

Sewer Mining

1. Overview

Sewer mining is the process of tapping into a sewer, (either before or after the sewage treatment plant), and extracting sewage, which is then treated and used as recycled water.

Sewer mining generates residuals, some of which may be discharged into the sewerage system provided certain acceptance conditions can be met.

1.1. Objective

In relation to sewer mining, Sydney Water's objectives are:

- to facilitate sewer mining by providing timely information, advice and responses to sewer mining enquiries and applications
- to encourage improved water efficiency and sewage management outcomes
- to ensure the operation of the sewerage system is not compromised
- to ensure that the extraction and use of sewage for sewer mining only exposes Sydney Water to business or legal risks that can be managed

1.2. Scope

This policy relates to applications to Sydney Water to connect to its sewerage system, extract sewage and discharge residuals back into its sewerage system, for the purpose of sewer mining.

1.3. Summary

Sydney Water will permit sewer mining provided:

- Sufficient flows remain in the sewer to meet commitments to existing and proposed water recycling schemes as well as agreed sewer mining schemes
- sufficient flows remain in the sewer to prevent problems
- the sewer miner obtains all necessary approvals
- it meets approved design, construction and operation of connection
- the sewer miner provides the required indemnities to Sydney Water
- the sewer miner executes a commercial agreement with Sydney Water

2. Policy

Sydney Water will permit connection to the sewerage system for sewer mining as long as:

- sufficient flows remain in the sewerage system to meet the requirements of existing and proposed water recycling schemes
- sufficient sewage flows remain in the sewerage system, taking into account the minimum operational flow requirements of the sewerage system, the current diurnal flow pattern of the sewerage system and existing sewer mining operations upstream or downstream of the proposed connection
- the sewer miner secures and maintains all approvals, licences and authorisations required by any public authority for extracting and treating the sewage, using the recycled water and disposing of any by-products from the sewer mining operation
- the sewer miner designs, constructs and operates its sewer mining connections in accordance with Sydney Water's standard criteria for sewer mining connections as they apply to the specific site
- the sewer miner indemnifies Sydney Water against all damage, injury, expense, loss or liability of any nature sustained by Sydney Water or any other party as a consequence of any act or omission by the sewer miner
- the sewer miner has paid a security for the sewer mining connection, if required by Sydney Water
- the sewer miner enters into a commercial agreement with Sydney Water for the establishment and maintenance of the sewer mining connection, and where required, an industrial trade waste consent for discharge of treatment residues

A number of state government and local government agencies are involved in assessing the feasibility of a sewer mining operation, connecting to Sydney Water's sewerage system, and operating a sewer mining facility.

Where Sydney Water is involved, its processes will be fair and transparent in providing:

- guidance about the steps to be taken by the sewer mining applicant and Sydney Water in progressing an application for a sewer mining connection
- a contact officer for the duration of the sewer mining application process
- information on Sydney Water's terms and conditions of a sewer mining connection
- information on applicable fees and charges
- information on the characteristics of the particular sewage catchment
- advice on possible sewer mining connection points
- relevant information on the operational requirements of the particular sewerage system
- an estimate of the quantity of sewage available for extraction by the sewer miner at any proposed connection point
- information on acceptable waste stream returns to the sewerage system, consistent with Sydney Water's Trade Waste Policy
- Sydney Water General Managers to resolve a dispute should a matter not be able to be resolved between the (potential) sewer miner and Sydney Water staff, (either during the application process or once an agreement has been entered into)

- independent arbitration on disputes regarding sewer mining by the NSW Independent Pricing and Regulatory Tribunal (IPART) in cases where the two parties have been unable to resolve the dispute, (either during the application process or once an agreement has been entered into)

2.1. Sewage content

Sewage contains various waste substances. While Sydney Water has wastewater source management systems in place, it cannot fully control the content of sewage extracted by a sewer miner. Incidents of illegal and unforeseen discharges of substances into the sewer do occur.

The content of sewage in a sewerage system may change over time as the upstream sewage catchment changes with ongoing development. For example, commercial development may replace residential development and vice versa. Sewer miners will be required to acknowledge and be aware that existing and future trade waste discharges might alter the contents of sewage in the sewerage system.

As Sydney Water cannot fully control the content of sewage, Sydney Water can make no guarantee or give any warranty regarding the quality of any sewage that may be taken by a sewer miner. Prospective sewer miners need to consider this risk in assessing the viability of any proposed sewer mining operations.

