Managing Floodplains & Rivers for the Future –

Floodplain Development and Water Extraction in Inland NSW

CONTENTS:

January 2007

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1 Executive Summary

1.1 Development on the floodplain is considered one of the most serious threats to our inland rivers. The floodplain plays a critical role in a healthy, function floodplain - by isolating the floodplain from the river system the impact of development is ecologically disastrous for the entire system.

1.2 Our rivers and floodplains are dependent on variable and fairly frequent flooding regimes. Floods trigger fish and waterbird breeding, the growth of floodplain woodland and aquatic plants, essential nutrient cycling and widespread invertebrate production. Floods also recharge groundwater reserves.

> *"In NSW, floodplains equate to about 88% of a rivers area and more than 95% of this is owned by landholders who will be affected by changes in river flows".* (Kingsford, 2005)

1.3 This paper will consider two key water related issues that occur throughout inland NSW - rural flood control works and the diversion of floodplain water, or floodplain harvesting. Other floodplain management and development issues will not be considered.

1.4 Rural flood control usually involves the construction of levee banks along a river bank and/or around a field to protect crops and other assets (flood control around towns is not being considered here).

1.5 Draining rivers, or floodplain harvesting, includes taking water that has flowed into floodrunners or overflowed from the main river channel, and taking local runoff that has not yet entered the main river channel. The diverted water is usually used for agriculture.

1.6 The harvested water is generally channelled and/or pushed (usually with levee banks) into storages or onto crops, or it is pumped from natural depressions and billabongs. Small creeks can also be turned into off-river storages, enabling them to be fed a direct supply of water from local runoff (Kingsford 2005).

1.7 Works on floodplains have major ecological implications when they isolate the floodplain from the river system and prevent water getting to important ecological features such as wetlands. Works may also adversely affect and intensify flooding in other areas, causing damage to the surrounding environment, other properties, and to towns downstream.

1.8 Floodplain harvesting has the *additional* impact of taking even more water from our inland river systems, which are already suffering from overextraction. This greatly reduces the spread of flooding and so connectivity of the floodplain and river channel. The extent of the problems with water use and management in the Murray-Darling Basin are well known, and the implications for the riverine environment are evident in the vistas of dusty wetlands and dead or dying river red gums.

1.9 Floodplain harvesting and flood control remain a major loophole in NSW water management, particularly now that many other forms of extraction have been

capped and/or annual limits have been imposed. Development is continuing largely unchecked and unregulated, allowing some users to gain water for free and/or protecting their resources at the expense of the environment and other users in the system. In the Gwydir valley alone harvesting levels have been estimated at 30GL each year (MDBMC 2001), though anecdotal evidence suggests the volume far exceeds this figure.

1.10 The diversion of floodplain water is generally unmetered and unmeasured, and most floodplain harvesting and associated works have not been licensed under the 1912 *Water Act*. This Act was also applied in a limited manner to rural flood control. There are a great number of works that remain unlicensed.

1.11 The problem is now compounded by concerns for the protection of environmental water from harvesting (see photos below taken recently in the Macquarie Marshes).

> *"[The* Water Act 1912*] was never applied [to licence floodplain harvesting] as there was generally no requirement to restrict total overall water extractions or off-allocation diversions. Harvested floodplain water has been treated as a* ***freely available bonus*** *to a farmer's licensed entitlement."*
>
> (NSW Floodplain Harvesting policy advice No. 3; Schedule 3, Section 2, Water Sharing Plan for the Gwydir Regulated River Water Source 2002)

1.12 There are a number of policy commitments at a state and national level, including in the NWI and the Murray Darling Basin Cap Agreement, that will remain unmet until floodplain management, in particular harvesting, is adequately regulated and enforced, and until environmental water is adequately protected from extraction via harvesting or otherwise. In particular, extraction through floodplain harvesting must be addressed in order for NSW to meet commitments “to complete the return of all currently overallocated or overused systems to environmentally-sustainable levels of extraction” (NWI Objective 4).

1.13 There has been no statewide audit of development on NSW floodplains, nor has there been a statewide robust independent environmental assessment of floodplains and the impact of development to guide floodplain planning and management. These requirements are consistent with National Water Initiative (“NWI”) requirements to manage interception activities and assess the environmental and economic costs and benefits (including to downstream interests) of floodplain harvesting & rainfall harvesting (see clause 56).

1.14 Current government policy indicates an intention to ‘rubber stamp’ all existing harvesting works, despite commitments to cap harvesting, requirements to protect environmental water from illegal extraction, and the need for licensing and management to be environmentally accountable.

1.15 The lack of regulation severely limits the effectiveness of public investment in efficiency savings or market mechanisms to return much needed water to the environment.

1.16 Despite the fact that new water legislation was developed in 2000 to address a lack of environmental considerations, floodplain development and management

is still being dealt with under the 1912 Act. For example, floodplain management plans are being developed under the 1912 Act to deal with rural flood control and licence unauthorised works, even though the 2000 Act contains more extensive environmental provisions. Further, anecdotal evidence from landholders and agency staff indicates that the process lacks transparency and fails to adequately consider the environment and downstream users.

1.17 The harvesting of flood waters from local runoff is not being dealt with as floodplain harvesting, rather it is dealt with under the geographically limited farm dams policy. The environmental impacts of the policy have not been adequately considered or restricted, and in the western region there is no restriction on dams to capture local runoff. Nor is this form of harvesting being considered within the Murray Darling Basin Cap.

1.18 There are a number of opportunities available to the government to make floodplain management more sustainable and in-line with policy and NWI commitments. This report makes the following recommendations:

1. Put in place the existing commitment to a permanent moratorium on new or expanded works and harvesting activities.
2. All illegal water diversion, particularly the diversion of environmental water, must be stopped, and regulatory powers should be transferred to the Department of Environment and Conservation as key environmental water managers.
3. There must be a full statewide environmental and socio-economic assessment and audit of floodplain harvesting and floodplain development, followed by the cessation of unsustainable harvesting and the removal of ecologically inappropriate flood works.
4. The *Water Management Act 2000* must be activated before there is any further licensing.
5. Floodplain harvesting must comply with the MDB Cap, and works removed and/or harvesting activities ceased where necessary.
6. Any compliant floodplain harvesting must be adequately accounted and the water paid for.
7. Rainfall harvesting must be included within the broader floodplain harvesting management recommendations above and the MDB Cap
8. Features such as billabongs, where used as storages, should be decommissioned and returned to a more natural state.
9. A best practice manual for flood control and development on floodplains should be developed, which details how development can occur in a more environmentally sensitive manner and provides guidelines for minimising the impacts of development.
10. All planning and consultation processes must be conducted in a transparent and accountable manner. The gazettal of floodplain management plans must halt until there is a full assessment of rural floodplain development and robust environmental guidelines are developed and applied.

2 The Floodplain Environment

2.1 Floodplains are also biodiversity hotspots, with at least 100 times more species than the river channel, and possibly up to 1000 more species. For a time after filling, floodplain lakes teem with life 'as rich and diverse as that of any lake system in the world (Mussared, 1997).

2.2 The fact that the floodplain and riverine environment depends on flooding is self-explanatory. Floods are essential for nutrient and organic carbon cycling, and the widespread production of invertebrates (an important food source for fish and colonial-nesting waterbirds) and for floodplain woodland and aquatic plants. Floods trigger fish and waterbird breeding and the growth of plants for waterbird feeding is initiated. It also recharges groundwater reserves.

> *"The Lower Balonne floodplain is a distributary system of rivers, channels and lakes covering some 1.38 million hectares in South West Queensland and North West N.S.W… It is home to some 500 different flora species, 24 frogs and a rich array of animal and bird life. Like all floodplains, the Lower Balonne is unique and very diverse due to the highly infrequent and highly variable flooding events."* (Fessey, 2006)

2.3 Our rivers and floodplains are dependent on frequent but variable flooding regimes:

*"Under natural flow … [rain] delivered small or moderate floods to most rivers in most years; usually enough to spill out over the riverbanks, to wind through the maze of channels, billabongs and lakes and to inundate lower-lying areas of floodplain. Occasionally, perhaps one year in 10 or 12, a huge flood would roll down the rivers, spreading vast floods and wetting their entire floodplains" (*Mussared, 1997*).*

3 Floodplain Development and Management

3.1 There are a number of floodplain management issues throughout NSW, but two key water related issues are development on floodplains and rural flood control works, and the diversion of floodplain water, or floodplain harvesting.

