

# THE OPERATORS ROLE IN MANAGING SEWER NETWORK ODOURS



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# THE OPERATORS ROLE IN MANAGING SEWER NETWORK ODOURS

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## **ABSTRACT**

Goulburn Valley Water (GVW) is undertaking a comprehensive sewer network odour management strategy to control sulphide generation, odour emissions and corrosion in the sewer network. The success of the consultancy in preparing the strategy and subsequent implementation of the recommendations relies on the members of our Operation teams.

The development and delivery of the strategy is highlighting that Operations is crucial to identifying odour sites, undertaking accurate odour monitoring, informing the public and ensuring the odour control facilities continue to operate efficiently.

This has been achieved by Operation team leaders and staff taking ownership of the strategy which has been demonstrated by participation at project workshops, hosting informative site visits, installing and downloading hydrogen sulphide gas monitors (oda-loggers) and actively participating in problem solving.

The process has also provided staff with the tools required to inform members of the public about the strategy as they now possess the knowledge and understanding as why sewer odours are being generated and GVW's process to manage the current issue and plan for the future.

Operations role is critical to the success of the consultancy and in managing sewer network odours now and into the future.

## **KEY WORDS**

Sewer, Network, Odour, Management, Operators

## **1.0 INTRODUCTION**

GVW manages a sewer network system that includes 26 wastewater management facilities, 260 sewage pumping stations and 1,100 kilometres of pressure and gravity sewers. Most serviced towns have a flat topography with a central business district surrounded by residential areas. There are several large food based industries, including SPC Ardmona, Unilever, Campbell's Soups, which are located in towns that discharge into the sewer network.

The sewer network often includes deep sections of gravity sewer main (6-10 m deep), comprising mostly of reinforced concrete and vitrified clay pipes, multiple sewage pump stations and long sewer rising mains. The sewage pump stations have also been designed and constructed to different standards over time.

In the past GVW has managed odour complaints on a site by site basis, with odour projects often taking several months or years to progress to works on site. GVW also has a variety of odour control facilities. The aim is to provide an overall management strategy to control current and prevent potential network odour generation.

## 2.0 PROJECT TEAM

A project team has operated the project from initiation through to implementation. The project team initially consisted of senior management that oversaw the development of a consultant brief, the selection of a short list of suitable consultants, tendering and the awarding of the consultancy.

The project team has grown to include the District Managers and members of their Operation teams. This has been important as the Operators work with the sewer network daily, know where the existing odour sites are and have experience in operating odour control facilities. The Operators have provided a series of 'informed' noses from experienced staff that have been able to explain the issues and shortfalls in the existing sewer network

Consulting Environmental Engineers (CEE) were engaged in April 2009 and have worked well with the project team.

## 3.0 CONSULTANCY

The target timeframe for completion of the strategy was to identify priority sites and associated works for inclusion in the 2013 to 2018 Water Plan. The key components of strategy include:

- Document technical, design, operations, maintenance and replacement solutions for implementation at existing and potential odour risk sites,
- Prepare a comprehensive strategic report confirming the Sewer Network Odour Management Strategy that enables implementation throughout the Corporation,
- Identify and categorise a sewer network odour risk level for each catchment in each serviced town,
- Collate and analyse odour data from priority sites, and
- Investigate and prepare odour mitigation solutions for the priority sites.

The structure and timeframes for the consultancy to prepare the strategy is summarized in Table 1.

**Table 1:** *Structure of Consultancy*

Component		Title	Delivery Date
Phase 1	Stage 1	Desktop Review of Current Practices and Polices	November 2009
	Stage 2	Odour Risk	February 2010
Phase 2	Stage 3	Odour Measurement	April 2011
	Stage 4	Options for Odour Management	June 2011

The consultancy is a combination of desktop studies, site investigations and workshops. The strategy is being developed for all aspects of sewer network management, including: planning, design, operation, management, maintenance and odour control facilities.

## **4.0 PROJECT BENEFITS**

### **4.1 Direct Benefits**

The benefits to GVW in the form of recommendations and information include:

- Identification of priority sites
- Planning and costing of future odour control facilities
- Incorporating odour control at the project inception stage
- Development of general policy and objectives for odour management
- Selection of odour control philosophy for controlling odour
- Trending and analysis of odour complaints
- Promoting sewer network odour management
- Preparation of odour management annual report
- Fast tracking of the investigation and concept design of priority odour sites

### **4.2 Indirect Benefits**

The indirect benefits derived from the strategy will ensure that the strategy is implemented and supported to control and manage sewer network odours now and into the future. The indirect benefits included:

- Skills and knowledge development
- Engagement of staff
- Fast tracking of odour monitoring
- Community education
- Importance of collecting accurate odour complaints and site data

### **4.3 Engagement of Operators**

The engagement of Operators during the development of the sewer network odour management strategy has helped to ensure that it is owned, adopted and implemented efficiently across the Corporation. As a result, Operators now understand the necessity to source data accurately and ensure ongoing maintenance of odour control facilities – they are not “set and forget”. This has been achieved by:

- Participating in workshops with the consultant and management
- Hosting site inspections with the consultant
- Participating in odour investigations at priority sites
- Reviewing and providing comment on reports

### **4.4 System Knowledge**

Operations have provided key information for the consultant on the current issues related to the sewer network system. They have been able to fill in the gaps of knowledge as well as identify issues that may not be identified through desk top investigations.

