

Northern Rivers' Agricultural Drainage Review

23 December 2022

**CONFIDENTIAL REPORT
PREPARED BY**

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1. Executive Summary

Shortly after commencing this review, a NSW Legislative Council Select Committee handed down its report “*Response to major flooding across New South Wales in 2022*” (hereafter referred to as “the Select Committee Inquiry”). Within a matter of days, the report from the 2022 NSW Flood Inquiry, “*2022 Flood Inquiry, Volume One: Summary report and Volume Two: Full report*” (hereafter referred to as “the Independent Flood Inquiry”) was released. Also, the Australian Bureau of Meteorology announced that there was a 70% chance of wetter than normal conditions continuing across eastern Australia through to the end of summer in 2023. While these three developments did not trigger the review I had been asked to do, they did provide additional context to my work.

None of the findings in this report should surprise the Department of Regional NSW (DRNSW), or the Department of Primary Industries (DPI), as the associated issues are longstanding. None of the recommendations made in this report, or those in the Select Committee Inquiry’s report and the Independent Flood Inquiry’s report, will flood-proof the Northern Rivers. However, the recommendations in this report do provide a basis for agricultural drainage across the region to be improved, to the extent that the drainage will function more efficiently during normal seasons and water levels on farms will recede more quickly following extreme weather events. Moreover, there is also the opportunity for improved environmental outcomes if the publicly-owned agricultural drainage system is improved.

2. Findings & Recommendations

Barriers to Maintenance

Finding No. 1: Publicly-owned agricultural drainage across the Northern Rivers is in a degraded state and the primary cause for its degradation is inadequate public investment in maintenance over an extended period.

Recommendation No. 1: The NSW Government significantly increase its annual funding allocations for the operation and maintenance of publicly-owned agricultural drainage across the Northern Rivers. The NSW Government should also consider providing Northern Rivers' councils, or any successor flood mitigation and drainage authority, with 're-set' funding in the near-term to allow the most urgent items on drainage maintenance backlogs to be addressed.

Finding No. 2: Regulatory complexity is the second most significant issue impacting on the maintenance of agricultural drainage across the Northern Rivers. The cost of negotiating the associated regulatory complexity consumes a significant amount of the limited resources available to Northern Rivers' councils to maintain drainage and acts to discourage best practice approaches to the management of drainage.

Recommendation No. 2: The NSW Government act to simplify regulatory arrangements that are serving to discourage Northern Rivers' councils from meeting their drainage responsibilities and from employing best practice.

Finding No. 3: There is room to improve the coordination of emergency maintenance work being undertaken by the Transport for NSW (TfNSW) across the Northern Rivers and the efficacy of some of that work.

Recommendation No. 3: The NSW Government instruct TfNSW to consult with Northern Rivers' councils before undertaking emergency maintenance/repair work on drainage to determine whether there is scope for its resources to be used to better effect.

Finding No. 4: Some NSW regulatory officers consider that there is little point in undertaking any maintenance of drainage in the lowest lying areas across the Northern Rivers, given the prospect of rising sea levels. In the absence of declared policy changes to land use in such areas, this amounts to a 'default' position which adds to the drainage-related frustrations of councils, drainage unions and individual landholders.

Recommendation No. 4: The NSW Government instruct Crown Lands, the Department of Planning and Environment (DPE), and the Department of Primary Industries-Fisheries (DPI-F) that until such time as it has adopted a change in land use policy and has a program in place to manage such a change, default positions are not to be adopted and that all applications for permits to undertake work on drainage must be considered on their merits.

Opportunities to simplify the Regulatory Framework

Finding No. 5: The three most important changes that are required to simplify the existing regulatory framework are:

- a clearer distinction between routine/basic maintenance and major maintenance/new works needs to be reflected in the planning policies and guidelines released by the Department of Crown Lands (Crown Lands), Department of Planning and Environment (DPE) and Department of Primary Industries – Fisheries (DPI-F) so that there can be a more proportional approach to regulatory requirements and compliance;
- the inclusion of councils in the list of public entities that can undertake routine maintenance on flood mitigation and drainage infrastructure without needing to seek regulatory consent Note: such a change would not remove the requirement for councils to undertake risk assessments and manage the associated risks, nor exempt them from complying with the same requirements that bind other public authorities that are already able to undertake maintenance without the need for consent; and
- a rethink of DPI-F’s threshold requirements in respect to the routine maintenance in coastal wetlands.

Recommendation No. 5: The NSW Government benchmarks any recommendations arising from the review of regulatory arrangements pertaining to agriculture drainage undertaken by the Coastal Floodplains Interagency Working Group against those identified in Finding 5 of the Northern Rivers’ Agricultural Drainage Review.

Finding No. 6: There are a range of opportunities to simplify the regulatory framework governing the conduct of drainage works across the Northern Rivers. The opportunities range from:

- continuing to work within the existing framework, but with streamlined processes;
- continuing to work within the existing regulatory framework, but with streamlined processes and councils assuming more responsibility;
- continuing to work within the existing regulatory framework, but with streamlined processes and responsibility for drainage across the Northern Rivers being vested in a single agency; or
- moving to a new regulatory framework, with responsibility for drainage across the Northern Rivers being vested in a single agency.

Recommendation No. 6a: The NSW Government establish a single authority to manage flood mitigation and agricultural drainage across the Northern Rivers.

Recommendation No. 6b: The NSW Government consider the following interim actions to provide councils and drainage unions with near-term relief from the cost and complexity of current arrangements. This would be prudent given the time that would be required to establish a single authority to manage flood mitigation and agricultural drainage across the Northern Rivers and to consolidate the associated regulatory arrangements.

- 6b (i): Directing Crown Lands, DPE, and DPI-F to differentiate between minor and major drainage works; to reflect such differentiation in their works approval processes; and to provide online example applications/templates to guide those seeking to obtain work approvals.

- 6b (ii): Directing Crown Lands, DPE, and DPI-F to commence discussion with Northern Rivers' councils to identify any accreditation/licensing arrangements that might be appropriate as part of a devolution of authority that would allow councils to undertake routine maintenance drainage works, within their geographical boundaries, without the need for consent.
- 6b (iii): Directing Crown Lands, DPE, and DPI-F to provide a minimum level of service in respect of applications to undertake flood mitigation and drainage works where such applications continue to be required. The minimum level of service suggested is 28 days i.e., Crown Lands, DPE and DPI-F be required to respond to applicants within 28 days of applications being received, identifying, at a minimum, whether an application had been successful or the specific matters that need attention before the application can be reconsidered.

Opportunities to improve communication about, understanding of, and compliance with regulations pertaining to drainage on floodplains

Finding No. 7: There is a decreasing level of tolerance across the region for additional reviews and consultation unless they are specific in nature. The decrease in tolerance levels has occurred due to the long-standing nature of many of the drainage issues across the Northern Rivers and the additional demand placed on councils and communities by the recent natural disasters.

Recommendation No. 7: In order improve its own communication and understanding of floodplain drainage and related regulatory matters, and to assist relevant stakeholders, the NSW Government should:

- 7a: look to communicate in more specific ways, and face-to-face, where possible;
- 7b: consider establishing a Northern Rivers' Drainage Task Force/Advisory Group comprised of regulatory, community and industry representatives to provide a focal point for the discussion of the more complex drainage issues across the region (e.g., priorities; strategies to resolve long-standing issues; and if the intent is to introduce land use changes, how best to do so) and to assist the government with its related communication;
- 7c: direct Crown Lands, DPE and DPI-F to review their understanding of regulatory matters that are raised most frequently with them and to reach a common understanding of such matters;
- 7d: direct Crown Lands, DPE, and DPI-F to review their web-based information relating to drainage work approvals to ensure it is readily accessible, can be easily understood, and provides examples/templates to guide those seeking to lodge applications for approval to undertake drainage maintenance should such approvals still be required;
- 7e: direct Crown Lands, DPE and DPI-F to make greater use of the geospatial and digital information already available to the NSW Government to reduce the amount of information they currently seek from applicants seeking to obtain approvals to undertake drainage work;
- 7f: direct Crown Lands, DPE and DPI-F to offer on-site consultation to any applicant who is seeking to undertake work that is considered by the regulators to be environmentally, culturally, or socially sensitive/complex.

Priorities for management and maintenance of coastal drainage systems that support agricultural production across the Northern Rivers

Finding No. 8: The conventional way of determining the priorities for the management of any infrastructure is to focus on those things that are mission critical and those areas that generate the most economic and social benefit and/or have the most environmental impact. However, in the absence of sufficient funding and in the face of a regulatory system that is complex and costly to navigate, there is no clear sense of priorities for the management and maintenance of the drainage systems that support agricultural production across the Northern Rivers – nor is there likely to be unless the barriers that stand in the way of effective management and maintenance are removed or significantly reduced.

Recommendation No. 8: The NSW Government focus on a near-term ‘reset’ of drainage maintenance – one which allows councils to attend to the most urgent items on their maintenance backlogs, but with the benefit of simplified regulatory arrangements.

Note: this is to be seen as an interim measure until such times as the NSW Government decides to:

- embark on land use changes across the Northern Rivers and has the policies and program/s to do so; or
- decides to establish a single authority for flood mitigation and drainage across the region; or
- establishes a Task Force/Advisory Group that can work with councils and other stakeholders to determine priorities across the region (or to assist a drainage authority to do so).

Best management practises for drainage of agricultural flood plains

Finding No. 9: There is a degree of uncertainty around the ownership, and purpose, of some agricultural drainage assets in the Northern Rivers and this uncertainty extends to who is responsible for the maintenance of these assets.

Recommendation No. 9: The NSW Government establish a process, and resource the implementation of such a process, to assist Northern Rivers’ councils and Crown Lands to resolve agricultural drainage ownership issues. Where drainage assets cannot be confirmed as being privately owned, they be deemed public assets and assigned to a specific public authority.

Finding No. 10: It is not a lack of understanding of what constitutes best practice that is impacting the management of agricultural drainage across the Northern Rivers - it is a lack of resources and the complex and costly regulatory arrangements that are limiting, and in some cases precluding, the application of best practice.

Recommendation No. 10: The NSW Government place drainage across the Northern Rivers under the control of a single authority or provides councils with significantly increased funding for the maintenance of drainage and streamlined regulatory arrangements. Unless the above occurs, there should be no expectation of best practice; rather, the focus should be on better practice.

Cost sharing arrangements across the relevant state and local government agencies for drain infrastructure management required to support agricultural production

Finding No. 11: Northern Rivers' councils and the region's primary producers are not currently in a position to make increased contributions towards the cost of upgrading the agricultural drainage system across the Northern Rivers. However, as there is a direct relationship between the efficiency of a service and the willingness of those who depend on it to pay, were the agricultural drainage services across the region improved, new cost sharing arrangements might be contemplated.

Recommendation No. 11: The NSW Government defers any cost increases it might wish to impose on Northern Rivers' councils and/or primary producers, in respect of drainage across the region, until it is able to offer an improved drainage service, or it has positioned the councils to do so.

3. Introduction & Matters of Context

This report addresses the Terms of Reference in **Attachment 1**, albeit in a slightly different sequence.

None of the recommendations in this report will ‘flood proof’ the Northern Rivers but they do provide a basis for agricultural drainage to be improved, to the extent that it will function more efficiently during normal seasons and, water levels on farms will recede more quickly following extreme weather events. Moreover, there is also the opportunity for improved environmental outcomes if agricultural drainage systems across the Northern Rivers are improved.

Many of the people interviewed throughout the review, including NSW and local government employees, were personally affected by the flooding that has occurred across the Northern Rivers over the last two years and/or were under additional pressure in their work circumstance because of the floods. None of the people interviewed were ‘novices;’ indeed, most had served in their respective fields for many years and nearly all expressed frustration over the fact that drainage across the region has been the subject of review over many years, yet little has changed.

In the interests of affording a degree of protection to those who have spoken frankly, and so that working relationships between and within organisations are not placed at risk, many of the opinions expressed in this report are not fully attributed. However, such opinions have only been included in this report if it could be ascertained that they had some substance.

3.1 Caveats

In his PhD thesis, Mitch Tulau observed that:

“In their cleared state, coastal floodplains also represent some of the most agriculturally productive landscapes available. As a result, they are often some of the most altered environments, besides urban areas. Interfaces between more intensive land uses, such as cropping, and less intensive land uses, such as wetland management, and the relationships between agriculture and environmental rehabilitation, are key issues in the management of coastal floodplains.”¹

The purpose of this report is not to further the interests of farmers over the environment across the Northern Rivers, or vice-versa. Rather, the report assumes that the NSW Government remains intent on continuing to promote primary production across the Northern Rivers and protecting the environment.

The report also assumes that the NSW Government accepts that it has a continuing obligation to contribute to the operation, maintenance, and replacement of publicly-owned drainage infrastructure across the region.

¹ Mitchell Tulau “Lands of the richest character”: agricultural drainage of backswamp wetlands on the North Coast of New South Wales, Australia: development, conservation and policy change: an environmental history” (a PhD thesis submitted to Southern Cross University in 2011), pg. 1-3.

Some Northern Rivers' councils did not participate in the review² but the messages from those that did were very consistent. Based on my field visits and the consistency of views put to me, I have no reason to believe that the drainage circumstances described in this report are not applicable elsewhere across the region.

3.2 The Northern Rivers, in Context

Defined by the Clarence, Richmond and Tweed Rivers, an area of 20,732 km², the Northern Rivers brings together 310, 857 residents and almost 30,000 businesses located in the following seven local government areas of north-east NSW³:

- Ballina Shire,
- Byron Shire,
- Clarence Valley Shire,
- Kyogle Shire,
- Lismore City,
- Richmond Valley Shire, and
- Tweed Shire.



In addition to the seven councils that administer the above local government areas, there is an eighth Council in the Northern Rivers - Rous County Council. Rous County Council was established in 1959 and is the appointed flood mitigation authority for the Richmond Valley, Ballina and Lismore local government areas (LGAs). Rous County Council also has responsibility for providing bulk water supply to Ballina, Byron, Lismore and Richmond Valley LGAs.

² The following factors are likely to have had a bearing on the non-participation of some councils: work overload in the aftermath of the 2022 floods; multiple and concurrent levels of Government engagement/review following the floods; senior staff turnover, including GMs and Senior Engineers; a willingness to allow Rous Council to take the lead because of its role as the Flood Mitigation Authority for part of the region; and a general state of 'fatigue' because drainage issues have been longstanding.

³ Population data based on ABS 2021 census data, available at <https://profile.id.com.au/northern-rivers>.

The Northern Rivers region supports 107,411 jobs and generates an economic output of \$34.034 billion p.a. The largest employment sectors are:

- Healthcare and Social Services (18,616)
- Retail (12,635)
- Education and Training (10,656)
- Construction (9,365)
- Public Administration and Safety (6,316)
- Manufacturing (6,140)
- Tourism (6,076)
- Accommodation and Food Services (6,046)
- Agriculture, Forestry and Fishing (6,013)⁴

While Agriculture, Forestry and Fishing ranks 9th in terms of the number of people employed, the sector is the 5th biggest contributor to economic output, with tourism for instance ranked 13th (their respective contributions being \$2.194billion p.a. and \$1.066billion p.a.).⁵

3.3 Northern Rivers Floods of 2022, in Context

NSW DPI provided evidence to the Independent Flood Inquiry on 22 June 2002, that advised the preliminary estimated losses across the flood affected areas of NSW were in excess of \$500 million.

The following excerpts, from the Select Committee's Flood Report, provide a sense of the extent of the flooding that occurred across the Northern Rivers in early 2022:

"The flood events in February, March and July 2022 occurred within a year of a prior declared flood event (March 2021), and within 2 years of a major storm event (February-March 2020). The Tweed, Brunswick, Richmond and Wilsons River catchments had 7-day average rainfalls that were 37 to 61% above previous records. The highest 7-day total recorded in eastern NSW was 1,346 mm at Uki on the Tweed River. The weekly rainfall totals in parts of north-east New South Wales were more than 60% of the average annual total rainfall (based on the 1961-1990 period)".⁶

"Along the Richmond and Wilsons Rivers (plus Coopers and Leicester creeks) there was devastating flooding, particularly for the town of Lismore (Wilson's River) and Coraki and Woodburn (Richmond River). While communities in Lismore were well prepared for a major flood, the additional two metres of flooding led to unprecedented impacts. Many properties and businesses that were previously sold in flood-free locations were inundated with water. The additional floodwater meant that there were approximately 4,000 evacuees..."⁷

⁴ Regional Development Australia, Northern Rivers Region Economic Profile – see <https://app.remplan.com.au/northernrivers/economy/summary?state=15Nxfx5e9sVYkwvu5QW2MpHNNHQH9ow>.

⁵ Ibid.

⁶ Bureau of Meteorology. (2022). Special Climate Statement 76 – Extreme rainfall and flooding in south-eastern Queensland and eastern New South Wales. Retrieved from <http://www.Bureau.gov.au/climate/current/statements/scs76.pdf>.

⁷ NSW Legislative Council Select Committee report into the *Response to Major Flooding across New South Wales, 2022*, pg. 23.

