2 Service levels

- The primary purpose of Central Coast Council's water business is to provide quality drinking water services as well as environmentally and socially responsible sewer services and stormwater drainage services in an economically sustainable manner
- Council operates within the legislative and compliance framework to deliver services according to Council's charter and contractual obligations by developing policies, procedures, systems and mechanisms
- Council ensures safe, reliable and affordable services and quantifies its service output levels by a series of measures associated with quality, customer complaints, main breaks and failures, service interruptions and management.
- Council undertakes extensive risk assessment and risk management measures to safeguard its assets and continuous services
- Council is a customer-centric service provider
- Council recognise water as a precious resource and continue to undertake water conservation measures.

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1 Introduction

Central Coast Council (Council) is unique in that its water, sewer and stormwater drainage services are dually legislated by the Water Management Act (WMA) and the Local Government Act (LGA). It is a Water Supply Authority that resides within a Council.

IPART is responsible for setting the maximum prices for monopoly services supplied by Council's water, sewerage and stormwater drainage services.

Governance for Council's water, sewer and stormwater drainage services is achieved by attaining "Best Practice", legislated by the Local Government Act (LGA) and reviewed by the Department of Primary Industry and Environment (DPIE).

1.1 Reporting service levels and performance

As a means of evaluating Council service level efficiency, this Technical Paper provides an overview of performance indicators in comparison to previous years and to other major utilities. It aims to focus on the highlights of Council's performance on water, sewer and stormwater drainage. As one of the major stakeholders, IPART is the recipient of the majority of Council's performance reports, most of which are publicly accessible.

National performance reports benchmark the pricing and service quality of Australian water utilities. Indicators include water resource supply and usage, financial operations, bills and pricing, assets, water quality compliance and customer performance. These reports support commitments under the National Water Initiative (NWI) and are published annually and prepared independently by the Bureau of Meteorology (BOM), State and Territory governments, and the Water Services Association of Australia (WSAA).

Council regularly reports and publishes its results as a regulated monopoly water, sewer and stormwater drainage service provider for the Central Coast local government area. These reports cover a wide range of performance indicators:

- Council provides data annually to the Department of Planning, Industry and Environment-Water (DPIE). The data is then forwarded to the Bureau of Meteorology for publishing in the National Performance Report (NPR) (Figure 1). The NPR data is useful for comparing Council's service levels and efficiency to other urban water utilities in Australia, and over time.
- The NSW Environment Protection Authority (EPA) receives an annual return that details performance for each of the Environment Protection Licences (EPLs). Council provides data to the National Pollutant Inventory (NPI) on the loads of specific pollutants to the environment discharged under its EPLs. The public can access the output data via the EPA's website.
- Council provides drinking water samples for independent analysis by NSW Health Forensic and Analytical Science Service (FASS). Water quality monitoring results are uploaded onto a NSW Health database regularly. Council is contacted for investigation if results fall outside Australian Drinking Water Guidelines values. Council publishes an annual summary of the Central Coast drinking water quality on its website. https://www.centralcoast.nsw.gov.au. An annual report sent to shareholders and delivered to the Parliament of New South Wales is also available on Council's website.

The National Performance Report (NPR)

The National Performance Report (NPR) Urban Water Utilities is produced annually by the Bureau of Meteorology. It summarises the performance of utilities and Councils (utilities) as well as bulk water authorities to deliver urban water services to more than 20 million Australians. In conjunction with the Council of Australian Governments' agreement on the National Water Initiative, the Bureau of Meteorology publishes the NPR using information provided by utilities through their state regulators.

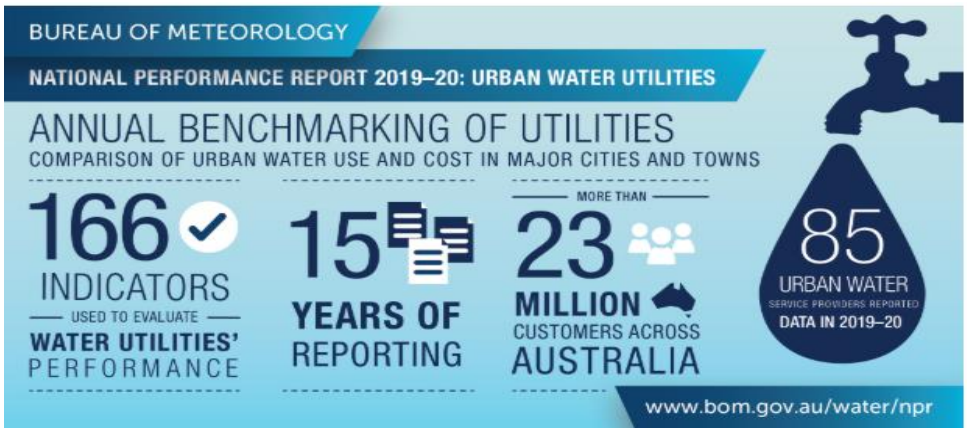

Figure 1: Bureau of Meteorology Annual Benchmarking of Water Utilities

The NPR is split into two parts:

- Part A contains commentary and analysis for main indicators
- Part B of the study includes data reported on by utilities and bulk water authorities

The 2019-2020 NPR is the most recent edition of the series. The NPR is a valuable tool that allows Council to compare its efficiency and service to that of other utilities.

Weather, temperature, water supply, utility size, geography, population density and regulatory environment all impact performance, making it difficult for any utility to excel in all NPR metrics. There may also be differences in reporting methodologies and indicator meanings among utilities.

1.2 Risk Management

Council has developed frameworks for identifying and prioritising operational and capital expenditure. Due to the diverse nature of infrastructure services delivered within Council, the water, sewer and stormwater drainage business has developed an additional tailored prioritisation and risk management framework. This works in harmony with the overarching corporate Enterprise Risk Management (ERM) Framework.

1.2.1 Overview of the Enterprise Risk Management Framework

Council's Corporate Risk Framework

The purpose of the ERM Framework is to assist staff in developing a portfolio of risks that threaten the organisation's ability to meet its objectives.

ERM creates a top-down, enterprise view of all the significant risks that can impact the organisation. Responsibility for setting the tone and leadership for ERM resides with the Executive Leadership Team (ELT). These roles have the enterprise view of the organisation and are ultimately responsible for understanding, managing and monitoring the most significant risks affecting Council.

The principles and practices of risk management, detailed in Council's ERM Framework, can be applied across Council Departments, Units and Sections, as well as to specific issues, functions, projects and activities.

Risk Appetite is defined as 'amount and type of risk that an organisation is willing to pursue or retain' (ISO Guide 73:2009 Risk Management Vocabulary). It is a comparison tool that assesses the level of an identified risk to determine if it is acceptable with current controls in place, or whether improved controls or escalation are necessary. The levels of risk appetite for *Council* are detailed in Table 1.

Table 1: Risk appetite of Central Coast Council for various categories

	Level of Risk Appetite			
Consequence Category	**Low**	**Medium**	**High**	**Extreme**
Work, Health & Safety/Public Safety	▪			
Natural Environment	▪			
Regulatory/Compliance	▪			
Reputation		▪		
Financial		▪		

The Risk Appetite Matrix forms part of the risk evaluation process. Once a risk is evaluated with controls in place, it must be assessed against the Risk Appetite Matrix to determine where the highest rated consequence falls. The risk is then evaluated in a series of steps:

- If the highest rated Consequence from the risk evaluation process (Table 1) is rated as Low in the Risk Appetite Matrix: The activity can only be undertaken if the overall risk is rated as Low.
- If the highest rated Consequence from the risk evaluation process is rated as Medium in the Risk Appetite Matrix: The activity can only be undertaken if the overall risk is rated as Medium or Low
- If the highest rated Consequence from the risk evaluation process is rated as High or Extreme in the Risk Appetite Matrix: The activity cannot be undertaken and must be reviewed to improve controls to a level within appetite and if this is not possible, escalated.

As part of the risk assessment process, the risk is assessed with current controls in place. Once this occurs, the outcome is analysed against the Level of Risk Appetite. If the highest rated consequence is outside the Level of Risk Appetite, the risk's controls need to be reviewed. If the risk cannot be lowered to an acceptable level, then it must be reported up the management line to the Director for a decision on whether the activity can continue despite being outside the accepted Level of Risk Appetite. The outcome is then reported through to the ELT as part of the risk reporting process. This process is shown in the Risk Appetite Flowchart (Figure 2).

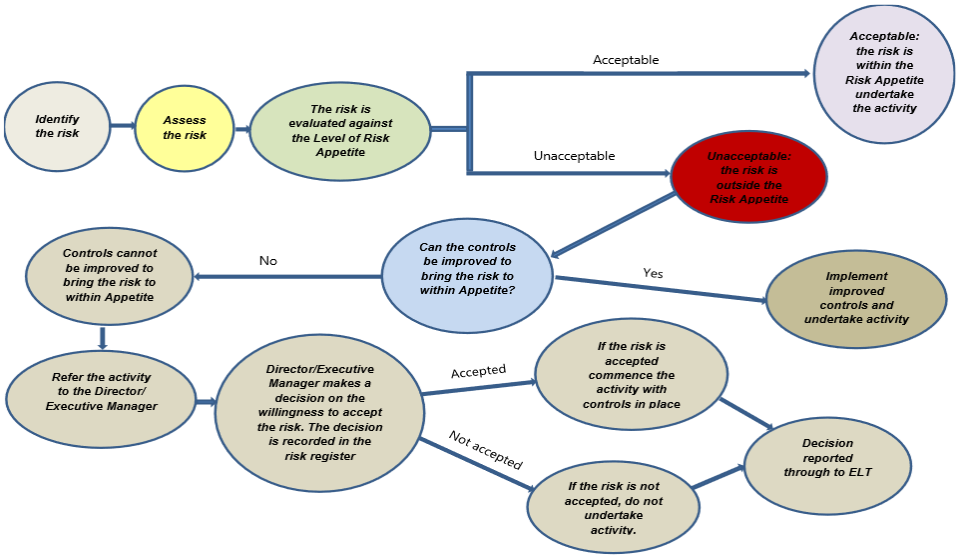

Figure 2: Risk appetite flowchart [Infrastructure Risk Management Framework and Guideline]

The water business's key focus areas are:

- Water leakage
- Compliance with environmental legislation
- Ability to manage biosolids
- Compliance with drinking water standards
- Sewage treatment plant (STP) capacity
- Critical asset failure
- Unsafe work behaviours
- Mitigating flood risks and managing stormwater drainage

Water, Sewer and Stormwater Drainage Gateway Approval and Business Risk Framework

The Water and Sewer Directorate and Infrastructure Services Directorate has adopted a gateway approval process to ensure efficient and prudent assessment of proposed capital works. The approval process offers flexibility to reprioritise capital projects as new risks arise.

As part of the approval process, the water business utilises a multi-criteria risk assessment methodology across all asset classes. The risk assessment matrix is also used to assist the decision-making process in relation to operational projects and activities. The risk assessment tool is based on business and customer risk if the project or program was not to proceed at the time of submission or proposal.

The assessment allows managers to review individual risks and the likelihood of those risks occurring, to inform a decision on when and if the project, program or activity should proceed. The key focus areas are:

- Legal/Regulatory
    - compliance
- Health and Safety
    - workforce health and safety
    - public health and safety
- Service Delivery
    - asset condition and criticality
    - levels of service
    - loss of service
    - property damage
- Community Impacts
    - internal property overflows or flooding
    - community or economic disruption
    - traffic disruption
- Environmental Damage
    - cultural or heritage impact
    - general damage
- Financial
    - repair and or clean-up costs
- Organisational
    - reputation

Council's combined asset management plan contains the methodology criticality and risk prioritisation for planned renewals and capacity upgrades to water, sewer and stormwater drainage assets. Table 2 shows Council's risk criticality prioritisation framework.

Water, sewer and stormwater drainage assets utilise a risk and criticality framework, consistent with ISO 31000 – Risk Management, aligning with Council's ERM Framework. This framework identifies the likelihood of failure (LoF) and consequence of failure (CoF) scores applied to individual water, sewer and stormwater drainage assets. The asset overall risk of failure score is determined as the product of LoF and CoF scores, as presented in Table 2.

Table 2: Central Coast Council risk and criticality prioritisation framework

Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic
Rare	Low - 1	Low - 3	Low - 6	Medium - 10	Medium - 15
Unlikely	Low - 2	Low - 5	Medium - 9	Medium - 14	High - 19
Possible	Low - 4	Medium - 8	Medium - 13	High - 18	High - 22
Likely	Medium - 7	Medium - 12	High - 17	High - 21	Extreme - 24
Almost Certain	Medium - 11	Medium - 16	High - 20	Extreme - 23	Extreme - 25

Risk Rating		
Extreme	Must not fail	Not tolerable; Reduce risk to medium or low. Immediate Corrective Action required
High	Should not fail	Unacceptable; Reduce to medium or low. Prioritised action required
Medium	Plan to repair	Undesirable; Consider opportunity to reduce to low, but otherwise tolerable. Planned action required
Low	Plan to repair	Tolerable; Manage by routine procedures

The LoF scores are driven by an estimation of remaining useful life that considers the asset age, material, location, function and other relevant operational attributes. The LoF score is adjusted by recorded asset failure records.

The CoF scores combine multiple data sources, and identify the financial, social and environmental consequences of asset failure. Consistently, the diameter and/or size and capacity of the assets are significant contributors to the CoF scores. Central Business District areas and road hierarchy are also influential, with the addition of railway, coastal areas and endangered vegetation layer interactions, particularly for sewerage assets.

These contributing factors are all triggers for the prudent and efficient renewals and replacement programs for Council's water, sewer and stormwater drainage assets. Through focussed assessments in accordance with best asset management practices and economies of scale, and creating and implementing these in programs, Council can deliver appropriate services to Central Coast residents.

1.2.2 Risk treatment plans and tolerance

Council's water, sewer and stormwater drainage business has developed a Risk Management Framework that links to the Corporate Risk Management Framework and is tailored to its asset classes. The CCC Corporate Risk Framework has been developed in accordance with the AS/NZS ISO 31000-2009 – Risk Management.

The risk assessments under this framework will enable the Water and Sewer Directorate and Infrastructure Services Directorate to:

- Quantify the relative risks of the assets to identify assets that may require corrective actions
- Prioritise assets for renewal within an asset class

- Prioritise projects across asset classes
- Report on asset risks at a corporate level.

1.2.3 Infrastructure Risk Management Process

Council has adopted an Infrastructure Risk Management Framework and Guideline process, consistent with the risk management process as detailed in AS/NZS ISO 31000-2009 – Risk Management. This ISO 31000-2009 risk management process is illustrated in Figure 3.

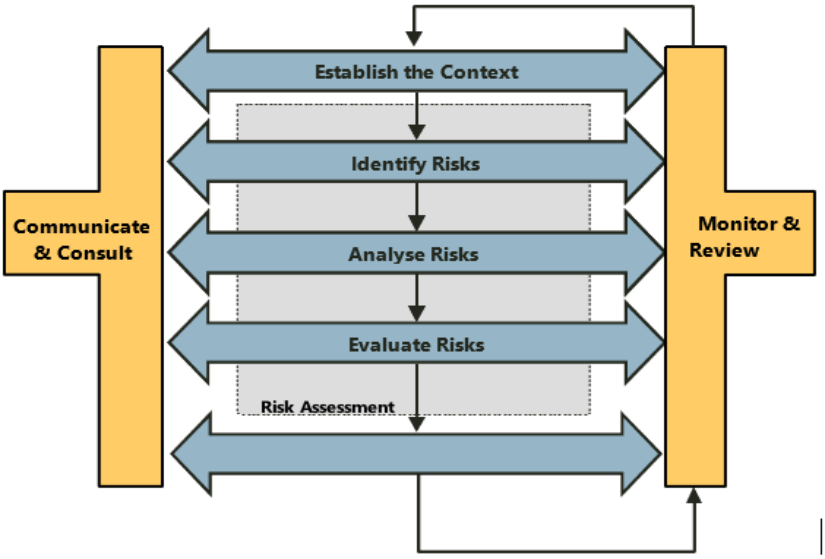

Figure 3: Risk Management Process (adapted from ISO 31000)

The basic parameters and steps for Council's Infrastructure Risk Management Framework process are:

- Scope: Identification and evaluation of asset risks and impacts
- Risk criteria: Criteria used for analysing asset risks
- Risk assessments: Linear risk assessments to be completed with GIS and discrete assets will be completed using an MS excel spreadsheet
- Identify risks: Ongoing task. Systematic identification of risks
- Analyse risk: Process where causes, consequences and the likelihood of these consequences are analysed, along with any existing control measures used to minimise risks
- Evaluate risks: Decision on risk treatment and priorities
- Treat risks: Identification of a range of options for treating risks
- Monitor and review: Ongoing task to ensure the risk management cycle is repeated regularly
- Communicate and consult: Dialogue with stakeholders in a consultative manner throughout all stages of the risk assessment.

The Infrastructure Risk Assessment Process (Figure 4) describes the 12 steps required to undertake an asset-based risk assessment.

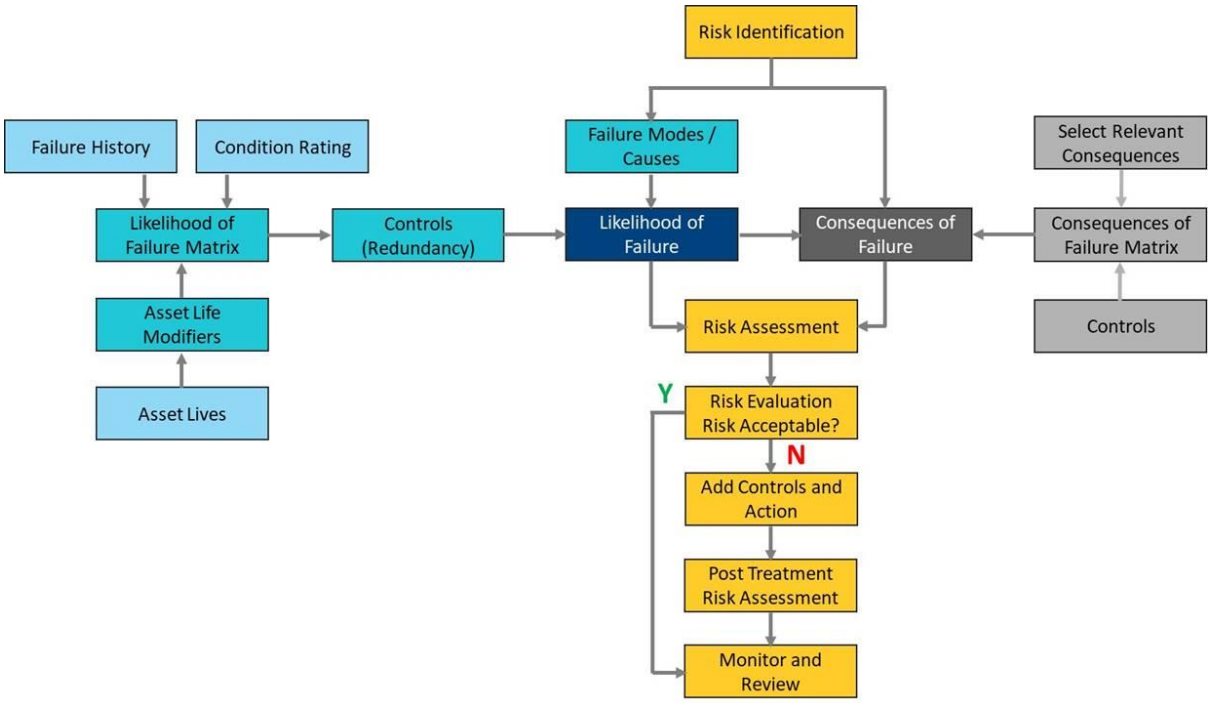

Figure 4: Infrastructure Risk Assessment Process

2 Customer experience

Council's Water and Sewer Directorate's 2018 Strategic Business Plan outlines its key focus as providing valuable services that strengthen and support the Central Coast community through four major areas, (a) energised and compassionate staff, (b) an agile and resilient business, (c) effective and efficient service delivery and (d) genuine partnership with the community.

Council's engagement focus is 'customer centric'. Council aims to fulfil its customer promise of delivering consistent, simple and effortless engagement, and continually aspire to improve by listening and responding to the needs of the community. Council values customer feedback across multiple channels to improve its services.

This section briefly highlights four customer surveys that qualitatively and quantitatively gauged the productivity of Council's community partnership:

- Central Coast Council Customer Experience Survey 2020
- Community Feedback for IPART Submission 2021
- IPART Water Utility Customer Satisfaction Survey 2020
- Water Services Association of Australia National Customer Perceptions Study 2019

Council's approach to customer interactions, customer participation and perception of its overall performance, is presented in our Technical Paper 1, 'Engaging with our Customers and Community'. This paper analyses the results of a study conducted with the following objectives:

- To determine customer satisfaction with current operations
- To identify customer preferences for future water and sewerage projects and services
- To gauge support for Council determining the drainage charge and issuing this charge through general rates
- To measure support for all Council residents contributing to the funding of drainage infrastructure
- To ascertain support levels for 'scarcity pricing' (altering water usage prices during times of drought)
- To ascertain support levels for 'price alignment' (introducing a common price for sewer services for all Council residents and businesses)

In 2020, Council added deliberative forums to its existing suite of community engagement tools. These have been well received and delivered informative results, representative of the Central Coast community.

Through analysis and consultation, Council has identified eight customer personas which depict Council's key audiences. Council conducted engagement to help shape its pricing submission, including a structured residential survey, website survey via our online *Your Voice Our Coast* consultation hub, and engagement specifically targeting our business customers. More than 1250 individual respondents have informed Council's understanding of community priorities for water and sewerage services.

Customers can contact the Council regarding their water, sewer and stormwater drainage services any time. Complaints, requests, service calls and emails are attended continuously to meet the customer needs, ensuring public health and environmental protection.

2.1 Monitoring, triage and customer request management

Water, sewer and stormwater drainage are essential services, making the Directorates that manage these services unique in provision and monitoring to fulfil community, regulatory and environmental obligations.

The Water Operations Centre (WOC) was established in 2019 and is the sole location where Central Coast water and sewer systems are monitored 24 hours a day, seven days a week. Council's after-hours hotline is used to respond to emergency stormwater drainage requests.

The objectives of the Water Operations Centre and after-hours hotline are to:

- Reduce business risks associated with operation of Council's water, sewer and stormwater drainage assets
- Reduce work health and safety risks
- Reduce environmental and public health risks and associated potential regulatory action
- Reduce risk of customer impacts e.g. through water discontinuity, sewer overflow events and property damage
- Improve the efficiency of water, sewer and stormwater drainage operations
- Reduce financial cost of operations and maintenance
- Proactive management of water, sewer and stormwater drainage networks
- Improve customer service including response times and outcomes for customers
- Improve regulatory reporting

The Water Operations Centre and after-hours hotline work to:

- Provide a greater level of support to Water and Sewer and Stormwater Drainage field staff
- Allow management of lone and fatigued workers, particularly after hours

- Provide a more consistent level of service to our customers across the Central Coast, particularly after hours
- Provide consistent monitoring, management, and response for infrastructure failures (civil, mechanical, electrical and telemetry)
- Manage scheduling and recording of reactive works and the utilisation of resources, particularly after hours
- Proactively manage water, sewer and stormwater drainage operations to reduce the number of incidents and response costs
- Respond rapidly to natural disasters and emergencies.

In addition to the establishment of the Water Operations Centre, IPS was introduced to water, sewer and stormwater drainage in 2020 with one-way integration to CX (Council's Customer Request Management System). This is contributing to a more stream-lined approach to resolving customer issues. The planned 2021 expansion to introduce field mobility with IPS Field Inspector will further streamline the process of resolution of customer requests.

Council is planning to further improve customer request management with the proposed implementation of a specialised call centre in the Water Operations Centre in 2022-23.

2.1.1 Telemetry

The water and the sewer networks have numerous alarms established on key infrastructure that are triggered in the event of asset failure. SCADA is used by the water and sewer system controllers to facilitate remote control of key equipment within the water and sewer network.

Remote telemetry is also integral to stormwater drainage service provision as a Flood Warning System, particularly in critical flood sensitive areas. The telemetry automatically records rainfall and water levels (including monitoring of declared dam stormwater basins) to signal early warning notifications and assist calibration of the floodplain model.

2.1.2 Triage

All water and sewer responsive work is identified by either the community or SCADA and allocated a priority by the system (Table 3).

Council is continually seeking to improve our triage process to ensure the delivery of value-for-money services to our customers.

Table 3: Prioritisation matrix for responsive water, sewer and drainage asset repairs

Priority	Water	Sewer	Drainage
Priority 1 **Emergency** Immediate attention required - same response business hours and after hours. Immediate safety issues, structural property damage, direct adverse environmental impacts.	Complete failure to maintain continuity or quality of supply to a group of customers or to a critical user at a critical time – same response business hours and after hours.	Complete failure/major failure to contain sewage within the sewer system or any problem affecting many users. Includes environmental impact away from source, sewage leaving the site / in water course / drainage system.	Complete failure to maintain flood protection or adequately control stormwater runoff, exposing a group of customers or a critical user at a critical time to a high risk / unsafe situation – same response business hours and after hours.
Priority 2 **Urgent** More prompt response during business hours, may defer after hours jobs to first thing next working day after triage.	Failure to maintain full service or quality of supply to a small group of customers.	Failure to contain sewage within the sewer system or any problem affecting several users, resulting in blockage of sewer branch line, wet weather surcharge.	Major failure to maintain flood protection or adequately control stormwater runoff with potential for a moderate or sustained impact on customers or the environment.
Priority 3 **Non-urgent/ routine**	A water leak that is not affecting supply – continuity of water quality or a non-urgent fault, with minimal effect on customers or the environment.	Non-urgent fault, outstanding restoration work, minimal customer or environmental impact.	Minor failure to maintain flood protection or adequately control stormwater runoff with minimal, localised or short duration impacts on customers or the environment.
Priority 4 **Low priority**	Visual impacts only or minor system performance loss.	Visual impacts only or minor system performance loss.	Visual impacts only or minor system performance loss.

2.2 Customer experience measurement

Council engage annually with its customers through its Customer Experience survey. This assists in identifying risks and opportunities, decision making and strengthens community and customer relationships. The 2020 Customer Experience survey aimed to:

- Identify the community's overall level of satisfaction with Council's performance
- Examine community perceptions of Council
- Determine satisfaction levels with current services and facilities within the community
- Identify methods of communication and engagement with us.

Customer experience data was collected in 2020 via a telephone survey to 606 households. Respondents rated their perceptions on a scale of 1 to 5, as presented in Technical Paper 1.

