Written evidence submitted by Evidence from Willis Towers Watson (FLO0034)

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1. Introduction

We are pleased to provide Willis Towers Watson's response to the Committee's inquiry into inland flood risk in the UK and the potential impacts of climate change. We welcome this inquiry's multiple perspectives as an important next step in enhancing resilience to protect against future flooding given the projected increase in extreme rain events that will result from a warming planet[1].

We acknowledge that flooding is a complex challenge with profound effects on individuals, businesses, communities and the UK economy. A cross disciplinary, evidence-based approach is necessary to manage this risk to tolerable levels through economically viable, sustainable and socially acceptable ways.

Our response focuses on the following topics-

- Improving access to flood risk mitigation measures
- Leveraging insurance solutions and integrating climate considerations into mainstream finance
- Ensuring a risk first approach

Basis for evidence – about Willis Towers Watson

Willis Towers Watson (NASDAQ: WLTW) is a leading global advisory, (re)insurance broking and solutions company that helps clients around the world turn risk into a path for growth. With roots dating to 1828, we have over 45,000 employees in more than 140 countries.

With our combined expertise helping organisations strategically manage people, capital and risk, we are supporting governments and public and private sector organisations around the world to better understand the physical, transition and liability risks from climate change, build resilience and capture the opportunities presented by the low carbon transition. This has included supporting the Bank of England's and the PRA's work to date on implementing climate risk stress testing within the financial sector.

Our Climate Quantified™ proposition brings together our deep weather and climate analytical experience from the (re)insurance and investment markets, our extensive academic, research and institutional investor relationships to integrate multi-disciplinary expertise and capabilities to meet complex challenges.

Our rigorous approach and recognised experience are enabling us to support the global community's response to climate risks through our own and cooperative initiatives, such as our founding with the UK Government of the Coalition for Climate Resilient Investment launched at the UN Climate Action Summit in September 2019 aimed at improving climate resilience in investment decision-making. We also led the foundation of the Insurance Development Forum (www.insdevforum.org) , supported by the World

[1] Hirabayashi et al., 2013, 'Global flood risk under climate change', Nature Climate Change, 3.

Bank, UN, DfID and industry leaders to apply the capabilities of the insurance sector to meet the climate and resilience challenges of the UN 2030 Agenda.

2. Improving access to flood risk mitigation measures

The physical processes which cause flooding are well understood. Societal responses to flooding hazards at the property and larger scales are also well developed. This is demonstrated through the reduction in 'at risk' properties in the UK.

The question, therefore, is why there is not more investment in flood risk mitigation? This is all the more surprising when we consider the significant financial and societal benefits which derive from reducing the risk of flooding. These include, the tangible financial benefits to reducing flood risk but also the mental wellbeing of impacted individuals and reduced environmental impact of flooding (clean up and construction).

New development

Robust spatial planning is an essential component of a national flood risk strategy. This will reduce or eliminate new risk through development in areas at risk of flooding and ensure that development does not contribute to an increased flood risk downstream of the development.

We support a 'whole catchment' approach to development planning where flood risk is a fundamental component in decision making.

Restricting further development in flood risk areas reduces the obligation on future generations to protect such assets.

Existing development

We support investment in flood risk mitigation projects to reduce the risk or consequence of flooding to communities. Such investment must be evidence based, affordable and recognise future uncertainties in climate, funding and land use.

Larger scale flood mitigation measures require government support given the size, planning and cost involved. Such schemes are likely to deliver the most significant return on investment and provide the most efficient way of protecting many properties.

We believe there are opportunities to involve the insurance market in aligning support and funding for large scale flood defence properties. However, given the annual renewal cycle of insurance contracts limited long term commitment of customers to specific underwriters there is limited incentive for insurers to contribute to flood risk management projects to protect properties that they may not insure in future.

Property level

Where investment in larger schemes cannot be justified, flood risk management at the individual property level may be appropriate.

The techniques for 'Build Back Better' and property level flood protection are well developed and we are disappointed that there has not been more consistent adoption of these techniques.

We believe that consideration should be given to inclusion of flood resilience requirements in Building Regulations. This would improve adoption of the BSI Kitemark for Flood Protection products.

