Date: 5 June 2023
Reference: 23/42074

The Committee Chair
Environment and Planning Committee
Parliament House, Spring Street
EAST MELBOURNE VIC 3002

Dear Ms Terpstra

Call for submissions: Inquiry into the 2022 Flood Event in Victoria

Thank you for affording us the opportunity to lodge this submission to the Environment and Planning Committee in relation to the inquiry into the State's preparedness for, and response to, Victoria's major flooding event of October 2022 (the Flood Event). This submission pertains primarily to the following elements covered by the scope of the Inquiry:

(1) causes of and contributors to the Flood Event;
(2) adequacy and effectiveness of early warning systems;
(3) 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;
(4) implementation and effectiveness of the 2016 Victorian Floodplain Management Strategy in relation to the Flood Event;
(5) location, funding, maintenance and effectiveness of engineered structures, such as floodwalls, rural levees and culverts, as a flood mitigation strategy;
(6) Flood Event as a whole, specifically the catchments and floodplains of the Goulburn River and the broader Goulburn- Murray System;
(7) the implications for future planning decisions, including:
    (a) how the Victorian planning framework can ensure climate mitigation is a consideration in future planning decisions;
    (b) how corporate interests may influence decision-making at the expense of communities and climate change preparedness; and
    (c) any other related matters.

Murrindindi Shire lies within the Goulburn River catchment and was severely impacted by the Flood Event. Murrindindi Shire Council lodges this submission also on behalf of its vulnerable community.

These floods will have a lasting impact on the Murrindindi community. All settlements within the municipality were affected by this significant event, either directly or indirectly. The area suffered mass road closures and widespread property and stock damage, particularly on Thursday 13 October and Friday 14 October 2022. This resulted in delayed heavy vehicle access for major industry and lost revenue for small businesses and tourist operators, not to mention the trauma of major stock and produce losses, as well as home inundations.

Murrindindi Shire Profile

The Shire is situated northeast of Melbourne, with a total population of just under 16,000 and covering an area of 3,879 square kilometres, encompassing the charming rural townships of Alexandra, Eildon, Kinglake, Marysville and Yea, as well as many smaller communities.

The Shire boasts great natural beauty and tourist attractions, such as Lake Eildon, Kinglake National Park, Cathedral Range State Park, the Goulburn River and Lake Mountain. There are many picturesque walking, bike and horse-riding tracks and trails across the municipality, including the Great Victorian Rail Trail.

The majority of the Shire's land is classified as agricultural, with agriculture (including forestry and fishing), construction, manufacturing and tourism being our key industries.

Murrindindi Shire is located on the lands of both the Taungurung and Wurundjeri People.

The Shire lies within the 'Commuting Hills', 'Southern Forests' and 'Upland Slopes' Social-ecological System (SES) regions of the **Goulburn River catchment** (refer Goulburn Broken CMA), with the upper reaches of the river traversing through the municipality from Lake Eildon, along with the tributaries of **Big River, Rubicon River, Taggerty River, Acheron River, Murrindindi River, Yea River, Steavenson River, Home Creek and King Parrot Creek**. Murrindindi is the uppermost municipality below the Lake Eildon dam, and the most significantly impacted by any flood releases. When water is released from the dam, it also impacts on the tributaries across the municipality.

Major Land Uses by Social-ecological System:

Social-ecological System	Land Use
Commuting Hills	• Grazing 54% (Modified pastures 51%, Native vegetation 3%) • Forestry 24% (Production forestry 21%, Plantation forestry 3%)
Upland Slopes	• Grazing 54% (Modified pastures 51%, Native vegetation 3%) • Forestry 21% (Production forestry 17%, Plantation forestry 4%) • Public land 17% (Nature conservation 8%, Other 9%)
Southern Forests	• Forestry 66% (Production forestry 65%, Plantation forestry 1%) • Public land 24% (Conservation 19%, Other 5%)

Murrindindi's economy is heavily dependent on the key industries that accompany these land uses. Within the Hume region, Murrindindi boasts strong agriculture, forestry and fishing industries, equating to 20% of total regional output ($260.3M). These industries are the largest employers in the municipality, with 731 jobs representing 17% of total employment within the region. The biggest flood impact to the municipality was on the farms and agricultural lands along river valleys and flats, where cropping, cattle, sheep and feed (silage and hay) were detrimentally impacted.

