Sydney Water has identified a preferred solution for the Winmalee Wastewater System Improvement Project. This solution is a modified version of the option preferred by most community members during previous consultation.

Project update

The Winmalee Wastewater System Improvement Project will ensure the wastewater system in the Blue Mountains continues to operate efficiently and safely. Sydney Water has been working with the local community and interested stakeholders for the past four years to look at ways to improve and protect the wastewater system at Springwood and Winmalee.

Since consulting the community in 2011 about three shortlisted options, we have done additional studies to help inform our decision. We appreciate your patience while we have continued the planning for this project. We know that it is an important project for the local community, and we wanted to ensure that we had the best information available.

Sydney Water has now made a decision on a preferred solution. It is a modified version of the option preferred by most community members in 2011 (Option 3). By taking extra time to refine the solution, Sydney Water has reduced the estimated design and construction costs by around $10 million.

In the coming months, we will finalise the engineering design for the preferred solution.

Before we can commit to building the preferred solution, we will do an environmental impact assessment. We will continue to work with the community and seek their input.

This booklet explains the project, including a history of the system, the project background, the existing problem and the preferred solution.

About the project

The existing wastewater system

The Winmalee wastewater system is made up of the domestic wastewater network, 70 pumping stations, the Blue Mountains Sewer Tunnel and the Winmalee Wastewater Treatment Plant (WWTP).

The Blue Mountains Sewer Tunnel is a critical part of the wastewater network in the Blue Mountains. It is 39 km long, and transports wastewater from Mount Victoria and other towns in the mountains to the Winmalee WWTP.

The tunnel was built in stages between 1985 and 1996. By connecting villages in the upper Blue Mountains to the tunnel, Sydney Water was able to decommission 11 wastewater treatment plants, delivering significant environmental benefits to the area.

There are sections of the tunnel that are joined by vertical shafts, called drop shafts. These drop shafts help the tunnel to follow the steep contours of the land. There are two drop shafts in Springwood – one in Lugano Avenue and one near Lawson Road.
When these drop shafts were built, it was not expected that the tunnel would be extended up to Mount Victoria and would be required to cope with such large volumes of wastewater.

All of the wastewater in the Blue Mountains Sewer Tunnel is transported to the Winmalee WWTP. This WWTP serves about 59,000 customers in the Blue Mountains, and treats about 16.5 million litres per day at a rate of about 190 litres a second (L/s). It can provide tertiary level wastewater treatment for up to 1,000 L/s. The treated wastewater is released into an unnamed creek at the back of the plant.

In heavy rain, the WWTP may receive more than 1,000 L/s. When this happens, the excess diluted wastewater is carried through a bypass pipeline around the treatment plant, where it is released into the same creek. The system is designed to operate this way and the Environmental Protection Licence approves this controlled release.

About the problem

What happens when it rains?

During heavy rain, water enters the wastewater system through cracks in pipes, leaking joints, and illegal stormwater connections. This increases the amount of diluted wastewater in the Winmalee wastewater system by up to 20 times.

In the Blue Mountains, the rate of stormwater getting into the local wastewater pipes is very low – only around two per cent of inflow. This may seem a low percentage, but the Winmalee wastewater catchment covers a very large area of over 42 km², so two per cent inflow is a considerable amount of extra water.

The drop shafts at Lugano Court and Lawson Road in Springwood are not big enough to cope with the large volumes of dilute wastewater during very large storms. The high flows cause pressure to build up in the drop shaft. This pressure, over time, increases the risk of the structure weakening and eventually failing.
The drop shafts have not had structural problems yet, but if they did, it could result in:

• damage to neighbouring properties and public land
• potential risks to public safety and public health
• the uncontrolled flow of large volumes of untreated dilute wastewater into the environment and properties.

Repairing the damage would take a lot of time, and would be disruptive and costly.

**How much rain causes the problem?**
Sydney Water has assessed the two drop shafts to understand how much wastewater they can safely carry and how much rainfall increases their structural risk.

**Lugano Avenue drop shaft**
On an average day with no rain, about 115 L/s passes through the Lugano Avenue drop shaft.
This drop shaft can take about 3,000 L/s and currently, these flows are likely to happen on average every 50 years (in a 50 year Average Recurrence Interval (ARI) event).

**Lawson Road drop shaft**
During an average day with no rain, about 130 L/s passes through the Lawson Road drop shaft.
This drop shaft is slightly wider than the one at Lugano Avenue, and can take about 4,000 L/s. Currently, these flows are likely to happen on average, every 100 years (100 year ARI event).

