The Assessment of Flooding Risks in the Courts: Seeds of a Divergent Jurisprudence

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In Australia, risk analysis, risk assessment and risk management are buzz words for decision-makers who must deal with the prospective – but relatively uncertain – impacts of climate change and other environmental risks. But what do these terms mean in practice and how do they play out in the courts? This article identifies some divergent approaches to these issues with particular regard to planning policies, instruments and case law involving a risk of flooding. It identifies three alternative policy approaches and tracks their application (and non-application) in the courts in particular flooding cases. It argues that, despite a dominant policy paradigm favouring strategic land-use planning and adaptive risk management, when assessing flooding risks, the courts have often applied a more normative and precautionary approach in their own decision-making. Some reasons for this “divergent jurisprudence” are discussed.

INTRODUCTION

In Australia, risk analysis, risk assessment and risk management are buzz words for decision-makers who must deal with the prospective – but relatively uncertain – impacts of climate change and other environmental risks. But what do these terms mean in practice and how do they play out in the courts? This article identifies some divergent approaches to these issues with particular regard to planning policies, instruments and case law involving a risk of flooding.

HOW SAFE IS SAFE ENOUGH? UNIVERSAL VERSUS CONTINGENT APPRAISALS OF RISK

Since the second half of the 20th century, technological innovation, population growth and global inter-connectivity have all intensified dramatically, generating huge gains in economic wealth for some members of the global community. However, as Ulrich Beck pointed out, these same trends have created new and enlarged risks of harm to people and the environment.1 To deal with the problem of ever increasing risks, a variety of methods have been developed for modelling and assessing them. The traditional, actuarial approach to modelling risk measures the probability of an adverse event and multiplies that with the predicted consequence(s) of the event.2 The actuarial method offers an objective, rational and pragmatic approach to assessing risk but, beyond the realm of relatively well-known and predictable risks, the utility of the actuarial method is limited. This is because it simplifies the nature of the problem – it assumes risks can be accurately isolated and modelled and it limits the range of predicted consequences to reduce the number of unknown variables. When the likelihood and severity of harm is uncertain, and if many extraneous factors could influence the outcomes, the actuarial method loses its rigour – its modelling techniques become less trustworthy and the resulting predictions lose their reliability. In short, the actuarial method is too simplistic to deal accurately or comprehensively with the full range of multi-faceted, “wicked problems” – such as climate change – confronting modern society.

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In 1983, Fischhoff et al rejected the objective, rationalising approach of the actuarial method and argued instead that decisions about risk are inherently context specific. Calculations of risk can seldom be reduced to two factors – probability of an event and degree of harm expected. In the real world of actual decision-making many considerations will and should be taken into account. Risk assessment is not a technical, uniform process with predictable results, it is a decision problem requiring a choice among alternative courses of action. That choice will depend on “the set of options, consequences, values and facts examined in the decision-making process”.

These factors will vary over time and in different situations, meaning decisions about risk will always be contingent and purely objective, scientific methods are inherently flawed:

In different situations, different options, values, and information may be relevant. Over time, any number of changes could lead to a change in the relative attractiveness of any given option: Errors in the analysis may be discovered, new safety devices may be invented, values may change, additional information may come to light and so forth. Even in the same situation and at a single time, different people with different values, beliefs, objectives, or decision methods might disagree on which option is best. In short, the search for “absolute acceptability” is misguided.

Other analyses of risk highlighting the economic, psychological, sociological and cultural influences on risk decisions have followed fast on the heels of the work completed by Fischhoff et al. These perspectives broaden the range of undesirable effects, include other ways to express possibilities and likelihood and expand the context for decision-making to include interpretations of undesirable events and “socially constructed realities”. While eschewing any attempt to define a universal formula for answering the essential question, how safe is safe enough, the literature in this area does highlight the need for more open, inclusive and deliberative methods of gauging what level of risk is acceptable.

In 1996, in an attempt to bridge the gap between technical and later, more contingent interpretations of risk, the National Research Council (NRC) in America published its influential report, Understanding Risk: Informing Decisions in a Democratic Society. In this Report the NRC promoted an “analytic-deliberative” approach to decision-making about risks:

Risk characterisation is the outcome of an analytic-deliberative process. Its success depends critically on systematic analysis that is appropriate to the problem, responds to the needs of the interested and affected parties, and treats uncertainties of importance to the decision problem in a comprehensive way. Success also depends on deliberations that formulate the decision problem, guide analysis to improve decision participants’ understanding, seek the meaning of analytic findings and uncertainties, and improve the ability of interested and affected parties to participate effectively in the risk decision process.

Essentially, the analytic-deliberative process seeks to find a role for scientific and more contextual inputs into decision-making. The first step in the process is to assemble scientific and other information that will form the raw material for a “systematic analysis appropriate to the problem”. Scientific and other uncertainties should be recognised. Thereafter, the input of interested and affected parties should be sought to help shape and refine the decision-making process. Debate and deliberation will then lead to a more holistic and, hopefully, a well-reasoned decision incorporating the insights of actuarial and scientific modelling as well as more contextualised considerations.

