WATER MANAGEMENT ADVISORY COMMITTEE

03 July 2024

COMMUNITY STRATEGIC PLAN 2018-2028

ONE – CENTRAL COAST IS THE COMMUNITY STRATEGIC PLAN (CSP) FOR THE CENTRAL COAST LOCAL GOVERNMENT AREA

ONE – CENTRAL COAST DEFINES THE COMMUNITY'S VISION AND IS OUR ROADMAP FOR THE FUTURE

ONE – CENTRAL COAST BRINGS TOGETHER EXTENSIVE COMMUNITY FEEDBACK TO SET KEY DIRECTIONS AND PRIORITIES

One - Central Coast will shape and inform Council's business activities, future plans, services and expenditure. Where actions are the responsibility of other organisations, sectors and groups to deliver, Council will work with key partners to advocate on behalf of our community.

Ultimately, every one of us who live on the Central Coast has an opportunity and responsibility to create a sustainable future from which we can all benefit. Working together we can make a difference.

RESPONSIBLE

WE'RE A RESPONSIBLE COUNCIL AND COMMUNITY, COMMITTED TO BUILDING STRONG RELATIONSHIPS AND DELIVERING A GREAT CUSTOMER EXPERIENCE IN ALL OUR INTERACTIONS. We value transparent and meaningful communication and use community feedback to drive strategic decision making and expenditure, particularly around the delivery of essential infrastructure projects that increase the safety, liveability and sustainability of our region. We're taking a strategic approach to ensure our planning and development processes are sustainable and accessible and are designed to preserve the unique character of the coast.

G2 Engage and communicate openly and honestly with the community to build a relationship based on trust, transparency, respect and use community participation and feedback to inform decision making

There are 5 themes, 12 focus areas and 48 objectives

COMMUNITY STRATEGIC PLAN 2018-2028 FRAMEWORK

All council reports contained within the Business Paper are now aligned to the Community Strategic Plan. Each report will contain a cross reference to a Theme, Focus Area and Objective within the framework of the Plan.

Meeting Notice

The Water Management Advisory Committee
of Central Coast Council
will be held in the Nexus Building,
3 Amy Street, Wyong,
on Wednesday 3 July 2024 at 1.30pm,
for the transaction of the business listed below:

1 Procedural Items

2 Reports

Jamie Loader
Chairperson

1.1 INTRODUCTION: WELCOME, ACKNOWLEDGEMENT OF COUNTRY, APOLOGIES, DISCLOSURE OF INTEREST

Chairperson

Welcome, Acknowledgement of Country, Receipt of Apologies

We acknowledge the Traditional Custodians of the land on which we live, work and play.

We pay our respects to Darkinjung country, and Elders past and present.

We recognise the continued connection to these lands and waterways and extend this acknowledgement to the homelands and stories of those who also call this place home.

We recognise our future leaders and the shared responsibility to care for and protect our place and people.

1.2 PREVIOUS BUSINESS: CONFIRMATION OF MINUTES, REVIEW ACTION LOG

Chairperson

03 April 2024 meeting minutes and action log are included at attachment 1, for confirmation and review.

Attachments

1 MINUTES - Water Management Advisory Committee - 3 April 2024 D16135045

Central Coast Council

Water Management Advisory Committee

Held in the Nexus Building
3 Amy Street, Wyong

03 April 2024

MINUTES

Attendance

Members	**Status**
Pamela McCann	Present – online
Daryl Mann	Present - online
John Asquith	Absent
Ken Brookes	Present from 2:30pm.
Mick Redrup	Apology

Staff	**Status**
Jamie Loader, Director Water and Sewer	Present
Luke Drury, Section Manager, Assets and Planning	Present
Satpal Singh, Lead Engineer Water Resilience, Assets and Planning	Present
Danielle Hargreaves, Unit Manager, Headworks and Treatment	Present
Kashif Rana, Project Manager, Assets and Planning	Present
Briony Stiles, Civic Support Officer	Present
Lisa Martin, Civic Support Officer	Present

The Chairperson, Jamie Loader, declared the meeting open at 1:37pm

PROCEDURAL ITEMS

1.1 Introduction: Welcome, Acknowledgement of Country, Apologies, Disclosure of Interest

1:37pm

The Chair read an Acknowledgement of Country statement.

The Chair noted that the meeting has not achieved quorum.

Apologies received were noted. Have not heard from John Asquith & Mick Redrup is an apology. Ken Brookes said was coming but hasn't appeared online as yet.

The Chair called for any disclosures of interest. No disclosures were received.

1.2 Previous business: Confirmation of minutes, review action log

1:44pm

The group cannot confirm the minutes from the previous meeting as noted below, which were distributed to members via email and uploaded to Council's website:

Water Management Advisory Committee Minutes 28 September 2023

The group cannot endorse minutes as the meeting has not achieved quorum. The Chair noted that there are no outstanding actions from that meeting.

No outstanding actions.

REPORTS

2.1 Water Supply System Status Report

1:47pm

Satpal Singh Spoke to Water Supply Status update presentation.

Further clarifications were provided as below:-

- Dam levels – confirmation that running 100% off Mangrove at the moment. Are keeping Upper Mooney Dam in reserve for upcoming Mardi Water Treatment Plant (MWTP) shutdown as a contingency.
- Status of assets. Confirmation that if there wasn't Salvinia weed in Wyong River Weir,

wouldn't be pumping out of it anyway. Report is looking at quarterly assets status.

- Confirmation that Lower Mangrove Pumpstation Pump 4 and 7 are currently out of service. Impact on yield is due to release of water from Mangrove Creek Dam while available water is preserved in Upper Mooney Dam in light of reliability issues at the Lower Mangrove Pumpstation.
- Confirmation that specialist Contractors are undertaking the pump and motor repairs.

Satpal Singh opened the floor to questions from the Committee.

Pamela McCann queried that we are currently in drought? Doesn't think that is the Community's perception. Is there something we should be doing to address that?

Luke Drury confirmed there is a difference between storage level and the drought indicators that determine the region is in drought. We are in strong position in terms of storage, and have focused on maintaining the waterwise messaging within the community including the "Live to 150{L}" campaign in media.

Waterwise messages are distributed via website and digital media, and on the water bills that go out every quarter.

Resolved

That the Committee notes the Water Supply System Status report for February 2024.

2.2 Environmental Protection Licence (EPL) Non-compliance Summary

2:07pm

Danielle Hargreaves provided an update on the Environmental Protection Licence Non-compliances and spoke to the report provided in the agenda.

Further clarifications were provided:

- Clarification on the pump stations oxygen injections - Luke Drury stated the BB01's oxygen dosing had been operating but there were interruptions to hydrogen peroxide dosing at BB14 and BB13 at end of last year due to supplier delivery issues of those chemicals. This impacted odour complaints at Bateau Bay Sewage Treatment Plant. Some work arounds have been set up to allow deliveries to recommence while longer term improvements are made. This did not impact BB01 which features the oxygen dosing system for septicity control.

Resolved

The Committee notes the Environmental Protection Licence (EPL) non-compliance summary report.

2.3 Update on Water and Sewer Masterplan

2:15pm

Kashif Rana spoke to the Update on Water and Sewer Masterplan presentation.

Further clarifications were provided as below:

- Luke Drury confirmed that where the gap analysis identified the gap in 'understanding resourcing needs' this primarily relates to the external facing documentation that Council publishes under IP&R framework. An action in meeting the NSW Strategic Planning Assurance Framework is to see more integration of water utility outcomes within the broader Council documentation. That was identified in that gap analysis.
- Current top tier strategic planning document for the Water and Sewer Department is its Strategic Business Plan (SBP) which covers asset management, planning, personnel, safety and finance.
- Business risks such as Workplace Health and Safety (WHS) are focussed on in the Water and SBP, with one of the 5 priority areas in that plan being a 'safe and committed work force'. W&S also have a safety team that meets monthly, and working groups around fatigue and confined spaces. Daryl Mann suggested Staff consider how WHS could be included in the 2nd tier of strategic documents such as the Water and Sewer Masterplan.

Kevin Brookes arrived to the meeting at 2:30 pm.

- Additionally to the Masterplan, there is a Water and Sewer Asset Management Maturity assessment and associated Asset Management Improvement plan. These have identified a number of key actions to progress on.
- The Capital works plan within the W&S Masterplan is less focussed on asset renewals, but more focussed on new assets and upgrades identified under masterplan. These will be combined with the asset renewal forecasting from the Asset Management Plans and will allow future update of the Council's Infrastructure Pipeline.
- The need to revisit the planning tools identified in the 2012 Gosford Water and Sewer Masterplan (technical memos) was raised. Luke noted that staff had been reviewing the technical memos and they have been informing recent planning investigations.

Resolved

That the Water Management Advisory Committee (WMAC) notes the report.

2.4 Water Resilience Project Status Update

2:37pm

Luke Drury spoke to the Water Resilience Project Status Presentation.

Further clarifications were provided as below:

- Ken Brookes raised the need for a hydrology model for Porter's Creek Catchment and

that historical yield estimates were influenced by salt water backing up into the catchment rather than fresh water inflows. Luke Drury confirmed that staff had noted this need as part of recent catchment gauging gap analysis work and were scoping the development of a catchment model (e-source) to better inform yield estimates.

- Current top tier strategic planning document for the Water and Sewer Department is its Strategic Business Plan (SBP) which covers asset management, planning, personnel, safety and finance.

Resolved

That the Committee notes the Water Resilience Project Status Update for September 2023.

3:00pm

The Chair noted that leading up to Council elections in September that all Advisory Committees will be dissolved, it will be up to new councillors how they want to structure it, and what advisory committees they require.

Also noted that the shutdown of Mardi Water Treatment Plant at end of this month is a critical piece of work that will take place. Lots of preparedness work has been undertaken at Somersby Water Treatment Plant (SWTP) as supply of all water for the central coast will rely on SWTP (with some supply from Hunter Water) for approximately four weeks. Lots of engagement has been occurring with certain customers to assist them manage risks during this period.

Luke Drury confirmed that Council are concentrating on preparing to operate internal trunk water mains during the shutdown and are also focused on reliability improvements to the raw water pump stations.

Ken Brookes enquired if anyone been in touch with the quarries to make sure won't be releasing sediments etc, Luke Drury confirmed that was an action completed.

Ken Brookes requested a Salvinia outbreak update. The Chair noted there is plant equipment pulling out weeds and a larger weed harvester on its way from Brisbane that will be launched into the river. Council was monitoring upcoming rainfall and its likely impact on shifting some of the weed material.

Danielle Hargreaves noted that they are building a long term monitoring plan. Using the DPI based Salvinia management plan for longer term monitoring etc. Weevils to go in in Spring but there is uncertainty on their efficacy. Manual weed removal also coming after the larger weed harvester completes its work, it has been acknowledged it will take some time.

The Meeting concluded at 3:07pm.

Next meeting 6 June 2024, Nexus Building, Wyong.

Action Number	Meeting Date	Action	Responsible Party	Action Update	Status
24	27/5/20	Staff to provide a table as a Standing Agenda Item, as presented in the Briefing Note on Water Resilience Works that lists each project and provides a brief status at each Water Management Committee Meeting.	Water and Sewer staff	Ongoing – to be included in future agendas	Complete
35	12/8/20	Staff to provide ongoing annual summaries to the Advisory Group of any breaches of Environment Protection Licence's after the relevant annual returns are submitted as well as an update on any major incidents in the network should they occur.	Water and Sewer staff	Ongoing – to be included in future agendas	Complete
42	22/7/2022	Unit Manager Headworks and Treatment to contact Committee member to confirm these access arrangements and that the area is still open for public access, generally, and further facilitate that this is being conveyed and made available.	Unit Manager Headworks and Treatment	Access arrangements to confirmed, contact is Liz Knight.	Complete
43	28/9/2022	CCC Asset and Planning is seeking feedback from WMAC on the following matters: Requesting feedback and input from Committee members, specifically regarding the 12 outcomes and their views on what may be of interest to the community.	Project Manager Integrated Water Cycle Management	Initial feedback being sought following September 2022 WMAC meeting. Feedback due COB Monday 31 October 2022.	Complete
44	28/02/2023	Noted a Committee member has provided feedback via email which addresses some aspects in relation to outstanding action items.	Unit Manager, Assets and Planning / Water and Sewer staff	The Coordinator noted he would review and come back with more information.	Complete.

