the costs and benefits of Option 1 are difficult to monetise, the potential for low- or no-cost solutions to the problem potentially with "UK plc" benefits of **some share of £4-16m per year** plus any equity benefits to low-income householders mean this option is being consulted on for implementation alongside the further options set out below. Indeed a pilot scheme to trial approaches has already been launched to gather further evidence.

[24] See: http://www.defra.gov.uk/publications/2012/12/06/pb13841-frcp-prospectus/

Option 2 – A subsidised insurance pool for high-risk properties

Description of option

54. Working Group 1 recommended that government consider the viability and desirability of a subsidised insurance pool for properties at flood risk as developed and proposed by the Association of British Insurers (known as "Flood Re"). Such a pool would operate as follows:

    - A body would be set up to insure any household against flooding at a price set by government.
    - Where insurers can offer cheaper cover, they would do so, but for households that fulfil the pool entry requirements (which will be based primarily on whether the risk-reflective premium for that property exceeds some chosen threshold), insurers could choose to pass the flood risk to the pool. In doing so, the customer would pay a capped premium for the flood component of their insurance which would be ceded to the pool.
    - Claims costs for policies in the pool would be funded partly from the capped premium income. However if the pool only contained the capped premiums of pooled policies then funds would be insufficient to meet expected claims. This is because the policies in the pool would have risk-reflective premiums higher than the capped premiums. To ensure that the pool has sufficient income to cover the expected risk (claims costs), it would need to be subsidised. The ABI propose a mandatory levy on all UK insurers.
    - Under the ABI's proposals, a reinsurance contract would provide financial backing for the pool to help ensure that claims costs could be met even when the accumulated pool fund is in deficit, such as following a large flood event. Compared with other forms of providing financial cover (e.g. holding a capital reserve which would be subject to year on year fluctuation), reinsurance has the benefit of smoothing the annual variability of Flood Re's finances. However, reinsurance would not be available from the market for all potential claim scenarios which implies a need for either the industry, government or both to underwrite some situations.

55. Design choices for a pool are set out below and have implications for the level of support provided to households, the scale of any residual liability, and the costs, benefits and risks of the pool.

    - **The value of the industry levy**: a higher levy would reduce the exposure of the pool to losses (with excess levy revenue in any one year being used to build up a reserve) but would mean that impacts on bills would be more likely to be felt by all policyholders.
    - **The premium threshold for policies being pooled**: a high threshold would reduce the exposure of the pool but mean policies were affordable to fewer households.
    - **Proportion of flood claim costs retained by insurers**: the ABI proposal involves no risk retention by insurers, with the pool meeting the full cost of any claims. An element of risk retention would reduce the exposure of the pool and retain incentives on insurers and households to limit claims, but make offering cover less attractive to insurers, and policies proportionally more expensive to households.
    - **Degree of targeting of support, for example by policyholder income**: this would reduce the pool's exposure or size of levy necessary and helps avoid poorer households subsidising wealthier ones, but would involve extra administration. Imperfect targeting may reduce the policy impact, known as "deadweight".
    - **Type of cover supported**: buildings cover is a requirement for mortgages and prices are more sensitive to local flood risk, but limiting the pool to buildings policies would mean no direct support for social/private tenants.

56. A variety of pool designs have been explored with the ABI. The latest proposal has the following atttributes:

    - £180m levy p.a. to create a pool for ~500,000 households across all Council Tax bands except band "H".

- Subsidy is targeted towards those in lower Council Tax bands by increasing the cap for each successive band. The proposed net (of insurer overheads and profits) flood-only premium cap for a Band A household would be £210 (buildings and contents). This increases across the CT bands, reaching £276 for Band D and £540 for Band G. Taking account of average prices for non-flood perils and adding in an assumed 40% of the gross price for insurer overheads and profit leads to the estimated overall combined premiums under the Flood Re proposal set out below. These are presented alongside our estimated risk-reflective premiums under a do-nothing scenario, and corresponding estimates of average prices paid currently (under the Statement of Principles) by households at flood risk.

Estimates of overall gross premiums (combined buildings + contents) paid under Flood Re, a worst-case risk-reflective scenario and currently under the Statement of Principles

Council Tax Band	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Flood Re proposal	650	650	720	800	920	1100	1550	2490*
Risk-reflective	1140	1165	1185	1290	1430	1560	1850	2490
Current (SoP)	535	525	570	630	710	825	1145	1460

Note: * Band H is not included in the Flood Re proposal.
Sources: Flood Re proposal and data from ABI and leading insurers.

Analytical approach and assumptions

57. Estimates of revenue flows (premiums and levy) have been made, alongside projections of likely claims on the pool. Analysis is based on 1000 20-year simulations of flood events, drawn randomly from a distribution generated from industry data. This has allowed calculations to be made of the likelihood of deficit within the pool and has informed the calculation of economic costs and benefits.

58. The effective aggregate subsidy (i.e. the difference between risk-reflective and capped premiums) per Council Tax band is derived from the above premium estimates and national statistical data on household expenditure on insurance products by income[25]. The aggregate subsidy in each band is then multiplied by HM Treasury *Green Book* "equity weightings" in order to derive the "welfare" value for that band.[26]. In the *Green Book*, the equity weightings apply to income quintiles rather than Council Tax bands. In order to assign an equity weighting factor to each Council Tax band, the distribution of CT bandings has been divided into quintiles and then mapped to income quintiles assuming a perfect correlation between house value and income[27]. This results in the mapping shown below. The welfare (equity-adjusted) values for all Council Tax bands are then summed to determine the overall net equity benefit (see "Benefits" section and Tables 5 and 6 below for more details).

CT band	**Derived equity weight** (see text)
A	2.25
B	1.45
C	1.05
D	0.75
E	0.45
F	0.45
G	0.45
H	0.45

59. The following other assumptions have been made in the analysis of pooling options:

[25] Household spending on insurance in 2010. ABI Data Bulletin. May 2012. www.abi.org.uk/Facts_and_Figures/62677.pdf.

[26] The Green Book: Appraisal and Evaluation in Central Government. HM Treasury. 2003.

[27] During consultation we will seek evidence to refine this assumption in conjunction with Communities and Local Government.

- The insurance levy raises ~£180m per year. This is approximately equal to the estimated value of the current cross-subsidy for the 500,000 highest-risk households (Source: ABI discussions). Such a sum could be raised through a 2.6% levy on all domestic household insurance policies in the UK, which equates to ~£10 per combined buildings and contents policy;
- Collecting the levy incurs an administrative cost of ~£1m per year. This is a tentative working assumption at this stage;
- Administrative costs of the pool itself have been estimated using an ABI analysis of how a pool would be staffed and associated annual running costs incurred by the pool administrator. Defra has developed this analysis to include overheads and start-up costs incurred by the pool administrator, and the start-up and ongoing costs likely to be incurred by the insurance industry. In summary, the start-up costs of the pool (to all parties) are estimated at £7-11m and the ongoing costs also at £6-10m per annum. More detail on the approach used to derive the administrative costs of this and other options is provided in **Annex 5**.
- Insurers pass the full benefit of the price capping on to policyholders;
- Both buildings and contents policies can be ceded to the pool. In economic terms the rationale for subsidising the cost of contents insurance is weaker than that for buildings policies. This is because flood warnings can reduce damages to contents, and the wider economic costs of non-insurance explored earlier arise more in the context of buildings not being insured rather than contents. However, limiting the pool to buildings policies would mean no direct support for social/private tenants;
- Support can be targeted towards lower income households or lower council tax bands without deadweight or additional administration costs. In reality there would be a trade-off, with deadweight difficult to remove entirely. Targeting via council tax bands is the simplest approach but is imperfect.

Results of financial analysis

Table 4: Results of financial modelling of the Flood Re proposal.

Details	# of House-holds	Support received by lowest 20% earners	Support received by highest 20% earners	Expected annual pool 'profit'	Chance of deficit within 20 years	Chance of deficit being >£100m in any one year
Tapered support for all CT bands except band H, with reinsurance covering aggregate annual losses between £500m & £2bn (assumed)	500,000	31%	0%	£27m	58%	15.3%

60. Table 4 highlights the following:

- The pool income exceeds expected annual losses so over time the pool *should* be in profit most of the time,
- but the pool is exposed to significant losses if flood events cause damages in excess of the pooled funds or outside of the terms of the reinsurance contract. Recovering from this would require funding to be provided to the pool from general taxation or the insurance levy to increase in the following years, which would be likely to increase bills for all policy holders;
- Those on higher incomes are more likely to be insured and tend to have more expensive insurance, so are more likely to be in the pool – hence benefits will naturally tend towards the more affluent even when support is targeted towards those on lower incomes;

- The pool also has the potential to amass large surpluses, which demonstrates the large degree of variance in financial outcomes.

61. The variance in financial performance of a pool, and the scope for large liabilities from a large single flood event, or a series of smaller events, are key concerns with this option. Commercial reinsurance is likely to be available to underwrite a pool and could be used to manage these liabilities. Buying reinsurance would reduce the risk of large-scale losses, but would increase the frequency of smaller-scale losses as the costs of the reinsurance leave less levy income to meet claims from smaller events that fall beneath the reinsurance treaty excess. So while reinsurance can helps to smooth the losses, it means the pool is more likely to run into deficit over time, requiring either a higher levy (likely to mean higher bills for all policy holders), a higher premium threshold (making insurance less affordable for high-risk households), or more risk-sharing with insurers to avoid this. Other risks of a subsidised pool arise from asymmetric information: information on flood risks held privately by insurance companies may differ from that of the pool operator, and in some situations there may be incentives for insurers to cede policies to the pool that may not meet the criteria.

62. Analysis of the chance of the pool being in deficit also raises concerns. The chance of the pool being in deficit (and therefore needing to draw on extra funds, beyond the reinsurance contract) sometime within a 20 year period is some 58% (see Table 4). Note that although the chance of deficit tends to decline over time there can still be outcomes involving deficits in later years. The liability for the pool is therefore likely to require ongoing management even if a major flood does not occur in the first few years.