Murrindindi's Climate Vulnerability

A report from the Climate Council entitled 'Uninsurable Nation: Australia's Most Climate-Vulnerable Places', dated 3 May 2022, lists 'Indi' as the eighth (8th) most at-risk federal electorate in Australia by 2030. The report states that climate change is creating an insurability crisis in Australia, due to worsening extreme weather and sky-rocketing insurance premiums. In the top 10 at-risk electorates, the report found that 15% of properties, or around one in every seven properties, will be uninsurable this decade. The report further found that:

- Riverine floods are the costliest disaster in Australia. Riverine flooding poses the biggest risk to properties. Of the properties classified as uninsurable by 2030, 80% of that risk is due to riverine flooding.
- Bushfires and surface water flooding (sometimes called flash flooding) are the other major worsening hazards causing properties to become uninsurable by 2030.

Murrindindi suffers from all three of these scenarios: riverine flooding, bushfires and surface water flooding.

Local Impacts of The Flood Event

The Shire was impacted by a set of severe storms over the two weeks beginning Thursday 13 October 2022. The effect of heavy rain falls and riverine flooding was amplified across the municipality due to damp conditions and a saturated catchment associated with an ongoing La Niña event. River valleys impacted by flooding included the Goulburn and its tributaries, the King Parrot Creek, Yea River, Acheron River, Steavenson River, Home Creek and others. Localised heavy rain also impacted several towns across the municipality, including Kinglake, Alexandra, Eildon, Glenburn and Yea, where falls over 30mm were recorded in just 30 minutes. Towns and settlements that were also impacted by riverine flooding included Acheron, Molesworth, Whanregarwen, Taggerty, Yea, Thornton, Kerrisdale, Flowerdale, Strath Creek, Snobs Creek, Buxton and Narbethong.

The most significant flooding occurred on the farms and agricultural lands along river valleys and flats, where cropping, cattle, sheep and feed (silage and hay) were impacted, and open drains protecting infrastructure were filled with mud and landslides that impeded water flows, causing flooding in farm sheds and households. The Thornton township experienced significant damage to both private properties and public infrastructure, with some residents experiencing over-floor flooding within their homes.

Communities downstream of Lake Eildon are still counting their losses and coming to grips with the scale of the economic, environmental and emotional cost of the biggest natural disaster to hit our shire since the 2009 bushfires. Heavy rainfalls, coupled with unrelenting water releases from the Lake Eildon dam, caused widespread floods and devastation.

Full recovery will take a long time, as it always does with such an event. The trauma of having to rescue cattle across rapidly rising waters in the middle of the night, the helpless witnessing of roads crumbling and bridges being washed away, the frantic filling of many thousands of sandbags, the countless farm animals dead or dispersed, the destruction of wildlife habitat, and the round-the-clock vigilance and ongoing flood alerts, all had a toll on mental health.

The financial cost to rebuild the private and public infrastructure, including the many hundreds of kilometres of fences washed away, catastrophic damage to bridges and the dangerous impairment of the road network, is compounded by the economic impact and loss of trade for the local businesses, flooded caravan parks, farmers markets, and community groups forced to cancel events. And, of course, this comes at a time when the local economy was already struggling to recover from the COVID impacts.

Dozens of properties with stream frontages required assistance with damaged or lost streamside fencing and with post-flood management of weed infestations.

The Flood Event also had a significant impact on local roads, bridges, parks and trails across the Shire.

The Yea Wetlands sustained extensive damage to boardwalks and pathways, as well as substantial damage to trees and other vegetation, making it unsafe for people to enter.

Rehabilitation and stabilisation works have been necessary on the Great Victorian Rail Trail as a result of the damage caused, and there were damage and large washouts along the Flowerdale Walking Track.

The road network suffered severe and widespread damage. Transport and vital supply chains were significantly impacted with many road closures in place, including water over one major arterial road. Some 103 kilometres of local roads were affected, with a further 202 kilometres of arterial roads also impacted to a considerable extent. Two bridges, including the historic Breakaway Bridge in Acheron, were destroyed, creating a long-term impact on nearby residents and businesses. Many other bridges were damaged and necessitated some temporary bridges to be installed to allow for local light vehicle access. The cumulative cost of restoration of Council assets is estimated to be over $30M.

Being located on the upper reaches of major waterways and due to our topography, when an extreme rain event occurs our roads are damaged by both inundation and water runoff/overland flows, and our roads can be more severely damaged by the strong water flows than from long standing flood waters; although, both are a problem.