*“In the Richmond Valley local government area, 800 homes were damaged with 450 deemed uninhabitable. More than 1000 local residents were displaced waiting for temporary housing”.*⁸

*“In Byron there were 2,200 properties in the flooded areas, 1,600 of which were inundated with water. In addition, 192 properties were isolated in the hinterland when roads were closed due to landslips”.*⁹

*“Over 700 properties were impacted in Ballina and 2,500 people accessed evacuation centres. The floods also severely impacted an Aboriginal community of about 200 people on Cabbage Tree Island, with the entire island requiring restoration and reconstruction. The school and 26 of the 27 homes were entirely destroyed, requiring demolition.”*¹⁰

*“In the Tweed Shire, the floods resulted in \$80 million of damage to roads, including 2,200 major faults such as landslips. In addition to roads, public buildings, waste and wastewater infrastructure, waterways, sports fields and natural riparian areas all suffered significant damage.”*¹¹

3.4 Drainage across the Northern Rivers, in Context

The following two quotes above provide a contrasting view of agricultural activity and drainage across the Northern Rivers’ floodplain at two different points in time.

“On the Tweed, Richmond and Macleay, and other coastal rivers, there are thousands of acres of swamp lands of the richest character which only need proper drainage to make them very valuable. The drainage of these lands appears to be one of the surest and most profitable investments on which money can be employed. It will undoubtedly be the means of inducing closer settlement of the Coastal districts of the State.”

NSW Public Works Department 1904

“Many of the drainage networks and end-of-system infrastructure currently keeping agriculture viable and productive on low-lying land (< 1m AHD) are already compromised and inefficient in draining sub-catchments. More will become vulnerable to sea level rise by 2050.....Wetland remediation is the only management option that is considered to give ‘excellent’ improvement in reducing acid production and blackwater risks for low-lying land. The remaining options include various degrees of change to drainage infrastructure and current agricultural land use. These options achieve ‘moderate – good’ results at best.”

WRL Coastal Floodplain Prioritisation Study
Project 2022, Stakeholder Engagement and
Communication Plan
(April 2022), pg. 5

⁸ ibid pg. 24.

⁹ ibid pg. 24.

¹⁰ ibid pg. 24.

¹¹ ibid pg. 24.

In the intervening century, the key developments that had a bearing on the drainage system and its management regimes were:

- 1860s-1880s: significant development of farming and drainage across the Northern Rivers and the formation of voluntary drainage unions as a form of local governance over drainage matters.
- Early 1900s: NSW Public Works Department constructs drainage works, and government forms drainage trusts to manage them.
- 1950s-1970s: government support for new dams/weirs; commencement of flood mitigation schemes and increased funding for drainage to reduce flood impacts and to open new areas for agriculture, but in the face of growing environmental community concerns the emergence of environmental laws.
- Mid 1970s-1980s: a reducing commitment by the NSW Government to the funding of agricultural drainage in the face of an increased understanding of its environmental impacts; a transfer of state-owned agricultural drainage infrastructure to councils and the introduction of environmental regulations.
- 1990s: reducing levels of drainage maintenance by councils because of uncertainties caused by the increasing amount, complexity, and cost of environmental regulation/compliance; because NSW Government funding contributions for drainage had remained unchanged since the mid-1980s; and declining numbers of and membership in drainage unions, largely because of dissatisfaction with the condition of publicly-owned drainage.
- Post 2000: further regulatory complexity increasing number of reviews on drainage-related matters (see **Attachment 4**); the creation of the Marine Estate Management Authority; annual funding allocations to councils remain unchanged from the 1980s; and councils focus on flood mitigation with little/to no maintenance of publicly-owned agricultural drainage.

4. Barriers to Drain Management

4.1 Overview

The drainage systems across the Northern Rivers are exactly that, systems. On-farm drainage systems are designed to get water off individual farms quickly because excess water limits plant growth and crop yields. If excess water remains on a farm too long, there can be impacts on soil health and ground water levels, and permanent plantings can be destroyed.

Farm drains across the Northern Rivers usually discharge into larger drains that are maintained by drainage unions or councils and then at some point into a natural water course. In some instances, on-farm drains discharge directly into natural water courses. Smaller water courses, which have usually been modified in some way, can also serve as intermediary drainage, and are maintained by either drainage unions, councils or Crown Lands. If the larger drains cannot discharge the water coming from farms, either at all or quickly enough, then the on-farm drains cease to serve their purpose.

If drains beyond farms are not properly maintained, the capacity of the drains will be reduced over time, either by silt and/or vegetation. If floodgates become inoperable, tidal flows can be restricted and the water quality throughout the related drain, creek or river becomes impacted. Therefore, failure to maintain any part of a drainage system is likely to have impacts elsewhere throughout the system and the impacts can be economic, social and/or environmental.

The agricultural drainage assets in the poorest condition across the Northern Rivers are those that are publicly-owned, and the sugar cane industry is the most affected by poor drainage because it is located entirely on the floodplains. The Northern Rivers' sugar cane industry generates approximately \$267 m of revenue p.a. from 6.3% of the Tweed Shire area, 2.1% of the Richmond Shire area and 0.5% of the Clarence Shire area.¹² However, some cane growers are switching to macadamia production and others already growing macadamias have expanded onto the floodplains. Given the higher costs associated with establishing and maintaining macadamia plantations, those operating on the floodplains are even more exposed by degraded drainage.

The following photos (taken by me) depict varying forms of degradation that can directly attributed to a lack of basic maintenance.



Figure 1

Showing drains constrained with the encroachment of vegetation

¹² Data provided by the NSW Canegrower's Association.

Figure 2:
Drain blocked by
vegetation



Figure 3
Drain blocked by
mangrove
pneumatophores



Figure 4:
Drain constrained
by the
encroachment
of spoil



Figure 5:
Drain constrained by
the encroachment of
vegetation



Figure 6:
Showing cracked
pipe and an
outlet that
cannot open
due to
siltation and
collapsing
concrete



Figure 7:
Showing cracked
pipe and an outlet
that cannot open
due to siltation and
collapsing concrete
surrounds



Figure 8:
Showing a cracked pipe end (missing outlet) and mangrove encroachment

4.2 Perspectives regarding the barriers to drainage

The following perspectives regarding the barriers to drainage were put to me during the review:

Farming industry representatives asserted:

- successive state governments have placed councils in impossible situations in relation to drainage by failing to provide sufficient funding for the maintenance of publicly-owned drainage assets and by allowing works/licence approval processes to become overly complex and expensive;
- what would have been minor maintenance problems at a point in time are now major problems because of inaction and will now be much more expensive to resolve;
- farmers are held to account for the standard of their drainage, but no action is taken against government agencies that fail to meet their related responsibilities;
- the value of the work done on farms to improve layouts and drainage is being eroded by the failure of government agencies (including councils) to meet their drainage obligations;
- in the absence of maintenance, the volumetric capacity of publicly-owned drains has reduced;
- the role of drainage unions is made harder when council's fail to maintain publicly-owned drainage;
- NSW government agencies are quick to point to the costs associated with the maintenance of drainage but seem oblivious to/disinterested in the cost of poor drainage to farmers;
- artificial distinctions are being drawn within NSW government agencies between flood mitigation and drainage
- mission-creep is occurring within DPI-F because its field officers are now focusing not just on protection of fish habitat but also on "potential" fish habitats; and
- there is an absence of common sense when Northern Rivers' councils must take spoil from one side of a drain to QLD for disposal, while farmers are able to treat and reuse spoil from the other side of the drain on-farm and that farmers would be willing to accept drainage spoil from council and treat it on-farm¹³

"It' hard to get growers to be active members of the union and to pay their levy when the other side of the drain is not being maintained by Council"

Northern Rivers' drainage union
Director

¹³ The EPA requires that any spoil recovered from a drain by a public authority must be delivered to an authorised receival and treatment facility. Soil containing acid sulphate recovered from drains on farms can be recycled after it has been treated by lime, but councils are not permitted to treat similarly affected soil in the same way. Northern Rivers' councils must transport such soil to Queensland because there is no authorised receival and treatment facility within the Northern Rivers.

Fishing industry representatives asserted:

- there is too much green and red tape, and the associated cost has become unsustainable – there should be a single agency or a river manager responsible for drainage;
- floodgates are not opened when they should be and drains are not being properly maintained – the result is degraded water quality; ongoing damage to fish populations (fish kills); diminished fishing, farming and tourism industries; and the near destruction of the local oyster industry;
- if councils do not have sufficient staff to actively manage floodgates, there is scope for the fishing and cane industries to do so, under agreed operating protocols and mutual consent arrangements;
- there is no point in thinking of modernising marinas to encourage tourism unless there is a willingness to undertake dredging when access to and from them is blocked by sand bars, and that it will not be enough to dredge the Richmond River mouth once – dredging will need to be done on an ongoing basis;
- scientific studies and reports in relation to the Tuckean wetland and the need for dredging of the Richmond River mouth sandbar go unactioned; and
- the Tuckean wetland has become an ecological wasteland; if restored, the resulting benefits would more than offset the costs involved, and the scientific analysis and the benefit-cost analysis have already been done

Councils asserted:

- they are placed in an untenable situation because the amount of funding they receive annually from the NSW Government to meet their mandated obligations in respect of floodwater mitigation/drainage has remained unchanged since 1985;
- notwithstanding that DPI-F has made some changes to its process for issuing works/maintenance approvals, the processes to allow what should be considered routine maintenance on drainage works are restrictive, overly complex, and expensive¹⁴;
- because of funding constraints, they do not have the resources to undertake some technical assessments that are needed to properly inform their understanding of the condition and capacity of their drains, and their maintenance programs;
- because of an incomplete transfer of information from the state to councils, the ownership and purpose of some assets remains unclear;
- it is taking 6-12 months for Crown Land to even consider a works permit application and this further discourages councils from undertaking maintenance on drainage assets; and
- staff with drainage responsibilities are feeling increasingly frustrated, and in some cases completely impotent.

“If we want do more than just basic maintenance on publicly-owned drainage, we have to meet the same regulatory requirements as Club Med would to develop a new resort.”

Northern Rivers’ Council Asset Manager

¹⁴ Works licences are not expensive, but the costs involved in supplying the supporting risk assessments and mitigation plans to secure a licence are.

NSW Government agencies indicated that:

- DPI-F has already simplified its work approval requirements;
- the work that is occurring under DPE's auspices (within an interagency working group) to streamline relevant regulatory requirements is challenging but has progressed to the point that draft recommendations are being considered within each of the agencies represented on the working group;
- constrained levels of staffing within Crown Lands inhibit its capacity to process drainage maintenance permit/licence applications more quickly; and
- most of the environmental issues associated with drainage come from the lowest lying areas on the floodplain (<1m AHD) and there may be no point in trying to resolve drainage problems in those areas because climate change will render any near-term solutions unsustainable in the longer term.

In summary

- Farming, fishing and council representatives all see the major barriers to drain management being a lack of investment by successive state governments in the maintenance of publicly-owned agricultural drainage, and regulatory arrangements that are complex and costly and serve to discourage the conduct of maintenance;
- NSW government agencies acknowledge the complexity of the regulatory arrangements and describe the work being done to streamline the arrangements as "challenging" because of jurisdictional issues and a lack of a clear NSW government policy position on the future of land use across floodplains.

The regulatory and cost barriers alluded to above are not new. In his 2011 PhD thesis, Mitch Tulau observed that:

"There are no thresholds attached to the triggering actions in SEPP 14, so there is no process for even minor works to be exempt from the assessment requirements. In many cases, these requirements have proved to be insurmountable obstacles to proposed projects proceeding. Often the proposed works were relatively minor and were commonly commissioned as part of publicly funded rehabilitation projects. In these cases, the assessment requirements would have cost substantially in excess of the actual works – and the funds available. In many cases, the proposed rehabilitation works had to be abandoned, such as at: Cattai Creek, one of the worst areas of ASS discharge on the NSW coast; Farquar Inlet, also on the Manning; Fullerton Cove; and Irrawang Swamp.⁷⁰ Many works proposed under the Acid Sulphate Soils Hot Spot Program, a \$2.6M project jointly launched in 2001 by the Premier, Bob Carr, with the Ministers for Agriculture and Fisheries, were effectively thwarted by the expense of preparing EISs. In the case of Everlasting Swamp for example, only half of the proposed projects could be carried out for this reason. In a number of other cases, the SEPP has significantly delayed remediation works. The Yarrhapinni Wetlands Rehabilitation Project is perhaps the best-known example, where it was considered that the proposal triggered the SEPP because by 1985, when the instrument was gazetted, the partially-drained and acidified former Yarrhapinni Broadwater had been colonised with freshwater aquatic species – reintroduction of salt water would have resulted in vegetation change from freshwater to saltwater species, so the proposal was deemed to involve 'clearing'. An EIS was prepared under Part 4 of the EP&A Act. However, the EIS was rejected on the grounds that Part 5 matters also needed to be addressed, and the amended EIS was completed in 1999, the whole process taking five years. A similar interpretation of 'clearing' has also confronted proponents of a project to restore tidal flow to wetlands at Tomago and Fullerton Cove. Bush regeneration and weed management have also been classed as 'clearing'. The process of preparing an EIS was commenced in 1996, and the DA was eventually consented to by KSC in June 2000. Sometimes interpretations of the instrument have been counter-intuitive. For example, council planning staff have frequently interpreted the filling in of artificial drains, drains that were draining the wetland, as 'filling'. A proposed rehabilitation project at Little Broadwater, being a northern limb of the Everlasting Swamp backswamp, was delayed because DUAP saw the restoration of natural hydrology as being 'filling', with water. This interpretation has also been applied at Cattai Creek, and, most notoriously of all, at Yarrhapinni (Chapter 9). The proposed removal of a section of an artificial levee that was blocking an old creek channel in Tuckean Swamp was also said to trigger an EIS, although the triggering action was unclear. Similarly, the removal of spoil mounds that originated from drain construction or cleaning also triggered the instrument at Irrawang Swamp."¹⁵

¹⁵ Tulau, op cit, pg 415 n.b. SEPP is an abbreviation for State Environmental Planning Policy.

4.3 *Barrier No. 1* – Insufficient public investment in the maintenance of publicly-owned drainage

“We receive the same amount of funding from the State Government for the maintenance of drainage as we were receiving in 1985 – after we deduct the wages of our one-person drainage maintenance crew and the cost of their vehicle, there’s virtually nothing left to spend on actual maintenance”

Northern Rivers’ Council Senior Asset Manager

“Right now, I have a \$12m farm investment hanging by a thread because of a \$50 drainage issue that is the responsibility of government to fix”.

Northern River’s Macadamia Grower

An indication of the extent and value of drainage assets that some Northern Rivers’ councils are expected to manage is shown in **Attachment 2**. The councils were able to show me numerous examples of written representations they had made to successive NSW governments seeking increased funding for the maintenance of their drainage, to no avail – the annual funding received from the NSW government for the maintenance of publicly-owned drainage has not changed since the 1980’s.

Councils’ maintenance challenges are further compounded by the fact that some of the drainage infrastructure they are expected to manage is nearing its end of life.

In the absence of adequate annual maintenance allocations from the NSW government, and constrained by rate pegging, councils are forced to maintain drainage in quite rudimentary ways¹⁶ and hope that they might secure a special purpose grant at some stage to address some of their maintenance backlogs. Councils further contended that the level of funding they receive from the NSW government on an annual basis, and occasional access to grant funding, discourages the development of proper maintenance cycles.

In contrast:

- The Hunter Flood Mitigation Authority has a similar number of assets to the Clarence Council but has an annual budget of approximately \$7m and employs 7 x technical officers and 10 x outdoors staff.
- Coleambally Irrigation Cooperative Limited (CICL), located in the Riverina and wholly owned by its farmer customers, spends between \$500,000 - \$1,000,000 p.a. on the maintenance of its 740 km of drainage.¹⁷

¹⁶ To quote one council drainage maintenance manager who hosted me on an inspection of his area of responsibility, “I have to make do by scrounging whatever I can from local farmers”.

¹⁷ Expenditure figures provided by Mr Kevin Kelly, CICL’s Asset & Maintenance Manager n.b. While CICL does not have to cope with tidal flows, it does have to cope with very significant volumes of drainage water, the impacts of floods and water quality issues. CICL also operates across a very flat landscape but relies on gravity rather than pressurisation to supply and drain water over a large area. In the absence of pressurisation, and given the flat landscape, CICL has to attach considerable significance to the maintenance of its supply channels and drainage system.

Finding No. 1: Publicly-owned agricultural drainage across the Northern Rivers is in a degraded state and the primary cause for its degradation is inadequate public investment in maintenance over an extended period.

Recommendation No. 1: The NSW Government significantly increase its annual funding allocations for the operation and maintenance of publicly-owned agricultural drainage across the Northern Rivers. The NSW Government should also consider providing Northern Rivers' councils, or any successor flood mitigation and drainage authority, with 're-set' funding in the near-term to allow the most urgent items on drainage maintenance backlogs to be addressed.

4.4 Barrier No. 2 – Regulatory Complexity

A list of the legislation, regulation and policies that, depending on circumstances, can apply to drainage maintenance works are provided in **Attachment 3**. While legislation defines the purpose of an Act, specifies who and what is governed under the Act, and confers related powers upon a specific entity or entities, much of the detail upon which regulators (like Crown Lands, DPE, and DPI-F) rely is specified in regulations, policies and guidelines rather than legislation.