<u>Economic assessment of Option 2</u>

Costs

63. Many of the financial flows involved with a pool are transfers rather than net economic costs. For example, whilst the £180m raised in levy is a cost falling on the industry and likely to be passed on to policyholders, it is exactly offset by an equivalent gain to the pool ultimately benefitting (other) policyholders. It therefore does not constitute a net economic cost.

64. Central to any discussion of the costs of a subsidised pool like Flood Re is whether there are net economic costs associated with the transfer of flood liabilities from insurers (under the baseline) to Flood Re, which involves a concentration of risk since flood risks can no longer be pooled together with insurers' other risks (e.g. with offsetting risks which might be more correlated with dry weather like subsidence or fire). This means that more financial provision has to be made for each £1 of potential (expected value) flood claim in Flood Re, compared with that £1 of potential claim risk pooled with insurers' other risks. Whilst the risk itself has not increased, there is a greater cost of capital in providing reserves or other financial "cover" for a given amount of risk if that risk is not spread.

65. This cost of capital is either an opportunity cost in terms of profits foregone on higher-return activities, the cost of borrowing, or an increased reinsurance cost. In practice, the proposal for Flood Re is to cover a large proportion of the liabilities with reinsurance rather than holding large reserves. In this case, the greater cost of capital requirement associated with the concentrated liability shows up as a higher charge made by reinsurers than would be the case for a more mixed set of risks of the same value. Reinsurance may also be more expensive than other forms of covering liabilities, e.g. through general insurers' or Exchequer reserves, if the general level of return on capital which reinsurers seek is higher (e.g. because they hold the reserves in place of the customer).

66. The net economic cost of the Flood Re liability has been estimated by assessing the net charge for the portion of risk which is reinsured (claims above £500m, up to say £2bn), and comparing that with what it would have cost to provide for the same liabilities under the baseline. (NB this ignores any net economic cost associated with Flood Re liabilities below £500m and above £2bn). ABI approaches to reinsurance brokers suggest that the annual gross charge for Flood Re's reinsurance would be around £165m per year, for an annual expected value claim of £60m (based on expected pool losses; in practice there will be great variability in claims from year to year). This suggests that the sum of reinsurer's admin, overhead and capital costs (including profit) account for about 60% of the gross charge. The quotes obtained may not be representative so a lower cost

rate of 30% of gross charge (based on HM Treasury intelligence) has also been used to inform a range of net cost. For an annual expected value claim of £60m, the range of net cost of reinsurance is therefore estimated at between £26-105m per annum[28].

67. The next step is to subtract an estimate of the cost of covering the same "volume" of liability (i.e. an annual expected value loss of £60m under the baseline free market scenario. Although in practice, insurance takeup (under the "worst case" baseline) is estimated to be reduced by up to 7%, for the most part, insurance cover is likely to remain profitable for insurers and as an approximation a broadly similar level of liability is assumed as under the Flood Re option (albeit now managed by the industry as part of their wider risk provision). Data on the marginal cost of capital for general insurance liabilities is not available but an illustrative 10% has been assumed. This can be thought of as either the net opportunity cost of reserves or the net cost of reinsurance or other financial cover (e.g. borrowing). This implies the annual cost of capital for managing the liability under the baseline would be around £7m per annum. In **10-year present value terms**, the estimated cost of the liability under Flood Re and the baseline is presented below along with the net economic cost.

10-year PV costs (£m)	**Low case**	**High case**
a. Net cost of Flood Re reinsurance after expected claims (equivalent to overheads, capital costs and profit)	221	904
b. Cost of providing for equivalent liabilities under the counterfactual	57	57
Overall net economic cost of Flood Re liabilities (= a-b)	**164**	**846**

68. As **10-year Present Values** the estimated economic cost range for the additional net liability of the pool is therefore **£164-846m**. The large variation in these estimates reflects the range in assumed reinsurer cost and profit rates, but the key point is that the pool would impose net economic costs (compared with other options, other things being equal) because of the way high risks are pooled together and the net cost of managing this liability. Flood Re's design involves the use of reinsurance to manage the volatility in the scheme's spending. Alternative approaches would be to significantly increase the levy paid by all insurance customers (to provide a buffer for volatility), or through the Exchequer financing any shortfall and recovering it from Flood Re in future years. Either of these would apparently increase cost-effectiveness through avoiding the cost of reinsurance. However, increasing the levy would impact households with unpredictable and sometimes large costs, against the intended aim of the policy. Publicly financing shortfalls – which by using the lower cost of capital for the public sector would apparently reduce costs for a wide range of interventions in financial markets – would at the margin have the potential to cause government's wider cost of borrowing to increase, through increased and more unstable public borrowing. Alternatively, if it were to be accommodated within the existing fiscal envelope then there would be an opportunity cost associated with other public spending (potentially with a much higher economic return) having to be curtailed. Furthermore, for the Exchequer to manage significant financial variability through the general account in this way would expose public finances to unhelpful volatility.

69. In addition to the costs of the liability, there are costs of administration. These are estimated to be ~**£1m** for administering the levy plus **£7-11m** of setup costs to establish the pool (of which £4-6m would be for the administrator and £3-5m for insurance companies and brokers). Once the pool is up and running there would be an estimated ongoing cost of **£6-10m per annum**, with £4-5m incurred by the administrator and £2-4m to the industry. For more details of the administrative cost calculations see **Annex 5**. Adding set-up costs to ten years' worth of ongoing costs (and assuming half of the ongoing cost would be incurred alongside the start-up cost in the first year), total present value administration costs are in the range **£67-98m**. This includes the levy collection cost. The range reflects different assumptions regarding the average staff cost rate (see Annex 5).

[28] Net cost of reinsurance is calculated as c% of the gross charge (with c = 30-63%). Gross charge is (Expected value of claim)/(1-c). So for an expected value of £60m, Gross charge is £86m-£165m, meaning net cost of reinsurance is £26-105m.

70. In total, the range of 10-year Present Value costs is therefore **£231m to £944m**. Basing the best (central) estimate on the mid-point suggests a **10-year Present Value cost** of **£588m**.

Benefits

"Equity" benefits

71. The financial benefits of a subsidised pool are also often transfers rather than net economic benefits; for example, the implied subsidy to policyholders. However there is an economic "equity" benefit associated with the subsidy where recipients are relatively income-deprived.

72. There is a positive equity benefit for those in Council Tax bands A to C offset by a negative equity benefit arising from supporting the remaining Council Tax bands, giving a net equity benefit of **£35m per year** (See **Table 5**). This is a relatively small net benefit in comparison with the total aggregate subsidy, a result that arises because the higher council tax bands D-G (and by implication income groups) still receive a reasonably large share of the subsidy (40%), which is only slightly offset by subsidy accruing to the lower bands (60%). The targeting of lower council tax bands in Flood Re only just redresses the inherent regressive tendencies of a subsidised pooling option.

Table 5: Effective annual subsidy and net equity benefit by Council Tax band.

CT Band	A	B	C	D	E	F	G	H	**Total**
A. Aggregate financial subsidy (£m)	39.7	48.2	56.4	45.1	30.9	12.9	6.9	-	**240.2**
B. Equity weight	2.25	1.45	1.05	0.75	0.45	0.45	0.45	0.45	
C. Equity-weighted subsidy (£m) (=AxB)	89.3	69.9	59.2	33.8	13.9	5.8	3.1	-	**275.1**
D. Net equity benefit (£m) (=C-A)	49.7	21.7	2.8	-11.3	-17.0	-7.1	-3.8	-	**35.0**

"Participation" benefits

73. In addition to the equity benefit, there will be economic benefit arising from keeping households in the insurance market and avoiding the wider economic costs of non-insurance. For the pool option, this has been estimated by assessing the degree to which premiums are reduced compared with the baseline (do-nothing option), and applying the price elasticity estimates per income quintile (discussed earlier) to determine the increase in demand.

74. With the pool in place, it is estimated that about 30,000 households are "kept" in the buildings insurance market compared to the worst case "do-nothing" baseline. (This compares with about 40,000 households which are estimated to drop out in a move from the current situation (Statement of Principles) to the worst-case do-nothing option). This results in a reduced economic cost of non-insurance compared with the baseline, and therefore a net economic "participation" benefit of Flood Re of an estimated **£9m per year** (See **Annex 4** for details of the calculations). Applying a similar "half and double" range as for the baseline cost, gives a range for annual "participation" benefit for Variant 1 of **£4m – £17m**.

75. It should be noted that, under the pool, the benefit of bringing households at flood risk back into the market for insurance, compared with the do-nothing baseline, is ultimately being achieved through cross-subsidy from those at low or no risk, who pay marginally higher insurance premiums as a result. The fact that premiums increase for these low-risk customers implies some of these may reduce their demand for insurance compared with what it would have been under a free market scenario, meaning reduced cover for other perils such as fire, burglary etc[29]. However, as discussed in paragraph 41, we assume that, taking into account the fact that those who re-enter

[29] The reduction compared with the current situation in which the Statement of Principles still provides for some cross-subsidy will be lower, however.

the market under the pool also face these "other perils", the impacts of any reduction of insurance in the low flood risk group are broadly offset.

Total benefits

76. The total annual economic benefits of the pool ("Flood Re") are therefore an equity benefit of £35m (paragraph 72), plus a reduction in the costs of non-insurance ("participation benefit") of £4m-17m (paragraph 74), resulting in a **total benefit of around £39-52m per year, or £336-448m as a 10-year Present Value benefit**. Taking the mid-point of this range gives a central (best estimate) Present Value benefit figure of **£392m**.

Net Present Value

77 Subtracting costs (paragraph 70) from benefits (paragraph 76), the economic **Net Present Value of Flood Re over 10 years** therefore ranges between **-£608m** (combination of low benefits and high costs) **and +£217m** (high benefits and low costs), with a **central (best estimate) figure of -£196m.**

Unmonetised factors

78. Flood Re (and other options for intervention discussed in this Impact Assessment) would also lead to mitigation of some of the wider impacts arising under the "do nothing" scenario (as set out in the final bullet of **Box 2** on page 13), namely the avoidance of localised instability in housing markets, potentially including property "blight". It could also give confidence to mortgage lenders concerned about the impact of high premiums on buyers' finances, maintaining mortgagability and hence saleability of properties in flood risk areas. Offsetting these impacts may be some "allocative inefficiency" from intervening in the market and preventing price signals for insuring against flood risk developing. However, the measure is intended to be time limited and aims to smooth transition to risk-reflective pricing, offsetting costs arising from a rapid transition, were that to occur under the baseline.