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4 Fischhoff et al, n 3.
5 Fischhoff et al, n 3, 3.
6 For an introduction to different strands in the social science literature, see Sheldon Krimsky and Dominic Golding (eds), Social Theories of Risk (Praeger, 1992).
7 Krimsky and Golding, n 6, 77.
The analytic-deliberative model mooted by the NRC absorbs and gives credence to risk information from diverse sources, both objective and subjective, but it does not give a definitive answer to the essential question “how safe is safe enough?” It simply promotes a process for arriving at an agreed (or at least more acceptable) solution in individual cases. But even that procedural method has some loopholes – what “system” or method, for instance, can be used to compare, assess and analyse qualitatively diverse information? The usual candidate for dealing with this thorny question is cost–benefit analysis. Cost–benefit analysis attempts to allocate a monetary value to all the costs and benefits of different measures, thus allowing comparisons to be made across diverse types of information based on their relative monetary implications. Unfortunately, many risks are not easily attributed a monetary value – either the market does not assign them a value (such as many environmental, social and psychological benefits and losses) or the nature of the risk is not sufficiently well known to attribute a value to it (for instance, the risks and probable impacts of climate change). As Jaeger states, “Cost-benefit analysis reaches its conceptual limits when applied to stochastic outcomes.”

There may still be some value in attempting a cost–benefit analysis – it provides a common language for decision-makers operating on a budget – but the limitations of that method also need to be recognised.

As we have seen, the analytic-deliberative process is ambivalent about the normative question, “how safe is safe enough?” It assumes the answer to this question will emerge as part of the deliberative process. To provide greater certainty, or perhaps simply to avoid long drawn out deliberations, governments often set the parameters of acceptable risk or at least give some guidance on the matter. After all, representative governments are themselves the product of a deliberative process which gives them authority to act on behalf of their communities. In some areas, these risk parameters may be set as quantitative standards – for health and safety measures, for instance. In other areas, the guidance may be more opaque. For example, the Planning Act 2016 (Qld) addresses risks to the environment from new development by stating that decision-makers should “apply the precautionary principle” meaning that “lack of full scientific certainty is not a reason for delaying taking a measure to prevent degradation of the environment if there are threats of serious or irreversible environmental damage”. Decision-makers are also required to make decisions, “avoiding, if practicable, or otherwise minimising the adverse environmental effects of development”.

Clearly there are some quite divergent approaches to assessing and dealing with risks and some rather opaque guidance on how to assess risks once identified. The next section explores how these issues unfold in the context of flooding policy.

**DIVERGENT POLICY: DEALING WITH THE RISKS OF FLOODING**

As a nation, Australia is heavily exposed to flooding risks. In recent years the financial impacts of flooding events have grown exponentially and that trend is likely to continue as the frequency and severity of flooding events intensifies due to climate change. The Australian community is aware of...
these issues and considerable work has been dedicated to devising appropriate policies and principles for dealing with flooding risks. The discussion in this section identifies alternative approaches to the question, “how safe is safe enough” in some different flood policy documents.

An early example of a risk-based policy document is offered in the 2000 publication, *Floodplain Management in Australia: Best Practice Principles and Guidelines* (the SCARM Report). The SCARM Report sought to encourage the planning and use of floodplains as “a valuable and sustainable resource capable of multiple but compatible, land uses”. It accepted development would and should continue to occur on flood-prone land so the primary objective should be to reduce private and public losses from future flooding events to “acceptable levels”. What is an acceptable level of risk? As a general rule of thumb, the SCARM Report offered the view that development should reduce the risk of flooding (with its consequent private and public losses) to “As Low as Reasonably Practical” (ALARP principles). The threshold for what is reasonably practical should take into account the affordability of risk management measures.

The central message in the SCARM Report, however, was the need for strategic risk management, involving the preparation of floodplain management plans for individual floodplains:

> The best practice principle is that a comprehensive planning process to develop a floodplain management plan is the most effective and equitable way to realise the objectives of floodplain management.

The SCARM Report gave detailed guidance on the procedures to be followed in preparing floodplain management plans. They should be based on comprehensive, risk informed assessments of diverse information covering – flood behaviour; the cost of particular measures; environmental and social factors (including the needs of the local community and intangible flood costs); and local, regional and State planning needs, restrictions and opportunities. The SCARM Report recognised floodplain management is “a complex, multi-objective process that requires consideration of interrelated issues, such as community aspirations concerning the use of flood-prone land, the social, ecological and economic costs and benefits of possible land uses and management measures, as well as the hazard cost and social disruption caused by flooding”.