The four main sources of regulatory frustration that councils cited were:

- the varying lists of which public authorities can act in relation to works without consent, because in some instances councils are included whereas in others they are specifically excluded;
- uncertainty around what maintenance can be undertaken, especially in declared coastal wetlands, because of the multiplicity of regulators that can be involved and the regulators' reliance on, and interpretation of differing regulatory instruments;
- very prescriptive risk thresholds that are not in legislation, regulation or planning policies, but in departmental guidelines; and
- variations in the way that some guidelines are interpreted and applied.

Government legislation and regulation, be it federal or state, is often expressed in terms that are not easily understood and even where something appears straightforward, it may not be. By way of example, Rous County Council (which is a flood mitigation authority) sought clarification about whether a recurring maintenance permit could be issued to a flood mitigation authority to deal with drainage outlets located in Coastal SEPP wetlands. Council thought that a permit couldn't ordinarily be issued under such a circumstance but that an Infrastructure SEPP switches off requirements under the Coastal SEPP wetland for a flood mitigation authority. The Council was subsequently advised by DPI-F that the Infrastructure SEPP did not switch-off the requirement under the Coastal SEPP. However, advice from the DPE on the same matter provided a different interpretation. I, therefore raised the same matter with DPI-F and received the following response:

"Resilience and Hazards SEPP Coastal Wetlands

The assessment pathway for undertaking any earthworks, draining the land or any other development within mapped Coastal Wetlands is an EIS as such works are listed in the Resilience and Hazards SEPP 2021 (RH SEPP) as designated development requiring development consent - refer to Figure 1 below. The only exception applies to environmental protection works, and the RH SEPP stipulates that such an exception only applies to environmental protection works that have been identified in: 1.) a certified Coastal Management Program, or 2.) a statutory local government plan for the use and management of community land under Division 2 of Part 2 of Chapter 6 of the Local Govt Act 1993, or 3.) a Crown Lands plan of management.

The RH SEPP also specifically states (s2.7 (1)(b)), highlighted below, that works requiring a permit to harm marine vegetation under the FM Act, if occurring in a RH SEPP Coastal Wetland, trigger application of the designated development trigger required by the RH SEPP. For this reason, DPI Fisheries maintenance permits are not typically applicable in RH SEPP Coastal Wetlands as this would not fit within the intent of the maintenance permit (i.e., because they are not minor and low risk).

Part 2.2 Development controls for coastal management areas

Division 1 Coastal wetlands and littoral rainforests area

2.7 Development on certain land within coastal wetlands and littoral rainforests area

(1) The following may be carried out on land identified as "coastal wetlands" or "littoral rainforest" on the *Coastal Wetlands and Littoral Rainforests Area Map* only with development consent—

- (a) the clearing of native vegetation within the meaning of Part 5A of the *Local Land Services Act 2013*,
- (b) the harm of marine vegetation within the meaning of Division 4 of Part 7 of the *Fisheries Management Act 1994*,
- (c) the carrying out of any of the following—
 - (i) earthworks (including the depositing of material on land),
 - (ii) constructing a levee,
 - (iii) draining the land,
 - (iv) environmental protection works,
- (d) any other development.

Note—

Clause 2.14 provides that, for the avoidance of doubt, nothing in this Part—

- (a) permits the carrying out of development that is prohibited development under another environmental planning instrument, or
 - (b) permits the carrying out of development without development consent where another environmental planning instrument provides that the development may be carried out only with development consent.
- (2) Development for which consent is required by subsection (1), other than development for the purpose of environmental protection works, is declared to be designated development for the purposes of the Act.
- (3) Despite subsection (1), development for the purpose of environmental protection works on land identified as "coastal wetlands" or "littoral rainforest" on the *Coastal Wetlands and Littoral Rainforests Area Map* may be carried out by or on behalf of a public authority without development consent if the development is identified in—
- (a) the relevant certified coastal management program, or
 - (b) a plan of management prepared and adopted under Division 2 of Part 2 of Chapter 6 of the *Local Government Act 1993*, or
 - (c) a plan of management under Division 3.6 of the *Crown Land Management Act 2016*.
- (4) A consent authority must not grant consent for development referred to in subsection (1) unless the consent authority is satisfied that sufficient measures have been, or will be, taken to protect, and where possible enhance, the biophysical, hydrological and ecological integrity of the coastal wetland or littoral rainforest.
- (5) Nothing in this section requires consent for the damage or removal of a priority weed within the meaning of clause 32 of Schedule 7 to the *Biosecurity Act 2015*.
- (6) This section does not apply to the carrying out of development on land reserved under the *National Parks and Wildlife Act 1974* if the proposed development is consistent with a plan of management prepared under that Act for the land concerned.

Figure 1: Clause 2.7 of the Resilience and Hazards SEPP 2021

RH SEPP Coastal Wetlands and development consent

With particular regard to your query on whether the Infrastructure SEPP (Transport and Infrastructure SEPP) 'switches off' requirements under the Coastal Management SEPP for a flood mitigation authority to undertake drain outlet maintenance works, electronic links along with key points copied from the doc, are provided below for your review.

Clauses 10, 11 and 19 of the Coastal Management SEPP (now cl 2.7, 2.8 and 2.16 of the Resilience and Hazards SEPP) prevail over the Transport and Infrastructure SEPP (refer to Cl (2)(a) of T&I SEPP - State Environmental Planning Policy (Transport and Infrastructure) 2021 - NSW Legislation) – refer to Figure 2 below. Clause 2.7 of the RH SEPP is outlined in Figure 1 above.

2.7 Relationship to other environmental planning instruments

Note—

This section is subject to section 3.28(4) of the Act.

- (1) Except as provided by subsection (2), if there is an inconsistency between this Chapter and any other environmental planning instrument, whether made before or after the commencement of this Chapter, this Chapter prevails to the extent of the inconsistency.

Note—

Subsection (1) does not prevent a local environmental plan from making provision about development of a kind specified in Part 2.3 in a particular zone if the provisions of this Chapter dealing with development of that kind do not apply in that zone.

- (2) Except as provided by subsections (3) and (4), if there is an inconsistency between a provision of this Chapter and any of the following provisions of another environmental planning instrument, the provision of the other instrument prevails to the extent of the inconsistency—

(a) clauses 10, 11 and 19 of *State Environmental Planning Policy (Coastal Management) 2018*,

Figure 2: Clause 2.7 of the Transport and Infrastructure SEPP 2021

“... cl2.56 of the Transport and Infrastructure SEPP, which relates to flood mitigation work which can be undertaken without consent, does not switch off consent requirements for flood mitigation works undertaken within Coastal Wetlands.

Perhaps you may wish to clarify with the Department of Planning regarding the interpretation of the policy and legislation and the provisions which would allow such works to be ‘switched off’ from the legislation.

It is worth noting that if the above legislation is not switched off, then section 2.7 (4) of the RH SEPP (shown in Figure 1 above) places a limitation on the decision making of a consent authority (such as the local council) when considering such a designated development, requiring the consent authority to only consent to works if the following applies: “the consent authority is satisfied that sufficient measures have been, or will be, taken to protect, and where possible enhance, the biophysical, hydrological and ecological integrity of the coastal wetland or littoral rainforest.” It is likely that satisfying these requirements for drainage works in a Coastal Wetland would be difficult to demonstrate to the consent authority – which would generally be a local council

The strict provisions imposed relating to development consent requirements for development on land identified as Coastal Wetlands, and the development assessment requirements for those developments within Coastal Wetlands that do require development consent, highlight the high level of importance and value that is placed on Coastal Wetland environments.

For sites beyond RH Coastal Wetlands - Review of Environmental Factors.

With regard to the issue of costly environmental impact assessments associated with drain outlet maintenance works (other than EISs potentially required as per the above for works within Coastal Wetlands), in accordance with Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act), a self-determining authority in its consideration of its proposed activity shall examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity. This examination typically takes the form of an REF. Given this REF is required by the EP&A Act for drain outlet maintenance works (i.e. the REF is not a DPI Fisheries or FM Act requirement), where a permit is required under the FM Act for drain outlet maintenance works, DPI Fisheries would typically request a copy of the REF to assist with the permit assessment process, and the contents of the REF is generally sufficient in addressing the information requirements of the DPI Fisheries permit application.

Acid sulphate soil management

With regard to drain outlet maintenance and acid sulphate soil (ASS) management, the REF required under the EP&A Act (as described above) should, among other things, consider impacts to/from soils including ASS and, where impacts are identified, should identify the mitigation measures that would be implemented to ensure potential impacts are avoided, minimised and mitigated. This type of information is essentially an ASS management plan. It is not an unreasonable expectation for a present-day ASS management plan to be consistent with best management practice (i.e., a method that has been determined to be the most effective and practical means of preventing or reducing impacts), or for industries/government authorities that frequently deal with ASS to be well-versed in its management. Of note is that information regarding ASS management is not solely required by DPI Fisheries as it should understandably form a significant component of an REF for drain outlet maintenance activities. Section 7.1 of the Ballina Local Environmental Plan, which relates to ASS and ASS management plans, is also noteworthy.”¹⁸

In discussion of DPI-F’s response with Rous County Council, Council noted:

- DPI-F had highlighted that the requirement for a Review of Environmental Factors was required under the Environmental Planning and Assessment Act 1979 (administered by DPE) and that DPI-F was the only regulatory authority asking to see such reviews and Acid Sulphate Soils Management Plans for routine maintenance;
- When Council applied to maintain three drainage outlets at Empire Vale, DPI-F indicated that unless Council reduced the volume of sediment it proposed to be removed, the DPE would be unlikely to approve the application;
- In its dealings with DPI-F, it had been questioned whether some maintenance was about drainage rather than flood mitigation and whether its authority extended to maintaining structures where the primary purpose was to drain;
- Council’s experience in dealing with DPI-F was that individual departmental officers interpreted requirements variously and inconsistently;
- DPI-F’s advice that the Infrastructure SEPP did not switch off regulatory requirements for maintenance work conducted by a flood mitigation authority in coastal wetlands was contrary to advice council had received from DPE and that DPI-F staff had previously indicated that they would be guided by DPE’s advice;
- Councils were placed in difficult circumstances when two state government agencies could not agree on the nature and intent of government regulations;
- DPI-F’s advice that an EIS would be required to undertake maintenance of publicly funded flood mitigation infrastructure located in Coastal SEPP wetlands would “cripple” any hope of keeping such assets in working condition because no council could afford to develop an EIS every time they needed to undertake routine maintenance.

Rous Council’s views were summed-up in a subsequent email to me which included the following text:

“The fact that we are maintaining existing publicly funded infrastructure, that the State Government previously encouraged and supported, and in many cases funded and constructed themselves, has been completely missed. This maintenance is very different in nature and impact to say, a new development. We’re not draining land that has never been drained, we’re not creating new channels, we’re not doing broadscale clearing of mangroves. Routine maintenance of government infrastructure has been caught in a regulatory process primarily aimed at controlling new works.”

¹⁸ ASS (Acid Sulphate Soils); REF (Review of Environmental Factors)

For the benefit of completeness, the advice referred to as having been provided by DPE was:

Please see below the Department's general position on your request. Please note this isn't legal advice and we would encourage the County Council to obtain its own advice as well, taking into account the specific details of the proposed works.

Your question is: "Would our maintenance of this floodgate outlet [in a coastal wetland mapped under State Environmental Planning Policy (Coastal Management) 2018] be classed as designated development under the Coastal SEPP and as a result would we have to apply for consent to undertake the proposed works? or does the Infrastructure SEPP provision for flood mitigation (Part 3, Division 7 and Section 50) switch that requirement off?"

I suggest that the answer, depending on the circumstances (e.g., extent of works, assets involved) is probably No. If the works can be characterised as routine maintenance works in connection with flood mitigation works, a public authority can undertake those works under Part 5 of the Environmental Planning & Assessment Act 1979, without consent.

My detailed answer discussing how the relevant planning instruments relate to one another is below – Apologies, it is very long.

Coastal Management SEPP

1. Clause 10(1) of the State Environmental Planning Policy (Coastal Management) 2018 (Coastal Management SEPP) requires consent for clearing native and marine vegetation and other development, and that is declared to be designated development under clause 10(2).
2. However, if the development is characterised as **environmental protection works**, while development consent is still required, it is not designated development - see clause 10(2).
3. **Environmental protection works** are defined in the dictionary of the Standard Instrument – Local Environmental Plan:

environmental protection works means works associated with the rehabilitation of land towards its natural state or any work to protect land from environmental degradation, and includes bush regeneration works, wetland protection works, erosion protection works, dune restoration works and the like, but does not include coastal protection works.
4. Clauses 10(3)(5) and (6) make further provision for removal of weeds and works identified in Coastal Management Programs and specific plans of management.

Infrastructure SEPP

5. Clause 8 of State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) provides for the relationship between it and other environmental planning instruments, including how it interacts with the Coastal Management SEPP. In particular, clause 8(2) of the Infrastructure SEPP provides that clauses 10, 11 and 19 generally prevail over the Infrastructure SEPP.
6. However, please note that Clause 11 of the Coastal Management SEPP (which deals with the proximity area for coastal wetlands and littoral rainforests) only **prevails where development consent is required**. Therefore if a provision of the Infrastructure SEPP allows the activity to occur as exempt development or development without consent, there is **no inconsistency** with clause 11 of the Coastal Management SEPP, unless one of the exclusions in Infrastructure SEPP clause 8(3) or (4) apply.
7. Clause 8(4) of the Infrastructure SEPP states that:

A provision of this Policy that permits development for the purpose of emergency works or routine maintenance works to be carried out without consent, or that provides that development for that purpose is exempt development, prevails over clauses 10 and 11 of State Environmental Planning Policy (Coastal Management) 2018 to the extent of any inconsistency, but only if any adverse effect on the land concerned is restricted to the minimum possible to allow the works to be carried out.
8. Therefore if a public authority has the benefit of a provision in the Infrastructure SEPP that allows development for the **purposes of emergency works or routine maintenance works** to be carried out without consent or as exempt development, these provisions prevail over clause 10 of the Coastal Management SEPP. The determining authority still needs to undertake its Part 5 assessments and comply with the usual requirements for Part 5 activities and ensure **that any adverse effect on the land concerned is restricted to the minimum possible to allow the works to be carried out**, in accordance with clause 8(4).
9. The public authority is also still obliged to seek any other approvals such as under the Fisheries Management Act 1994.

Flood mitigation works

10. Flood mitigation works are defined in the dictionary of the Standard Instrument - Local Environmental Plan:

flood mitigation work means work designed and constructed for the express purpose of mitigating flood impacts. It involves changing the characteristics of flood behaviour to alter the level, location, volume, speed or timing of flood waters to mitigate flood impacts. Types of works may include excavation, construction or enlargement of any fill, wall, or levee that will alter riverine flood behaviour, local overland flooding, or tidal action so as to mitigate flood impacts.

11. Division 7 of the Infrastructure SEPP makes provision for public authorities to undertake flood mitigation works. A note in clause 49 of the Infrastructure SEPP provides that “Examples of flood mitigation work include levees, barrages, causeways, cuttings, embankments, **floodgates** and detention basins.”

12. Flood mitigation works are development without consent under clause 50(1), if undertaken for certain purposes, which are identified in clause 50(2). As clause 50(2) identifies routine maintenance works as one of the types of development that does not require consent, routine maintenance works in connection with flood mitigation works do not require consent under clause 10 of the Coastal Management SEPP (by virtue of clause 8(4) of the Infrastructure SEPP).

Infrastructure SEPP – Clause 50 Development permitted without consent

(1) Development for the purpose of flood mitigation work may be carried out by or on behalf of a public authority without consent on any land.

(2) A reference in this clause to development for the purpose of flood mitigation work includes a reference to development for any of the following purposes if the development is in connection with flood mitigation work –

- (a) construction works,
- (b) routine maintenance works,
- (c) environmental management works

13. Clause 5(4) of the Infrastructure SEPP **defines routine maintenance works** as:

If this Policy provides that development for a particular purpose that may be carried out without consent includes routine maintenance works, the following works or activities are (subject to and without limiting that provision) taken to be routine maintenance works if they are carried out for that purpose –

- (a) routine repairs to or replacement of equipment or assets,
- (b) temporary construction yards,
- (c) clearing of vegetation (including any necessary cutting, pruning, ringbarking or removal of trees) and associated rectification and landscaping.

14. Clause 5(2) of the Infrastructure SEPP states that maintenance includes repair.

I hope this information assists you and I would be happy to provide you with any further assistance you need on this or any coastal and marine planning policy matters.”

The purpose of including these two lengthy extracts from DPI-F and DPE is not to cast doubt on the professionalism of either of the senior officers involved; nor is it to definitively resolve Rous County Council’s original question – rather it is to highlight the complexity associated with but one of the regulatory issues associated with drainage that confronts Northern Rivers’ councils.