Summary and conclusions of the assessment of a subsidised "Flood Re" pool (Option 2)

79. Based on the monetary analysis above, the economic performance of a "Flood Re" pool appears highly uncertain. Although there may be situations where the pool generates a positive net present value in economic terms, the best estimate involves a negative net present value (after considering costs though before considering wider non-monetised factors). It should be noted however that a key driver for this result is the uncertain extent of the net economic cost or inefficiency from transferring correlated flood risks into a separate pool, especially if managed using reinsurance to smooth the annual variability of claims and make Flood Re's finances more stable. In terms of monetised benefits, estimates are highly tentative but benefit associated with improved equity appears more significant than keeping customers in the market for wider economic reasons.

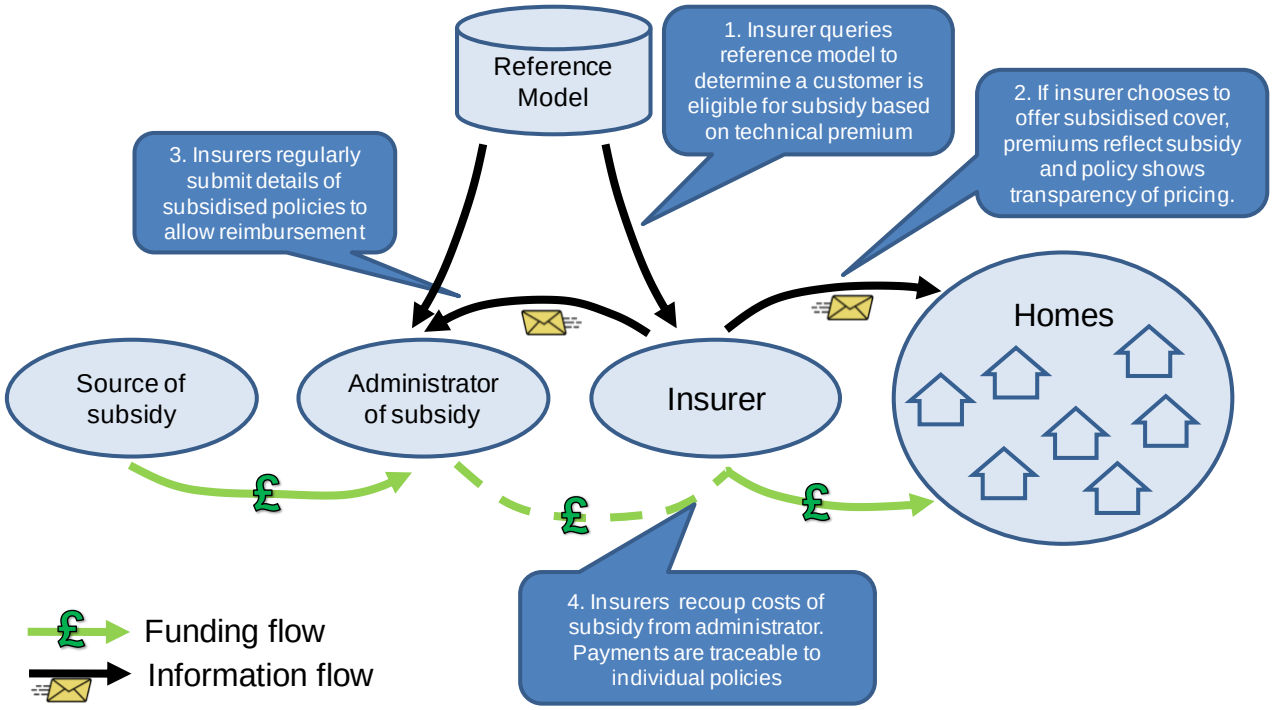
80. **Implications of alternative baseline transition**: Where a counterfactual "do nothing" transition to risk-reflective pricing would actually have been slower or more partial (without the pool) than assumed in the analysis above, then the net benefit of Flood Re is further reduced. Introducing the pool will of itself tend to accelerate risk-reflective pricing by insurers, since by pricing in this way they can transfer flood risks to the pool. Even making a commitment to monitor the market with a view to introducing a pool in the future may have some accelerative effect on risk-based pricing.

Option 3 – Direct subsidy of insurance premiums

Description of option

81. Under this option, government would provide a subsidy to those within a defined target group for intervention, to bring their insurance premiums down to more affordable levels. Insurers would continue to price risk and provide all the other aspects of insurance they do currently: write policies, carry risk and handle and meet claims.

82. There are two ways that such a model could be delivered. Firstly, a subsidy could be channelled through insurers, based on evidence of the policies they have written for the target group. **Insurers could be reimbursed for offering a discount to insurance premiums** based on some verified evidence of policies written. It would then be up to insurers to distribute the subsidy within their customer base. Insurers would still be free to set the overall policy price, while informing the customer about the discount they have received on the flood component of the premium. Such arrangements could be **administered by a third party, and funded by a levy** on the insurance industry. The diagram below sets out how such a model could work.



83. A second model would be to **provide the subsidy directly to end customers**, either based on a top-down assessment of the individual households to be targeted, or through an application by households that would provide information on the location and perhaps containing one or more insurance quotes. Subsidy could then be paid, either in the form of a "voucher" for which an insurer could then be reimbursed, or as a direct payment. This approach might have an economic efficiency advantage in that consumers would still "see" risk-reflective insurance prices and therefore experience at least some signalling of flood risk, though administrative burdens may be higher than subsidy delivered through insurers.

84. Under any approach to premium subsidy, an agreed "reference model" of flood risk and technical premiums would probably be required, to avoid divergent views amongst the industry and government about the true level of risk-reflective premium and therefore the due subsidy..

Costs

85. The economic costs of any direct subsidy scheme will be restricted to administration as although there will be a monetary amount associated with any payment mechanism, this will be a transfer payment, exactly offset by a corresponding benefit to policyholders. The functions associated with this option will be different from that of a pool, e.g. while there will be no costs from handling claims and a reduced auditing requirement, there will be the need to support the development of a reference model for flood risk and a process to regularly reimburse insurers for eligible policies that they have written. Taking these different factors into account, for a subsidy scheme of similar scale to a pool, ongoing running costs are estimated to be slightly higher overall, at **£10-16m per annum**, although overall setup costs would probably be a little lower at around **£6-9m**. Out of these costs, ongoing costs to the insurance industry are estimated to be similar to those under the pool (£2-4m pa), but costs to the administrator would be higher. However, setup costs to industry are likely to be higher under the subsidy option than the pool (by about £1m) due to the need to roll

out the reference model within companies. (For more details of cost calculations see **Annex 5**). An industry levy could be used to raise funding for the subsidy itself – this is not included as it is a transfer payment from one set of policyholders to another. However, there would be an economic cost associated with admin in raising the levy, which would be similar to that under Option 2 and assumed to be around **£1m per year**. Overall, adding setup costs to ten years' worth of ongoing costs (again assuming that half of the annual ongoing costs would be incurred in the first year), the Present Value total admin costs are in the range **£98-145m**. These are 40-50% higher than Option 2 due to the increased ongoing costs. As before, the range is determined by different staff cost rate assumptions (see Annex 5).

86. Although the insurance industry will write more policies under Option 3 than the "do nothing" baseline, with implied costs in terms of capital or reinsurance holdings, this can be recouped directly from policyholders or subsidy payments. This will not involve an inefficient separate pool of risk (as under Option 2), and there will be no associated net economic cost from this separation. As such, the total economic cost of Option 3 is restricted to the admin cost, of **£98-145m (Present Value), with a central (best estimate) figure of £122m**.

Benefits

87. A direct subsidy scheme could operate in a similar way to a pool (Option 2), albeit with reimbursement of premium above a threshold rather than setting an ex-ante cap, and without the establishment of a pool of risk with the ensuing new and separate liability. There are similar design considerations in setting the premium threshold level and targeting interventions towards those on low incomes as for Option 2. The economic benefits of a direct subsidy scheme (Option 3) are viewed as similar to those of a pooling arrangement (Option 2) of similar scale and, as for that Option, composed of:

- An "equity" benefit from subsidy directed towards those in lower income groups;
- A "participation" benefit from keeping people in the insurance market, with associated avoidance of the wider economic impacts of non-insurance.

88. However, a risk with a direct subsidy scheme is that insurers will not find it sufficiently attractive to offer cover to customers in high-flood risk areas despite the subsidisation of premiums. This is because insurers will continue to hold the risk and hence potential claims costs compared with a Option 2 where premiums are subsidised and risk is transferred to a pool (Flood Re). This suggests that the benefits for Option 3 should be lower than for Option 2 to account for potentially insufficient competition within the market to provide affordable insurance for the target group despite the subsidy.. In other words, insurers may be more reluctant to compete on price as aggressively as they might under the pool option, as they will be retaining the flood risk. The aggregate amount of price subsidy offered to consumers may therefore be a little lower than under the pool option where insurers no longer have to carry the risk.

89. Furthermore, without very careful design and implementation there would be potential for the subsidy system to be gamed and/or for the full benefits not to be passed onto consumers (greater potential than in other Options). Taking account of these two benefit-reducing factors, we assume that the economic benefit of the direct subsidy option is 20% lower than for the pool Option 2, based on (at this stage) arbitrary 10% reductions for each issue (i.e. insurer risk retention, and gaming). This suggests annual benefits of **£31-42m per year** or **£267-358m** as a 10-year Present Value. Taking account of costs, the overall Net Present Value of the direct subsidy is therefore tentatively put at between **£122 - 260m, with a central (best estimate) figure of £191m**. As for the pool Option 2, the subsidy Option 3 would also help mitigate the wider non-monetisable impacts of the do-nothing option, albeit potentially with some non-monetised allocative efficiency cost (see paragraph 78).