To assist decision-makers with the task of comparing and analysing diverse information, the SCARM Report suggested combining economic appraisal – which would provide a common framework for assessing the effects of alternative management options – and active public consultation to elicit “the community’s wants and desires regarding the development and use of flood prone land”. A deliberative process, informed by all the “facts” resulting from the comprehensive, multi-disciplinary analysis would then lead to a robust and well-informed floodplain management plan in which management objectives, strategies and measures are broadly aligned with the “community’s wants and desires”. These recommendations align closely with the analytic-deliberative model promoted by the NRC. They also endorse the use of cost–benefit analysis as a decision-making tool.

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18 SCARM Report, n 17. See also, AEM Handbook, n 17 which supersedes the SCARM Report.

19 SCARM Report, n 17, xiv and 4.

20 SCARM Report, n 17, 52. Although elsewhere in the Report it accepts that acceptable levels of risk must have regard to “affordable” risk management, SCARM Report, n 17, 4.

21 SCARM Report, n 17, xv.

22 SCARM Report, n 17, 16.

23 SCARM Report, n 17, 16.

24 SCARM Report, n 17, 3.

25 SCARM Report, n 17, 16.

26 SCARM Report, n 17, 16.

The influence of the 2000 SCARM Report can be readily discerned in New South Wales’ 2006 Flood Plain Manual which also incorporates the New South Wales (NSW) Flood Prone Land Policy (the NSW Policy).\(^{28}\) In New South Wales the Flood Plain Manual is an important decision-making tool because council decision-makers who furnish advice substantially in accordance with the principles therein are exempt from liability for “anything done or omitted to be done in good faith … in so far as it relates to the likelihood of land being flooded or the nature or extent of any such flooding”.\(^{29}\) Following in the footsteps of the SCARM Report, the NSW Policy accepts that “flood prone land is a valuable resource that should not be sterilised by unnecessarily precluding its development”.\(^{30}\) It encourages the preparation and use of floodplain management plans and provides a wealth of additional guidance on how to prepare these plans. It includes detailed advice on the economic, social and environmental issues to be considered and it suggests some general benchmarks for acceptable development\(^{31}\) but it fails to provide any uniform, detailed or prescriptive measures. This is a deliberate choice because overly prescriptive measures could result in some appropriate proposals being “unreasonably disallowed or restricted”.\(^{32}\) At the end of the day, the NSW Flood Prone Land Policy falls back on the notion that councils should “manage future flood risk to an acceptable level based on social, economic and ecological, as well as flooding considerations”.\(^{33}\)

Both the SCARM Report and the NSW Policy are premised on a preference for “managing” the risk of flooding: rational, deliberative decision-making, pitching the cost of measures against their potential effectiveness, will provide the solution to dealing with flooding risks. In other words, drawing on the climate adaptation literature, flooding risks can be adequately mitigated through the use of appropriate adaptation measures.\(^{34}\) Appropriate measures may take the form of special design or engineering features or they may be more holistic, for instance, creating resilience by promoting risk awareness and evacuation strategies. Implementing appropriate, cost-effective measures is the gist of this method which I shall call the “mitigate and adapt method”.

In 2013, 13 years after the publication of the SCARM Report, the Australian Emergency (AEM) Handbook no 7 replaced the SCARM Report. The AEM Handbook continues to promote the use of floodplain management plans as the best practice management tool. It accepts the reality, however, that floodplain management entities are “at different points on a path towards best practice”.\(^{35}\) Where the relevant studies are incomplete or there are gaps in the knowledge base, the AEM Handbook now encourages decision-makers to exercise their powers, “in a precautionary way using the best available information in a conservative manner”.\(^{36}\) These decisions might be revisited when improved information becomes available. Thus, unlike its predecessor, the AEM Handbook supports a precautionary approach to decision-making as an alternative policy approach when following “best practice” is simply not possible.

The AEM Handbook also departs from its predecessor by providing decision-makers with some clear principles (or norms) about what constitutes an acceptable level of risk. To ensure risk is reduced to acceptable levels, development on flood-prone land should:

- have limited impact on the flood risk of the existing community including its emergency response capability;
- be compatible with flood functions and hazard;

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\(^{29}\) *Local Government Act 1993* (NSW) s 733.

\(^{30}\) New South Wales Government, n 28, s 1.1.

\(^{31}\) New South Wales Government, n 28, Apps J, K.

\(^{32}\) New South Wales Government, n 28, s 1.1.

\(^{33}\) New South Wales Government, n 28, s 1.1.2.

\(^{34}\) See, for instance, Intergovernmental Panel on Climate Change, n 16, 25–29.

\(^{35}\) AEM Handbook, n 17, 19.

\(^{36}\) AEM Handbook, n 17, 92.
• ensure people who are more vulnerable will be located in less-exposed areas;
• include appropriate zoning and development controls to limit the vulnerability of development to flooding; and
• ensure infrastructure is designed with its potential impacts on flood behaviour in mind and making it fit for purpose when needed in response to floods.37

These quite specific objectives offer some clear guidance for risk managers. They are presented as relatively absolute, normative principles to be followed regardless of any “affordable risk management measures” offered by developers. They set a minimum baseline and provide some clear parameters for identifying “acceptable development”.