The following extract from Mitch Tulau’s PhD thesis illustrates that the complexity and cost associated with the regulations, particularly on coastal wetlands, pertaining to drainage work is not new:

“There are no thresholds attached to the triggering actions in SEPP 14, so there is no process for even minor works to be exempt from the assessment requirements. In many cases, these requirements have proved to be insurmountable obstacles to proposed projects proceeding. Often the proposed works were relatively minor and were commonly commissioned as part of publicly funded rehabilitation projects. In these cases, the assessment requirements would have cost substantially in excess of the actual works – and the funds available. In many cases, the proposed rehabilitation works had to be abandoned, such as at: Cattai Creek, one of the worst areas of ASS discharge on the NSW coast; Farquar Inlet, also on the Manning; Fullerton Cove; and Irrawang Swamp.⁷⁰ Many works proposed under the Acid Sulphate Soils Hot Spot Program, a \$2.6M project jointly launched in 2001 by the Premier, Bob Carr, with the Ministers for Agriculture and Fisheries, were effectively thwarted by the expense of preparing EISs. In the case of Everlasting Swamp for example, only half of the proposed projects could be carried out for this reason. In a number of other cases, the SEPP has significantly delayed remediation works. The Yarrahapinni Wetlands Rehabilitation Project is perhaps the best known example, where it was considered that the proposal triggered the SEPP because by 1985, when the instrument was gazetted, the partially-drained and acidified former Yarrahapinni Broadwater had been colonised with freshwater aquatic species – reintroduction of salt water would have resulted in vegetation change from freshwater to saltwater species, so the proposal was deemed to involve ‘clearing’. An EIS was prepared under Part 4 of the EP&A Act. However, the EIS was rejected on the grounds that Part 5 matters also needed to be addressed, and the amended EIS was completed in 1999, the whole process taking five years. A similar interpretation of ‘clearing’ has also confronted proponents of a project to restore tidal flow to wetlands at Tomago and Fullerton Cove. Bush regeneration and weed management have also been classed as ‘clearing’. The process of preparing an EIS was commenced in 1996, and the DA was eventually consented to by KSC in June 2000. Sometimes interpretations of the instrument have been counter-intuitive. For example, council planning staff have frequently interpreted the filling in of artificial drains, drains that were draining the wetland, as ‘filling’. A proposed rehabilitation project at Little Broadwater, being a northern limb of the Everlasting Swamp backswamp, was delayed because DUAP saw the restoration of natural hydrology as being ‘filling’, with water. This interpretation has also been applied at Cattai Creek, and, most notoriously of all, at Yarrahapinni (Chapter 9). The proposed removal of a section of an artificial levee that was blocking an old creek channel in Tuckean Swamp was also said to trigger an EIS, although the triggering action was unclear. Similarly, the removal of spoil mounds that originated from drain construction or cleaning also triggered the instrument at Irrawang Swamp.”¹⁹

Suffice to say, any regulatory regime that is too complex invites being challenged, circumvented, or ignored – worse still, it can cause people and organisations to exit the industry being regulated out of sheer frustration. The following two quotes, albeit one from outside of the Northern Rivers, further attest to how councils feel about the regulatory arrangements that apply to drainage and floodplain mitigation works in NSW:

“We were getting DAs in at council and we’re following the law, and we’re asking for 15 reports to go and restore the riverbank at a cost that might be three or four times the cost of actually doing the work.

... a few people have tried to do it the right way and everybody else has just done whatever they wanted because it was too hard to come and do it the right way and talk to us. So, we get a poor environmental outcome; we get a poor community outcome. Nobody’s winning.”

Councillor Patrick Connolly, Mayor of Hawksbury City Council, to Select Committee Inquiry (Select Committee’s Report, pg 131, Section 5.80)

“We have pretty much run up the white flag on drainage – it’s just too hard.”

Comment by a senior Engineer from a Northern Rivers’ Council

¹⁹ Tulau, op cit, pg 415.

The comment by the Mayor of Hawksbury City Council is noteworthy in that it indicates that regulatory arrangements are not just inhibiting the conduct of maintenance of drainage and flood mitigation, they are also inhibiting post flood recovery measures.

The level of frustration conveyed in the above quotes was echoed by all Northern Rivers' councils and industry representatives that contributed to the review. By way of further illustration:

- A Director from a drainage union (the union) contacted me late one night because they were at their “wits end”. The Director went on to explain that as well as trying to deal with the flood damage to their own farms, the union had gone to the expense of floating an excavator into the union’s drainage system because access roads (council’s and the union’s) had been rendered impassable by the 2022 floods. As the excavator was nearing the limits of the union’s jurisdiction, the union approached council to seek approval to clean a remaining section of about 150m. Council advised that Crown Lands approval would be needed. Crown Lands subsequently took three months to advise that it was not sure whether they owned the land on which the uncleared drain was located. More correspondence ensued and Council was able to provide proof that the land was indeed Crown Land. Crown Lands then agreed they were the owner but advised that it could not process the application because there had been changes in legislation and it was still working their way through the changes to understand them.²⁰
- A drainage union official, from a different catchment, sent me the following photos of work performed by the TfNSW to clean drains in their catchment following the March 2022 floods. Note: the explanations next to each of the photos are those provided by the official supplying the photos.



Figure 9

“RMS answer to clearing the pipe - dig a hole in front of it!!”
Drainage union official

“Silted outlet looking towards river 15 metres away”
Drainage union official



Figure 10

²⁰ A copy of the related correspondence from Crown Lands was provided to me.



Figure 11

“A small area has been excavated in front of and to the depth of the invert of the pipe. A large Bullywood tree has been cut down and removed. A mangrove tree growing in the silted outlet has been left as has the mud in the outlet. The height of the mud in the blocked outlet is above the height of the top of the pipe under the roadway! It is 10 metres to the river!!!... with no more mangrove trees!!!..... an ideal outlet that could have been cleaned with no effort at all while machinery was on site No rocket science here - this pipe cannot drain anything!!”

Drainage union official

It is worth noting that when the official first became aware of the work being performed by TfNSW, he contacted me to see if there was any possibility of some basic work being performed on both sides of the roads in the same work locations. I contacted Rous County Council and DPI-F to see if they were aware of the work being done by TfNSW. Both agencies advised that they were not aware of the work being undertaken by TfNSW.²¹

Suffice to say, there would appear to be scope for TfNSW to give more consideration to the scope of its drainage work, to better coordinate such work at a local level, and to rethink the utility of the kind of efforts depicted in the photographs so that public funds are used to better effect.

In addition to the amount and complexity of legislation and regulation that may apply to drainage maintenance work, councils and landholders described application processes as a further barrier. For example:

- Fisheries Permit Application Parts 2 & 7 of the *Fisheries Management Act 1994*, Permit Application Part 1 of the *Marine estate Management (Management Rules) Regulation 1994*, Permit Application Aquatic Reserve 2015 is a 21-page document which requires applicants to:
 - respond to 78 questions (and then depending on the exact nature of the works, to respond to more questions in three appendices)
 - identify what planning instruments apply e.g., SEPPs, REPs, LEPs, DCPs apply²²
 - identify if there are any threatened species, populations or communities of plant, mammal bird, reptile, amphibian, or fish species are likely to occupy, depend, upon, pass through or use the work site/s
 - whether the work will occur within a declared Acid Sulphate Soil (ASS) zone
 - to provide up-to-date topographical maps or aerial photo images, a cadastral map, colour photographs and a construction environmental management plan.

²¹ The TfNSW is not required to contact a council before undertaking such repair work.

²² SEPP (State Environmental Planning Policy), REP (Regional Environmental Plan), LEP (Local Environmental Plan) & DCP (Development Control Plan).

- Crown Lands issues licences for a variety of purposes and in a variety of forms, under the *Crown Land Management Act 2016*, that permit access to and the use of Crown land for a specified purpose/s. For example: for waterfront structures, such as jetties, boat ramps and slipways, for grazing and water supply and access, for short-term and temporary activities, such as events, environmental research or site investigations; and for extractive industry operations. There is no authorisation process that is specific to drainage works and depending on the nature, frequency and duration of the works, an applicant can apply for either a short-term or a general licence.

Crown Lands advised that it “considers each application received on its merits and will assess the application against the following:

- related policies and guidelines
- land assessment requirements
- Aboriginal land claims
- native title
- site inspection
- development consent
- valuation
- current land use and condition.”

Landholders and councils complained that it was routinely taking 6-12 months for Crown Lands to respond to an application to undertake drainage maintenance work on crown land. Crown Lands acknowledged that this was often the case but explained that this occurred as:

- there was a limited number of staff across the state available to consider the many forms of application they receive from parties wishing to undertake activities on Crown Land; and
- it gives priority to applications that it considers to be associated with public, versus private, benefit and where First Nation interests are involved.

Given the amount of geospatial and digital information that the NSW Government has at its disposal²³, it is suggested that if DPI-F, for example, is provided with accurate information about the location of proposed work, it is better-placed than a landholder to know whether a particular location is home to an endangered species, or is within a declared ASS zone, because it’s the NSW Government that makes such declarations.

²³ Responses to many of the questions that are asked, can be obtained at the NW Government’s own portal at <https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address>.

Similarly, and given the complexity surrounding the interrelationships between planning instruments, it could be argued that NSW regulators are better placed than a landholder to know whether a SEPP, REP, LEP or DCP applies to an application. When I made this point to a group of regulators who were looking at how the current regulatory regime that governs the conduct of drainage maintenance might be simplified, one of the representatives responded by suggesting that requiring applicants to respond to such questions meant that they would have to do some research and, in the process, would develop a better awareness of the existence of such policies and their purpose. If time had permitted, I would have pointed out to that representative that while there was a degree of logic in their position it was limited by the complexity associated with such policies and rather than becoming better informed, applicants become overwhelmed, confused and/or frustrated.

Given the amount and complexity of information required to lodge a permit application, councils, drainage unions and landholders are often forced to engage consultants to develop and lodge an application and the cost of doing so can sometimes exceed the cost of the proposed works.

Councils, drainage unions and landholders become doubly aggrieved when Crown Lands, DPE and/or DPI-F defend their application fees as being minimal because it is not the application fees that are in question – it is the cost of providing supporting risk assessments for even routine maintenance.

By way of example, and at the risk of returning to an event previously mentioned in this report, in August 2021 Rous County Council undertook maintenance of three floodgate outlets to remove sediment and mangrove seedlings immediately in front of the outlets. In response to DPI-F's feedback, concrete troughs were installed between the floodgates and the river channel to allow for more efficient and simpler cleaning of the outlets in the future (and in the hope that such a solution would mean any more approvals that would be required to maintain these outlets in the future would be easier to secure). The three sites were considered relatively straightforward and the distances to the river were short. In order to obtain the related works approval, Rous County Council was required to complete a Review of Environmental Factors and apply to NSW DPI-F for approval to harm marine vegetation and to undertake dredging. The related work cost \$29,270 and the cost of obtaining the regulatory approval was \$13,700. While the cost incurred in providing the supporting information for the application (i.e., \$13,700) did not exceed the cost of the work in this instance, it would have if Rous County Council was not able to undertake the related assessments in-house.

Given that Rous County Council has an annual maintenance budget of \$350,000 and more than 700 individual floodgates, 190km of drains, 70km of levees and 66 floodgate outlets, its argument that the regulatory costs associated with even routine maintenance is discouraging the conduct of maintenance is not without some foundation.²⁴

²⁴ Attachment 2 indicates that the NSW Government provides Rous County Council approximately \$84,000 p.a. towards the cost of maintaining public owned agricultural drainage and flood mitigation infrastructure. The remaining \$266,000 comes from fees paid to Rous County Council by Ballina, Lismore and Richmond Councils for related services.

Finding No. 2: Regulatory complexity is the second most significant issue impacting on the maintenance of agricultural drainage across the Northern Rivers. The cost of negotiating the associated regulatory complexity consumes a significant amount of the limited resources available to Northern Rivers' councils to maintain drainage and acts to discourage best practice approaches to the management of drainage.

Recommendation No. 2: The NSW Government act to simplify regulatory arrangements that are serving to discourage Northern Rivers' councils from meeting their drainage responsibilities and from employing best practice.

Finding No. 3: There is room to improve the coordination of emergency maintenance work being undertaken by the Transport for NSW (TfNSW) across the Northern Rivers and the efficacy of some of that work.

Recommendation No. 3: The NSW Government instruct TfNSW to consult with Northern Rivers' councils before undertaking emergency maintenance/repair work on drainage to determine whether there is scope for its resources to be used to better effect.

4.5 *Barrier No. 3* – Tensions over Climate Change

Early in the review, some landholders asserted that some regulators were using climate change as a reason to put them “out of business”. While the landholders’ views could be seen as entirely emotive, some regulatory officers admitted to me that they felt conflicted in dealing with drainage related matters in the Northern Rivers given findings in a yet-to-be released study (the WRL Coastal Floodplain Prioritisation Study).

The findings in question identify certain areas as being at high risk because of predicted sea level rises over the 30-50 years. In my discussions with these officers, they seemed reluctant to countenance any expenditure of public funds on the maintenance of any agricultural drainage across the Northern Rivers until such time as the WRL report has been considered by the NSW Government and the Government’s response to the report had been made public.

However, there were other officers that appreciated that in the absence of an NSW Government position to direct/encourage land use change on floodplains, it was not their place to ‘pause’ regulatory processes. My point in highlighting the dilemma that some regulatory staff are facing is not to suggest that Crown Lands, DPE and DPI-F staff should not be considering climate change/sustainability issues. Rather, it is to suggest that it is not appropriate that individuals, or agencies, adopt ‘default’ positions in respect of applications to undertake routine maintenance of drainage because of the possibility of changes to land use policy across the Northern Rivers.

Finding No. 4: Some NSW regulatory officers consider that there is little point in undertaking any maintenance of drainage in the lowest lying areas across the Northern Rivers, given the prospect of rising sea levels. In the absence of declared policy changes to land use in such areas, this amounts to a ‘default’ position which adds to the drainage-related frustrations of councils, drainage unions and individual landholders.

Recommendation No. 4: The NSW Government instruct Crown Lands, the Department of Planning and Environment (DPE), and the Department of Primary Industries-Fisheries (DPI-F) that until such time as it has adopted a change in land use policy and has a program in place to manage such a change, default positions are **not** to be adopted and that all applications for permits to undertake work on drainage must be considered on their merits.

5. Options to simplify the regulatory framework associated with drain management on coastal floodplains

We're not draining land that has never been drained, we're not creating new channels, we're not doing broadscale clearing of mangroves. Routine maintenance of government infrastructure has been caught in a regulatory process primarily aimed at controlling new works.

Senior officer from Rous County Council.

5.1 Overview of Options

The most recent NSW Government effort to simplify the regulatory framework that applies to drainage commenced in 2020 under the auspices of an interagency group comprised of representatives from DPI-Fisheries, Crown Lands, the Natural Resources Access Regulator and Environment and Heritage groups within the DPE.

I was surprised to learn that given the longstanding frustration of primary producers on the floodplains around the complexity of associated regulation, that DPI-Agriculture (DPI-Ag) was not a standing member in this group. The group has not concluded its work but provided me with a summary document that has clearly been to the fore in its deliberations - "*Coastal Floodplains drainage project - What we heard report*" (dated April 2022). This document provided a sense of the competing imperatives and the complexity of the regulatory framework that are impacting on drainage.

At one of my meetings with this interagency working group, I was advised that the some of the options considered by the group were:

- A 'one-stop shop' model which would allow applicants online access to a portal/site that provided an overview of the legislative requirements that apply to drainage works/maintenance and a description of the related approvals process and links to more detailed information requirements.
- A 'concierge' approach which saw a single agency/organisation (yet to be determined) designated to assist applicants to develop and lodge applications and then facilitate the progression of approvals through other agencies when that was required.

At the same meeting:

- Crown Lands advised that:
 - it had recently entered into an MoU with Local Lands Services (LLS) which will allow LLS to undertake certain actions on Crown Lands without reference to Crown Lands and to undertake certain forms of assessments for Crown Lands, and that there might be scope to do the same with Councils on drainage matters; and

- councils could seek to avail themselves to existing provisions which allow certain applicants to apply for “head”/long-term licenses for specific types of works.
- DPI-F advised that:
 - In addition to its work to allow bloc approval of certain activities and extended approval periods, it was now able to issue approvals to undertake works on Crown Land without having to seek Crown Lands approval to do so but noted that its approval would specify that the works also required Crown Lands consent.²⁵
 - DPI-F was looking at the possibility of identifying certain types of works as being pre-approved where a Council had already entered into a longer-term licensing agreement with the DPI-F, but that works in coastal wetlands would not be covered by any such pre-approval.