3.2 Floodplain harvesting includes taking water that has overflowed from the main river channel or flowed into floodrunners, and taking local runoff that has not yet entered the main river channel. Water is generally channelled and/or pushed (usually with levees) into storages or onto crops, or it is pumped from natural depressions and billabongs.

3.3 Harvesting occurs around New South Wales, but primarily in the Darling Basin – i.e. the Macquarie River and north to the border. The main areas are Namoi, Gwydir and Border rivers, and to a lesser extent lower Macquarie and Barwon Darling.

3.4 Rural flood control works are generally used to protect crops and other property, and are often levees or banks that divert water away from the crops.

3.5 At times the works will be used for both flood control, and to divert water into a channel or storage for later use.

Examples

Water Diversion from the Floodplain - Harvesting

3.6 See Diagram A for pictorial examples of floodplain harvesting methods.

3.7 **Example A**: Pumping from billabongs or forming a channel from a billabong to a storage. There may or may not be banks to guide the flood water into the channel or hold it in the billabong.

3.8 **Example B**: This example can take many forms. Flood water can flow or be directed (with levee banks) into the existing channel that is used to pump river extractions to the storage, or part of the river bank can be removed to form an artificial flood runner that is connected to the storage.

3.9 In some catchments drains have been dug across the floodplain to enable water to 'fall' into them when it flows across, and it can then be pumped into storages (Kingsford 2005).

Wee Wee wetlands and the Murrumbidgee

"*…the vast majority of the water [diverted at the Maude weir for the environment] was used for an environmentally unfriendly irrigation scheme … [which] channelled [the water] into huge irrigation bays of approximately 400 ha in size. The water was ponded to a depth of 3 to 4 metres … and then held there for weeks … to kill weed seeds, as the area is certified organic.[In 2005/2006 season] some 12,000 to 15,000 ha of land was irrigated in this manner…*" (Howley, 2006)

3.10 Often this water would otherwise flow back into the system further downstream or flow onto other ecological features such as wetlands. An example of this is between Redbank weir on the Murrumbidgee River and the Lowbidgee wetlands (see the boxed quote above).

3.11 **Example C**: This is similar to example B. People can extend and deepen existing floodrunners to channel river water into canals/storages or push it onto pasture/crop. See the photos from the Macquarie Marshes below for an example.

3.12 **Example D**: This method utilises floodplain depressions and features such as ephemeral lakes as water storages and water is then pumped from them. It can often be opportunistic and use temporary pumps or other means. Specific examples include Gooran Lake in the Gunnedah area.

3.13 In flat country, levee banks, built to guide flood water into storages, do not need to be high to have a major impact – at times a fifteen centimetre contour bank can stop the majority of overland flow from getting into the river system and re-

route it into a storage dam. The adverse implications for the river, its wetlands and downstream users can be huge.

3.14 Small distributary or effluent creeks can also be turned into off-river storages resulting in the supply of water straight into storages (Kingsford 2005).

3.15 In the slopes country on the western side of the Great Dividing Range, the harvesting of rainfall runoff in gullies is generally covered by the farm dams policy, but this example can also include large developments such as that currently proposed in the Gwydir Valley by Sundown Pastoral Company (the development application is currently with Department of Natural Resources).

3.16 Other examples can include water being directed out of the river using a system of levee banks and used to flood pastures or a paddock directly. Sometimes this occurs in areas that were once wetlands prior to clearing since the area will naturally flood.

3.17 Another way of harvesting water is through tail-water return systems, where fully bunded irrigation fields keep floodwater out but capture all rainwater and direct it into storages for use later. Whilst these systems do not often take huge quantities of water from the field, the systems can be set up to capture water externally for later use as well.

Diverting and Extracting Flood Waters in the Lower Balonne

"…during the late 1980s and 1990s broad scale cotton irrigators realised the potential of the [Lower Balonne, with stations such as Cubbie taking large amounts of water from the floodplain as well as the river]. The result on the downstream communities has been devastating. Flows are minimal and have ceased to reach the end of system for more than 2 years. Narran Lake, a world renowned Ramsar site is no exception. The problem is that too much water is allowed to be extracted across all flow levels…" (Fessey, 2006)

"The Panel supports the contention of the CRC for Freshwater Ecology that there will be significant long term degradation of the Lower Balonne floodplain and of the Narran lakes in particular once the system experiences the water extraction that is possible with the present infrastructure. We see a long period of decline, with the full impacts not necessarily being fully obvious within the 40 year time scale of this assessment, due to the background high flow variability."
(Cullen, P. et al (2003) "***Review of Science*** *Underpinning the Assessment of the Ecological Condition of the Lower Balonne River System*".)

Rural Flood Control and Floodplain Development

3.18 As mentioned above, rural flood control usually involves putting up levee banks beside a river and/or around a field to protect crops and other assets. This alienates the floodplain and can have major implications on the direction of flooding, velocity, and magnitude in other areas. This can cause damage to the surrounding environment, other properties, and to towns downstream.

3.19 In tailwater return systems around bunded irrigation fields, they can also assist in preventing chemicals on crops being washed into the river.

