CLIMATE CHANGE, STORMWATER AND THE LAW

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1. Sydneysiders know that the stormwater from the city's large, impervious areas is wasted by pumping it through unseen pipes into the ocean or the harbour[1]. At the same time, they are told that dam levels are too low and that water restrictions must be imposed. Many would think that Sydney's population growth[2] and climate change will put increasing pressure on water resources. Scientists among them may know that impervious surfaces typically absorb more solar radiation than natural surfaces do, and that if stormwater does enter urban streams its warmth and pollution may kill aquatic organisms or drive them away.

2. But few may have heard of the principles of water sensitive urban design (WSUD), which address those issues and help adaptation to climate change.

3. Most climate scientists consider that climate change is real and dangerous, that the planet is warming and that dangers lie ahead. Increasing the amount of runoff from an urban area is said to influence the local climate because if precipitation does not soak into the urban landscape, it is not available to absorb heat, evaporate, and thereby cool the city[3]. As Mr Sid Perkins has put it: "By losing its capacity to retain soil moisture, a city, in a sense, loses its capacity to sweat".

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[1] It has been suggested that more than 500 gigalitres per year are lost via the Sydney stormwater system: Mark Taylor, *Sydney's Water Woes*, Australasian Journal of Environmental Management (2006) vol 13 138 at 139 citing Essery.
[2] A Sydney population growth of 570 people per week has been recorded: Taylor (above) citing Australian Bureau of Statistics 2006.
[3] Sid Perkins, *Science News* 166:0 (Sept 4, 2004) p 152(2).

4. From such considerations, the view has emerged that there is a role for WSUD in addressing, among other things, climate change risk. The practice and principles of WSUD have been described as follows by T. H. F. Wong:

> "It is increasingly practiced in new urban Greenfield development areas and urban renewal developments linked to a broader ESD agenda. Key guiding principles of WSUD include:
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> 1. reducing potable water demand through water effluent appliances and seeking alternative resources of water such as rainwater and (treated) Wastewater reuse, guided by the principle of "fit-for-purpose" matching of water quality and end uses;
> 2. minimising wastewater generation and treatment of wastewater to a standard suitable for effluent re-use opportunities and for release to receiving waters;
> 3. treating urban stormwater to meet quality objectives for reuse and/or discharge to surface waters;
> 4. using stormwater in the urban landscape to maximise the visual and recreational amenity."[4]

5. It is necessary to explain how this fits into the legal framework.

6. WSUD has achieved legal status by adoption, although not in uniform language, in planning instruments or policies of consent authorities which must or may be considered when granting development consent. For example, see Warringah Council, *Water Sensitive Design Policy*; Coffs Harbour City Council, *Water Sensitive Urban Design Policy and Guidelines*; and Wollongong Development Control Plan 2009 Ch E 15: *Water Sensitive Urban Design*.

7. The Coffs Harbour Guidelines par 1.2.1 identify the influence of WSUD on climate change as follows:

> "CHCC has adopted an agreed sea level rise of 0.91 metres for the Local Government Area (LGA).

[4] T.H.F. Wong "*An Overview of Water Sensitive Design Practices in Australia*, Urban Water Practice and Technology 1, vol 1 No 1 2006.

Other aspects associated with climate change that may be expected to influence the LGA include;

- Decreasing rainfall – which will place increased importance on efficient water use and require a reduced dependence on surface water during low flow conditions. A lower rainfall incidence will place increased pressure on the natural water cycle and in particular environmental flows will be impacted with likely negative effects on existing natural water courses, other aquatic habitats and availability of surface waters for other species. Water users may experience long-term water restrictions and higher prices as environmental flows are reduced, thereby increasing the importance of on-site water detention for subsequent use.
- Increasing temperatures and subsequent evaporation – resulting in drier conditions, potentially increasing bush fire risk and resulting in water becoming an even more valuable resource for both the urban and natural environment.
- Sea level rise – which will further impact on areas already flood affected, including both urban and natural wetland ecosystems. This has flow on effects for both human populations and biodiversity, through loss and alteration of habitat / homes / infrastructure, costs associated with upgrading infrastructure and further encroachment on natural areas by human development. Increased salination of surface and groundwater will also likely result.
- Storms – increased rainfall intensity (while overall rainfall volume may decrease) will impact on drainage and water management in urban areas.