Before reflecting on the advice provided by the interagency working group, it is appropriate to consider what the Select Committee and Independent Flood Inquiries found and recommended in respect of drainage and its regulation:

Select Committee:

- “...better management of drainage channels could have reduced the severity of the February-March 2022 flooding event as well as the frequency and severity of future floods”. (Finding 21, pg. 127)
- “...the NSW Government significantly increase its investment in flood mitigation and preparation, including its support of local government to do the same, by increasing ongoing, long-term funding and access to technical guidance and assistance for local councils and by ensuring that land-use planning and development takes a risk-based approach” (Recommendation 35, pg. 127)6
- “... the NSW Government work with relevant agencies and local landowners to find ways to improve the management of drainage channels including looking for recommendations to reduce red and green tape.” (Recommendation 37, pg. 127)

Independent Inquiry Report²⁶

- “.....Some detrimental impacts of floods come from built structures which are supposed to provide flood mitigation not being maintained and consequently malfunctioning after heavy rain, making floods worse at a local level. Many are the responsibility of several agencies and are maintained by none” (Vol 2, Finding W, pg. 327)
- “.....floodplain infrastructure (drains, levees, flood gates) items are all assigned to an appropriate lead agency which has responsibility for ensuring they are fully maintained and functioning especially when floods are likely.” (Vol 2, Recommendation 28, pg. 327).
- “... to minimise disruption to essential servicesfloodplain infrastructure (drains, levees, flood gates) items are all assigned to an appropriate lead agency which has responsibility for ensuring they are fully maintained and functioning especially when floods are likely.²⁷
- Rous Council’s role over time for flood mitigation had “defaulted to managing some but not all flood mitigation infrastructure, the majority of which is in rural areas” and that due to the shared responsibility between different councils, there is “no clear lead organisation and no whole of catchment perspective”²⁸

²⁵ Such a specification might allow DPI-Fisheries to finalise its related consideration of applications, but it does not represent a significant simplification of existing processes for applicants.

²⁶ Over half of the 1498 submissions to the Independent Flood Inquiry came from the Northern Rivers and 414 of those were about “water engineering” – a term that encompassed infrastructure matters such as rainfall, stormwater, drainage, rivers and canals.

²⁷ Independent Flood Inquiry Report, opcit, Recommendation 28, pg 42.

²⁸ Evidence by Rous County Council to Independent Flood Inquiry - see Section 5.123, p.g.120 of the Independent Flood Inquiry Report.

- There was a need to re-establish a single, well-funded flood mitigation authority because the importance of Rous Council as the lead agency had “been taken away by local councils’ interference ...” and for “the removal of complex and conflicted legislation and intergovernmental agency conflict that prevents flood mitigation works and processes, noting that there are seven government departments with jurisdiction over land, water, vegetation and flood mitigation infrastructure ...”²⁹

During my most recent meeting with the interagency group, some members noted that not all councils in the Northern Rivers had availed themselves to existing options offered by Crown Lands and DPI-F that simplified regulatory requirements and indicated that, in any event, they were not getting a lot of requests for approvals to undertake maintenance work. If time had permitted, I would have responded in similar terms to the way those councils did to me when I made the same observation to them; namely that:

- DPI-F’s risk assessment and risk mitigation requirements for works in coastal wetlands can exceed the cost of the actual maintenance.
- Councils are under significant stress dealing with the disasters that have presented in recent years and the work required to go through the processes required to secure bloc and/or extended duration permits/licences, or the costs to outsource that work, was discouraging them to make such applications.
- Even if councils were less pressed, a significant amount of their maintenance work falls within coastal wetlands and they have reservations about the utility of bloc and extended permits/licenses because according to DPI-F, they cannot be applied in such areas.

Without the benefit of having full visibility of the options to simplify regulatory arrangements considered by the interagency group³⁰, there would appear to be four broad approaches that could be taken to simplify the arrangements pertaining to the operation and maintenance of agricultural drainage across the Northern Rivers; they are to:

- continue to work withing the existing regulatory framework, but with streamlined processes;
- continue to work within the existing regulatory framework, but with streamlined processes and councils assuming more responsibility;
- continue to work within the existing regulatory framework, but with streamlined processes and with responsibility for drainage across the Northern Rivers being vested in a single agency; or
- move to an entirely new regulatory framework, with responsibility for drainage across the Northern Rivers vested in a single agency.

²⁹ Evidence by Chairman of Richmond River Canegrowers’ Association to Select Committee - see section 5.125, p.g. 118 of the Committee’s report.

³⁰ The working group explained that its draft recommendations were still being considered by the agencies represented in the group and once the required feedback had been provided, the group would be able to finalise its report.

5.2 Option 1: Continue to work within the existing framework, but with streamlined processes

This is the option that is being explored by the interagency working group being led by DPE.

DPE has indicated that it sees potential for a “one-stop shop” in the form of an e-portal that explains current requirements, processes and options (such as bloc permits) in simplified terms and a “concierge” approach to the processing of applications for work permits.

When I observed that an e-portal was unlikely, for instance, to assist a council interpret the relationship between DPI-F work approval requirements in Coastal wetlands and SEPPs, the interagency working group agreed with my observation. However, the group noted that the e-portal was an information tool and that the provision of a “concierge service” could assist in the interpretation and resolution of complex matters. The matter of how a concierge service would operate and whether it would extend to an applicant only having to deal with a single agency/point of contact had not been determined.

It is interesting to note that Crown Lands consider that it already provides a concierge service because it coordinates its consideration of applications with DPI-F when there is a need for DPI-F to be involved. However, the notion of a concierge service is normally also associated with a premium service (and certainly not the 6-12 months Crown Lands is routinely taking to consider agricultural drainage applications).

It is hard to envisage that the provision of an e-portal and/or some form of concierge service will provide any real relief from the burden associated with arrangements that are inherently complex and have become increasingly costly. The following additional actions could however be taken relatively easily, because they do not require amendments to legislation, within the current regulatory construct:

- the provision of resources (people or finance) to assist those councils that have yet to apply for the bloc and extended approvals currently on offer by Crown Lands and DPI-F to do so;
- the provision of examples of successful permit applications from other councils to illustrate formats, logic and language that have already been deemed acceptable;
- the review of existing application requirements, especially DPI-F, to ensure that departments are not asking for information that can be readily accessed through existing government databases;
- as well as eliminating questions in the permit application documents that they are readily able to answer for themselves, Crown Lands, DPE and DPI-F could consider having two permit applications - one for routine maintenance (which reflected a more proportional approach to the amount of information being sought), and another for major maintenance/new works (which contained more detailed information requirement);
- a concierge approach to service delivery that goes beyond the provision of advice on regulatory matters and includes the provision of assistance to develop applications and to facilitate their timely consideration where more than one agency/department must be involved;

- the review of information on websites/e-portals, especially Crown Lands, to ensure that there is specific reference to the requirements to undertake drainage works, including maintenance, and specific hyperlinks to other sources of information that may be relevant; and
- the provision of a guaranteed level of service across Crown Lands, DPE and DPI-F in respect of processing applications to undertake drainage maintenance, such that all applicants are provided with an approval to undertake works or specific advice relating to any refusal of their application within 28 days of receipt of their application.³¹

Notwithstanding all the above, the three most significant changes that I consider are required to simplify the existing regulatory construct are:

- a clearer distinction between routine/basic maintenance and major maintenance/new works which is reflected in Crown Lands', DPE's and DPI-F's planning policies and guidelines, so that there can be a more proportional approach to regulatory requirements and compliance;
- the inclusion of councils as public authorities that can undertake routine maintenance on drainage, and flood mitigation, infrastructure without having to seek consent. Note such a change would not remove the requirement for councils to undertake risk assessments and manage the associated risks, nor exempt them from complying with the same requirements that bind other public authorities that are already able to undertake maintenance without the need for consent; and
- a rethink of DPI-F's 'threshold' requirements in respect of routine maintenance in coastal wetlands.

The limitations of continuing to work within current arrangements, even if there can be some streamlining of existing regulatory arrangements, are:

- there will be no reduction in the amount of legislation or the number of agencies that will have a role in regulating a function (drainage) that it is critical to economic, social, cultural and environmental outcomes across the Northern Rivers;
- unless the simplified arrangements make a major distinction between the requirements needed for routine, as distinct from heavy/deep maintenance, or new works and can be applied within coastal wetlands, councils and landholders will continue to be frustrated by being held accountable for outcomes that will remain largely beyond their control;
- the option is unlikely to deliver a focused approach to floodplain management and the operation and maintenance of drainage or reduce red and green tape; and
- the option does not necessarily ensure a common approach to service delivery by regulators.

³¹ These agencies would not be bound by the guarantee if an applicant had submitted an incomplete application or had not responded with sufficient clarity.

5.3 Option 2: Continue to work within the existing framework, but with streamlined processes and councils assuming more responsibility

The key features of this option are:

- all agencies currently involved in the approval of drainage work would devolve responsibility for routine maintenance, as defined by specific thresholds, to councils while retaining their current prerogatives for approvals that exceeded the defined thresholds;
- those agencies that devolved a level of authority to councils would retain the right to audit the processes and standards applied by councils and to withdraw the authority that they had devolved if a council was not discharging the devolved authority appropriately; and
- councils would be required to have those officers who are to exercise devolved authority deemed competent/accredited to do so (under arrangements established by the related regulator).

The advantages of this option are:

- it does not require major legislative or regulatory change;
- regulators will be relieved of much of the burden of dealing with applications for routine maintenance, but will still be able to exercise oversight of councils' related performance;
- subject to also obtaining additional funding, Northern Rivers' councils will be better placed to discharge their responsibility for the operation and maintenance of publicly-owned agricultural drainage;
- the regulatory 'interface' for most routine drainage maintenance matters would sit more appropriately between landholders and councils; and
- councils will be encouraged to get back into the business of drainage.

The limitations of this option are:

- unless the streamlined arrangements make a major distinction between the requirements needed for routine as distinct from heavy/deep maintenance or new works and can be applied in coastal wetlands, landholders and councils will continue to be frustrated by the amount, complexity and cost of the regulatory arrangements;
- the transfer of additional responsibility to councils will have resource implications;
- there will be no reduction in the amount of legislation or number of agencies that will have a role in regulating a function (drainage) that is critical to economic, social, cultural, and environmental outcomes across the Northern Rivers;
- it will not deliver the focused approach to floodplain management and the operation and maintenance of drainage across the Northern Rivers, nor to the extent of reduction in green and red tape, recommended by the Select Committee and Independent Flood Inquiries; and
- it will not necessarily ensure a common approach to service delivery by regulators.

5.4 Option 3: Continue to work within the existing framework but with responsibility for drainage across the Northern Rivers vested in a single agency

The key features of this option are:

- councils are relieved of their responsibilities for drainage; and
- regulators and landholders would be able to deal with a single drainage authority which has responsibility for the operation and maintenance of drainage across the Northern Rivers.

The benefits of this option are:

- it does not require major regulatory change;
- there is a precedent (in the Hunter Valley) that could inform the formation and operation of the drainage authority;
- regulators would retain their current levels of regulatory authority/control;
- it would provide the one-stop shop most stakeholders are seeking;
- it should provide increased efficiency for all stakeholders; and
- it responds to Recommendation 28 in the Independent Flood Inquiry Report which advocated that flood mitigation and drainage infrastructure be under the control of a lead agency.

The limitations of this option are:

- major effort will be required to transfer the ownership of related infrastructure from councils to a newly created drainage authority;
- it requires an increase in public funding for drainage across the Northern Rivers because the publicly-owned assets that would be transferred are in a degraded condition (and in the absence of increased public funding, the drainage authority would be set up to fail because it would not meet the expectations that would be placed on it by the NSW Government or the public); and
- the newly created drainage authority would still have to function in a complex regulatory construct.

5.5 Option 4: Move to a new regulatory framework with responsibility for drainage across the Northern Rivers vested in a single agency

The key features of this option would be:

- the consolidation of regulatory matters pertaining to agricultural drainage into a single piece of legislation;
- councils would be relieved of the responsibility for the management of floodplain drainage across the Northern Rivers³²;
- the creation of a drainage authority with:
 - the authority to consider applications for drainage works, within certain thresholds³³, and to issue works licences; and
 - the responsibility to operate, maintain and replace publicly-owned drainage across the Northern Rivers.

The benefits of this option are:

- there could be a significant reduction in regulatory complexity;
- the management of drainage across the Northern Rivers would be rationalised and a 'one-stop shop' would be provided for landholders and councils;
- councils would be relieved of a significant burden;
- there should be a more cogent approach to the operation, maintenance and replacement of drainage, and associated economies of scale;
- the NSW Government and emergency response organisations would have access to a single point of knowledge and authority in respect of floodplain and drainage management across the Northern Rivers; and
- it best responds to Recommendation 28 in the Independent Flood Inquiry Report which advocated that flood mitigation and drainage infrastructure be under the control of a lead agency.

The limitations of this option are:

- it will require a major commitment by the NSW Government and multiple agencies to bring about the required degree of legislative and regulatory change;
- major effort will be required to transfer the ownership of related infrastructure from councils to a newly created drainage authority; and
- it requires an increase in public funding for drainage across the Northern Rivers because the publicly-owned assets that would be transferred are in a degraded condition (and in the absence of increased public funding, the drainage authority would be set up to fail because it would not meet the expectations that would be placed on it by the NSW Government or the public).

³² Councils could however still be contracted by the drainage authority to perform certain functions such as drainage inspections and routine maintenance if councils saw that such an arrangement was in their interests.

³³ The thresholds could be determined in a variety of ways e.g., project scale/cost/risk. While new works and decommissioning of existing works would be matters that would probably still need to be coordinated with DPE, DPI-Fisheries and perhaps Crown Lands, routine maintenance would not.

5.6 Option 5: A phased approach to Options 3 and 4

- Option 5a: adoption of option 2 as a pathway to option 3, or
- Option 5b: adoption of option 3 as a pathway to option 4.

The benefits of this option (and the sub options therein) are:

- it offers the prospect of near-term relief from the regularity complexity associated with current arrangements, and
- the associated ‘phasing’ provides time for an evolutionary, rather than revolutionary, approach to change.

The limitation of this option is that, in the absence of firm timelines for transition from option 2 to option 3, or from option 3 to option 4, there would be the prospect of bureaucratic inertia.

5.7 ‘Weighing’ the Options

Option 1, or something akin to it, appears to be the focus of the interagency working group that has been tasked to examine how the regulatory arrangements can be simplified. This option requires the least amount of change and will be the least costly.

The fact that the interagency working group that has been looking at ways to streamline the current arrangements for nearly two years and describes its work as “challenging” is telling. Any major increase in the level of public funding to upgrade drainage across the Northern Rivers needs to be associated with more responsive/less complicated regulatory arrangements if there are to be tangible improvements in the operation and maintenance of drainage across the Northern Rivers.

Option 1 is the simplest to implement and would go some way to reducing the tensions that exist between councils, drainage unions, landholders and the regulators that have authority in relation to drainage, and flood mitigation matters. However, this option, in and of itself, will not lead to a clearer sense of drainage priorities across the Northern Rivers or encourage best practice. Moreover, it will not provide the ‘lead agency’, recommended by the Independent Flood Inquiry (Recommendation 28), that could be held to account for the condition of drainage and flood mitigation infrastructure and be available to provide a single source of subject-matter expertise in emergency situations across the region.

Option 2. The extent to which tangible benefits will accrue from this option depends very much on how routine maintenance is defined and the extent of authority that councils would be permitted to assume. Provided Northern Rivers’ councils received an increase in funding and were included as public authorities that could undertake routine drainage work without the need to seek consent, this option would better position the councils to discharge their drainage responsibilities. This option will not however provide for the single source of authority for floodplain management and drainage across the Northern Rivers recommended by the Independent Flood Inquiry; nor will the option necessarily provide for a consistent approach to the establishment of drainage investment priorities across the region.

Option 3 does not require major change and would provide the one-stop shop that councils and landholders are seeking. It is also likely that regulators would be more comfortable dealing with a single floodplain mitigation and drainage authority than they would be with devolving a level of their authority to eight Northern Rivers' councils.

Option 4 requires significant change and may meet significant resistance from some, and possibly all, of the current regulators that have some jurisdiction over drainage works. As with any endeavour that requires legislative change, this option might also present opponents of the government with an opportunity to oppose the associated changes. However, this option best responds to Recommendation 28 in the Independent Flood Inquiry Report.

While the consolidation of existing legislation and regulation pertaining to drainage would be a major undertaking, it should not be viewed as an impossible undertaking. Financial thresholds might also be contained in the new act/regulations that meant any new agency would have to seek approvals from other regulatory agencies (e.g., Crown Lands, DPE, and DPI-F) for very significant drainage undertakings, such as the development of a new drainage network. In short, the new act/regulation could be limited to providing a drainage authority with powers restricted to those required to operate, maintain and replace existing drainage across the Northern Rivers.

This option provides a real opportunity to resolve longstanding and fundamental complexities that are inherent in current arrangements and best responds to the drainage concerns expressed by local landholders, councils and communities across the Northern Rivers.

If the Government considers Option 4 'a bridge too far', it could move to provide councils with more authority as an interim measure, prior to the establishment of a drainage authority that also operated largely within the current regulatory arrangements. Such an approach would:

- allow some of the significant limitations of the existing regulatory arrangements to be overcome sooner than would occur under Option 4;
- remove the challenges associated with undertaking major legislative and regulatory changes; and
- allow the drainage authority to 'stand up' and focus on operations and maintenance without the burden of also being a regulator.

If the NSW Government is prepared to commit to major reform of the current regulatory arrangements and to the establishment of a Northern Rivers drainage authority, it could establish the authority and have it operating largely within the existing regulatory framework while work to create a single drainage regulatory instrument continued.

It is likely that cost will also be identified by some as a major reason for not pursuing, or even considering, Options 3 and 4. However, the associated cost should be weighed against the cost of continuing with arrangements that landholders, industry and councils and the Select Committee and the Independent Flood Inquiries considered are not working; the costs being borne by those affected by poor drainage; and the costs of flood damage that might have been mitigated, or at least reduced, have the drainage system throughout the Northern Rivers been properly maintained. Option 5 offers a way in which objections regarding the time and amount of work required to embrace Option 3 and more particularly Option 4 might be overcome.