Economic Impact
While the full economic impact on the Shire is still being evaluated, including on the agricultural sector, in November 2022, following the Flood Event, Tourism North East engaged Urban Enterprise to examine the likely impacts of the flooding on the 'visitor economy'. Their report determined an estimated loss in visitor expenditure for Murrindindi of around $12M for the December 2022 quarter. (See the table extract below.)

Region	Visitation Scenarios			Visitor Expenditure Scenarios			Estimated Jobs Disrupted
	Business As Usual	Estimated Visitation	Estimated Loss	Business As Usual	Estimated Spend	Estimated Loss	
Murrindindi Shire	219,500	305,600	-86,100 -39%	$29.11M	$41.24M	-$12.13M -42%	24 – 50

A full review of the potential business impact of the floods on Murrindindi can be found in the attached 'October Floods 2022 – Business Impact Analysis – REMPLAN' document.

This submission seeks a review of how the Eildon storage is managed with respect to flood mitigation, how the community receives early warnings for such an event, how the response efforts were managed, and how recovery funding is allocated.

Responses to Enquiry Aspects

In terms of the specific aspects of the Flood Event that the inquiry is seeking responses to, while not all relate to Murrindindi, we would like to make the following observations in relation to those that do:

Causes of and contributors to the Flood Event
Some elements of the Flood Event are unavoidable, especially due to the effects of climate change, and the intensity of the rainfall was far greater than predicted. The real issue is how to manage such an event to minimise its impacts, including preparatory measures to help guard against a repeat occurrence.

