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BULOKE SHIRE COUNCIL

5 June 2023

Parliament of Victoria
Legislative Council Standing Committee on Environment and Planning
Parliament House, Spring Street
EAST MELBOURNE VIC 3002

To whom it may concern,

Summary ARGN 1037 | Buloke Shire Council

The information set out below outlines the impact of the major rain and flood event which occurred in many parts of Northern and Western Victoria on and around mid-October 2022. Substantial rain falls in the Avoca and Richardson catchments led to flooding occurring throughout Buloke Shire.

River catchments including the Avoca River peaked at Charlton Town on Monday 17 October 2022 at a level of 7.87 metres, which caused over the floor flooding to occur at3 properties in the town of Charlton. The Richardson River at Donald peaked at 3.76 metres and remained within the levees. Other waterways including the Tyrrell, Cooroopajerup, and Lalbert creeks, caused flooding in Culgoa and surrounding farming areas.

Mitigation works included but were not limited to:

- The construction of 5 earthen levees to protect the towns of Charlton, Donald and Wycheproof.
- A large sandbag operation with CFA, VicSES, DELWP, and members of the community across Charlton, Donald, Wycheproof, and Culgoa
- Blocking of storm water drains within Charlton Town
- Strategic re-commissioning of drainage infrastructure in road network/s
- Strategic installation of temporary culverts in road network/s

An Emergency Relief Centre was opened for a period of 11 days at the Wycheproof P-12 School and had an average attendance of 18 people per day requiring accommodation and support.

A Municipal Operations Coordination Centre was stood up at the Wycheproof Municipal Office.

Five community meetings were held across Buloke Shire at various times in preparation for the flood events in each locality.

As a result of the October Flood Emergency 2022 the Buloke Shire's road network has been severely impacted by flooding and detours, with over 80 Council managed (sealed and gravel) roads closed within Buloke Shire and a major detour off the Calder Hwy with large vehicles being diverted throughout local road networks.

At time of writing, total cost of damage to Council's road network following AGRN 1037 is estimated at $52M, excluding costs associated with counter-disaster operations. The true damage to the road network will only be realised in the future outside of the window within which the Council can apply for DRFA funding. The fact that the Buloke Shire Council has fully redeployed all works operational,

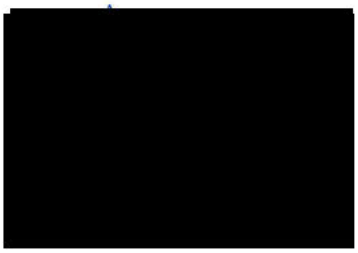
project delivery and asset engineer staff to emergency and immediate works since October 2022 means regular maintenance programs required under the Council's asset renewal and maintenance program have been postponed. This will ultimately add to the degradation of Council's extensive road network.

Significant damage from flood waters has and will continue to have a major impact on the agricultural community including significant crop losses throughout the Shire that will cause financial and mental health concerns within the community.

Numerous community events were required to be cancelled throughout the Shire during the floods, including but not limited to the Wycheproof Cup Horse Racing, Wycheproof Stock sale, Birchip B&S Ball, and the Charlton Show as well as a range of local community events.

It is anticipated that there will be significant infrastructure, economic, agricultural, and social impacts to the community in Buloke as a consequence of the October flood event for many years.

The Buloke Shire Council welcomes the Inquiry into the 2022 Flood Event in Victoria. This investigation recognises that disasters can deeply impact people's lives and livelihoods, and helping communities recover from disasters can be challenging and complex. Every community is unique and will have its own history, values, and experiences. Without a whole-of-government approach to preparedness, response, and recovery future events will continue to stretch agencies, local authorities, and communities beyond their capacity.



Responses to Terms of Reference

Causes of and contributors to the Flood Event

The Terms of Reference outline some of the key factors which either caused or contributed to the Flood Event including issues associated with early warning systems, engineering structures, catchment management and resourcing of emergency management agencies. Further comments in relation to each of these areas and options for state government consideration are outlined later in this submission.