90. **Implications of alternative baseline transition:** As before, the basis of economic considerations is in comparison with the "worst case" baseline which implies immediate transition to full risk-based pricing. The caveats set out in the discussion of Option 2 associated with the estimation of benefits apply equally to Option 3. Like Option 2, the net benefits of the approach will be lessened if the transition to risk-reflective pricing under the "do nothing" counterfactual would have been less severe than assumed for analysis. Also like Option 2, introduction of the subsidy may itself hasten adjustment to risk-reflective pricing (before accounting for the subsidy), though this effect may be

less marked under the subsidy option since insurers do not have an incentive to accelerate a transfer of risk to a third party (the pool).

Option 4 – Regulate for the availability of affordable flood insurance through a "flood insurance obligation"

91. This option would take the form of an obligation on insurance companies to each underwrite a certain proportion of UK households defined as being at high flood risk. Creating a level playing field for insurers via regulation would avoid the competitive pressure to withdraw from flood risk areas and create a market for high flood risk properties. The need to offer sufficiently attractive terms to such households would mean insurance is more readily available and affordable. This measure would be transitional over a reasonable period to allow the property and land values to adjust more slowly to levels of local flood risk, and for choices to be made by householders and public authorities in terms of mitigating actions.

92. The option would work as follows:

- The scheme administrator(s) would develop a "reference model" of property flood risk to identify households at risk of flooding, from all sources, and the expected annual likelihood of flooding for these properties. This is used to establish a target group of high risk households that may be more likely than others to experience difficulties with insurance.
- Insurers are obliged to show that they are covering a specified number of target households (provisionally anticipated to be in terms of both contents and buildings cover). Insurers' share of the target is determined by their share of the UK household market. The obligation applies to all insurers operating in the UK household market above a specified *de minimis* threshold so there is no obligation for the very smallest firms or very newest entrants (to allow them to build up a critical mass of policies and avoid barriers to entry).
- The administrator(s) enforces compliance if the obligation is not met. Potentially, there could also be scope for "trading" so that an insurer could avoid non-compliance costs by buying 'credits' from another insurer that has exceeded their obligation, although we do not anticipate that this trading would be mandated. Insurers below the *de minimis* threshold would be able to sell 'credits' for households they underwrite to those with a target to meet.
- The obligation is reduced over time by increasing the level of risk before a property is included in the target group, or by relaxing the number of households that need to be covered.

93. The regulation would not specify the prices offered to customers by individual insurance companies. These will depend on a number of factors, including how easily each insurer is able to meet the obligation through their existing customer base or (potentially) by trading their obligation with competitors. A key difference between this option and Options 2 and 3 is that, under the obligation, the price of insurance would be set at the level of the individual household thus helping ensure affordability, as individual insurers would be under an obligation to provide cover to a certain number of high-risk households. Under Option 2 (pooling) the price of insurance would be set nationally by the Government at a level which, even if lower than the risk-reflective price, still might not be affordable for an individual household. Under Option 3 (subsidies) insurance would be offered at the risk-reflective price less a subsidy, the level of which was again set nationally by Government: again, this still might not be affordable for an individual household.

94. However, in order to make sure the objectives of this option are met from a policy perspective Government would retain control over certain levers, as follows:

- Size of the target group; This is a design choice and the relationship between the target group and the overall market has a bearing on pricing outcomes and the impact of the policy;
- The overall proportion of the target group that insurers need collectively to underwrite. As some households have opted not to insure themselves even at historically discounted prices, the overall obligation would be set at less than 100% of the target group.;

- Nature of the enforcement regime (including size of financial penalties or other non-compliance costs) if the obligation is not met. Penalties or costs would need to be set sufficiently high to provide the incentive for insurers to compete to provide cover to target households (as a cheaper alternative to paying the penalty), but not so high as to introduce instability to the market (e.g. because insurers rush to offer extremely cheap insurance to avoid paying punitive fines). The competition for the target market is the mechanism by which prices are driven down from potential free market (risk-reflective) levels. The difference between premium revenue gathered by insurers from the target market, and the cost of cover (i.e. the technical premium) is then recouped from other customers, replicating the existing cross-subsidy in the market.

Costs

95. In terms of costs which can be monetised, the net economic cost of this option is the cost of administering it, including the cost to insurance companies of targeting potential flood risk customers. Other costs such as the implied cross-subsidy are, before considering equity issues, transfer payments. Note that it is not envisaged that insurers will be required to provide policies which would have been unprofitable under the baseline, because of very high levels of flood risk, i.e. the obligation will be scaled to mirror the existing cross-subsidy (or some proportion of it), not go further than this to include inherently uninsurable risks. In this sense it is comparable with other options but the route to achieve cross-subsidy is different. Relative to the direct subsidy option (Option 3), the regulatory option may involve:

    - lower annual running costs, as there will be no levy to collect and manage, and claims for subsidy reimbursement will not need to be processed;
    - lower costs to insurers as there will be no levy to manage and flood risk premiums will not need to be calculated separately for subsidy purposes, but potentially offset by extra marketing costs from targeting flood risk customers to meet the obligation;
    - higher administration costs falling to the regulator of auditing insurers' performance against the obligation. There are choices surrounding reliance on self-reporting versus more intrusive regulation, but there is a potential trade-off here between minimising burdens on the insurance industry and chances of success in meeting the policy outcome.

96. Admin costs are estimated at between **£6-8m** in terms of one-off costs (with £4-6m incurred by the insurance industry and £2m by the regulator(s) of the obligation). These are broadly similar to those of the direct subsidy option (Option 3) and a little lower than those of the Flood Re pool (Option 2) which involves a one-off transfer of policies with associated cost. Ongoing administrative costs of Option 4 are estimated at **£6-10m per annum**, with £2-5m falling to the insurance industry and £4-5m to the administrator(s). One admin saving associated with Option 4 compared with the other options is that a levy would not be involved (direct administration of which costs around £1m under Options 2 and 3 with additional costs in the industry). The ten-year Present Value costs of Option 4 are estimated at **£58-89m with a central (best estimate) figure of £74m**. These are around 40% less than the admin costs of Option 3, and 10-15% less than those for Option 2. (Besides admin costs, the latter also involves a large cost associated with the additional liability of the pool).

Benefits

97. Benefits depend on the level of price reduction achieved in the target population compared with the "do-nothing" baseline. The primary mechanism for driving price down within the target group is competition amongst insurers to fulfil their obligations and avoid costs of non-compliance. The relationship between the obligation, penalties and impacts on price is complex; in practice the impacts of the obligation would have to be monitored by the regulator and design "levers" (see paragraph 94) fine-tuned as necessary. Initial analysis of key market and price impacts is provided in Box 3 (see below). For the purposes of cost-benefit analysis, we assume that the obligation is set at a level that results in the existing level of take-up of insurance within the target group being maintained. This implies there will be economic benefit in terms of enhanced market participation compared to the "do nothing" baseline (assuming, as for the other options, that there is no net negative "participation" impact for other perils – see the discussion at paragraph 75). Whether there is any "equity" benefit will depend on the degree to which the obligation encourages particular competition for lower income households. It may be that insurers are incentivised to

insure smaller properties with lower claim costs and less risk for a given annual likelihood of flooding, which may provide indirect equity benefit. The different nature of the regulatory option means that there is not an in-built propensity to skew benefits towards higher income households which then needs correcting as there is with both Options 2 and 3. The only other way in which equity benefit may arise is if poorer customers are more responsive to competitive strategies and companies give poorer customers a better deal (more subsidy) than richer ones. This is not clear. At this stage no equity benefits have been credited to the option.

Box 3

Price impacts of the Flood Insurance Obligation

- An obligation would lead to insurers applying discounts (either implicitly or through explicit estimation) to risk-reflective prices. This means an element of risk-reflective pricing would remain within the target group (to the extent it would have arisen under the do-nothing scenario); which would incentivise risks to be managed and avoid moral hazard amongst high risk households.

- It is assumed that insurers would be able to meet their obligation through trading, with all high risk households worth the same towards meeting targets (ie. no differentiation between higher and lower households within the target group). This would tend to imply that the same value of discount would be offered to all households within the high risk group (regardless, for example, of their income level or other characteristics).

- However, insurers are likely to seek out the lowest risk households within the target group first. The creation of a new market for high-risk households is likely to drive increased activity by specialist brokers etc. As insurers use different means of assessing risk, most households without a history of claims should be able to secure affordable insurance by shopping around to find the insurer with the lowest risk assessment for their property.

- The obligation would be designed to minimise any potential volatility in price effects. Allowing trading, setting the level of penalties so that it does not lead to excessively-large subsidies being offered (e.g. by including an implicit "buy out price") and a continuous obligation (rather than regular compliance dates) should lead to price stability.

- As less affluent customers in lower value properties will entail lower claim costs, there may be a naturally progressive nature to the obligation. However, this will need to be monitored, and we are also considering what facilitative measures would need to accompany any obligation (e.g. information etc) so that customers are aware of their options.

- At the outset, insurers will set their pricing strategies for all customers before knowing what discounting will be required to meet their obligation. They are therefore likely to begin with a higher than necessary cross-subsidy paid by low risk policyholders. If less than this cross-subsidy is needed to meet their obligation insurers will take a profit. Insurers are likely to also take a profit where they are able to secure a customer at a higher price than the discounted prices offered in general. This could be when the discounted price is lower than is currently paid – the insurer could charge the same as now and profit from the unused discount. Over time competitive pressure should minimise the scope for both these areas of unintended profits

98. Participation benefits and therefore the total benefits of Option 4 are estimated to accrue from avoiding the costs of non-insurance compared to the "do-nothing" case. We assume at this stage that benefits would accrue at 10-15% less than the maximum possible £6-£24m benefits which would be achieved if all the households dropping out of the market under the do-nothing case came back into the market. The reason for the (at this stage arbitrary) reduction is that there may be households which insurers regard as being at flood risk (and charged accordingly under the do-nothing scenario) but which are not recognised by the reference model used for setting the obligation. In other words, there may be some mis-targeting based on information asymmetries between the industry and the regulator. Note also that, as highlighted in Box 3, there will be a

tendency for the highest risk customers to be targeted last under the Obligation, after lower risks have been secured. After applying the 10-15% adjustment to reflect these issues, this suggests a range in estimate of **£5-22m** for the annual benefits of Option 4, which translated into 10-year Present Value benefits is **£43-189m with a central (best estimate) figure of £116m**.