Council participated in the Water Services Association of Australia National Customer Perceptions Study 2019. This survey sampled 9,795 customers on behalf of 35 Australian and New Zealand water utilities. It was our first year of inclusion in the survey with results helping to establish a baseline for improving customer satisfaction across survey metrics. The WSAA survey focused on four key metrics from a sample of more than 400 Central Coast residents. Metrics were measured on a scale from '0' for strongly disagree to '10' for strongly agree. Council rankings for the four-key metrics were, 5.7 for Value for money, 5.7 for Community reputation, 5.7 for Trust and 6.2 for Overall satisfaction (detailed in Technical Paper 1).

IPART commissioned a water utility customer satisfaction survey in 2020-21 as a benchmarking exercise to establish performance indicator metrics for customer service. This survey included Central Coast Council, Hunter Water and Sydney Water. Table 4 compares customer perception of Council, Hunter Water and Barwon Water in Victoria.

Table 4: Extract from IPART water utility customer satisfaction survey results 2 Oct 2020

Customer satisfaction indicator	Hunter Water	Central Coast Council	Barwon Water
	(Average over last year)	(Average over three surveys in 2020-21)	(Average over last year)
How would you rate your water / waste water provider on delivering value for money?	**6.2**	**5.8**	6.7
How would you rate your trust for your water / waste water provider?	**6.8**	**6.0**	7.1
How would you rate your water / waste water provider's reputation in the community?	**6.8**	**5.6**	7.2
How would you rate your satisfaction with your water / waste water provider as a service provider overall?	**6.9**	**6.1**	7.3

Note: Hunter Water and Barwon Water's results are the average of results obtained from surveys undertaken in June 2020, August 2020, November 2020 and February 2021. Central Coast Council's results are the average of results from surveys undertaken in August 2020, November 2020 and February 2021.

A reputable research company, Woolcott Research, conducted a survey to quantify the customer expectations and perception of Council services (Community Feedback for IPART Submission, April 2021). A broad cross section of community members provided their view on future priorities for water and sewer services, performance satisfaction with various aspects (reliability of water supply, water quality, water pressure, sewage overflows, response time, drainage, etc.) and pricing.

2.2.1 Customer Charter and strategy

Our Customer Charter sets out our commitment to our customers. Several documents guide our interactions with customers and the community (Figure 5).

Council believe customer service is the responsibility of everyone within the organisation. Consequently, our Customer Charter is supported by our Customer Experience Strategy, placing customers at the centre of everything we do.

What is our Commitment?

- **We are approachable**
  - It is easy to interact with us – we are friendly, helpful and treat everyone with respect
- **We are responsive**
  - We respond quickly and provide updates along the way
- **We are clear and consistent**
  - We provide customers with easy access to information across multiple channels
- **We are collaborative and engaging**
  - We build customer relationships and seek our community's perspective
- **We are safe and responsible**
  - We consider community concerns and viewpoints when making decisions
- **We are invested**
  - We work in the best interests of the community.

What does success look like?

Delivering the commitments to our community made in the Customer Charter means:

- ✓ We answer calls to the Contact Centre within two minutes
- ✓ We respond to urgent issues within one business day
- ✓ We respond to non-urgent issues within five business days
- ✓ We respond to private social media messages within four hours
- ✓ We keep customers and colleagues updated
- ✓ We record our interactions in the Customer Information System (CX System)
- ✓ We track our performance, identify opportunities for improvement and celebrate success.

Figure 5: Central Coast Council Customer Charter

2.2.2 Water, sewer and stormwater drainage customer requests

In total, Council water, sewer and stormwater drainage businesses receive more than 15,000 to 20,000 calls per annum. Table 5 compares customer call numbers in 2018-19, 2019-20 and 2020-21. Most of these are by phone, however Council also has service centres at:

- Erina Library
- Gosford Service Centre
- Lake Haven Library
- Tuggerah Library
- Woy Woy Library
- Wyong Service Centre

Table 5: Total Water, Sewer and Stormwater drainage customer calls

Service	**2018-19**	**2019-20**	**2020-21** (see note)
Water	11832	15189	12837
Sewer	3329	4544	4628
Stormwater Drainage	252	183	182
Total	**15413**	**19916**	**17647**

Note: 2020-21 number is forecasted (March 2021 figure annualised)

Approximately 38% of all customer calls received relate to meter issues. In response, Council has a meter replacement program based on the age of the meter (greater than 9 years old). In 2019-20, Council replaced more than 20,000 meters and this is ongoing. Meters are also replaced as required when the meter reader identifies a fault.

2.2.3 Complaints

Council delivers a diverse range of services to our residents, community partners, visitors, government agencies and businesses. Despite its best efforts and intentions, sometimes customers are unhappy with the standard of service delivered. Council actively encourages all feedback from the community and is committed to managing responses in a timely, respectful and appropriate manner, ensuring value-add.

Community feedback gives Council valuable insights into service standards that meet customer's expectations, or fail to deliver, and where improvements are required.

Effective management of community feedback informs Council's commitment to continuous improvement. It also enhances Council's reputation and performance in building strong connections within the community.
Customer dissatisfaction with a service or product will often lead to complaints. As National Performance Report (2019-20) articulates, a complaint can be a written or verbal expression of dissatisfaction made about an action, a proposed action or a failure to act by the water utility, its employees or contractors.

Council's Complaints and Feedback Management Policy [CCC012, July 2019] incorporates the principles of the Australian / New Zealand Standard: Guidelines for Complaint Management in Organisations (AS/NZS 10002:2014) and the NSW Ombudsman's Complaint Management Framework (2015). Figure 6 shows Council's three-step complaint management approach.

Council's Complaints and Feedback Management Policy aims to:

- Enhance public confidence by creating an environment that encourages feedback and complaints
- Ensure complaints are managed in a timely and equitable manner
- Recognise the needs and expectations of the complainant
- Provide a transparent, accessible and effective complaints process
- Provide a system that can be used to analyse, evaluate and audit complaints and their outcomes to deliver quality improvements
- Supply a mechanism for reviewing the effectiveness and efficiency of our feedback and complaint management practices and outcomes.

Figure 6: Council's three-step complaint and feedback management (adapted from NSW Ombudsman, 2015)

The Water and Sewer Complaints Management Framework (CCC, 2018) has adopted a tiered approach (Figure 7) consistent with the corporate Complaints and Feedback Management Policy (CCC012). Complaints are categorised into three key areas shown in Table 6.

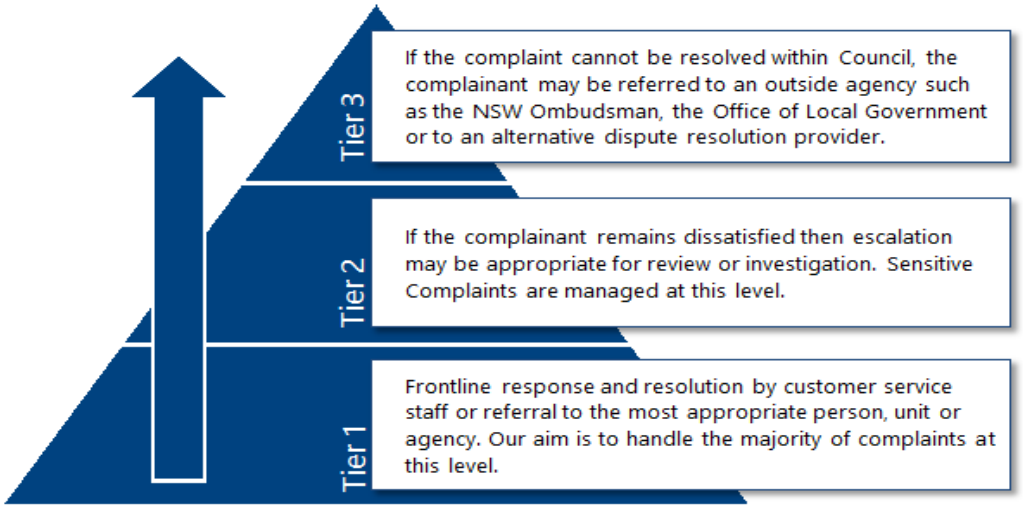

Figure 7: Three-tiered approach for complaints management (Draft Water and Sewer Complaints Management Framework, CCC 2018) (adapted from NSW Ombudsman)

Table 6: Tier 1, Tier 2 and Tier 3 complaint management approach

Framework: Tier 1 - Front line complaint handling where every attempt is made to resolve the issue at first point of contact.	
Tier 1 (a) Resolved – Customer Contact can resolve the complaint *Example: Customer rings regarding water quality (e.g. discoloured water). Customer Contact can answer this is due to a main break or high levels of manganese or contractor negligence. The question can be answered at first response and the customer is happy. No further action required.*	Tier 1 (b) Unresolved for Dispatch Action – Customer Contact can only explain to a point *Example: Customer has a taste or odour complaint related to drinking water, or there is a sewer odour that needs investigation, then the complaint is unresolved but requires an action. These types of complaints may require a standard response which will be handled by either a dispatch or technical officer.*
Framework: Tier 2 - Where resolution cannot be achieved within the first tier and a further review, the issue is escalated to a more senior officer and/or complaint review specialist for technical and procedural investigation.	
Tier 2: Complex – These complaints can be technical in nature, require investigation and in some cases a written response. *Examples: The calls may be associated with financial hardship, insurance claims, public health issues or pollution incidents. This complaint cannot be resolved at first response Tier 1 and may be immediately classified a Tier 2 complaint.*	
Framework: Tier 3 - The issue cannot be resolved within Council and leads to external referral.	
Tier 3: External Assessment required to resolve certain complaints. An outside agency (NSW Ombudsman, Office of Local Government, etc.) will be engaged.	

Some actual examples of Tier 1 and Tier 2 complaints are listed in Table 7.

Table 7: Some examples of Tier 1 and Tier 2 complaints

Tier 1(a) Resolved Complaints examples - I have discoloured water - There is no water - The boat ramp is closed due to a sewage pollution incident
Tier 1(b) Unresolved and Dispatch Complaints examples - I have discoloured water and my clothes are stained - I have run a tap and the water is brown/black - My water is discoloured - Taste - the water tastes like chemicals - There are weeds growing all around the pump station - There are workers making noise - The water smells - The water seems to have high chlorination - The pump station is noisy and smells - Odour e.g. Bateau Bay treatment plants is very smelly - Trade waste odour - I have low water pressure - I have no water and was not advised
Tier 2 Complex Customer Complaints examples - Illness (I have become ill from drinking the tap water) - Plumber reimbursements - Capital works (When will this work complete? It is ruining my business.) - Asset odour - Asset performance - Water quality (taste, colour, pressure) e.g. the quality of water is killing my fish/plants - Pollution - Reimbursement (sewerage has gone all over my garden furniture) - Why did you remove my BBQ when doing work on the pipes in my backyard? - Financial hardship - Water rebates

Complaints received by various water and other utilities can be benchmarked by normalising the data. The number of water and sewer complaints per 1,000 properties is reported to the National Performance Reporting (NPR). The total number of water and sewerage complaints per 1,000 properties is a measure of a utility's customer satisfaction and operational performance.

Figure 8 shows that the number of complaints received by Council in 2019-20 was significantly higher than previous years. Year 2019-20 was a challenging year with drought, bushfires, algae blooms, a major flood and the pandemic. Section 3 of this Technical Paper discusses several output measures for performance indicators including the number of customer complaints.

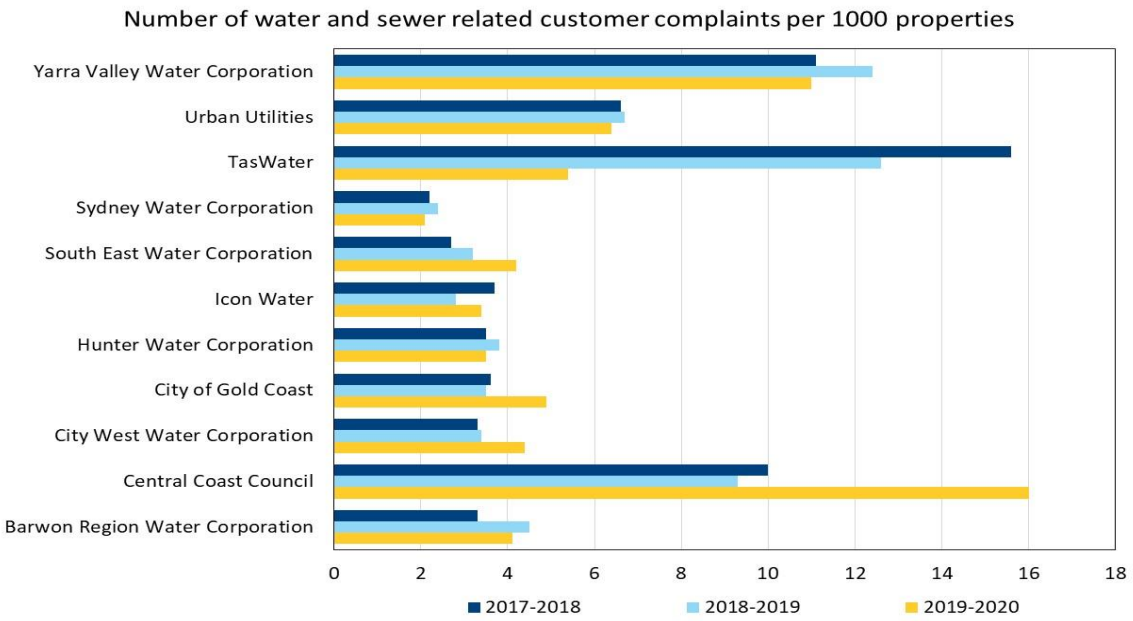

Figure 8: Total number of water and sewer customer complaints over three reporting years in major utilities (NPR 2019-2020)

2.2.4 Customer service in the field

Council's water and sewer field officers are at the front line in customer service delivery, undertaking a range of planned and unplanned work. Customer perceptions of the response time to fix service interruptions is a good measure of Council's customer service in the field.

In Council's 2021 customer survey (Community Feedback), the customer experience (measured by satisfaction) regarding Council's field staff implies a positive perception, especially in regard to unplanned interruptions. Figure 9 shows customer satisfaction with Council's response time to fix interruptions. While satisfaction levels varied between 38% (amongst the small to medium sized business respondents) and 46% (amongst the residential – structured respondents), it is important to note that there was little dissatisfaction expressed in relation to response times, which only varied between 3% (for the small to medium sized business respondents) and 8% (for the residential – Council Your Voice Our Coast (YVOC respondents).

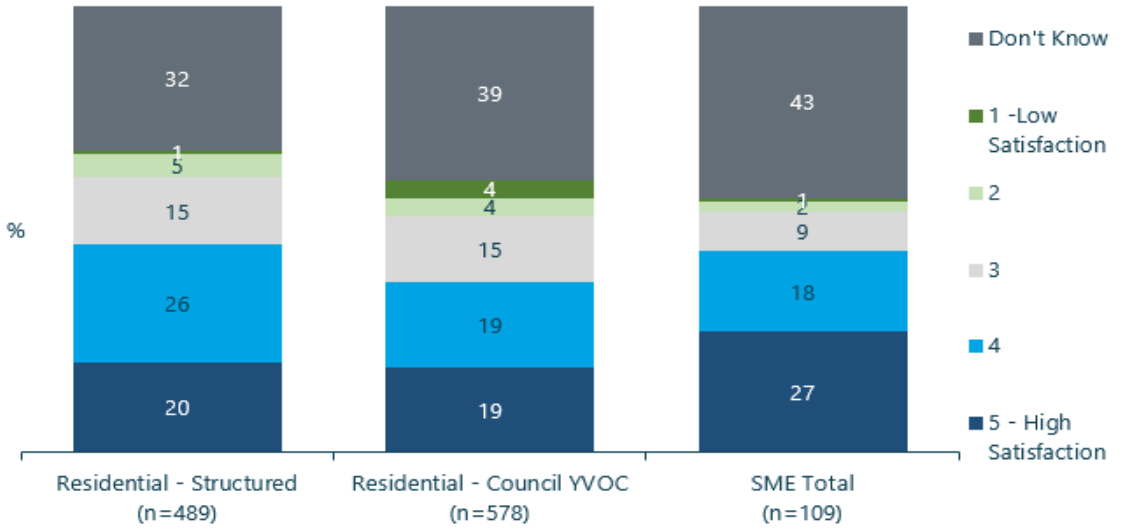

Figure 9: Satisfaction with Response time to fix interruptions (Community Feedback for IPART Submission April 2021)

2.2.4.1 Compliments in the field

Some examples of customer compliments received by Council are presented in Table 8.

Table 8: Some examples of customer compliments

- *"Thank you for outstanding work yesterday and staying in contact with the resident"*
- *"Thank you it all got sorted very quickly, much appreciated"*
- *"Crews were brilliant and professional and do not get the recognition they deserve"*
- *"I would like to thank Council for fixing our burst water pipe today. Today the contractors connected our water to the new mains, we are very grateful for this. However, after finishing their work we still did not have water, so we phoned the Council, they came out about 6pm. It turns out our pipes had rocks in them, when council came out the problem was bad, and more help required. The water main burst with water everywhere. Staff's attitude was fantastic.*
- *"I live in Umina and for years we have had issues with flooding but recently the council has undertaken works in the area to reduce the flooding and I would like to just say thank you. We have had a lot of rain over the past few days, and we have not had an issue with flood water. I know the Council gets hammered with complaints, but I thought it appropriate to say thank you. This result from the undertaken works has had a huge impact on our lives as before with heavy rain we couldn't get out of our yard without the risk of the car getting stuck in the flood water"*
- *"I had Mark and Brad come out from Council today to sort my problem with a leaking water meter and I was very impressed with their can-do attitude and their overall work ethic. Council should be glad to have employees of this standard. It's the first time in a long time I have been able to get something sorted without any hassles"*
- *"A customer called to express their appreciation in regard to the speed of service. The officer who attended was so pleasant"*

2.2.5 Planned Interruptions

Often there is a requirement to isolate supply to customers for a period of time, mainly due to laying new mains or repairing existing ones. Council understands this causes an inconvenience to customers and attempts to minimise disruption. Council considers its critical customers (hospital, doctors etc) and its major water users, and tries to avoid high usage times.

Council endeavours to keep its customers engaged in various ways, including:

- Letterbox drop to inform customers of shutdowns
- Placing Variable Message Boards in high visibility if more than 200 homes will be impacted and posts notifications on Facebook and Twitter.
- Updating Council's website with detailed interruption information

2.2.6 Unplanned interruptions

Unfortunately, unplanned interruptions occur from time to time and are normally associated with broken mains or services and pump station power loss. Unplanned disruption to service is categorised as a high priority, and every attempt is made to be on site within two hours (if deemed emergency) with a rectification time within five hours. Unplanned outages associated with a water main often require digging up ground surfaces and require remediation of the site to ensure safety. Council endeavours to perform full site restoration work within ten business days.

Figure 10 shows the unplanned outages of large utilities since 2017-18. Council had significantly less interruptions than well-resourced Hunter Water and Yarra Valley Water, and notably less interruptions than Sydney Water.

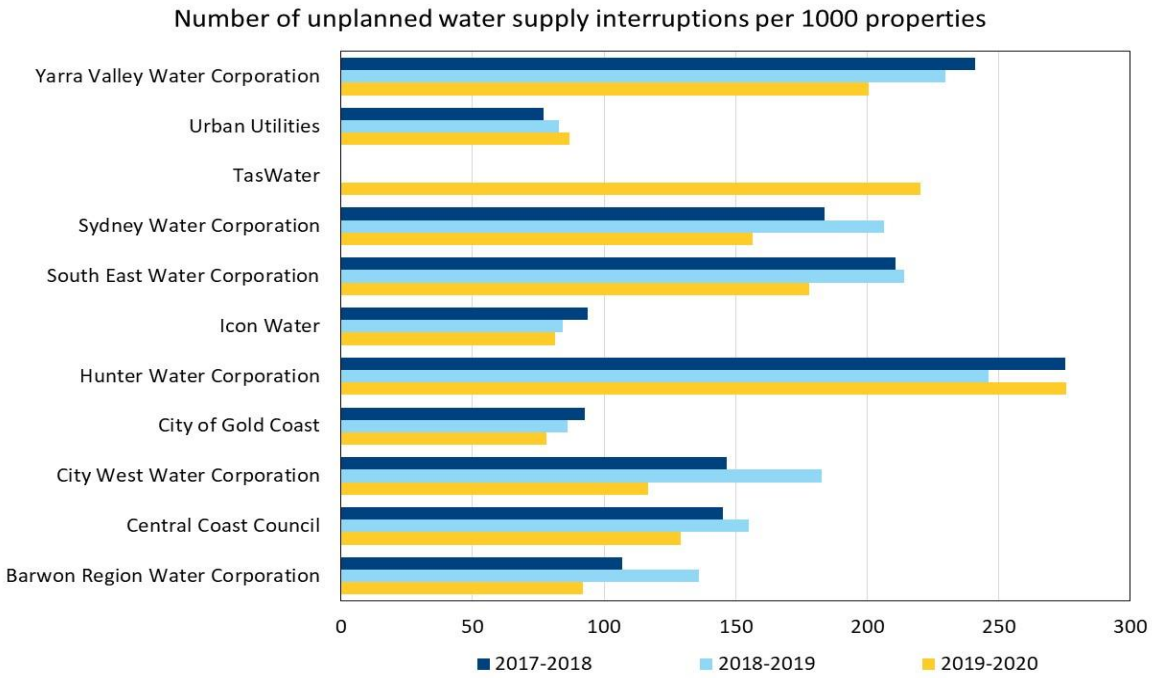

Figure 10: Total number of water supply interruptions over three reporting years in major utilities (NPR 2019-2020)

Council endeavours to keep its community informed regarding unplanned and planned outages using both social media and its website (Figure 11 and Figure 12). Council's website in the preceding twelve months has had 21,250 views, as well as 50,547 Facebook followers.

Water service interruptions

For current updates on water service interruptions, please monitor the **Central Coast Council Facebook page.**

Unplanned service interruptions

Suburb	Date	Time	Issue Type	Details	Properties affected	Notes
KILLCARE	24/05/2021	1:45pm - 10:00pm	Water Outage	Water Main Break	Beach Rd	Crew on site

Planned service interruptions

Suburb	Date	Time	Issue Type	Details	Properties affected	Notes
TUGGERAH	Tuesday 20/04/2021 until 20/06/2021	Two Months	Operational Change Reservoir			• Residents may notice an increase in water pressure, discoloured water. This is normal for this type of process and Council assures residents that their water will remain safe to drink
MARDI	Tuesday 20/04/2021 until 20/06/2021	Two Months	Operational Change Reservoir			• Residents may notice an increase in water pressure, discoloured water. This is normal for this type of process and Council assures residents that their water will remain safe to

Figure 11: Community notification of unplanned water service interruptions

Figure 12: Community notification of water outage

2.2.7 Customer billing

Council's water billing is performed quarterly in a simple format. Council also presents average daily usage so customers can compare their water consumption.

Council offers customers eNotices for those who prefer electronic billing, as well as hardcopy. Customer payment options include:

- Direct Debit
- Online
- Telephone
- BPAY
- Centrepay
- Post
- In Person

Pensioner rebates

Council provides eligible pensioners with rebates on their water account. If eligible pensioners are joint property owners with non-eligible people, a proportionate rebate is provided, or if their eligibility changes during the year. Up to $43.75 per quarter is applied to their account, to a maximum annual rebate of $175 each year.

Hardship assistance

Customers experiencing difficulty paying their water account on time receive hardship assistance and a personalised payment plan. Customers are considered for hardship assistance if the property incurring the rate is:

- The principal place of residence (home) or
- The principal place of residence of your dependent who is also suffering genuine financial hardship or
- Owned by an aged pensioner and is vacant whilst the ratepayer is in short-term care

Depending on needs, Council can provide customers with:

- Payment options, including help to set up weekly, fortnightly or monthly direct debits
- Personal payment plans to help pay off overdue rates at the same time as addressing future instalments in one easy plan
- Access to Centrelink's Centrepay facilities
- Referral to financial counselling services
- Advice on how to manage water usage to save money

2.2.8 Online services

Council's online services offer the community remote access to:

- Payments - the unregistered payment portal allows customers to make payments for a range of items without needing to login or create an account. This includes payments for applications, licences, rates, trade waste and ancillary services.
- Property certificate application – this includes sewer diagrams, special meter reading, sewer connection plan and long section
- Property application portal – Examples of certificates are water service application and Water Management Act application
- The customer service portal - to report an issue, make a request or provide feedback
- Online applications for Low Impact Stormwater Drainage assessments – allows customers to apply for a Low Impact Stormwater Drainage rate
- Capital works – allows customers to review the annual capital works program via an interactive website map which includes project details, budgets, planned commencement dates and monthly progress updates.

2.2.9 Developer experience

As a condition of development consent, the consent authority (Council) requires that satisfactory arrangements are made for the provision of water and sewer services to the new development, which may include payment of water and/or sewer developer charges. To identify the appropriate arrangements, the developer must submit an application for a Section 307 Compliance Certificate under Section 305 of the Water Management Act 2000.

Upon receiving the application, Water Assessment Team staff will investigate the impact of the proposed development on the system, determine required investigations and/or works by the developer and the relevant fees payable including Water Supply and Sewerage Developer Charges. As the Water Supply Authority, Council will issue a Section 306 requirements letter outlining the charges and/or works that the developer must pay and/or construct for the development. When all contributions/fees are paid and the works are completed and passed by Council, the Section 307 certificate of compliance will be issued. Council implements Water Supply and Sewerage developer charges as described within its two Development Servicing Plans (DSPs). Currently Council has two DSPs covering the two former Council Local Government Areas that outline the approach to Developer Charges. Council has also prepared a Works in Kind Policy and Guideline to improve the governance associated with Developer Contributed Assets, not Assets Free of Charge (AFOC).

2.2.10 Scoping to improve customer experience

Our ambition is to support all staff to be accountable for superior customer service, ensuring all experiences and interactions with Council are positive (Council's Customer Experience: High Level Plan and Roadmap to Change). Council's customer promises were endorsed and supported by its Leadership Team when Council was formed. With each customer interaction and Council touchpoint, Council will deliver on its customer promise of consistency, simple and easy communication with customers and aspiring to improve through listening and responding to the needs of the community. During the 2022 IPART price determination period, Council will scope a process for improved customer engagement.

3 Safe and reliable services

Council has outlined its responsibilities to provide consumers with dependable water, sewer and stormwater drainage systems. Our objective for water and sewer is to support ecologically sustainable development and to meet community needs through the provision and maintenance of effective services. These responsibilities include provision of high-quality water supply complying with drinking water guidelines, transport and treatment of sewage for disposal to meet the Council's legislative and regulatory requirements, service delivery, problem resolution and minimum system efficiency requirements for water pressure, water continuity, sewer overflows and stormwater drainage services.

