

# AGEING INFRASTRUCTURE

## OUR DILEMMA

### Capital investment occurs in highs and lows



- Every asset we own and operate (such as pipes, pump stations, treatment plants) has a finite lifecycle. Even with regular maintenance, these assets eventually need to be replaced or upgraded for us to continue to deliver our services.
- The design life of our water and sewer infrastructure varies dependent on the size and type of our assets – from 10–15 years for the mechanical and electrical components of a pump station, to 100 years for some of our pipes.
- Our capital investment varies, depending on where we are in the lifecycle of our assets:
  - » Low investment stage – While the asset is within its design lifecycle and performing as expected, it requires little to no capital investment.
  - » High investment stage – As assets reach the end of their lifecycle, significant capital investment is required to upgrade or replace the asset.
- We are entering a “high investment stage” due to the age of our assets (many pipes were installed post-war). This means we need a higher level of capital investment than in previous years to maintain or improve the level of service we can provide through our assets.
- Renewals (upgrading and/or replacing our ageing infrastructure) will account for 50% of our total capex over the next five years.
- We propose \$264M of capex for renewals during 2023–28, up \$67M from our \$197M investment during 2018–23.

### Getting the balance right helps keep customer bills low



- Our key operating costs include labour, materials, electricity, safety controls and contractors.
- We carefully plan our operating costs to ensure we are getting the most out of our assets and other resources, by maintaining them in good condition, so that we can avoid unnecessary large-scale capital investments.
- Increases in our operating costs have a greater impact on customer bills than our capital investments – this is because we must pay for operating costs when we incur them but capital investments can be paid off over the lifecycle of the assets (up to 50 years).
- Balancing proactive maintenance costs against reactive maintenance costs is important – we don’t want to spend money unnecessarily, but waiting until things go wrong costs more in the long run.
- We propose \$136M of average annual opex for the next five years – this is close to the same amount that we spent in 2021–22, but what we need to spend it on is changing.

### CAPEX

Capital Expenditures (Capex) are our major long-term expenses that are typically related to our fixed assets. *Usually lump sum, one-off expenses.*

### OPEX

Operational Expenditures (Opex) are the day-to-day expenses that we incur to keep our business operational. *Usually ongoing, annual expenses.*

## OUR TRADE OFFS

Too cautious

Too risky

### Cautious & conservative investment

Invest heavily and early to keep assets “as new” through:

- **More advanced technology** – Installing instrumentation and automation broadly across our region would be very costly but would allow us to better predict failures across every part of the network
- **More frequent asset replacement** – Investing in more resources (to monitor and analyse asset performance) and more renewals (to upgrade or replace assets at the first sign of poor performance) would also be very costly but would allow us to better prevent failures.

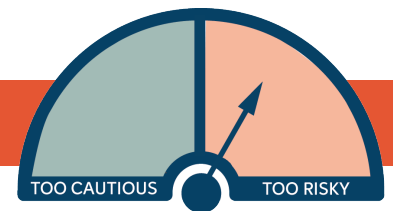
BARWON WATER  
SELF-  
ASSESSMENT

### Risky & reckless investment

Wait for assets to completely fail and pay more once failures occur, causing:

- **Declining level of service** – Waiting for failures would mean more extreme failure incidents, with greater social and environmental impacts (such as sewer network failures result in discharge of raw sewage to private properties, waterways and the environment)
- **Higher costs overall** – Waiting for failures would mean costs are deferred but are greater when they are incurred, so higher costs are passed on to future generations of customers (such as cost of relining a sewer pipe now to prevent failures is less than cost of completely replacing sewer pipe when it fails later).

# EXAMPLE



## Example - Sewer Network

Here's how we propose to find the balance between "cautious & conservative" investment and "risky & reckless" investment in our sewer network over the next five years.

### Target expenditure based on learnings in last five years

We propose to **double capex on our sewer network** (\$96M during 2023-28 compared to \$50M during 2018-23) but keep investment on our water network largely the same.



This is because we have observed relatively stable water network performance but some concerns in sewer network performance over the past five years. For example:

- There were three major, unexpected sewer pipe failures in the last two years. Assets failed before they should have at Barwon Heads, Aireys Inlet and Leopold.
- The Barwon Heads sewer spill was a major inconvenience to the community, causing:
  - » Sewage spilling into the river, which led to a precautionary closure of the beach while water quality tests were completed.
  - » Multiple road closures, with construction activities and additional truck movements occurring day and night during the peak tourist season.
  - » Customers being asked to minimise water usage to essential purposes only, to minimise flows into the sewerage system during the peak of the incident and repairs.
- The Barwon Heads spill was also costly, with:
  - » More than 50 Barwon Water Group employees and contractors required to respond to the incident, with staff working 24 hours a day over four days.
  - » Multiple traffic management contractors required at several sites to ensure public safety.
  - » Ongoing investigations required to determine the cause of the failure and address implications across the rest of our sewer network.

**91%**  
of customers surveyed so far are comfortable with our proposed actions to deliver innovative, reliable services, including managing our ageing infrastructure

### Strategic technology uplift to learn even more

We propose to **invest \$6.7M in sewer sensors** at strategic locations across our sewer network, so that we can better target future investment in improving performance of these assets:



- We currently rely on notifications from our customers and community to alert us to a problem with our sewer network – this includes manual reports of odour, blockage and visual spill.
- Our successful "smart sewers" trial project at Lorne in 2019 showed us how technology can help to prevent spills:
  - » Installation of 15 sensors on a previously problematic sewer main in Lorne identified three blockages that we otherwise would not have known about.
  - » Knowledge of these blockages meant we could clean the sewer main and prevent any sewage spill before it occurred, protecting the local environment
- Rather than invest in a full roll out of sensors across the entire sewer network, we are proposing a strategic roll-out that will focus on the 15-20 suburbs with highest spill rates per 100km of sewer main, as well as all sewage pump stations assessed as extreme or high risk.
- Learnings from our strategic roll-out over the next five years will help guide future investment in technology to prevent sewer spills.

### Risk-based approach to renewal of assets

We propose to **proactively invest to address high-risk problems**, rather than replacing or upgrading all our ageing assets unnecessarily:



- Some assets will not be replaced until they fail, because the risk of failure is considered low.
- Other assets will be subject to routine, ongoing maintenance – because the criticality of the asset and the consequence of any failure is high.
- Additional capital investment will renew nearly twice the amount of sewer mains than has been done over the past five years, including all assets where the risk of failure is considered extreme.
- At the same time, our operational investment will focus on increasing maintenance activities (such as sewer main cleaning) to support ongoing and reliable services.
- As more assets are renewed, we expect to see an improvement in the overall sewer network.

