ITEM 5 WATER AND WASTE
APPROVED INSPECTION PROGRAM FOR PRIVATE SEWERAGE PLUMBING
WSS382/343/08(P1)
Refer 9 attachments

1 BASIS FOR CONFIDENTIALITY

Not Applicable.

2 EXECUTIVE SUMMARY

Not Applicable.

3 PURPOSE OF REPORT

The purpose of this report is to obtain Council approval pursuant to section 134 of the Local Government Act (LGA) 2009 for a selective approved inspection program allowing entry of authorised persons onto private property to detect unauthorised stormwater connections to the sewerage network.

4 PREVIOUS RESOLUTIONS

Not Applicable.

5 DISCUSSION

Background

The City of the Gold Coast has a sewerage network that is a series of property connections, gravity mains, maintenance holes and pump stations. The network is designed and operated to transfer and treat sewage flows. Inflow and infiltration is used to describe unwanted surface water, stormwater or groundwater that enters the sewerage network through faulty infrastructure and unauthorised stormwater connections to the sewer.

Water and Waste (W&W) ensure the sewerage network complies with the SEQ Design and Construct Code that stipulates the minimum network capacity to convey five times average dry weather flow. Inflow and infiltration can cause flows to exceed these parameters, resulting in costly conveyance and sewage overflows. A review of the financial impact of infiltration for the Year 2014-15 estimated increased operating costs of sewage transfer and treatment in the order of $2.0 million.

Infiltration is the long term seepage of groundwater that enters the network through cracks and leaks in pipes and maintenance holes. Infiltration can be exacerbated by rain when water tables remain high. Inflow is typically rain-dependent and enters the network via leaky maintenance hole lids, low-lying overflow relief gullies, defective overflow structures, unauthorised stormwater connections and pool backwash water.

During heavy rain events, inflow can be severe and cause networks to surcharge. W&W use a number of mechanisms to mitigate the risks of sewage overflows, including purpose built overflow structures in “low risk” areas. However, a low-lying property can occasionally experience issues with sewerage services or a localised sewage overflow. Such customers are of high priority to W&W to resolve and are categorised as “hotspots”, which have been identified in all Councillor divisional areas (refer Attachment 1).
ITEM 5 (CONTINUED)
APPROVED INSPECTION PROGRAM FOR PRIVATE SEWERAGE PLUMBING
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Section 193 of the Water Supply (Safety and Reliability) Act 2009 (WSA) prohibits discharge of prohibited substances into a service provider’s infrastructure, including rainwater, roof water and stormwater (refer Attachment 2). It is the responsibility of the property owner to maintain sewerage and stormwater pipes within their property boundary so that stormwater does not enter the sewer. Although properties are issued with a certification of compliance at construction, post-certification work can result in non-compliant stormwater connections to sewer, sometimes without the knowledge of the property owner. Anecdotally, the most common solution is a simple reconfiguration of pipes.

Current Situation

As an initiative of the City's Sewage Overflow Management Plan, the Inflow and Infiltration Reduction Plan was developed. This captures a range of activities to strategically study, manage and rectify inflow and infiltration (refer Attachment 3). Whilst W&W undertake extensive work in public sewers, the effectiveness of such works, especially for inflow reduction, is found to be limited if property defects remain unaddressed. This is not unique to Gold Coast. Water utilities commonly report benefits of sewer remediation work only when both public and private sewer defects are addressed.

W&W intends to first address defects in public sewers. If the area continues to exhibit excessive inflow, W&W propose to undertake an approved inspection program to investigate compliance of private plumbing. Property investigation will be conducted through visual inspection of sewerage plumbing, potentially followed by smoke testing and/or dye testing. All three techniques are commonly undertaken by utilities in Australia. W&W aim to trial the three techniques and assess the success of inflow reduction from each technique. It is proposed not to pursue smoke and dye testing unless necessary for specific cases.

Objectives

The objectives for the proposed inspection program are to:

1. Identify common and critical types of inflow sources in private sewers.
2. Identify complexities of investigating and remediating privately owned infrastructure.
3. Trial community engagement strategies and assess community response to investigation and remediation requests from Council.

Options

1. Inspect and remediate public sewers (business as usual).
2. Inspect and remediate public and private sewers.

Analysis

Option 1 – Inspect and remediate public sewers only (business as usual)

W&W undertake extensive rehabilitation and renewal work to mitigate and reduce inflow and infiltration in public sewers. It does not have a comprehensive program to address inflow and infiltration within private property boundaries. If the City does not undertake compliance investigations when excessive inflow issues continue to occur, it displays a tolerance to non-compliance and disregard of the potential risks to the public health and environment caused by sewage overflows.
Option 2 – Inspect and remediate public and private sewers

This option provides a complete system audit and maximises potential to reduce inflow. The benefit of an approved inspection program is that it allows a right of entry to property for authorised persons without the usual consent requirements. This is not to infringe on occupiers’ rights, but to allow inspection to be carried out without the need for the occupier to be home (provided compliance to sections 133 and 134 LGA in Attachment 4). The entry conditions and public notification requirements for an approved inspection program ensure investigations are undertaken in the most transparent, open and least disruptive manner.

The proposed inspection program forms part of the Rain-Dependent Inflow Management Pilot (refer Attachment 5). Inspections for the pilot will be carried out in four trial catchments (refer Attachment 6). These sites are chosen due to repeatedly observed excessive flows during rain events. Each site reflects variable catchment characteristics that may require customised approaches for inflow investigation and remediation. The pilot aims to provide information to ensure prudent outcome for the City’s Inflow Reduction Implementation Plan. This plan will formalise W&W's process for future remediation of private property inflow.