Action Number	Meeting Date	Action	Responsible Party	Action Update	Status
45	28/02/2023	Request for interest and availability from Committee to attend either of the forums – 1 & 2 March and 9 & 10 May Email will be sent to WMAC members, with further information and form, seeking response by end of week.	Project Manager Integrated Water Cycle Management	Meeting Support staff to distribute EOI and further information.	Complete.
46	28/02/2023	Question regarding unsealed roads/roadway maintenance meet objectives – this will be followed up with information to be provided to the Committee.	Water and Sewer staff	Response provided via memo included in the September 2023 WMAC Agenda.	Complete

Item No: 2.1

Title: Water Resilience Project Status Update

Department: Water and Sewer

3 July 2024 Water Management Advisory Committee

Reference: F2019/01200 - D16210723

Author: Kate Gibbs, Executive Support Officer
Satpal Singh, Lead Engineer Water Resilience. Assets and Planning

Manager: Luke Drury, Section Manager. Assets and Projects

Executive: Jamie Loader, Director Water and Sewer

Recommendation

That the Committee notes the Water Resilience Project Status Update for July 2024.

Report purpose

To provide the Water Management Advisory Committee with an update of key water resilience projects for the Central Coast.

Executive Summary

The Water Resilience Project Status report provides an update on the water security works that are currently underway and the status of each project.

These works are reported within the three pillars identified in the Central Coast Water Security Plan (CCWSP):

- Pillar 1 Conserve and use water efficiently
- Pillar 2 Maximise existing water supplies to delay new water supplies
- Pillar 3 Develop new rainfall independent water supplies for an adaptive future.

Report

1. Pillar 1 Conserve and use water efficiently

1.1. Overview

Water conservation and efficiency is the cornerstone of our Water Security Plan. Achieving long term reductions in demand increases the resilience of the water supply to population growth and future drought.
Council outlined the key resources and activities required to develop and implement a long-term water conservation program within its Water Resilience Step Change Business Case in the 2021 IPART submission. The following roles were filled last year to assist the program:

- Strategy Lead Water Conservation-1
- Water Education Officers-2
- Water Communications Officer-2

The role of Strategy Lead Conservation remains vacant since mid-December 2023. Attempts to recruit the role in early 20224 were unsuccessful, with another round of recruitment currently underway..

1.2. Development of Water Conservation Strategy

During the development of Central Coast Water Security Plan (CCWSP), an "all options on the table" approach was followed. The conservation of water resources is a critical component of effective and environmentally sustainable management of urban water supplies. The Central Coast community strongly supported water conservation as a demand side measure to meet future water needs of growing central coast region. Water conservation came out be Pillar 1 of CCWSP.

A Water Conservation Strategy is being developed to implement this pillar of the plan. About 80-90% of the strategy is complete and will be completed as the Strategy Lead Water Conservation role is filled. The strategy has followed the Water Efficiency Framework developed by the Department of Planning and Environment now part of Department of Climate Change, Energy, the Environment and Water (DCCEEW).

<u>Project Status</u>

Options identification and evaluation metrics have progressed however, finalisation is dependent on the recruitment of the vacant Strategy Lead Water Conservation role.

1.3. Trial smart meters for top 100 large non-residential customers

Smart meters enable leak detection in real time, timely identification of high consumption patterns and an ability to notify customers, generate accurate consumption trends, improve customer relationship and increased revenue generation through improved meter reads.

These are gaining traction in water utilities for the above-mentioned reasons. Over 600,000 smart meters have been installed in Australian water utilities.

The Council water customer data analysis showed that about 100 large customers account for more than 50% of non-residential water usage. Some of these customers have multiple meters also. The customers that fall in this cohort use more than 10ML/year.

The proposal is to convert the existing customer meters into smart meters using a plug-in device and communication network. The data can be accessed through online cloud-based software.

Project Status

" Taggle Systems" which is a market leader in Australia for smart metering was awarded a contract for providing and installing these devices. The Project is on track and the installation will be complete by end of June 2024.

- About 90% of the work of installation of devices is complete
- Aqualus, the platform for accessing the online data is operational
- Council is working with key customers to decide on threshold values for water leakage alerts.

1.4. Trial of Water RoadMap for large customers

Council has not proactively promoted water conservation to large water use customers since the lifting of restrictions post the millennium drought in 2012. There is no specific tool or staff to serve large customers and promote water savings. There has been no follow up action with customers who developed Water Efficiency Management Plans (WEMPs) during the millennium drought.

Council has subscribed to Water Stewardship membership Asia Pacific (WSAP) and purchased licences to explore the use of the Water Roadmap, its proprietary product. The Water RoadMap provides the customers with a strategic pathway towards improved water and wastewater management, addressing water security and water efficiency. The consultant ran a demonstration of the tool to the Water and Sewer management team for its water production business. The output report was prepared and circulated to identify gaps in our business processes.

Project Status

Council has initially purchased 10 licences for the RoadMap and is facilitating delivery to 10 large non-residential customers. Council has already competed initial (benchmark) delivery of RoadMap for 9 customers:

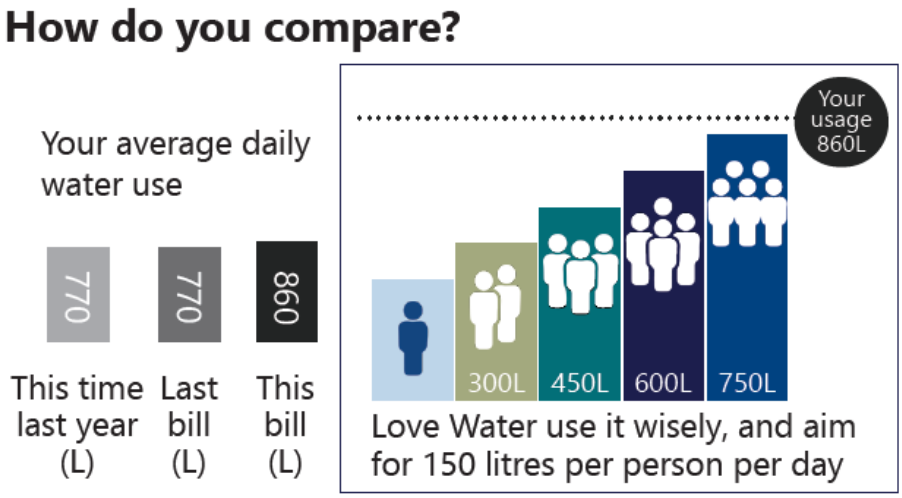
- Trendpac
- Sanitarium
- Sanitarium on Meals
- Lendlease (Keyton)
- Ingham
- Cordina
- Sara Lee
- Mars
- CSR Hebel

The feedback from these customers was positive and they benefitted from the exercise. It has provided them with the opportunity to understand their water usage behavior and use this as a benchmark to monitor future course of actions identified. Two more rounds after 6 and 12 months will be undertaken to keep the momentum going. Second round after six months was delivered for two customers: Sanitarium and Ingham.

WSAP are providing a further 10 licenses for the second batch of customers and providing an accredited facilitator to complete the midline work for the first batch and run the initial (benchmark) delivery for the second batch of 10 new customers. The work is proposed to be completed by 30 June 2024. Two new customers, Crown Plaza at Terrigal and Delta Laboratories were delivered benchmark RoadMap from the new list of customers.

1.5. Water Conservation Messaging in Customer Water Bill

Council staff have identified that there is an opportunity for water conservation messaging through the customer water bill in addition to information provided by other channels. The proposed formatted customer water bill will have water usage figures plotted as bar chart with values labelled as below on the left. The right-side boxed graphics will show comparison with 'Water Wise Rules' target of 150 litres/per person per day. The visual depiction of usage rather than text is considered more impactful and will empower residential customers to proactively save water. The redesigned water bill is planned to start from July 2024.



1.6. Department of Climate Change, Energy, the Environment and Water

The Department of Planning and Environment (DPE) has now become a part of new department, Department of Climate Change, Energy, the Environment and Water (DCCEEW). The department is leading water conservation on several fronts and Council staff are participating in various programs and workshops to keep abreast of the state initiatives and leverage future opportunities that may become available.

Recent Milestones/Activities:

Schools Program - DCCEEW is designing water efficiency program for schools on the pattern of Victoria Government's, Schools Water Education Program (SWEP). Council's Water Education Officers are involved in the program and have provided list 20 schools with high per student water usage. The smart metering devices will be installed, and access provided to visualise the data. Most of the schools in the list are already included in the trial smart metering project.

Data sharing with third parties will be involved. Taggle Systems, Council's provider of 'Aqualus' system is in talks with the department to work this out.

1.7. Water Services Association of Australia (WSAA) Project

Recent Milestones/Activities:

Water Efficiency Benchmarking (WEB) - WSAA requested Expression of Interest from various water utilities to participate in this project. Our neighbor organisations, Hunter Water and Sydney Water are also participating in this project along with many other utilities.

The project will create a platform that provides clear and useful insights to inform businesses about water use and help non-residential customers and water utilities understand and

improve water efficiency. This program aligns well with other projects Council is doing in this space e.g., installing smart metering devices for large non-residential customers, Water RoadMap etc. Council has provided 'Expression of Interest" in the project. The Institute for Sustainable Futures (ISF) and BMT' s Water Efficiency team are engaged by WSAA to lead this project. The project has kicked off and Council is working through the information requested by the consultants.

1.8. Active leak detection program

Background

Leak Detection Project involves acoustic scanning of reticulation and trunk supply mains to detect leaks on various pipe materials including cement lined cast iron, asbestos cement, mild steel cement lined and PVC water mains.

The project will reduce operating costs associated with the supply of treated water to customers since the net overall volumes of water supplied via the distribution network will be reduced as leaks are progressively detected and repaired. Consequently, the cost recovery will also improve for water supplied to customers.

Central Coast Council operates a water distribution network comprising 2,019km of watermains up to DN450 and an additional 167km of trunk watermains up to DN1200 size.

Further benefits of the Leakage Detection Project will identify longer term asset issues in the water distribution network and assist with targeted water main renewals to improve network reliability and decrease the age of network assets.

Project Status

Ongoing

Recent Milestones

- Fifteenth quarterly package of work completed. A length of 528km of potable water mains were acoustically scanned between mid-December 2023 & mid-March 2024.
- Sixteenth quarterly package of work commenced encompassing:
    - Tumbi Umbi
    - Berkeley Vale
    - Umina Beach
    - Green Point
    - Daleys Point
    - East Gosford

- West Gosford
- Ourimbah
- Palmdale
- Jilliby
- Wadalba
- Kanwal
- Lake Haven
- Narara
- North Gosford
- Wyoming
- Matcham
- Terrigal

- Leak detection contractors are currently working in Wyoming. Lake Haven and Jilliby have been acoustically scanned in the current quarterly package of work and represent the first scan of these locations under the new program. The results from Lake Haven reflected the historical reactive work order performance from IPS, indicating that this area has a fairly low rate of leakage, most likely influenced by the lower network operating pressures from Kanwal Reservoir. Three leaks were recorded, all leaks being related to meter tap or meter fittings. One moderate hydrant leak was detected in Jilliby. .
- Approximately 1,910km of the Central Coast Council water supply network (for watermains less than or equal to 450mm diameter) has been scanned as of 31st May 2024.
- The current sixteenth quarter of leak detection work is for 536km of watermain.
- The estimated leakage rate per km of water main for each suburb is continuing to be used as a prioritisation technique to gain maximum benefit from the project.
- Estimated water losses identified to 18th March, 2024 through leak detection prior to repairs being completed was 0.76ML/day for the fifteenth quarter of work. The estimated loss rate was 1.44kL/km/day based on 103 leaks detected.
- Trunk main leak detection work is currently being performed as part of risk minimization for Stage 1 and 2 Mardi Water Treatment Plant upgrade works.