99. After taking account of costs, the overall **Net Present Value** of Option 4 over 10 years is therefore in the range from **-£46m to +£131m with a central (best estimate) figure of +£43m.** As for Options 2 and 3, the Obligation would also help mitigate the wider non-monetisable impacts of the "do-nothing" scenario such as avoidance of sharp adjustments and blight in local property markets, and help maintain mortgagability, albeit potentially at some cost in terms of allocative efficiency through intervening in an otherwise free market (see paragraph 78).

100. **Implications of alternative baseline transition:** As before, this range is based on comparison with the "worst case" do nothing transition to risk-reflective pricing. As for the other options, if the obligation is introduced and the do nothing transition would have been less severe than estimated, net benefits will be reduced. Unlike Options 3 and (especially) 2 however, Option 4 may be able to be held as a reserve intervention along with a strategy of monitoring the market without accelerating risk-reflective pricing by insurers.

Other options considered

Greater targeting of flood management investment

101. The flood risk management investment programme already prioritises funding towards flood defence schemes in deprived communities at significant flood risk. This is justified on economic welfare grounds: those at the bottom of the income scale value marginal benefits more highly than those higher up the distribution (as reflected in the HM Treasury *Green Book* "equity weights" discussed elsewhere) and annual average flood damages are greater in higher risk situations.

102. However, there could be scope to go further either to a) invest additional capital to enable schemes which would benefit the target group, but not currently , to go ahead; or b) to further "skew" investment decisions towards the target group within existing budgets. However, this would represent an indirect way of addressing the immediate policy problem relating to insurance availability and affordability – though clearly ongoing investment in appropriate flood management is vital to the long term operation of the insurance market.

State provision of flood insurance

103. Working Group 1 noted the international precedent for state provision of flood insurance, in place of private market provision. In the Netherlands and the US, the state is effectively insurer of flood risks, with no private provision. In France, there is private provision of a tightly-regulated and state-backed natural disaster insurance scheme. However, the Working Group noted (and this Impact Assessment reconfirms) that such approaches do not seem to be a proportionate solution to the problem identified, and go beyond the essentially transitional rationale for government intervention in the UK context where private insurance provision is seen as being efficient, sustainable and profitable as long as risk is managed within certain bounds. As such, state provision of flood insurance has been ruled out from the "long list" of potential approaches.

Summary and conclusions of options assessment

104. Summary results of the options assessments reported above are set out in the table overpage.

Summary of options assessment (£m, 10-year Present Value except where stated)

Option:	**1 (Do minimum)**	**2 ("Flood Re" Pool)**	**3 (Subsidy)**	**4 (Obligation)**
Total cost *high-low (central)* *of which:*	n/a	944-231 (588)	145-98 (122)	89-58 (74)
Adminstration/operation		98-67	145-98	89-58
Cost of separate liability		846-164	-	-
Total benefit *low-high (central)*, of which:	n/a	336-448 (392)	267-358 (313)	43-189 (116)
Equity	n/a	~300	~240	Not by design but may be inherent equity benefits (not estimated)
Participation	n/a	34-146	27-117	43-189
Net Present Value *low-high* *(**central**)*	n/a	**-608 to +217** **(-196)** *	**+122 to +260** (**+191**)	**-46 to +131** (**+43) ****
Benefit:Cost Ratio (central)	n/a	0.7 *	2.6	1.6 **
Main non-monetised impacts (see para 78)	Benefits: Mitigation of potential sharp adjustment/blight in local property markets, maintaining mortgagability etc (smaller impact than Options 2-4)	***Costs***: some potential for reducing insurance take-up for non-flood perils in low/no risk group compared with do-nothing baseline (assumed to be offset by b) below). Some allocative inefficiency (though time-limited). ***Benefits***: a) Avoidance of potential sharp adjustment/blight to local property markets under the "worst case" baseline, maintaining mortgagability etc. b) Maintenance of insurance for non-flood perils in the high flood risk group (where policies remain "bundled" under the baseline).		
Implications of slower transition to risk-reflective pricing under the baseline	NPV might tend to decline but can be maximised through monitoring and adaptation	NPV declines. Holding implementation in reserve is not an option since this would accelerate a move to full RRP by industry to trigger introduction and risk transfer.	NPV declines. Holding implementation in reserve may be possible if subsidy unattractive to industry; though it may still accelerate a move to full RRP.	NPV would decline if obligation introduced. But scope to hold introduction as a reserve option which would help maximise NPV since it would only be introduced if needed.

Notes:

* - Result driven by potential for large economic costs of covering a separate pool liability, but the magnitude of these costs is a particular uncertainty.
** - Result may be improved if there are equity benefits.

105. Analysis suggests that:

- Option 1 (do minimum) could be net beneficial but this is critically dependent on being able to acquire a good proportion of the benefits of reducing non-insurance for a limited outlay. This is highly uncertain, although in any event, some of the approaches examined may complement other options.
- Option 2 (pooling) can offer benefit in terms of equity and market participation by households (subject to specific design), but economic performance appears very variable. The key issue is the potential economic cost of any net liability for a separate flood insurance pool, with the expected costs of managing this liability highly likely to be in excess of the benefits delivered to high risk households, particularly if reinsurance is used to smooth Flood Re's finances. However, Flood Re may offer two things not achieved by Options 3 and 4 – namely, better confidence in the actual cost of flood insurance to consumers in the medium term (which would be more firmly within Government's control than under a subsidy or obligation), plus industry support in managing a smooth transition to Flood Re pricing in the immediate term (Flood Re is the industry's preferred solution).
- Option 3 (direct subsidy) appears more promising in that overall Net Present Value is positive, though one particular note of caution is that benefits have been subject to fairly arbitrary scaling (compared with Flood Re) to account for insurer non-participation and potential gaming, which are particular issues with this approach. It also does not command the degree of support of the industry as Option 2. Note that both Options 2 and 3 would need State Aid approval from the European Commission.
- Option 4 (regulate for the availability of affordable flood insurance through a Flood Insurance Obligation) would also appear cost-beneficial. Pricing impacts will depend on a range of factors and will need to be investigated further, as will the extent of any "equity" benefit to low-income groups which is not included in the figures. The cost-benefit analysis may not however reflect any inefficiencies or costs associated with a known lack of industry support of mandatory regulation which could make transition and introduction difficult.

- All options have been assessed relative to a "worst case" do-nothing baseline, where the Statement of Principles is not renewed and a free market for flood insurance is established with an immediate transition to risk-reflective pricing. Where one of the options is implemented and the true "do-nothing" situation would have involved more gradual or partial transition, the benefits of the approaches analysed will turn out to be less than estimated. This will also be true to the extent that the marginal price increases to low or no risk customers (compared with a do-nothing scenario, if not the current situation) who will be subsidising high flood risk customers under the options turn out to have any material net impact in terms of reduction in household insurance to cover non-flood perils (after allowing for increase in insurance of such perils amongst the high flood risk group). On the other hand, some benefits have not been monetised in the assessment – notably the avoidance of the impacts of any sharp adjustments in local property markets and potential maintenance of mortgagability.

- The general level of uncertainty in the benefit-cost analysis is again highlighted; estimates are based on a large number of assumptions and the analysis is perhaps most useful as a framework for expressing the pro and cons of different approaches rather than as a set of firm numerical estimates, at this stage.

Preferred policy approach

106. The preferred approach is currently being determined in conjunction with Ministers and alongside ongoing discussion with ABI and the results of wider consultation. The views of consultees on the merits of the different approaches are invited.

Risks and assumptions

107. There are inherent uncertainties in much of the analysis presented here both in terms of information on which to base policy design (much of which is privately held by the insurance industry) and the degree of confidence surrounding policy outcomes. The latter ultimately depend on insurer and household behaviours – which in turn are dependent on the fundamental underlying uncertainty surrounding flood risk. All of these uncertainties interact. However the quality of the evidence (both qualitative and quantitative) is considered appropriate for a consultation stage assessment, particularly in terms of highlighting the basic impacts of the different options and their relative (if not absolute) costs and benefits to promote debate on potential interventions. Further analysis will be taken forward in light of additional information coming forward during consultation to refine interventions as arrangements for a preferred approach are worked up.

108. Besides the fundamental uncertainty regarding speed of market adjustment referred to above, a further area of uncertainty surrounds the real economic costs of allowing households to withdraw from the insurance market because of excessive prices. In particular, analysis is based on a simple Price Elasticity of Demand analysis rather than a fully-specified demand function for insurance. This is a very simplified approach and has embodied a number of assumptions both in terms of the level of PED and its application to large price changes (see for example Annex 4). Whilst the estimate of £6-24m per year (with a central estimate of about £12m per year) is clearly uncertain, it is felt to be a reasonable indication of the order of magnitude, and we are continuing to work on improving our understanding of the real demand relationship for insurance.

109. Finally it should be noted that the economic assessment of all options is based on the fact that they are intended to facilitate an orderly and equitable transition from the current situation of informal cross-subsidy (and implicit moral hazard arising from blunted incentives for local flood risk management) to a more economically-efficient future where flood risk is better signalled and moral hazard in development and risk management decisions is reduced. In a situation where transitional measures become more permanent, then issues of allocative inefficiency and moral hazard would persist which would tend to imply additional economic costs from sub-optimal decisions being perpetuated.

Costs and benefits to business

110. Estimates of direct costs to business (consistent with the Better Regulation Executive “One In, Two Out” methodology) under the options are set out in Table 8 below. The central estimates reported in the summary sheets are the mid points of the ranges (shown in brackets below).

Table 8: Direct costs to business (£m)

Option	**1 (Do minimum)**	**2 (Pool)**	**3 (Direct subsidy)**	**4 (Obligation)**
Total one-off (admin)	0	2.7 - 5.4	3.7 – 6.4	3.7 – 6.4
Annual - admin	0	2.1 – 4.3	2.1 – 4.3	2.5 – 4.9
10-year Present Value (includes half of annual cost in start-up year)	0	20 – 40	21 – 41	24 – 46
Equivalent Annual (BRE EANCB basis – early estimates only)	0	2.3 – 4.7 (mid: 3.5)	2.5 – 4.8 (mid: 3.6)	2.7 – 5.4 (mid: 4.0)

111. Costs to business include the shares of administration costs falling to insurance companies and brokers, as estimated in the earlier costs and benefits sections in this impact assessment. These are broadly similar for the main Options 2-4 (see first two rows of Table 8 above).