In addition to the matters expanded on later in the submission, the Council notes the following areas have had a negative impact on its own planning, response, and recovery from the Flood Event. It is expected that these issues are likely to be present in other municipalities and further investigation at a state and regional level as part of a future review on emergency management will be required:

a) Decommissioned channel systems and lack of up-to-date flood modelling

Lack of alignment and ineffective risk management reviews between various functions led to a failure to understand the implications of decommissioning the channel systems on the natural water flows within the Buloke Shire connecting the Richardson and Avoca Rivers to the many catchments and creek systems within this region. Integrated planning across water authorities, state government, local government and other agencies did not occur, there has been a lack of accurate and comprehensive information used for planning since decommissioning and consequently there has been no investment into new or replacement assets in view of these changes.

The notion of returning back to natural water flows post decommissioning is flawed given the apparent reluctance of the water authority, private landowners, road and rail authorities to appropriately decommission defunct drainage assets. This leaves a hybrid model which neither aligns with natural water flows, nor the old channel system.

Placement of existing drainage assets is now in many cases incorrect and in other cases assets do not exist where they now should.

b) Privately owned infrastructure, including private levies and dams

Historically private levies have been built on agricultural land to protect key infrastructure and valuable crops while dams have been built in natural waterways to capture water in drought for both cropping and stock use. This infrastructure has often been constructed with the best of intentions, and in support of more than one farming property; however, it is likely this was done with limited thought or awareness of the impact of constructing these ‘barriers’ would have during flooding disasters on those downstream.

As these levies and dams are constructed on large properties, they are not captured or assessed as part of flood mitigation planning and awareness of this infrastructure only becomes apparent during emergency periods.

c) Large established crops (dry acre)

Buloke Shire had an above-average rain fall in the lead up to the October 2022 flood event resulting in large established cereal, lentil, and canola crops within the Buloke region. The ability to respond ‘nimbly’ to the October Flood Event was affected by inaccurate modelling, in part due to the lack of understanding and awareness of the ‘temporary levee’ effect of crops on water flow. Large rainfalls were not recognised immediately because the crops held the water back from the river systems and gauges in the river system often spiked as a result of the surge of water being released from the adjoining crops.

Recommendations:

- Review of the decommissioned channel water supply systems to ascertain drainage infrastructure investments required
- Catchment-wide review of private infrastructure to determine appropriateness and ensure accurate modelling
- Multiple scenario testing based on locality and season
- Investigate opportunities for BOM to partner with CMAs and agricultural groups with IoT rain gauges throughout the catchment
- EMV to lead a review post AGRN 1037 to ensure learnings from this Event are considered in SEMP and MEMPs

Adequacy and effectiveness of early warning systems

The process of any early warning system for the Buloke Shire appeared ad hoc, informal, and inconsistent with what was happening 'on the ground'.

The VicEmergency App is customer-focussed and not detailed enough for specific localities and councils to use effectively in emergency response. The VicRoads website was unable to update in real time (or indeed, even close to real time) causing major issues with reference to detours and Council-closed roads.

After the Avoca catchment experienced large rainfalls in early October the Avoca River at Charlton town peaked at approximately 7.1 metres on 9 October. Subsequent rainfall from 10-12 October and forecast large rainfall for remainder of the week triggered modelling suggesting Charlton Town would peak at only 6.1 metres on 15 October – that is, modelling suggested that the peak would be 1 metre less than the prior week notwithstanding the large amount of water already within the catchment. In fact, the eventual peak of 7.87 metres which occurred on 16 October was only after considerable water redirection upstream.

The relationship between the modelling and early warning systems, and the triggering of key actions under the MEMP was disjointed and resulted in late actions to mitigate flood impacts including the calling a public meeting, filling sandbags, establishment of sandbag collection points within Charlton, Donald and Culgoa, and standing up the MOCC.