5.8 Summary

- Option 1 could resolve some of the fundamental tensions that exist between councils, primary producers and regulators in the Northern Rivers, but it will not address broader imperatives.
- Option 2 is recommended as the minimum course of action that should be taken, but it might also be used as an interim measure if more significant change is contemplated.
- Option 3 is preferable to Option 2, and it too could be employed as an interim measure.
- Option 4 represents significant change, but to a system that is widely regarded as broken - it is the recommended option if the NSW Government is intent on replacement, rather than the repair, of the current arrangements.
- Option 5 contains 'pathways' which could be used as interim measures enroute to Option 3 or 4.

Finding No. 5: The three most important changes that are required to simplify the existing regulatory framework are:

- a clearer distinction between routine/basic maintenance and major maintenance/new works needs to be reflected in the planning policies and guidelines released by the Department of Crown Lands (Crown Lands), Department of Planning and Environment (DPE) and Department of Primary Industries – Fisheries (DPI-F) so that there can be a more proportional approach to regulatory requirements and compliance;
- the inclusion of councils in the list of public entities that can undertake routine maintenance on flood mitigation and drainage infrastructure without needing to seek regulatory consent Note: such a change would not remove the requirement for councils to undertake risk assessments and manage the associated risks, nor exempt them from complying with the same requirements that bind other public authorities that are already able to undertake maintenance without the need for consent; and
- a rethink of DPI-F's threshold requirements in respect to the routine maintenance in coastal wetlands.

Recommendation No. 5: The NSW Government benchmarks any recommendations arising from the review of regulatory arrangements pertaining to agriculture drainage undertaken by the Coastal Floodplains Interagency Working Group against those identified in Finding 5 of the Northern Rivers' Agricultural Drainage Review.

Finding No. 6: There are a range of opportunities to simplify the regulatory framework governing the conduct of drainage works across the Northern Rivers. The opportunities range from:

- continuing to work within the existing framework, but with streamlined processes;
- continuing to work within the existing regulatory framework, but with streamlined processes and councils assuming more responsibility;
- continuing to work within the existing regulatory framework, but with streamlined processes and responsibility for drainage across the Northern Rivers being vested in a single agency; or
- moving to a new regulatory framework, with responsibility for drainage across the Northern Rivers being vested in a single agency.

Recommendation No. 6a: The NSW Government establish a single authority to manage flood mitigation and agricultural drainage across the Northern Rivers.

Recommendation No. 6b: The NSW Government consider the following interim actions to provide councils and drainage unions with near-term relief from the cost and complexity of current arrangements. This would be prudent given the time that would be required to establish a single authority to manage flood mitigation and agricultural drainage across the Northern Rivers and to consolidate the associated regulatory arrangements.

- 6b (i): Directing Crown Lands, DPE, and DPI-F to differentiate between minor and major drainage works; to reflect such differentiation in their works approval processes; and to provide online example applications/templates to guide those seeking to obtain work approvals.
- 6b (ii): Directing Crown Lands, DPE, and DPI-F to commence discussion with Northern Rivers' councils to identify any accreditation/licensing arrangements that might be appropriate as part of a devolution of authority that would allow councils to undertake routine maintenance drainage works, within their geographical boundaries, without the need for consent.
- 6b (iii): Directing Crown Lands, DPE, and DPI-F to provide a minimum level of service in respect of applications to undertake flood mitigation and drainage works where such applications continue to be required. The minimum level of service suggested is 28 days i.e., Crown Lands, DPE and DPI-F be required to respond to applicants within 28 days of applications being received, identifying, at a minimum, whether an application had been successful or the specific matters that need attention before the application can be reconsidered.

6. Opportunities to improve communication about, understanding of, and compliance with regulations pertaining to drainage on floodplains

As with any regulatory construct, there are always opportunities to improve communication between those applying regulation and those subject to it. Before identifying specific opportunities to improve communication about, understanding of, and compliance with regulations pertaining to drainage on floodplains, it is interesting to note that the interagency work to simplify drainage approval processes appears to have been the exclusive domain of agencies with environmental and/or regulatory foci.

It is also interesting to note that the Stakeholder Communications and Engagement Plan that has been developed to support the implementation of actions recommended in the Coastal Floodplain Prioritisation Study places the key stakeholders who will be most affected (councils, drainage unions, peak bodies and landholders) at the bottom of the wiring diagram that depicts the “cohesive communication pathway” that is envisaged.

It is not surprising given the number of stakeholders in, or that have met with, the interagency working group to see recommendations for more communication between regulators and those being regulated in the group’s “what we heard report”. However, given the complexity of the existing regulatory arrangements is such that some aspects cause confusion for even regulators, improved communication should not be seen as replacing the imperative to simplify existing requirements.

Many of the issues that are associated with drainage across the Northern Rivers are long-standing and have been the subject of considerable discussion and communication – **Attachment 4** provides a list of studies, reviews and plans that have considered drainage and water quality issues in NSW since 1987³⁴. While not all the studies, reviews and plans in **Attachment 4** have focused on the Northern Rivers, in the majority of cases they have focused on this geographical location.

The second aspect that warrants noting is that most of the studies, reviews and plans are separated by very short periods of time, periods that are so short that there would have been little, and in some cases no, opportunity for implementation of one plan to inform the development of the next.

Given this history and all that communities across the region have gone through in recent times, there is a diminishing appetite for more meetings and reports, unless they herald the prospect of near-term action. The scope for improved communication on drainage matters across the Northern Rivers therefore lies in having more targeted, rather than increased, communication.

³⁴ This list was found on the Richmond River Greens website at https://greens.org.au/sites/default/files/2019-02/Richmond-river-report_WEB.pdf The list may not be definitive, but it still serves to illustrate that there has been no shortage of review into land use and drainage issues across the region.

While the management of Acid Sulphate Soils (ASS) remains a continuing challenge across the Northern Rivers those regulators, council officials and agricultural industry representatives that have been around water quality issues in the Northern Rivers long enough to have some corporate memory, acknowledge the important role played by the Acid Sulphate Soil Management Advisory Council (ASSMAC) in the development of the ASS best practice guidelines – guidelines which continue to be widely regarded internationally.

ASSMAC provided a forum that saw regulators, scientists, local government and farming industry representatives work collaboratively to define a problem and fix it.³⁵ The NSW Government could draw on the ASSMAC experience by forming a Northern Rivers' Flood Mitigation & Drainage Advisory Group or Task Force to inform the NSW Government's consideration of the region's longstanding more complex drainage issues; to assist in the determination of regional flood mitigation and drainage priorities; and to deal with the biggest issue that lies ahead - how to bring about land use change in the lowest lying areas of the Northern Rivers. Such an organisation might also provide a useful sounding board/conduit for the Northern Rivers' Reconstruction Corporation.

Not only is there scope for Crown Lands, DPE and DPI-F to simplify the application processes that must be navigated in order to obtain approvals to undertake drainage maintenance work, there is also scope to improve communication around the related processes. For instance, Crown Lands' website provides examples of activities that require a licence from Crown Lands, but drainage maintenance is not included in the examples and my use of the related search function using the words "drainage maintenance", "works approvals", "works licences" did not generate any responses that shone a light on Crown Lands' permit requirements.

The application forms required by Crown Lands and DPI-F should also be able to be completed and lodged online. Both agencies might also consider hosting a workshop to assist those councils who have not availed themselves to bloc or extended work permits to do so.

Finding No. 7: There is a decreasing level of tolerance across the region for additional reviews and consultation unless they are specific in nature. The decrease in tolerance levels has occurred due to the long-standing nature of many of the drainage issues across the Northern Rivers and the additional demand placed on councils and communities by the recent natural disasters.

Recommendation No. 7: In order improve its own communication and understanding of floodplain drainage and related regulatory matters, and to assist relevant stakeholders, the NSW Government should:

- 7a: look to communicate in more specific ways, and face-to-face, where possible;
- 7b: consider establishing a Northern Rivers' Drainage Task Force/Advisory Group comprised of regulatory, community and industry representatives to provide a focal point for the discussion of the more complex drainage issues across the region (e.g., priorities; strategies to resolve long-standing issues; and if the intent is to introduce land use changes, how best to do so) and to assist the government with its related communication;
- 7c: direct Crown Lands, DPE and DPI-F to review their understanding of regulatory matters that are raised most frequently with them and to reach a common understanding of such matters;

³⁵ While it could be argued that the resulting best practice guidelines did not eliminate the ASS problem, the guidelines were a major step forward and ones which the NSW Government saw fit to endorse.

- 7d: direct Crown Lands, DPE, and DPI-F to review their web-based information relating to drainage work approvals to ensure it is readily accessible, can be easily understood, and provides examples/templates to guide those seeking to lodge applications for approval to undertake drainage maintenance should such approvals still be required;
- 7e: direct Crown Lands, DPE and DPI-F to make greater use of the geospatial and digital information already available to the NSW Government to reduce the amount of information they currently seek from applicants seeking to obtain approvals to undertake drainage work;
- 7f: direct Crown Lands, DPE and DPI-F to offer on-site consultation to any applicant who is seeking to undertake work that is considered by the regulators to be environmentally, culturally, or socially sensitive/complex.

7. Priorities for management and maintenance of drainage systems that support agricultural production in the Northern Rivers

If the relevant regulators, and councils and the farming and fishing industries were asked what they considered to be the priorities for management and maintenance of drainage systems that support agricultural production, it is likely that their responses would differ markedly.

Regulators would likely, and to an extent understandably, contend that significant parts of the drainage system across the Northern Rivers should be decommissioned and that public monies should only be expended on those parts of the system that support farming on higher ground. Councils would likely focus on those parts of the system that cause them the most frequent and/or significant problems or are the cause of most complaint (from either landholders or the community at large). The farming and fishing industries would focus on those areas where drainage is having the most impact on their productivity and profitability.

As indicated in Section 4 of this report, some regulators are increasingly focused on longer-term climate changes and sustainability issues and are looking to the NSW Government to introduce programs that will encourage land use reform across the Northern Rivers (such as land buybacks and blue carbon farming). There is a degree of enthusiasm for land buybacks and blue carbon-type programs within councils too, but at the same time they are concerned about the possibility of losing critical economic, and social mass if farming activity in their areas is reduced.

The fishing industry seeks improved water quality but appreciates the importance of farming to the Northern Rivers and sees the active management of tidal flows as being a means of striking a balance between their and farmers' interests. The farming industry is concerned that regulators are intent on closing-down cropping on low-lying areas across the Northern Rivers by "stealth" but understands the importance of social licence.

In sum, most of the key stakeholders are looking to the NSW Government to move beyond general discussion about possible land use changes in the region - they seek a declared position from the NSW Government and visibility of the detail that will underpin any associated changes (i.e., detail around buybacks, incentives, blue carbon initiatives etc) so that they can make informed decisions about the future.

The difficulty inherent in reconciling the above positions depends to an extent on whether the NSW Government is intent on bringing about land use changes across the Northern Rivers and, if so, how and when it might do so. The closer the timeline for the introduction of land use changes, the clearer the focus needs to be on what areas are to be targeted and on what the priorities for management and maintenance of drainage will be thereafter. If, however, a decision on these matters is not imminent, community engagement has not begun, and the prospect of implementation of related programs is even more distant, decisions about drainage priorities will remain problematic.

Notwithstanding that there are varying views on the matter of drainage priorities, most problems that were apparent at site inspections I undertook during the review were the consequence of an absence of routine maintenance e.g., blocked or broken outlets, blocked drains; cracked headwalls and pipes; broken floodgate panels and seized winches on floodgates. There were however other problems for which materiel solutions had not either been identified or are disputed. Also, there were issues that would have at a point in time been relatively minor, but now, with the passage of time, have become major and for which there may be no solution.

It would not require a significant amount of money to remediate many of the problems associated with blocked outlets and drains; to repair or replace cracked headwalls and pipes; to repair or replace damaged panels and winches on floodgates, but it may require a shift in regulatory mindset.³⁶ However, there are some issues that are more complex in engineering and environmental terms. Without exception, everyone I spoke to/that spoke to me about the Tuckombil Barrage (which included fishers, farmers, councils and regulators) agreed that the current infrastructure needs to be replaced by something that can be actively managed. The future of the Tuckean area is another matter that is not beyond resolution provided there is a deliberate process to consider the options³⁷ and a commitment to make a decision – and this too may take some time. The challenges at the Tuckombil and the Tuckean are not insurmountable, but they will take time, a deliberate process and targeted communication to resolve. There are however some drainage issues that might never be resolved. For instance, the major drains that pass through what is now the Richmond River Nature Reserve require major maintenance³⁸ but it is hard to see the associated regulatory approvals for such work ever being obtained – even if it was possible to get the approvals, there would likely be significant community opposition given the scale of work that would be required.

In summary, another way of looking at the priorities might be to examine what can, and should, be done by way of minor maintenance in the near-term (1-2 years), mid-term (3-7 years) and longer-term/may never be done. Significantly, councils, drainage unions and landholders were open to this logic and when I asked them if they could identify works that could happen in the near-term if funding could be secured, they were readily able to do so.³⁹

If the NSW Government is open to such a process, then it might for example provide each of the councils that have significant agricultural drainage maintenance backlogs with a significant funding increase over a three-year period to address their near-term priorities. The funding allocations could be phased in a way that decreased the possibility of contractors being overwhelmed by demand in any given year e.g. Rous, and Ballina Councils might get 50% of their increase in Year 1, 25% in Year 2 and 25% in Year 3; Lismore and Richmond Councils might get 25% in Year 1, 50% in Year 2 and 25% in Year 3; and Tweed Council might get 25% in Year 1, 25% in Year 2 and 50% in Year 3.⁴⁰

³⁶ As indicated in the preceding paragraph, some regulatory staff contend that there is little point in making any investment in the maintenance of drainage in the lowest lying parts of the floodplains.

³⁷ Two different perspectives on the Tuckean were put to me by environmental officers: one was that all forms of farming needed to cease in the area and all the drainage needed to be decommissioned; the other was that there was scope to reconfigure some of the drainage and to continue to allow some forms of farming in certain parts of the area.

³⁸ The drains are concrete pipes of about 750mm in diameter and were in place long before the Nature Reserve was declared – the drains are blocked; the access routes have been completely overtaken by vegetation; and the impact from the condition of the drains could be clearly seen on adjacent farms. Given that the drains now extend through approximately 750m of Crown land and the extent of work that would be required to restore them, it is hard to envisage them ever being returned to any form of operational condition.

³⁹ Some of the works were subsequently incorporated into an in-extremis agricultural maintenance funding bid that I submitted to DPI on 12th September 2022.

⁴⁰ These percentages are not underpinned by any analysis and illustrative only.

Finding No. 8: The conventional way of determining the priorities for the management of any infrastructure is to focus on those things that are mission critical and those areas that generate the most economic and social benefit and/or have the most environmental impact. However, in the absence of sufficient funding and in the face of a regulatory system that is complex and costly to navigate, there is no clear sense of priorities for the management and maintenance of the drainage systems that support agricultural production across the Northern Rivers – nor is there likely to be unless the barriers that stand in the way of effective management and maintenance are removed or significantly reduced.

Recommendation No. 8: The NSW Government focus on a near-term ‘reset’ of drainage maintenance – one which allows councils to attend to the most urgent items on their maintenance backlogs, but with the benefit of simplified regulatory arrangements.

Note: this is to be seen as an interim measure until such times as the NSW Government decides to:

- embark on land use changes across the Northern Rivers and has the policies and program/s to do so; or
- decides to establish a single authority for flood mitigation and drainage across the region; or
- establishes a Task Force/Advisory Group that can work with councils and other stakeholders to determine priorities across the region (or to assist a drainage authority to do so).

8. Best management practices for drainage of agricultural coastal flood plains

There have been previous attempts to define what constitutes best practice for the management of agricultural drains on NSW's coastal flood plains. In 2003, the authors of the *"Restoring the Balance: Guidelines for Managing Floodgates and Drainage Systems on Coastal Floodplains"* considered that:

- There was a "need to assess key features of coastal floodplain drainage systems before changing their management. Important features include the ranges of salinity and tides in the estuary, the elevation of land, the presence and depth of acid sulfate soils, the acidity of groundwater, the permeability of soils, and the changes that may have occurred in the type of native vegetation."⁴¹
- All stakeholders needed to be involved in determining achievable management objectives.
- While some objectives had conflicting management requirements, many were compatible and allowed multiple objectives to be achieved.
- Management objectives could include preventing inundation of cropping land, reducing drainage of acidic groundwater, reducing low dissolved oxygen events, enhancing fish passage, enhancing fish habitat, managing aquatic weeds or restoring wetlands to conserve or enhance wildlife.
- There were three strategies that could secure the management objectives they identified, but they needed to be pursued in an integrated manner. The strategies were:
 - To modify floodgates to enable controlled tidal exchange of drain water with fresh or brackish estuarine water as this would improve water quality within drains, provide for improved fish passage and enhanced fish habitat and enable the use of salt water to reduce aquatic weeds. It was noted that the active management of floodgates would require associated risk assessments and consideration of the most suitable opening device to provide the required degree of water level control and an assessment of subsidiary works (e.g., levees, penstocks) to prevent or control inundation and limit water movement.
 - To use water retention structures to reduce the seepage of acidic groundwater to drains in acid sulphate soil backswamps and to reduce the risk of unwanted intrusion of saline water, peat fires and drainage of acidic or deoxygenated surface water; and to aid the establishment of wetland pastures or wetland conservation areas.
 - To redesign drains so that deep drains were replaced with shallow drains which could intercept surface, but not ground, water; to undertake land forming to direct surface water into shallow drains; and to fill in unnecessary drains.