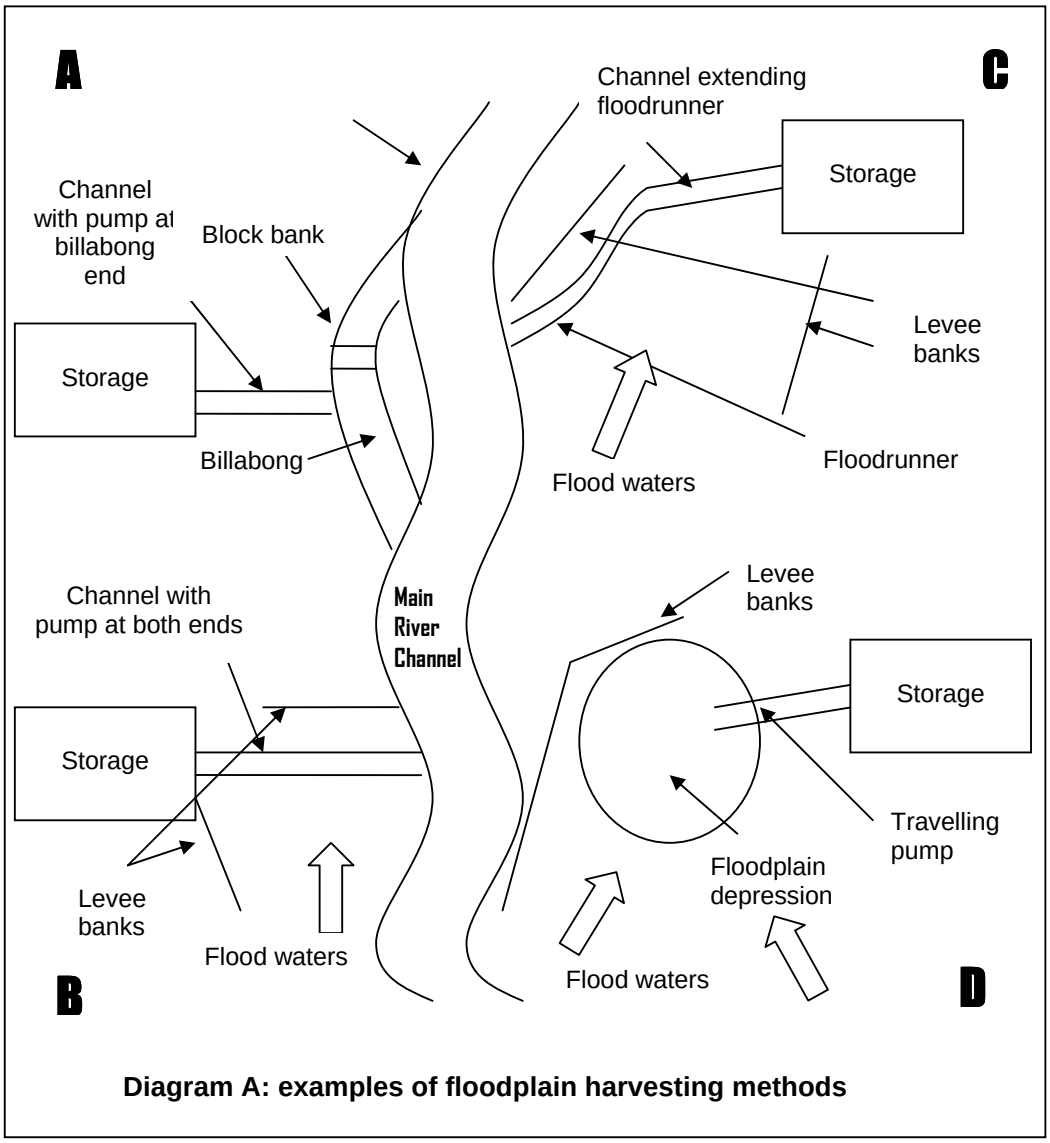


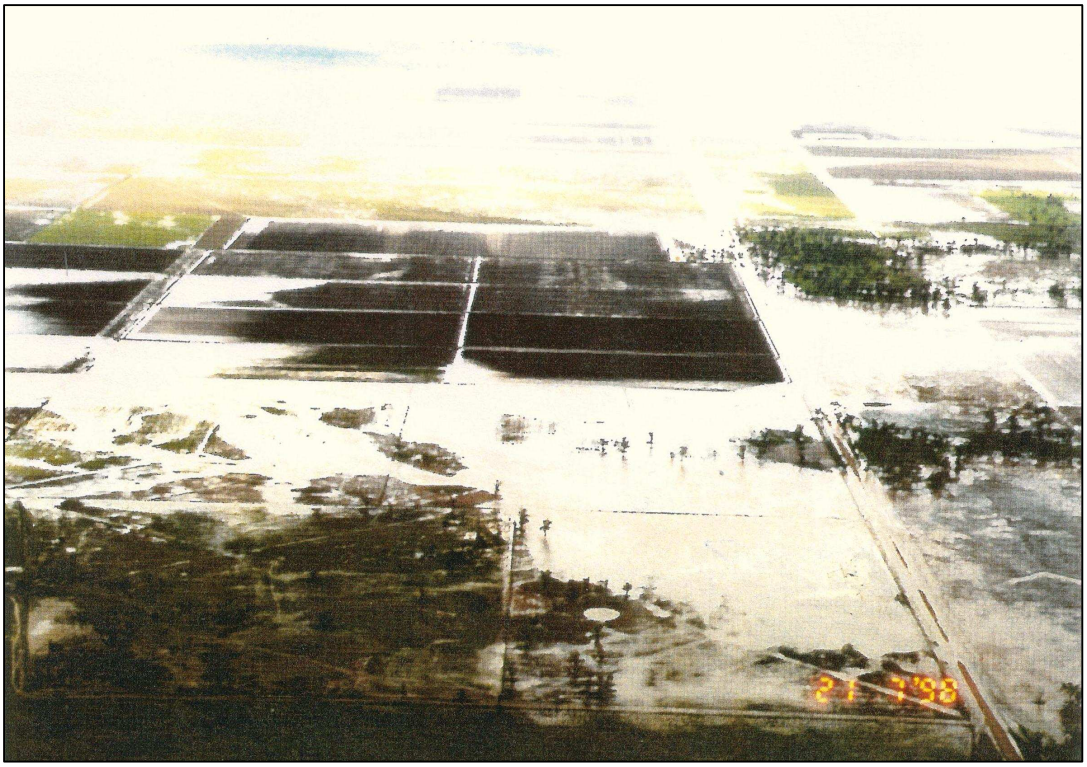
Diagram A: examples of floodplain harvesting methods

This photo illustrates examples A and B, with water being diverted away from a wetland via a channel. This photo was taken during a release of environmental water in the Macquarie Marshes. The wetland is a private Ramsar site, the channel is on the neighbouring property.

These photos show water flowing from a river red gum forest and wetland onto cleared country and into a channel and storage dam.

These photos are of water being diverted from the Macquarie River and its floodplains. There are banks on the western side of the river to hold and spread the water, diverted from the river upstream, onto private land, and direct it into channels that are taking the water from the river for private use.

These photos are of flood control levees protecting paddocks in the Cudgegong valley. At points the levees are 8 metres in height. These levee banks completely alienate the floodplain, an integral part of the system, from the river. If there are no banks on the other side of the river flooding will be greatly increased in the environment opposite.



<u>Rural Flood Control</u>: There are pictures of flood control levees in the Namoi valley. The photos demonstrate how these banks stop some paddocks being flooded, and increase the flooding elsewhere. This alienates parts of the floodplain, and can cause damage to the environment and neighbouring properties (see picture below), as well as drowning ecosystems that are not normally flooded.

4 Why Is Floodplain Development an Issue?

a. Ecological Concerns

> *"the most serious threat to dryland rivers is from diversions, regulation and* ***floodplain development****"* (Kingsford, 2000).

4.1 The NSW Floodplain harvesting policy (policy advice number 3) recognises that "floodplain harvesting can seriously affect the connectivity between the local floodplain, wetlands and the river, through the loss of flow volume and redirection of water flows."

4.2 The diversion of floodplain water adds to the overall issue of overallocated river systems in the Murray Darling Basin, as there is a general loss in volume from the river (as water taken often re-enters the river), less water in wetlands (due to decreased water levels or extraction intercepting water flowing to wetlands) and a reduction in groundwater recharge through seepage.

4.3 Trapping flood flows can also be problematic where native fish have followed fresh water out onto the floodplain to breed, and are subsequently lost when the water is retained and extracted.

4.4 Floodplain works more generally alienate the floodplain and connected or downstream ecosystems, and severely limit the effectiveness of essential ecological processes. Further, the clearing of ecological assets such as wetlands and ephemeral lakes, and badly constructed flood works can exacerbate damage to property caused by flooding, especially on neighbouring properties.

4.5 Whittington and Hillman (1998) state that "There is no doubt that levees are ecologically disastrous for the sections of the floodplain isolated from the river and equally, the loss of floodplain may also severely impact on the health of the river. As a rule, only activities that can accommodate flooding should take place on a floodplain."

b. Gaps and Problems with Floodplain Management

4.6 Development on the floodplain has occurred largely unchecked and unregulated by the relevant government departments. Hence many works that exist have severe impacts on the ecological functioning of the floodplain and on water volumes in the system generally.

Diversion & Taking of Water – Floodplain Harvesting

4.7 The diversion of floodplain water, or harvesting, is generally unmetered[1] and unmeasured, and is a major loophole in water management, particularly now that a number of other extractions have been capped and/or annual limits have been imposed.

4.8 Unregulated streams contribute much of what becomes floodplain water, and often receive much of their water from localised floodplains. Therefore, harvesting these flows not only has impacts on the environment and on users of unregulated systems, the extraction also impacts the regulated and downstream system.

4.9 Floodplain harvesting has still not been capped under the Murray Darling Basin Cap, despite policy commitments, and most of this extraction remains unregulated and unlicensed.

4.10 The problem is now compounded by concerns for the protection of designated environmental water from harvesting.

The Water Act 1912 and Diversion of Flood Water

"However [the Water Act 1912*] was never applied [to licence floodplain harvesting] as there was generally no requirement to restrict total overall water extractions or off-allocation diversions. Harvested floodplain water has been treated as a freely available bonus to a farmer's licensed entitlement."*

(Floodplain Harvesting Policy Advice No. 3 and Schedule 3, Section 2, Water Sharing Plan for the Gwydir Regulated River Water Source 2002)

4.11 The lack of regulation also severely limits the effectiveness of public investment in efficiency savings or market mechanisms to return much needed water to the environment.

4.12 As there has been no statewide audit or metering of harvesting its impact on water volumes has not been fully calculated. However, it has been estimated that in the Gwydir valley it accounts for 30GL (MDBMC 2001)[2], though anecdotal evidence suggests that volumes are far greater.

4.13 As this water is generally not licensed it is not paid for and remains a 'freely available bonus' for some landholders (note however that policy allows a certain extent of rainfall capture in the eastern part of the Murray Darling Basin without licensing – see below for details).

[1] Much harvesting is not metered due to the location of meters . For example, on a channel Xkm long that goes from river to storage there may be a meter at the river end metering river extractions, but not where flood waters go into the channel. Therefore, there is no metering or measurement of what ends up in the storage dam or what is pumped directly from the channel.

[2] As floodplain harvesting has been given tacit acceptance yet has remained unregulated, it has resulted in a significant increase in off-river storages. For example, storages in the Gwydir Valley have increased from little to about 400,000 ML today (Kingsford 2005, see Fig. 3)

4.14 As the water is not regulated State Water and the NSW Government are not receiving management fees or revenue that they would otherwise get from the use of a state resource.