Recommendations:

- Review of early warning procedures and their relationship with MEMP's
- Review river gauge locations within catchment and install within creek systems

Resourcing of the State Emergency Service, the adequacy of its response to the Flood Event and the adequacy of its resourcing to deal with increasing floods and natural disasters in the future

In prior Victorian Inquiries into emergency management, the need for joint-agency response has been recognised and highlighted as necessary for emergency management preparedness and response. The creation of 'silos' and the impact of same in the midst of an emergency was keenly felt within the Buloke Shire where over-reliance on local volunteers stretched local agencies beyond capacity. It is noted 6 VicSES volunteers were available to support the Buloke Shire.

The leadership structure established under the ICC was somewhat effective, however in view of the limited resourcing across the board local response efforts were hampered by apparent ineffective handovers involving the Incident Controller who was responsible for approving all response actions

across the North West region, including Campaspe, Gannawarra, Mildura, Swan Hill and Buloke Shire councils.

The above situation resulted in Council staff assuming all responsibility for community engagement to determine mitigation actions, such as the survey and scope development of temporary levees and strategic road cuts (including state-owned roads such as the Birchip-Wycheproof Road).

Recommendation:

- Cross training between VicPol, VicSES, CFA and Council staff as a key enabler to address capability and capacity issues, particularly in situations where a 'surge capacity' is required to deal with multiple and simultaneous emergencies.
- Review structure in preparing for and responding to flood events including community engagement and liaising with councils
- Review current MOUs within SEMP and MEMPs to ensure capacity is maintained
- Review financial assistance available to support planning, response and recovery for emergency events
- Ensure any future action in relation to planning, response and recovery is undertaken with a broader lens than simply a compliance-based 'tick the box' exercise and deliberative community engagement is considered a key cornerstone of development and review

Implementation and effectiveness of the 2016 Victorian Floodplain Mitigation Strategy in relation to the Flood Event

The Buloke Shire Council forms part of 2 regional catchment areas: the North Central Catchment Management Authority, and the Mallee Catchment Authority. Council recognises that as part of the VFMP process both catchment authorities are currently reviewing their respective regional flood mitigation strategies. As part of the review, the Council notes multiple flood studies have been undertaken within the Shire by both CMAs, however these studies have been affected by outdated LiDAR survey established at the time of the Wimmera Mallee Pipeline. Further, it appears that these flood studies were developed in isolation and failed to ensure alignment which would provide an overarching Shire-wide mitigation.

It is unclear to what extent CMAs have been successful in obtaining funding to implement actions established under their respective plans, for example there has been an investigation into the establishment of TFWS and prediction services for the high-risk community of Culgoa however no permanent gauge has been installed upstream of this township. A summary review of existing flood mitigation strategy actions has identified a large number of these relate to 'fact finding' investigations or feasibility studies with limited practical outcomes to ultimately benefit communities within the catchment areas.

Recommendations:

- Source Shire-wide updated LiDAR which will feed actual data into flood modelling, strategies and planning
- Undertake studies to understand and manage the impact of decommissioned channel systems
- Develop Shire-wide plans for flood and stormwater infrastructure requirements, including storm water harvesting as part of the development of flood plans and strategy