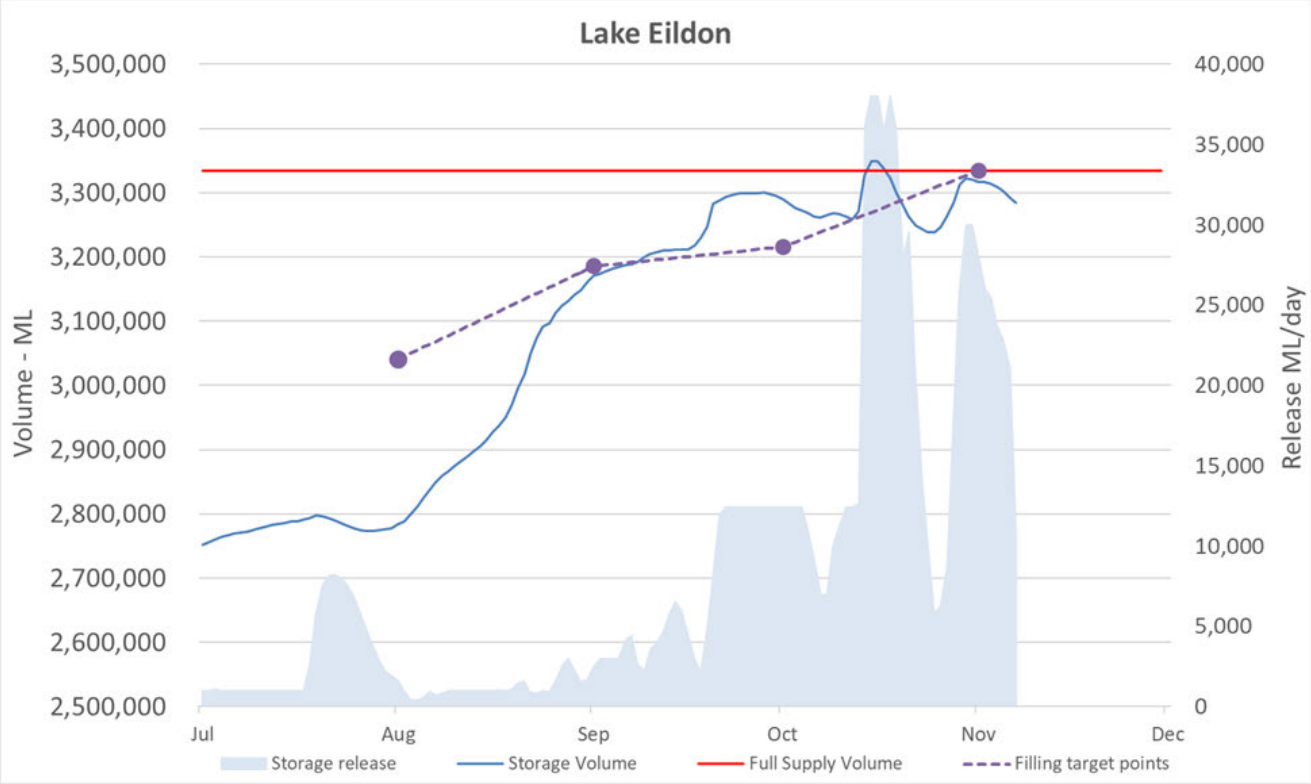
Lake Eildon Storage Management

As the community grapples with the magnitude of this event and its aftermath, one cannot help but conclude that the water levels in Lake Eildon could have been better managed by Goulburn Murray Water (GMW) to avoid having to release 38,000 ML/day into the Goulburn River and causing the resultant devastation downstream. Is the stated goal of filling the dam to 100% of its capacity by 1 November a wise strategy in such a wet year, when floods are highly likely? Should the operating rules for the Eildon dam be reviewed to allow more headroom in the dam in wet years, to better cope with extreme inflows? Some community members have called for a filling limit of 90%. A 10% buffer for Lake Eildon equates to 333,416ML, which may still be insufficient, based on the Flood Event outcomes. This is a policy decision that is a matter for the State to decide. However, Council believes that a filling limit for Lake Eildon suitably below 100% should be determined, in order to free up capacity to buffer heavy inflows in an extreme rainfall event, and only allow the dam to reach 100% in declared flooding emergencies.

It is being contended that GMW did not give sufficient weight to its responsibilities regarding flood mitigation. Given that the forecasts available last year from the El Niño Southern Oscillation (ENSO), the Indian Ocean Dipole (IOD) and the Southern Annular Mode (SAM) were all indicating a wet spring, the fact that GMW ran the Lake up so high in winter and spring of 2022 was a clear contributor to the outcome. The use of “carryover” water (an arrangement that allows water holders, such as irrigators, water corporations or the environmental water holders, to keep unused, allocated water in Eildon at the end of one season to use in the next) has exacerbated the flood risk from Eildon. In 2007, the carryover mechanism was introduced to de-risk the system with respect to drought; however, the unintended consequence of that change has led to a greater risk of flooding for properties along the upper to mid-Goulburn. This has resulted in a transfer of risk from a group of water holders to another group of landholders and those within the towns along the Goulburn. Council understands that, at the close of the 2021/2022 irrigation season, 840,000ML of carryover water was being held in spillable accounts. This equates to about 25% of the volume of Lake Eildon.

The process of releasing water in ‘pulses’ also ignores the downstream consequences of such actions, from erosion to inundation. Sudden surcharges along a watercourse will always result in bank erosion, with sediment, vegetation and other debris becoming caught up in the flows, which only compounds the impact of the event. In Murrindindi’s case, this adversely impacted on our heritage bridges, which will be out of action for our rural communities for years and will cost tens of millions to repair. A review of this management process is direly needed.

Screenshots from the GMW website are appended at the end of this submission, including a water storage chart and their policy position on flood mitigation (in the last snip). Both the appended GMW chart and the chart inserted directly below show that GMW could have limited the storm releases to 12,000 ML/day, which is below minor flood level, and avoided the acute phase of the floods, had they increased their earlier, pre-storm releases and created more headroom in the dam. However, their website says that their overriding objective is to secure levels for water supply, the amount of which is a subjective determinant and is compounded by the carryover arrangement. This is despite the fact, within the Water Act 1989, that storage managers have an obligation under Section 122ZL, clause (2) (d), which states that the storage manager “must have regard to developing and implementing strategies to mitigate flooding, where possible.”



The State Government should review the operating rules for large dams and the water storage policy, so that dams are managed to allow for flood retention mitigation during periods of high rainfall and runoff, in order to protect the vulnerable downstream urban and rural communities.

We attach a copy of the Ministerial Briefing Note from The Farmers of Murrindindi, which highlights the level of devastation caused by 38,000ML release and reinforces that “A more conservative approach to the Eildon Weir’s operating procedures and subsequent flood pre-release decisions would have provided us with greater protection”.

Adequacy and effectiveness of early warning systems

Communications around the Flood Event were inadequate. If the Community and Council had received better early warning of the release, we may have been able to have pumps ready to help protect the Thornton township and also be better prepared to protect Breakaway Bridge. (The lead time of releases to Thornton from the dam wall is 5 hours). We appreciate that pre-event flood meetings and communications releases were provided by GMW; however, the warnings around the specific volume of 38,000ML release were lacking (as illustrated by the above chart, releases were expected to continue at the 12,400ML mark).