A close reading of the AEM Handbook suggests the authors were more experienced and more aware of the limitations of strategic risk management as promoted in its predecessor, the SCARM Report. To fill the gaps in that approach – for instance, when a comprehensive floodplain management plan is unavailable – and to provide some useful guidance on the baseline parameters for “acceptable risk”, the AEM Handbook falls back on both a more precautionary and a more normative approach to floodplain development. I shall call this the “precautionary/normative approach” to dealing with flooding risks.

A third approach to the question of how safe is safe enough, in the context of flooding risk, is illustrated by the Queensland State Planning Policy, 2017. This statutory planning instrument includes a section on safety and resilience to natural hazards. The overall objective is that risks are avoided or mitigated (author’s emphasis) to an acceptable or tolerable level to protect people and property and to enhance the community’s resilience to risk.38 Acceptable risk is defined as risk that is “sufficiently low to require no new treatments or actions to reduce risk further. Individuals and society can live with this risk without feeling the necessity to reduce the risks any further”.39 A tolerable risk, on the other hand, is one that is “low enough to allow the exposure to continue, and at the same time high enough to require new treatments or actions to reduce risk”.40 Reflecting current trends in disaster management, the concept of resilience – defined as the ability to adapt to changing conditions and prepare for, withstand, and rapidly recover from disruption41 – also takes a prominent place in the relevant planning objectives. The most significant point to note, however, is that decision-makers are offered a choice whether to avoid the risks altogether or, if, in Council’s view that is not possible, to mitigate the risks by imposing measures to reduce their likelihood and impacts. In effect, local councils are left to decide for themselves whether to adopt a precautionary approach – avoiding the risk altogether – or a more risk-friendly, adaptive approach to mitigating flooding risks. I shall call this third approach to decision-making the “either/or” or, “delegated and diverse” method – meaning the level of government closest to the problem is free to make up its own mind about what level of risk is acceptable.

This brief analysis has identified alternative policy approaches to answering the question, how safe is safe enough in the context of flooding policy. Within Australia, the “mitigate and adapt” approach to floodplain management is the dominant policy paradigm. Grounded in notions of rational, objective decision-making, it incorporates more contextualised information by reference to cost–benefit analysis and the analytic-deliberative method. In other words, the solution to flooding risks lies with technology + add-ons. The major premise is that good-quality decision-making will allow flooding risks to be appropriately “managed” and development should proceed in a modified but familiar, business as usual, manner.

The precautionary/normative approach to flooding risks, gives greater weight to the problem of ongoing uncertainty, an inescapable element of risk-based decision-making. Information uncertainty

37 AEM Handbook, n 17, 87.
40 QDILGP, n 39, 5.
41 QDILGP, n 39, 5.
casts doubt on the reliability of technological solutions. The precautionary/normative method also recognises the analytic-deliberative method is a counsel of perfection that is seldom fully realised in practice. Recognising these shortcomings, the preferred approach of the precautionary/normative method is to be “cautious”. In legal terms, a cautious approach invites the use of the precautionary principle although the precise association of that principle with the more general notion of “acting cautiously” has become somewhat obscured in recent years.\textsuperscript{42}

Lastly, the “delegated and diverse” method effectively diverts responsibility for answering the question, “how safe is safe enough?” to individual decision-making entities. These entities are invited to choose between a “mitigate and adapt” approach or a more precautionary one – the overarching policy is simply ambivalent between the two.

The next section illustrates how these various decision-making approaches have been applied in planning case law.

**A JURISPRUDENTIAL VIEW OF RISK – THE TELSTRA CASE**

Although this article is primarily concerned with flooding risks, a good place to commence any evaluation of risk in the jurisprudence of Australian planning courts is *Telstra Corp Ltd v Hornsby Shire Council* (*Telstra*). This was a landmark case delivered by Preston CJ in the New South Wales Land and Environment Court (LEC) in 2006. Although the judgment is primarily noteworthy for its elaboration of the precautionary principle, Preston CJ also addressed the relationship between the precautionary principle, risk and rational decision-making.

The facts of the case were that Hornsby Shire Council had refused an application by Telstra to build a mobile telephone base station on the grounds of the Cheltenham Recreation Club. In so doing, Council was responding to vocal community concerns about the safety and amenity of the proposed development. Preston CJ recognised the case raised questions about “fear, rationality and the law”. Echoing the philosophy of the NRC Report, Preston CJ took the view that responding to community fear “entails a commitment to rational deliberation, in the form of reflection and reason-giving”.\textsuperscript{43} He decided the appeal should be allowed.