4.15 Illegal water diversion (through floodplain harvesting) occurs when individuals take water or use their works contrary to licence and approval conditions. This will include taking environmental water.

4.16 Currently in regulated rivers it will be the environment or stock and domestic users who lose water since other users can account for their allocations at their pump and so are able to ensure they get their full quota.

4.17 In unregulated rivers the environment as well as downstream users and their water licences will be negatively impacted.

Floodplain Development and Flood Control Works

4.18 As mentioned above, there has been no statewide audit of what works (bona fide or otherwise) exist nor has there been a comprehensive environmental assessment of the implications of these works.

4.19 Enforcement and compliance have never been prioritised and remain under-resourced, and historically the needs of the environment have been given little consideration, as exemplified by provisions under the old legislation.

c. Legislation

4.20 There are two Acts that apply to works on floodplains and taking floodplain water– the *Water Act 1912* and the *Water Management Act 2000*. Currently works on floodplains and harvesting are still being dealt with under the 1912 Act. This will continue until the Government commences the floodplain provisions under the new Act.

4.21 For harvesting, indications are that a new floodplain policy will initially provide rules for issuing floodplain harvesting licences (DNR, 2005), and following that macro plans will be developed and possibly inserted into existing water sharing plans as floodplain harvesting provisions[3].

4.22 The NSW Implementation Plan for the National Water Initiative indicates that "Macro Plans will be developed for the State's floodplains… [and] access licences for Floodplain Harvesting activities will [be] issued in accordance with the provisions of the Macro Plans." (page 32).

4.23 However it is not clear whether existing works will be licensed directly under the 2000 Act, or under the old Act and then transferred to the 2000 Act. If it is the latter, it is unclear how the stronger environmental provisions and requirements would be dealt with.

[3] Amendments were made to the 2000 Act in December 2005 that enable existing water sharing plans to be amended to include floodplain harvesting provisions (see Schedule 12).

4.24 For rural flood control works, indications are that floodplain management provisions need to be developed under water management plans before the 2000 Act is brought into play. Currently floodplain management plans are being prepared under the 1912 Act to guide licensing of existing and future works. It is intended that once gazetted they will be made into Minister's Plans and integrated into the water sharing plans and new Act through the floodplain management provisions. These plans are meant to incorporate the earlier floodplain guidelines and environmental considerations (P Sobinoff, DNR, pers comm, 2006)[4].

4.25 Works licensed under the 1912 Act will likely be transferred to the 2000 Act. However it is unclear how or if the stronger environmental provisions under the 2000 Act will be applied on conversion, and if existing unauthorised works will be licensed directly under the 2000 Act, or dealt with under the 1912 Act and then transferred.

Water Act 1912 (See Appendix A for relevant sections)

Floodplain Harvesting

4.26 Works for harvesting (and the associated act of taking the water) need to be approved under Part 2 of the 1912 Act (in particular sections 10 and 13C) but indications from the floodplain harvesting policy are that few have been licensed in this manner (see the boxed quote above), although large developments that rely on diverting floodwater may have been licensed. Where works that harvest/capture water have been approved under Part 8 only, their use for harvesting will be illegal as it is contrary to licence conditions.

Rural Flood Control Works

4.27 Flood control works are currently licensed under Part 8 of the 1912 Act. These works should allow floodwater to pass, but this has not always been the case with licensed works.

4.28 Some works have been licensed but a number of works remain unauthorised. This is partly due to the geographical limitations placed on the use of Part 8 (limited partly through legislation and partly through discretion). The departmental definition of 'floodplain' was approximately the riparian zone on main rivers and some of their tributaries, or an area designated as a floodplain (13 such area have been designated). Floodplain guidelines were developed in the 1970's and 1980's, which essentially drew a 'yellow line' around floodrunners and river channels to demonstrate the zone in which development was not to occur. Unfortunately the guidelines were not always adhered to, nor were they based on robust environmental knowledge or assessments, and so remain an unsatisfactory method for guiding development.

[4] These plans are not dealing with floodplain harvesting, perpetuating the disjointed approach to the issue.

4.29 Part 8 is intended to be applied where a work "is reasonably likely to affect the flow of water to or from a river or lake, and is to be used for, or has the effect or likely effect of, preventing land from being flooded …" (section 165A). However localised floodplains, gullies, ephemeral creeks and so on were generally not captured within Part 8, nor were floodlines such as the 1 in 50 year or 1 in 100 year floodline, so works in those areas are largely unlicensed. Similarly, contour banks, usually found on land with slopes of 1-2% - are not generally considered under Part 8, except in some designated floodplains (P Millar, DNR, pers comm, 2006). For works that fall within the scope of the farm dams policy, it is likely that they will remain unlicensed and so will not be subject to any environmental requirements.

4.30 Natural Resource staff have asserted that part of the difficulty in licensing works or enforcing legislative provisions was the overly onerous requirement to show that there is a cause and effect from development on flooding before the Part was applied. This issue supports the suggestion that a broad and robust environmental assessment is needed to underpin planning provisions and licensing to enable management provisions to be robustly and effectively applied, as well as the value in having deeming provisions to enable more effective compliance.

4.31 Currently floodplain management plans ("**FMP**") are being developed under Part 8 (key sections include 166A and 166C) to provide guidance on and details for the licensing of works, and the process will result in the retrospective licensing of unauthorised works. No sufficient or robust environmental assessment or study has been done to underpin the retrospective licensing of unauthorised works or these guidelines.

4.32 The Lower Gingham Watercourse FMP allows works that will increase flooding on neighbouring properties and land by up to 50%[5], and flood velocity can increase by up to 50%. Further, development within the floodway network is not prohibited, and the only restriction within the core wetland area is that there is to be no raised roads. Similar concerns have been raised anecdotally by committee members for the Lower Macquarie FMP, which has recently been released in draft form.

4.33 Committees have been involved in the development of these plans, but there have been no requirements for independent chairs or a representative committee, and a number of committees have not included environmental representatives, relevant downstream landholders, representatives from the Fisheries Department or the Department of Environment and Conservation. For the Lower Gingham FMP, for example, a Ramsar landholder within the plan area was not included on the committee. Further, anecdotal evidence indicates that the process is not based on consensus decision making.

Enforcement

4.34 It is a criminal offence under the Act to take water contrary to a licence or approval (key sections are 21B, 180, 180A and 180D). The government can require remedial works to be carried out. Under section 180K any person may

[5] An increase of 0.15m is allowed, and throughout the system depths are said to generally be only about 0.3m.

bring proceedings for an order to remedy or restrain a contravention or a threatened contravention of the offences division.

Standing & Making Objections

4.35 For water use licences and flood control works local occupiers, whose interests may be affected by granting an approval for such a work, can make an objection when the proposal is advertised (sections 11 and 170). If the flood control proposal is granted the objector has a right of appeal (section 171AA), and a right to be heard at a public inquiry if the authority intends to issue the licence under section 10.

Water Management Act 2000 (See Appendix B for relevant sections)

Floodplain Harvesting & Works

4.36 Landholders will need an access licence (section 56) and a works approval[6] (section 90). It is not certain whether they will need a water use approval (section 89).

4.37 Works and use approvals and licences will not be issued unless it is shown that there will be minimal environmental harm (section 97), requiring applicants to demonstrate how harm will be mitigated, and providing the government with a stronger position to refuse proposals with adverse environmental implications.

4.38 Under the gazetted water sharing plans for regulated rivers floodplain harvesting is included within the long-term extraction limit of the existing plans. However, until there has been a full audit of authorised and unauthorised works in each plan there will be no way of including harvesting within this limit.

4.39 It is of concern that the current unregulated river water sharing plans do not recognise floodplain harvesting in the long-term extraction limit, despite the fact that harvesting can be substantial in unregulated systems, and will have an effect on downstream users and possibly regulated systems.

Rural Flood Control Works

4.40 The 2000 Act includes floodplain management provisions[7], with mandatory core provisions and discretionary provisions (sections 29 and 30 respectively, also note section 34). It is intended that the floodplain management plans currently being developed will be substituted into the 2000 Act to address these provisions, probably as Ministers Plans (section 50).

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[6] "water supply work" includes any work that receives water from a water supply work under the control or management of a water supply authority. (Water Management Act Dictionary)

[7] These provisions will apply to rural flood control only, and not harvesting.