- Specifically, investigate and re-establish a natural flow path between Morton Plains, around the township of Birchip, North to Marlbed reserve and the channel reserve otherwise recognised as the Dunmunkle line north of the Watchupga East Road.
- Specifically, undertake study to understand the natural flow path through Marlbed drainage line and Sea-Lake drainage line (Dunmunkle Creek System) and develop flood mitigation strategies
- Develop concept level infrastructure priorities for each study
- Install permanent telemetered stream gauge/s along Tyrrell Creek
- Formalise or decommission channels and levees based on a comprehensive risk assessment
- Conduct detailed flood mapping and flood studies for townships of Birchip, Nullawil, Sea Lake, Berriwillock and Nandaly
- Undertake a flood study to cover gaps in Charlton flood mapping for Gower and Yeungroon Creeks via railway line to Avoca River
- Investigate and design works to reduce the risk and frequency of flooding in Charlton including reinstating natural flow paths to the southeast (upstream) of Charlton.
- Update planning controls for Lower Loddon and Avoca floodplains, based on regional mapping
- Construct community supported works to reduce the risk/frequency of flooding in Charlton and update planning controls from rural flood studies (e.g. Gower Creek, Yeungroon Creek, Tyrrell Creek, Lalbert Creek, Marmal Creek, Mosquito Creek, Cooraoopajerup Creek)
- Undertake a Shire-wide flood modelling project that includes:
    - Regional mapping for priority areas not currently mapped,
    - Update to detailed flood modelling for Charlton and Donald,
    - Detailed flood mapping for Wycheproof,
    - Detailed flood mapping for Watchem, and
    - Investigation into the impact of channel decommissioning
- Investigate the establishment of TFWS and prediction services for Donald
- Investigate the establishment of TFWS and prediction services for Wycheproof and undertake a flood study, including irrigation channel and informal levees for Wooroonook Lakes, Cooroopajerup Creek, and Marmal creek.

Location, funding, maintenance, and effectiveness of engineering structures such as floodwalls, rural levees, and culverts, as a flood mitigation strategy

The Buloke Shire recognises the construction of a permanent earthen levee on both the western side protecting the aged care facility, Goodwin Village, and the eastern side protecting the Donald township was largely successful in redirecting waterflow and protecting properties which would have otherwise been inundated as evidenced by the 2011 flood event.

In Donald, the need for 2 temporary levees to 'plug' the intersecting Camp Street and bridge was mitigated by a prefabricated levee on the western side. Due to limited financial resources at the time of construction, Council was not able to fund this mitigation option on the eastern side, and

subsequently the temporary construction of an earthen levee on the eastern side was required during the Flood Event. The prefabricated levee was constructed within hours; however, the earthen levee required the redirection of mechanical and human resources at a time when both the Donald and Charlton townships were experiencing high water flows. Deployment of these scarce resources at that critical juncture meant that they were not available to be called upon in Charlton.

As outlined above, critical culverts and floodways no longer align with the natural water flow due to the decommissioning of the channel system which occurred following the construction of the Wimmera Mallee Pipeline. This has been most apparent in the area otherwise identified as the Morton Plains catchment which links a large catchment area south of the Birchip township with the Dunmunkle System approximately 30km to the north encompassing Marlbed, Green Lake and ultimately Lake Tyrrell. Road and rail authorities now have infrastructure which inhibits natural water flow increasing flood risks to the townships of Birchip and unnecessarily destroys valuable crops in these areas.

Recommendations:

- As a matter of urgency, fund construction of prefabricated levee at the intersecting Camp Street, Donald
- As a matter of urgency, investigate and design works to reduce the risk and frequency of flooding in Charlton including reinstating natural flow paths to the southeast (upstream) of Charlton
- Install of one-way valves to all storm water systems draining directly to the Avoca and Richardson river systems in Charlton and Donald
- Install permanent drainage and/or floodway in Birchip-Wycheproof Road
- Refer recommendations referenced under, 'Implementation and effectiveness of the 2016 Victorian Floodplain Mitigation Strategy in relation to the Flood Event' above

The Flood Event as a whole, including but not limited to, the catchments and flood plains of the Avoca River and Richardson River

As identified above, ultimately the modelling and early warning systems failed in a number of respects:

- Lack of consideration of channel decommissioning and inappropriate drainage infrastructure in road and rail networks
- Limited to nil knowledge of private infrastructure resulting in ineffective planning and response
- Lack of scenario planning in view of effects of crops on water flow

Since the 2011 flood event, the community of Charlton has worked closely with North Central Catchment Management Authority, VicSES and the Buloke Shire Council to consider a levee which was proposed to be constructed around Charlton Town. The levee was considered the only option to protect the township although it is noted members of the community did seek to have the study investigate opportunities to direct upstream waterflows into the natural overflow creek systems of Gower and Yuengroon. Ultimately the proposed levee failed to proceed due to a number of factors, including the huge cost burden to the community by a 'special levy' estimated at the time of scoping the project to be in excess of $11M.