112. The levy on the insurance industry which would be introduced under Options 2 and 3 would very likely be classified by the Office for National Statistics as a tax, and is therefore not in scope for the "One In, Two Out" assessment. Similarly, HM Treasury advise that the cross-subsidy arrangement which the industry would effectively be forced to operate under the Obligation (Option 4) would likely be classified as "imputed tax and spend". Again therefore, although this also involves a first round revenue impact on insurers (as for the formal levy in Options 2 and 3), this is out of scope of One In, Two Out (and will be recouped by insurers from customers). All costs to business calculations are currently tentative however and will be firmed up as proposals are developed post-consultation.

Annex 1: International flood insurance comparisons

1. Internationally there isn't a single model for flood risk insurance which is near universally applied. Rather, there is a continuum of models with varying degrees of insurance penetration and cover provided. Broadly the models can be grouped into:

    - Free market private sector insurance
    - Tightly regulated State-backed insurance schemes
    - No private sector insurance market - State bears the risk

Free market private sector insurance

2. In **Germany** there is little government intervention in the flood insurance market. Buildings insurance doesn't cover flooding or other natural hazards as standard but extended coverage for natural hazards is available as an add on.

3. Insurers use a system of flood risk zoning known as Zonierungssystem für Überschwemmung, Rückstau und Starkregen (ZÜRS) to set premiums and excesses which are reflective of the flood risk. Coastal flood risk from storm surges is excluded. Insurance cover is generally not available to properties in the highest ZÜRS zone (areas with a 10% annual flood probability or greater).

4. Since natural hazards cover is an optional extra, flood risk insurance penetration is very low. Widespread river flooding in Germany in 2002 caused an estimated €11.6 billion damage of which insured losses were around €1.8 billion (domestic and business). The Government provided a €7.1 billion reconstruction fund which was supplemented by funding from the European Solidarity Fund and private donations.

5. Other countries with a private sector insurance market include **Australia** and **Japan**.

Tightly-regulated state-backed insurance schemes

6. In **France** there is a private insurance market but reinsurance by the state-run 'Caisse Centrale de Réassurance' is possible where losses as a result of flooding are subjectively classified by a commission of Government ministers as 'a state of natural disaster'. The inter-ministerial decree can specify which locations and types of damage this guarantee applies to.

7. The natural disaster extension on household insurance is obligatory and therefore insurance penetration is almost 100%, although household insurance itself is only obligatory for tenants, not owners. Premiums are standardised and not reflective of flood risk so there is no incentive for policyholders to reduce their flood risk.

No private sector insurance market - state bears the risk

8. In the **USA** standard household insurance does not cover flood risk. The National Flood Insurance Program (NFIP) is a federal programme enabling property owners in participating communities to purchase flood insurance in exchange for adopting and enforcing regulations which manage flood risk to new development.

9. Under the NFIP, the federal Government assumes all liability for the insurance coverage, sets the rates, coverage limitations, and eligibility requirements, designates special flood hazard areas (areas with a 1% annual flood probability or greater) and issues flood insurance rate maps which show risk premium zones. The federal Government regulates the NFIP, but the states assist in implementation in communities.

10. The private sector sells insurance, adjusts and pays claims, and performs engineering and planning studies. Private insurers do not however assume any financial risk.

11. There is no requirement for any community to join the NFIP but if they do not, any areas at flood risk are not eligible for financial assistance. Furthermore in high-risk flood areas, home buyers are required to purchase flood insurance before qualifying for a federally insured mortgage.

12. Premiums reflect a range of factors including the flood zone a building is located in. Where communities join the NFIP's Community Rating System, local policyholders can receive a 5-45% discount on premiums which reflects the communities' additional efforts to reduce flood damage to insurable property (e.g. installation of resilience measures).

13. In the **Netherlands** the Government funds flood protection and maintenance works necessary to provide a very high standard of flood protection since sixty percent of the country is below sea level, and almost fifty percent of GDP is at risk from floods exposure. Consequently there is neither a public nor market-based insurance scheme to cover risks associated with flooding. If individuals incur damages as a result of flooding, the Government will pay out compensation under circumstances set out in the Law Compensation of Damages incurred due to Disasters.

Annex 2: The Statement of Principles

Revised statement of principles on the provision of flood insurance: Commitments by the Association of British Insurers, July 2008

The Government and the insurance industry have agreed that the conditions should be in place to enable the insurance market to be able to provide flood insurance to the vast majority of households and small businesses efficiently and without the specific commitments below from 1 July 2013. Thereafter, the industry will continue to work with existing customers to explore insurance options for domestic property and small business customers where the flood risk is significant and no public plans are in place to defend the property.

Until 30 June 2013, ABI members commit to:

- Continue to make flood insurance for domestic properties and small businesses available as a feature of standard household and small business policies if the flood risk is not significant (this is generally defined as no worse than a 1.3% or 1 in 75 annual probability of flooding).
- Continue to offer flood cover to existing domestic property and small business customers at significant flood risk providing the Environment Agency has announced plans and notified the ABI of its intention to reduce the risk for those customers below significant within five years. The commitment to offer cover will extend to the new owner of any applicable property subject to satisfactory information about the new owner.

It is important to note that:

- The premiums charged and policy terms will reflect the level of risk presented and are not affected by this commitment.
- This commitment does not apply to any new property built after 1 January 2009: the ABI encourages developers and customers purchasing a property in a new development to ensure that it is insurable for flooding. The ABI intends to publish guidance on insurance for new developments in autumn 2008.
- This commitment is subject to annual review that will consider progress in resolving the areas of continuing work and implementing the Government's commitments (separate document) and to additional review in the event of any significant external shocks, such as a reduction in the availability of flood reinsurance or major changes in the UK insurance market.

Annex 3: Affordability of insurance premiums under the baseline

The impact of a "worst case" (fast and full) transition to risk-reflective premiums on financially-vulnerable households at flood risk has been assessed as follows.

Overall approach

We start with an industry dataset of just over 36,000 individual premiums for buildings insurance policies. This contained both premiums paid now and estimates of premiums fully reflecting the risk of flooding. We calculated the proportional change from one set of prices to the other, to estimate the price impact of a change from the current market situation to one where insurance prices are fully flood-risk reflective. The sample dataset was scaled up to the national level based on other industry estimates of how many households, at the national level, would benefit from certain price premium caps under the "Flood Re" proposal. Using ONS data on insurance takeup and expenditure by income group, household numbers were broken down by income decile. The scaled-up estimates of households impacted in each income group and accompanying price increases were used to estimate i) potential reductions in demand (using estimated price elasticities) and ii) impacts as a proportion of income (using HM Treasury data on household income levels).

A difficulty has been developing an approach that allows the two datasets to be compared equally. To allow this a range of assumptions have been made and these are set out at the end.

Step 1

Data was obtained from a single industry source that gave the gross price (e.g. the technical price of that risk plus the insurer's operating cost and profit margin) for 36,589 properties at flood risk[1].

Step 2

This dataset was then arranged from high to low price with combined policies summed and included as a single policy. Averages of the premium were then taken at each 10% of the sample. Changes in prices among these 10 groups were used to record the variability of insurance premiums that will be used later to calculate the impact of changes in premiums in the households' disposable income.

Step 3

The sub-sample of policies with risk-reflective premium levels above the trigger level for the Flood Re intervention (Option 2) was then scaled up in line with how many households the industry had advised us would be captured by Flood Re (i.e. 500,000). The same proportionate scaling-up factor was then applied to the remainder of the policies in the sample, to estimate the population of households which might experience price increases but not be "caught" by Flood Re (around 100,000). 22% of all households were removed to reflect the 22% ABI research had identified as already paying the correct price. The remaining 78% were distributed across 10 income deciles based on take up rates of different insurance types based on ABI analysis of ONS data[2]. As take up rates vary between products a suitable weighting was calculated based on the mixture of policies types the sample represented.

Step 4

To understand the average impact an unwinding of the current level of "under pricing" would have in practice, average household premium figures were taken from ABI presentation of ONS figures on general household insurance[3], weighted again to take into account the mixture of policies represented in the sample. This then produced a percentage figure of how much the unwinding of the under pricing would represent a % increase in current premiums for each income decile.

[1] This dataset was provided by a single insurer in confidence to Government.

[2] 'HOUSEHOLD EXPENDITURE ON INSURANCE', Available on the ABI website at www.abi.org.uk/Facts_and_Figures/62662.xlsx

[3] Ibid.

Step 5

These figures were then used to produce the PED analysis. See the main Evidence Base for further details. The central estimate of -0.1 for take up elasticity was varied across income deciles running a regression between take up and the logs of both premiums and income using data for each income decile.

Step 6

The average under pricing for each income decile within each of the 10 bands of flood risk obtained in step 2 was then compared to average figures for household income[4] to estimate the impact as a proportion of household income.

Main Assumptions

1. The analysis assumes that those on lower incomes are equally likely to appear in the top band of risk based prices as the bottom. Although there is no evidence to suggest a correlation between income and flood risk it is well established that more expensive properties attract larger premiums. This analysis may therefore **overstate** the impact of any unwinding on those on lower incomes.

2. The analysis assumes that the distribution of flood risk premiums within the sample of 36,000 is reflective of the national picture. We have not been able to establish if the single insurer who provided this data set it typical although we have received reassurance from the industry that it is.

   Without a sense of the extent to which the insurer who provided the data set reflects the national picture it is impossible to confirm the extent to which this analysis over or understates the impact of any change.

Sources:

- A dataset of 36,000 properties risk reflective premiums. This dataset was provided in confidence and further details are unavailable.

- 'ABI analysis of Office of National Statistics figures on household insurance. Available at: www.abi.org.uk/Facts_and_Figures/62662.xlsx

- Internal HMT dataset of average incomes post tax and benefit adjustments.

[4] HMT figures for average post tax and benefits household income.