**Winmalee WWTP**
If big rainfall events happen and all of the wastewater flows reach the Winmalee WWTP, it is unlikely the pipes at the plant could take the flows. If too much wastewater passes through these pipes, it could cause uncontrolled flooding or structural problems within the WWTP.

On an average dry weather day, the flow reaching the plant is 190 L/s. The WWTP can currently treat up to 1,000 L/s.

We now know that:

• the bypass pipeline (that goes around the treatment plant) can carry an extra 2,000 L/s
• currently, these flows are likely to happen, on average, every two years (two year ARI event).

Sydney Water will address these problems as part of this project.

**The preferred solution**
Sydney Water has now identified a preferred solution for the project. When finalising the decision for this solution, we considered:

• potential environmental impacts
• safety, operational and maintenance considerations
• the views and preferences of the community
• value for money for the local community and Sydney Water customers
• the information provided by structural and environmental studies.

This is a very important project for the local area and for Sydney Water.
We wanted to make sure we had all of the relevant information and reports available before we chose the preferred solution.

**About the preferred solution**
Since 2011, most members of the community and stakeholders have told Sydney Water that they:

• would prefer all of the wastewater in the Blue Mountains Sewer Tunnel to be released into the creek at the back of the Winmalee WWTP
• do not want excess wet weather flows from the tunnel released into a different local creek.

Sydney Water has listened and developed a solution to match these community preferences.

The preferred solution:

• will allow all wastewater flows to be released into the unnamed creek at the back of the treatment plant. This creek currently receives treated and untreated flows from the WWTP
• does not involve Sydney Water releasing excess wastewater flows into another local creek
• will allow the system to accommodate the wastewater flows predicted to occur in a 100 year ARI event
• is a modified version of Option 3 (a shortlisted option presented to the community in 2011).

**What is an ARI event?**
An ARI, for example, of 100 years does not mean that the event will only happen once every 100 years. In fact, for each and every year, there is a one per cent chance (a one in 100 chance) that the event will be equalled or exceeded (once or more than once).

For more information on rainfall events, visit: [http://www.bom.gov.au/water/designRainfalls/rainfallEvents/why100years.shtml](http://www.bom.gov.au/water/designRainfalls/rainfallEvents/why100years.shtml)
The preferred solution involves Sydney Water:
- building a new, larger drop shaft at Lugano Avenue
- linking the Lawson Road drop shaft to an existing tunnel access shaft, that is next to the drop shaft. During very wet weather, the access shaft will act as a second drop shaft, allowing all flows to be contained within the system
- making small structural modifications to increase the capacity of the pipelines at the Winmalee WWTP.

By taking extra time to refine the solution, we have halved the project’s estimated design and construction costs.

Before we can commit to building the preferred solution, we will do an environmental impact assessment. Sydney Water will seek community and stakeholder feedback as part of this process.

We have listened to your views, and the preferred solution is in line with the values expressed by the community since mid-2011.

Lugano Avenue
Sydney Water plans to build a new, larger drop shaft and connecting tunnel at Lugano Avenue.

We have developed a preliminary design for the new drop shaft, and this will be refined and finalised in the coming months. We will also start an environmental impact assessment and will engage specialists to assess all of the potential impacts of the work.

After an environmental impact assessment is developed and approved, it is expected that the new drop shaft at Lugano Avenue will take Sydney Water up to 18 months to build.

While the work is being done, the community may experience noise, vibration, and some changes to the traffic, parking and access arrangements.

We will keep the community informed during the development of the final design and will seek community feedback during the environmental impact assessment.
**Lawson Road**

Next to the Lawson Road drop shaft is an access shaft. This is used by maintenance staff to enter the lower section of the tunnel.

Sydney Water plans to:
- leave the existing drop structure, drop shaft and connecting pipeline in place
- join the existing Lawson Road drop shaft to the access shaft.

The existing drop shaft will continue to operate during dry weather.

When the flows get too high for the existing drop shaft:
- the access shaft will act as an additional, wet weather drop shaft
- the excess wastewater will flow into the access shaft and back to the lower section of the tunnel.

Maintenance staff will still use the access shaft to enter the tunnel in dry weather.