Next Milestones

- Sixteenth quarter of work commenced from April 2024 and is continuing to progress.

- Data from customer calls reporting leaks is also being used for prioritisation. Locations will continue to be prioritised on recorded leakage data and frequency of watermain breaks per 100km.

Forecast completion date

- The current contract is scheduled to be completed at the end of June 2024. Procurement of a new and expanded contract has substantially progressed, to commence in the first quarter of the 2024/25 financial year.
- Currently 94% of the water supply network for watermains less than DN450 has been acoustically scanned at least once.
- Continue to target locations throughout the network based on historical leakage results, prioritising locations with high leakage rates.

2. Pillar 2 Maximise existing water supplies to delay new water supplies

2.1. Overview

Upgrades and refurbishment of existing, under-utilised surface water, recycled water and groundwater infrastructure can provide cost effective yield benefits before constructing new supplies.

2.2. Mardi Water Treatment Plant Stage 3 Upgrade ($82.5M)

Background

The Mardi Water Treatment Plant (MWTP) upgrade will secure up to 160ML/d nameplate treatment capacity at current treated water quality targets under contemporary raw water quality conditions, catering for peak day demand for the Central Coast now and into the future while also meeting inter-region transfer commitments.

Partial project funding obtained under the NSW Safe and Secure Water Program.

IPART Determination May 2022 found the project to be prudent but suggested opportunities to improve delivery efficiency which led to an Early Contractor Involvement (ECI) phase with the preferred tenderer in early 2023 and deferral of a portion of mechanical and electrical works to a future Stage 4 project, estimated in 2040.

Department of Planning and Environment (DPE) issued an approval under Section 292 of the Water Management Act for the project under the new framework on the basis of the preliminary design.

Project Status

- Site fully established and construction underway
- Preparation for a 4-week shutdown of MWTP in July is continuing

- Detailed design is continuing with various components between 90% to IFC stage.

Recent Milestones

- Construction commencement was marked with a sod turn media event on 3 May 2024
- Excavation of the rock embankment and pad in preparation for DAF construction is complete
- A 3-week shutdown of MWTP was completed successfully in May, including remediation work in existing tanks to improve durability and future performance

Next Milestones

- First concrete pours and pipelaying to commence in June
- Extended Shutdown 2 to take place in July 2024
- Detailed design to be substantially complete in August

Scheduled completion date

- Late 2025

2.3. Mooney Dam Water Pump Station Upgrade ($4.4M)

Background

Mooney Raw Water pumping station requires a capacity increase from 30ML/d to 60ML/d. The project objectives are as follows:

- Enable Southern Average Day Demand (ADD) to be taken solely from Upper Mooney Dam. This greatly simplifies treatment as raw water alkalinity is consistent (as compared to mixing Mangrove and Mooney water)
- Provide security of supply to the Southern area. If Mangrove creek pumping station fails, the current 30ML/d Mooney duty is not sufficient to supply the south on a peak day.
- Enhance the delivery capacity from Mooney Mooney Dam to the Somersby water treatment plant and to increase headworks yield by enabling water transfer from Lower Mangrove Weir to Mooney Mooney Dam during periods of surplus flow in Lower Mangrove Creek and low levels in Mooney Mooney Dam.
- Utilise Mooney Mooney Dam as the sole source for Southern ADD, simplifying the treatment process and ensuring consistent alkalinity by reducing the need for raw water mixing.

Project Status

Project placed on hold while options phase is reassessed – pending additional resourcing within the Asset Management Team.

Recent Milestones

Initial stakeholder project review workshop.

Next Milestones

- Project constructability and options confirmation
- Concept design for preferred option
- Define and confirm procurement strategy
- Detailed Design and delivery.

Scheduled completion date

TBC post reassessment of options and concept design.

2.4. Recycled Water Scheme Review and Refurbishment

Background

Council operates several Sewage Treatment Plants (STPs) and stormwater capture systems, which potentially yield water for reclamation for a variety of applications. Council supplies recycled water to diverse users including residential customers, groundkeepers, holiday parks, mines and construction companies. This project is the preliminary review of the refurbishment of recycled water scheme (Phase 1). This was commissioned to review the Council's schemes to understand the current challenges, capacity, regulatory status and potential end users.

The major drivers for this project are to:

- understand the refurbishment/upgrade requirements to return the schemes to a fully operational status and obtain current regulatory approvals
- develop a prioritised strategy to identify where capital/operational investment into the existing reuse schemes provides the most value.

Project Status

The main investigation was completed in 2020 and, with Council input, the final report was issued. Recommendations were reviewed by Council's Water Resilience Committee in July 2020. The report confirmed compliance issues in relation to end water quality for the recycled water schemes.

Previous Milestones

Completion of detailed water quality monitoring in 2022.

Next Milestones

Onboard new resources on recycled water scheme details.

Review of detailed water quality monitoring data and determination of upgrade/renewal requirements.

The tenders for 'Recycled Water Regulatory Gap Analysis - Toukley - Bateau Bay – Kincumber' which closed on 7/03/2024 has been awarded to GHD and is scheduled to commence late June 2024.

Forecast completion date

Scoping of Phase 2 was delayed which will commence in June 2024 with a Regulatory Gap Analysis - Toukley - Bateau Bay – Kincumber- Gwandalan' to be completed through 2024-25.

2.5. Porters Creek Transfer System Readiness Assessment

Background

Porters Creek Transfer Scheme (PCTS) was used as an additional water source during millennium drought, which was operational from 2006 to 2008. The PCTS involved transferring raw water from Porters Creek and pumping it to upstream of the Wyong River Weir for storage and treatment at Mardi Dam and Mardi Water Treatment Plant respectively. Porter Creek catchment is fast growing urban catchment and PCTS was installed just upstream of creek's merger with Wyong River. The system was installed as an emergency water supply under the Water Act 1912. The water license approval was only temporary, for a maximum period of 2 years.

Council adopted a Drought Management Plan (DMP) in 2020. The DMP was prepared in accordance with the NSW Government Best-Practice Management of Water Supply and Sewerage Guidelines (2007) which requires Local Water Utilities such as Council to have a sound Drought Management Plan in place and be ready to implement their plan when drought conditions arise. The DMP identified the PCTS as a historical water source that could be implemented during a future drought if required. The DMP identified the opportunity to re-examine the option but also highlighted the constraints that would need to be overcome.

Central Coast Water Security Plan (CCWSP) also involves a drought response, developed to implement alternate water supplies quickly in the case of a drought emergency. One such action is to undertake a readiness assessment for the PCTS to ensure it is 'Plan Ready' in the event of a future drought. This includes seeking a water supply works approval and extraction license for the scheme and any amendments required to the Wyong River extraction rules.

Project Status

The project was kicked off 20 June 2023. The first draft of the stage 1 report was received which resulted in bringing forward some actions from stage 2 of the project due to the risk

presented in determining the feasibility of the scheme in general. These items were the condition assessment of existing assets, the bridge and the pipeline and catchment risk assessment. Detailed site survey and utility location survey, level 2 bridge inspection, and catchment risk assessment has now been completed. CCTV work for the gravity main component of the transfer main has also been completed.

Recent Milestones

The draft report for the gap analysis along with project plan and cost estimates for stage 2 and 3 was received from GHD and was circulated among all the identified stakeholders for comments. The comments from all stakeholders have been received back.

Next Milestones

Meeting with GHD to discuss and implement changes based on stakeholders' comments in couple of weeks. To receive stage 1 final report by end of July 2024.

Forecast completion date

Stage 1 is expected to be completed following submission of the final report in July 2024. Prioritisation of the subsequent phases will depend on the outcomes of the Health Based Targets assessment of the Porters Creek Catchment which will inform the constraints to the schemes operation and Council's appetite to deliver the scheme earlier or later during a future drought.

3. Pillar 3 Develop new rainfall independent water supplies for an adaptive future

3.1. Drought Response Desalination Readiness Activities

Background

Following the conclusion of the Drought Response Desalination Readiness Assessment, the recommendation to revise the originally proposed horizontal collection well intake structure in favour of a traditional direct ocean intake and to progress the project to a construction ready state is being pursued. To facilitate this, staff have commenced works associated with the additional studies and investigations necessary to formally obtain planning and environmental approvals from the NSW Department of Climate Change Energy Environment and Water (DCCEEW) . The project was on hold until recently due to high storage levels has been restarted again.

Project Status

Beca HunterH_2O has been engaged as secondment style engagement to prepare detailed consultancy brief that covers the site selection and concept design for the proposed Central Coast desalination plant at Toukley.

Recent Milestones

The project was kicked off 10/12/2023 and the following milestones have been achieved since then:

- Preparation of project plan
- Stakeholders' identification and engagement workshop
- Risk identification workshop
- Engagement of subconsultant Ramboll for assisting discussion with the regulator on approval pathways and preparation of Secretary's Environmental Assessment Requirements (SEARs) application
- Preparation of application for Ausgrid to assess existing power availability and future planned upgrades

Next Milestones

The brief for concept design and environmental studies is expected to be completed by September 2024. Confirmation of the planning approval pathway (consent amendment vs new application) is required to confirm the final required scope.

Forecast completion date

Additional investigations that were identified as required to progress have an anticipated completion period of 3 years once the overall project is restarted.

Investigations scheduled to recommence FY2024/25.

Link to Community Strategic Plan

Theme 4: Responsible

Goal H: Delivering essential infrastructure

R-H4: Plan for adequate and sustainable infrastructure to meet future demand for transport, energy, telecommunications and a secure supply of drinking water.

Risk Management

This report outlines various demand and supply side measures to manage risks to regional water security.

Options

That the Committee notes the report.

Attachments

Nil

Item No: 2.2

Title: Water Supply System Status Report

Department: Assets, Infrastructure and Business

3 July 2024 Water Management Advisory Committee

Reference: F2019/01200 - D16210729

Author: Satpal Singh, Lead Engineer Water Resilience. Assets and Planning

Manager: Luke Drury, Section Manager. Assets and Projects

Executive: Jamie Loader, Director Water and Sewer Acting Director Water & Sewer

Recommendation

That the Committee notes the Water Supply System Status report for February 2024.

Report purpose

To provide the Committee with a summary of the status of the water supply system (Action Item 9).

Executive Summary

The Water Supply System Status report provides the Committee with a summary of the status of the Central Coast water supply system including dam storage levels, headworks operations statistics, water restrictions, status of important headworks assets, Hunter water storage levels and transfers, and climatic forecasts.

Background

The Water Management Advisory Committee (WMAC) requested staff to provide a summary of the status of the Central Coast water supply system, as a Standing Agenda Item (Action Item 24).

Current Status

1. Summary

Total system storage is 89.7% as on 31/05/2024 with Mangrove Creek Dam (MCD) 90.1%. Upper Mooney Dam (UMD) had reached 100% due to recent rainfall events and Mardi Dam was sitting around 75.4%.