GMW, BoM and SES should jointly provide accurate data (specific release volumes) and better early warning of potential flooding when GMW releases water from Eildon when approaching minor flood levels, especially during high rainfall events. The residents and farmers had to find the information for themselves or had to interpret the information. An emergency warning was released through the Vic Emergency App, but this did not specify the release volume and only reached those people who use the App and who were proactively monitoring it. What was really needed was notice to the SES of the actual projected megalitres/day to be released and for an urgent text message to go out to everyone within the catchment (like they do in the USA for tornado warnings), and for GMW to also publish that information on their Facebook account and push it to the local Emergency Broadcaster and SES units. (Publishing on their website is not sufficient, as there is no trigger for people to check. It relies on farmers monitoring their website every hour, which is not practical). This must occur every time the

releases are above 12,000 ML/day, or above minor flood level. The SES is the lead agency in a flood event, but their officers were told too late about the drastic and sudden increase in release volume.

We have repeatedly requested that GMW proactively tag Council, SES and UGFM (radio station/ Emergency Broadcaster) with release data if likely to cause inundation. This is not part of the communication protocol, and did not work consistently, so we ask that this direct and detailed communication be enshrined in the rules. The BoM flood alerts are too generic; our farmers need to have the detailed granular data of the releases, to help manage their stock and operations.

The State Government should also invest in flood warning systems for communities at known flooding locations, as an adjunct to an improved telecommunications system. This includes a requirement to install and maintain flow gauges and remote sensors along the tributaries into the Goulburn for early warning and to enable the ICC to understand the true build-up of flooding, given the combined impacts of the natural flows on top of the releases from Eildon.

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

In an event like this, Council's local flood management structures, such as culverts, detention basins and wetlands, are unable to cope. Like most infrastructure across the country, they were designed for pre-climate change storm intensities and the storm that hit the broader catchment was well above a 1 in 100-year event. The consequence is that Council, and the State, loses other important infrastructure, like roads and bridges, through uncontrolled overflows.

Restoring these to like-for-like, as grant funding is predicated on, will not help alleviate the impact that any similar future event will have. As it does not make sense to restore them to as they were, it is left to Council to fund any upgrades, where grant funding is available. For local wetlands and trails, restoration grant funds are not even provided, as they are not classified as essential infrastructure.

The government should also support funding for flood mitigation works that are identified when flood studies are completed, to proactively reduce the impacts of future events.

Townships like Thornton need to be protected by permanent levy banks and the Rubicon River needs a weir to help control flows. These are matters that should be dealt with by the State. The same applies to old VicRoads' bridges that sit on bearing pads and are easily dislodged by flood waters.

There should also be a program to gradually replace weedy vegetation with native vegetation within riparian zones. Noxious weeds, like willows, end up contributing to the debris that becomes washed down in flood events and gets caught at bridges, which exacerbates the problem. Whereas, natives, like gum trees, are not so prone to this.

Flood Event as a whole

<u>Inadequate Response Management</u>

The response to the Flood Event was not adequately managed. It appears that SES were operating locally and not reporting back to the ICC at Shepparton, because they were isolated, and the ICC was not set up to operate through an online communications platform (like Microsoft Teams or Zoom). Shepparton is too far away to operate as an effective physical location for Murrindindi's emergency agencies. Also, Shepparton's access roads were flooded.

Because we were not able to physically get an EMLO to the ICC in Shepparton or Benalla during the flood, and because neither had an online option, we were not able to participate in any Emergency Management team meetings. The Shepparton ICC started having a phone-in option, but it didn't work, so we had to revert to providing email updates only. This arrangement needs to be addressed for the future.

Requests for help through the ICC also fell on deaf ears. Murrindindi was ignored and left to fend for itself. By way of examples, a request to EMV on 24 October for assistance to help fill sandbags was denied by the ICC, claiming that “the threat was not immediate and paid staff are not usually tasked to help with private assets”, and a direct call to the regional controller for other urgent assistance was also met with a brick wall response. Officers were left feeling that Murrindindi had been abandoned for the larger municipalities. The demands from Shepparton and Seymour completely overshadowed the requests from Murrindindi for flood assistance, resulting in Council having to deploy staff to perform SES activities and plea for community volunteers, who were unaffiliated with any agency, and at the peril of inadequate risk assessments and liability cover.