4.41 Flood works require a works approval under section 90. The Act contains requirements that works are not to be approved unless it is shown there would be minimal environmental impact (section 97). Importantly, it appears that the government has the power to apply these stronger environmental provisions when the licenses are transferred, enabling inappropriate or environmentally damaging works to be modified or removed.

4.42 There are also discretionary provisions that allow the Minister to, at a later date, direct a landholder to take specified measures to ensure that a water source is adequately protected (section 326). This can include a requirement to alter or remove existing works (section 332). These provisions are applicable for flood control works and harvesting works.

Enforcement

4.43 It is a criminal offence under the Act to take water contrary to an access licence, to use it contrary to a water use approval, or use a work contrary to the works approval. The relevant sections are in chapter 7 of the Act, in particular sections 341 – 348.

4.44 As it is a criminal offence there is a higher standard of proof than there would normally be for a civil provision. It must be "beyond reasonable doubt" that the offence has taken place, rather than simply on the balance of probabilities.

Standing & Making Objections

4.45 The 2000 Act is also valuable as it has broader standing provisions, as anyone can object to an application for a water use approval or works approval (section 93). However, objections to access licences are limited to when there is no water management plan in place.

4.46 Further, more broadly under section 336 any person may bring proceedings for an order to remedy or restrain a breach of the Act or the regulations.

d. National Agreements and State Policy

National Water Initiative

4.47 There are a number of elements of the National Water Initiative ("NWI") that are relevant to floodplain management and these commitments are currently outstanding.

Over-allocated systems (Water Access Entitlements and Planning Framework)

4.48 There is a clear link between the urgent need to regulate floodplain harvesting and Objective 4 - "to complete the return of all currently overallocated or

overused systems to environmentally-sustainable levels of extraction", particularly given that harvesting has not yet been capped and remains a 'free water loophole' in water management. Floodplain harvesting takes significant volumes of surface water from river systems, and it includes activities that drain water directly from the river channel.

Interception Activities (Water Access Entitlements and Planning Framework)

> *"The [NWI] Parties also recognise that if [the interception and storage of overland flow is] not subject to some form of planning and regulation, [it] presents a risk to the future integrity of water access entitlements and the achievement of environmental objectives for water systems. The intention is therefore to assess … the economic and environmental costs and benefits of the activities of concern…"* (Clause 56, NWI)

4.49 Interception activities within the NWI include floodplain harvesting and rainfall harvesting. It is apparent from the evidence above that in fully or over allocated systems significant interception activities are not yet recorded or environmentally assessed, nor has a robust compliance monitoring regime been implemented.

4.50 More broadly the draft NSW Implementation Plan for the NWI fails to fulfil the objectives and outcomes of the NWI related to protecting the integrity of water-access entitlements from unregulated growth in interception, particularly given that floodplain harvesting has still not been capped, and remains largely unregulated. Further, unregulated harvesting can have major implications for downstream entitlements.

Environmental and Other Public Benefit Outcomes (Water Access Entitlements and Planning Framework)

4.51 The objective encapsulated under clause 35 commits NSW to give environmental (and probably stock and domestic) water "statutory recognition and have at least the same degree of security as water access entitlements for consumptive use and be fully accounted for". However limitations in current accounting systems and a lack of compliance and enforcement with regards to illegal harvesting indicates that NSW must adequately regulate floodplain harvesting and enforcement legislation before this objective will be met. For example, recent evidence of taking environmental water in the Macquarie Marshes calls into question whether the existing regime is enforceable and enforced (see the related clause 31).

Water resource accounting (Objective vii)

4.52 There remains a lack of progress in relation to accounting for and managing floodplain harvesting, and the lack of metering of such extraction. Further, a water balance covering all significant water use cannot be achieved until harvesting is adequately regulated.

4.53 The lack of regulation of floodplain harvesting also has implications for adequate accounting of environmental water, and concerns about people harvesting water released specifically for the environment in the Macquarie Marshes highlight this problem. This issue also relates to NWI Objective 23(iii), which requires "improved environmental management practices", and clause 37 that requires NSW to "provide for secure ecological outcomes".

Timely consultation

4.54 Timely consultation and transparent processes are relevant to all aspects of floodplain management, but are particularly relevant to the floodplain management planning process that currently exists. NWI Element 1 includes a requirement that planning processes provide "adequate opportunity for productive, environmental and other public benefit considerations to be identified and considered in an open and transparent way". Further, an outcome outlined in clause 93 requires 'transparency in decision making'. Anecdotal evidence from people within the government and landholders indicate that the floodplain management planning process has been anything but transparent, including where specific individuals have been excluded from pivotal information and decisions.

Murray Darling Basin Cap Agreement 1995

4.55 The diversion and extraction of flood water is meant to be covered by the Murray Darling Basin Cap agreement of 1995, and the NSW floodplain harvesting policy confirms this. Yet despite the fact that the cap agreement has been in place for over a decade, there has not been a statewide audit of flood water extraction and it is unclear how much harvesting has occurred since 1995 and whether flood water extraction has increased since the cap has been applied to river extractions.

4.56 Due to the introduction of the Cap as well as specific annual limits to extractions in our rivers, floodplain harvesting has become an even more attractive source of further water supply and is a major loophole in water management. It also increases the likelihood that substantial growth has and will continue to occur, and the longer it is left uncontrolled the more difficult it will be to establish control.

4.57 The NSW Government does not intend to include rainfall harvesting within Cap calculations until it is over the 10% specified in the farm dams policy (as a licence would then be required).

4.58 The NSW Government is intending to calculate the Cap on floodplain harvesting by essentially looking at the level of development and cultivation in 93/94 and level of river extractions (which will be better known on regulated systems) and determining the difference.

4.59 Applying the Cap will have several benefits: not only will it contain unrestricted water extraction and keep extraction volumes to those in of 1993/4 levels of development, it can lead to a more functional riparian corridor and floodplain as billabong storages may be decommissioned to enable more manageable compliance of harvesting.

Floodplain Harvesting Policy

4.60 The current floodplain harvesting policy is Policy Advice number 3, which was provided to water management committees in the late 1990s. However a new policy is being finalised. Once in place this policy will guide the licensing of new and existing works and the extraction of 'flood' water.

4.61 The current policy defines the floodplain as extending to the 1 in 100 year flood line, although legislation and past practices have not used the same definition and it is unclear where this line is in many catchments.

4.62 The current policy (attached at Appendix C) details a number of principles, including:

- *Principle 1:* All existing floodplain harvesting works and floodplain harvesting extractions will be licensed.

- *Principle 3:* No new works or expanded floodplain harvesting activities in the Murray-Darling Basin that will result in the diversion of additional water will be authorised

- *Principle 4:* Floodplain diversions associated with works in place in the Murray-Darling Basin prior to the end of the 1994 irrigation season will be considered as within the NSW cap.

- *Principle 5:* … appropriate steps [will be] taken to keep harvesting to cap levels.

4.63 The commitment to bringing flood water harvesting under the Cap and to issue a moratorium on new harvesting activities or works are important steps towards better floodplain management, yet they remain unfulfilled.

4.64 Unfortunately Principle 1 seeks to entrench past unregulated practices and indicates an intention to licence all unauthorised works, regardless of whether they would otherwise be considered illegal or unacceptable when scrutinised according to environmental guidelines or requirements. It is unclear how this approach will address questions of cap compliance or commitments to bring overallocated systems back to sustainable levels of extraction, or adequately protect environmental or downstream entitlements.

4.65 The policy separates overbank flow from rainfall/overland flow, with the latter intended to be covered by the farm dams policy (detailed below). This means that if certain works are catching runoff they will not be caught by any environmental regulations when they take less than 10% of the farm's rainfall.

4.66 The NSW draft Implementation Plan for the National Water Initiative details some aspects of the policy currently in development (page 31). It will:

- Establish a process & timeline for audits of floodplain extraction works;

- Establish a process and timeline for delivery of floodplain harvesting outcomes within the Water Sharing Plan framework; and

- Develop rules for issuing floodplain harvesting licences under section 55A of the 2000 Act within the MDB cap for inland river systems.

Farm dams policy

4.67 This policy only covers the central and eastern divisions (the 'slopes country') and does not cover the western division. The Department of Natural Resources has stated that this is because there is far less run off in the flatter western area (approximately west of Mungindi and the Lachlan River)[8].