Providing dependable services necessitates significant ongoing operating and capital expenditures. As a responsible operator, Council must manage operational expenditure and capital expenditure to ensure bill affordability and meet regulatory requirements at the lowest possible lifecycle cost. Weather, asset condition, asset configuration and operating practises are all factors that affect service reliability. Council uses specific indicators and associated metrics to benchmark our service level for customer service, operational and regulatory purposes:

- Water pressure
- Water main breaks and water continuity
- Water quality and compliance
- Sewer overflows (storm events & other)
- Sewer odour complaints
- Sewer main breaks and chokes
- Compliance with EPL loads and concentrations of certain constituents

Our assets and activities also have the potential to endanger the public and our employees' safety. Appropriate controls must be in place to handle these safety risks to a manageable level. SCADA monitor and manage all operations in our catchments, dams, and network assets 24 hours a day, seven days a week.

In the 2019 IPART determination, IPART accepted the output measures proposed by Atkins Cardno for water and sewerage services over four years. These stipulated metrics are presented in Table 10 and Table 11.

IPART accepted the additional milestones (a) three project milestones associated with Mangrove Creek Spillway Dam Upgrades, Mardi to Warnervale Trunk Main, and Charmhaven STP upgrades and (b) total customer minutes lost to unplanned supply interruptions and total customer minutes lost to planned supply interruptions (Table 12). IPART introduced one

other output measure relating to the Council's low-impact assessment process for stormwater charges (Table 12).

Table 9: Water Output Measures for Council's 2019 IPART (Table B.1: IPART 2019)

Output or activity measure	Current target	Target for 2020	Target for 2021	Target for 2022	Target for 2023
1. Water quality complaints per 1,000 properties	9.9	9	8	8	7
2. Average frequency of unplanned interruptions per 1,000 properties	151.8	115	115	115	115
3. Water main breaks per 100km of main	23.7	16	16	16	14
4. Compliance with Australian Drinking Water Guidelines – microbial guideline values (%)[a]	100	100	100	100	100
5. Compliance with Australian Drinking Water Guidelines – chemical guideline values (%)[a]	100	100	100	100	100

[a] 100% in measures 4 and 5 means fully compliant with corresponding values in Australian Drinking Water Guidelines.

Note: We have presented the full four years of output measures recommended by Atkins Cardno. However, we will review the Council's output measures as part of our next price review. In the event that our next price review is deferred, these output measures will continue to apply.

Source: Atkins Cardno, *Central Coast Council Expenditure Review*, March 2019, Table 6-1.

Table 10: Sewerage output measures for the Council's 2019 IPART determination (Table B.2: IPART (2019)

Output or activity measure	Current target	Target for 2020	Target for 2021	Target for 2022	Target for 2023
1. Wastewater overflows per 100 km of main	32.6	32	30	28	26
2. Wastewater overflows reported to the environmental regulator, per 100km of main	1.6	1.6	1.5	1.4	1.3
3. Wastewater odour complaints per 1,000 properties	1.9	1.7	1.7	1.5	1.3
4. Wastewater main breaks and chokes per 100km of main	35.6	35.6	34	32	30
5. Compliance with EPL concentration, load limits.	N/A	Yes	Yes	Yes	Yes

Note: We have presented the full four years of output measures recommended by Atkins Cardno. However, we will review the Council's output measures as part of our next price review. In the event that our next price review is deferred, these output measures will continue to apply.

Source: Atkins Cardno, *Central Coast Council Expenditure Review*, March 2019, Table 6-2.

Table 11: Additional output measures for the Council's 2019 IPART determination (Table B.3: IPART (2019)

Output measure	Output
Water	
Project milestone: Mangrove Creek Spillway Dam Upgrades	Mangrove Creek Spillway Dam Upgrade project to be 100% complete by 30 June 2024
Project milestone: Mardi to Warnervale Trunk Main	Mardi to Warnervale Trunk Main project to be >75% complete by 30 June 2024
Customer Service: Supply Interruptions	1. Total customer minutes lost to unplanned supply interruptions. 2. Total customer minutes lost to planned supply interruptions. *Council reports data to NPR (frequency and average duration of unplanned interruptions) which can be used as an input to this measure, but it is not available for the current year.*
Sewerage	
Project milestone: Charmhaven STP	Charmhaven STP upgrades to be 100% complete by 30 June 2024

Table 12: Stormwater drainage application output measures for the Council's 2019 IPART determination (Table B.4: IPART (2019)

Output measure	Output
Low-impact application process	Percentage of low-impact applications completed within 15 working days of receiving a complete application.

3.1 Water pressure

Council endeavours to supply water at a minimum of 12 metres of pressure for normal domestic purposes, excluding water for firefighting. Water supply pressure varies due to increased demand, main breaks, operational changes and water usage within the property. Accordingly, Council does not guarantee water pressure will be constant. Council monitors the water network using SCADA and other systems to promptly and effectively detect, respond to and rectify low pressure events.

Factors that can affect sufficient water pressure to a property are listed in Table 13.

Table 13: Primary factors affecting appropriate water pressure at delivery points

System demand	Increased water demand can lower water pressure. The demand can be dictated by seasonal temperature changes or large users (eg. power stations).
Location and topography	Water pressure is likely to be lower in properties that are elevated above or far away from water pump stations and storage reservoirs, or at the water network's extremes.
Population growth	Population growth raises water demand, resulting in lower water pressure.
Asset conditions / operations	Pipe restrictions from closed valves in the network and unlined fittings or valves that may have corroded. These decrease the hydraulic capacity of the watermain creating low water pressure.

Council strives to ensure water pressure by implementing a staged capital works plan in response to growth within the distribution network. These new assets are either constructed by Council (Mardi to Warnervale Pipeline) or by Developers under Works in Kind Agreements.

Council's Water and Sewer Directorate undertakes several tasks including:

- Responding to customer enquiries and complaints about low water pressure by analysing SCADA data, the water hydraulic model and undertaking field tests to investigate and determine an appropriate response to the issue
- Working with customers to identify the reason for low pressure including issues related to the customers' internal plumbing

- Installing pressure loggers across the network to monitor pressure in areas where there may be recurrent low-pressure events
- Optimising pressure across the network through the configuration and operation of network infrastructure. Examples include:
    - utilising pump station controls to adjust water delivery pressure
    - opening and closing valves to rezone supply areas, thus modifying water flow and pressure in localised areas of the network
    - increasing reservoir water levels to prepare for times of high demand
- Undertaking hydraulic modelling to better understand system performance and identify opportunities for improving pressure across the network.

3.2 Water quality complaints and compliance

The Australian Drinking Water Guidelines (ADWG) (NHMRC 2011) provide a framework for the management of water supplies from the catchment to the tap and set health-related and aesthetic limits. There are broadly two groups of health-related aspects: microbiological and chemical/physical aspects.

Regular tests are performed at Council and independent National Association of Testing Authorities (NATA) registered laboratories to ensure our water is safe for human consumption and complies with the water quality guideline values provided in ADWG.

There are three IPART output measures with respect to treated water quality:

- Compliance with Australian Drinking Water Guidelines – microbial guideline values: 100%
- Compliance with Australian Drinking Water Guidelines – chemical guideline values: 100%
- Water quality complaints per 1,000 properties: 8 in 2021

Council's drinking water is subjected to regular monitoring and testing across the supply system. The regime is defined by NSW Health's Drinking Water Monitoring Program. During the 2019 IPART pricing determination period, the drinking water produced by Council maintained high standards of water quality.

Table 14 presents our water quality performance in 2019-20. For all chemical parameters, the 95th percentile results were compliant to ADWG. Over the last five years, the chemical parameters seldom exceeded the ADWG health guidelines. With respect to microbial parameters, the only exception to ADWG was a single detection of E. coli (1 mpn/100 mL).

Table 14: Water quality performance summary based on laboratory and field test results

PERFORMANCE SUMMARY

From 1 July 2019 to 30 June 2020, your water quality complied with the Australian Drinking Water Guidelines 2011.

WATER QUALITY TEST RESULTS

1 July 2019 to 30 June 2020

Microbiological Sampling and Analysis

Parameter	Guideline Value	Guideline basis	Result	Number of samples
E. coli	100% of test results contain no E. coli	Health	100% of test results contain no E. coli	840

Physical Sampling and Analysis

Parameter	Units of Measure	Guideline Value	Guideline Basis	Average Result	95th Percentile Result	Number of Samples
True Colour	HU	15	Aesthetic	1.2	4	29
Turbidity	NTU	5	Aesthetic	0.44	1.1	866
Total Dissolved Solids (TDS)	mg/L	600	Aesthetic	133	158	29
Total Hardness as CaCO3	mg/L	200	Aesthetic	57	69	29
Aluminium	mg/L	0.2	Aesthetic	0.05	0.10	29
Antimony	mg/L	0.003	Health	< 0.001	< 0.001	29
Arsenic	mg/L	0.01	Health	<0.001	0.005	29
Barium	mg/L	2	Health	0.016	0.030	29
Boron	mg/L	4	Health	< 0.1	< 0.1	29
Cadmium	mg/L	0.002	Health	< 0.0005	< 0.0005	29
Calcium	mg/L	-	-	15	22	29
Chloride	mg/L	250	Aesthetic	37	49	29
Chromium	mg/L	0.05	Health	<0.005	<0.005	29
Copper	mg/L	2 (1)	Health (Aesthetic)	0.070	0.24	29
Fluoride	mg/L	1.5	Health	0.39	0.99	29
Free Chlorine	mg/L	5	Health	1.38	1.89	839
Iodine	mg/L	0.5	Health	0.03	0.06	29
Iron	mg/L	0.3	Health	0.025	0.09	29
Lead	mg/L	0.01	Health	<0.002	0.002	29
Magnesium	mg/L	-	-	3.8	4.9	29
Manganese	mg/L	0.5 (0.1)	Health (Aesthetic)	0.017	0.056	29
Mercury	mg/L	0.001	Health	0.0003	0.0004	29
Molybdenum	mg/L	0.05	Health	<0.005	0.006	29
Nickel	mg/L	0.02	Health	<0.01	<0.01	29
Nitrate	mg/L	50	Health	1.3	2.0	29
Nitrite	mg/L	3	Health	<0.1	<0.1	29
pH		6.5 - 8.5	Aesthetic	7.71	7.5 - 8.0	867
Selenium	mg/L	0.01	Health	0.0024	0.0035	29
Silver	mg/L	0.1	Health	< 0.002	< 0.002	29
Sodium	mg/L	180	Health	32	53	29
Sulfate	mg/L	500 (250)	Health (Aesthetic)	36	64	29
Uranium	mg/L	0.017	Health	<0.005	<0.005	29
Zinc	mg/L	3	Health	0.031	0.070	29

HU = Hazen Units, NTU = Nephelometric Turbidity Units, mg/L = milligrams per litre (or parts per million), NA = not applicable.
'Australian Drinking Water Guidelines 2011. The Australian Drinking Water Guidelines 2011 recognise that occasionally throughout the year there may be health or aesthetic related test results above the Guideline values, and that these results are not necessarily an immediate threat to health. As such, the Guidelines do not require a 100 per cent result in all cases, with the exception of E.coli. Each test result above the guideline value for E. coli is investigated and actions taken where necessary to minimise the risk of a recurrence.

Figure 13 shows the results of the National Customer Perception Study conducted by Water Services Association Australia (WSAA) in 2019. WSAA assessed Council's customers and found 7.25 out of 10 expressed satisfaction with their water quality at home. In the same study, WSAA asked customers to provide reasons for not drinking their town water supply. More than half of the respondents of Council (Figure 14) customers cited taste of water and nearly quarter of the respondents marked their concern as potential health risks.

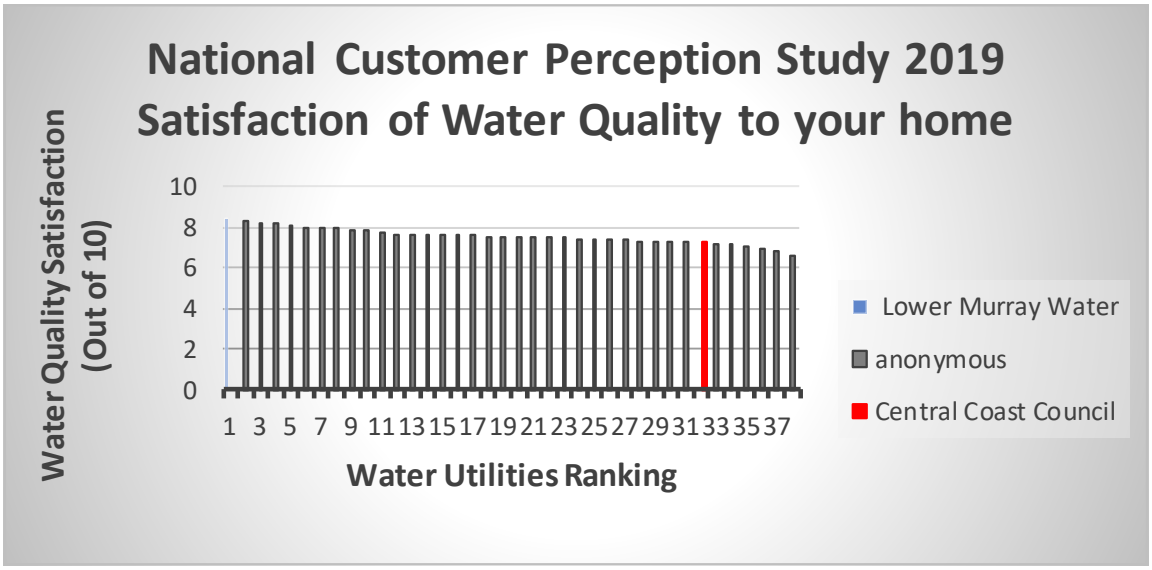

Figure 13: National Customer Perception Study 2019 Satisfaction of Water Quality to Your Home

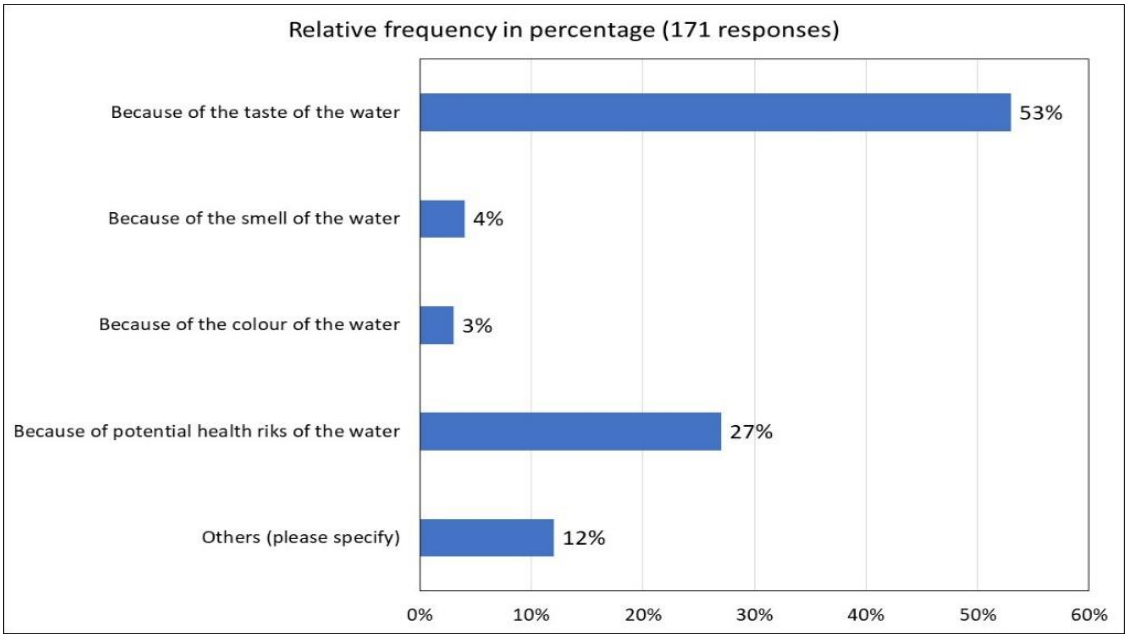

Figure 14: Customer reasons for not drinking Central Coast Council's water (WSAA National Customer Perception Study 2019)

Water quality complaints are presented in two ways in this section, (a) water quality complaints per 1000 properties and (b) total water quality complaints per 1000 properties. Figure 15 presents the reported water quality complaints every month and water quality complaints per 1,000 properties in the Central Coast LGA since July 2017. Following a compliant 2007 to 2019, complaints exceeded the output measure in 2020. Water quality complaints in 2021 marginally exceeded the output measure for 2021.

Figure 16 shows water quality complaints per 1000 properties and Figure 17 presents total number of water quality complaints for local water utilities. Council reported the highest number of total complaints among the water utilities in the National Performance Reporting report in 2019-20. In terms of number of complaints per 1000 properties, Council was ranked third after Clarence Valley Council and Goldenfields Council.

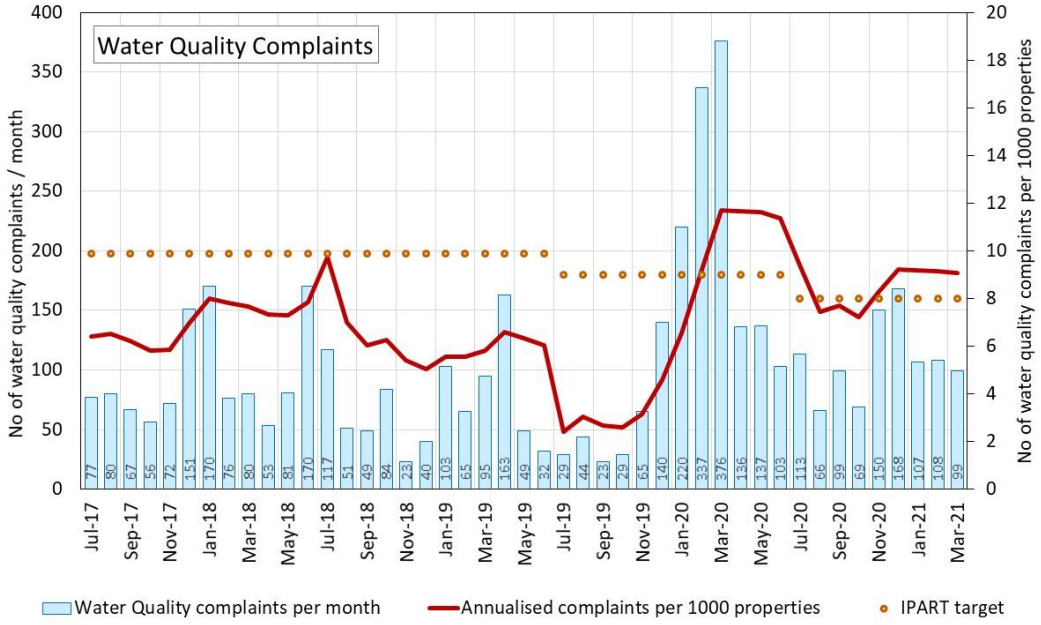

Figure 15: Water quality complaints in the Central Coast LGA since July 2017

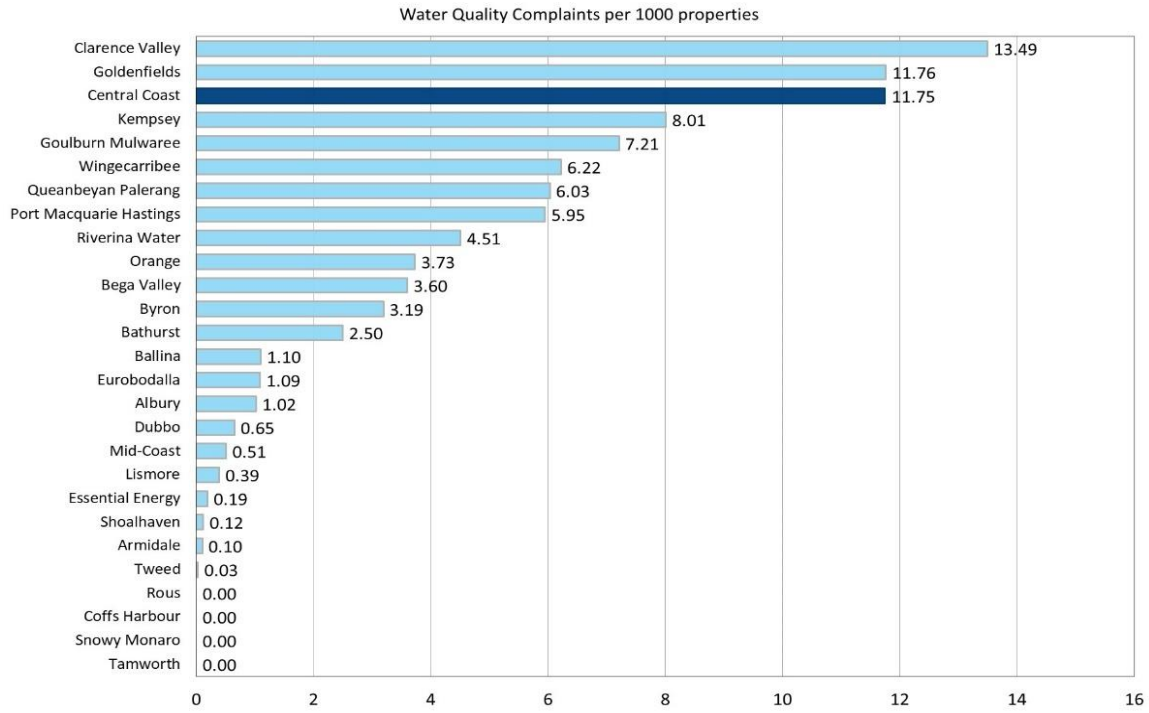

Figure 16: Water quality complaints per 1000 properties in NSW local water utilities (LWU Report 2019-2020)

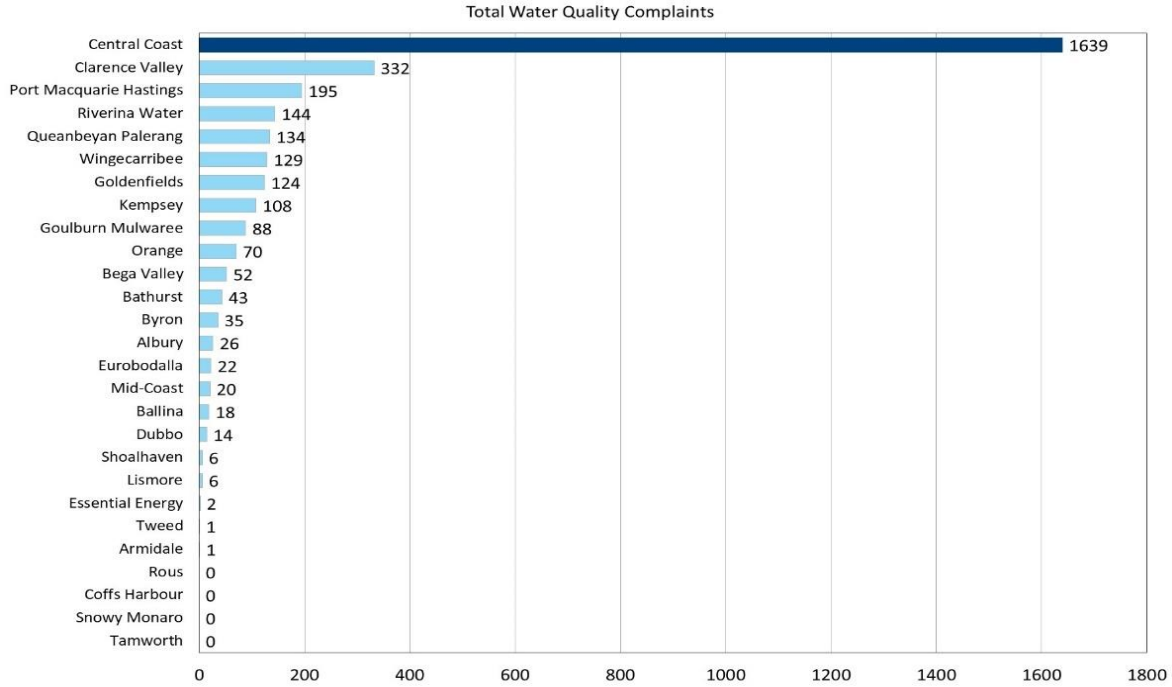

Figure 17: Total water quality complaints in NSW local water utilities (LWU Report 2019-2020)

3.2.1 Specific observations regarding water quality concerns

Council reviewed the relatively high level of water quality complaints and found that approximately 95% were due to discoloured water, often associated with taste and odour.

Discoloured Water

Prior to undertaking significant system changes in the water reticulation system, Council performs a risk assessment and takes any necessary action to prevent or mitigate discoloured water. Council notifies residents in advance of planned water supply works via hand delivered notices, advertisements and its website.

High concentration of manganese in the raw water source can contribute to discoloured water. The quality of the raw water supplied to dams is heavily influenced by rainfall. Increased raw water extractions are possible after rainfall events because stream levels are higher. This can cause substantial rises in turbidity, colour and dissolved organic carbon (DOC) in the raw water supplied to water treatment plants and storage tanks. Continuous improvement to treatment processes at Council's three water treatment plants needs to occur in response to changes in raw water quality. This will ensure customers continue to receive drinking water of appropriate quality.

Taste/Odour

The taste and odour of water can vary from tap to tap, due to naturally occurring minerals, water treatment processes, internal plumbing and personal preference. Council adds chlorine to the water supply to prevent harmful bacteria. A residual amount is required to be present in tap water, which may cause a slight chlorine taste or odour.

Council conducted several studies on the Central Coast's water supply system in response to regulatory requirements and community needs. This included a 'catchment to tap' risk assessment conducted in 2013-14 and a study of water quality variation across the distribution network in 2015-16. Findings led to the introduction of numerous organisational and monitoring schemes, water planning initiatives and capital works projects to continue to enhance water quality. An update to instrumentation across the network and changes in chlorine dosing controls are two of these initiatives. The decommissioning of several reservoirs and water pump stations has also resulted in operational efficiencies.

3.2.2 Council's approach to mitigate water quality concerns

Chemical and microbial water quality can be controlled by maintaining healthy catchments and waterways, proper treatment and well-maintained reticulation system. Discoloured water

complaints can be reduced by regular monitoring and maintenance, including cleaning of mains and regular flushing. Council seeks capital and operational funds for hotspot management, systematic main cleaning and pigging, reservoir internal coating, chlorination and mixing process enhancement, catchment minor asset renewals, pump station capacity upgrade, and water treatment and plant pre-treatment train upgrades.

A suite of capital works projects and programs is proposed by Council for the period of 2022-23 to 2026-27 to meet the Compliance with the ADWG chemical and microbial IPART output measure targets. The total value of these projects and programs is summarised in Table 15. Further information on the capital works projects and proposed initiatives associated with compliance with EPL concentration and load limit is detailed in the Appendix.