This solution does not require an Emergency Relief Structure and all of the flows will go to the Wimnalee WWTP.
In the coming months, Sydney Water will finalise the design for the Lawson Road site. We will start an environmental impact assessment, where specialists assess the potential impacts. We will keep the community informed during the development of the final design and will seek community feedback during the environmental impact assessment.

We expect the work at Lawson Road to take about five months. Some nearby residents and businesses may experience some noise during this work.

**Winmalee WWTP**
Sydney Water plans to improve the bypass pipeline at the Winmalee WWTP, so it can carry much larger flows during wet weather. This will involve duplicating parts of the pipeline and changing sections that limit the flow. In the coming months, Sydney Water will finalise the design for this work.

All of the work is within Sydney Water’s land but nearby residents may experience some noise and minor traffic impacts.

**Other options explored**
Sydney Water looked at a number of other strategies and options for the project over the past four years. When compared to the preferred solution, we found that these strategies were either not technically possible, were too expensive, would not meet community expectations or would have the potential to impact the environment more than the preferred solution.

We explored a number of different strategies to protect the drop shafts. The preferred strategy presents the best value for Sydney Water’s customers when considering community views, environmental outcomes, cost and other factors.

We looked at options that would:

- **Reduce the amount of stormwater and rainwater entering the tunnel.** There are two key ways stormwater and rainwater enters the tunnel; through the wastewater pipes on private property and through the unlined tunnel. Sydney Water does not have control over the private network. We investigated reducing the water entering the tunnel through cracks and leaks to reduce the flows reaching the drop shafts during wet weather events.

- **Reduce flows through the drop shafts by storing the excess flows.** Sydney Water explored storing excess flows upstream of the drop shafts during wet weather and releasing it back to the system after the storm passed. We looked into storing excess flows within the Blue Mountains Sewer Tunnel and outside of the system (in a tank or pond).

- **Reduce flows entering the tunnel from local wastewater pumping stations.** Sydney Water investigated the possibility of reducing flows entering the tunnel from the local wastewater networks in the upper Blue Mountains by reducing the flows through the local pumping stations.

- **Reduce the pressure on the drop shafts** by releasing excess wastewater flows from the system through a controlled overflow point. Sydney Water considered a number of options and locations for the overflow point.

You can read more about the other options explored by visiting [sydneywater.com.au](http://sydneywater.com.au) or calling 1800 064 127 and requesting a fact sheet.
**Next steps**

**Finalising the design**
In the next few months, Sydney Water will be refining and finalising the engineering designs for the preferred solution. We will talk with stakeholders and members of the local community about these designs as they are developed.

**Environmental impact assessment**
When we have refined the designs, Sydney Water will do an environmental impact assessment to assess the potential impacts of the preferred solution, under Part 5 of the *Environmental Planning and Assessment Act 1979*.

Specialists will study the potential environmental impacts during construction and operation of the preferred solution. They will recommend ways these can be reduced or managed.

The environmental impact assessment will address potential impacts on:
- plants and wildlife
- Aboriginal heritage
- noise and vibration
- erosion and sedimentation
- traffic and access
- visual impacts
- impacts on the uses of the area
- water quality.

Sydney Water recently engaged Cardno Pty Ltd to do a geomorphology (erosion) study on the unnamed creek behind the treatment plant. The study assessed the potential impacts of the preferred solution and recommended ways to manage and reduce the impacts identified.

We are addressing the report findings, and are talking with local landowners about its recommendations.

This study will form an important part of the environmental impact assessment, and more erosion studies may be needed.

We expect to finish the environmental impact assessment in mid-2013.

**Have your say**
We would like to know what you think about the preferred solution.

Sydney Water will continue to update the community and stakeholders while the design is refined and finalised. We will also seek your input into the environmental impact assessment, to make sure all relevant local knowledge is captured and any community concerns are addressed.

In the coming months, we will:
- meet with key stakeholders and members of the community
- doorknock residents near each of the preferred work sites to talk to them about the proposed solution and give them the opportunity to ask questions.

Sydney Water will publicly exhibit the environmental impact assessment when it is finished in mid-2013.

While it is on display, anyone will be able to provide Sydney Water with feedback by sending in a written submission. Sydney Water will consider and respond to all issues raised in written submissions.

If you contact us about the project, Sydney Water treats your personal information in accordance with the *NSW Privacy and Personal Information Protection Act 1998* (PPIPA).

**To know more**
To know more about the preferred solution, the project or to provide us with feedback, please call the Community Relations team on 1800 064 127, or email swwa@sydneywater.com.au.