4.68 Under the policy landholders are allowed to capture 10% of the runoff on their properties with dams on "minor streams" before they need to apply for a licence. Minor streams are considered 1st or 2nd order watercourses that do not permanently flow. They will often be gullies or on localised floodplains, often important areas for downstream water supply.

4.69 In the western region there is no such restriction – a landholder has the right to capture all rain water run-off with dams on minor streams (Order under Section 54).

Floodplain Management Plans

4.70 As discussed above these are intended to be statutory plans (they are currently being developed under the 1912 Act, and will then be transferred to the 2000 Act). The plans are to consider a number of floodplain matters including the distribution of floodwaters, and the location of important floodways. They will be the basis for issuing flood control work approvals for future works and retrospectively for existing works.

4.71 There are approximately 7 plans already gazetted, and a number that will be gazetted imminently. A number of others are at various stages of development. There will be between 19-26 plans produced in all, contingent on funding (P Sobinoff, DNR, pers comm. 2006).

State Water Management Outcomes Plan ("SWMOP")

[8] Western division – laser levelling in these flatter areas has led to increased runoff from local rainfall. This rainfall is often harvested using canals at the bottom of a paddock

4.72 The SWMOP contains a number of targets relevant to floodplain management that are to be met by 2007.

4.73 Target 1d: Floodplain water harvesting extractions licensed and capped at 1993/94 levels in the MDB, and at levels consistent with the long term average annual extraction limit in other water sources.

4.74 Target 25: Action taken to (re)connect at least 60% of the natural 1 in 5 year flooded area to the river for 11 key rural floodplains by ensuring:

- Target 25a: The major flood paths and flood dependent ecosystems are mapped
- Target 25b: The significant barriers to flooding are identified and action to deal with the major barriers commenced.

4.75 Whilst these are steps in the right direction, even if they are met there will remain large sections of floodplain across the state that are alienated from the river system.

"Conserving and rehabilitating floodplains will improve the quality of river water, removing much of the silt and many of the nutrients that help cause cyanobacterial blooms. The most effective way to rehabilitate floodplains is to restore their natural flooding cycle…" (Mussared, 1997)

Compliance Policy

4.76 The Department of Natural Resources has recently issued a new Compliance Policy. The policy has potential to enable complaints to be adequately dealt with and to give people a more accountable avenue through which to complain about unauthorised works if effectively implemented.

Monitoring Policy

4.77 The current monitoring policy is inadequate for monitoring floodplain harvesting (and also for monitoring environmental water). The policy admits that there is often little monitoring at all on unregulated streams, which are often a major source of flood water, and as most monitoring is done by looking at meters on pumps at the river, taking flood water through channels and levee banks is not accommodated.

4.78 DNR currently has a pilot project in the Gwydir Valley underway to look at methodologies for assessing the volumes of water that can be harvested by different works.

Floodplain development manual

4.79 This manual is primarily to assist councils in dealing with flood risk in urban areas and the protection of property, but is relevant to the development of the

floodplain management plans under the 1912 Act. It contains some information on committee membership, and the floodplain planning process.

5 The Way Forward – Better Floodplain Management

"Healthy floodplains are vital to Australia's inland river system, but they are now suffering the death of a thousand cuts… The danger is that Australia's rivers will permanently lose their ability to replenish and renew themselves …" "Floodplains are as important to rivers as bark to trees. Stripped of their floodplains, rivers will slowly die…"
(Mussared, 1997)

5.1 Floodplain management is currently a major gap in the water reform process, but there are a number of opportunities available to make floodplain management more sustainable and in-line with a range of commitments, not least those under the National Water Initiative.

5.2 The recommendations are:

1. **Enforce the existing commitment to a permanent moratorium on new or expanded works and harvesting activities.**

   This is consistent with the current NSW floodplain harvesting policy

2. **All illegal water diversion, particularly the diversion of environmental water, must be stopped, and regulatory powers should be transferred to the Department of Environment and Conservation as key environmental water managers.**

   This will require an adequate environmental water accounting regime, enforceable compliance provisions and a well-resourced and active compliance program. NSW must allocate capacity to apply the provisions of the *Water Management Act 2000* to licence and actively regulate floodplain harvesting & floodplain development.

   The regulation of floodplain management must be separated from the management component, and together with powers to protect environmental water should be transferred to DEC.

   There must also be provisions to enable water be credited back to the environment.

3. **There must be a full statewide environmental and socio economic assessment and audit of floodplain harvesting and floodplain development, within the context of NWI commitments[9], followed by the cessation of unsustainable harvesting and the removal of ecologically inappropriate flood works.**

   There is a need for a broader statewide environmental assessment to provide guidance for what development is and is not acceptable on environmental terms. This assessment is particularly important given the piecemeal

[9] see in particular clause 56

approach to floodplain management that has currently occurred, and given that many works are being used for activities beyond existing approvals.

4. **The *Water Management Act 2000* must be activated before there is further licensing.**

   This Act contains stronger provisions to protect the environment and all floodplain management will be subject to this Act. Further delay in its implementation, and the continuation of planning and management under the 1912 Act, is illogical.

5. **The MDB Cap must be implemented in the context of floodplain harvesting, and works removed and/or harvesting activities ceased where necessary.**

6. **Any remaining floodplain harvesting must be adequately accounted and charged for.**

7. **Rainfall harvesting must be included within these broader floodplain harvesting management requirements and the MDB Cap.**

8. **Features such as billabongs, where used as storages, should be decommissioned and returned to a more natural state.**

9. **A best practice manual for flood control and development on floodplains should be developed, which details how environmental impacts can be minimised and when impacts are unacceptable.**

10. **All planning and consultation processes must be conducted in a transparent and accountable manner, with reasonable opportunity for public consultation.**

    The gazettal of floodplain management plans must halt until there is a full assessment and audit of rural floodplain development and robust environmental guidelines are developed to protect the ecological integrity of the floodplain and the safety of downstream users and towns. An inquiry into the process may be required.

APPENDIX A: Water Act 1912

Part 2, Division 3 - Water Rights and Works

Section 10 Application for licences

(1) Any occupier may apply for a licence for the construction or use of any work to which this Part extends and to take and use any water, for the purpose of:

(a) water conservation, irrigation, water supply, or drainage, or

(c) changing the course of a river.

Section 11 Notification of application for licence

(1) On application being made for a licence under section 10 …
(2) Where…the work is, or is proposed to be, situated within a declared local area, any:
(a) local occupier, or
(b) statutory authority,
whose interests may be affected by the granting of the application may…lodge …an objection …

Section 13C

(2) The Ministerial Corporation may refuse to grant any application for a licence if it is not satisfied with the proposals for the construction of the works …., or with the work … in the preparation of the land for irrigation.

Section 21B Offences with respect to construction, erection and use of work without licence etc

(1) Any person who:
(a) constructs, erects or uses a work to which this Part extends otherwise than pursuant to a right conferred on the person by this Part or Part 10 or by a licence, …
is guilty of an offence and is liable, on conviction…

Part 8 – Flood Control Works

Section 165A

Controlled work is an earthwork, embankment or levee on land that forms part of, the bank of a river or lake, or is within a floodplain[10], … wherever situated or proposed to be constructed, that is reasonably likely to affect the flow of water **to or from a river or lake**, **and** is to be used for, or has the effect or likely effect of, **preventing land from being flooded** … (emphasis added)

Section 166A Floodplain management plans

[10] Designated floodplains – section 165

May prepare and adopt a floodplain management plan, which is to set out the management of flood waters within the floodplain.

The Plan is to accord with the general principles and policies set out in the relevant floodplain development manual.

The public is to have an opportunity to make submissions on the proposed plan in accordance with the procedure provided for by the relevant floodplain development manual, and government is to take those submissions into account.

Section 166C Matters for general consideration

They must have regard to the following matters, and any other matters that it considers relevant for approvals:

(a) the contents of any relevant floodplain management plan or any other relevant Government policy,

(b) the need to maintain the natural flood regimes in wetlands and related ecosystems and the preservation of any habitat, animals (including fish) or plants that benefit from periodic flooding,

(c) the effect or likely effect on water flows in downstream river sections,

(d) any geographical features, or other matters, of Aboriginal interest that may be affected by a controlled work,

(e) the effect or likely effect of a controlled work on the passage, flow and distribution of any flood waters,

(f) the effect or likely effect of a controlled work on existing dominant flood ways or exits from flood ways, rates of flow, flood water levels and the duration of inundation,

(g) the protection of the environment, … etc

Section 168B Preliminary assessment of whether controlled work complies with floodplain management plan

(1) After receiving an application for an approval, and before determining the application under section 171, they are to make an assessment of whether the controlled work is a complying (complies with the floodplain management plan (see below) – determine under section 171 – no opportunity for objection) or a non-complying controlled work (doesn't comply with the floodplain management plan or if its not in an area subject to such a plan – determine under section 169 re publication).