⁴¹ Scott Johnson, Frederick Kroon, Peter Slavich, Alan Cibilic and Andrew Bruce "Restoring the Balance: Guidelines for Managing Floodgates and Drainage Systems on Coastal Floodplains".

The authors of the 2003 report also observed that the guidelines they had developed were “...based on the best scientific understanding of the day. They will need to be applied adaptively given that social, economic and environmental circumstances are continually changing. They will require further development as our understanding of the processes continues to grow”.

More recently, the University of New South Wales Water Resources Laboratory (WRL) “Coastal Prioritisation Study”⁴² prioritised sub catchments according to the extent of risk they posed to water quality on floodplains, and by extension to the marine estate, and assessed their vulnerability to sea level rises. Some of the key messages from WRL’s work, which are reflected in a related Stakeholder Communications and Engagement Plan, are:

- *“Limited further improvements can be gained with existing drainage and the land use it supports in some catchments”*
- *“Wetland remediation is the only remediation option that is considered to give ‘excellent’ improvement in managing acid production and blackwater risks for low lying-land....the remaining options....achieve moderate-good results at best”*

It is interesting to note that:

- Since 2003:
 - there has been very significant investment in laser levelling/land forming on those parts of the floodplains across the Northern Rivers that support cropping to improve agricultural drainage, but little to no public investment to improve publicly-owned drainage; and
 - councils and drainage unions have acted to increase the number of floodgates that can be actively managed.
- In 2022, and notwithstanding that some of the drainage solutions identified in the WRL study are similar to those identified in the 2003 report, agricultural drainage solutions that might deliver good results appear to be being discounted by WRL in favour of a single solution which is considered to be “excellent”.

Setting aside the bigger question of possible changes in land use (and therefore the possibility that some parts of the drainage system might be decommissioned) as recommended by WRL, there is scope for improved management of the systems as they exist today, and there will be a continuing imperative for improved management into the future.

Northern Rivers’ councils are struggling to manage their drainage assets and one of the challenges the uncertainty about who owns some drainage assets located within their boundaries, and in some cases the purpose of those assets. Crown Lands indicated that it also faces the same predicament.

While some councils indicated that the matter of unresolved ownership is relatively minor, others indicated otherwise; indeed, one council indicated that its degree of confidence about the ownership of drainage assets it was being expected to manage was “only about 80%”. For the avoidance of doubt, the matter of unresolved ownership of drainage assets is not about contested ownership – it is about the absence of ownership.

⁴² WRL Coastal Floodplain Prioritisation Study Project.

Crown Lands advised that it resolves undetermined drainage ownership issues by deeming any related assets privately-owned. While this approach may resolve the ownership issue for Crown Lands, it is highly unlikely to see the maintenance of the related assets resolved. Some councils indicated that they would prefer to add an asset that has no apparent owner to their asset register if there could be some form of financial adjustment made by the NSW Government for doing so, rather than continue to attract criticism over assets they do not believe they own.

In circumstances where an asset is in an area that is/could be maintained by a drainage union, the option of transferring the asset, and providing some form of recompense, to a union could also be considered.

As a first step towards resolving this issue, the NSW Government might require Northern Rivers' councils to provide it with a list of drainage assets in their areas where ownership is unresolved. This step would allow the extent of the ownership issue to be quantified and discussion with councils, and perhaps drainage unions, to be had – the end-state should be that all drainage assets are owned and appropriately managed⁴³. Where it is not possible to resolve the ownership of a drainage asset and/or an asset does appear to serve any purpose, the asset should be de-commissioned.

Finding No. 9: There is a degree of uncertainty around the ownership, and purpose, of some agricultural drainage assets in the Northern Rivers and this uncertainty extends to who is responsible for the maintenance of these assets.

Recommendation No. 9: The NSW Government establish a process, and resource the implementation of such a process, to assist Northern Rivers' councils and Crown Lands to resolve agricultural drainage ownership issues. Where drainage assets cannot be confirmed as being privately owned, they be deemed public assets and assigned to a specific public authority.

The key factors in managing any form of infrastructure are:

- having a clear understanding of the purpose, value and relative importance of assets,
- having a clear understanding of what assets need to be managed more intensively than others,
- having a system in place that allows for visibility of the condition of assets, and
- making adequate provision for the maintenance and replacement of assets.

Best-practice infrastructure management is underpinned by two key documents – an asset register and a formally documented maintenance strategy, and both documents should inform each other.

At a minimum, an asset register should contain the following information:

- a description of each asset and its purpose,
- the location and value of each asset,
- the date the asset was constructed/commissioned and its expected life, and
- some form of link to any associated inspection and maintenance requirements, and where they exist, to any operating rules for particular assets (such as floodgates).

⁴³ i.e. allocated an asset number; attributed a value; recorded in an asset register, and included in maintenance and replacement schedules.

Asset registers should not only inform maintenance decisions, but also risk management, asset replacement schedules, accounting and tax considerations, and board reporting.

Few infrastructure operators are ever in the position of being able to maintain every asset on their asset register – having a clear understanding of the relative importance of an asset allows for judgements about the degree of risk that can/cannot be accepted within asset maintenance and replacement programs. An asset that is deemed mission critical will ordinarily attract a higher maintenance priority than one which is not. Consideration must also be given to how readily an asset, or key components, can be replaced – if there is a long lead time to replace an asset (because the asset or components must be sourced from overseas for instance, or because associated technical support will be hard to get), it too might attract a higher maintenance priority.

In practise, infrastructure operators usually adopt a preventative approach to the maintenance of key assets; condition/inspection-based maintenance on less critical assets; and run their least critical or easily replaced assets with little or no maintenance until they fail. It is also the case that some assets of exactly the same type and age may have shortened or extended life cycles because the circumstances in which they were made or in which they function was/is different e.g. some pipes last longer than others because of the quality of concrete used to manufacture them; some drains may scour more readily because of their shape and/or the volumes and flow rates they have to support; and a culvert that was designed to support 20 vehicles movements a day when it was commissioned will have a reduced life if it subsequently has to support a significantly higher number of vehicle movements and/or heavier loads. In any event, decisions around what assets are the subject of preventative maintenance, condition-based maintenance, or left to run until they fail need to be informed by judgements that are supported by proper analysis, appropriate levels of documentation and periodic reviews.⁴⁴

Decisions around the relative importance of assets; the extent to which they are maintained; and the associated logic and risk assessments should be formally agreed at the highest levels of an organisation e.g., at board level, or in the case of local government, by the elected councillors, and reflected in a maintenance strategy.

Northern Rivers' councils that contributed to this review maintain asset registers, but it was not within my remit, nor would it have been appropriate given the pressure engineering and asset managers are currently under, for me to have audited the registers or their maintenance strategies.

The important questions that councils need to consider for themselves is whether they have formally documented maintenance strategies that capture the logic that underpins their approach to maintenance and whether those strategies, and the risk appetite/s therein, has been formally agreed by the elected members of council; and whether their council's asset registers are sufficiently detailed to inform their drainage maintenance and replacement programs.

Maintenance strategies should be used to inform the development of Asset Management Plans – the plans should identify what actions are required when, where and by whom; and the key resources that are needed to undertake the designated actions.

⁴⁴ Best practice would involve subject matter experts (usually independents) in the periodic reviews of asset condition and maintenance strategies.

One council provided me with a copy of its Flood Mitigation Asset Management Plan (the plan), which specifies its inspection regimes and addresses the maintenance requirements of its levees and floodgates. The plan specifies that urban levees and floodgates on those levees should be inspected every 6 months, whereas rural levees should be inspected every 12 months. The plan further specifies that major floodgates on rural levees should be inspected every 6 months and minor floodgates on levees should be inspected every 12 months.

Significantly, the plan identifies the requirement that there be external assessments of the condition of urban levees every five years and identifies actions that should occur in respect of drainage before, during and after floods. However, the plan does not appear to have been updated since 2004.

Asset Management Plans need to be 'living' documents and should be complemented by more detailed maintenance programs – such programs, be they preventative or condition-based⁴⁵, need to be underpinned by forward planning to ensure that required resources (funding, staff, contractors, equipment and materials etc) are available at the required time; to ensure the least amount of disruption to services (to customers and the community); and to ensure that any associated approvals/licences are secured. There is also an extent of planning required even when a run-to fail approach⁴⁶ is employed because such approaches are dependent on replacement components/materials being readily available.

Some maintenance is minor in nature, in that it does not require major expenditure, specialist resources, or detailed planning e.g., the lubrication of floodgate winches. Some maintenance although relatively simple in nature needs to be pre-planned because it requires chemicals that are expensive and can often be in short supply, and/which can only be undertaken by staff/contractors with the requisite licences/qualifications e.g., weed control and access maintenance.

Some forms of routine maintenance need to be conducted at certain times of the year e.g., weed control must take account of weed growth/germination cycles and track maintenance is best conducted during drier months. Certain parts of a drainage system will require more maintenance than other parts because they are more prone to weed infestation, siltation, or erosion for instance. More expensive or more complicated forms of maintenance, sometimes referred to as 'heavy' or 'deep' maintenance, generally occur less often but require detailed planning. However, because deep maintenance is more expensive and more complicated, best practice would see some deep maintenance occurring somewhere within a drainage system every year to 'smooth' the associated costs over time. Staggering the conduct of deep maintenance may also be dictated by the limited availability of specialist resources and the need to minimising disruption to others.⁴⁷

⁴⁵ Preventative maintenance involves specific maintenance attention being given to an asset on a scheduled basis to ensure, to the extent that is possible, that an asset does not fail and will reach its full life cycle – it is predicated on a willingness to accept a higher level of cost in return for reduced risk. Condition-based maintenance involves the rectification of problems as and when they are identified – it will usually be less costly than preventative maintenance but comes with more risk.

⁴⁶ The 'run to fail' approach is the least costly approach to maintenance but should only be used when the consequences associated with the failure of the asset/s are low and the asset/s can be easily replaced.

⁴⁷ The timing of deep maintenance needs to take account of cropping cycles – conducting deep maintenance on infrastructure that is required to support the movement of heavy vehicles during peak periods, such harvesting, for instance should be avoided. The replacement of culverts and piping during peak drainage periods should similarly be avoided.

At the end of each year, a summary of the routine maintenance activity, associated expenditure and lessons learned should be compiled. The efficacy of chemicals used in weed control also warrants inclusion because weeds can become resistant to a chemical that is used repeatedly. More detailed summaries should be compiled in respect of deep maintenance programs – indeed, if a particular job was complex, expensive and rarely undertaken, a specific summary for that job should be compiled. Such summaries become an important part of an organisation’s corporate knowledge/memory and the learnings should inform future planning – they are also invaluable in the event there is a change of CEOs/GMs, Asset Managers and/or Senior Engineers.

Farmers in the Northern Rivers are readily able to access information on best practice drainage from agronomists and their industry associations, and canegrowers in the region are obliged to manage their drainage in accordance with a code of practice as a condition of their contracts with local mills.

The drainage unions that continue to function across the region also understand the fundamentals of best practice management of drainage. Further, Northern Rivers’ councils employ professional asset managers and/or civil engineers who understand the principles and practices that underpin contemporary asset management.

However, because the level of funding that councils are receiving to maintain drainage systems is inadequate, there is little deep drainage maintenance planning occurring and routine maintenance decisions are largely being informed by complaints from private landholders and drainage unions. The risk of such an approach is that the proverbial ‘squeaky wheel’ can get more attention than is deserved and scarce resources are not necessarily directed to best effect. Some councils readily admitted that there had been no deep maintenance conducted on their drainage network for over a decade.

Some councils, and drainage unions, also indicated that they did not have the design/survey information that underpinned the construction of some of their drainage and therefore lacked a proper ‘baseline’ against which to make maintenance decisions.⁴⁸ While it is possible to undertake cross-sectional surveys to establish a new baseline, or to determine the extent to which a drain conforms to its original design, such work is expensive. However, in the absence of an understanding of original profile of a drain, restorative maintenance becomes more complicated. So, councils can know they have a problem, but not necessarily know the extent or real cause of that problem.

Even if there could be a significant increase in funding for drainage across the Northern Rivers, given the age and condition of much of the infrastructure, and the challenges currently associated with getting regulatory approvals to undertake even modest levels of maintenance, it is unrealistic to expect councils to be employing best-practice approaches to maintenance – better practice would be a more realistic objective.

⁴⁸ The councils that alluded to this problem indicated that the related drainage design/survey information was not transferred to them by the State at the time they were required to assume responsibility for publicly-owned drainage – while this could be seen as a poor handover by the State, given the age of some of the drains it might also be the case that the associated information was not available to the State at the time of handover. The drainage unions that alluded to the same problem admitted that some of the information might also have been lost during past floods, or simply not handed on by an office bearer to a successor.

If the NSW Government required, or wanted, Northern Rivers' councils to employ better maintenance practises, it could assist the councils to:

- resolve unresolved asset ownership issues;
- better understand the condition of major drainage assets;
- have an external review of their asset registers and asset inspection regimes;
- provide sufficient funding to allow councils to undertake appropriate levels of routine maintenance; and/or
- provide a more assured level of funding for deep maintenance – one that encourages at least some deep maintenance to be conducted on a regular, and properly planned, basis.

Northern Rivers' councils should also be encouraged to share their approaches to asset management so that if one council is doing something more efficiently or more effectively its approach might be replicated by the others.

By way of example, Clarence Valley Council was able to secure funding from the NSW Flood Management Program to examine how best to determine its maintenance priorities. The subsequent review employed a multi criteria assessment matrix and applied that down to sub district level across the Clarence Valley local government area (CVLGA) to arrive at what it considered should be the priorities for flood and drainage risk mitigation and maintenance across the CVLGA. The resulting report⁴⁹ recommended a multi-criteria methodology that, amongst other steps, weighted the relative importance of floodplain and drainage assets by attributing a specific value to them, based on the extent to which the assets contributed to/impacted on/would be affected by the following;

- protection of lives,
- protection of dwellings,
- evacuation of people (inundation of key access roads),
- evacuation of livestock (inundation of access routes),
- reduction of the periods of inundation,
- species impacts,
- vegetation and habitat impacts,
- protection of rural land,
- alignment with Council's strategic plans (flood risk infrastructure), and
- longevity (vulnerability of climate change)

While the weightings attributed to each of the criteria could be open to debate, the important factor is that there was an attempt to accord relative priority to a range of factors. This approach is somewhat different from the regulatory approach being taken in respect of drainage works where, notwithstanding that many of the related regulatory instruments identify a requirement to account of environmental, social and economic imperatives, protection of the environment is overwhelmingly the primary consideration.

⁴⁹ Clarence Valley Structural Mitigation Works Review (2021) was undertaken by BMT Commercial Australia Pty Ltd (2021).

If Northern Rivers' councils were provided increased, and more assured, funding for the maintenance of agricultural drainage and the authority to undertake routine maintenance, or significantly simplified arrangements to obtain approvals, a more deliberate approach to the planning of works would follow. A more deliberate approach to the planning of works would encourage councils to pursue 'bloc' approvals (where approvals continued to be required) and this would allow Crown Lands, DPE and DPI-F to ready themselves to consider requests for approvals at particular times of the year rather than having to contend with occasional requests that might come at any time (i.e. it would encourage councils, drainage unions and regulators to move towards a planning cycle with clearly identified times for planning inputs and approvals).

Finding No. 10: It is not a lack of understanding of what constitutes best practice that is impacting the management of agricultural drainage across the Northern Rivers - it is a lack of resources and the complex and costly regulatory arrangements that are limiting, and in some cases precluding, the application of best practice.

Recommendation No. 10: The NSW Government place drainage across the Northern Rivers under the control of a single authority or provides councils with significantly increased funding for the maintenance of drainage and streamlined regulatory arrangements. Unless the above occurs, there should be no expectation of best practice; rather, the focus should be on better practice.

9. Cost-sharing opportunities across the relevant state and local government agencies for drain infrastructure management required to support agriculture production

The operation and maintenance of drainage union drains is funded through a levy imposed by the unions on the landholders that are connected to, and rely, on the drains. If a landholder has a falling out with his/her union or becomes disillusioned with it, they may withhold their levy payment. While unions can initiate legal proceedings against those who fail to pay their levy, they are loathe to do so.⁵⁰ The most frequent cause of such disillusionment is the lack of maintenance of publicly-owned drainage that is connected to union drainage because any such lack of investment reduces the value of maintenance funded by a drainage union.

If a significant number of landholders lose confidence, for whatever reason, in their drainage union, the unions cease to be able to discharge their responsibilities – when that happens, councils find themselves, by default, having to assume responsibility for more drainage. It is perhaps ironical that a lack of public investment in the drainage that supports agricultural production across the Northern Rivers can lead to increased public responsibility for what was private drainage.