Indemnity wording in insurance contracts requires review to actively support the implementation of property level flood resilience measures. This could facilitate the retention of buyers of insurance to ensure the underwriting risk benefits from funding resilient build back.

We see this as a big opportunity. Depending on the economics of such schemes, 'build back better' would be the natural step to improve risk resilience, as it is in both insurers' and policyholders' interests to build back better.

In addition to addressing the legal and financial aspects above, there needs to be wider awareness of flood resilient techniques through education and communication.

3. Leveraging Insurance solutions and integrating climate considerations into mainstream finance

We would welcome an increased role for the insurance industry in supporting an improved understanding, and ultimate reduction, in flood risk. The insurance industry is uniquely positioned to support sustainable flood risk management and investment and coordinate a step change in the national approach to mitigating flood risk

We believe this requires a top down and bottom up approach, linking flood risk management with the world of climate sensitive regulation and disclosure to promote and reinforce the benefits of risk mitigation at multiple levels including:

- Influencing policyholder behaviours;
- Enabling more suitable re/insurance products to position the market and;
- Deploying insurance industry and academic experience of developing and applying probabilistic models of natural catastrophes to enhance different mitigation strategies, approaches and stress testing of balance sheets

Using insurance to promote 'Build Back Better'

In some of our work in corporate risk broking for the UK public sector we have assessed and quantified the return on investment in simple, practical and targeted flood mitigation. Measures such as upgrading drainage, temporary flood protection, elevation of electrical equipment and retrofitting with hazard in mind prove effective in minimising disruption and damages.

We understand that there could be a range of individual measures all having their contribution but, when a more targeted and strategic approach is taken, evidence shows that the right combination could bring the highest benefit and is worth pursuing. Based on past flood events, such initiatives have proven the need for the investment in additional asset level mitigation, which results in a significant investment return at targeted sites.

Insurance is a common thread linking infrastructure / development, risk management and post-event costs at policy holder level. Willis Re has supported numerous UK insurers to refine their approach to flood risk rating, with a general transition toward risk reflective approaches for an economically viable increase in take-up from insurers in recent years. Supporting such a granular view of flood risk premiums enables the identification of accumulations that either add to the correlated risk or, by contrast, can be diversifying. It further ensures a consistent approach from the establishment of a risk reflective tariff, through to capital modelling and reinsurance.

From a reinsurance perspective, risk volatility will lead to higher reinsurance premiums, which could dissuade insurers from assuming such risks in the first place, especially during the Flood Re transition period. To ensure that the most appropriate reinsurance can be designed, we will require a better understanding of the impacts, benefits and challenges of 'Build Back Better' to engage with the re/insurance market.

Deploying academic expertise

As well as the flood risk engineering and modelling experts employed by Willis Towers Watson, we also work with leading academic partners through the Willis Research Network (WRN) - an award-winning collaboration supporting and influencing science to improve the understanding and quantification of

risk, with the aim to improve the resilience of our clients and society as a whole. Among the projects supported via the WRN, some focus on flood risk.

In the UK, our long-term partnership with Newcastle University, has helped Willis Re to develop new insights into flood risk in terms of spatial and temporal dependence[2] [3], and how to quantify the uncertainty relating to different influences on the frequency, severity and duration[4] of extreme flood events. Climate trends are superimposed upon the impacts of land use change, water management and climate variability so understanding flood risk to the level of detail required by the insurance and risk management industry carries significant uncertainties, meaning that this research is essential to create a credible view of risk with which to advise our clients.

Our academic partners at the Newcastle University have also helped us to respond to recent regulatory requirements from the Prudential Regulation Authority to stress test insurance portfolios for estimated impacts of various levels of global warming. By providing a practical and defendable methodology to increasing flood risk related to climate change, we have been able to advise our clients on the levels of climate resilience of their portfolios.

These challenges are faced by countries around the world, so we also support research to provide a global context to flood risk, as well as specific flood risk modelling for areas where current industry catastrophe modelling does not exist. This research supports our business activity but is also ultimately published in the public domain.