In his decision, Preston CJ accepted the precautionary principle is pertinent to decision-making under the *Environment Protection and Assessment Act 1979* (NSW) and acknowledged the precautionary principle “permits the taking of preventive measures without having to wait until the reality and seriousness of the threats become fully known”.\textsuperscript{44} He identified two “conditions precedent” for the precautionary principle to apply: (1) a threat of serious or irreversible environmental damage; and (2) scientific uncertainty as to the environmental damage.\textsuperscript{45} On the facts of this case, Preston CJ decided the precautionary principle did not apply. In his view, the first condition precedent, that there should be a threat of serious or irreversible harm was not satisfied. The existing regulatory standards and the particular design features of the development combined to suggest a precautionary approach had already been taken and so any threat of harm to the health and safety of people or the environment was negligible.\textsuperscript{46}

Turning more specifically to his comments on the interplay between risk and precaution, Preston CJ recognised the precautionary principle has a role to play in responding to risks but he argued it cannot and should not be used to try to avoid all risks: “A zero risk precautionary standard is inappropriate.”\textsuperscript{47} On the contrary, “In applying the precautionary principle measures should be adopted that are proportionate

\begin{itemize}
  \item \textsuperscript{42} Elizabeth Fisher, *Risk Regulation and Administrative Constitutionalism* (Bloomsbury, 2007) Ch 4.
  \item \textsuperscript{43} *Telstra Corp Ltd v Hornsby Shire Council* (2006) 67 NSWLR 256, [9]; 146 LGERA 10; [2006] NSWLEC 133.
  \item \textsuperscript{44} *Telstra Corp Ltd v Hornsby Shire Council* (2006) 67 NSWLR 256, [126], [125]; 146 LGERA 10; [2006] NSWLEC 133.
  \item \textsuperscript{45} *Telstra Corp Ltd v Hornsby Shire Council* (2006) 67 NSWLR 256, [128]; 146 LGERA 10; [2006] NSWLEC 133.
  \item \textsuperscript{46} *Telstra Corp Ltd v Hornsby Shire Council* (2006) 67 NSWLR 256, [184]–[186]; 146 LGERA 10; [2006] NSWLEC 133.
  \item \textsuperscript{47} *Telstra Corp Ltd v Hornsby Shire Council* (2006) 67 NSWLR 256, [156]–[158]; 146 LGERA 10; [2006] NSWLEC 133.
\end{itemize}
to the aims pursued.” To establish a balanced degree of precaution to risk, Preston CJ favoured applying the “usual formulation” – assessing risk by examining the probability of the event occurring and the seriousness of the consequences should it occur – with some margin for error built into the equation. He suggested a stepwise or adaptive management approach could be a good way of retaining a margin for error.

The final step in the decision-making process favoured by Preston CJ is to compare the risks against the potential costs and benefits of the proposed development:

The selection of the appropriate precautionary measures must involve examining both sides of the ledger: the costs associated with the project, process or product (which tends to increase the degree of precaution) as well as the benefits of the project, process or product (which tends to decrease the degree of precaution commensurate with realising the benefit).

He added:

Where there is a choice between several appropriate measures, recourse should be had to the least onerous measure and the disadvantages caused should not be disproportionate to the aims pursued.

Preston CJ’s analysis in the Telstra case follows the logic of the NRC Report in adhering to rational deliberation and reasoned decision-making. This, and the emphasis on adopting “proportionate” and “affordable” measures, also echoes the advice of the SCARM Report. In other similarities, both the Telstra judgment and the SCARM Report place heavy reliance on cost–benefit analysis to bridge the divide between multi-disciplinary sources of information. Both recognise that eliminating risk altogether will seldom, if ever, be the optimal solution; rather, prudent solutions will be proportionate to the level of risk involved and mindful of the economic cost they incur on developers.

In the Telstra case, Preston CJ’s reasoning accords with the “mitigate and adapt” method identified above. The following cases explore how closely this early judicial guidance on risk assessment has been followed in subsequent case law relating specifically to flooding risks.

**MASONRE PTY LTD v LOGAN CITY COUNCIL [2014] QPEC 51**

In Masonre Pty Ltd v Logan City Council (Masonre), a development application to build four houses on vacant land in an established residential area was refused by Council. Council identified a number of conflicts with the specific outcomes of the flood plain management area code (the Code) as the reason for its decision. The Code nominated the “highest recorded flood” – in this case the 1974 flood – as the defined flood event for measuring the relative flood protection offered by development proposals. The development proponent had proposed to elevate each house on piers so the habitable floor level would be above the level of the highest recorded flood in the vicinity. Despite that design measure, Council was concerned that, contrary to the terms of the Code, in times of flood the development would increase the number of people at risk from flooding; increase the number of people likely to need evacuation and place an additional burden on emergency services. The proposed development also failed to meet the Code’s requirements for road access.