Section 170 Objections to non-complying controlled works

(1) An objection to the granting of an approval for a non-complying controlled work may be made:
(a) where the controlled work was, at the time the application for the approval was made, situated or proposed to be constructed within a declared local area:
(i) by any statutory authority, or
(ii) by any local occupier,
whose interests may be affected by the granting of such an approval …

Section 171AA Notice of determination to be given to objector

(1) If the Ministerial Corporation determines an application for an approval by granting the approval and an objection was made to the granting of an approval under section 170…
(2) The person who made the objection may appeal against the determination to the Land and Environment Court. …

Section 180 Construction of unauthorised works

A person must not construct a controlled work otherwise than in accordance with an approval that is in force in respect of the work.

Section 180A Compliance with conditions of approval

If they do not comply with approval conditions they are guilty of an offence and is liable on conviction.

Section 180D Directions for remedial work

Government may require person to carry out remedial works:

(a) work to remove, modify, repair or restore the controlled work or to render the work ineffectual,

(b) work to repair any damage caused by the controlled work (including any damage caused to any specified land, structure, river, lake or vegetation, or to the environment),

(c) work to ensure that any specified land, structure, river, lake or vegetation, or the environment, will not be damaged or adversely affected or further damaged or adversely affected, by the controlled work,

(d) without limiting paragraphs (a)-(c), work to correct or restore any alteration caused by the controlled work to the flow of water in, to or from, or the quantity of water contained in, any specified river or lake.

(4) A person who fails to comply with a direction under this section is guilty of an offence and is liable on conviction…

Section 180K Restraint of contravention of Division

(1) Any person may bring proceedings in the Land and Environment Court for an order to remedy or restrain a contravention, or a threatened or apprehended contravention, of this Division. …

APPENDIX B: *Water Management Act 2000*

Section 18 Matters for Consideration (Management Plan)

(1A) In formulating a draft management plan, the management committee must also have due regard to the provisions of any relevant catchment action plan …

(2) Due regard may also be had, in the formulation of the plan's proposals, to the effect within each water management area or water source to which the plan applies of activities occurring, or likely to occur, outside each such area or water source. …

Section 29 - Core provisions (Water Management Plan – Floodplain Management)

The floodplain management provisions of a management plan for a water management area must deal with the following matters:

(a) identification of the existing and natural flooding regimes in the area, in terms of the frequency, duration, nature and extent of flooding,

(b) the identification of the ecological benefits of flooding in the area, with particular regard to wetlands and other floodplain ecosystems and groundwater recharge,

(c) the identification of existing flood works in the area and the way they are managed, their benefits in terms of the protection they give to life and property, and their ecological impacts, including cumulative impacts,

(d) the risk to life and property from the effects of flooding.

Section 30 Additional provisions

The floodplain management provisions of a management plan for a water management area may also deal with the following matters:

(a) proposals for the construction of new flood works,

(b) the modification or removal of existing flood works,

(c) restoration or rehabilitation of land, water sources or their dependent ecosystems, in particular in relation to the following:

(i) the passage, flow and distribution of floodwater,

(ii) existing dominant floodways and exits from floodways,

(iii) rates of flow, floodwater levels and duration of inundation,

(iv) downstream water flows,

(v) natural flood regimes, including spatial and temporal variability,

(d) the control of activities that may affect or be affected by the frequency, duration, nature or extent of flooding within the water management area,

(e) the preservation and enhancement of the quality of water in the water sources in the area during and after flooding,

(f) other measures to give effect to the water management principles and the objects of this Act,

(g) such other matters as are prescribed by the regulations.

Section 34 Environmental protection provisions

(1) A management plan for a water management area, or any part of a water management area, **may** contain the following provisions ("environmental protection provisions") in respect of any aspect of water management: …

Section 50 – Minister's Plans

… (2) A Minister's plan must in general terms deal with any matters that a management plan is required to deal with, and may also deal with any other matters that a management plan is authorised to deal with, other than matters that are already dealt with by a management plan.

(2A) Part 3 (except sections 15 and 36–41[11]) applies to a Minister's plan. However, the Minister:

(a) may adopt any of the provisions of sections 36–41 in a particular case, and

(b) may dispense with a particular requirement of Part 3 in the case of a Minister's plan referred to in subsection (1A).

(3) Before making a Minister's plan, the Minister must obtain the concurrence of the Minister for the Environment to the making of the plan. …

(***Note***: these are generally done under section 388 'advisory or other' committees (though even this is not required), as water management committees requirements are done under Part 2, which does not apply here)

Section 56 Access licences

(1) An access licence entitles its holder:

(a) to specified shares in the available water within a specified water management area or from a specified water source (the "share component"), and

(b) to take water:

(i) at specified times, at specified rates or in specified circumstances, or in any combination of these, and

(ii) in specified areas or from specified locations,

(the "extraction component").

(2) Without limiting subsection (1) (a), the share component of an access licence may be expressed:

(a) as a specified maximum volume over a specified period, or

(b) as a specified proportion of the available water, or

(c) as a specified proportion of the storage capacity of a specified dam or other storage work and a specified proportion of the inflow to that dam or work, or

(d) as a specified number of units.

(3) Shares in available water may be assigned generally or to specified categories of access licence. …

Section 89 Water use approvals

(1) A water use approval confers a right on its holder to use water for a particular purpose at a particular location.

[11] Public exhibition and submission of draft etc

(2) A water use approval may authorise the use within New South Wales of water taken from a water source outside New South Wales.

Section 90 Water management works approvals

(1) There are three kinds of water management work approvals, namely, water supply work approvals, drainage work approvals and flood work approvals.

(2) A water supply work approval authorises its holder to construct and use a specified water supply work at a specified location.

(3) A drainage work approval confers a right on its holder to construct and use a specified drainage work at a specified location.

(4) A flood work approval confers a right on its holder to construct and use a specified flood work at a specified location.

("flood work"[12] means a work (such as a barrage, causeway, cutting or embankment):

(a) that is situated:

(i) in or in the vicinity of a river, estuary or lake, or

(ii) within a floodplain[13], and

(b) that is of such a size or configuration that, regardless of the purpose for which it is constructed or used, it is likely to have an effect on:

(i) the flow of water to or from a river, estuary or lake, or

(ii) the distribution or flow of floodwater in times of flood,

and includes all associated pipes, valves and equipment, but does not include any work declared by the regulations not to be a flood work.)

Section 93 Objections to applications for approvals

(1) Any person may, in accordance with the regulations, object to the granting of an approval that has been advertised pursuant to section 92…
(5) Before making a decision … the Minister must endeavour to resolve the issues raised by the objection …

Section 97: (Refusal of Applications)

“No extraction or works (or access licence under section 63) unless adequate arrangements are in force to ensure that minimal harm will be done to any water source, or its dependent ecosystems (harm as a consequence of the use of water on the land) …”

Section 326 Directions to protect water sources

The Minister may, by order in writing served on a landholder, direct the landholder to take specified measures to ensure that:

(a) the use of a water supply work situated on the land does not impair any water source, or

(b) the use of a drainage work situated on the land does not impair any water source into which water is discharged by the work, or

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[12] Dictionary
[13] an area of land declared by an order in force under Division 6 to be a floodplain. Note details above suggesting the 13 designated under the 1912 Act will be carried over.

(c) the use of a flood work situated on the land does not impair any water source into or from which water is diverted by the work, or

(d) the carrying out of a controlled activity on the land does not impair any water source in the vicinity of the work, or

(e) the carrying out of an aquifer interference activity does not impair any aquifer.

Section 330 Directions concerning unusable water management works

(1) The Minister may, by order in writing … direct the landholder or person to take specified measures to remove or modify it or render it inoperable.