Annex 4: Calculation of participation benefit for Flood Re (Option 2)

Participation benefits are estimated in this impact assessment using estimates of Price Elasticities of Demand (PEDs) in the absence of knowing the full demand relationship for property insurance. However, a PED is a ratio of two percentage changes and one consequence of using PEDs for the large price changes examined here is that results depend on the starting point (denominator) used to calculate the percentage price change. This means that the impact of a move from a low price to a high price is not (as it should be) equal and opposite to the impact of moving back from the same high price to the same low price. To overcome this issue, the participation benefit of introducing Flood Re (which is also used to inform the benefit assessment for other options) is estimated as the average of two estimates:

a) the magnitude of impact using the "low" (Flood Re) price as the denominator (starting point). Although artificial, this can be thought of as a situation where Flood Re is implemented end-to-end with the existing Statement of Principles (implying little change in practice), so participation benefit is estimated by simulating a removal of Flood Re so that customers are exposed to the "do-nothing" scenario (worst case risk-reflective pricing). The number of people dropping out of the market in this scenario shows the participation benefit of Flood Re;

b) the impact using the "high" (risk-reflective) price as the denominator (starting point). Again, although both scenarios are only analytical constructs to overcome a mathematical issue, scenario b) can be thought of as a situation where Flood Re is only implemented after a move to fully risk-reflective prices has occurred.

Calculations

a) "Low" denominator in price change calculation (simulated pool removal)

Impact as % of income	**0-20%**	**20-40%**	**40-60%**	**60-80%**	**80-100%**	**Total**
Buildings Premium Paid under counterfactual	£1136	£1162	£1170	£1345	£2135	
Buildings Premium Paid under pool	£520	£551	£630	£839	£1758	
%age change in premiums if pool removed (compared with counterfactual)	+118%	+111%	+86%	+61%	+21%	
Change in demand if pool removed	-20%	-11%	-7%	-5%	-1%	
Households in pool facing price increase	57,125	87,123	105,633	115,765	134,355	500,000
Decline in households insuring if pool removed **(= increase in households insuring with pool c/w counterfactual**)	**10,705**	**10,049**	**7,772**	**5,545**	**1,893**	**35,965**
Proportion of those properties flooding p.a.	1.4%	1.4%	1.4%	1.4%	1.4%	
Homes flooded each year which are now insured under the pool (c/w counterfactual)	150	141	109	78	27	504
Aggregate saving of "UK plc" cost p.a. @21k/household (£m)						**10.5**

b) "High" denominator in price change calculation (introduction of pool after RRPs occur)

Impact as % of income	**0-20%**	**20-40%**	**40-60%**	**60-80%**	**80-100%**	**Total**
Buildings Premium Paid under counterfactual	£1136	£1162	£1170	£1345	£2135	
Buildings Premium Paid under pool	£520	£551	£630	£839	£1758	
%age change in premiums if pool introduced (compared with counterfactual)	-54%	-53%	-46%	-38%	-18%	
Change in demand if pool introduced	+9.2%	+5.3%	+4.1%	+3.0%	+1.3%	
Households facing price reductions	63,337	95,344	118,512	142,414	160,922	580,529
I**ncrease in households with pool c/w counterfactual**)	**5,827**	**5,053**	**4,859**	**4,272**	**2,092**	**22,103**
Proportion of those properties flooding p.a.	1.4%	1.4%	1.4%	1.4%	1.4%	
Homes flooded each year which are now insured under the pool (c/w counterfactual)	82	71	68	60	29	310
Aggregate saving of "UK plc" cost p.a. @21k/household (£m)						**6.5**

Annex 5: Administrative costs of Options 2, 3 and 4

General

1. This annex sets out more detail of how the administrative costs of Options 2, 3 and 4 have been estimated. For context see the discussions of the costs and benefits of these options in the main body of the IA. At this stage, in the absence of firm evidence, a number of assumptions have been used to generate cost estimates. These assumptions are felt to be suitable for strategic, consultation-stage analysis but will need to be developed further as proposals develop. Additional evidence will be sought during and after consultation to improve these estimates.

2. Initially, ABI and Defra developed an estimate of the annual running costs of a pool approach (Option 2), based on a likely staff structure and associated staff cost. This initial work was then developed by Defra to:
   - Include overheads, set-up costs and costs falling on other parties (besides the pool administrator);
   - Consider how the cost headings might differ for Option 3 (direct subsidy) and Option 4 (flood insurance obligation) compared with Option 2, the implications for quantities such as staff resource requirements, and hence monetary costs.

3. Detailed breakdowns of the admin cost estimates are provided in **Table A5-1** ("upper" estimates) and **Table A5-2** ("lower" estimates). The notes which follow give more detail on the methods and assumptions underpinning these estimates. "Upper" estimates were generated first, based on the initial ABI advice. The implied staff cost rate for most administrative functions associated with this advice was relatively high at £54,348 pa and "lower" estimates were generated by halving the salary rate. The upper and lower estimates were then taken to represent the upper and lower bounds of the likely range of admin costs.

Upper estimates

Option 2

Annual running costs of the pool (incurred by administrator)

4. ABI estimates that the annual running of a subsidised flood risk pool would require 23 FTE at various grades with an overall staff cost of £1.25m. This resource was interpreted as fulfilling the functions set out below (see also Tables A5-1 and A5-2).

   - Processing new business (ordinary year, post start-up)
   - Verifying insurer claims and making payments
   - Analysis, forecasting and advising on adjustments to the industry levy
   - Reporting and auditing (to FSA requirements)

5. In the absence of better evidence, resources have been spread equally across the four functions. Assuming an FTE translates into 225 working days per annum, the annual person-days expended on each of the four activities is 1,294 ((23 x 225) / 4).

6. The ABI FTE estimate was interpreted as not including any costs associated with modelling flood risk, claims and risk-reflective premiums. Based on advice from the Environment Agency on the costs of setting up a "reference model" for Options 3 and 4, some 20 FTEs (4,500 days pa) were added to the annual running costs of the pool option. It may be, however, that the pool could operate without a formal reference model agreed by insurers and the pool – if this is the case then modelling requirements would be less, which would lead to some reduction in the associated staff

cost of £1.09m (the remaining cost of £2m under this heading is associated with expenditure on the model per se – see Paragraph 8).

7. The cost per day for the above administrative activities was that implied by the ABI work – i.e. £1.25m divided by 23 FTE (equalling £54,348 pa) divided by 225 days per annum (equalling £242/day). This rate implicitly includes an allowance for more senior staff oversight as well as actual administrative staff.

8. An allowance for expenditure on modelling investment and enhancements has been added to administrative costs, at £2m per annum, based on Environment Agency advice given for the reference model used in Options 3 and 4 (it has been assumed that a similar model would need to be operated by the pool).

9. The final element of annual ongoing costs is overheads, including rent, IT support, and shared services (such as Human Resources etc). Defra's general overhead rate, including IT and shared services, of £15,845 per FTE was used. To this was added a rent estimate of £8,761 per FTE, based on internet research of office costs in London[34].

One-off setup costs of establishing the pool (incurred by administrator)

10. Two one-off costs have been estimated: that for putting in place the legal arrangements for setting up the pool (an assumed 30 days of legal time at a rate of £500/day); and a one-off data processing exercise to transfer the new flood policies to the pool. This has been based on the number of policies in the pool (around 500,000) and an assumed 20 minutes processing time per policy. This implies the task takes 20,625 person days. Each day is costed at half the average administrative cost of regular pool operations (reflecting the likely use of temporary data processors), at a rate of £121/day.

One-off costs to companies and brokers

11. The one-off costs to insurance companies and brokers are assumed to comprise training and software changes. In each case, it is assumed that each of twenty participating companies have to employ 5 FTE for half a year (a total of 11,250 staff days for each of training and changing software). Costs for brokers dealing with companies are implicitly included in the 5 FTE assumption. Staff days are costed at the same rate as regular pool admin (i.e. £242/day).

Ongoing costs to companies and brokers

12. Once the pool is up and running, it is assumed that insurance companies and brokers incur extra costs (over and above the counterfactual) in the following areas:

    - Separating the flood risk element of premiums, to determine the residual premium for other perils (retained on the books of the insurers). This would presumably be automated but a nominal 5 minutes per policy has been assumed, summed over 500,000 policies. This works out at an estimated 5,208 staff days in total, costed at £242/day (the regular admin cost rate for the pool operator – assumed to be applicable to the wider industry)

    - Approaching the pool with new business. It has been assumed that the cost to companies is the same as the cost to the pool administrator of dealing with new business.

[34] www.findalondonoffice.com. An estimate for a self-contained office for 23 FTE in the City of London, including supporting space such as meeting rooms etc was £201.5k per annum. The implied cost rate per FTE was then applied to the final number of FTEs (43, including modelling posts not estimated by ABI).

- Administering the insurance levy: insurance companies will be responsible for paying the insurance industry levy to government and then spreading the cost of this across their business. It has been assumed that each of 20 participating companies require 0.5 of an FTE to administer this. This has been costed at the same rate as the pool administrator's regular admin (i.e. £242/day).

- Sales team and broker costs: It has been assumed that each insurance company has to employ and additional 1 FTE on the sales side (probably dispersed across the sales department) to handle liaison with customers. This estimate has been doubled to take account of additional resources which may be required in broker companies. In total, this leads to an estimate of 9,000 days per annum, again costed at the regular pool administrator rate of £242/day.

Option 3

13. Admin cost estimates for Option 3 were developed by taking the Option 2 estimates and i) adjusting cost lines where resource requirements were likely to be higher or lower, ii) adding any new cost lines, and iii) subtracting any cost lines which were not applicable. A general assumption is that Options 2, 3 and 4 are all broadly similar in terms of the numbers of households targeted. Like Option 2, Option 3 involves an administrator (funded from the industry levy) for what is now a direct subsidy scheme (rather than a subsidised insurance pool).

Annual running costs of the subsidy scheme (incurred by administrator)

14. Costs are as for Option 2, except as follows:

- An additional FTE is assumed for modelling work. The model becomes a formal joint reference model under Option 3, with associated liaison with insurance companies and technical support.

- The "Processing new business" line is replaced with a requirement to process claims from insurers for reimbursement of subsidy. This is a more onerous requirement since companies have to claim for all policies every year, rather than just supply new business. It is assumed that each policy takes 20 minutes to process; policy numbers are assumed to be the same as for Option 2 at around 500,000. The resulting number of staff days required is 20,625 (costed at £242/day).