There are points in time when even the most strongly supported and well organised drainage unions may not be able to meet their maintenance obligations; typically, when natural disasters overcome their drainage systems. drainage unions do not have the type of assets that enable them to secure significant loans, nor are they well positioned to impose significant levy increases or one-off levies to deal with the impact of a natural disaster when their members are also trying to deal with the aftermath of disasters. The fact that the NSW government does not recognise the drainage unions as being primary producers or businesses, means the unions are often ineligible for disaster relief/recovery funding programs for those sectors.

In addition to funding drainage unions, farmers are required to pay rates to their Local Land Services (LLS) organisation if their property exceeds a certain size (being ≤ 10 ha in the Northern Rivers). The rate/quantum is based on the stock carrying capacity of a property and farmers are required to lodge an annual return confirming the number of stock on their farms – if they do not carry stock, the LLS determines the notional stock carrying capacity and rates accordingly.

Canegrowers in the Northern Rivers are however exempted from this charge.⁵¹ Other agricultural producers who are not exempted from the levy question why canegrowers should continue to benefit in this way.

⁵⁰ Quite apart from the legal expenses involved in taking a union member to court, there are a range of interdependencies between what are in essence family-owned businesses that weigh against a union taking one of its members to court e.g. union members will often have contractual obligations with each other around such matters as shared equipment, leased acreages, and contract services such as harvesting. Pursuing one's legal rights is also easier said than done in small communities.

⁵¹ This exemption was carried from the *Rural Lands Protection Board Act* into the *Local Land Services Act, 2013*. My sense is that Northern Rivers canegrowers would be unhappy if the exemption was removed but they might accept that outcome if they had confidence in any new arrangements that the NSW Government put in place to improve the condition of drainage across the region.

Northern Rivers' councils are 'rate pegged' and as such they cannot increase their rates without the approval of the Independent Pricing and Regulatory Tribunal (IPART). IPART, in turn, is required to consider the impact of any cost increases on customers. Given the natural disasters that beset the region in recent years, IPART might be reluctant to approve rate increases that exceed the rate of inflation. Even if this was not the case, councils would probably be reluctant to apply for an increase for the purpose of compensating for the inadequate level of funding provided by the NSW Government to maintain agricultural drainage because they are even more aware of the extent of ratepayers' distress within their local government areas.

In the absence of an increased public financial commitment to the operation and maintenance of publicly-owned drainage and given the circumstances that farmers and communities are facing, any decision to increase the rates or levies that are applied by Northern Rivers' councils and/or the North Coast LLS would likely attract significant public criticism. Any decision to remove the exemption that canegrowers enjoy might also attract criticism. However, if the NSW Government was willing to increase its financial contribution, and provide simplified regulatory arrangements, a rate or levy increase, or some new form of cost recovery mechanism, might attract less criticism.⁵²

The matter of cost sharing would assume different proportions if the NSW Government decided to relieve councils of their floodplain and agricultural drainage responsibilities and vest them in a single government authority.

While a transfer of authority to a single entity would likely come with increased cost to the NSW Government initially, it should lead to a more a more focused approach to planning and the determination of priorities, the adoption of best practice, and a more efficient drainage service.

If agricultural producers benefitted from the delivery of a better drainage service, they would be more likely to be willing to contribute to that cost of that service.

Finding No. 11: Northern Rivers' councils and the region's primary producers are not currently in a position to make increased contributions towards the cost of upgrading the agricultural drainage system across the Northern Rivers. However, as there is a direct relationship between the efficiency of a service and the willingness of those who depend on it to pay, were the agricultural drainage services across the region improved, new cost sharing arrangements might be contemplated.

Recommendation No. 11: The NSW Government defers any cost increases it might wish to impose on Northern Rivers' councils and/or primary producers, in respect of drainage across the region, until it is able to offer an improved drainage service, or it has positioned the councils to do so.

⁵² Another option would be to leave the current rate/levy unchanged and to introduce a drainage levy, with the related revenue being quarantined specifically for drainage maintenance.

10. Conclusion

Most of the issues around drainage across the Northern Rivers have been the subject of considerable review over a long period of time but climate change is bringing them into sharper focus.

If the NSW Government is intent on addressing the drainage issues that beset agriculture across the Northern Rivers, and notwithstanding the possibility of changes to land use policy across the region, there are two broad courses open to the government as follows:

1. to make changes to existing funding and regulatory arrangements so that Northern Rivers' councils have some prospect of meeting the drainage responsibilities they were directed to assume by the NSW Government; or
2. to relieve councils of the flood mitigation and drainage responsibilities and vest them in a single authority (as recommended by the Independent Flood Inquiry).

The second of these two options will require significantly more work to implement but it would come with an increased prospect of there being a clearer sense of flood mitigation and agricultural drainage priorities across the Northern Rivers and of best practices being applied.

If DRNSW wanted to pursue the option of relieving councils of flood mitigation and agricultural drainage responsibilities, it could recommend modest changes being made to existing regulatory arrangements and an increase in funding to councils in the near-term as being a useful 'bridging strategy' to the NSW Government.⁵³

DRNSW could further note that some near-term action on basic maintenance issues would also serve to provide a much-needed boost within the Northern Rivers and would create an environment more conducive to having conversations around more complex issues than routine maintenance, such as the future of the Tuckean wetlands, the Bagotville Barrages, and land use changes.

⁵³ Such an approach would allow councils to start to address their maintenance backlogs; provide time for the replacement authority to be established; and allow some assets to be improved before they were transferred to the new authority.

11. Attachments

11.1 Attachment 1: Terms of Reference

A review of issues and opportunities associated with the management of agricultural drains on coastal floodplains

Review the barriers to drain management on agricultural land located on coastal floodplains by working with key regulatory agencies, councils across the Northern Rivers and relevant stakeholder groups to identify:

- options to simplify the regulatory framework associated with drain management on coastal floodplains;
- Opportunities to improve communication about, understanding of, and compliance with regulations pertaining to drainage on floodplains;
- priorities for management and maintenance of coastal drainage systems that support agricultural production across the Northern Rivers;
- cost sharing arrangements across the relevant state and local government agencies for drain infrastructure management required to support agricultural production; and
- a suite of best management practises for drainage of agricultural flood plains.

11.2 Attachment 2: Publicly-owned flood mitigation & drainage assess across the Northern Rivers – basic facts

Responsible Council	Population ⁵⁴	Council Area	Major Public Assets	Quantity	Value of related Assets	Staff for related functions	Annual NSW Govt Funding (for flood mitigation & drainage)	Comments
Ballina	46,296	484km ²	Drains Floodgates Outlets Culverts Piping Sediment & detention basins Sediment & pollution pits	910km 53 1850 15.9km 310km 2850m ² 10,295	\$133m			
Byron	36,116	567km ²						
Clarence	54,115	10,441km ²	Drains Levees Floodgates Outlets	250km 110 500		1.5 x Managers and 6 x field staff	\$91,200	In addition, the Council has responsibility for 50 farm drain bridges/culverts and 18km of bank protection.
Lismore	44,334	1,290km ²						
Richmond	23,565	3,051km ²						
Rous County	n/a	n/a	Drains Levees Floodgates Outlets Culverts Piping	190km 73km 759 66 40 4.7km	\$103m	1.5 x FTE Managers and 4 x outdoors staff	\$86,400	Much of the infrastructure, especially the drains, outlets & headwalls, pipes etc are 60-100 years old.
Tweed	97,392	1,321km ²	Drains Levees Floodgates Outlets	40km 62km 365 365		5 x FTE Manager and 1 x Outdoor Staff	\$224,000	Most of the agricultural drainage throughout the Tweed is maintained by drainage unions. These floodgates vary from a single pipe of 375mm, to structures incorporating multiple culverts/outlets

⁵⁴ As at 2020 Census.

11.3 Attachment 3: Legislative, Regulatory & Policy Framework around drainage

- *Biodiversity Conservation Act (BCA) 2016*
- Biodiversity DA report under BCA
- Biodiversity values map under BCA
- Test of Environmental Significance
- *Crown Land Act 2016*
- *Coastal Management Act 2016*
- *Environmental Planning & Assessment Act 1979*
- Review of Environmental Factors (part 5)
- Statement of Effects (part 4)
- Environmental Impact Statement
- *Environmental Planning & Assessment Regulation 2000*
- *Fisheries Management Act 1994*
- Permit Application Parts 2 & 7 of the FMA 1994
- Permit Application Aquatic Reserve Notification 2015
- *Harm Marine Vegetation, Fisheries Management Act 1994*
- Local Environmental Plan (LEP)
- *Marine Estate Management (Management Rules) Regulation 1999*
- *Native Title Act 1993*
- *Roads Act 1993*
- State Environmental Planning Policy (SEPP)
- Coastal Management SEPP
- Infrastructure SEPP 2007
- *Water Management Act 2000*
- *Water Management (General) Regulation 2018*
- Controlled activity permit under WMR

11.4 Attachment 4: Sample of Northern Rivers' related environmental reviews, plans, policies & strategies

1987	State Pollution Control Commission conducts water quality surveys of major rivers on the North Coast.
1992	NSW State Rivers and Estuaries Policy adopted
1995	Report on the Local and Regional impacts of acid sulphate soil runoff in the lower Richmond River catchment
1996	Richmond Catchment Management Strategy
1997	NSW Government discussion paper, A Stressed Rivers Approach to the Management of Water Use in Unregulated Streams
1999	NSW Government sets Water Quality Objectives (WQOs) and the River Flow Objectives (RFOs) for the Richmond River catchment
	Richmond Catchment Stressed Rivers Assessment Report
2000	NSW adopts the Australian and New Zealand Environment Conservation Council (ANZECC) guidelines for fresh and marine water quality to "provide
2002	Australian Catchment, River and Estuary Assessment
	Draft Richmond Regional Vegetation management plan
2003	Upper North Coast Catchment Management Board releases the Catchment blueprint: integrated catchment management plan for the Upper North Coast catchment
2005	NSW Government introduces Marine Water Quality Objectives (MWQOs) for NSW Ocean Waters which directly relate to the coastal marine environment.
2006	Estuary Processes Study of the Richmond River
	Northern Rivers Catchment Action Plan is launched by Northern Rivers CMA
2008	Wilsons River Catchment Management Plan is launched by Rous Water
2010	Northern Rivers Regional Biodiversity Management Plan
2011	Wilsons River Reach Plan launched
2012	The Coastal Zone Management Plan (CZMP) for the Richmond River Estuary
	North Rivers CMA's Regional State of the Environment Report
2013	The Northern Rivers Catchment Action Plan 2013- 2023
2014	Ecohealth Report for the Richmond River
2016	North Coast State of the Environment Report
2017	New South Wales Marine Estate Threat and Risk Assessment Report
2018	NSW Government's Marine Estate Management Strategy case study on the Richmond River

11.5 Attachment 5: Source Documents/Reference Materials

- “Assessment, Discovery, Identification, Sustainable Remediation” (Abstract) - Robert G Quirk (July 2016)
- “A Coastal Wetland Restoration First Pass Prioritisation for Blue Carbon and Co-Benefits in NSW” - Dr Kirti K. Lal and Associate Professor Kerrylee Rogers (University of Wollongong)
- “An Echo of Wings: A History of the Tuckean Swamp” – Johanna Kijas
- “A Partnership Approach to Integrated Management of Acidified Coastal Floodplain” - Ian White, Mike Melville, Ben Macdonald, Robert Quirk, Robert Hawken, Mark Tunks, Don Buckley
- “Clarence Valley Structural Mitigation Works Review” - BMT Commercial Australia Pty Ltd (May 2021)
- “Coastal Floodplains drainage project – what we heard report” DPE (April 2022)
- Code for self-assessable development, On-farm drainage maintenance works involving the removal, destruction or damage of marine plants – QLD Department of Employment, Economic Development and Innovation, 2011
- “Design and Cost Report: Tuckean Swamp Implementation Toolkit” prepared by GHD for OzFish Unlimited, Limited (July 2022)
- DPI Flood Ready Cane Farming Draft Strategic Plan for the North Coast Region of NSW 2014
- Drainage Issues in NSW Sugar Cane Land Drainage Issues – Presentation by NSW Canegrowers’ Association
- Drain Issues summaries provided by Ballina, Rous and Tweed Councils and Tweed Drainage Council
- Drainage Management within the NSW Sugar Industry (2019)
- “Flood Ready Cane Farming Strategic Plan for the North Coast Region of NSW - DPI (2014)
- History – drainage of coastal floodplains, Mitch Tulau
- Keith Hall Drainage Options Study – Newsletter, December 2021 (Rous & Ballina Councils)
- “Major Fish Kills in the Northern Rivers of NSW in 2001: Causes, Impacts & Response” - Simon Walsh, Craig Copeland and Megan Westlake (September 2004)
- NSW Canegrowers’ Association submission to NSW State Environmental Planning Policies Review
- NSW Legislative Council Select Committee – “Response to major flooding across New South Wales in 2022” (website link: <https://www.parliament.nsw.gov.au/lcdocs/inquiries/2866/Report%20No%201%20-%20Response%20to%20major%20flooding%20across%20New%20South%20Wales%20in%202022.pdf>)
- NSW Marine Estate Management Strategy 2018-2028
- NSW Sugar Industry Drainage and Water Quality Initiatives and Practices & Suggested Accepted Development Requirements for Maintenance of Existing Drain Outlets (2018)
- “Restoring the Balance: Guidelines for Managing Floodgates and Drainage Systems on Coastal Floodplains” - Scott Johnson, Frederick Kroon, Peter Slavich, Alan Cibilic and Andrew Bruce (November 2003)
- Richmond River Dredging and Sampling Analysis Plan, DOI-Lands (April 2017)
- Richmond River Floodplain Prioritisation Study – AJ Harrison, DS Raynor, G Lumiatti, PF Rahman and WC Glassmore, UNSW (January 2022)
- Rous County Council submission to NSW Legislative Council Select Committee Inquiry into the response to Major Flooding in NSW, 2022
- Tweed Shire Council Flood Mitigation Asset Management Plan, April 2004
- “Whole System Carbon Cycling during the growing season of a sugarcane crop in the Tweed Valley” – JR Webb, RG Quirk, IR Santos, DT Maher, B. Robson, P Isaac, I McHugh
- WRL Coastal Floodplain Prioritisation Study Project _Stakeholder Communication & Engagement Plan – Phase 2 Summary (2022)

11.6 Attachment 6: Contributors to the Report

I am indebted to the following organisations for their assistance throughout the review:

NSW Government Agencies

- Crown Lands
- Department of Primary Industries (DPI)
- Department of Primary Industries – Fisheries (DPI-F)
- Department of Planning & Environment (DPE)
- North Coast Local Land Services (NCLLS)
- Marine Estate Management Authority (MEMA)

Councils

- Ballina Shire Council
- Clarence Shire Council
- Rous County Council
- Tweed Shire Council

Industry Organisations

- Ballina Fishermens' Cooperative
- Coleambally Irrigation Cooperative Limited
- NSW Cane Growers' Association
- Oz Fish
- Richmond Valley Drainage Union
- Tweed Cane Growers' Association
- Tweed Drainage Council

11.7 Attachment 7: Notes about the Author

John Culleton was born and educated in regional WA but moved to the Northern Rivers, from the Riverina, in 2017. He has been involving in balancing the requirements of primary production and the environment since 2008.

John was the Chief Executive of Coleambally Irrigation Co-operative Limited (CICL's) and Coleambally Mutual Co-operative Limited from 2008-2017, a period of unprecedented water reform in Australia. John was responsible for much of CICL modernisation – he knows what it is like to experience drought and flooding; to operate within a complex regulatory framework; and to report to multiple regulators. He also knows what is required to build, operate, and maintain water infrastructure (including drainage).

John has served as a Director on the National Irrigator's Council (2011-2017) and the Rice Marketing Board for the State of New South Wales (2013-2022). In addition, he was a founding member of the Murrumbidgee Valley Stakeholders' Group (a group formed in response to the Murray-Darling Basin Plan) and the Murrumbidgee Water Sharing Plan, Stakeholders' Advisory Panel. John currently chairs the NSW Fish Passage Task Force, which reports to the Minister for Agriculture and for Western New South Wales – the Task Force's primary function is to optimise the opportunities for native fish to move more freely, and therefore reproduce more readily, throughout NSW's inland river systems. However, the Task Force also has responsibilities in the areas of fish screening and cold-water pollution.

Before joining CICL, John held roles as Deputy Chief Investigator for the NSW Office of Transport Safety Investigations and NSW/ACT State Manager of the Royal Australian College of General Practitioners. Prior to these roles, he spent 32 years in Australian Army. As an Infantry Officer, he commanded at platoon, company, and battalion levels. He also served in the Middle East, Malaysia, Canada, and the US. John's work to expand Army's presence and surveillance capability throughout Far North Queensland, which required extensive interaction with remote communities throughout the Torres Strait, Cape York and the Gulf Country, was recognised by his inclusion in the 1993 Queen's Birthday Honours list. His final posting in the Army was as Australia's Defence Attaché to the United Nations in New York.

John is a graduate of the Royal Military College, Duntroon; the Australian Army Command & Staff College; the Canadian Forces Staff College; and the Australian Institute of Company Directors. He also holds a BA (with majors in Economics & Government).