Table 15: Capital works program summary proposed to meet compliance with ADWG chemical and microbial output measures ($2021-22)

IPART output measure ($M)	Forecast 2022-23	Forecast 2023-24	Forecast 2024-25	Forecast 2025-26	Forecast 2026-27	Total Forecast
Compliance with ADWG microbial and chemical guidelines output measure	26.4	8.9	1.1	2.2	11.9	**50.5**

A suite of capital works projects and programs is proposed by Council for the period of 2022-23 to 2026-27 to meet the water quality complaints per 1000 properties IPART output measure targets. The total value of these projects and programs is summarised in Table 16. Further information on the proposed capital works projects and programs and other initiatives to reduce water quality complaints per 1000 properties is detailed in the Appendix.

Table 16: Capital works program summary proposed to meet water quality compliance and complaints output measures ($2021-22)

IPART output measure ($M)	Forecast 2022-23	Forecast 2023-24	Forecast 2024-25	Forecast 2025-26	Forecast 2026-27	Total Forecast
Water quality complaints per 1,000 properties	0.4	5.6	0.9	2.5	1.2	**10.6**

3.2.3 Council's proposal for water quality output measures

To ensure public health for drinking water customers, Council is committed to abide by stringent water quality output measures. As IPART articulates (IPART 2019), *While meeting output measure targets is important, strict conclusions about the Council's performance should*

not be drawn on the basis of whether or not it has met these targets. There may be reasonable explanations why it does not meet certain targets.

Council seeks to maintain the IPART accepted output measure for 2019 (9.9 per 1000 properties) for water quality complaints in the new pricing cycle, until significant Council investments take effect, subject to funding in the 2022 IPART determination cycle.

Discoloured water concerns can be reduced by regular monitoring and maintenance, including cleaning of mains and flushing. Taste and odour issues relate to organic and inorganic matter in water, water treatment processes, chlorination and catchment processes. Council proposes hotspot management and routine pigging and cleaning programs. Council will endeavour to consistently meet the IPART output measure of 8 complaints per 1000 properties with the proposed funding in 2025.

Council proposes the following IPART output measures for treated water quality:

- Compliance with Australian Drinking Water Guidelines – microbial guideline values in the water supply: 100%
- Compliance with Australian Drinking Water Guidelines – chemical guideline values in the water supply: 100%
- Water quality complaints per 1000 properties: 9.9 (as accepted by IPART for 2019) with the current level of funding
- Water quality complaints per 1000 properties: 8 (as accepted by IPART for 2022) in 2025 with the proposed additional funding

3.3 Water main breaks

IPART requests one output measure with respect to water main breaks:

- Water main breaks per 100 km of main: 16 in 2021

Water continuity refers to a consistent and reliable supply to customers. Temporary water supply interruptions occur from time to time and these pauses may be planned (scheduled) or unplanned (responsive).

Managing an efficient water supply to the community requires a consistent water source, dependable treatment systems and a reliable water reticulation network.

The NPR report highlights the improving trend for the Council regarding water main breaks, bursts and leaks per 100km of water mains from 2015-20. Figure 18 presents the number of water main breaks every month and per 100 km of water main. Water main breaks per 100

km (Figure 18) dropped from 12.06 in 2018-19 to 11.58 in 2019-20, on trend with NPR report data. The target set by IPART of 16 per 100km of main breaks is currently being achieved.

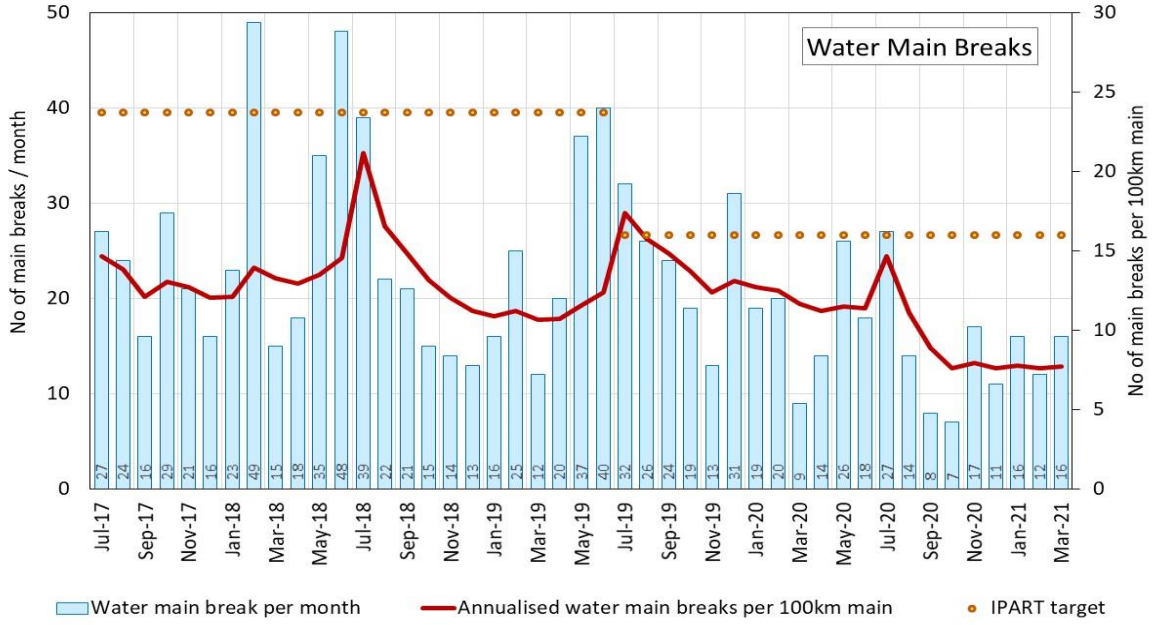

Figure 18: Water main breaks in the Central Coast LGA since July 2017

Figure 19 compares the water main break per 100 km of mains for local water utilities. Council ranking at the weighted mean among the water utilities in the NPR report in 2019-20, has significantly improved in the current year of 2020-21.

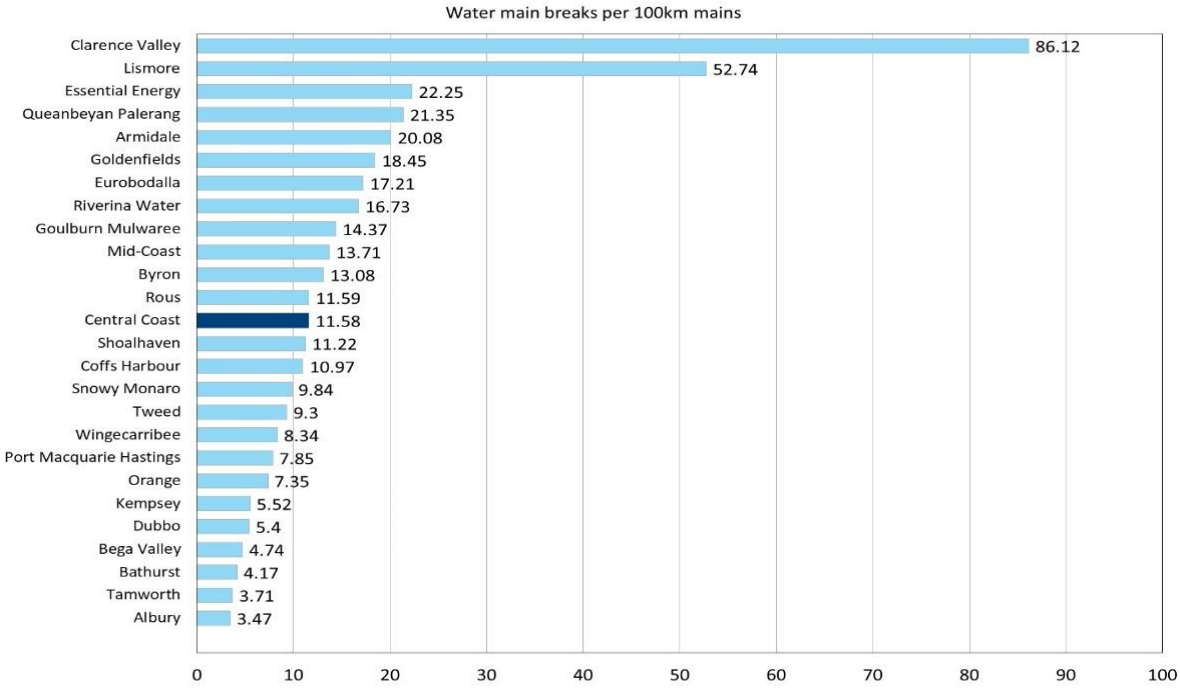

Figure 19: Water main break per 100km of mains in local water utilities in NSW (LWU Report 2019-2020)

3.3.1 Council's approach to mitigate main break concerns

A review by Council finds that main breaks trend down because of Council's renewals program. If the renewals program cannot be sustained, Council may not be able to meet the output measure. Capital expenditure renewal for water main has been steady over last few years, but as infrastructure ages, Council is proposing to base capital expenditure renewals on risk. Council intends to undertake PRV installation and managements, SCADA automation, water pump station management and water main assets and trunk main renewal programs to minimize the water main breaks.

A suite of capital works projects and programs is proposed by Council for the period of 2022-23 to 2026-27 to meet the water mains breaks per 100 km of mains IPART output measure targets. The total value of these is summarised in Table 17, with further information on capital works projects and programs to minimise water main breaks per 100km of main, detailed in the Appendix.

Table 17: Capital works program summary proposed to meet the water main breaks output measure ($2021-22)

IPART output measure ($M)	Forecast 2022-23	Forecast 2023-24	Forecast 2024-25	Forecast 2025-26	Forecast 2026-27	Total Forecast
Water main breaks per 100km of main	2.0	6.3	5.2	5.4	5.8	**24.7**

3.3.2 Council's proposal for main break output measures

In order to ensure a reliable supply of drinking water to customers, Council continues to maintain the IPART output measures. Council seeks to maintain the IPART prescribed output measure for 2022 (16 per 100 km mains) for water main breaks in the new IPART pricing cycle. With investment in ongoing maintenance to minimise water main breaks per 100km of main, Council is confident it can meet this output measure.

Council may be able to reduce the frequency of the unplanned interruptions and endeavour to meet the output target of 14 main breaks per 100 km of main in 2025, with additional funding to invest in capital works projects and programs, and other proposed initiatives (Section 3.4 and Appendix).

Council proposes the following output measures with respect to treated water main breaks with the proposed level of funding:

- Number of water main breaks per 100 km of main: 16 (as accepted by IPART for 2022)

- Number of water main breaks per 100 km of main: 14 (as accepted by IPART for 2023) in 2025 with the proposed additional funding.

3.4 Planned and unplanned interruptions

IPART requested one output measure with respect to water supply continuity by minimising planned and unplanned interruptions:

- Average frequency of unplanned interruptions per 1000 properties: 115 in 2021

Raw water for the Central Coast is harvested from Wyong River, Ourimbah Creek, Mooney Creek, Mangrove Creek and several groundwater aquifers. It is sent to one of three water treatment plants providing filtered drinking water treated to Australian Drinking Water Guideline standards.

The treated water supply is delivered to 133,000 properties connected to the water network through 2,248km of water mains, 71 reservoir structures and 50 water pump stations including potable and raw.

The Central Coast population forecast predicts a 16.82% growth from 2021 to 2036 which will see our population increase from 354,915 to 414,615 (Figure 20). This influx will increase demand and asset wear, creating the potential for more planned and unplanned interruptions on the current system.

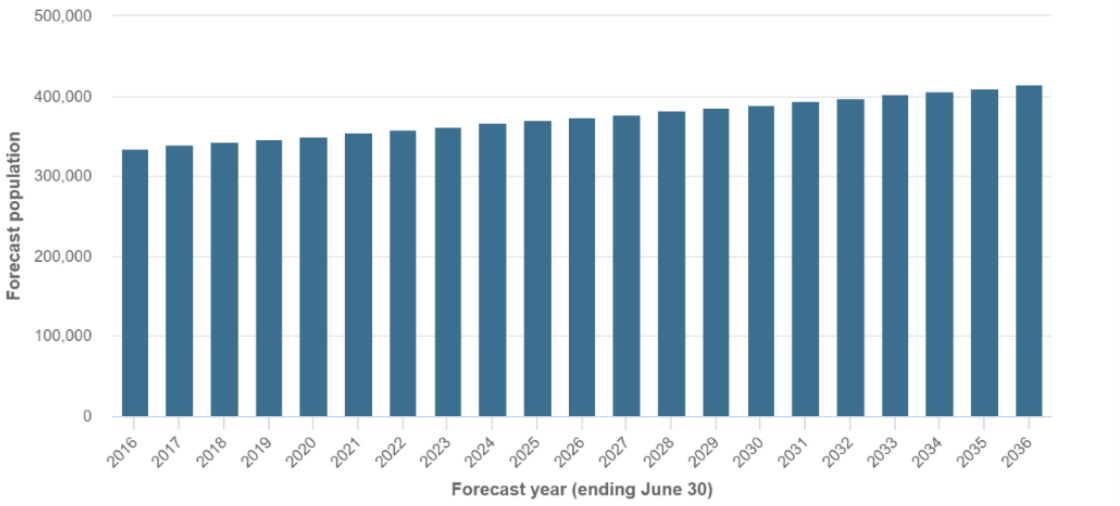

Figure 20: Forecasted population of Central Coast LGA

When performing planned work to modify and maintain our infrastructure, Council may temporarily interrupt customers' water service. For planned interruptions, Council provides

fair notice of scheduled interruptions to customers and appropriate efforts must be made to restore water services. Communication with the community is via:

- Letter box drops to ensure customers are aware of shutdowns
- Variable Message Boards in high visibility areas if more than 200 homes are affected
- Updates on Facebook and Twitter
- Updates on Council's website

The most common water supply interruptions are caused by mains breaks, major leaks and emergency repairs due to issues including tree roots damaging pipes and infrastructure damage by third parties. Various factors affecting the frequency and length of unplanned water interruptions are shown in Table 18.

Table 18: Factors that affect the frequency and length of unplanned water interruptions

Water main breaks	Breaks in trunk and distribution mains are the most common cause of water supply interruptions. These failures may occur as a result of asset condition, local developments (such as plant roots, differential settlement, etc.) or weather conditions.
Reservoir storage capacity	A water main break may cause a rapid loss of water from reservoirs. The amount of water stored in reservoirs that can be utilised before the asset failure is rectified influences whether asset failures lead to interruptions in customers' water supply.
Time of response and rectification	The length of water interruptions is affected by our pace and success in responding to and addressing infrastructure failures, such as water main breaks. This is impacted by the size of the repair and the number of customers inside the isolated repair region.
Network Configuration	By relying on versatility to reconfigure our water network, Council can respond to water main breaks and provide continuous supply to customers by bringing in water from another source.

Figure 21 presents the reported unplanned water supply interruptions every month and unplanned water supply interruptions per 1000 properties in the Central Coast LGA since July 2017. This metric is directly influenced by the water main breaks (Figure 18). Following marginally compliant years of 2017-18 and 2018-19 of then IPART output measure, the number of interruptions per 1000 properties exceeded the revised output measure of 115 in 2019-20. However, the recent trend and the performance (2020-21) are favourable to meet the revised output measure with proposed funding in the 2022 IPART determination cycle.

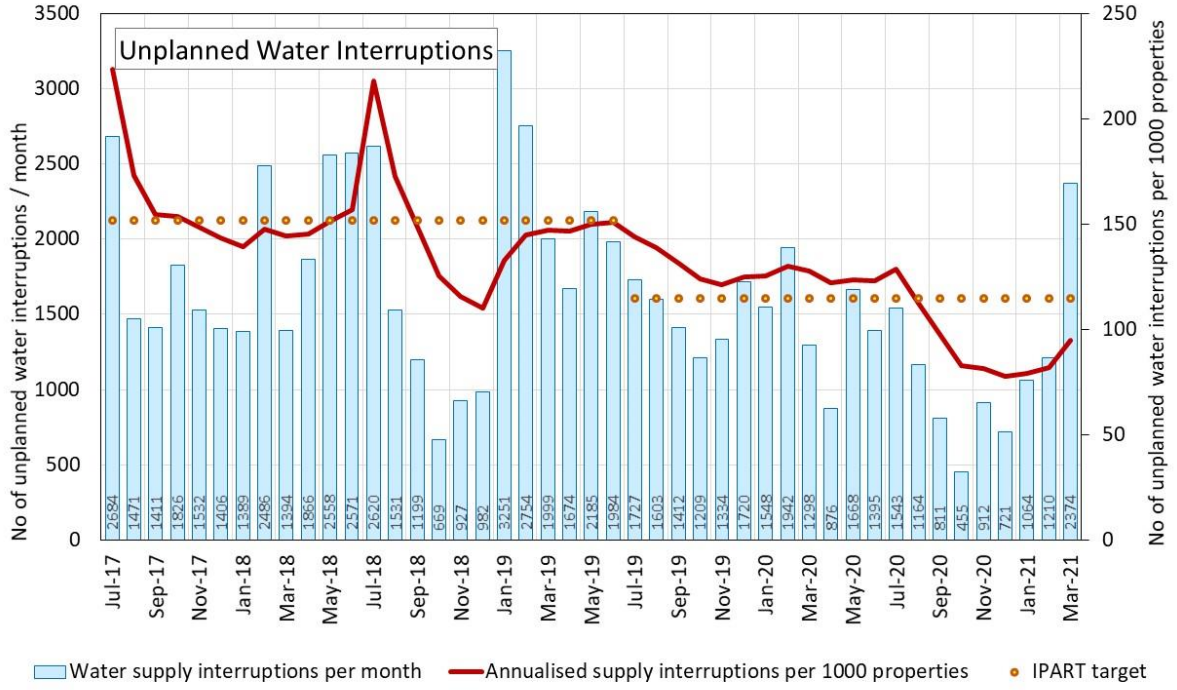

Figure 21: Unplanned water supply interruptions in the Central Coast LGA since July 2017

On their *Review of Central Coast Council's Expenditure* on the previous IPART submission, Atkins Cardno proposed that "Total customer minutes lost to supply interruptions (both planned and unplanned) to remain stable or improving over the determination period". The purpose of this measure was to improve understanding and performance of the impact of loss of supply to customers from planned or unplanned interruptions, rather than only measuring the frequency of interruptions. However, Council maintained it could not report on the new output measure on duration of supply interruptions, as it was not collecting the relevant data. It requested this item be delayed until its system is updated and 'establishes a baseline'. The Council stated that it does not currently record data on the duration of planned shutdowns.

IPART pointed out that there was merit in the Council reporting on the duration of interruptions, nevertheless it recognised the Council's need to establish a baseline. IPART therefore amended the output measure to distinguish between the two types of interruptions (planned and unplanned) and has not specified an explicit target performance level. The data reported against these two output measures over the 2019 IPART determination period could provide a basis for setting a target at the next price review.

Due to an unusual period of severe drought, bushfires, water restrictions, heavy rainfall and subsequent floods in 2019-20, Council was not able to establish a robust and credible baseline for the duration of water supply interruptions. Further, with the COVID-19

pandemic, Council experienced a financial management issue and subsequent restructure. However, Council's results for the 2019-2020 NPR report indicated the average duration of an unplanned interruption was 197 minutes (Figure 22), due in part to the utility's service area becoming more dispersed.

With appropriate financial and staff resources, Council will endeavour to establish a credible and robust baseline for planned interruptions in 2022-23 and verify this in 2023-24 and 2024-25.

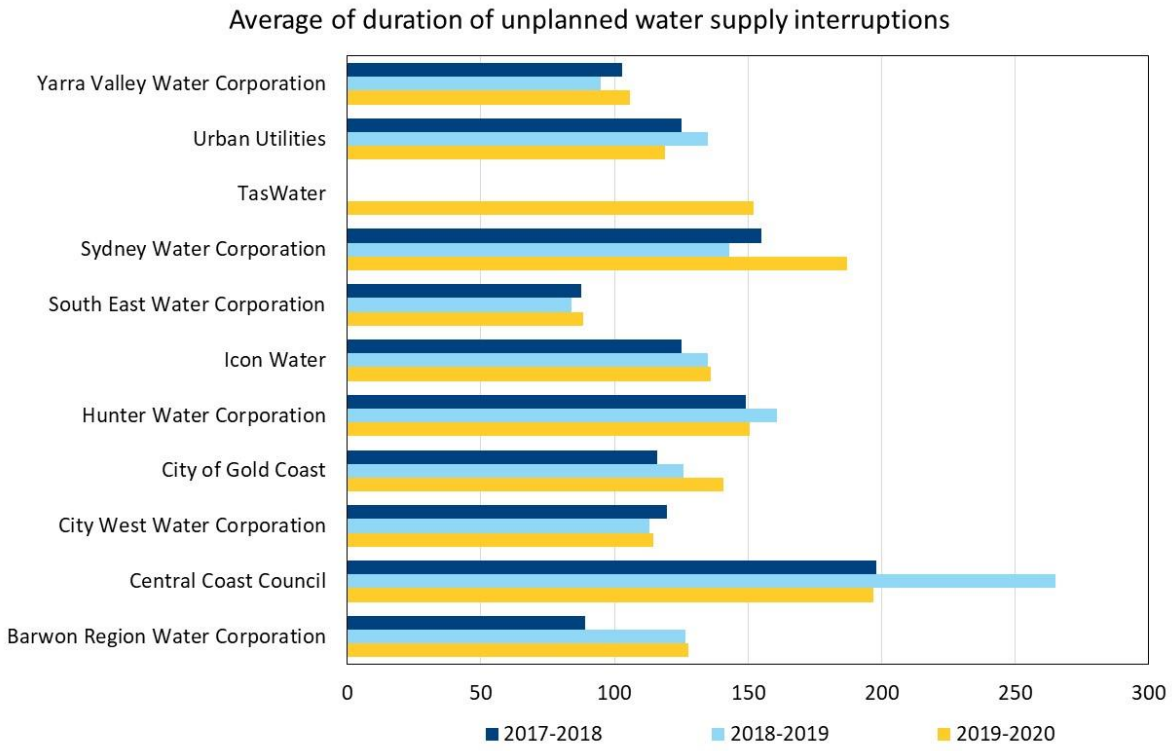

Figure 22: Average duration of unplanned water supply interruption over three reporting years in major utilities (NPR 2019-2020)

3.4.1 Council's approach to mitigate water supply interruptions

Delivery of projects to reduce main breaks (Section 3.3) will significantly decrease the number of unplanned water supply interruptions. With secured funding for cathodic protection, valve replacements, pump replacements, civil and mechanical work, network asset renewals, pump station replacement and rehabilitation and upgrade of SCADA packs etc., Council will be able mitigate unplanned water supply interruptions.

A suite of capital works projects and programs is proposed by Council for the period of 2022-23 to 2026-27, to meet the average frequency of unplanned interruptions per 1000 properties IPART output measure targets. The total value of these projects and programs is summarised in Table 19. Further information on capital works projects and programs for the

proposed initiatives to reduce the frequency of unplanned interruptions per 1000 properties is detailed in the Appendix.

Table 19: Capital works program summary proposed to meet frequency of unplanned interruptions output measure ($2021-22)

IPART output measure ($M)	Forecast 2022-23	Forecast 2023-24	Forecast 2024-25	Forecast 2025-26	Forecast 2026-27	Total Forecast
Average frequency of unplanned interruptions per 1,000 properties	4.8	4.5	2.6	4.0	2.1	**18.0**

In addition to the capital works project and programs proposed, Council has commenced trialling the implementation of a water reticulation shut-off blocks model. The model divides the water reticulation network into the smallest size polygons or areas, to identify the critical valves necessary during an unplanned or planned water activity to minimise the number of customers affected.

3.4.2 Reliable water source supply and treatment capacity

3.4.2.1 Central Coast Water Security Plan (CCWSP)

Council is in the process of reviewing its Water Security Plan (currently WaterPlan 2050) as part of ongoing planning, risk management activities and regulatory compliance. The outcomes from this project will inform the long-term strategy for water security for the Central Coast. Council will assess the long-term supply/demand balance and update our Drought Management Plan accordingly. An 'all options on the table' approach will consider the merits of more diversified supply sources. This is required to ensure the Central Coast's water security needs can be met for a range of potential water futures.

The CCWSP is being undertaken in parallel and in close collaboration with the review of the Lower Hunter Water Security Plan (LHWSP) conducted by the NSW Department of Planning Industry and Environment (DPIE) and Hunter Water Corporation (Hunter Water). The purpose of collaboration is to identify mutually beneficial options through greater cooperation between the two regions.

Yield modelling for the IWRP has been undertaken using a new joint headworks model (WATHNET) that was jointly developed by Council and Hunter Water for the two regional water plans. The model utilises updated hydrology (rainfall/runoff model) for the Central Coast catchments and reflects all current Water Sharing Plan rules. Alignment of the yield

methodology has been implemented for the LHWSP (via DPIE Governance Panel) to address key considerations:

- Allow utilisation of synthetic climate data to better assess risk associated with inherent climate variability and overlapping droughts between the Hunter and Central Coast regions. Overlapping droughts influence the operation of the Hunter-Central Coast pipeline which can transfer approximately 35% of Central Coast average daily demand in either direction.
- Integration of drought management planning into yield assessment to ensure the Central Coast has an enduring supply pathway that does not allow the community to ever run out of water.
- Allow consistent assessment of the merit and required timing of any joint investment opportunities between Council and Hunter Water.

Assessment of future growth, and associated increases in average water supply demand has been used to determine a yield target of 38.8 GL/yr at the plan horizon of 2051. This represents an increase of 6.3GL/yr above the current system yield of 32.5GL/yr. The current system yield of 32.5GL/yr is currently forecast to be exceeded in 2031-32. This is illustrated in Figure 23.

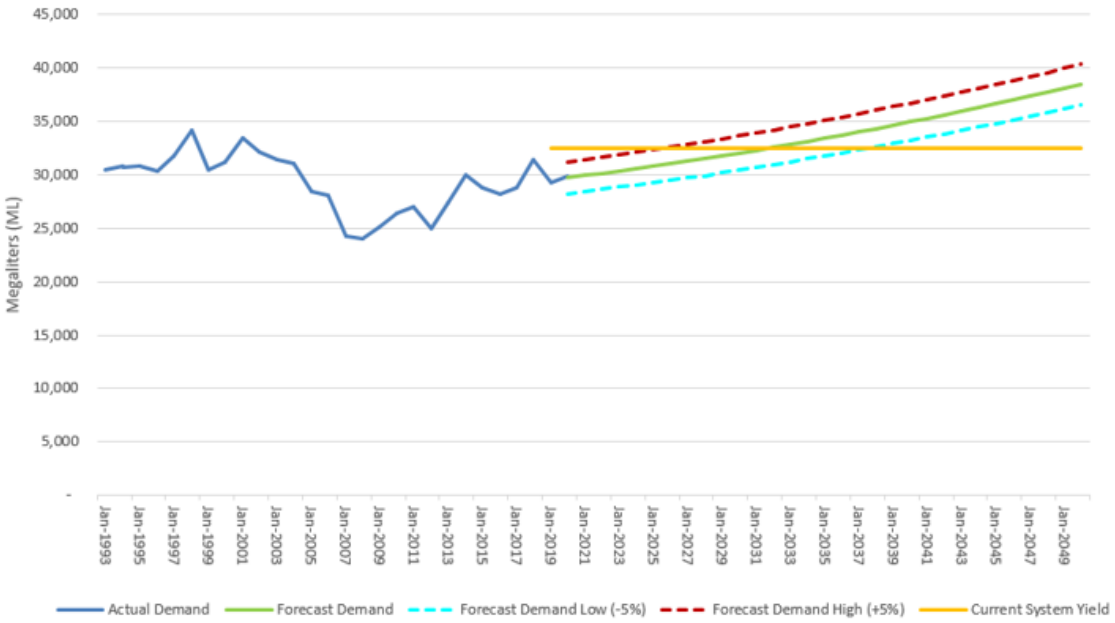

Figure 23: Central Coast Supply and Demand Balance future projections

The yield is the average annual demand for water that can be sustainably managed over the long term. Hence, yield is not static and changes over time with changes in inflows, infrastructure, demographics, the design criteria and the operating rules for the system.