After Council’s decision was given, Temporary Local Planning instrument no 1 (Logan Interim Flood Response) 2013 (TLPI 2013) came into effect. TLPI 2013 nominated the “100 year ARI” as the

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48 Telstra Corp Ltd v Hornsby Shire Council (2006) 67 NSWLR 256, [167]; 146 LGERA 10; [2006] NSWLEC 133.
49 Telstra Corp Ltd v Hornsby Shire Council (2006) 67 NSWLR 256, [161]–[162]; 146 LGERA 10; [2006] NSWLEC 133.
50 Telstra Corp Ltd v Hornsby Shire Council (2006) 67 NSWLR 256, [163]; 146 LGERA 10; [2006] NSWLEC 133.
51 Telstra Corp Ltd v Hornsby Shire Council (2006) 67 NSWLR 256, [177]; 146 LGERA 10; [2006] NSWLEC 133.
52 Telstra Corp Ltd v Hornsby Shire Council (2006) 67 NSWLR 256, [166]; 146 LGERA 10; [2006] NSWLEC 133.
53 Masonre Pty Ltd v Logan City Council [2014] QPEC 51, [4].
54 Masonre Pty Ltd v Logan City Council [2014] QPEC 51, [7].
55 The ARI is a statistical estimate of the average period in years between the occurrence of a flood of a given size or larger (SCARM Report, n 17, 96).
defined flood event and categorised inundation to a maximum depth of 300 mm during events up to and including the defined flood event (DFE) as a low flood hazard. In keeping with recent plan drafting trends, TLPI 2013 was also written in a less prescriptive and more performance-based style. These two differences encouraged the developer to argue that significant weight should be given to the newer, less onerous document (TLPI 2013), and that an adequate performance-based solution could now override any conflicts with specific outcomes identified in either instrument. The particular performance-based solution on offer was an emergency flood management plan including an evacuation strategy that would give residents between 24 and 48 hours’ notice of an impending large flood. Reference was made to the Disaster Management Act 2003 (Qld) (DMA) in support of these claims. However, his Honour, Judge Everson DCJ, was not swayed by this argument. He noted the DMA did not confer any power to require someone to evacuate their home and there was no sanction against any person who refused advice to evacuate. He then observed:

The approach of the appellant appears, in any event, to confuse desirable planning outcomes in a spatial sense with the process of organising and managing an appropriate emergency response to a natural disaster such as a flood. While the DMA provides a framework for emergency responses to a major flood event, sound planning principles seek to prevent prospective residents being at risk from such a natural disaster at all. Emergency responses provided for in the DMA or elsewhere do not provide a justification for otherwise unsound land use proposals.

In Masonre, residential development that was appropriate in all other respects was rejected solely on the grounds of flooding risks. Although the developer had offered both a technical fix – building to a height above the defined flood event – and a non-technical fix – early warning advice – both Council and, on appeal, the Court, refused to accept the “mitigate and adapt solution” on offer. Instead a strongly normative and ultimately precautionary approach prevailed.

**RADRAY CONSTRUCTIONS PTY LTD v HORNSBY SHIRE COUNCIL [2014] NSWLEC 1024**

In Radray Constructions Pty Ltd v Hornsby Shire Council (Radray) the development proponent appealed Council’s decision to refuse its application to build a Seniors Living Development comprising 13 dwellings in a low-density (Res A) area. Council had refused the application due to its concerns about the risks of flooding. In this case the planning scheme was relatively silent on the matter – despite flood events as recent as 2010 and 2012, there were no formal floodway restrictions in operation across the whole of the site.

On appeal to the LEC the parties’ experts agreed that:

- approximately 74% of the site would be inundated in a 100-year flood event and 100% of the site would be inundated in a probable maximum flood (PMF); and
- approximately 44% of the site has velocity-depth products exceeding 0.4 sq m/s in a 100-year event. This value is the threshold for safe pedestrian movement.

To address these issues, the developer proposed various mitigation works. The proposed measures would:

- raise floor levels in each apartment above the level of the PMF – residents would be able to remain safely in their units during significant storm events;
- flood proof the basement carpark above a 1:100 year DFE; and
- elevate footpaths on the site above the 1:100 year DFE to ensure safe egress at all times.
In other measures, the applicant proposed engineering work to improve flood storage and conveyance across the site and to make the body corporate responsible for clearing and maintaining flood routes in accordance with a comprehensive, emergency management plan. To cover all bases, there would be flood hazard signage within the development; flood information contained in the contract of sale package and ongoing requirements on the site’s body corporate to provide flood awareness information to site residents.62

This impressive array of holistic risk management measures persuaded Commissioners Hussey and Dixon the engineering solutions were “technically sufficient” to protect the units from flooding but, taking the entire context into account, that was not enough.63 More was at stake. For instance, the Commissioners considered the proposed engineering works would impact adversely on the existing streetscape and neighbourhood amenity. They were also concerned that, in a 1 in 20-year flooding event, the engineering works would increase the velocity of flood waters and the depth of flood water on adjoining properties. In less drastic but potentially more frequent flooding events, the communal gardens would be flooded and this could be particularly distressing for elderly occupants.64 Disruptions to normal routines, damage to the communal gardens and the time and cost associated with remediation work were potential stress factors which might cause “varying psychological difficulties for some residents, with severity again depending on the degree of damage or disruption, and the existing health status or vulnerability of the older person”.65 The Commissioners were not sufficiently persuaded by the developer’s argument that, once a resident had experienced a flood event and been assured their dwelling was not liable to be “washed away” their anxiety levels would be lower on the next event leading, over time, to residents simply becoming accustomed to floods passing through the site.66 Taking all these issues into account, the appeal was dismissed and Council’s refusal was confirmed.