Section 332 Measures that may be specified in directions

(1) The measures that may be specified in a direction under this Part are as follows: …

(b) measures to demolish, remove, dismantle or block a water management work or otherwise render it ineffective, …

(d) measures to restore or enhance the condition of any water source that has been harmed by:

(i) the use, misuse, lack of use or lack of maintenance of a water management work, or …

(e) measures to repair any damage caused by:

(i) the use, misuse, lack of use or lack of maintenance of a water management work, or …

including any damage caused to any specified land, structure or vegetation, or to the environment,

(f) measures to ensure that any specified land, structure or vegetation, or the environment, will not be harmed by:

(i) the use, misuse, lack of use or lack of maintenance of a water management work, or …

(g) measures to correct or restore any alteration caused by:

(i) the use, misuse, lack of use or lack of maintenance of a water management work, or …

to the flow of water in, to or from, or the quantity of water contained in, any specified water source,

(h) any ancillary measures that the Minister considers to be necessary or expedient.

(2) A direction under this Part may specify the manner in which, and the time within which, any such measures are to be taken.

Section 336 Restraint of breaches of this Act

(1) Any person may bring proceedings in the Land and Environment Court for an order to remedy or restrain a breach of this Act or the regulations.

Section 341 Unlawful taking of water

(1) A person must not take water from a water source otherwise than:
(a) in accordance with an access licence, and
(b) from a water allocation credited to that access licence, and
(c) by means of a water supply work nominated by that access licence as a work by means of which water allocations credited to the licence may be taken. …

(1B) A person may be proceeded against and convicted …

(2) This section does not prevent a landholder from exercising a basic landholder right in accordance with this Act. …

(4) A person is not guilty of an offence under this section as a consequence of having taken water in contravention of an available water determination if the person establishes that he or she took all reasonable steps to ascertain the terms of the determination but was unable to do so…

Section 342 Using water without a water use approval

(1) A person must not use water on land for any purpose:
(a) otherwise than in accordance with a water use approval that authorises the use of water on that land for the purpose for which the water is used, …
(2) This section does not prevent a person from exercising a basic landholder right in accordance with this Act. …

Section 343 Constructing or using water management work without a water management work approval

(1) A person must not:
(a) construct a water supply work otherwise than in accordance with a water supply work approval that authorises the construction of that work, or …
(c) construct or use a flood work in or in the vicinity of a river or lake, or within a floodplain, otherwise than in accordance with a flood work approval.
(2) Subsection (1) (a) does not prevent a person from exercising a basic landholder right in accordance with this Act. …

Section 344 Unlawful carrying out of certain activities

(1) A person must not:
(a) carry out a controlled activity in, on or under waterfront land otherwise than in accordance with a controlled activity approval, or …
(2) Subsection (1) does not prevent a person from constructing and using a water management work in accordance with a water management work approval. …

Appendix C: Policy Advice No 3 – Floodplain Harvesting

Advice to Water Management Committees

NSW Government

No. 3 Floodplain Harvesting

What is floodplain harvesting?

Floodplain harvesting is the collection, extraction or impoundment of water flowing across floodplains. The floodplain flows can originate from local runoff that has not yet entered the main channel of a river, or from water that has overflowed from the main channel of a stream during a flood. For the purposes of this policy the floodplain is defined as extending to the 1 in 100 year flood line.

Harvesting can generally be put into one of three categories:

1. Diversion or capture of floodplain flows using purpose built structures or extraction works to divert water into storages, supply channels or fields or to retain flows.
2. Capture of floodplain flows originating from outside of irrigated areas using works built for purposes other than floodplain harvesting. Examples are:
   - levees and supply works such as off river storages constructed in billabongs or depressions that fill from floodplain flows
   - below ground level water channels from which the water is pumped into on farm storages.
3. Opportunistic diversions from floodplains, depressions or wetlands using temporary pumps or other means.

Capture of rainfall or runoff from farm irrigation fields, via tailwater systems or other means, is not floodplain harvesting.

What are the issues?

The harvesting of water from floodplains reduces the amount of water reaching or returning to rivers. This decreases the amount of water available to meet downstream river health, wetland and floodplain needs and the water supply entitlements of other users.

As well, floodplain harvesting can seriously affect the connectivity between the local floodplain, wetlands and the river, through the loss of flow volume and redirection of water flows.

The *Water Act 1912* provided powers to license floodplain harvesting. However this was never applied as there was generally no requirement to restrict total overall water extractions or off-allocation diversions. Harvested floodplain water has been treated as a freely available bonus to a farmer's licensed entitlement.

This situation has now changed. The Murray-Darling Basin cap applies to all water diverted from inland NSW catchments and rivers. Licensed and off-allocation access has been subject to increasing restrictions. Embargoes on water licences are also in place on many areas on the coast.

Floodplain harvesting works and water extractions also clearly fall into those activities that the *Water Management Act 2000* requires to be only undertaken by way of a licence. The Act also requires such licensing to consider the ecological functioning of floodplains.

Floodplain harvesting can no longer be left outside of the State's water management and compliance system or as a source of increase in further water diversions. Given this, it is the Government's intention that floodplain harvesting works and taking of water from floodplains be licensed and managed. It will take a number of years to complete the process. However, the water sharing plans must signal the basic principles that will govern the process.

Approach to floodplain harvesting

Floodplain harvesting will not be a component of individual water sharing plans being produced for the regulated and unregulated rivers. During flood times water originating in one river system may flow across floodplains and along "flood runners" into adjacent river systems. It is therefore often not possible to assign an area of floodplain to a particular river.

Instead, management of floodplain harvesting will occur on a state-wide basis, according to the six principles set out below.

There are many thousands of existing floodplain works which will require licensing and this will be done over the next couple of years. The licensing process will include proper environmental impact assessments.

A separate category of licence will be established.

Principle 1

All existing floodplain harvesting works and floodplain harvesting extractions will be licensed.

While all surface and groundwater licences now (or will shortly) specify volume entitlements or annual limits to water, it is not possible to do this for floodplain harvesting licences at this stage. This is because the pattern of use is highly episodic and site and infrastructure specific, and current data on structures and use is minimal.

The Department of Land and Water Conservation will licence existing structures and specify monitoring of use - including metering of pumps - as a licence condition where possible. This may not be possible initially in cases where a tailwater system is also picking up floodplain water as they are difficult to separate, or where overland flow is being captured by a billabong for which we do not have any information on its capacity. Options for application of volumetric conditions will be developed and implemented where appropriate within the first five years of the initial water sharing plans.

Principle 2

Licensing will focus initially on controlling the structures, but with movement towards specifying volume limits and flow related access conditions, including metering of pumps.

All new floodplain harvesting works are required by law to be licensed. However, as any new works would result in a growth in diversion, which would threaten river health and/or the water entitlements of others, such works would have to be offset by a reduction in other forms of water diversion.

Principle 3

No new works or expanded floodplain harvesting activities in the Murray-Darling Basin that will result in the diversion of additional water will be authorised.

Because cap is based on the use of water with development as it was in 1994, NSW considers that the water use that would result from use of the floodplain infrastructure in place in 1994, is part of the cap in each system. It is likely that there has been some growth in floodplain harvesting works and extractions since then.

However, it is expected that the licensing process will result in some modification of existing works. This may be adequate to offset any post 1994 development. If not, restrictions on the use of the licensed works will have to be applied to return diversions to cap levels. Such restrictions could include restrictions on pumping times or a requirement to modify the work to allow a proportion of flows to be bypassed.

By preventing the construction or enlargement of new works, the opportunity for any further growth in floodplain harvesting diversions will be minimised.

Principle 4

Floodplain diversions associated with works in place in the Murray-Darling Basin prior to the end of the 1994 irrigation season will be considered as within the NSW cap.

Principle 5

Once licensing is completed, an assessment of long-term use resulting from authorised structures against that from structures which existed in 1994 will be carried out and appropriate steps taken to keep harvesting to cap levels.

Trading of floodplain harvesting rights will not be permitted because the frequency and volume of use is site and infrastructure specific, and volume management will take some time to implement.

Principle 6

Floodplain harvesting rights will not be tradeable.

Plan Requirements

To provide a link between the water sharing plans and the floodplain harvesting policy, the following model provisions should be incorporated into regulated and unregulated river system water sharing plans.

1. *Harvesting of water from the floodplains of rivers which are included in this Plan's water sources is not subject to the provisions of this plan and has not been included in the diversion limit that applies to this plan.*

2. *This plan has, however, been developed on the understanding that the harvesting of water throughout the state will be managed on the basis of the principles set out in the policy advice. (The 6 principles should be listed).*

Appendix D: References

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