As no single water supply option is likely to meet all the needs of the LGA, a portfolio approach has been followed that considers various combinations of supply options. A long

list of water demand and supply options was shortlisted based on merit and feasibility. These options were then arranged into four portfolio themes and progressively refined into five shortlisted portfolios (Figure 24) to address the estimated yield shortfall of 6.3GL/yr in 2051 (planning horizon of the CCWSP).

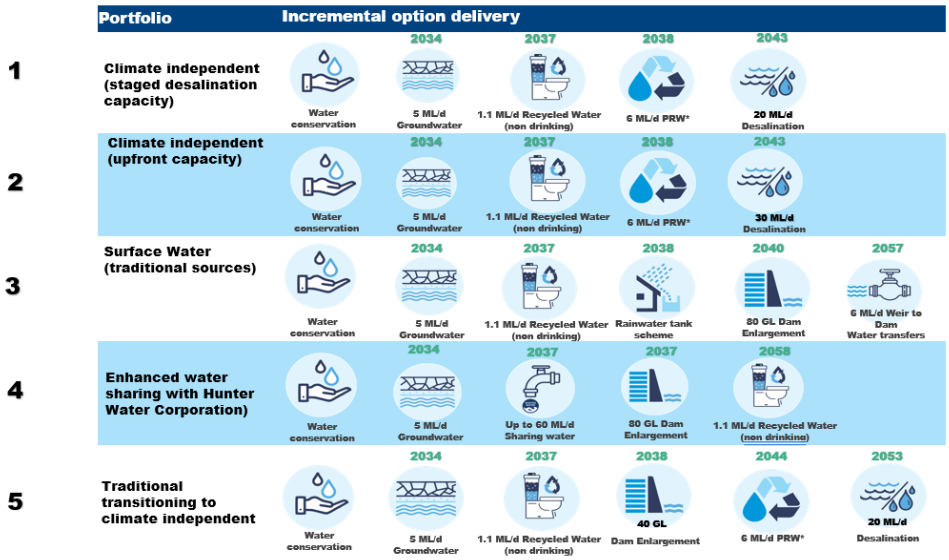

Figure 24: Shortlisted CCWSP Portfolios for long-term water security

Each of the five shortlisted portfolios (Figure 24) had been designed to meet the 2051 yield target for the median demand scenario, as well as identifying an additional option (or alternate operating rules) that would achieve the high demand forecast scenario.

Council has undertaken an economic Cost Benefit Analysis (CBA) of the Portfolios to identify the least cost Portfolio that meets the required yield for Central Coast customers (discounted cashflow of capital and operating costs), as well as the overall Cost-Benefit characteristics of each portfolio at a 'whole of New South Wales' level, to identify the broader benefits of inter-regional investments being considered under the LHWSP.

The results of the CBA were utilised in a Multi-Criteria Assessment which will also consider non-financial impacts, benefits and community support in order to identify the preferred Portfolio(s). This assessment has informed the calculation of the Water Supply Long Run Marginal Cost (LRMC) and allows Council to make the required tactical decisions to support the longer-term strategy.

The plan is scheduled for public exhibition in September 2021 and distributed to DPIE for review at the end of 2021. This will allow overlap with the LHWSP, scheduled to go to NSW Cabinet for consideration in early 2022. At the time of writing, Council's preferred supply portfolio is Portfolio 2.

3.4.3 Council's proposal for water supply interruptions output measures

In this pricing cycle Council was not in a position to establish a robust and credible baseline for the duration of planned or unplanned water interruptions, due to an unusual period of severe drought, bushfires, water restrictions, heavy rainfall and subsequent floods and the COVID-19 pandemic. Adding to this, Council experienced a financial management issue and subsequent restructure.

Council is committed to maintain the IPART prescribed output measure for 2022 (115 per 1000 properties) for water supply interruptions in the new pricing cycle with the proposed funding.

Council proposes the following output measures with respect to water supply continuity:

- Average frequency of unplanned water service interruptions per 1,000 properties: 115 (as accepted by IPART for 2022)

3.5 Sewer main breaks and chokes and Sewer overflows

In terms of protecting the environment and public health associated with sewage collection, transport, treatment and disposal, Council is obliged to both the Environment Protection Authority (EPA) and other regulators and our community. Sewer system overflows may occur occasionally, even in well-designed systems that collect and store sewage flow. Sewage overflows and main breaks have the potential to cause significant environmental harm, public health risk and a lack of confidence in Council's ability to serve and meet public expectations. Council must report such incidents to the regulators, particularly the EPA.

The performance of Council's sewerage system is influenced by soil type, pipe material, tree roots, disposed solids, topography, settlement behaviour of soil, electricity outages, sewerage configuration, management of trade waste, volume of sewage, rainfall and overall weather conditions.

There are three IPART output measures with respect to sewer overflows, main breaks and chokes:

- Sewer main breaks and chokes per 100km of main: 34 in 2021
- Sewage overflows per 100 km of main: 30 in 2021
- Sewage overflows reported to the environmental regulator, per 100km of main: 1.5 in 2021

3.5.1 Sewer main breaks and chokes

Common causes of sewer main break include pipe rupture due to shifting soil, growth of tree roots, settling, blockages due to fats and foreign materials and increased traffic or use of heavy equipment above ground. Corrosion of older pipes also leads to breaks or collapse. Main blockages or chokes may occur as a result of misalignment of sewer pipes, sagging of sewer lines where paper and solids accumulate, tree and shrub root infiltration and presence of debris and coarse solids in the sewer lines.

Figure 25 illustrates the number of sewer main breaks and chokes each month since July 2017 and per 100 km main. Council seldom met the target output measure for sewer main breaks and chokes from 2017 until September 2020. However, there has been a favourable trend towards meeting the performance output measure since August 2019.

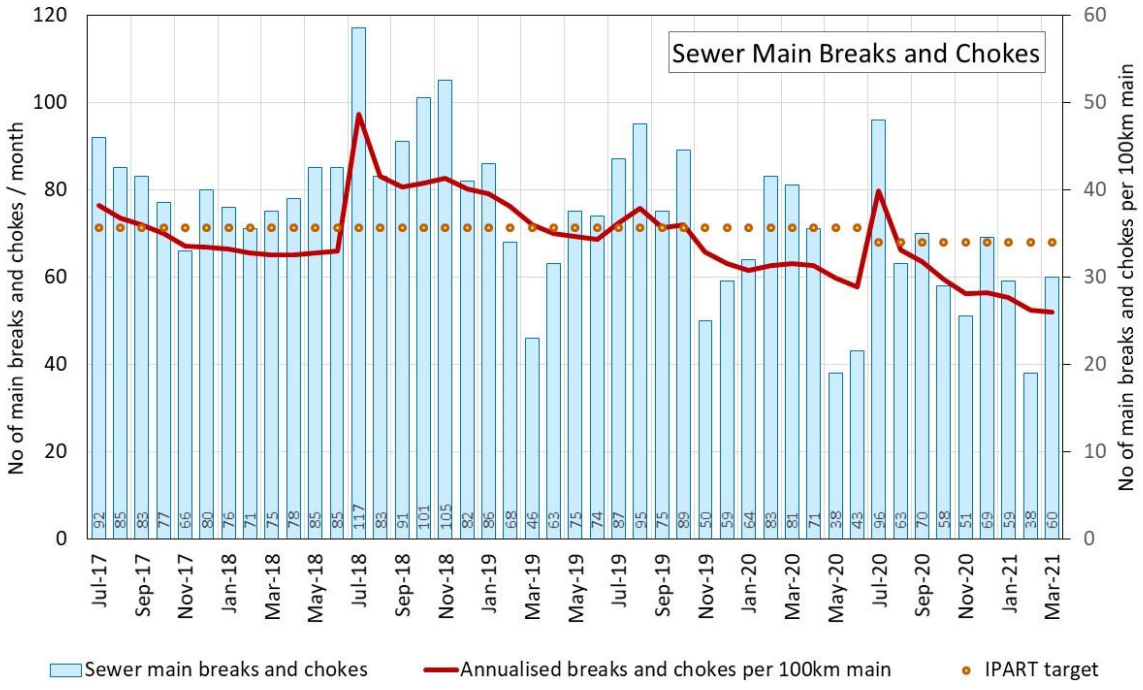

Figure 25: Sewer main breaks and chokes in the Central Coast LGA since July 2017

Figure 26 shows the annualised sewer main break and chokes per 100 km of mains for local water utilities from the NPR report in 2019-2020. Council reported 32.9 sewer breaks and chokes per 100 km sewer mains in 2019-20, which was the median value among the reported utilities and significantly better than Hunter Water (42.8) and Sydney Water (66). Barwon Water, a utility of similar size, reported 53.8 sewer overflows per 100 km sewer mains in the same year. Council performance notably improved in the current year of 2020-21.

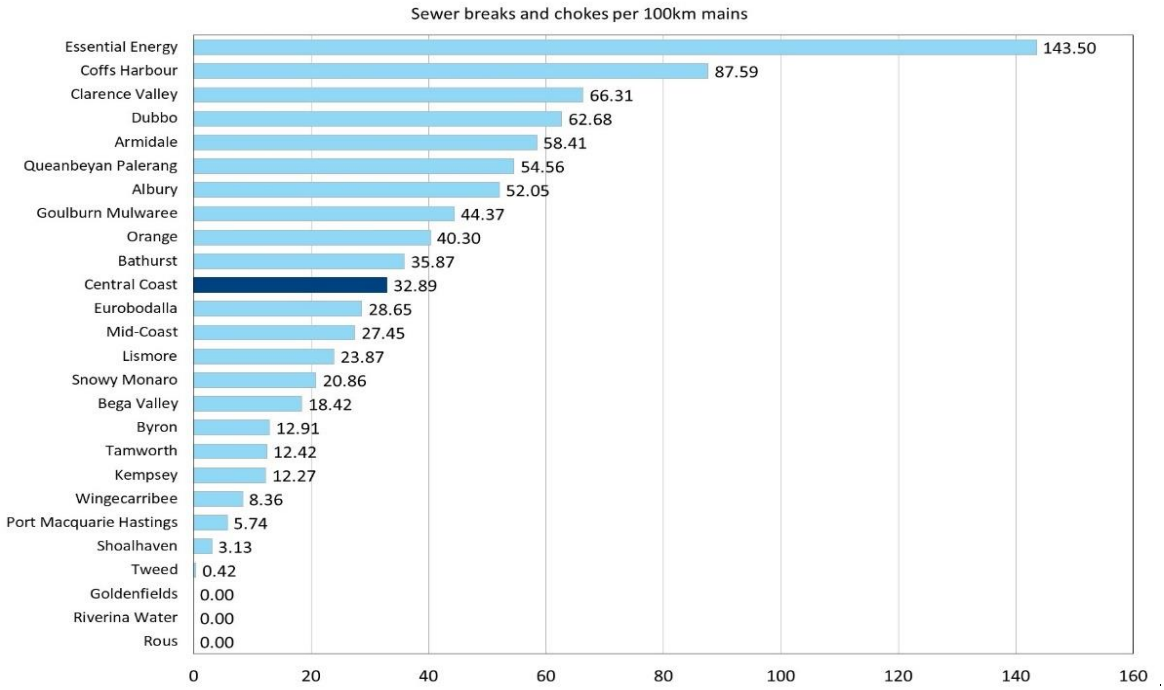

Figure 26: Sewer main breaks and chokes per 100km of mains in NSW local water utilities (LWU Report 2019-2020)

3.5.2 Council's approach to mitigate sewer breaking and choking concerns

Council's investment in the main and asset renewals program appears to play a favourable role. With a consistent commitment, Council will be able to sustain this improvement. A suite of capital works projects and programs is proposed by Council for the period of 2022-23 to 2026-27, to meet the sewer main breaks and chokes per 100 km of main IPART output measure targets. The total value of these projects and programs is summarised in Table 20. Further information on capital works projects and programs for the proposed initiatives aimed at reducing sewer main breaks and chokes is detailed in the Appendix.

Table 20: Capital works program summary proposed to meet sewer main breaks and chokes output measure ($2021-22)

IPART output measure ($M)	Forecast 2022-23	Forecast 2023-24	Forecast 2024-25	Forecast 2025-26	Forecast 2026-27	Total Forecast
Sewer main breaks and chokes per 100km of main	2.8	4.9	4.6	4.7	5.1	**22.1**

3.5.3 Sewage overflows

Overflows from existing reticulation systems can be reduced by a combination of operations and maintenance practices and asset renewals. Overflows could be minimised at their source by minimising defects in sewers. Any residual impacts can then be managed by other

options, such as increasing the capacity of the downstream system to carry wet-weather flows. Council conducts environmental monitoring and sampling in response to sewer overflows that may have environmental or health risks, to ensure environmental safety, required response and compliance.

The following activities have been conducted to fulfil our responsibilities related to dry weather sewer overflows:

- SCADA is used to monitor the sewage system in order to detect suspicious patterns and ensure that assets are operating optimally
- When sewage pump stations are not completely functioning, tankers are dispatched to pump and transport excess sewage
- Attending to and addressing any causal problems or sewer overflows as soon as possible to reduce consumer and environmental impacts
- Replacing and relining deteriorated sewer mains.

Figure 27 presents the number of sewage overflows each month and the number of sewage overflows per 100 km of sewer mains in the Central Coast LGA since July 2017. Following a downward trend, sewage overflows were compliant to the designated output measure over nine months in 2017-18. However, this indicator generally exceeded the output measure after July 2018 until 2020-21. A clear downward trend has been observed since January 2020 and the IPART output measure for number of sewage overflows per 100 km main has been compliant to the revised output measure of 30 in 2020-21.

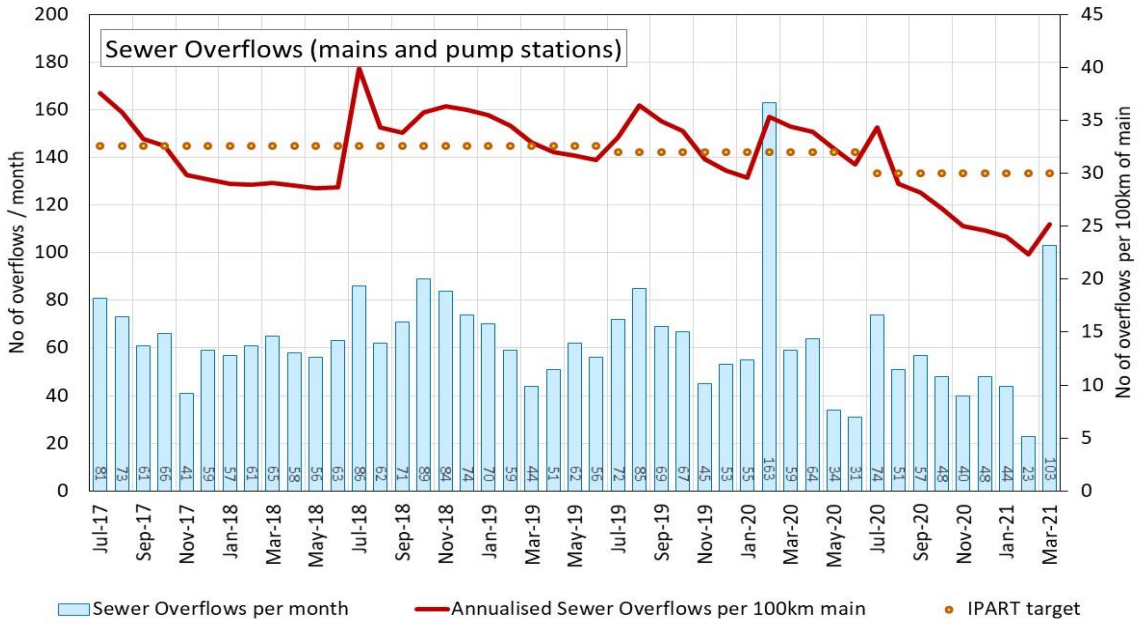

Figure 27: Sewer overflows in the Central Coast LGA since July 2017

3.5.4 Sewage overflows reported to the environmental regulator

A primary EPA objective is to protect, restore and enhance the quality of the environment in NSW. To help achieve this objective, the EPA assists the responsible party in efforts to mitigate the impact of pollution incidents on the environment and surrounding community. A water supply authority has a regulatory responsibility to report pollution incidents, such as sewage overflows, under section 148 of the *Protection of the Environment Operations Act 1997*.

The number of reported overflows to the EPA per month and number of reported overflows since July 2017 are shown in Figure 28. Although this indicator exceeded the prescribed output measure for 2019 (1.9 reporting per 100 km main) after November 2018, it rarely exceeded 1.9 between July 2017 and November 2018.

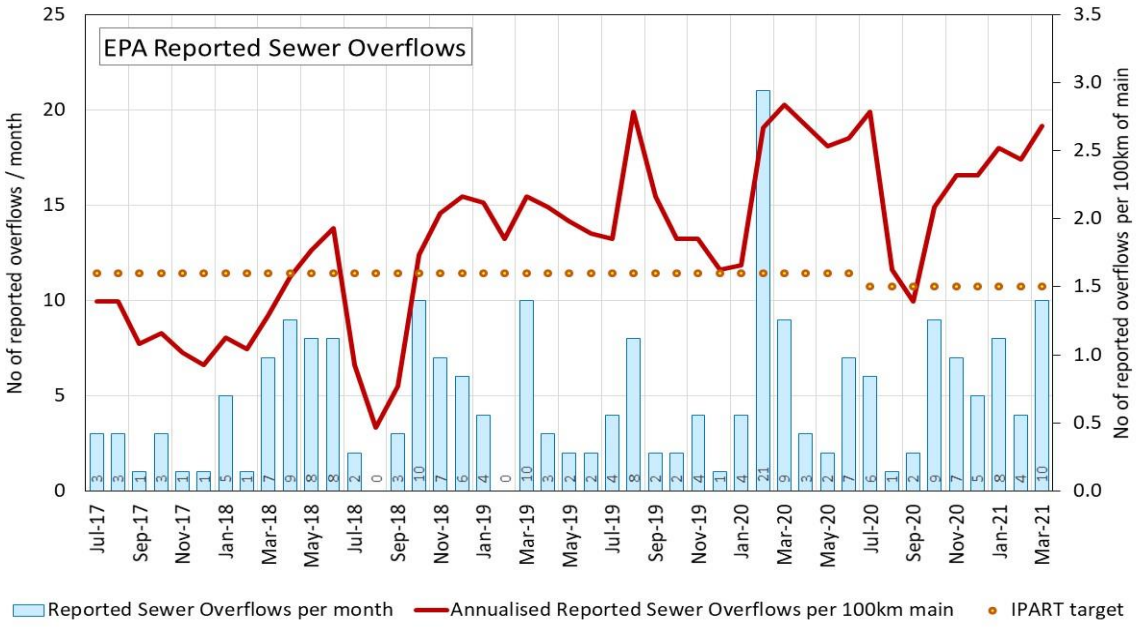

Figure 28: Reported sewer overflows to EPA by the Central Coast LGA since July 2017

A consolidated analysis indicates that the main cause for Council's failure to meet the output measure was the wet weather and the impact is particularly noticed in certain hotspots (e.g. March 2019 flash flooding). The occurrence of major flooding events (e.g. February 2020 and March 2021) can also impact multiple catchments and result in unavoidable overflows due to widespread inundation of customers' private overflow relief gullies. While Council has a significant program of work underway to improve system performance in response to planned growth and asset deterioration, there are no current programs planned to address impacts of catchment wide flooding caused by major storms.

Theoretically, up to 38 overflows in a year, i.e., three events per month, will keep this metric below 1.5 per 100 km of sewer mains. However, one heavy rainfall event in a year in the LGA will cause several sewer overflows and subsequent compliance failure with respect to this output measure. These events will continue to trigger reports to the regulator.

Sewer surcharge events primarily occur under dry weather conditions, indicating that surcharges are primarily caused by chokes and blockages due to tree root incursion, incorrectly disposed fats and oils and non-biodegradable solids entering the sewer network.

Figure 29 shows five-year data on sewer surcharges with respect to dry weather and wet weather conditions.

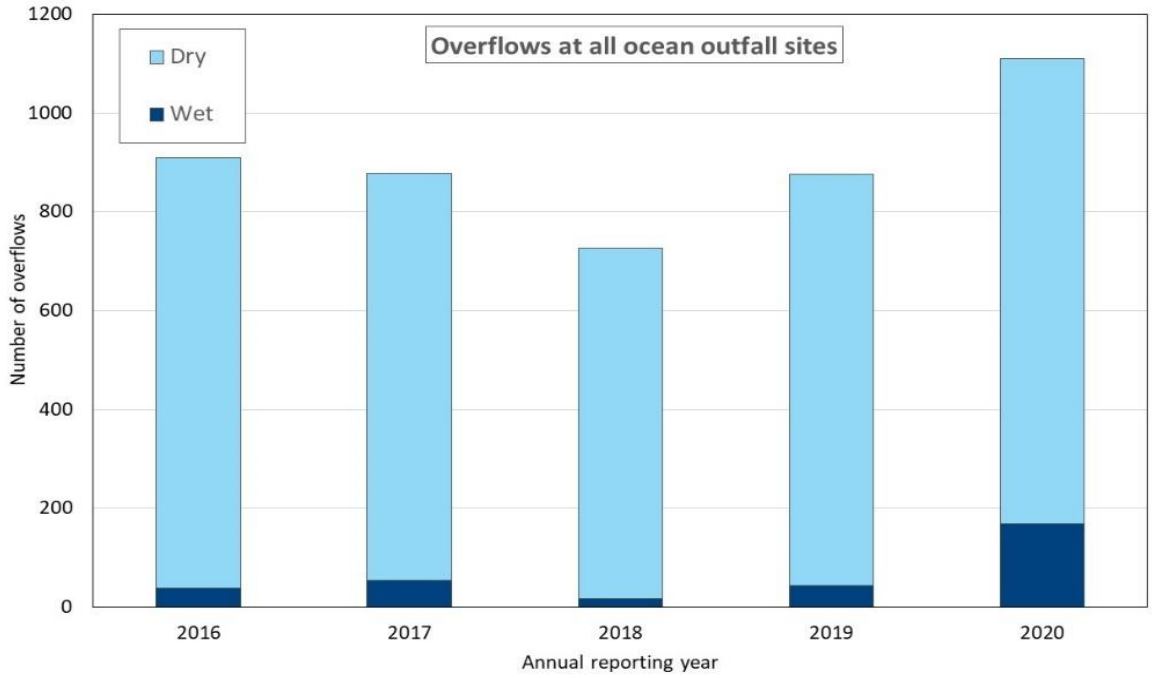

Figure 29: Sewer surcharges: dry weather and wet weather conditions

3.5.5 Council's approach to mitigate sewage overflow concerns

Sewer network overflow monitoring, SCADA upgrades, sewer pump station emergency overflow prevention, rising main rehabilitation, vacuum system renewals, rising main asset management, manhole rebuilds, pump station renewals and refurbishments, sewer main coating, sewer rising main renewals, cathodic protection, leaking manhole detection and management and other similar measures will enable Council to reduce sewer overflows and meet the aspirational output measures.

A suite of capital works projects and programs is proposed by Council for the period of 2022-23 to 2026-27 to manage the risk of sewage overflows. This is a combination of renewals of ageing infrastructure and upgrade of underperforming assets in response to growth. The total value of these projects and programs is summarised in Table 21. Further information on the proposed initiatives of sewage overflows per 100 km of main capital works projects and programs is detailed in the Appendix.

Table 21: Capital works program summary proposed to meet sewer overflows output measure ($2021-22)

IPART output measure ($M)	Forecast 2022-23	Forecast 2023-24	Forecast 2024-25	Forecast 2025-26	Forecast 2026-27	Total Forecast
Sewer overflows per 100km of main	14.6	18.8	29.8	23.9	38.9	**126.0**

3.5.6 Council's proposal for sewage overflows, and sewer main breaks and chokes output measures

Although Council failed to meet the designated output measure for sewer main breaks until recently, there has been a steady downward trend since July 2018. Council's investment in main and asset renewals programs appears to play a favourable role. Without a consistent commitment, Council may not sustain this improvement. With the current level of funding, Council should be able to meet the proposed 34 main breaks and chokes per 100km main. With the step change in funding, the aspirational level of 30 may be achieved.

Similarly, despite Council's inability to achieve the number of sewage overflows within the designated output measure, there has been steady progress since January 2020 to meet the designated performance level in 2022. Council's ability to influence this metric has been determined by the management of the ageing asset base through targeted and scalable asset renewals and other operational improvements. Wet weather and subsequent inundation of the system is outside Council's control. With due diligence, the current trend could be managed for sewer to meet the output measure 30 per 100 km of sewer mains.

However, as described in sections 3.5.3 and 3.5.4, Council is not in a position to meet the current 2021-22 output measure for the number of sewage overflow reported to EPA per 100 km of sewer main (1.4), due to the impact of wet weather events on system performance. The number of overflows arising from flooding within Tuggerah Lakes is significant as shown in data for February 2020 and March 2021. The NSW EPA has requested Council investigate infiltration to the system and look at issues relating to flood water ingress from private plumbing fixtures.

In its licence conditions, reporting requirements and other circumstances, EPA makes a distinction between dry weather and wet weather conditions with respect to chokes and overflows. Council requests IPART instigate separate output measures for wet weather and dry weather conditions in this price cycle.