Modelling to provide more robust adaptation and resilience

There is opportunity for wider use of scenarios and probabilistic models to stress test impact of Property level flood protection and 'Build Back Better' to support the implementation of such measures and engaging with insurers to provide the required marketing and customer insight. For instance, understanding the portfolio make up to gain most favourable commercial terms in placing reinsurance cover.

Stochastic event sets, which represent 10,000 or more realisations of a year, can be used as scenario generators for winter and summer floods. Users can add and subtract components, such as levees, to assess relative impact and investment value. We can incorporate climate change into the models to provide future proofing. We can do stress testing by changing physical aspects of the models such as defences. Probabilistic flood models can be effective tools for the government to do stress tests and make strategic decisions.

This method will provide more robust information for adaptation planning, add to the evidence base for the UK Climate Change Risk Assessment and the National Adaptation Programme, and is aligned with the UK Government's 25 Year Environment Plan, the Paris Agreement on climate change and the Environment Agency's work for the National Flood Resilience Review.

Integrating climate considerations into mainstream financial decision making

A robust and resilient response to adapting and mitigating the impact of UK flooding also requires climate-related considerations to be integrated into public and private sector financial decision making. In this regard, we welcome the policies and proposals within the UK's Green Finance Strategy and the

[2] Serinaldi et al., 2018, 'Untenable nonstationarity: An assessment of the fitness for purpose of trend tests in hydrology', Advances in Water Resources, 111, 132-155

[3] Serinaldi & Lombardo, 2020, 'Probability distribution of waiting time of the kth extreme event under serial dependence', Journal of Hydrologic Engineering, 25, 6.

[4] Serinaldi et al., 2018. 'Flood propagation and duration in large river basins: a data-drive analysis for reinsurance purposes, Natural hazards, 94, 71-92

leadership being demonstrated by the UK's financial regulators, including, for example, the Bank of England's work on climate stress tests. It will be important to maintain a high level of ambition in this area to ensure current and future climate-related risks are effectively managed today. For example, ensuring expectations set for climate-related financial disclosure by listed companies and large asset owners are fully met and Government also leads by example – such as fully integrating climate risk and resilience into the Government's spending review process.

We note the important role that sophisticated tools developed within the cauldron of the insurance industry, such as catastrophe models, can play in quantifying current and future climate-related risks. Strong cross-sector collaboration will be important to developing a consistent approach and institutions that help intermediate financial and human capital can play a particularly valuable role in ensuring an effective market wide response.

4. Ensuring a 'Risk Based' approach

The effect of climate change must be acknowledged in developing flood risk management policy; this is an imperative given the scientific evidence for climate change. However, we must not let climate change dominate the flood risk management agenda. We know that climate change will increase the probability and consequences of flooding; this is a fact. There are uncertainties in how climate change will alter the flood risk profile for the UK; flooding is also a statistical science with inherent uncertainty. We need to accept the uncertainty and work with it.

Before asking what level of investment is required to address flood risk as it relates to climate change, we must understand if our current investment in flood risk management is sufficient to address the risk today. Given the recent flooding events it could be argued that this is not the case.

Decisions on future flood risk investment must first consider what level of risk we, as a society, are willing to accept or tolerate. This discussion needs to include the costs, benefits, uncertainties and residual risks of various options.

Discussion of societal risk tolerance needs to consider all hazards, not only flooding. Building in societal resilience has benefits during shock events, including flooding.

5. Concluding Points

- It is important to understand uncertainties better with the support of scientific findings, such as the WRN funded research conducted by Newcastle University highlighting quantification of uncertainties around flood risk and the findings from the cross-industry collaboration on climate change scenarios. Communicating those uncertainties through societal engagements on risk essentials such as risk tolerance – including costs/benefits and residual risks of various options – will also be important.
- Engagement with the re/insurance industry is vital to influence changes and behaviours in the flood risk regime through incentive risk mitigation, as well to benefit from the pioneering work done in applied natural catastrophe risk quantification across other sectors.
- Take steps to ensure the UK continues to play a lead role in integrating climate considerations into public and private sector financial decision making, for example through climate disclosure, climate stress tests and Government spending decisions.