In New South Wales, the Flood Plain Development Manual and Flood Policy appear to favour an adaptive approach to flooding risk – “mitigate if reasonably practicable, avoid if not”. In Radray, however, the Commissioners found the adaptive engineering solutions proposed by the developer were “technically sufficient” but still unacceptable. Given the nature of the proposed project, a seniors living development, and potential impacts on surrounding properties, the engineering solutions on offer – although technically sufficient – did not make the level of risk acceptable. The approach of the Commissioners was both more holistic – viewing the development and its impacts as a whole and in context – and more precautionary – preferring avoidance (by confirming the refusal) over and above technical and affordable mitigation measures. Once again, a precautionary approach trumped the mitigate and adapt method of reasoning.

**Stockland Development Pty Ltd v Sunshine Coast Regional Council**

[2014] QPELR 52

In Stockland Development Pty Ltd v Sunshine Coast Regional Council, Stockland had applied for a preliminary approval to develop a master-planned community comprising 950 residential allotments capable of housing approximately 2,000 people. The site of the application was farmland, included in the East Maroochy Cane Lands precinct of the Maroochy River Plains Planning Area. The existing precinct intent was to allow sugar cane and other agricultural pursuits and a draft new planning scheme indicated a similar intent for the land. The land was mapped as an area prone to flooding in both the Maroochy Plan and the draft planning scheme. The Sunshine Coast Regional Council had refused the application but Stockland appealed that decision arguing that, despite conflicts with the planning scheme, there were sufficient grounds to justify approving the application – primarily a need for new housing. Although not

62 Radray Constructions Pty Ltd v Hornsby Shire Council [2014] NSWLEC 1024, [16].
63 Radray Constructions Pty Ltd v Hornsby Shire Council [2014] NSWLEC 1024, [91].
64 Radray Constructions Pty Ltd v Hornsby Shire Council [2014] NSWLEC 1024, [133]–[135].
65 Radray Constructions Pty Ltd v Hornsby Shire Council [2014] NSWLEC 1024, [71].
66 Radray Constructions Pty Ltd v Hornsby Shire Council [2014] NSWLEC 1024, [29].
the only issue, the flood-prone status of the land was discussed in some detail and clearly had a bearing on the judge’s final decision.67

To get around the conflicts with the planning scheme, the appellant highlighted the land’s location within the “Urban Footprint” of the South East Queensland Regional Plan and its former designation as an urban growth area in council’s draft growth management strategy. The appellant also made reference to the subsequent 2008 Sunshine Coast Growth Management Position Paper which identified flooding constraints as the primary reason why the land was no longer considered suitable for urban development. The appellant’s argument was that, if flooding was the main constraint preventing urban development, then, provided the flooding constraint was adequately mitigated, urban development should be allowed.

The measures put forward by the appellant to mitigate the flooding risk were:
- Filling the site so that it would be immune from flood to at least the average recurrence interval (ARI) 100-year event, including allowing for potential sea level rise from future climate change.
- Reconstructing the David Low Way, immediately east of the Motorway to achieve a flood immunity to the 50-year ARI level, and remain trafficable, albeit inundated to some extent, to the 100-year ARI event.68 This would achieve compliance with the requirements of the current Planning Scheme.69
- An evacuation and a “shelter in place” strategy. This included filling part of the site to achieve PMF immunity, thereby providing an area for residents to take refuge on site until the flood waters receded.70

In response, Council conceded the appellants could use engineering solutions to mitigate the flooding hazard. It maintained, however, that, in this particular case, the risks should be avoided – by not permitting the development to go ahead – rather than mitigated – by filling the site and adopting an emergency management plan. Council claimed its position had support in the draft planning scheme which adopted an “avoid if practicable but mitigate if not” approach to development.71

Ultimately, his Honour Judge Rackemann agreed with this “conservative” approach to managing the flood risk:

The development would result in the raising of the David Low Way and the creation of a flood refuge in an area prone to flooding but, on the other hand, would locate an additional residential population, of approximately 2000 people, into the floodplain, thereby potentially putting more people at risk and potentially adding to the burden on local and state emergency responses in times of disaster. 72

That level of risk was unacceptable in the context of the applicable planning instruments. Overall, the appellant had failed to demonstrate a strong or overwhelming need for housing otherwise than in accordance with the planning scheme.73