Council proposes the following output measures with respect to sewer overflows, and main breaks and chokes:

- Sewer main breaks and chokes per 100km of main: 34 (as accepted by IPART for 2021)
- Sewage overflows per 100 km of main: 30 (as accepted by IPART for 2021)
- Sewage overflows reported to the environmental regulator, per 100km of main: 2.4 (based on the recent performance)
- Sewage overflows reported to the environmental regulator, per 100km of main under dry weather conditions: 1.5 (aspirational – to establish a baseline)

3.6 Sewage odour complaints

Sewage odour complaints are one of the most common types of complaints. The degradation of sulphur dioxide in the sewerage system produces odours. Sewage treatment plants and sewerage network assets, such as sewer pump stations, can emit odours. The intensity of sewage odour can be attributed to a number of factors:

- Weather conditions
- Wind speed
- Shock influent loads
- Equipment failure
- Age of sewage in the network
- Pump station operations
- Asset conditions
- Presence of blockages and chokes

The number of sewage odour complaints each month, and per 1000 properties is shown in Figure 30. This number can fluctuate substantially from month to month, highlighting the need to actively investigate and manage the vectors responsible in the network.

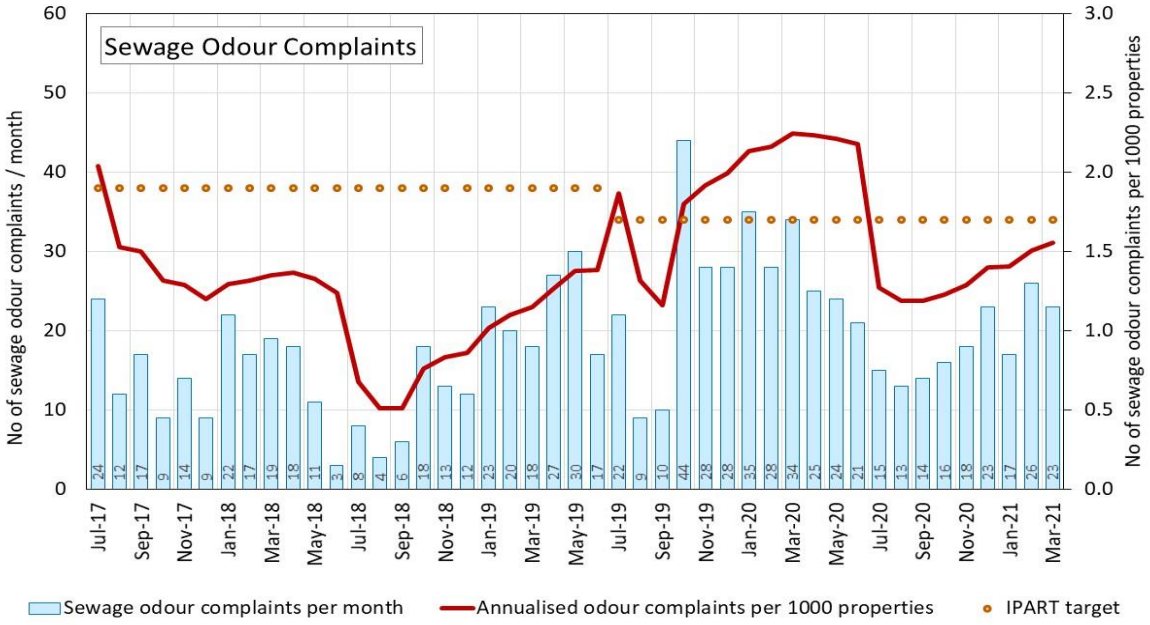

Figure 30: Sewer odour complaints in the Central Coast LGA since July 2017

Sewer odour complaints did not exceed the performance measure from July 2017 until September 2019. From October 2019 to March 2020 the number of complaints significantly exceeded the IPART output measure. From March 2020 to August 2020 there was a steady fall after which the number of odour complaints has been on the rise.

Figure 31 shows five-year data on sewer odour complaints with respect to sewage treatment plant and reticulation system. Sewer odour complaints are typically from network operations, with a minority from STPs.

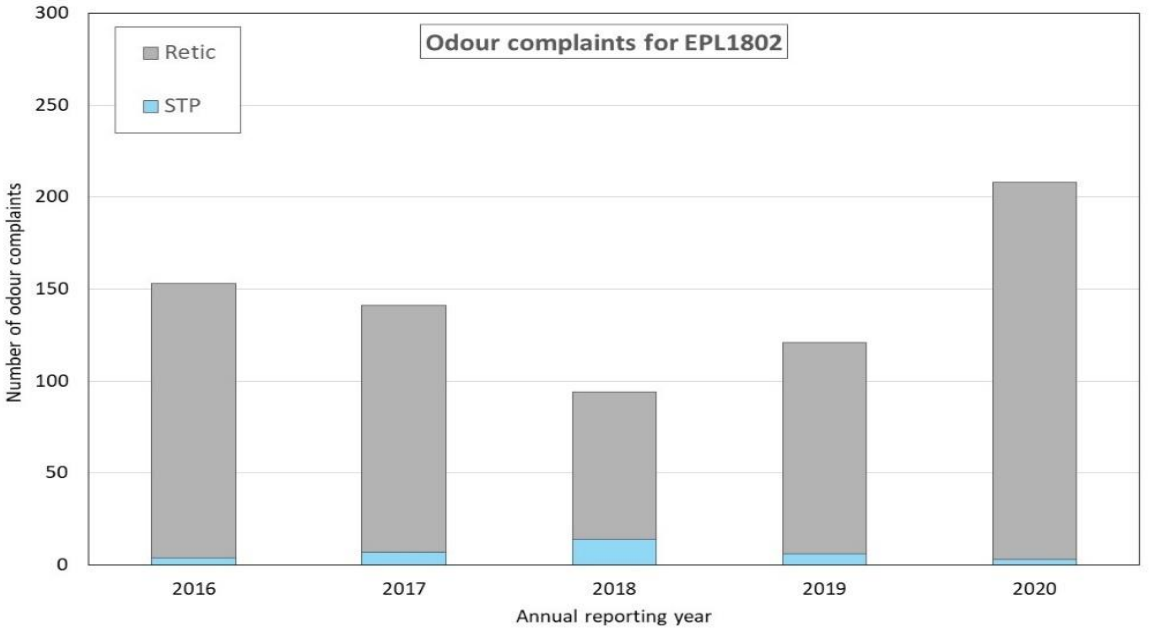

Figure 31: Sewer odour complaints: treatment plant and reticulation system

3.6.1 Council's approach to mitigate sewage odour concerns

Control measures put into place to mitigate odours include:

- Chemicals added to sewage in our sewer network and treatment plants
- Odour management equipment installed at the existing sewer pump stations and treatment plants
- Odour management technology used in the construction of new sewer pump stations
- Filter media on odour control systems in the sewer network and at sewage treatment plants regularly inspected and changed as required

By investing in a sewage treatment plant odour control program, sewage treatment plant treatment process improvements, Kincumber Mountain vent stack renewal, sewer odour vent replacements and Wyong odour control augmentation, Council will be able meet the aspirational out measure of 1.5 complaints per 1000 properties. A suite of capital works projects and programs is proposed by Council for the period of 2022-23 to 2026-27 to meet the sewage odour complaints per 1,000 properties IPART output measure targets. The total value of these projects and programs is summarised in Table 22. Proposed initiatives to reduce sewage odour complaints per 1,000 properties can be found in the Appendix.

Table 22: Capital works program summary proposed to meet sewage odour complaints per 1,000 properties output measure ($2021-22)

IPART output measure ($M)	Forecast 2022-23	Forecast 2023-24	Forecast 2024-25	Forecast 2025-26	Forecast 2026-27	Total Forecast
Sewage odour complaints per 1,000 properties	0.0	0.1	0.4	1.2	0.8	**2.5**

In addition to proposed capital works projects and programs, Council is proposing to implement an Odour and Corrosion Strategy across all areas of operation within the 2022-23 to 2026-27 period. The strategy will entail sewage, gas and liquid phase odour management reviews, as well as odour logging and sewage quality monitoring pre and post strategy implementation. This strategy will support and define some of the capital works projects and programs proposed.

3.7 Stormwater drainage management

As a Water Supply Authority, Council is responsible for mitigating flooding impacts and improving waterway health through the management of an extensive stormwater drainage network comprising built infrastructure and natural waterway systems.

Council is unique in that it is both a Local Government and Water Supply Authority, hence unlike other Water Supply Authorities, stormwater management is entirely the responsibility of Council within our Declared Drainage Areas.

3.7.1 Flood planning

Council manages the impact of flooding by following the objectives of the NSW Government Floodplain Development Manual. This process is critical to ensure that Council can make informed decisions about flood risk and future planning by:

- Preparing flood studies and floodplain risk management plans
- Identifying and prioritising a range of planning controls, infrastructure and response modification measures
- Providing essential information to the State Emergency Service so it can prepare and implement local flood plans to deal with emergency response situations

To ensure our flood planning practices align with current industry standards, Council is proposing investment in an expanded program of studies including flood modelling, flood studies, floodplain risk management plans and flood warning system reviews. The expanded program will ensure the strategic alignment of future capital works priorities to mitigate existing community risk and support sustainable future development.

At the time of the previous IPART determination period, flood planning services were primarily funded via a Stormwater Levy under the Local Government Act, whereby property owners pay approximately $25 per annum. The Stormwater Levy is no longer in place as the charges ceased in the 2016-17 rating year. Prior to the Stormwater Levy, the services were funded by the Stormwater Drainage Charge under the Water Management Act.

In planning its future activities, Council has considered the customers' views and have looked to simplify the provision of these services by ceasing to charge the additional Stormwater Levy and proposing to consolidate all stormwater drainage fees into the one charge. This submission includes the funding required to continue to provide this function consistent with historic service levels.

3.7.2 Stormwater management

Council operates, manages and maintains a stormwater drainage system within certain declared Drainage Areas. The stormwater drainage system includes more than 1,125 kilometres of pipes, culverts and open channels and over 47,000 stormwater drainage pits and headwalls.

These assets are critical for controlling stormwater runoff to minimise flooding impacts on the community. The failure of our stormwater drainage assets can impact on:

- Our customers in relation to property damage and continuity of service
- The environment due to erosion and pollutant export
- Damage to surrounding infrastructure such as roads and other services
- Restricting access for pedestrian, motorists and emergency services

To reduce the risk of asset failure and the associated consequences, Council is undertaking condition assessments and investing in rehabilitation and renewal of its stormwater drainage assets. Council is also proposing to expand the condition assessment program to target critical stormwater drainage assets with the highest consequence of failure. The expanded program will support clearing, inspection and repair of these critical assets.

To manage safety risks to the community and provide continuity of stormwater drainage and related services, Council is proposing to invest in the replacement and upgrade of stormwater drainage assets to maintain their structural integrity and strategically increase capacity where required, to control stormwater runoff and mitigate flooding.

Council is also proposing to invest in new stormwater drainage assets to support sustainable growth and development. The delivery of these assets is guided by floodplain risk management, land use and strategic growth planning. These new assets will support population growth by controlling stormwater and mitigating flooding from new developments and will reduce safety risks to new and adjacent existing communities.

In line with the recommendations from the 2019 IPART determination, Council propose to implement a new stormwater drainage output measure to report on the length of assets renewed, refurbished or upgraded each year. The proposed measure is documented in Table 23.

Table 23: Capital works program summary proposed to meet the stormwater infrastructure length output measure

IPART output measure	Target for 2022-23	Target 2023-24	Target for 2024-25	Target for 2025-26	Target for 2026-27	Total Target

Stormwater Drainage Infrastructure Length	5.4km	6.3km	5.9km	6.2km	6.4km	**30.3km**

The baseline has been established by calculating the length of infrastructure delivered during the 2019 IPART determination period and the predicted planned capital work programs across the next. The performance measure is indicative only and will vary subject to the type of renewal works undertaken (e.g. relining compared to replacement) as well as the size and location of the infrastructure delivered.

3.7.3 Stormwater maintenance

Council provides both a routine and reactive maintenance function in relation to the stormwater drainage network. This includes investigating and responding to customer enquiries, undertaking routine hazard inspections, identifying and prioritising stormwater drainage defects as well as managing the physical delivery of maintenance repairs. Council also has a role in responding to emergency events and natural disasters.

These maintenance services are critical as they mitigate stormwater drainage risks to the community, facilitate accessibility around the region and support effective asset planning by ensuring stormwater assets reach their intended useful life in the most cost-effective manner.

Council's Drainage Maintenance Management Plan comprehensively documents the services and their provision including process and system mapping, inspection frequencies, maintenance activity definition, defect rating frameworks, intervention levels and response times. This includes specific maintenance activity plans for:

- Pits, Pipes, Box Culverts and Headwalls – intervention levels addressing system blockages, erosion/scouring, asset displacement or damage
- Open Drains - intervention levels addressing blockages, erosion/scouring, structural failure or accessibility
- Table Drains - intervention levels addressing blockages and erosion/scouring
- Emergency response protocols

To maintain the existing stormwater drainage network and deliver prudent service levels, Council is proposing to continue delivery of stormwater drainage activities using a mixture of day labour staff, sub-contract plant and labour hire services, full contract provision and engagement of qualified contractors for specialist works such as complex drainage repairs.

In line with the recommendations from the 2019 IPART determination, Council propose to implement a new stormwater drainage maintenance output measure to report on the

number of customer requests relating to stormwater drainage each year. The proposed measure is documented in Table 24.

Table 24: Stormwater drainage customer requests per annum output measure

IPART output measure	3-year average	Target for 2022-23	Target for 2023-24	Target for 2024-25	Target for 2025-26	Target for 2026-27
Stormwater drainage customer requests per annum	2,545	2,545	2,545	2,545	2,545	2,545

The baseline has been established by averaging the number of stormwater drainage customer requests received by Council's Customer Experience system during the 2019 IPART determination period. Further system refinements will be investigated during the 2022 IPART determination period to allow more detailed reporting and to classify the requests that generate maintenance actions and/or relate to flooding.

3.8 Additional output measure from 2019 IPART determination

Projects

Mangrove Creek Dam Spillway Upgrade

Council proposed to undertake capital upgrades to resolve a dam safety limitation that prevented Council filling Mangrove Creek Dam (MCD) beyond 80% Full Supply Level (FSL).

Council undertook a comprehensive risk assessment of the operation of MCD in line with the requirements of Dams Safety NSW (Established Nov 2019), as outlined in the new Dams Safety Regulation 2019. Under this framework Council (via its specialist Consultant) undertook a 'risk-based' approach to management of the dam as opposed to the more conservative 'standards-based' approach.

The revised assessment methodology (independently peer reviewed) revealed that Council can operate the dam at the original 100% Full Supply Level (FSL) without any further upgrade to the existing spillway structure. Additional capital works may be required in support of any future raising of the Dam, however the risk of operation at 100% FSL is within the relevant risk-based threshold. The project objective of resolving the Spillway capacity constraint is now resolved.

Mardi to Mardi to Warnervale Pipeline

The Mardi to Warnervale Pipeline began construction in April 2020. This $61M project is critical to the northern part of the region's water supply system. Within the Kanwal Reservoir Catchment, it will serve expansion in the main northern development corridor, including Warnervale Town Centre and various greenfield subdivision sites. It will also improve drought

security via bulk water transfers between the Central Coast and Hunter. This project will provide the higher operating pressure required to service elevated areas and emerging low-pressure areas within the northern water supply network (including Warnervale Town Centre), allowing reduced reliance on booster pump stations and increasing the efficiency of the water supply system. The pipeline will provide opportunities for the Hunter and Central Coast regions to further work together on options to build drought resilience.

Completed Works and projects in progress

Some of the completed major infrastructure projects include:

- Upgrades to the sewer system and sewer pump stations in the catchments of Terrigal, Terrigal Lagoon, The Entrance, Chittaway Bay, Chittaway Point and South Wyong. These works protect the community and environment against overflows and odours, improve reliability and eliminate service deficiencies at treatment plants
- Replacement of the temporary sewer main across Terrigal Lagoon, which will improve the amenity of the lagoon and minimise potential environmental impacts.
- Upgrades to beachfront sewage pumping stations at Norah Head, Toowoon Bay and Bateau Bay beaches to increase the capacity and address a number of service deficiencies

Some of the ongoing major infrastructure projects underway include:

- Manhole inspections in the Tuggerah Lakes catchment (as part of the 'Reveal and Seal' program) to reduce the risk of undetected blockages which can lead to untreated sewage overflows to nearby waterways. The 'Reveal and Seal' program will be a continuing preventative maintenance activity
- Upgrades of sewage pumping stations at Summerland Point, Ettalong, Green Point, Wagstaffe, Springfield, Erina, Koolewong, Umina Beach, Tascott, Terrigal, Wamberal, West Gosford, Gosford, Hamlyn Terrace, Forresters Beach, Daleys Point, Kincumber, The Entrance, Tacoma, Woy Woy, Tuggerawong, Narara, Noraville, Tuggerah, Berkeley Vale, Blackwall, Toukley, Gorokan and Budgewoi. These upgrades will improve reliability, process control and address other existing deficiencies
- Rehabilitation of sewer mains based on the condition assessments from the CCTV inspection program. A total of 29 kilometres of sewer gravity mains have been relined to date, overcoming issues and other sewer network performance deficiencies
- Review of automated control schemes for sewage pumping stations that will provide information to enable quicker diagnosis and understanding of malfunctioning equipment and infrastructure
- Council's sewage capital works program for 2020–22 will invest $39M into upgrades to council's sewage infrastructure, including, (a) Upgrades to various sewage

treatment plants, pumping stations, gravity mains and vacuum and pressure systems at Wamberal, Terrigal, Avoca, The Entrance, Noraville, Budgewoi, Toukley and Tuggerah to improve reliability and increase capacity of the sewer system, and (b) Replace and upgrade sewage schemes at Tacoma South, Mooney Mooney, Cheero Point, St Huberts Island and Davistown to improve reliability, increase capacity and prevent overflows from entering nearby waterways

Stormwater Drainage – Low Level Impact Assessments – Output Measures

For the 2019 determination, IPART introduced an output measure for assessing low-impact stormwater drainage applications to be completed within 15 working days of receiving a complete application.

As of 1 July 2019, a total of 12 applications and 7 enquiries have been received through Council's customer request module. For the 12 applications, an average turnaround time of 13 days was achieved. For the 7 enquiries, an average turnaround time of 10 days was achieved.

3.9 Using technology to improve reliability and performance

3.9.1 SCADA and Telemetry

Council is committed to continuous improvement of its systems to enhance reliability, performance, and manage safety for its staff and the community. 'Be safe' is a corporate value and is reflected in Council decision making and drives system improvements and innovation across the water and sewer business.

The Operations and Maintenance Unit has recently developed a bespoke Electrical Safety Management System (ESMS) blending two streams – the Electrical Service General Safety Standards and an Electrical Services High Voltage Safety Management Plan. Under each stream sits related specifications, standards, procedures, permits and SWMS. This system establishes a framework to capture all aspects of work undertaken by related staff and has become a vehicle by which staff collaborate to drive improvement in work practices.

The ESMS has created a common 'language' for staff and delivered better safety planning and work outcomes. This is evidenced by an increase in safety discussions by staff both at regular Toolbox Talks and informally as jobs are undertaken, an increase in reporting of near misses and increased staff input into processes and documentation improvements within the ESMS. Staff experience tangible improvements to their working environment through innovation which is investigated, trialled and then embedded in ESMS via this safety reporting process.

Council has also identified two key technological improvements that will enhance reliability and performance of the network. Switchboard arc flash analysis will help us better understand and mitigate the risk associated with switchboard works. Alarm rationalisation will deliver significant operational benefits, better safety and security as well as better environmental outcomes associated with more accurate and timely information.

Switchboard Arc Flash analysis

The Operations and Maintenance Unit has identified switchboard arc flash as a risk that requires detailed analysis so that risk mitigation procedures can be based on an educated assumption of the ratings across the 400+ switchboard fleet.

Arc flash events can generate temperatures as high as 5000°C and can cause life threatening injuries. Implementing analysis of the switchboard fleet and associated risk measures will allow staff to determine whether recently introduced controls overstate the risk, leading to unnecessary and inefficient work practices, or understate the risk, leading to inadequate and potentially unsafe work practices. It will also enhance understanding of the risk that outdoor switchboards pose to the community.

Analysis of the entire fleet is not deemed to be cost efficient, so assessment of a representative cross section of switchboard types (age, size, connection type, load etc.) is in process. Results will inform improvements to switchboard design, protection settings and safety systems to more effectively mitigate the risks associated with performing works on these switchboards. These changes will be embedded into the ESMS and will be subject to review as part of continuous improvements to work practices and safety. Improvements will better equip staff with knowledge relating to known risks associated with switchboard types before they commence working on them. This will ensure improved safety outcomes are delivered as efficiently as possible.

Alarm Rationalisation

Opportunities to improve the reliability and performance of alarms across the network have been identified and a program for sewer pump stations has been developed to reduce unnecessary alarms, harmonise variations in work practices across sites, simplify SCADA templates and reduce double handling of data due to inadequate alarm masking. Rolling out the program will involve visiting over 200 sites to update local code.

A rationalised alarm philosophy will deliver operational efficiencies, reducing double handling and confusion for operators and maintenance staff. It will also allow for easier rotation of staff between sites and a reduction in errors associated with multiple or

conflicting processes. Improving 'alarm masking' and 'consequential alarming' will prevent multiple alarms from causing 'alarm flooding' which reduces response efficiency within the Water Operation Centre.

Reduction and harmonisation of SCADA templates will enable quicker and more consistent rollout of changes and system improvements. Efficiencies have been identified in data collection, interpretation and reporting making comparisons to KPIs timelier and more robust.

Safety and security will be enhanced by improvements in the interface between Soft starters and the Human/Machine Interface (HMI) enabling electricians to alter and configure 415v Soft starter parameters via Modbus without having to access the active Motor Cubical. Both onsite and network security will be improved with HMI PIN validation to SCADA auto-acknowledging the intruder alarm with the user's name, thereby reducing nuisance intruder alarms and providing the Water Operation Centre with greater visibility over each site.

Alarm rationalisation will also deliver better environmental results as timely and accurate monitoring allows Council to respond more quickly and efficiently to the issue and reduce environmental risk.

3.9.2 Information Technology

From 2018 to 2021 some key Information Technology deliverables have created efficiencies and enhanced the way that Water, Sewer and Stormwater Drainage runs their businesses (Table 25).

Table 25: Snapshot of IT improvements

Deliverable	Scope	Efficiencies/Achievements
Asset Management System	Migration of 755k technical assets stored within 30 plus databases (incl Access, Excel) to a single consolidated solution Harmonisation of Assets classifications to instil a common assets structure across council All water, sewer and stormwater drainage assets are now located on one database	Ability to capture costs over total life of Assets Ability to schedule and record Assets maintenance activities Mobility solution enabled to reduce travel to and from office to look up information Automation of inspections/workorders, reduction in manual entry and filing
Standardised hardware	Standardise the disparate laptop, desktop and peripheral equipment utilised by staff across Council sites	Greater functionality to hot desk, allowing movement between any council site

Deliverable	Scope	Efficiencies/Achievements
		Use of two screens improving ability to work and multitask Standardisation of IMT equipment resulting in more efficient troubleshooting and resolution
Consolidated software	Reduce duplicate software used throughout Council, minimising license and maintenance costs	Reduced license costs for software applications
Consolidated domain	Operate as one Council with a single platform	Introduction of better technical collaboration Less down time for staff in troubleshooting technical issues Better staff experience in consistent technology offerings
Operating System	Standardise operating system across Council	Staff can deploy anywhere and have a similar user experience Single methodology for deploying upgrades
Network Drives	Access Network drives in a single domain Prepare Home Drives for migration to OneDrive	Added file sharing and collaboration functionality Improved data accessibility Preparation for more collaborative functionality through One Drive Faster folder permission provisioning on position transfer
Time and Attendance	Consolidation of 2 disparate employee time recording processes from former councils. Reduce number of manual workarounds and provide visibility across Council. Reduce double handling by managers who have to provide approvals in both systems	One system for supervisors and managers to approve timesheets One system for employees
Geographic Information System	Design, build and implementation of on-premise consolidated GIS environment inclusive of: Infrastructure - server architecture (Test/Development/Production/Disaster Recovery); Systems/Solutions – ESRI Enterprise engine inclusive of corporate Geospatial solutions for intranet, internet, mobile and desktop;	Business continuity – High availability means 24/7 system availability to support Water & Sewer field operations and emergency response Improved user and customer experience - single source of access/truth for all geospatial data, systems and services. Improved performance and scalability – system is faster and able to store/process/provide complex and big data as a growing business requirement

Deliverable	Scope	Efficiencies/Achievements
	Data/Storage – centralised geodatabase and consolidation of 600+ corporate disparate geo-datasets (cleanse, merge, transition of 2000+ geo-datasets)	Capability to roll out more functionality e.g. geospatial based dashboards, mobility, forms, web solutions and self-service solution
Property and Rating	Design and build of solution for all property and rating transactions (including water billing)	One billing systems across Council
E-forms	Provide organisational platform to support process digitalisation for internal and external workflows	Enable staff to safely complete field-based works during COVID19, among other safety benefits. Faster turnaround times of form completion and distribution through multiple teams Compliance with information policies Improvised user experience from a single platform Agile ability to provide digital workflow solutions on demand
Security	Conduct a Real-World simulation of a cyber-attack to assess posture of Council's defences and detection capabilities	Security roadmap developed Identified critical risks across Council networks Remediation of risks posing immediate threat Awareness of need for greater investment into Security

3.10 Community and employee safety

3.10.1 Electrical safety procedures

Council's Electrical Services section manage the hazards and risks associated with electricity across the Water and Sewer Directorate via the implementation of an electrical safety management system (ESMS).

Council's ESMS is built on a framework where safe, competent people are provided with safe systems of work and fit for purpose electrical installations and equipment. The framework is shown diagrammatically inFigure 32.

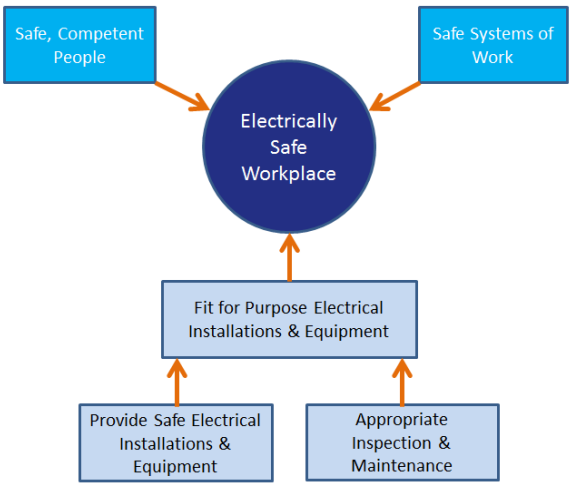

Figure 32: Electrical Safe Systems of Work Framework

The ESMS is underpinned by an Electrical Services Risk Assessment that focusses on the electrical related hazards and risks associated with Council's W&S Electrical Services Division. As an outcome of the Electrical Services Risk Assessment, the following document map was developed (Figure 33).