The spread of Salvinia weed in the river upstream of Wyong weir which was prohibiting pumping from Wyong river was washed away during a major rainfall event during the first week of April 2024. Normal pumping arrangements are likely to resume soon. Pumping from Ourimbah Creek to Mardi dam was unaffected.

The first planned shutdown of Mardi WTP for upgrade works was successfully executed through April and the second shutdown is due in July 2024.

Upper Mooney Dam (UMD) is currently having pressure vessel issues which are scheduled for rectification mid-June 2024; therefore, Somersby Water Treatment Plant (SWTP) is currently using water from run of the river in Mangrove Creek Weir catchment and releases from Mangrove Creek Dam.

The Bureau's ENSO Outlook is at La Niña Watch, due to some early signs that an event might form in the Pacific Ocean later in 2024. A La Niña Watch does not guarantee that a La Niña will develop. There is about an equal chance of neutral ENSO conditions in the same outlook period.

The average weekly demand during the autumn months was about 602ML. The maximum weekly demand during same period was 672ML.

Hunter Water Storage level is 96.4% as of 31 May 2024. Currently Central Coast is supplying Hunter about 5ML/day for urgent repairs until mid-June after which Hunter Water will supplying Central Coast as per water sharing agreement.

Council has recently undertaken commissioning of upgrades to the Mardi High Lift Pump Station that allow the full utilisation of the maximum 33ML/day south bound transfer from Hunter Water. This pump station will undergo extended testing prior to and during the July shutdown of MWTP.

Report

1. Headworks Operations Statistics

The table below is the summary of where the water has been sourced from for supply, water demand, storage levels and other important information for Central Coast water supply for the report period.

Table 1 Headworks Operations Statistics

	Mar 2024	Apr 2024	May 2024
Total Water Sourced for Supply (ML)			

MCD Release and Run of River D/S of MCD @ SWTP	1,254	1,378	1,695
Upper Mooney Dam @ SWTP	-	177	20
MCD Release @ MWTP/Mardi Dam	357	1,398	802
Mardi Dam @ MWTP	1,439	0	0
Woy Woy Bores @ GWTP-Woy Woy	0	0	0
Net Hunter Transfers (+ from HW and – to HW)	-71	-238	257
Total Demand (ML)	2,837	2,575	2,539
Mardi Mangrove Transfers (ML)			
To Mangrove Dam	-	-	-
To Mardi Dam / Mardi WTP	357	1,398	802
To Mangrove Creek	1,252	895	326
Rainfall (mm)			
MCD Rainfall	10	171	124
Mardi WTP Rainfall	11	290	268
Upper Mooney Dam	19	213	91
Total Sourced from environment for Storages (ML)			
Wyong River to Mardi Dam	0	0	0
Ourimbah Creek to Mardi Dam	72	814	850
Mangrove Creek Weir (run of river) to MMD via Spur Main	0	0	0
Mangrove Bore field to Mangrove Creek Weir	0	0	0
Ourimbah / Bangalow Bore field to Mardi Dam	0	0	0
Central Coast end of period Storage Levels (%)			
Total Storage	88.3	89.0	89.7
Mangrove Creek Dam	90.4	89.9	90.1
Upper Mooney Dam	69.1	99.9	100.0
Mardi Dam	44.3	58.4	75.4
Hunter Water end of period Storage Levels (%)	80.0	86.0	96.4

2. Water Restrictions

The Council adopted triggers for Central Coast water restrictions are tabulated below. Water restrictions start at Level 1 when Mangrove Creek Dam storage falls to 50%.

Table 2 Water Restriction Triggers

Restriction Level	Initiate Restriction Level when Mangrove Creek Dam falls to	Remove Restriction Level when Mangrove Creek Dam rises to
Level 1	50%	55%
Level 2	40%	42%
Level 3	35%	37%
Level 4	30%	32%
Level 5	25%	27%

The restriction triggers are presented as a guide that should be applied within the overall context of the relevant factors influencing the security of the supply such as:

- The seasonal outlook (for stream flows, rainfall, and temperature)
- Achievement of the current restriction target
- The timing and risk associated with any contingency water supplies, and
- Any other relevant information.

Council transitioned from Level 1 Restrictions to Water Wise Rules on 7 December 2020.

3. Status of Important Headworks Assets

The table below is the list of operations affected or at risk / offline by any current or potential asset issues. These affected operations and may or may not have an impact on system yield.

Table 3 Status of Important Headworks Assets

Operation Impacted	Status	Asset Impacting	Status Comments	Date due back in service
Raw Water Transfers to Mardi Dam	Available		Pumping from Wyong and Ourimbah sources to resume after swapping MWTP water source from MCD to Mardi Dam next second week of June	
Mardi to Mangrove Transfers	Available			
Raw Water Transfers from MCW	Available	Lower Mangrove Water Pumpstation – Reliability issues resulting in retention of water in Upper	Pump 1,2,5,6,7 and 8 available Pump 3 is out of service and requires another mechanical seal install. Parts are in hand, works to take place in coming weeks, ahead of second Mardi WTP shutdown	

Operation Impacted	Status	Asset Impacting	Status Comments	Date due back in service
		Mooney Dam as contingency and releases from Mangrove Creek Dam instead to meet demand during MWTP shutdowns.	Pump 4 Motor requires replacement - will not be available until 2025.	
Mooney Dam to WTP	Impacting Yield		All pumps available, but issue with pressure vessel is currently preventing use of this station. Parts have arrived, currently scheduled for install 13 June, 2024	End of June 2024
Mardi Dam to MWTP	Available			
Coastal Transfers	Available			
Western Transfers	Available			
HW Transfers	Available		As per agreement and operational strategy rules CC should be taking 33ML/day from HW but currently supply HW @ 5ML/day until mid-June due to main break on HW side	
Woy Woy Borefield	Mothballed			

4. Dam Storage Levels

As of 31 May 2024, total storage is 89.7%, MCD storage level is 90.1%, UMD and Mardi Dams were at 100% and 74.4% respectively.

Figure 1 Total Dam Storage Level

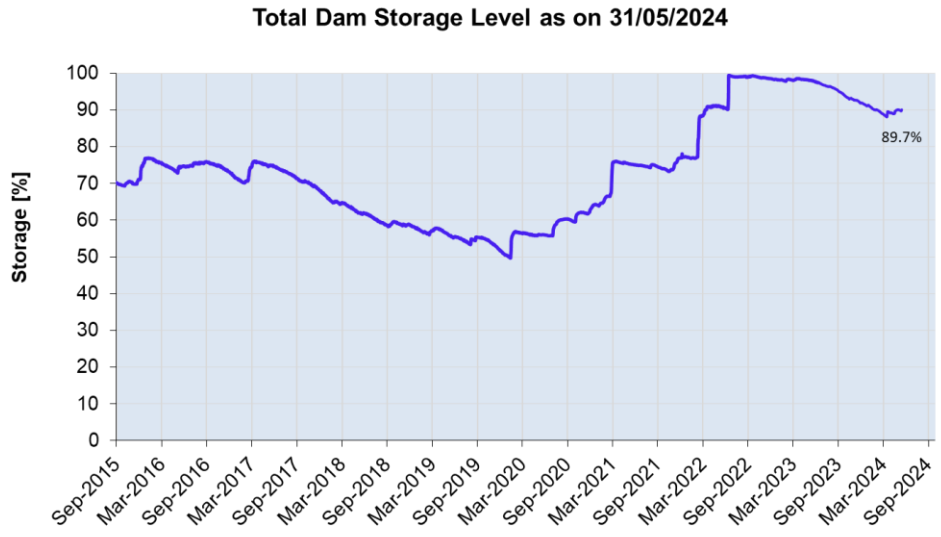


Figure 2 Mangrove Creek Dam Storage Level

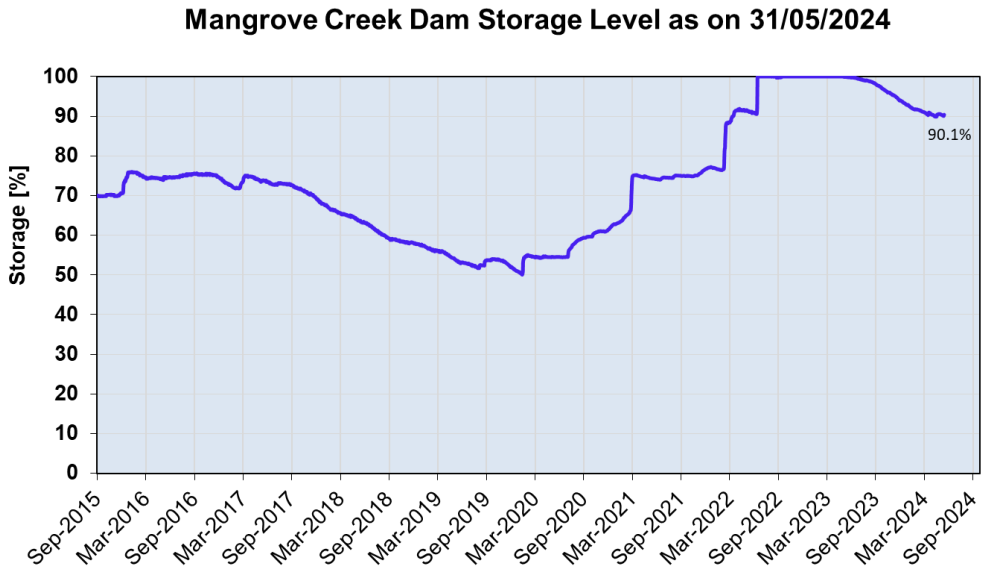


Figure 3 Upper Mooney Dam Storage Level

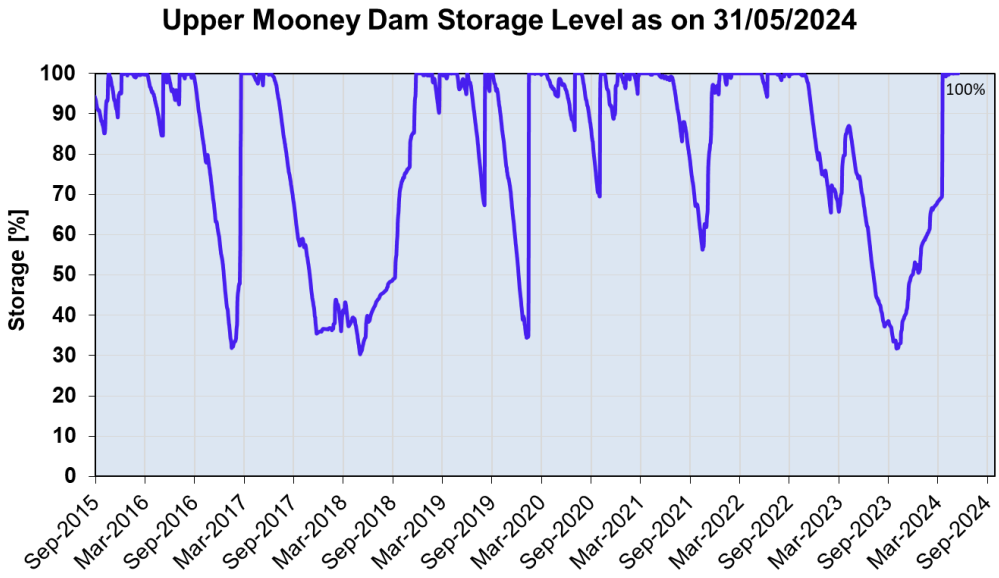
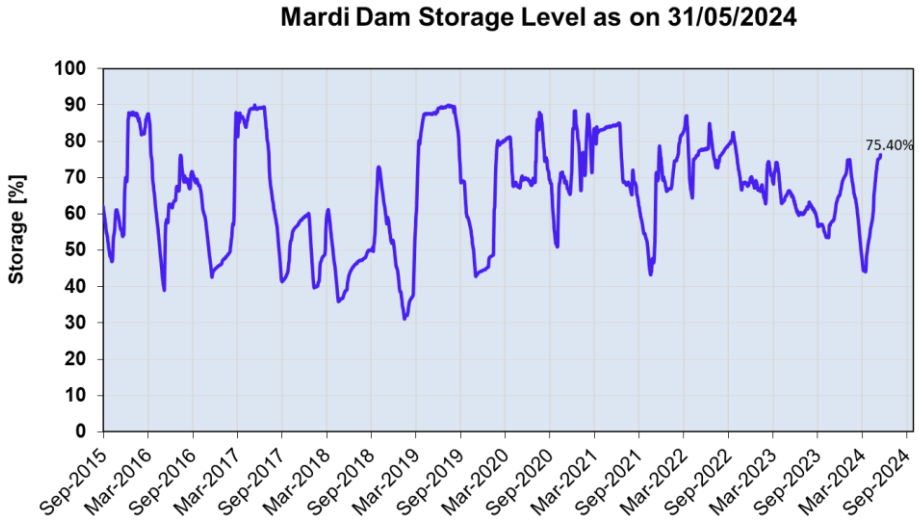