This is not the first time that Murrindindi has been abandoned like this, suggesting a need for an urgent review of ICC capability, capacity, span of control and service areas.

Loss of Productive Land

Over the decades, the alignment of watercourses within the Shire has changed in places, so much so that they no longer sit within Crown land and now cut across private property. The consequences of this are twofold – firstly, this can lead to rights-of-access issues for affected landowners and, secondly, result in the loss of productive, private farming land following a storm event that causes further, significant bank erosion. The government needs to comprehensively address these alignment issues, to redress ownership discrepancies.

Access to Homes and Other Buildings

Over the decades, a large number of dwellings and other buildings have been constructed that require the use of Crown Land to provide access via roads and bridges. While this is not best practice, and generally is no longer supported, consideration must be given to this legacy issue. The consequences of this are significant for residents following disaster events that damage or destroy this infrastructure. Following the October 2022 Flood Event, a number of residents have been left without appropriate vehicle or emergency access to their homes and are unable to rebuild or reinstate this access over Crown Land. The Government needs to fully address these ongoing access problems. This issue is one that has been known for some time, however, unless addressed, it will continue to arise with the increasing frequency of more intense weather events.

We trust that our submission will be of value, and we look forward to the outcomes of the inquiry.

Yours sincerely

[redacted]

Livia Bonazzi
Chief Executive Officer

Attachments:

- October Floods 2022 – Business Impact Analysis – REMPLAN
- Farmers Ministerial Briefing Note
- Snippings from the GMW website (below)

Snippings from the GMW website:

How the October 2022 floods occurred along the Goulburn River

Climate influences

In September 2022 the Bureau of Meteorology (BOM) declared a La Niña weather pattern for a third consecutive year – increasing the chance of above-average rainfall across the GMW region. This was only the third time an extended La Niña has occurred since records began in 1900.

Victoria's weather this year has also been influenced by a negative Indian Ocean Dipole, which typically sees above-average winter-spring rainfall in Australia.

The weather patterns we have received have caused a wetter catchment, higher soil moisture content, and minimal water absorption, leading to increased runoff and higher river levels.

Key facts

- Inflows to Lake Eildon peaked at 145,000 ML/day while releases were able to be maintained at a peak of 38,000 ML/day.
- The ability to minimise releases to this extent was a result of utilising the available airspace that had been maintained through strategic pre-releases.
- The peak flow at Seymour (est at 140,000 ML/day) occurred prior to the increased releases from Lake Eildon arriving at Seymour. The peak release from Lake Eildon was 38,000 ML/day release – this shows the significance of the flows from unregulated tributaries downstream of Eildon.
- The peak flow at Shepparton (est at 192,000 ML/day) was primarily made up of tributary inflows between Eildon and the Goulburn Weir, plus inflows from the Broken River and Seven Creeks.
- Releases from Lake Eildon only contributed approximately 6% of the peak experienced at Shepparton.