The discussion in this case raised the question whether development should be avoided altogether or mitigated by way of development controls and design features. In Queensland, as we have seen, the State Planning Policy contemplates both strategies – councils can choose to avoid the risk of flooding or to allow development provided the risk is mitigated to a tolerable or acceptable level. This is the “delegate and diverse” approach identified above. In its most recent planning documents, Council had opted for a strategy of avoidance. Even though all parties agreed the risk could in fact be mitigated to an acceptable level, the judge affirmed Council’s preference for avoiding development altogether: “That ‘avoid if practicable but mitigate if not’ approach is conservative, but understandable and worthy of some

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67 Stockland Development Pty Ltd v Sunshine Coast Regional Council [2014] QPELR 52, [83].
68 Stockland Development Pty Ltd v Sunshine Coast Regional Council [2014] QPELR 52, [88].
69 Stockland Development Pty Ltd v Sunshine Coast Regional Council [2014] QPELR 52, [90].
70 Stockland Development Pty Ltd v Sunshine Coast Regional Council [2014] QPELR 52, [96].
71 Stockland Development Pty Ltd v Sunshine Coast Regional Council [2014] QPELR 52, [192], citing s 3.10.2.1c of the draft planning scheme.
72 Stockland Development Pty Ltd v Sunshine Coast Regional Council [2014] QPELR 52, [192].
73 Stockland Development Pty Ltd v Sunshine Coast Regional Council [2014] QPELR 52, [209].
CONCLUSION – PRECAUTION THROUGH THE BACK DOOR?

Resilience, risk mitigation and adaptation are the lingua franca of policy experts operating in the field of climate change and disaster management. In many areas, the notion of adaptive governance, premised on ever more sophisticated methods of risk analysis and risk assessment, seems to have over run that more rudimentary decision-making tool, the precautionary principle. Once a shining light of the ESD dialogue and a relatively frequent visitor to judicial decision-making, one could be forgiven for thinking the simplest tenet of the precautionary principle, be cautious with decision-making, seems to have had its day. But, surprisingly, this is not the case, at least in the area of flooding case law. In each of the flooding cases reviewed above, both local councils and, on appeal, the courts, favoured risk averse, precautionary decision-making over and above the ‘mitigate and adapt’ solutions on offer. When planning instruments recognised the flooding risks, their terms were applied in a highly prescriptive, normative fashion bucking the trend towards more flexible, performance-based planning. Decision-making in each of these difficult cases relied more on the precautionary/normative approach than on the “mitigate and adapt” line of reasoning so strongly favoured in the policy literature.

Of course, there are other cases where development on flood-prone land has been approved subject to conditions and no doubt, too, less borderline or controversial cases are being routinely approved by councils without ever ending up in the courts. Nevertheless, there is a degree of consistency across the cases discussed above which demonstrates that, at least in the most controversial cases, a conservative or precautionary approach to decision-making is still capable of trumping the dogmatic assertion that “adaptation” and “mitigation” measures are the best way forward.

In Telstra, Preston CJ argued “A zero risk precautionary standard is inappropriate,” and that “measures should be adopted that are proportionate to the aims pursued.” This line of reasoning is perfectly consistent with the dominant paradigm in national flooding policy documents. These documents place great faith in the rigour of the “analytic-deliberative” model of decision-making believing that comprehensive, strategic risk management planning will deliver “resilient” development outcomes. But, even in these documents, there are some alternative strands of thought which operate as supplementary guidance when best practice plan-making is unavailable. This is reflected in the AEM Handbook where decision-makers are encouraged to proceed in a “cautious manner” when the relevant studies are incomplete or there are gaps in the knowledge base.

It appears the closer we get to the operational level of decision-making the more significant this supplementary line of reasoning becomes. After all, few councils are operating with the assistance of perfectly reliable information and comprehensive, best practice, floodplain management plans. As noted by Fischhoff et al, actual decision-making is a complex, multifaceted business requiring decision-makers to consider the social, cultural, political and legal risks associated with their decisions in contexts where facts are uncertain and circumstances fluctuate over time. Reliable information is often unavailable, incomplete or contrary to lived reality; the community’s risk appetite for flooding is largely unknown – especially when the eventual landowners are not currently identifiable; flooding risk is only one of

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74 Stockland Development Pty Ltd v Sunshine Coast Regional Council [2014] QPELR 52, [100].
76 See, for instance, Arora Construction Pty Ltd v Gold Coast City Council [2012] QPEC 52.
77 Telstra Corp Ltd v Hornsby Shire Council (2006) 67 NSWLR 256, [156]–[158]; 146 LGERA 10; [2006] NSWLEC 133.
78 Telstra Corp Ltd v Hornsby Shire Council (2006) 67 NSWLR 256, [167]; 146 LGERA 10; [2006] NSWLEC 133.
79 AEM Handbook, n 17, 92.
many planning considerations at stake; development conditions may not prove sufficient or be properly implemented over time and councils fear financial and political liability down the track for poor decision-making. In these circumstances, perhaps it is no wonder both councils and the courts have opted for a conservative, precautionary approach to decision-making despite the ready availability of a technical fix. Perhaps the precautionary principle still has relevance after all.