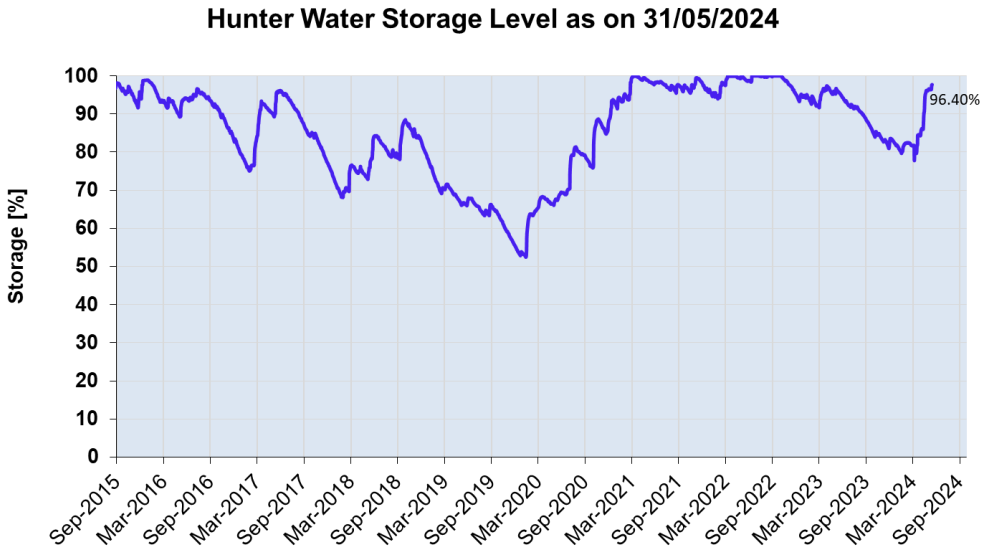
Figure 4 Mardi Dam Storage Level



5. Hunter Water Storage Level and Transfers

As of 2 August 2023, Hunter Water's storage is 82.3%. Currently water transfers are happening at around 5 ML/day from Central Coast to Hunter Water in water quality mode. Inter-regional transfers from April 2024 will enter bulk transfer mode, switching direction back and forth as both organisations manage significant capital works and associated asset shutdowns.

Figure 5 Hunter Water Storage Level



6. Groundwater

Woy Woy Borefield

Currently bores are run once a month to keep operational and for basic water quality readings. The extracted water is bypassed to sewer and water treatment plant remains mothballed.

7. Rainfall

Table 4 shows long term annual and monthly average (current month) rainfalls with up to date annual and monthly rainfall for the current year and the month.

Table 4 Rainfall Statistics

Period	Rainfall mm				
	Gosford[1]	Norah Head[2]	Mangrove Creek Dam[3]	Mardi WTP	Mooney Dam
Total for 2023	858	897	725	815	906
Total for 2024 up to 31 May 2024	822	933	454	717	512
Long Term Annual* Average	1,350	1,214	953	-	-
Monthly to 31 May 2024	280	339	124	268	91

Long Term Monthly Average (Feb)	125	124	61	-	-

1. BOM Station 061319 (closed 2015) data from 1985 to 2015 has been used for long term average figures and BOM Station 061425 (opened 2013) data has been used for 2021 to 2022 figures
2. BOM station 061273 (closed 2004) data from 1970 to 2004 is used for long term average figures and BOM station 061366 (opened 1989) data has been used for 2021 to 2022 figures
3. BOM Station 061394 (opened 1982) data from 1982 to 2020 has been used for long term average figures

* Calendar year

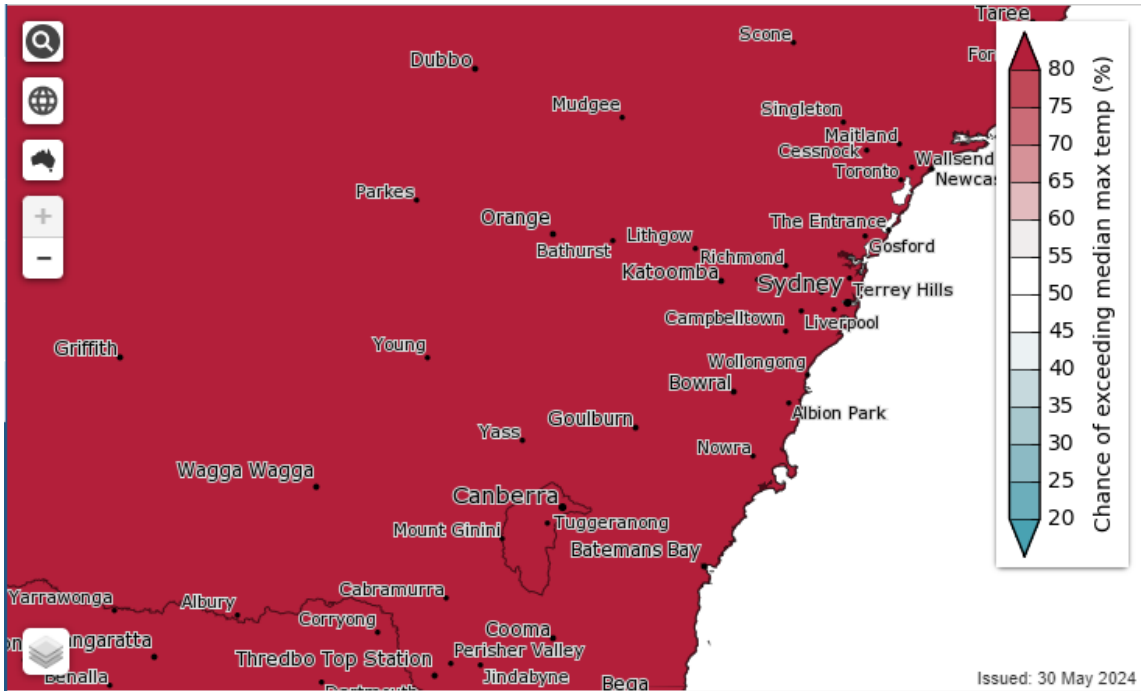
8. Seasonal Outlook for Rainfall and Temperature

The seasonal rainfall outlook issued by the Bureau of Meteorology on 30/05/2024 predicts 45-55% chance of exceeding the median rainfall for Central Coast in the three-month period from June to August 2024 (refer **Figure 6**).

Figure 6. Chance of exceeding median rainfall

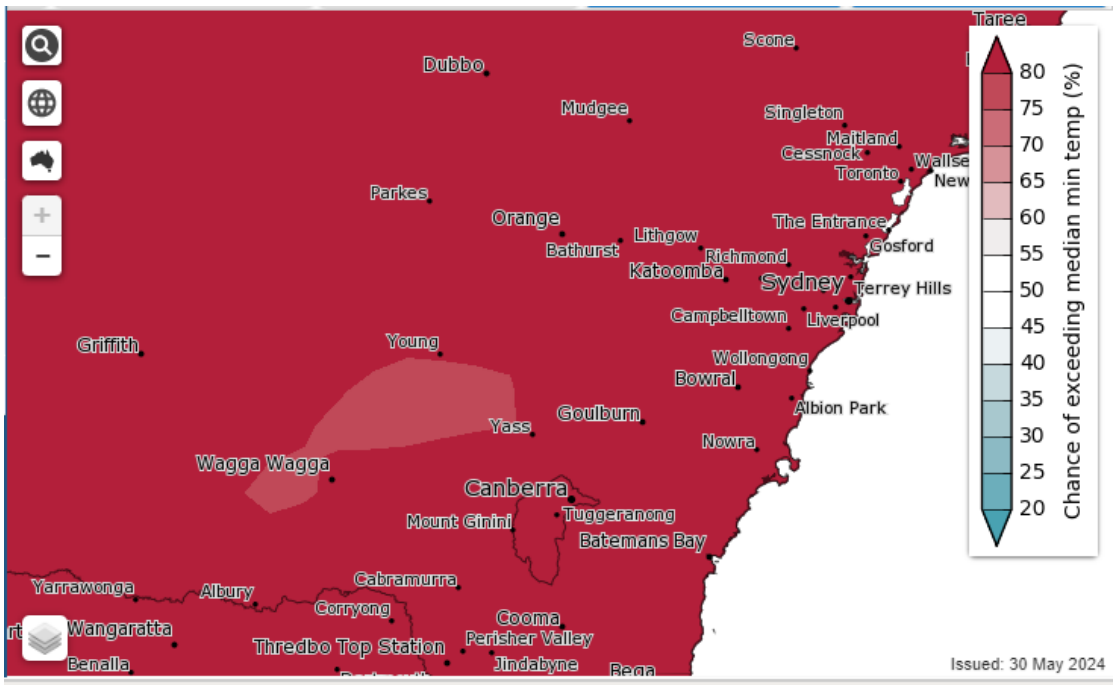
The seasonal projections for the Central Coast region predict above 80% chance of exceeding the median maximum temperatures during the three-month period from June to August 2024 (refer **Figure 7**).

Figure 7. Chance of exceeding median maximum temperature



The seasonal projections predict above 80% chance of exceeding the median minimum temperatures during the three-month period from June to August 2024 (Refer **Figure 8**).

Figure 8. Chance of exceeding median minimum temperatures



9. Climate Driver Update

Neutral ENSO conditions continue

The El Niño–Southern Oscillation (ENSO) is currently neutral.

However, the Bureau's ENSO Outlook is at La Niña Watch, due to some early signs that an event might form in the Pacific Ocean later in 2024. A La Niña Watch does not guarantee that a La Niña will develop. There is about an equal chance of neutral ENSO conditions in the same outlook period.

Climate models suggest that SSTs in the central tropical Pacific are likely to continue to cool over the coming months. Four of 7 models suggest SSTs are likely to remain at neutral ENSO levels, with the remaining 3 models showing the possibility of SSTs cooling to La Niña levels from August.

The Bureau's ENSO Outlook is at La Niña Watch due to early signs that an event may form in the Pacific Ocean later in 2024. A La Niña Watch does not guarantee La Niña development, only that there is about an equal chance of either neutral ENSO conditions or a La Niña developing in the same outlook period. Further, early signs of La Niña have limited relevance to mainland Australia, and better reflect conditions in the tropical Pacific.