To help prospective sewer miners assess risk relating to sewage quality, Sydney Water will provide sewer miners with the standards that parties need to meet when disposing of waste into the system, as well as available data on sewage quality in the parts of the sewerage system that are relevant to a sewer mining proposal.

2.2. Quantity of sewage available for sewer mining

The amount of sewage flowing through a sewerage system is a critical aspect of effective sewerage system operation and varies over time. In order to maintain adequate flows, Sydney Water determines the quantity of sewage available for extraction by sewer mining with regard to:

- a) the minimum operational flow requirements of Sydney Water's sewerage system
- b) the current diurnal flow pattern of the sewerage system
- c) existing commitments to current and proposed water recycling schemes
- d) existing commitments involving the extraction of sewage, either upstream or downstream of the proposed connection.

However, as Sydney Water cannot fully control the volume of sewage in the system, Sydney Water will make no guarantee or give any warranty regarding the quantity of sewage available to a sewer miner.

2.3. Allocation of sewage

Sydney Water adopts a first come, first served approach in allocating access to sewage flows. When advising future applicants of the availability of sewage in a particular sewerage system, Sydney Water will acknowledge and honour its commitments to existing sewer mining operations.

If a sewer miner does not proceed with extraction within one year of a sewer mining agreement being entered into, or commences and thereafter ceases extraction of sewage for a continuous period of one year, the sewer mining agreement will terminate. Sydney Water will write to the sewer miner before any termination occurs.

This provides a reasonable period of time for the operation to commence, allowing for delays in construction and cyclical changes in demand. It also ensures that new sewer mining projects are not held back by the failure of others that do not proceed within a reasonable period of time.

Sydney Water will publish maps of sewerage systems showing areas excluded from new sewer mining applications on its website. Areas may be excluded on the basis of commitments to water recycling schemes and/or sewer mining agreements.

2.4. Responsibility for managing sewage

Under the Protection of the Environment Operations Act 1997 (POEO Act), the Department of Environment and Climate Change (DECC) NSW has granted Sydney Water licences for each of its sewerage systems. Those licences entitle Sydney Water to transport and treat sewage and to discharge treated effluent to the environment under prescribed conditions and with clear penalties for licence breaches.

Once sewage is extracted from a Sydney Water sewerage system by another party, it is no longer covered by a Sydney Water licence. The sewer miner becomes wholly responsible for managing and treating that sewage, disposing of any by-products of treatment, and environmental outcomes.

2.5. Commercial principles

While Sydney Water seeks no financial gain from enabling sewer mining, it also aims to avoid any loss. Sydney Water will therefore recover from the sewer miner all costs incurred by Sydney Water in enabling the sewer mining connection and operation. Sydney Water will evaluate any financial saving realised by it from the sewer mining operation and recognise those savings in calculating any costs to be recovered from the sewer miner.

2.6. Discharge of residuals

Most sewer mining schemes will involve the extraction of wastewater directly from a Sydney Water sewer. The sewer miner will need to measure the quality and quantity of wastewater extracted from the sewer and the quality and quantity of any returns to the sewer. Sydney Water will only charge for the additional load of substances discharged back to the sewer. This may include treatment additives such as iron, aluminium and sulphate. The discharge to sewer from a sewer mining operation must meet Sydney Water's acceptance standards. This condition applies even when there has been no overall increase in the load of a substance to sewer.

The published trade waste acceptance standard for return of suspended solids will be determined by the capacity of the receiving sewer directly downstream of the connection point. This means that the acceptance standard concentration of 600 mg/L for suspended solids must be achieved in the receiving sewer, taking into account other discharges from the sewer mining operation, measured by analysis of a composite sample over a typical 24-hour period. Gross solids or grit will not be accepted back to the sewer, however macerated screenings may be returned provided the acceptance standard concentration of 600 mg/L in the receiving sewer is not exceeded. The extraction point should be designed to minimise the collection of grit from the sewer.

2.7. Definitions

Term	Definition
Recycled water	(sometimes called 'reclaimed water') is wastewater, stormwater or greywater treated to a standard appropriate for particular uses and level of human exposure. For large scale recycling schemes, treated wastewater may be sourced from sewage treatment plants. For sewer mining, wastewater for recycling is sourced directly from the sewerage system
Sewage	(also called 'wastewater') is the waste material passing through a sewerage system
Sewerage	is the system of pipes and pumps that transport sewage
Sewer mining	is the process of tapping into a sewer (either before or after the sewage treatment plant) and extracting sewage which is then treated and used as recycled water