In the recent event, and with limited time, Council staff were approached by locals with extensive historical knowledge of the area. This consultation resulted in the removal of a private dam which

acted as a hydraulic block within the natural creek system and the redirection of upstream flows through the above-mentioned creek systems.

Charlton Town was forecasted to peak at 8.1 metres; as a direct result of the mitigation undertaken in consultation with the community it only reached 7.87 metres and over 120 houses avoided inundation.

The Avoca River extends to the Tyrrell Creek system encompassing the overflow system of Cooroopajerup. Multiple levees were constructed around the township of Wycheproof, although the forecasted heavy rainfall in late October did not eventuate.

The Culgoa township (Tyrrell Creek) remains vulnerable with critical infrastructure such as the water treatment plant still requiring sandbagging. There is no permanent gauge along the Tyrrell Creek system which would allow for early warning, although Council recognises Mallee CMA installed a temporary gauge during the floods.

Locals from both Wycheproof, Culgoa and surrounding farming communities reported water flowing from unexpected directions largely due to the decommissioning of the channel system and private levees.

Due in a large part to the efforts of local volunteers, business owners and Council staff, infrastructure built in 2016 to contain water flowing within the Richardson River prevented multiple properties from inundation and protected a number of vital public assets. Some residential properties further downstream still required sandbagging and minor levee construction with the Donald recreation reserve still vulnerable.

The area otherwise identified as Morton Plains catchment, south of the Birchip township, experienced large local rainfall on top of what was already an above-average year. This resulted in water flows threatening up to 12 properties and subsequently the Birchip-Wycheproof Road needed to be cut in the same location as 2018. Large, valuable crops were inundated in the area identified as Marlbed; those flood waters were locked by inadequate drainage assets in both Council and state-owned roads. In preparedness for heavy rainfall forecast for November, Council worked with community and landowners to seek a natural path for the trapped water to be released into the Dunmunkle System encompassing Green Lake, the township of Sea Lake and Lake Tyrrell. Those consultation sessions identified high risk of black water contaminating the recreational Green Lake, and threatening key Sea Lake infrastructure such as the local school, sewerage plant, and landfill sites. It is noted the final water flow concludes in the area of high cultural significance – Lake Tyrrell (Direl).

Recommendations:

- Refer to 'Implementation and effectiveness of the 2016 Victorian Floodplain Mitigation Strategy in relation to the Flood Event'

Implications for future planning decisions including:

- **how the Victorian planning framework can ensure climate mitigation is a consideration in future planning decisions**
- **how corporate interests may influence decision-making at the expense of communities and climate change preparedness**

The Buloke Shire Council supports the submission and recommendations made by Rural Councils Victoria which states that rural councils are too resource stretched in planning to undertake the necessary strategic planning-scheme work to implement the contemporary flood studies into their schemes.

The Victorian planning framework can be enhanced to ensure that inappropriate development does not occur in flood-prone areas or that development does not further contribute to climate change.

The impacts of allowing any proposed development on land subject to flooding should be calculated and included as part of the decision-making process for development approval in line with current policy. For councils to make informed decisions, all flood modelling studies must be reviewed and updated regularly.

Any other related matters – Betterment

Council believes that by not allowing the assets affected by the October Flood Emergency 2022 to be reconstructed to a more disaster resilient standard Council will fail to meet the objectives outlined in the plan which are to:

- Measure quality and cost standards;
- Respond to the needs of its community;
- Provide accessibility to those members of the community for whom the service is intended;
- Be subject to continuous improvement;
- Link to a program of regular community consultation; and
- Report regularly to the community

Two examples example of 'Betterment' or continuous improvement would be:

1. the installation of new culverts to roads that experienced water over roads; and
2. the increase to the width of roads that provide key agricultural linkages as indicated in the Road Management Plan