- There are, however, no costs associated with verifying insurer claims (for payouts under policies) and making payments.

- Reporting and auditing requirements would be less onerous than the pool (which would have to be audited by FSA) and costs under this line are assumed to be halved.

- Overheads are now based on a total FTE of 121 rather than 43 for Option 2, which increases the overhead cost proportionately.

One-off setup costs of establishing the subsidy scheme (incurred by administrator)

15. The cost of legal arrangements assumed under Option 2 are replaced by the cost of contracting a third party to deliver the subsidy administration service. This is estimated in terms of staff time within government to prepare a prospectus and tender pack, and to review tenders (60 staff days), plus the cost to bidding companies (5 assumed, each employing five people for 20 days, so 500 staff days). The cost of supplying the reference model (estimated at £2m based on Environment Agency advice) is then added to the staff time cost (which is 560 days x £242/day). There is no

requirement under Option 3 to effect a one-off transfer of insurance policies to a pool, as there was under Option 2.

One-off costs to companies and brokers

16. Training and software change costs are assumed to apply, as for Option 2 and at the same overall cost – except that there is an additional £1m of expenditure associated with making the reference model available to staff within companies. This is assumed to be £50k for each of 20 participating companies.

Ongoing costs to companies and brokers

17. These costs are assumed to be of the same basic order as under the pool option, with the same broad tasks (except that instead of insurers approaching the pool administrator to process new business, they make periodic claims to the subsidy administrator for subsidy reimbursement).

Option 4

18. Admin cost estimates for Option 4 were developed by taking the Option 2 and 3 estimates and i) adjusting cost lines where resource requirements were likely to be higher or lower, ii) adding any new cost lines, and iii) subtracting any cost lines which were not applicable. A general assumption is that Options 2, 3 and 4 are all broadly similar in terms of the numbers of households targeted. Option 4 involves a regulator (or regulators) to oversee the flood insurance obligation; this body replaces the administrator under Options 2 and 3 though many administration activities are similar.

Annual running costs of the obligation scheme (incurred by regulator)

19. Costs are as for Option 3, except as follows:

- The "Processing reimbursement claims" line is replaced with a requirement to set annual obligations per insurance company. This is a less onerous requirement which will be done once per annum. In the absence of firm evidence it is assumed for now that the cost is half the requirement to handle new business under the pool option (Option 2).

- Analysis and forecasting will be less onerous than under Options 2 and 3 as there will not be a levy to administer under Option 4. In the absence of firm evidence it is assumed at this stage that analysis and forecasting costs are halved compared with Options 2/3.

- Reporting and auditing requirements are likely to be more onerous than under both Options 2 and 3, because of the need to positively verify insurers' performance against their obligations. Again, it is assumed for early analysis that costs are double those of the pool option (Option 2). This means they are four times higher than under the subsidy option (Option 3), which had assumed costs were half those of the pool.

- Overheads are now based on a total FTE of 38 rather than 43 for Option 2 and 121 for Option 3, which reduces the overhead cost proportionately compared with those options.

One-off setup costs of establishing the subsidy scheme (incurred by administrator)

20. The costs of contracting a third party to deliver the subsidy administration service under Option 3 are replaced with a requirement to establish legal arrangements for the regulatory model. These are assumed to be the same in magnitude as under Option 2 to set up a pool. The cost of supplying the reference model (estimated at £2m based on Environment Agency advice) is then added to the staff time cost (which is 30 days x £500/day). However, like Option 3, there is no

requirement under Option 4 to effect a one-off transfer of insurance policies to a pool, as there was under Option 2.

One-off costs to companies and brokers

21. Training and software change costs are assumed to apply, as for Option 3 and at the same overall cost.

Ongoing costs to companies and brokers

22. Costs to companies and brokers associated with sales are assumed to be significantly higher under the regulatory Option 4 than for Options 2 and 3, because of the obligation for companies to target flood risk customers and adjust terms to ensure sales are made. In the absence of any evidence however, a simple 100% increase in cost is applied compared with Options 2 and 3 (which both have the same cost). This implies an extra 1 FTE for each of 20 participating companies, doubled to account for associated brokers.

Lower estimates

23. For the lower admin cost estimates, the staff cost rate used for most of the administrative functions (those costing £242/day under the upper estimates, derived from the initial ABI analysis of pool costs) was halved, to £121/day. In annual terms this is equivalent to a reduction from £54,348 pa to £27,174 pa. This adjustment was carried out because the initial (what became the "upper") rate was felt to potentially overstate admin costs if applied to the majority of tasks. Conversely, the "lower" rate may understate costs but the two rates are felt to be plausible bounds on the likely range.

TABLE A5-1

Admin costs (all parties) - UPPER ESTIMATES

Pool (Option 2)		
Item		**Value (£m)**
One-off		
Establishing pool:		
Legal arrangements inc procuring a model		2.02
Transferring policies (year 1)		3.55
Companies/brokers:		
Training		2.72
Software changes		2.72
Total one-off		11.00
Ongoing (per annum)		
Running of pool (pool administrator):		
Maintaining model		3.09
New business (ordinary year)		0.31
Claims		0.31
Analysis/forecasting/levy adjustements		0.31
Reporting/auditing (inc FSA requirements)		0.31
Overheads		1.06
		5.40
Companies:		
Separating flood risk premiums		1.26
Approaching pool with new business		0.31
Levy admin		0.54
		2.11
Brokers/sales:		
Extra processes		2.17
Total ongoing pa		9.68
Costs to government:	Set up	5.56
	Annual	5.40
Costs to business:	Set up	5.43
	Annual	4.29

Subsidy (Option 3)		
Item		**Value (£m)**
One-off		
Establishing administrator:		
Contracting process/licensing model		2.14
(No initial transfer of policies)		0
Companies/brokers:		
Training		2.72
Software changes (making model available)		3.72
		8.57
Ongoing (per annum)		
Running of scheme (administrator):		
Supporting/making available reference model		3.14
Processing reimsursement claims from insurers		4.98
(No claim costs)		0
Analysis/forecasting/levy adjustements		0.31
Reporting/auditing		0.16
Overheads		2.98
		11.58
Companies:		
Separating flood risk premiums		1.26
Approaching administrator (new business)		0.31
Levy admin		0.54
		2.11
Brokers/sales:		
Extra processes		2.17
		15.86
Costs to government:	Set up	2.14
	Annual	11.58
Costs to business:	Set up	6.43
	Annual	4.29

Obligation (Option 4)		
Item		**Value (£m)**
One-off		
Establishing regulator (assume one body):		
Legal arrangements inc procuring a model		2.02
(No initial transfer of policies)		0
Companies/brokers:		
Training		2.72
Software changes (making model available)		3.72
		8.45
Ongoing (per annum)		
Running of obligation scheme (regulator):		
Supporting/making available reference model		3.14
Setting annual obligations by company		0.16
(No claim costs)		0
Analysis/forecasting (no levy adjustment)		0.16
Auditing of companies		0.63
Overheads		0.94
		5.02
Companies:		
Separating flood risk premiums		0
Audit/liaising with regulator		0.54
Levy admin		0.00
		0.54
Brokers/sales:		
Extra processes		4.35
		9.91
Costs to government:	Set up	2.02
	Annual	5.02
Costs to business:	Set up	6.43
	Annual	4.89

Key:

Higher estimate than Option 2

Lower estimate than Option 2

TABLE A5-2

Admin costs (all parties) - LOWER ESTIMATES

Pool (Option 2)		
Item		**Value (£m)**
One-off		
Establishing pool:		
Legal arrangements inc procuring a model		2.02
Transferring policies (year 1)		2.30
Companies/brokers:		
Training		1.36
Software changes		1.36
Total one-off		7.04
Ongoing (per annum)		
Running of pool (pool administrator):		
Maintaining model		2.54
New business (ordinary year)		0.16
Claims		0.16
Analysis/forecasting/levy adjustements		0.16
Reporting/auditing (inc FSA requirements)		0.16
Overheads		1.06
		4.23
Companies:		
Separating flood risk premiums		0.63
Approaching pool with new business		0.16
Levy admin		0.27
		1.06
Brokers/sales:		
Extra processes		1.09
Total ongoing pa		6.37
Costs to government:	Set up	4.32
	Annual	4.23
Costs to business:	Set up	2.72
	Annual	2.14

Subsidy (Option 3)		
Item		**Value (£m)**
One-off		
Establishing administrator:		
Contracting process/licensing model		2.07
(No initial transfer of policies)		0
Companies/brokers:		
Training		1.36
Software changes (making model available)		2.36
		5.79
Ongoing (per annum)		
Running of scheme (administrator):		
Supporting/making available reference model		2.57
Processing reimsursement claims from insurers		2.49
(No claim costs)		0
Analysis/forecasting/levy adjustements		0.16
Reporting/auditing		0.08
Overheads		2.98
		8.28
Companies:		
Separating flood risk premiums		0.63
Approaching administrator (new business)		0.16
Levy admin		0.27
		1.06
Brokers/sales:		
Extra processes		1.09
		10.42
Costs to government:	Set up	2.07
	Annual	8.28
Costs to business:	Set up	3.72
	Annual	2.14

Obligation (Option 4)		
Item		**Value (£m)**
One-off		
Establishing regulator (assume one body):		
Legal arrangements inc procuring a model		2.02
(No initial transfer of policies)		0
Companies/brokers:		
Training		1.36
Software changes (making model available)		2.36
		5.73
Ongoing (per annum)		
Running of obligation scheme (regulator):		
Supporting/making available reference model		2.57
Setting annual obligations by company		0.08
(No claim costs)		0
Analysis/forecasting (no levy adjustment)		0.08
Auditing of companies		0.31
Overheads		0.94
		3.98
Companies:		
Separating flood risk premiums		0
Audit/liaising with regulator		0.27
Levy admin		0.00
		0.27
Brokers/sales:		
Extra processes		2.17
		6.43
Costs to government:	Set up	2.02
	Annual	3.98
Costs to business:	Set up	3.72
	Annual	2.45

Key:

Higher estimate than Option 2

Lower estimate than Option 2