…

WSUD techniques can help ameliorate some impacts by reducing flow volumes and rates, storing water for short or long term use/infiltration back into the water cycle and essentially cleaning stormwater before releasing it back into the water cycle."

8. Where an environmental statute requires a decision-maker, such as a local council or other development consent authority, to take the public interest into consideration when reaching a decision, that includes consideration of the principles of ecologically sustainable development (ESD). The principles of ESD require consideration of relevant risks posed by climate

changes in a stormwater context. That may lead to consideration of the principles of WSUD.

9. The principles of ESD are incorporated into many NSW statutes. For example, the objects of the *Environmental Planning and Assessment Act 1979* include encouragement of ESD: s 5. The principles of ESD, as defined, include the precautionary principle and inter-generational equity: s 4(1) *Environmental Planning and Assessment* Act. ESD is described in s 6(2) of the *Protection of the Environment Administration Act 1997* as follows:

> "6 **Objectives of the Authority**
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> (2) For the purposes of subsection (1) (a), ecologically sustainable development requires the effective integration of economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through the implementation of the following principles and programs:
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> (a) the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
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> In the application of the precautionary principle, public and private decisions should be guided by:
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> (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and
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> (ii) an assessment of the risk-weighted consequences of various options,
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> (b) inter-generational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,
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> (c) conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and

ecological integrity should be a fundamental consideration,

(d) improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services, such as:

(i) polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,

(ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,

(iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems."

10. For climate change risks to be seriously considered, there must be good science as to its effects and causes. The most authoritative scientific study of climate change is the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) in 2007. The IPCC found that climate change is real and dangerous and, that to a significant extent, the causes are anthropogenic. The second half of the twentieth century brought the warmest years on record. The climate change risks presented by global warming include sea level rises, increases in the severity and frequency of storms, and coastal flooding.

11. In light of the IPCC and other reports and studies, there have been calls to take steps to mitigate factors that contribute to climate change and to adapt to its effect. Effective mitigation is not easy in the absence of international agreement on enforceable targets for lower emission of greenhouse gases. Adaptation was strongly advocated in the UK Stern Review Report, *The Economics of Climate Change*, at 420:

> "[Adaptation] is the only way to deal with the unavoidable impacts of climate change to which the world is already committed, and additionally offers an opportunity to adjust economic activity in vulnerable sections and supports sustainable development."

12. In October 2007, the Department of Environment and Climate Change published guidelines entitled *Floodplain Risk Management Guideline: Practical consideration of Climate Change*, aimed to assist councils in the implementation of floodplain risk management plans. The guidelines state that; "The impacts of climate change and the associated ramifications…cannot be ignored in decision-making today", and that "climate change is expected to have adverse impacts upon sea levels and rainfall intensities, both of which may have significant influence on flood levels".

13. In the Land and Environment Court of New South Wales there have been many cases where the principles of ESD have been applied. In recent years, through the application of ESD principles, the Court has made decisions relating to climate change. They have fallen into two categories. One category is climate change mitigation where the Court has decided that the contribution of new development such as coal power stations to greenhouse gases and thus to climate change, must be considered by decision-makers.[5] In the second category are climate change impact cases where the Court has decided that the decision-maker must consider the impacts of climate change on proposed development in vulnerable coastal areas.[6]

14. This then is part of the legal framework in which stormwater management and the principles of WSUD may come under legal scrutiny in the future.

[5] *Gray v Minister for Planning* (2006) 152 LGERA 258.
[6] *Walker v Minister for Planning* (2007) 157 LGERA 124, on appeal *Minister for Planning v Walker* (2008) 161 LGERA 423; *Aldous v Greater Taree City Council* [2009] NSWLEC 17.