3.10.2 Electrical arc flash analysis

The Electrical Services section in W&S have recently started to adapt to the requirements of managing the risk of arc flash with its "fleet" of switchboards (>400), safety procedures have been introduced to the harmonised safety system and extra PPE to address the risks of injury due to an "arc flash" event occurring in a pump station switchboard. Currently the arc flash rating of all but a handful of switchboards is unknown and all of the risk mitigation procedures are based on an educated assumption of the ratings.

Arc flash events are a result of the breakdown of air between live electrical conductors which results in a large current flow. Associated with these arcing currents, is the formation of a plasma arcs. The arc temperatures can be as high as 5000 °C. and the most dangerous element of an arc flash event is direct contact with the plasma arc, which can cause life threatening injuries.

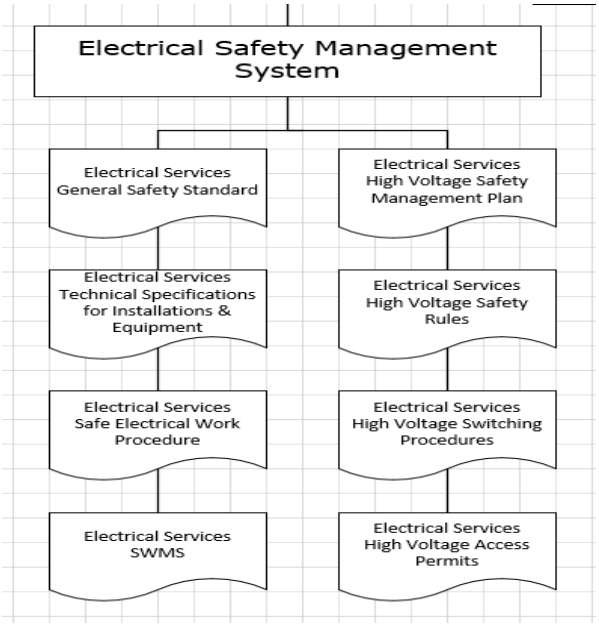

Figure 33: Electrical Safety Management System Document Map

To ensure that the current risk measures are appropriate and are not either overstating the risk (leading to unnecessary and inefficient work practices) or understating the risk (leading to inadequate and potentially unsafe work practices) it is essential that Council has a detailed understanding of the arc flash potentials of its switchboards. One of the critical things Council need to understand is whether its outdoor switchboards pose a risk to the public.

Based on best practice advice it has been determined Council need to carry out detailed analysis of a representative cross section of its switchboards to fully understand the correct mitigations Council need to apply to manage the risk presented by arc flash. Council has developed a specification based on a preliminary study of two switchboards. This spec sets out a step by step methodology, software modelling criteria and analysis requirements for a comprehensive arc flash analysis. Twenty-eight switchboards have been selected as a representative sample after a thorough assessment of the variety of switchboard types (age, size, connection type, load etc.) needing to be assessed.

The 28 switchboards were selected as a representative sample such that if the results confirm current assumptions (based on work undertaken by others e.g. Energy Network Association) it would allow most of Council's switchboards to be easily categorised without further study. It should be noted that if some studies deliver unforeseen results, further studies may be required. Also, the larger unique switchboards (at Treatment Plants) will still need to be individually analysed but this is planned to be done as a later step.

3.10.3 Dam safety

Council owns, operates and maintains seven (7) dams that are prescribed under the Dams Safety Act 1978 (NSW): Lower Mooney Dam, Upper Mooney Dam, Mangrove Creek Dam, Mardi Dam, Palm Tree Grove Detention Basin, Wyong Road Detention Basin and Pecan Close Detention Basin. These can be seen in
Table 26 and Figure 34.

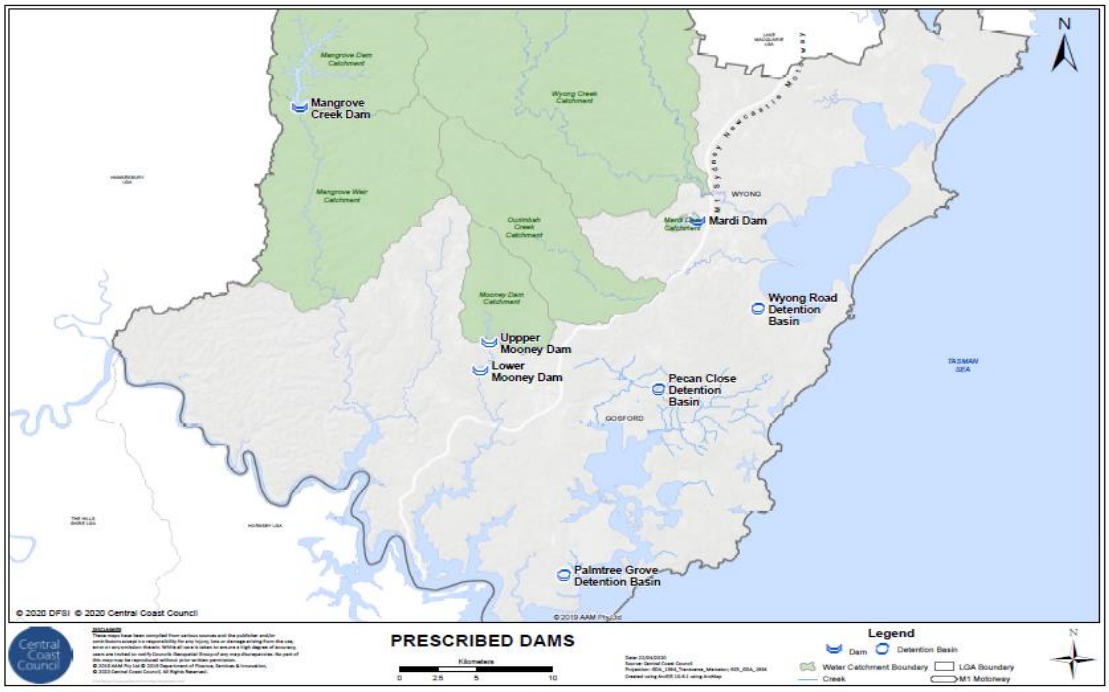

Figure 34: Council's Seven (7) Prescribed Dams Locations

Table 26: Prescribed Dams, Consequence Category and Responsible Directorate

Name	Responsible Directorate	Consequence Category
Lower Mooney Dam	Water and Sewer	Low
Upper Mooney Dam	Water and Sewer	High C
Mangrove Creek Dam	Water and Sewer	High A
Mardi Dam	Water and Sewer	Extreme
Palmtree Grove Detention Basin	Roads Transport Drainage	High C
Wyong Road Detention Basin	Roads Transport Drainage	High C
Pecan Close Detention Basin	Roads Transport Drainage	Low

The Dam Safety Act 2015 and the Dam Safety Regulation 2019 is in place to ensure that dams meet a level of safety acceptable to the community. Guidelines relevant to the design, operation and management of dams are produced by the Dams Safety NSW and the Australian National Committee on Large Dams.

Council is responsible for ensuring the following activities are undertaken:

- Proper operation, maintenance and surveillance of the dams using trained personnel
- Ongoing assessment of dam behaviour based on surveillance information
- Periodic review of each dam's compliance with current Dams Safety Committee requirements. Comprehensive surveillance reports are required to be submitted to the Dams Safety Committee at five yearly intervals
- Review of all dam information and assessments by experienced personnel
- Actions, in response to dam assessments, to ensure that the dams are maintained in a safe condition
- Appropriate dam safety emergency plans in place for dams whose failure could cause loss of life

Council has recently completed two major dam safety investigations at Mangrove Creek Dam and Mardi Dam which have confirmed confidence in the current management and operation of the two dams.

In 2020, Council completed a comprehensive risk analysis and investigation for the proposed upgrade of Mangrove Creek Dam's existing Spillway. The investigation identified the proposed upgrade was not required to return the Full Supply Level (FSL) of the dam to the original operational 100 % FSL. This was due to the adoption of an alternate 'risk based' assessment approach under the new Dam Safety Regulation 2019. The risk assessment was undertaken by specialist dam safety professionals and subject to an independent peer review, as required by Dam Safety NSW.

The review identified some potential capital works associated with the existing parametric joins in the dam wall and drainage works associated with the spillway. However, these works are not likely required unless Council was to raise the height of the Dam beyond the current 100% FSL. Council has considered this option as part of development of the Central Coast Water Security Plan however this option is not included in either of Council's preferred portfolios. Neither of these potential projects is therefore included in this pricing submission.

4 Levels of service capital investment

Council is performing below average in service provision and continuity. This could be attributed to Councils historically low capital investment. As noted in IPART's 2019 determination, both former councils had a history of underperforming in capital delivery. This underperformance has been explained in previous determinations however as shown in Figure 35 and Figure 36 it is evident Council must invest more in its assets to better perform.

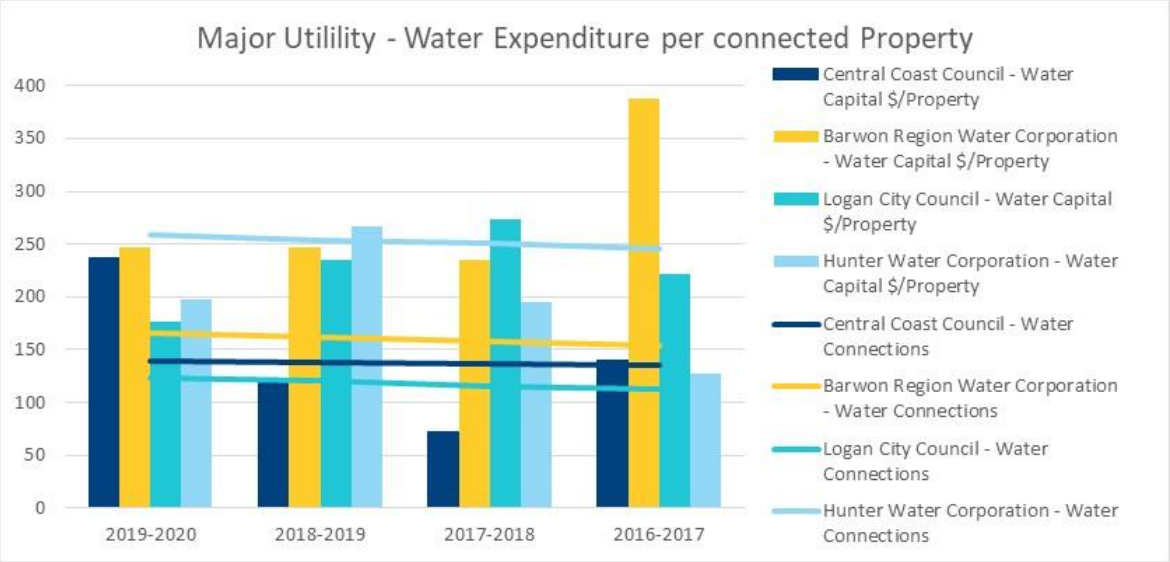

Figure 35: Major Utility - Water Expenditure per Connected Property (National Performance Reporting 2019-20)

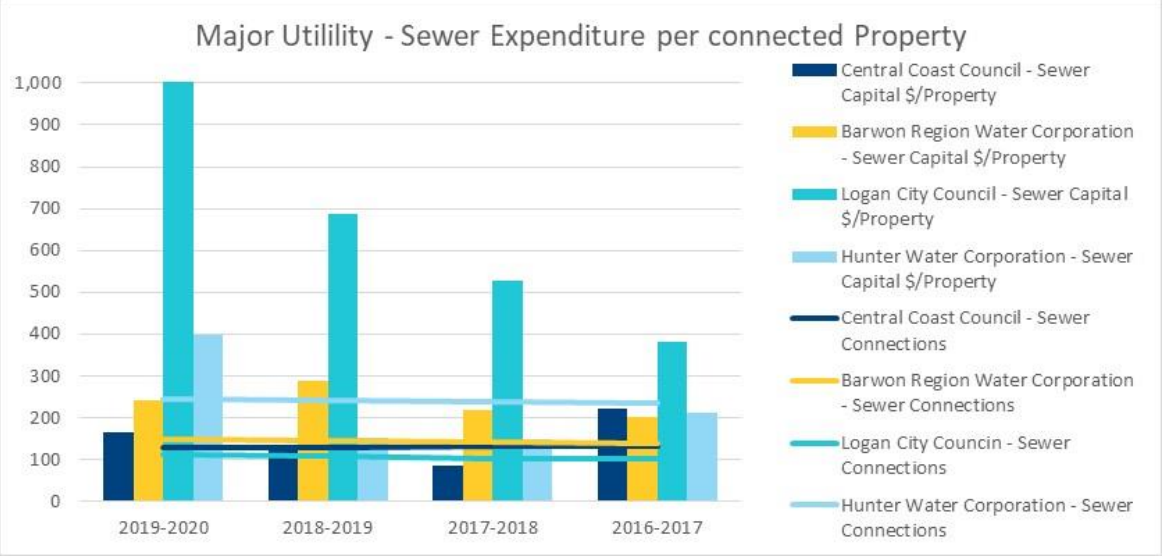

Figure 36: Major Utility - Sewer Expenditure per Connected Property (National Performance Reporting 2019-20)

5 Water conservation

Council was required to increase its water conservation program in response to the recent drought, following a previous reduction in expenditure for the majority of conservation related activities. Measures implemented and subsequently wound back (for various reasons) during the 2019 IPART determination period were:

- Water education and engagement
- Leak detection and rectification
- Water Restrictions.

It is industry standard practice that an efficient level of water conservation is implemented as part of Business as Usual activities. Council's historical stop/start approach to water conservation in response to an ever-changing cycle of wet and dry climate conditions is not efficient or effective. A range of required improvements in the area of Water Conservation is detailed in Council's Water Resilience Step Change Business Case to ensure Council's supply scheme is resilient to population growth, climate change and future droughts and allows the deferral of future large investments in new supply sources.

5.1 Water education and engagement

'Love Water' website and 'Live to 150L' campaign

The standalone website https://lovewater.centralcoast.nsw.gov.au/ was created to provide customers with easy access to water resource information, rules associated with the levels of water restrictions and tips and advice on saving water in their home and business. Water conservation advice and tools are provided by Smart Water Advice, ensuring consistency of messaging with other water industry partners. The website also promotes Council's aspirational water consumption target of 150L/person/day.

Water Education Programs

Council developed a water efficiency initiative on the Central Coast aimed at small businesses (Figure 37) to reduce water consumption by using data loggers to monitor water usage for up to two months. The online portal offered business owners access to the data, as well as a water audit by a professional plumber to investigate inefficient water use practises. This water saving program was also applied to Central Coast schools, resulting in immediate benefits in locating leaks and breaks. Some possible advantages of this program are:

- Leak detection
- Inventory of water amenities
- Lowering water usage
- Understanding peak times of water use
- Lowering of water bills.

Figure 37: Small Business Water Education Program Brochure

Water Efficiency Management Plans

During periods of Water Wise Rules or Water Restrictions, large water users are required to prepare and implement Water Efficiency Management Plans (WEMP) to achieve reductions in water demand. Limited resources have meant these plans have not been reviewed since their preparation during the Millennium Drought. It is therefore unlikely that new businesses are aware of the requirement to produce and implement WEMP. It is recommended the program is reinstated to ensure efficient gains by large water users, to improve longer term water resilience to future growth in population, climate change and drought. This is included within the Water Resilience Step Change Business Case.

5.2 Leakage management

Examination of historical Council records indicates that limited planned leak detection work had been co-ordinated by the Asset Management group during 2004-07 and 2011-14 in the former Gosford City Council. By contrast, Wyong Shire Council had only performed active leak detection work during 2005.

Council's approach to leakage management since amalgamation has been 'run to failure', reliant on the public reporting leaks to Council's customer contact centre. The main issue with this approach is that a leak may have been running for a significant period of time, but only recently become visible at the surface due to increased flow rate. Alternatively, leaks directly to the stormwater system may remain undetected unless observed by a member of the public or Council staff and reported for further investigation. Certain pipe types such as cast iron, also develop leaks prior to pipe failure and are then misreported as a water main break. This is reflected in the results for water loss indicators in the 2019-2020 National Performance Report for Water Supply Authorities, where Council reported leakage rate of 58L/connection/day or 3.2kL/km/day for its potable water supply network.

Since 25 March 2020, Council has commenced a proactive leak detection program with an annual funding commitment of $142,000 per year ($2020-21) for a total of $568,000 for four years ($2020-21). The funding was awarded under the previous IPART determination. In the absence of limited leakage data, the program commenced focus on the suburbs with the highest reported frequency of watermain breaks per 100km. Over the course of the first full year's program of work (i.e. four quarters), 476 leaks were detected across 1205 km of water main. The estimated loss rate prior to repairs was 2.5ML/day or 899.4ML/year. Estimated cost of water saved from the leaks identified and repaired for the first year of leak detection equates to $1.9M. Estimated loss rates are based on the IWA (International Water Association) Water Loss Taskforce figures and are conservative.

The leakage detection and quantification contract was awarded to Water Intelligence Australia from an open tender process. Expenditure for the first year of work was $136,415 ($2020-21).

Estimated loss rate is 2.05 kL/km/day for water mains <DN450 or 30L/connection/day. Extrapolating the identified leakage rate of 30L/connection/day to a network wide value for 126,746 connections, yields an estimated leakage rate at 1373ML/year. This value could be misleading and potentially only an indication, as the network has not been completely scanned. On average 39.7 leaks per month were detected, however some locations have already been identified as having a greater number of leaks. The top ten locations for both the number of leaks detected and volumetric loss for leaks detected are shown in Table 27.

Of interest, are the results from Wyoming where three scans have been performed to date; two scans at a four monthly frequency and one scan after seven months. A significant change was observed with the increase in elapsed time between scans of seven months. An estimated 46% increase in leakage rate based on volumetric losses was observed. The result indicates that Wyoming is a hotspot for leakage and ideally has a maximum acoustic scanning interval of four months to maintain any form of leakage control. With limited funding (equivalent to only half the network with main size <DN450) the program is juggling

to acoustically scan as much of the potable network as possible as well as identifying and concentrating on 'hot-spot' locations to maximise water conservation and reduce potable water losses. Approximately 45% of the acoustic leak detection performed to date is repeat scanning of locations with identified high volumetric loss rates, to gain a better understanding of the natural rate of rise in specific areas.

Table 27: Top ten locations for both the number of leaks detected and volumetric loss for leaks detected

Top 10 Volumetric	Top 10 Quantitative
Wyoming	Terrigal
Umina Beach	Umina Beach
Terrigal	Wyoming
Berkeley Vale	Berkeley Vale
Avoca Beach	Avoca Beach
North Avoca	Green Point
Green Point	Wamberal
Wamberal	North Avoca
Tuggerah	Kincumber
East Gosford	Tuggerah

Council plans to increase leak detection and rectification through the 2022 IPART determination period to effectively baseline system-wide leakage and realise savings. This is described further in the Water Resilience Step Change Business Case.

5.3 Water Restrictions

Council formally declared Level 1 Water Restrictions across its service area in February 2020 when reaching its trigger level of 50% storage in Mangrove Creek Dam. This followed Sydney Water and Hunter Water also implementing water restrictions through 2019, as their relevant triggers were reached.

The level of effective messaging and ability to adjust customer behaviour was limited, as the Central Coast Region experienced significant flooding immediately after restrictions were declared and the COVID-19 pandemic commenced the following month.

Following the subsequent recovery of water storages, Council reverted to Water Wise Rules at the end of 2020.

6 Environmentally responsible – regulatory obligations

Council must consider these NSW and Commonwealth Acts of Parliament and their associated statutes when delivering water, sewerage and drainage services to the community:

- Biodiversity Conservation Act 2016
- Biosecurity Act 2015
- Coastal Management Act 2016
- Contaminated Land Management Act 1997
- Crown Land Management Act 2016
- Dam Safety Act 2015
- Dam Safety Regulation 2019
- Dangerous Goods (Road and Rail Transport) Act 2008
- Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
- Environmental Planning and Assessment Act 1979
- Environmentally Hazardous Chemicals Act 1985
- Fisheries Management Act 1994
- Heritage Act 1977
- Local Government Act 1993
- Local Land Services Act 2013
- Marine Estate Management Act 2014
- National Parks and Wildlife Act 1974
- Pesticides Act 1999
- Protection of the Environment Operations Act 1997
- Roads Act 1993
- Rural Fires Act 1997
- Water Act 1912
- Water Act 2007 (Commonwealth)
- Water Management Act 2000
- Wilderness Act 1987

6.1 Environmental Management System

Following amalgamation, Council continues to develop its Environmental Management System through consolidation to update and standardise plans and procedures that mitigate environmental risk. The top five environmental risks have been identified for each Unit in Water and Sewer, to coordinate and prioritise mitigation projects and activities. These priority risks will be incorporated into the Council risk management framework, to ensure

that risk mitigation activities are reviewed and prioritised in capital expenditure and operational expenditure plans. Audit and review activities within the Water and Sewer Directorate, and Council more generally, will ensure that actions identified are effective at mitigating risk.

6.2 Treatment plant compliance

6.2.1 Sewage Treatment Plants (STPs)

NSW EPA has issued three Environment Protection Licences (EPLs) for the operation of eight Council STP premises, including the associated sewer reticulation system (Table 28).

Table 28: Environmental Protection Licences for Council sewage treatment plants and associated effluent outfalls

EPL	STPs	Treated Effluent Outfall
1802	Kincumber Woy Woy	Winney Bay
1942	Bateau Bay	Wonga Point
2647	Mannering Park Gwandalan Wyong South Charmhaven Toukley	Norah Head

Pollutant load and concentration limits and maximum daily volume of treated effluent discharged to the ocean outfalls specified in the EPLs are summarised in Table 29.

EPLs specify the conditions that premises must be operated under including:

- Load and concentration limits for specific pollutants discharged from the premises
- Maximum daily volume of treated effluent discharged to the environment
- Conditions relating to operation and maintenance of the premises including the reticulation system
- Monitoring conditions, including testing methods to be used
- Reporting conditions including annual reporting and incident reporting
- Pollution reduction studies and programs to improve environmental performance

Non-compliance with daily discharge volume limits occurs for each EPL following major storm events. EPL 2647 daily discharge volume limit is regularly challenged by the balancing of flow between five STPs with increased demand due to population growth (Figure 38) in the sewage catchment.

Table 29: Pollutant load, concentration and maximum daily volume limits of effluent discharged to ocean outfalls

Parameter		EPL 1802	EPL 2647	EPL 1942
Daily Flow to Outfall Limits				
Volume (ML)		150	40	36
Concentration Limits				
pH		6.5 – 8.5	6.5 – 8.5	6.5 – 8.5
BOD (mg/L)	90th %ile	30	-	-
Oil & Grease (mg/L)	50th %ile	5	5	5
	90th %ile	10	10	10
	3DGM	15	15	15
Total Suspended Solids (mg/L)	50th %ile	35	35	35
	90th %ile	50	50	50
	3DGM	60	60	60
Annual Load Limits				
Total Nitrogen (kg)		227,682.20	175,750	75,745
Oil and Grease (kg)		8,791.25	40,036	10,862
Total Suspended Solids (kg)		243,683.93	150,450	17,788
Cadmium (kg)		41.08	14	-
Chromium (kg)		63.84	14	-
Copper (kg)		113.26	160	-
Lead (kg)		4.43	14	-
Mercury (kg)		0.41	2	-
Selenium (kg)		101.69	14	-
Zinc (kg)		561.67	280	-
Pesticides and PCBs (kg)		1.77	3	-

Non-compliance with EPL conditions, including administrative non-compliances, are reported to EPA on an annual basis. Figure 39 shows the number of reported non-compliances of EPL 1802, EPL 1942 and EPL 2647 conditions from 2016 to 2020. Non-compliance with pollutant concentration and load limits reported to EPA have become prevalent for EPLs 1802 and 2647 (Table 30).