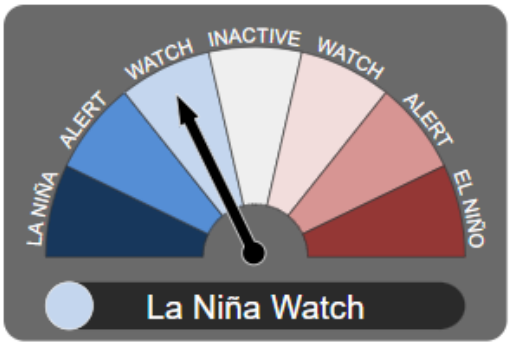
While phenomena such as La Niña provide broad indicators of the expected climate, the long-range forecast provides better guidance for local climate.

The Indian Ocean Dipole (IOD) is currently neutral. The most recent 6 weeks have seen the IOD index within neutral thresholds, with the latest weekly value close to zero. Predictability of the IOD is low at this time of year, but starts to improve through the winter months.

Global sea surface temperatures (SSTs) have been the warmest on record for each month between April 2023 and May 2024. The global pattern of warmth is affecting the typical historical global pattern of sea surface temperatures associated with ENSO and IOD. As the current global ocean conditions have not been observed before, historical comparisons based on past ENSO or IOD events may not be reliable. The Bureau's long-range forecast provides the best guidance for local climate.

The Southern Annular Mode (SAM) is currently neutral (as of 8 June). Forecasts indicate the index is expected to remain neutral for the remainder of June.

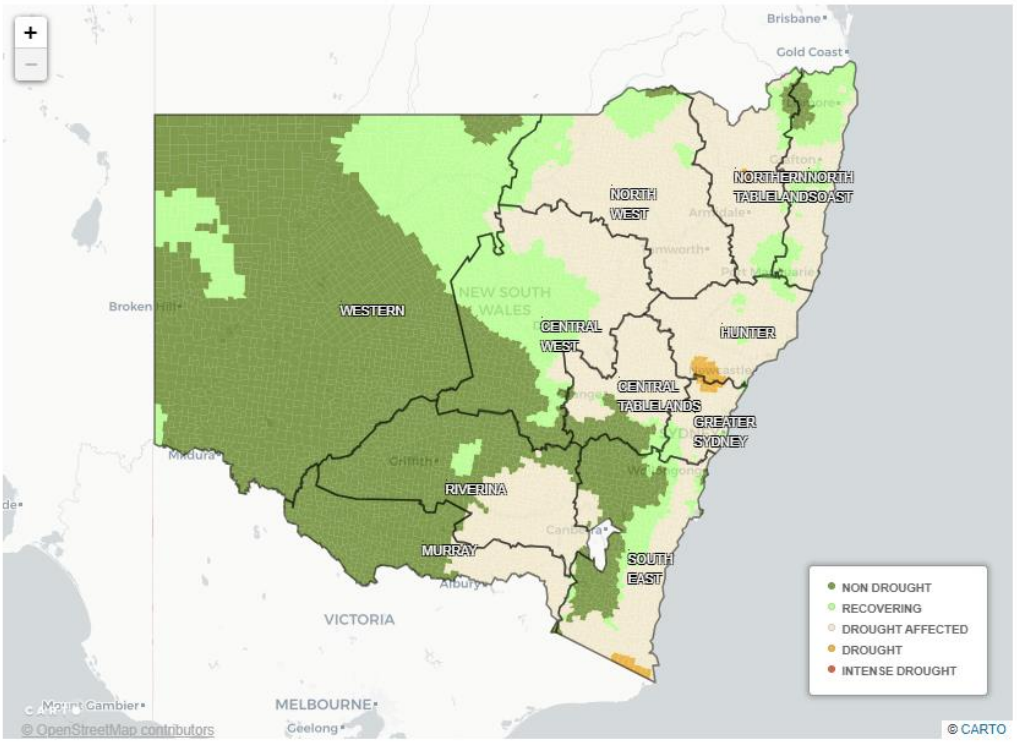
The Madden–Julian Oscillation (MJO) is currently weak (as of 8 June) and is mostly expected to remain weak for the coming fortnight. A weak MJO has little impact on Australian rainfall.



Issued 11 June 2024

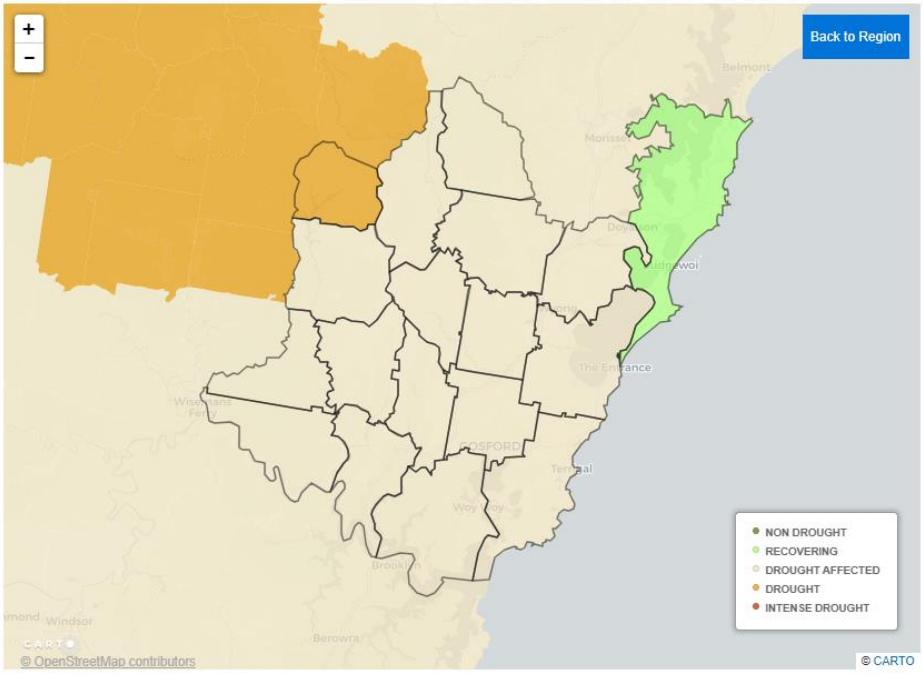
Next Issue: 11 June

10. Department of Primary Industry Combined Drought Indicator



Data current to 01/6/2024 (AEST)

Figure 8 Combined Drought Indicator map for NSW



Data current to 01/6/2024 (AEST)

Figure 9 Combined Drought Indicator map for the Central Coast

11. Forecast for Ourimbah Creek streamflow

The Bureau of Meteorology forecast stream flow for the Ourimbah Creek (211013) as shown in the Box Plot and table of statistics below along with historical references.

Figure 10 Forecast streamflow for Ourimbah Creek at upstream of weir (211013)

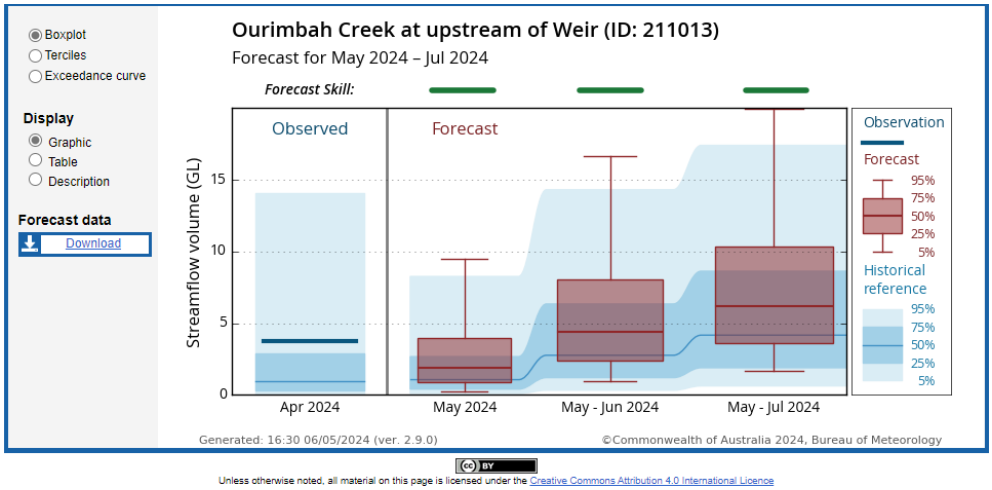


Table 5 Ourimbah Creek at upstream of weir streamflow Forecast Statistics

Forecast boxplots Ourimbah Creek at upstream of Weir (ID: 211013) May 2024 - July 2024								
	Streamflow forecast (GL)			Historical reference (GL)			Historical reference for observation (GL)	Recent observation (GL)
Percentile	May	May - Jun	May - Jul	May	May - Jun	May - Jul	Apr	Apr
5%	0.2	0.9	1.7	0.1	0.3	0.6	0.1	3.8
25%	0.9	2.4	3.6	0.4	1.2	1.9	0.3	3.8
50%	1.9	4.4	6.2	1.1	2.8	4.2	0.9	3.8
75%	4.0	8.1	10.4	2.7	6.3	8.6	2.9	3.8
95%	9.5	16.7	20.0	8.3	14.3	17.4	14.1	3.8

12. Water Demand

The Figure 11 shows the how daily water demand is impacted by daily maximum temperatures and daily rainfall. Temperature and rainfall parameters in Figure 11 are for Gosford AWS 61425-BOM and rainfall from Mardi Dam (MHL). It shows that customer demand is quite associated with max temperature variation. The daily rainfall also impacts the demand, but this relationship can be complex depending upon amount and frequency of rainfall. The graph also shows how temperature are trending low as expected for winter. The daily average over each month of autumn is also trending lower with fall in temperature. Other demand graphs show historical monthly and weekly demand for the Central Coast Council for longer periods.