The information has been provided to the consultant through Operations participating at workshops, hosting site visits to odour sites, current and potential, report reviews and general discussions.

Examples of the value of this input include:

- Current Odour Sites  
Operators often work on, and sometimes in, the sewer network on a daily basis and are aware of the odour sites through experiencing the odours while completing regular roles and duties.
- Customer Complaints  
Operators are required to respond to customer complaints and also inform members of the public about the odour source and rectification works completed. They can also encourage customers to lodge complaints to ensure that these are recorded and follow up actions are completed.
- Odour Control Facilities  
Operations maintain the odour control facilities and ensure that they continue to operate effectively. In doing so, they develop knowledge about their limitations, effectiveness and efficiency.

#### **4.5 Odour Monitoring**

In this project, the Operators are responsible for measuring hydrogen sulphide gas levels at the priority sites to confirm the ranking of sites, selection of odour control facilities, costing of works and ultimately, completion of a concept design.

This has required Operations to purchase suitable monitoring equipment, install downloading software and develop skills, procedures and experience in installing and downloading 'oda-loggers'. The consultant has played a role in assisting operators in selecting sites for logging and specifying the data format, including key information required.

The information and results need to be shared with Operators to provide feedback, promote discussion and improve knowledge and understanding. Often, the data does not provide the full picture, and odour has to be measured at various areas of each site, over reasonable lengths of time, and during various times of the year.

Lessons to date include:

- Weekly Logging  
Need to monitor for a minimum period of 7 days
- Loggers Don't Float and Are Expensive (\$ and Time) to Replace  
Operations need to monitor rain events and predict possible flooding of sites where loggers have been placed.

A storm caused a sewage pump station to surcharge which drowned an oda-logger unit and required it to be replaced, which took several weeks. The storm was predicted and the logger unit could have been removed prior. The "Titanic" has now been fabricated to enable the oda-logger to float.

## 5.0 SITE INVESTIGATION AND PROBLEM SOLVING

Often, it is the members of the Operations team who have the knowledge of how the site works now and in the past. Or think they do.

So far, two priority odour risk sites have been fast tracked to investigation stage. Operators have been integral in providing background information, completing odour monitoring and in problem solving, to identify the problems in the system and identify possible solutions.

Works undertaken by Operations have included:

- Oda-Logging  
Installation of the oda-logger unit for weekly periods at several locations within a site, such as pump station well, downstream manhole, vent stack, etc.
- Plugging Pipes  
Installing temporary plugs to isolate pipe work within odour sites.
- Smoke Testing  
This has been found to be effective in demonstrating where odour is emanating from a system, including possible restrictions to flow. For example, at one site it indicated that the cowl on a vent stack was a restriction rather than an assistance to odour flow and odour was continuing to be released through 'sealed' lids.
- Customer Contact  
Operations can assist by surveying neighbouring tenants and property owners about the history of odours at the site. They can also inform members of the public about the aims of the investigation and ultimately the sewer network strategy.

## 6.0 IMPLEMENTATION

The important role of Operators will continue into the implementation stage of the sewer network odour management strategy, now and into the future, to manage identified odour risk sites and those that may develop further with time.

Roles into the future will include:

- Maintain Odour Control Facilities  
These units need to be maintained in accordance with the manufacturers requirements, to ensure they continue to operate efficiently. They should also be regularly inspected for leaks, faulty equipment and damage.
- Manage Customer Complaints  
Customer complaint records have been used to identify odour risk sites and to compare and rank sites from different sewer network systems. Operators are now aware of the importance of encouraging customers to register legitimate complaints.

- Inform Public  
Through involvement in the development of the strategy Operators now have the tools available to inform the members of the public about sewer odours and GVW's strategy for dealing with existing and future sites.

## **7.0 CONCLUSION**

The successful development of GVW's sewer network odour management strategy and its implementation, through initially fast tracking priority sites, and eventually, the strategy as a whole, has been as a result of the input and ongoing role of members of GVW Operations teams.

## **8.0 ACKNOWLEDGEMENTS**

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