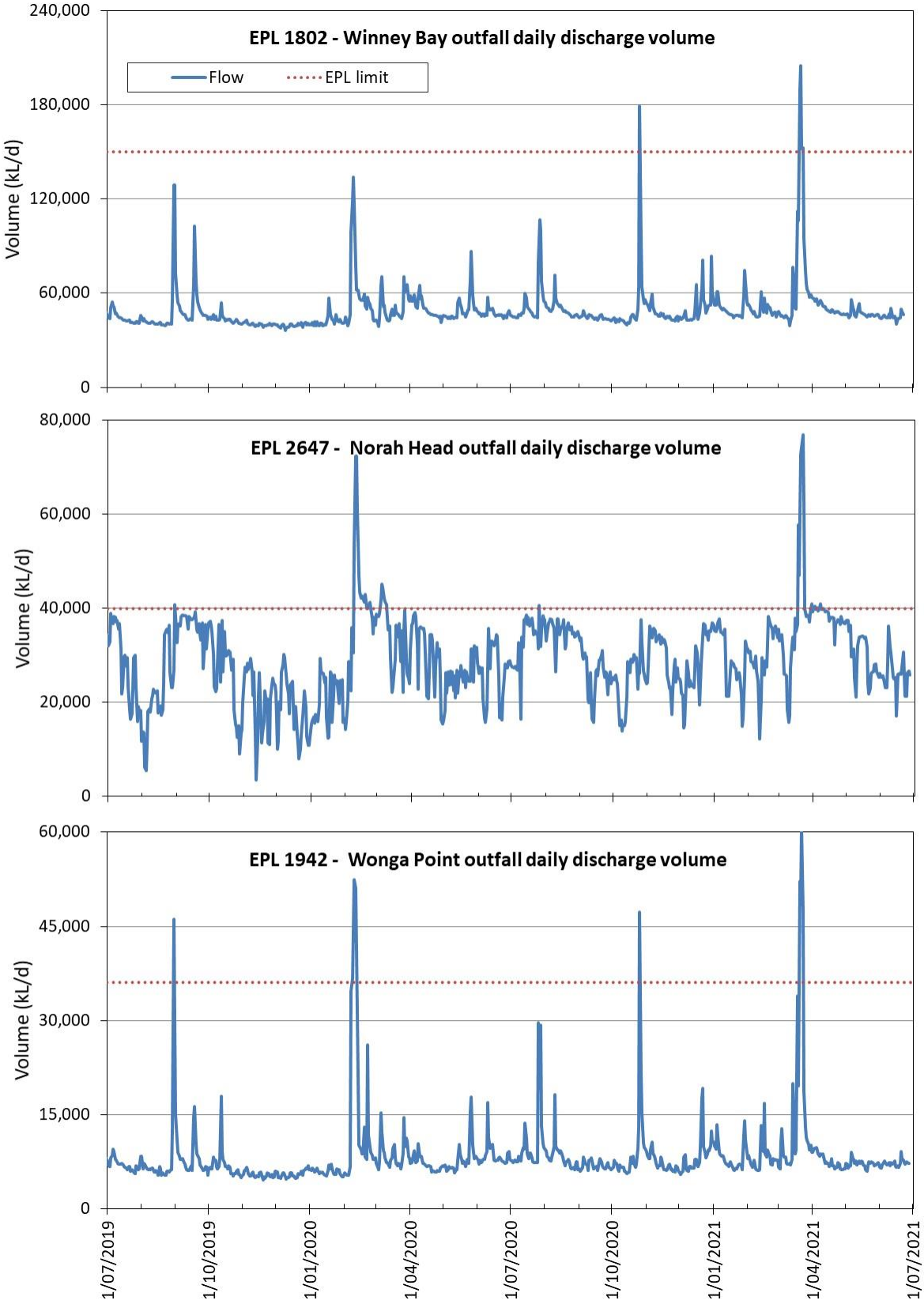

Figure 38: Daily discharge at Winney Bay (EPL 1802), Wonga Point (EPL 1942), Norah Head (EPL 2647) and associated EPL limits

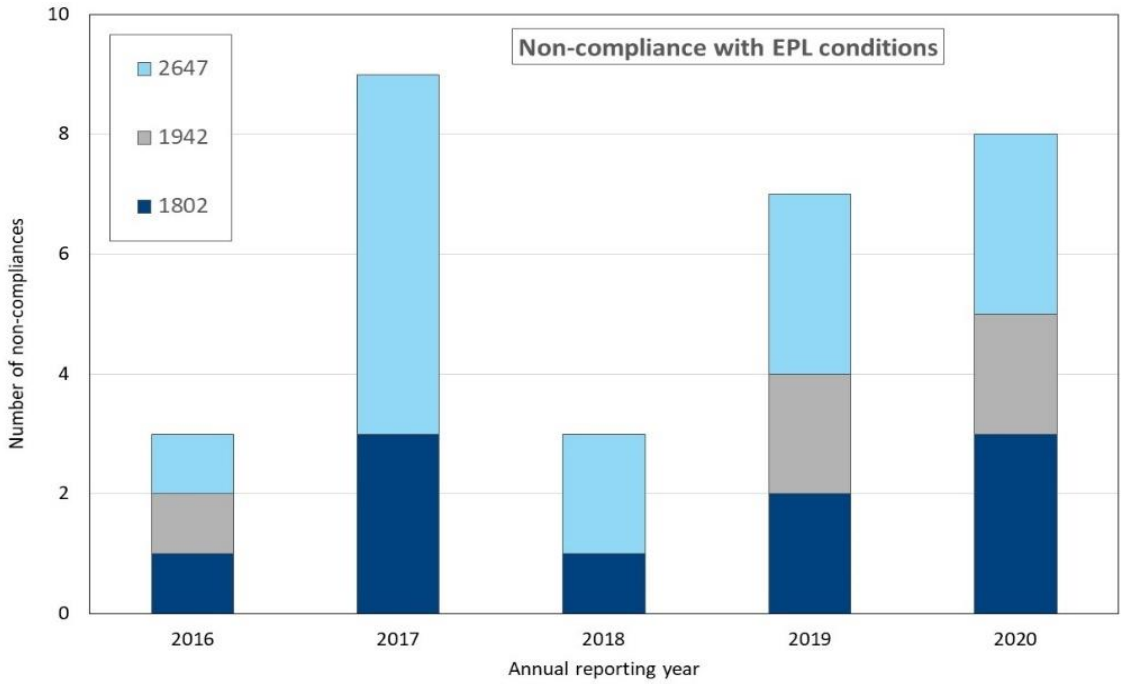

Figure 39: Reported non-compliances (including administrative) with EPL 1802, EPL 1942 and EPL 2647 conditions from 2016 to 2020

Table 30: Non-compliance with pollutant concentration and load limits reported to EPA have become prevalent for EPL 1802 and EPL 2647

Reporting year	EPL	Non-compliance
2018	2647	Maximum pH Annual load of total nitrogen
2019	1802	Annual load of total suspended solids Annual load of total oil and grease 3DGM concentration of daily discharge volume limits
	2647	Annual load of total nitrogen
2020	1802	Annual load of total suspended solids Annual load of total oil and grease 90th percentile concentration of total suspended solids
	2647	Annual load of total nitrogen

A number of capital improvement projects have been identified for Kincumber STP to improve plant capacity, sludge formation and handling at the facility to prevent future sludge carryover events:

- Mechanical sludge dewatering renewal ($3.4M in 2021-22 to 2022-23)
- STP capacity upgrade ($1M in 2023-24 to 2025-26).

Major augmentation works are proposed for Charmhaven STP ($12.2M from 2021-22 to 2024-25) to improve the removal of nitrogen and solids and reduce loads of these pollutants to the outfall to Norah Head.

6.2.2 Council's proposal for compliance with EPL concentration, load limits output measures

A suite of capital works projects and programs is proposed by Council for the period of 2022-23 to 2026-27 to meet the compliance with the EPL concentration load limits' IPART output measure targets. The total value of these projects and programs is summarised in Table 31. Capital works projects and programs and proposed initiatives associated with compliance with EPL concentration and load limits are provided in the Appendix.

Table 31: Capital works program summary proposed to meet compliance with EPL concentration and load limits output measure ($2021-22)

IPART output measure ($M)	Forecast 2022-23	Forecast 2023-24	Forecast 2024-25	Forecast 2025-26	Forecast 2026-27	Total Forecast
Compliance with EPL concentration, load limits	7.3	5.9	9.3	6.3	5.9	**34.7**

The proposed program of installation of overflow monitoring devices across the sewer network ($M1.26 in 2022-23 after $M0.03 in 2021-22) will improve the timeliness of response to overflow events and reduce pollutant loads when sewer overflows occur. Proposed sealing and repair of leaking sewer manholes near waterways ($M0.71 in 2023-24 to 2026-27 and $M0.89 in 2027-28 to 2031-34) will reduce the number of overflow events reportable to the environmental regulator.

6.3 Environmental incidents

EPLs require that Council reports incidents of sewage overflow that have potential to cause material harm to the environment, public health or property damage. Each instance must be monitored, investigated and a follow-up written report must be provided to EPA within seven days.

Figure 40 illustrates the number of pollution incidents reported to the EPA in each EPL annual reporting period and highlights the operational cost of reactively responding to these incidents caused by sewer chokes and blockages, asset failure, power outages and stormwater infiltration. Whilst most pollution events reported to EPA are relatively minor, a number of these resulted in or threatened regulatory intervention (Table 32).

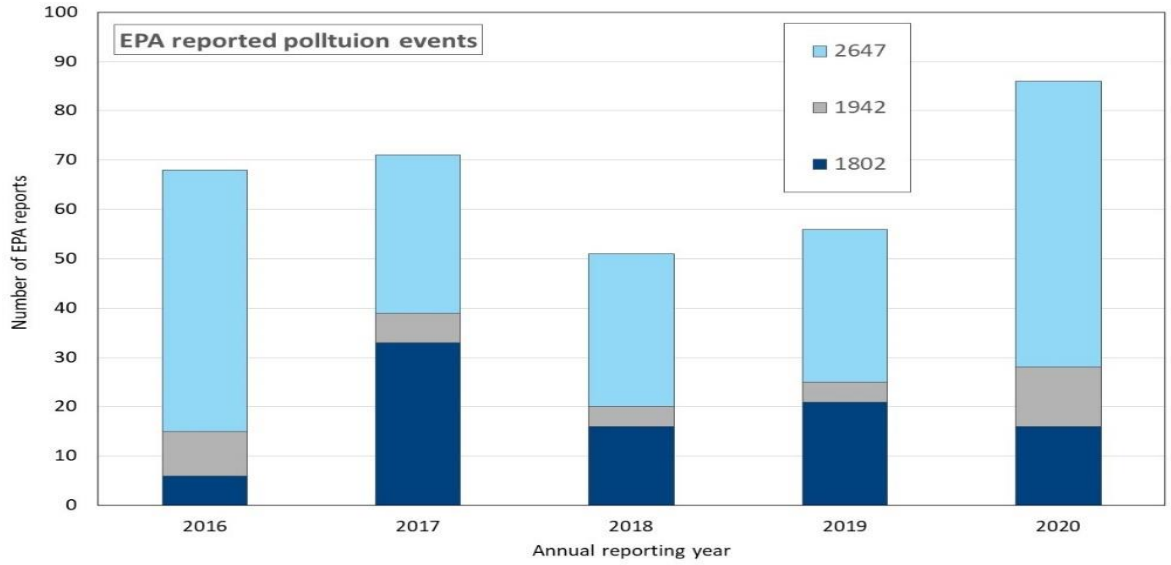

Figure 40: Number of pollution incidents reported to the EPA in each EPL annual reporting period

Table 32: Regulatory interventions by EPA since 2017

Year	Incident	EPA Response
2017	Multiple customer complaints of aerator noise from Charmhaven STP	Pollution Reduction Program (PRP) requirement to undertake noise mitigation measures
2017	Multiple odour complaints from vicinity of Kincumber STP	PRP to install odour control system on Empire Bay Drive, and investigate Doyle St vent stack as a potential odour source
2018	Delay in responding to an after -hours reported sewer manhole surcharge in Lake Munmorah	Notice to provide information regarding circumstances that lead to delays, and actions taken to correct
2019	Sewer trunk main leak into nearby creek at Forresters Beach that was not detected for a number of days	Inspection, notice to provide information and Enforceable Undertaking requiring creek rehabilitation and improvements in SCADA control of transfer systems
2019	Beachwatch monitoring at Terrigal Beach identified a history of poor bacteriological water quality, likely to have been of human origin	PRP to investigate sewer and drainage assets for potential contamination sources, with upgrade works identified and potential for extending the requirements to other lagoon catchments

Year	Incident	EPA Response
2020	Pumping of water from Wyong South STP wet weather lagoon to nearby waterway due to loss of freeboard and potential for wall breach following storm	Inspection and requirement for geotechnical survey to determine structural integrity of wall
2020	Sewer trunk main leak into nearby creek at West Gosford that was undetected for a number of days	Notice to provide information regarding SCADA control of transfer systems and response to pollution incidents
2020	Multiple events of clarifier sludge carry-over from Kincumber STP to the Norah Head ocean outfall, due to high volume inflow events and loss of process control	Notice to provide information to better understand circumstances of clarifier sludge carry-over events
2020	Loss of treated sewage from leak in Charmhaven to Toukley STP Effluent Disposal Main to nearby lake. Containment of discharge delayed due to delays in accessing	No regulatory intervention
2020	Sewage discharge from 525 mm rising main failure to Canton Beach impacting recreational use of beach during holiday period	No regulatory intervention
2021	Sewage discharge from 425 mm rising main failure at Budgewoi; isolated location caused delays in locating and repairing break	No regulatory intervention
2021	Pumping of water from Wyong South and Charmhaven STP wet weather lagoons to nearby waterways due to loss of freeboard and potential for wall breach following storm	Inspection as part of 5-year EPL review

6.4 Pollution reduction programs

EPA has implemented several Pollution Reduction Programs (PRPs) in its EPLs, requiring Council to investigate and mitigate more significant environmental pollution issues created by operations under the licence. Currently, a recently completed PRP is:

EPL 1802: Terrigal sewerage reticulation system
Investigation and Improvement Works for the Terrigal Sewerage Reticulation System to:

- Investigate all potential sources of sewage contamination in the Terrigal Catchment from the sewerage reticulation system and connections to this system
- Prioritise actions for addressing all potential sources of sewage contamination in the Terrigal Catchment
- Implement a program of works to repair or replace those parts of the sewerage reticulation system that pose a risk to human health and the water quality of Terrigal Beach and Terrigal Haven

Terrigal and Coastal Lagoons Audit
The Terrigal and Coastal Lagoons Audit is a comprehensive water quality improvement program Council is undertaking in partnership with the NSW Government's Department of Planning, Industry and Environment (the Department). The Audit is investigating water quality at Terrigal Beach, Terrigal Haven, Terrigal Lagoon, Wamberal Lagoon, Avoca Lagoon and Cockrone Lagoon. A team of scientists from the Department and Council is working collaboratively with technical experts and operational staff to assess possible sources of pollution in each catchment, determine the impact on long-term water quality and prioritise remediation works.

6.5 Greenhouse gas emissions

Like most water utilities, Council activities contribute directly to greenhouse gas emissions from fossil fuel consumption and greenhouse gas emissions (methane and nitrous oxide) as a product of sewage treatment processes. Indirect greenhouse emissions are due to electricity consumption, primarily from water and sewage pumping and treatment.

Electricity consumption is partially offset by renewable energy generated by solar panels installed at a number of facilities. Greenhouse gas mitigation occurs via methane capture and flaring at Kincumber and Toukley STPs.

Council's net greenhouse gas emissions are high relative to other NSW LWUs, indicative of the population served. Council's relative greenhouse gas emission impact is the weighted median of all NSW LWUs, when considered as t CO_2 equivalent per 1000 properties.

Figure 41

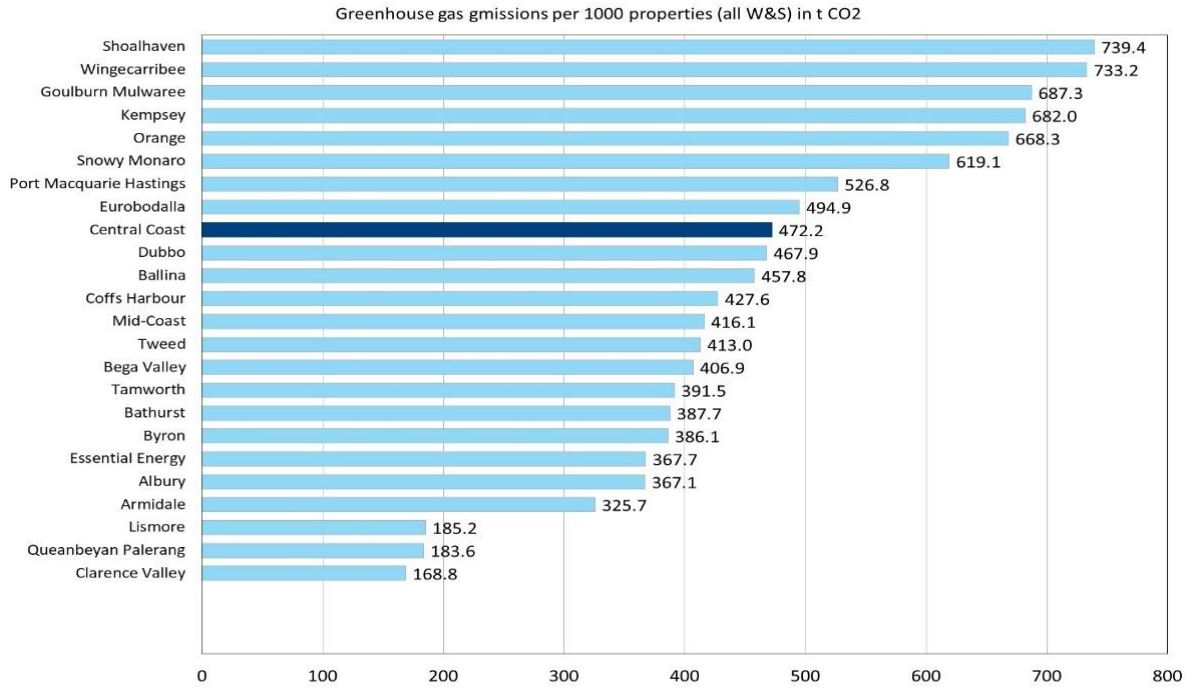

Figure 41: Greenhouse gas emissions by NSW local water utilities (LWU Report 2019-2020)

A number of projects specifically targeting greenhouse gas emissions are proposed:

- Kincumber STP energy co-generation plant ($3.2M in 2022-23 to 2024-25)
- Solar photovoltaic cell panel installation program at STPs ($1.7M in 2023-24 to 2025-26)
- Solar photovoltaic cell panel installation program at Mardi and Somersby WTPs ($284,000 in 2023-24)
- Expanded greenhouse gas monitoring program to meet current industry standards and improve knowledge of greenhouse gas sources from STP process ($525,000 in 2023-24 and 2025-26 to 2026-27)

Council will continue to improve greenhouse gas emission methodology in line with industry standards to better understand sources of emissions and implement energy saving measures where identified, to reduce operational expenditure.

6.6 Stormwater quality and amenity

Council owns and maintains approximately 52 kilometres of open stormwater drains and 419 stormwater quality improvement devices including constructed wetlands, biofiltration basins and Gross Pollutant Traps. These stormwater drainage assets help to manage stormwater runoff but also function to improve waterway health and community amenity.

At the time of the previous IPART determination, these services were funded via a Stormwater Levy under the Local Government Act. This levy whereby property owners pay approximately $25 per annum, is no longer in place and ceased being charged in the former Wyong Council in the 2016-17 rating year. Prior to the Stormwater Levy, the services were funded by the Stormwater Drainage Charge under the Water Management Act.

Stormwater quality and waterway health is very important to the Central Coast community, demonstrated by widespread support for the past Stormwater Levy, and consistently strong themes informed by the record level of consultation in the development of Council's Community Strategic Plan.

In planning its future activities, Council has taken into account the customers' views and have looked to simplify the provision of these services by ceasing the additional Stormwater Levy and proposing to consolidate all stormwater drainage fees into the one charge. This submission includes the funding required to continue to provide these services consistent with historic service levels.

7 Drinking water management system

Council is required to provide safe drinking water in accordance with the NSW *Public Health Act 2010*, the Public Health Regulation 2012, *Fluoridation of Public Water Supplies Act 1957*, and Fluoridation of Public Water Supplies Regulation 2017.

A key requirement for drinking water suppliers is compliance with a quality assurance program in the form of a Drinking Water Management System.

A Drinking Water Management System (DWMS) consists of documents, procedures and other supporting information for the safe supply of drinking water. The DWMS must address the elements of the Framework for Management of Drinking Water Quality (Australian Drinking Water Guidelines) relevant to the operations of the supplier. At the heart of the Framework are Critical Control Points (CCPs) - activities, procedures or processes critical to controlling a water quality hazard (for example chlorination and filtration/particle removal).

The DWMS must be kept current and regularly reviewed to ensure it has been properly implemented and risks are effectively addressed. An element of the Framework is the evaluation and audit of the management of drinking water quality. Water utilities should plan for external review or audit to demonstrate how they satisfy requirements of the *Public Health Act 2010* and Public Health Regulation 2012. Regardless of the audits commissioned by the water utility, NSW Health has the authority to commission a comprehensive review of utilities' DWMS.

In 2017, NSW Health provided funding for a consultant to work with Council to consolidate and review the two DWMS of the former Councils to develop a single Central Coast Council DWMS. This project was completed in June 2018 and will require review in 2022.

Council maintains a catchment-to-tap water quality verification program, with Critical Control Points established at critical barriers in the drinking water supply system to identify and take management actions to protect the health of customers. In addition to the internal water quality monitoring program, Council also participated in the independent water quality verification program maintained by NSW Health Forensic and Analytical Science Service (FASS). IPART established water quality output measures of 100% compliance with ADWG microbial and chemical guideline values for the 2019 IPART determination period (Table 33).

Table 33: ADWG microbial and chemical guideline values

Period	% Compliance ADWG microbial guideline values	% Compliance ADWG chemical guideline values
2020	100	99.7[1]
2019	100	100
2018	99.9[2]	99.9[3]
2017	100	99.8[4]

1: Two instances of cadmium and one instance of nickel concentration were found to be due to contamination from sources outside the water reticulation network.
2: One detection of E. coli (1 org/100 mL) could not be replicated by repeat sampling and analysis. No evidence of contamination could be determined.
3: One instance of cadmium concentration could not be determined by repeat sampling and testing. The source was unknown.
4: One instance of cadmium concentration could not be determined by repeat sampling and testing. The source was unknown. One instance of high pH was due to long water residence time in a concrete pipe.

Overall, the results of the drinking water monitoring and verification program demonstrate that Council continues to deliver safe drinking water to customers. Further information on Council's drinking water catchment, treatment and supply is provided in Technical Paper 10.

8 Abbreviations

ADWG	Australian Drinking Water Guidelines
AFOC	Assets Free of Charge
BOM	Bureau of Meteorology
CAPEX	Capital Expenditure
CBA	Cost Benefit Analysis
CCPs	Critical Control Points
CCWSP	Central Coast Water Security Plan
CoF	Consequence of Failure
CX	Customer Information System
DCA	Developer Contributed Assets
DOC	Dissolved Organic Compound
DPIE	Department of Planning, Industry and Environment
DSP	Development Servicing Plans
DWMS	Drinking Water Management System
ELT	Executive Leadership Team
EPA	Environment Protection Authority
EPL	Environmental Protection Licence
ERM	Enterprise Risk Management
ESMS	Electrical Safety Management System
FASS	Forensic and Analytical Science Service
FSL	Full Supply Level
GIS	Geographic Information Systems
HMI	Human Machine Interface
IPART	Independent Pricing And Regulatory Tribunal
IWRP	Integrated Water Resources Plan
KPI	Key Performance Indicator
LGA	Local Government Area
LHWSP	Lower Hunter Water Security Plan
LoF	Likelihood of Failure
LRMC	Long Run Marginal Cost
NATA	National Association of Testing Authority
NPR	National Performance Report
NWI	National Water Initiative
OPEX	Operating Expenditure
PRP	Pollution Reduction Programme
SME	Small to Medium Enterprise
SOC	State Owned Corporation
SWMS	Safe Work Method Statements
WEMP	Water Efficiency Management Plans

WMA	Water Management Act
WOC	Water Operations Centre
WSAA	Water Services Association Australia

9 References

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- Australian / New Zealand Standard ISO 31000-2009 – Risk Management
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- Biosecurity Act 2015
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- Central Coast Council Customer Experience High Level Plan and Roadmap to Change
- Central Coast Council Odour Strategy
- Coastal Management Act 2016
- Contaminated Land Management Act 1997
- Community Feedback for IPART Submission, Woolcott Research & Engagement, April 2021
- Complaints and feedback management policy CCC012 July 2019
- Corporate Complaints Management Framework
- Central Coast Council Complaints Policy
- Crown Land Management Act 2016
- Council Customer Charter
- Customer Experience Strategy
- Customer survey [on their satisfaction]
- Dams Safety NSW
- Dam Safety Regulation 2019
- Dangerous Goods (Road and Rail Transport) Act 2008
- Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
- Environmental Planning and Assessment Act 1979
- Environmentally Hazardous Chemicals Act 1985
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- Water and Sewer Complaints Management Framework
- Water Management Act 2000
- Wilderness Act 1987
- WSAA National Customer Perception Study 2019

APPENDICES

Central Coast Council proposed capital works programs

Proposed Council capital works programs for the 2022-23 to 2026-27 IPART with forecasted yearly investments are presented in this Appendix. All dollar values presented in this Section are in real 2020-21 dollars. Note these tables are not a complete representation of the total capital works program.

Table A1 – Capital works program by asset category to meet compliance with water main breaks per 100km of main – IPART output measure alignment

$M - Real $2021-22	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Total
Water main breaks					
Water Main	2.0	6.0	5.0	5.0	**18.0**
Water Network Assets	0.0	0.2	0.1	0.2	**0.5**
Water Pump Station	0.0	0.2	0.1	0.2	**0.5**
Total	**2.0**	**6.3**	**5.2**	**5.4**	**18.9**

Note – numbers may not add due to rounding

Table A2 – Capital works program by asset category to meet compliance with average frequency of unplanned interruptions per 1,000 properties - IPART output measure alignment

$M - Real $2021-22	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Total
Average frequency of water unplanned interruptions					
Water Main	0.3	0.8	1.4	1.8	**4.3**
Water Network	3.9	1.7	0.3	0.2	**6.0**
Water Pump Station	0.0	0.7	0.5	1.0	**2.1**
Water Reservoir	0.6	1.4	0.5	1.0	**3.5**
Total	**4.8**	**4.5**	**2.6**	**4.0**	**15.9**

Note – numbers may not add due to rounding

Table A3 – Capital works program by asset category to meet compliance with water quality complaints per 1,000 properties - IPART output measure alignment

$M - Real $2021-22	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Total
Water quality complaints					
Water Headworks	0.2	0.4	0.6	0.7	**1.8**
Water Main	0.0	0.0	0.0	0.4	**0.4**
Water Network	0.0	0.0	0.0	0.0	**0.0**
Water Pump Station	0.2	4.5	0.0	0.0	**4.7**
Water Reservoir	0.0	0.8	0.4	1.4	**2.5**
Total	**0.4**	**5.6**	**0.9**	**2.5**	**9.4**

Note – numbers may not add due to rounding

Table A4 – Capital works program by asset category to meet compliance with the Australian Drinking Water Guidelines, microbial and chemical guideline – IPART output measure alignment

$M - Real $2021-22	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Total
Compliance ADWG - Microbial & Chemical					
Groundwater	0.0	0.2	0.0	0.0	0.2
Water Network	0.0	0.0	0.0	0.0	0.0
Water Reservoir	0.0	0.9	0.5	1.3	2.6
Water Treatment Plant	26.4	7.8	0.6	0.9	35.7
Total	**26.4**	**8.9**	**1.1**	**2.2**	**38.5**

Table A5 – Capital works program by asset category to meet compliance with sewage overflows per 100 km of main - IPART output measure alignment

$M - Real $2021-22	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Total
Sewage overflows					
Sewer Low Pressure and Vacuum System	0.5	1.1	1.9	1.9	**5.4**
Sewer Main	2.1	5.8	10.4	8.7	**26.9**
Sewer Network	0.0	0.7	0.9	0.3	**1.8**
Sewer Pump Station	4.4	6.9	16.7	13.1	**41.1**
Sewer Pump Station and Mains	7.5	4.3	0.0	0.0	**11.8**
Total	**14.6**	**18.8**	**29.8**	**23.9**	**87.1**

Note – numbers may not add due to rounding

Table A6 – Capital works program by asset category to meet compliance with sewage odour complaints per 1,000 properties

- IPART output measure alignment

$M - Real $2021-22	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Total
Sewage odour complaints					
Sewer Main	0.0	0.0	0.0	0.4	**0.4**
Sewage treatment plants	0.0	0.1	0.4	0.4	**0.9**
Sewer Pump Station	0.0	0.0	0.0	0.4	**0.4**
Total	**0.0**	**0.1**	**0.4**	**1.2**	**1.7**

Table A7 – Capital works program by asset category to meet compliance with sewer main breaks and chokes per 100 km of main – IPART output measure alignment

$M - Real $2021-22	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Total
Sewer main breaks and chokes					
Sewer Main	2.8	4.9	4.6	4.7	**17.0**
Total	**2.8**	**4.9**	**4.6**	**4.7**	**17.0**

Table A8 – Capital works program by asset category to meet compliance with the EPL concentration, load limits – IPART output measure alignment

$M - Real $2021-22	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Forecast 2022-23	Total
Sewer compliance with EPL					
Sewage treatment plants	7.3	5.9	9.3	6.3	**28.8**
Total	**7.3**	**5.9**	**9.3**	**6.3**	**28.8**