Figure 11 Daily Water Demands Vs Temp /Rain

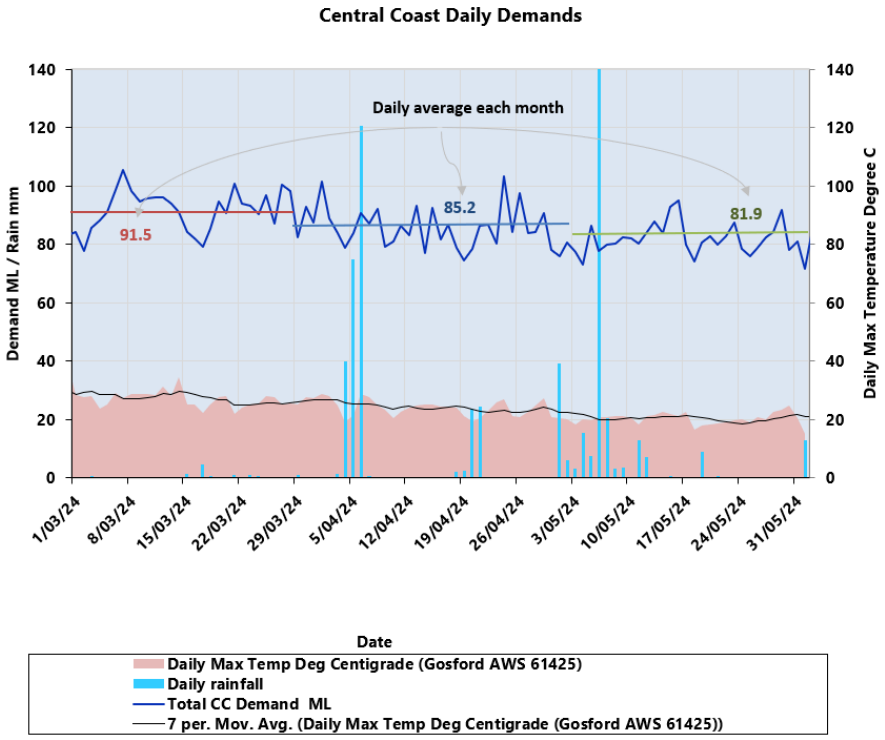


Figure 12 Monthly Water Demand for Central Coast Council

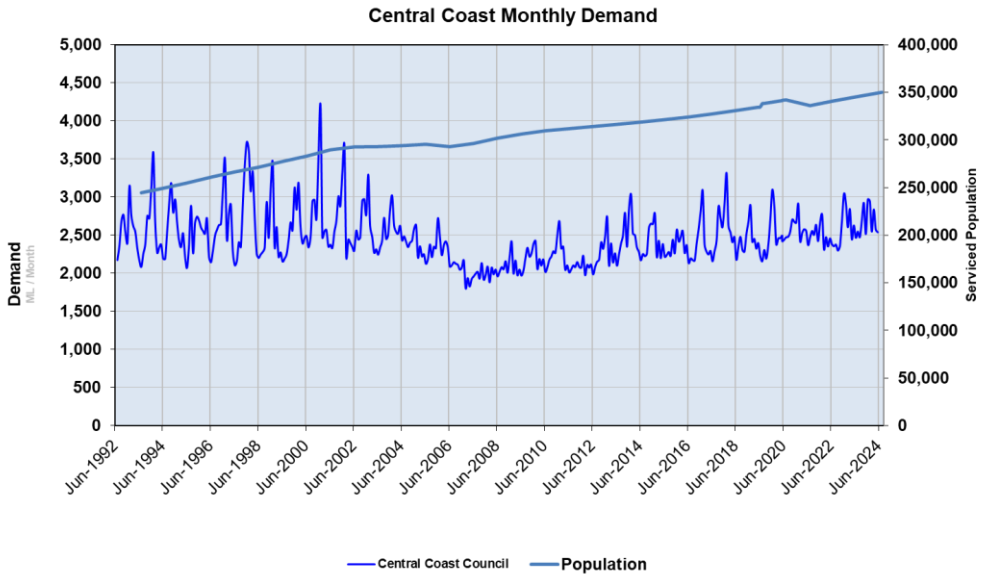


Figure 13 Weekly Water Demand for Central Coast Council

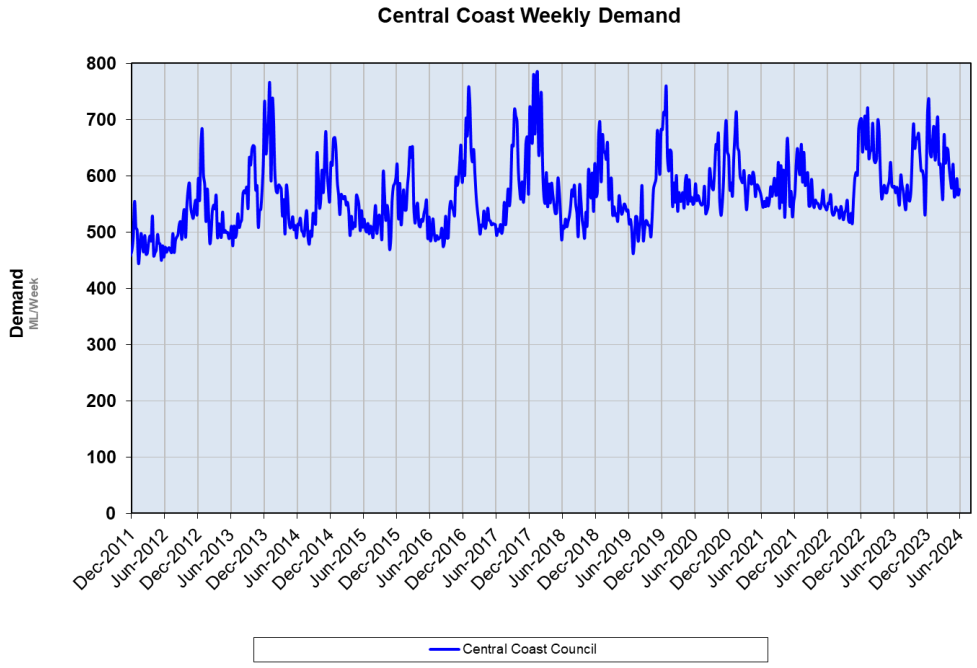
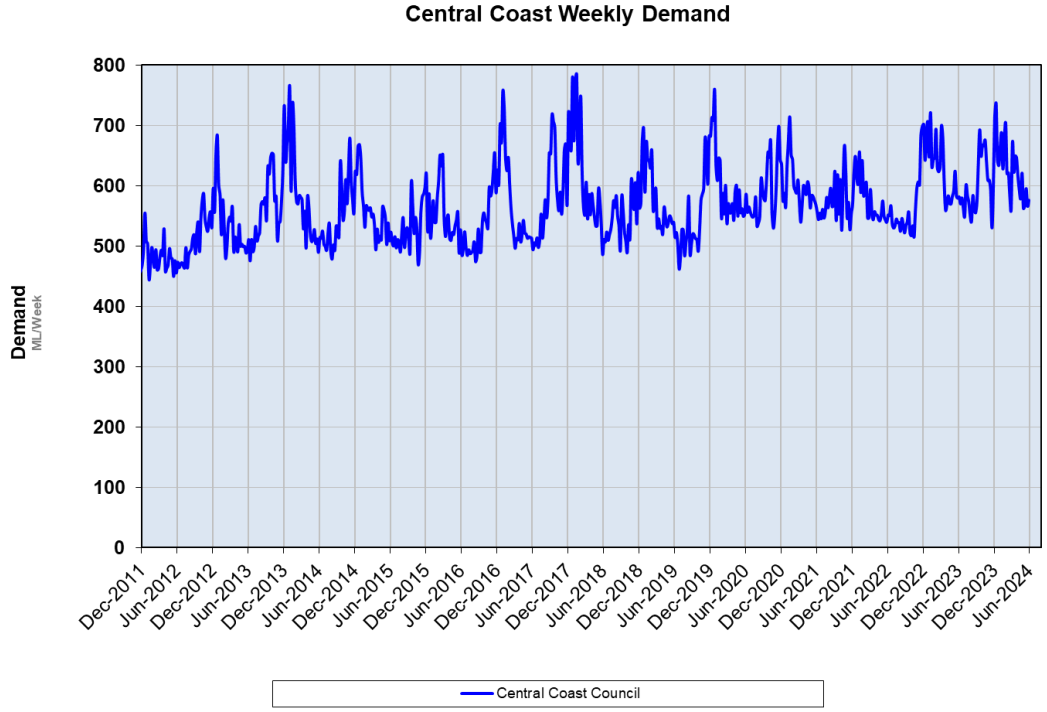


Figure 14 Weekly Water Demand (short term) for Central Coast Council



Link to Community Strategic Plan

Theme 4: Responsible

Goal H: Delivering essential infrastructure

R-H4: Plan for adequate and sustainable infrastructure to meet future demand for transport, energy, telecommunications and a secure supply of drinking water.

Risk Management

Current actions to mitigate risks associated water security are outlined in the 'Water Resilience Project Status Update 28 September 2023'.

Options

1. That the Committee note the report

Attachments

Nil

Item No: 2.3

Title: Revision of Water Restriction Triggers

Department: Assets, Infrastructure and Business

3 July 2024 Water Management Advisory Committee

Reference: F2019/01200 - D16219359

Author: Satpal Singh, Lead Engineer Water Resilience. Assets and Planning

Manager: Luke Drury, Section Manager. Assets and Projects

Executive: Jamie Loader, Director Water and Sewer

Recommendation

That the committee receives the report on Review of Water Restriction Triggers and provides advice

Report purpose

To seek the Committee's advice on the review of the current water restriction triggers from 50 % to 60% storage level to enhance long term water security, maintain reliability levels of service and put the customer at the centre of our business.

Executive Summary

Council has water restrictions from Level 1 to Level 5 with each rising level restrictions becoming more stringent. The current Level 1 water restriction are triggered when Mangrove Creek Dam (MCD) Storage falls to 50%, with higher levels of restrictions as the storage level keeps falling.

During the development of Central Coast Water Security Plan (CCWSP) the community supported water conservation to defer costly future augmentation and supported lower levels of water restrictions more often rather than higher levels of water restrictions.
The CCWSP identifies a desalination plant as part of the preferred portfolio to manage the long-term supply/demand balance, as well as a key drought response measure. The drought response desalination option is triggered when MCD storage levels approach 45%, triggering detailed design and construction commencement.

This potentially provides only a small window of up to 6 months between transitioning from the Level 1 restriction trigger to triggering drought response desalination. During the development of CCWSP, the 45% MCD storage level trigger was understood to provide a 36 month period before storage levels could deplete to a critical level of 15%. However, based on Hunter Water 's recent experience (with Belmont desalination plant) a program of

up to 48 months is considered a more reasonable time to deliver, which would also increase the trigger level to commence procurement and may drive a decision to deliver detail design earlier. Further work is being undertaken separately to understand this risk.

System modelling was undertaken to investigate how revising the water restriction trigger upward would impact the levels of service criteria (time in restrictions) and water security criteria as part of managing the supply/demand balance that considers both reliability and water security. The additional time buffer between the community commencing Level 1 Water Restrictions and Council triggering drought response desalination was also assessed.

The results show there are multiple benefits for raising the restriction trigger to 60%, while still meeting the reliability requirements of the water supply yield criteria described in the CCWSP.

Background

Central Coast Council (Council) has a Drought Management Plan (DMP) which forms part of the Council's long term water plan, the Central Coast Water Security Plan (CCWSP). In a typical water supply scheme, water restrictions are an accepted means of reducing water demand during periods of drought. Council's DMP has also included water restrictions for demand management. Various water utilities have different level of restrictions, triggered at different levels of water storage. The aim is to provide a scheme that manages the risk of reaching a critical storage level (water security), while not imposing water restrictions too frequently or for excessive durations (reliability).

Council has currently five levels of water restrictions as presented in Table 1 with various trigger levels to initiate and remove water restrictions.

Table A Water Restriction Triggers - Existing (Adopted 12/02/2020)

Restriction Level	Initiate Trigger (%) MCD Storage Falling	Remove Trigger (%) MCD Storage Rising
Level 1	50	55
Level 2	40	42
Level 3	35	37
Level 4	30	32
Level 5	25	27

The DMP also identifies the need to trigger the procurement of a drought response desalination plant to ensure the asset could be operational before a critical storage level of 15% was reached. This would be triggered as storages approach 45% and would also consider:

- the prevailing rate of depletion during the future drought

- the prevailing demand for drinking water and the effectiveness of water restrictions
- availability of key water supply assets
- current climate outlook

Drivers for Review of Current Water Restriction Triggers

The main drivers for the review of these triggers are:

- the community support for more frequent, lower-level water restrictions to avoid reaching critical storage levels
- the current short buffer between Level 1 restriction trigger at 50% and drought desalination trigger at 45% (approximately 6 months)
- the likely update of current assumption to commission desalination in 36 months (with desalination trigger at 45% until reaching 15%) to 48 months based on Hunter Water's experience with Belmont desalination project and investigations currently underway for the Toukley drought response desalination scheme.

These water restriction triggers were used in the development of the CCWSP when assessing the region's supply vs demand balance and developing the DMP. When Council engaged with the community during the CCWSP development in 2020-21, they supported imposing initial levels of water restrictions earlier during drought. The community supported more frequent, lower-level water restrictions to avoid if not at least to delay reaching critically low storage levels, with Water Conservation being the joint most supported option (equal with recycled water for non-drinking purposes). The water savings from going to restrictions earlier would enhance water security and provide additional time to adaptively implement the plan or defer the cost of additional augmentation as far as possible.

The current trigger to initiate water restrictions is also only approximately 5% higher than the trigger to commence procurement of the drought response desalination plant at Toukley. During a severe period of drought these two events could occur within only 6 months of each other. It is considered that the community would expect to make a sustained effort to reduce demand before a significant drought response investment was triggered (total cost likely exceeds $250 M).