Lake Eildon

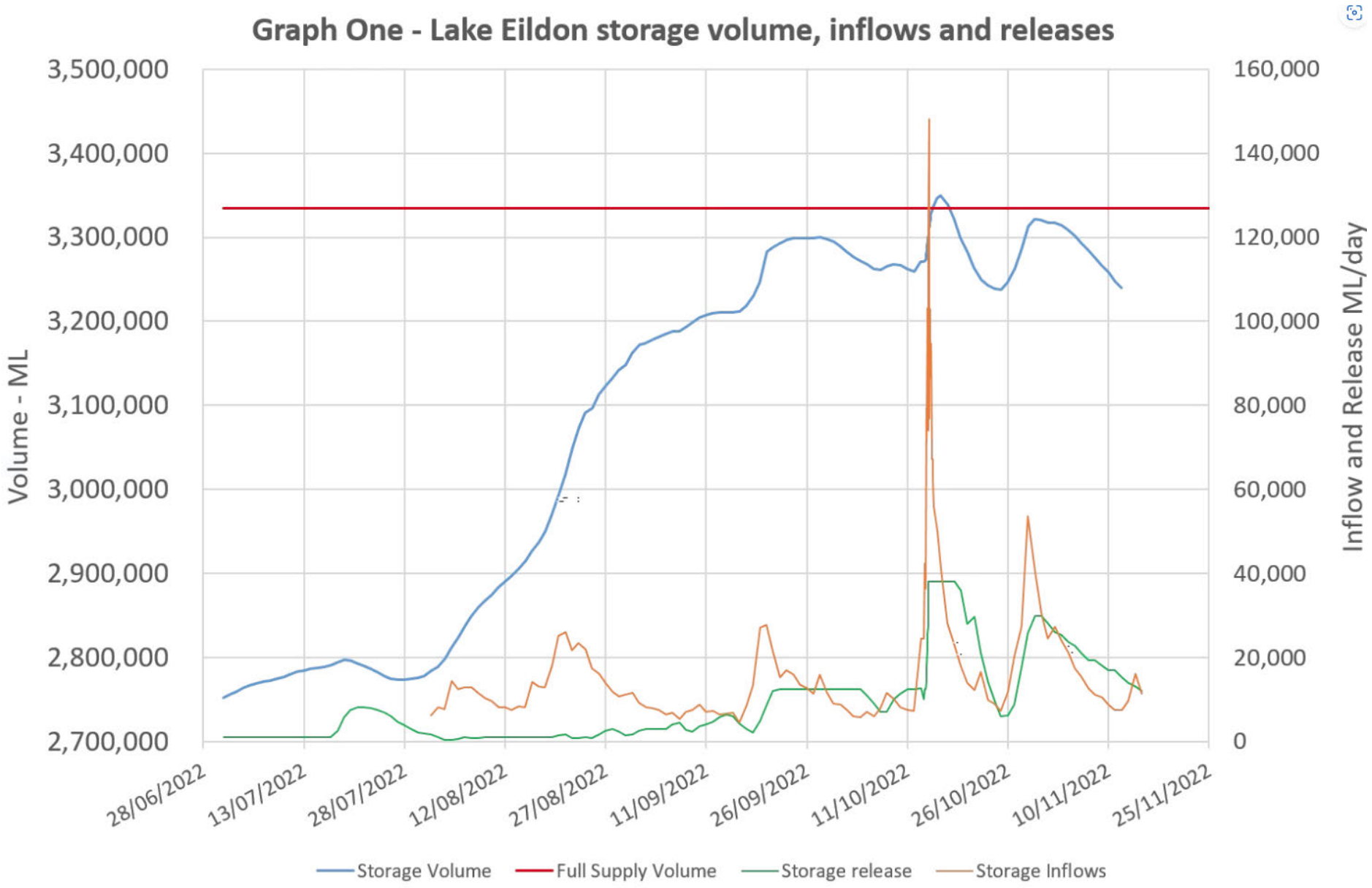
GMW began pre-releasing water through the outlet tower (power station) at Lake Eildon to manage storage levels in late August 2022 *(Graph One – Storage Release)*. These releases were to slow the rate of rise and provide GMW with options to manage potential high inflows.

Eildon inflows increased rapidly on Thursday 13 October and were over 100,000 ML/d for an extended period, reaching a maximum rate of about 145,000 ML/d early on 14 October.

At 11 pm on 13 October, GMW increased releases from Lake Eildon using the spillway gates. This was the first time this has happened for flood operations since October 1996. Releases were increased (stepped) by 2,500 ML/hour, up to 38,000 ML/d and were maintained while the storage level rose above the full supply level.

These actions were planned to keep releases and impacts on downstream communities as low as possible.

Inflows were above 38,000 ML/d until 17 October (i.e. inflows were exceeding outflows) *(Graph One – Storage Inflows)*.


Graph One - Lake Eildon storage volume, inflows and releases
Volume - ML
Inflow and Release ML/day
3,500,000
3,400,000
3,300,000
3,200,000
3,100,000
3,000,000
2,900,000
2,800,000
2,700,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
28/06/2022
13/07/2022
28/07/2022
12/08/2022
27/08/2022
11/09/2022
26/09/2022
11/10/2022
26/10/2022
10/11/2022
25/11/2022
Storage Volume
Full Supply Volume
Storage release
Storage Inflows

The role of GMW storages during floods

GMW's water storages are designed and operated to provide a secure and safe water supply. They are not specifically for flood mitigation. If there is opportunity, the storages can be operated to reduce the downstream flood peak where possible.

Water storages may provide significant mitigation for small floods and may reduce downstream flooding. However, a storage's ability to mitigate downstream flows so they remain below flood thresholds reduces as floods become larger.