Hunter Water Corporation is currently in the detail design and construction business case phase for the delivery of a 30ML/day Sea Water Desalination Plant at Belmont (same size as Toukley scheme). There are indications that the assumption of a 36-month period for detailed design and construction is a risk and a 48-month program would be a more reasonable period at current levels of understanding. Further work is being undertaken separately to understand the program to design and construct a future drought response desalination plant at Toukley.

The State Government is planning a review of water restrictions that may seek to harmonise the water restriction triggers for different parts of the state where appropriate. It is noted that Council's two major adjoining water utilities; Hunter Water and Sydney Water both have Level 1 restriction triggers at 60%. It was observed during the 2017-20 drought that Central Coast

residents adopted greater levels of water conservation when Hunter Water started messaging about water restrictions and saving water (common media across the regions). While the three supply schemes are all different, there is some merit in having similar water restriction triggers between the three organisations.

Each utility's water supply scheme has different characteristics which will govern its operation and ability to meet the reliability and water security levels of service. The aim of this review was to understand the impact of increasing the Level 1 restriction triggers on the levels of service and supply demand balance described within the CCWSP.

Modelled Scenarios

Council has used the updated simulation model WATHNET (joint model with Hunter Water Corporation), to assess the impact that changing the water restriction triggers has on the headworks system. The methodology and full results' summary are provided in Appendix A. A range of water restriction trigger levels were investigated as outlined in Table 2. A key consideration is that triggering water restrictions earlier will improve water security (less likely to reach critical storage level) but reduce reliability (restrictions triggered more often and last longer). There is a 'sweet spot' that can balance the two outcomes for a given level of demand.

Table B Water Restriction Trigger Scenario - Options

	Restriction Level	Option No.							
		1	1 alt.	2	2 alt.	3	3 alt.	4	4 alt.
Initiate Trigger (%) MCD Storage Falling	**Level 1**	53	53	55	55	57	57	60	60
	Level 2	43	48	45	50	47	52	50	55
	Level 3	38	43	40	45	42	47	45	50
	Level 4	33	38	35	40	37	42	40	45
	Level 5	28	33	30	35	32	37	35	40
Remove Trigger (%) MCD Storage Rising	**Level 1**	58	58	60	60	62	62	65	65
	Level 2	45	50	47	52	49	54	52	57
	Level 3	40	45	42	47	44	49	47	52
	Level 4	35	40	37	42	39	44	42	47
	Level 5	30	35	32	37	34	39	37	42

Analysis and Results

Adoption of 60% as the trigger level for restrictions provided approximately 12 months between commencing water restrictions and triggering drought response desalination during the design drought scenario (assuming a 45% desalination trigger based on the 36 month lead time described in the CCWSP). The 60% trigger level also coincided with the 5% time in restrictions level of service criteria becoming the limiting criteria in the yield calculation (as opposed to the water security criteria).

The optimised yield was achieved by adopting a trigger level of 57% for level 1 water restrictions but then triggering level 2 restrictions at 52% (5% earlier than the current restriction pattern). The results are presented in Table 3

Table C Water Restriction Trigger Scenario - Option Modelling Comparison

Option No.	Yield (GL/yr)	Time in Restrictions (%)	Level 1 Trigger (MCD %)	Drought Response Plan Trigger (MCD %)	Time between Triggers (months)*
Existing	34	2.3	50	46.4	2.1
1	34.1	2.8	53	46.1	3.9
1 alt.	34.4	3	53	45.4	4.4
2	34.3	3.4	55	45.8	7.8
2 alt.	34.9	3.8	55	45.5	8
3	34.4	4	57	45.6	9.1
3 alt.	35	4.4	57	45.6	9.3
4	34.5	5	60	45.3	11.6
4 alt.	34.6	5	60	45	12
*** Assumes demand is equal to yield, in reality demand may be lower (currently approx. 30 GL/year) therefore this may be an underestimation**					

Key insights include:

- The maximum yield recorded was for Option 3 alt. (highlighted)
- As the level 1 restrictions are increased so does the time in restrictions, which becomes the limiting criteria in Option 4 onwards (highlighted).
- As the level 1 restriction trigger is increased so does the time between it and the drought response plan triggering, where the greatest time between triggers being for Option 4 alt (highlighted).
- The alternative options generally lead to increased time in restrictions, increased system yield and increased time between triggers.

When selecting the preferred option, a balance between maximising the yield and maximising the time between triggering water restrictions and drought response desalination was sought. Feedback that the community supported the earlier introduction of level 1 restrictions was also considered.

Recommendation

In the light of the above analysis, it is found that there is the most benefit in pursuing the Water Restriction Triggers as per Option 4. The Water Advisory Management Committee's review and advice on this approach is sought.

Table D Water Restriction Triggers -Proposed

Restriction Level	Initiate Trigger (%) MCD Storage Falling	Remove Trigger (%) MCD Storage Rising
Level 1	60	65
Level 2	50	52
Level 3	45	47
Level 4	40	42
Level 5	35	37

Stakeholder Engagement

Water Resilience Committee endorsed the option 4 as above in its meeting held on 13/12/2023. The next steps were to discuss the approach at this WMAC meeting before preparing a subsequent report to Council that considers outcomes of the drought response desalination investigations and potential impacts to the associated triggers for design and construction.

Financial Considerations

Water sales forecasts are prepared with each IPART pricing submission which account for forecast reductions in sales due to forecast periods of water restrictions in the next price path. Variances between determined sales volumes and actual sales volumes within a price path are also managed through IPART's Demand Volatility Adjustment Mechanism (DVAM). The DVAM ensures that any over/under in water sales outside a set tolerance (currently 5%) are recovered/returned in the subsequent price path.

Link to Community Strategic Plan

Theme 4: Responsible

Goal H: Delivering essential infrastructure

R-H4: Plan for adequate and sustainable infrastructure to meet future demand for transport, energy, telecommunications and a secure supply of drinking water.

Risk Management

Council is seeking to achieve a balance between reliability and water security (as guided by scheme yield criteria) through the setting of water restriction trigger levels and drought response desalination triggers. The aim is to allow the community to reduce demand and

slow depletion during a future drought, prior to triggering major investments associated with drought response desalination.

There is currently a buffer of 30% (approximately 2.5 years of drawdown during a drought cycle) before the proposed increased water restriction triggers could be reached. This provides time to consider the proposal to increase water restriction triggers and better understand the impacts of a longer program to construct a drought response desalination scheme.

Options

1. The committee review the report and provide advice on the proposed adjustment to water restriction triggers.

Critical Dates or Timeframes

Council staff are awaiting progression of the drought response desalination investigations to better inform program and triggers for procurement, detail design and construction before preparing a report to Council to formalise a change in water restriction triggers.

Attachments

Nil.

Appendix A

WATHNET Modelling Details

The WATHNET headworks model was run using:

- 500 replicates of synthetic climate, where each replicate has the same climate statistics as historic climate. The 500 replicates are thinned from 1 million replicates and are comprised of 150 'worst' replicates and 350 normal replicates.
- 7 demand scenarios, 28, 29, 31.5, 34, 36.5, 39.5 and 40.2 GL/yr.
- Pumping efficiency of 90% from all weirs
- Mardi Dam to Mangrove Creek Dam (MCD) transfers ceasing when MCD reaches at 95% full
- Hunter Water to Central Coast transfers occurring until MCD reaches 95% full with maximum transfers from HW of 33 ML/day

A range of water restriction trigger options were investigated. Firstly, a set that used the current increment between levels, lifting as per a set of different level 1 triggers. An alternative set was also modelled, assessing the impact of reducing the increment between levels 1 and 2 (these scenarios are denoted "alt."). The different restriction scenarios investigated are shown in Table

Table A 1 Water Restriction Trigger Scenario - Options

	Restriction Level	Option No.							
		1	1 alt.	2	2 alt.	3	3 alt.	4	4 alt.
Initiate Trigger (%) MCD Storage Falling	**Level 1**	53	53	55	55	57	57	60	60
	Level 2	43	48	45	50	47	52	50	55
	Level 3	38	43	40	45	42	47	45	50
	Level 4	33	38	35	40	37	42	40	45
	Level 5	28	33	30	35	32	37	35	40
Remove Trigger (%) MCD Storage Rising	**Level 1**	58	58	60	60	62	62	65	65
	Level 2	45	50	47	52	49	54	52	57
	Level 3	40	45	42	47	44	49	47	52
	Level 4	35	40	37	42	39	44	42	47
	Level 5	30	35	32	37	34	39	37	42

The results of the modelling exercise are presented in Table 5, where the system yield, time in restrictions, trigger levels and time between triggers have been recorded for each option. Where the results indicate:

- The maximum yield recorded was for Option 3 alt. (highlighted)
- As the level 1 restrictions are increased so does the time in restrictions, which becomes the limiting criteria in Option 4 onwards (highlighted).
- As the level 1 restriction trigger is increased so does the time between it and the drought response plan triggering, where the greatest time between triggers being for Option 4 alt (highlighted).

- The alternative options generally lead to increased time in restrictions, increased system yield and increased time between triggers.

Table A 2 : Water Restriction Trigger Scenario - Option Modelling Comparison

Option No.	Yield (GL/yr)	Time in Restrictions (%)	Level 1 Trigger (MCD %)	Drought Response Plan Trigger (MCD %)	Time between Triggers (months)*
Existing	34	2.3	50	46.4	2.1
1	34.1	2.8	53	46.1	3.9
1 alt.	34.4	3	53	45.4	4.4
2	34.3	3.4	55	45.8	7.8
2 alt.	34.9	3.8	55	45.5	8
3	34.4	4	57	45.6	9.1
3 alt.	35	4.4	57	45.6	9.3
4	34.5	5	60	45.3	11.6
4 alt.	34.6	5	60	45	12
*** Assumes demand is equal to yield, in reality demand may be lower (currently approx. 30 GL/year) therefore this may be an underestimation**					

Further interrogation was then done to calculate time spent in each restriction level for each option assessed, these results are presented in **Error! Reference source not found.**. This a nalysis demonstrated that expectedly more time was spent in restrictions for all options compared to existing and in the alternative options compared to the original scenarios

Table A 3 Water Restriction Trigger Scenario - Time in Restrictions

Restriction Level	Time in Restrictions (%)								
	Option No.								
	Existing	1	1 alt.	2	2 alt.	3	3 alt.	4	4 alt.
No Restrictions	97.75	97.17	97.00	96.58	96.10	95.93	95.40	94.85	94.83
Level 1	1.46	1.77	1.66	2.07	2.09	2.47	2.51	3.15	2.90
Level 2	0.40	0.50	0.63	0.59	0.73	0.66	0.81	0.75	0.87
Level 3	0.22	0.30	0.38	0.40	0.53	0.47	0.60	0.56	0.61
Level 4	0.10	0.16	0.20	0.21	0.32	0.27	0.36	0.36	0.42
Level 5	0.06	0.10	0.13	0.15	0.23	0.21	0.32	0.32	0.36

When selecting the preferred option, several factors have been considered. Firstly, ensuring both enduring supply criteria are satisfied is non-negotiable. The remaining factors were balanced, between maximising the yield and maximising the time between triggers. Whilst the alternative scenarios achieve this and would seem to be preferred, it's understood the Central Coast community would be more opposed to triggering both level 1 and 2 restrictions more frequently as opposed to just level 1. It is for these reasons; Option 4 is recommended for adoption.

2.4 WATER AND SEWER 2026 – 2031 IPART PRICING SUBMISSION APPROACH

Krystie Bryant, Section Manager Asset Security and Reliance

Attachments

Nil.