Personal communication with relevant Area Councillors will be delivered a minimum of seven (7) days prior to public notification of the inspection. Extensive stakeholder engagement, including face-to-face customer survey and consultation, will be carried out prior to inspections. The survey will aim to gain an understanding of customers’ expectations of the inspection program as well as their preferences for methods of resolution for non-compliances. A hold point will be implemented to review un-remediated non-compliances with key stakeholders and Councillors and discuss suitable methods of resolution while taking into account customers’ feedback in the survey.

6 ALIGNMENT TO THE CORPORATE PLAN, CORPORATE STRATEGIES AND OPERATIONAL PLAN

The proposed inspection program for inflow reduction aligns to Gold Coast 2022, “we manage our resources for a sustainable future” by “manag(ing) sewerage systems to reduce impacts on the environment by reducing inflow and infiltration”.

7 FUNDING AND RESOURCING REQUIREMENTS

Funding is included in the W&W 2018-19 budget (refer Attachment 7).

8 RISK MANAGEMENT

Related Directorate risks include:

<table>
<thead>
<tr>
<th>Risk Name</th>
<th>Risk No</th>
<th>Mitigation Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer and Stakeholder engagement mechanisms are not optimised, resulting in increased customer complaints, substandard data collection and missed business opportunities.</td>
<td>CO000643</td>
<td>An inflow and infiltration community education and awareness program will be developed in parallel to achieve optimum results (refer Attachment 8).</td>
</tr>
</tbody>
</table>


ITEM 5 (CONTINUED)
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9 STATUTORY MATTERS

Sections 133 and 134 LGA detail the requirements for undertaking an approved inspection program. Council resolution approving the inspection program completes the first step required by the Act.

10 COUNCIL POLICIES

Under the Asset Management Policy, Council commits to ensure that water and sewerage infrastructure and services are provided in a sustainable manner. This proposal aligns with this policy as it aims to minimise inflow and infiltration in the sewerage system to reduce operational costs and the risk of sewage overflows to the public health and environment.

11 DELEGATIONS

The Local Government Act 2009 does not permit the approval of an approved inspection program to be delegated. Approval must be obtained via Council resolution. Inspections must be carried out by authorised persons.

12 COORDINATION & CONSULTATION

A range of stakeholders are being consulted on an ongoing basis. Refer to the table below.

Key stakeholder consultation

<table>
<thead>
<tr>
<th>Name and/or Title of the Stakeholder Consulted</th>
<th>Directorate or Organisation</th>
<th>Is the Stakeholder Satisfied With Content of Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kathy Baker, Manager Service Sustainability</td>
<td>Water and Waste</td>
<td>Yes</td>
</tr>
<tr>
<td>Dominique Keirens, Senior Infrastructure Planning Engineer</td>
<td>Water and Waste</td>
<td>Yes</td>
</tr>
<tr>
<td>Kate Paxman, Customer Management Officer</td>
<td>Water and Waste</td>
<td>Yes</td>
</tr>
<tr>
<td>Sam Hartley, Executive Coordinator Engineering and Environmental Assessment</td>
<td>Economy, Planning and Environment</td>
<td>Yes</td>
</tr>
<tr>
<td>Gary Wilkins, Supervisor Plumbing and Drainage</td>
<td>Economy, Planning and Environment</td>
<td>Yes</td>
</tr>
</tbody>
</table>
ITEM 5 (CONTINUED)
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13 STAKEHOLDER IMPACTS

External / community stakeholder Impacts

Severe customer impacts such as sewage overflows can be cost-effectively mitigated through strategic inflow management. It is possible that some owners may not have the resources (e.g. financially) to meet their obligation to rectify non-compliances.

Internal (Organisational) Stakeholder Impacts

The Plumbing and Drainage team from Economy, Planning and Environment (EP&E) is the regulatory authority for on-lot (within the property boundary) plumbing and drainage works and are therefore, responsible for directing remedial work for non-compliances of private sewerage plumbing and ensuring compliance with the legislation. Attachment 10 summarises their general process of actioning non-compliances with a proposed hold point.

14 TIMING

The proposed timeline for the approved inspection program and associated activities are:

<table>
<thead>
<tr>
<th>Task</th>
<th>Time</th>
<th>Expected Start Date</th>
<th>Expected End Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Councillor briefing</td>
<td>At least 7 days before public notification</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Public notice on local newspaper</td>
<td>14-28 days before inspection LGA section 134 (5-7)</td>
<td>17 Sep 2018</td>
<td>30 Sep 2018</td>
</tr>
<tr>
<td>Resolution be made available to the public</td>
<td>From newspaper publication of notice until the end of the program LGA section 134 (4,9)</td>
<td>17 Sep 2018</td>
<td>31 Dec 2018</td>
</tr>
<tr>
<td>Notice letter mail out</td>
<td>14 days before inspection</td>
<td>17 Sep 2018</td>
<td>17 Sep 2018</td>
</tr>
<tr>
<td>Councillor briefing</td>
<td>At least 7 days before inspection</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Approved inspection program</td>
<td>Inspections are expected to take 1-2 weeks per trial catchment</td>
<td>1 Oct 2018</td>
<td>31 Dec 2018</td>
</tr>
<tr>
<td>Councillor briefing</td>
<td>Post-inspection</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>

15 CONCLUSION

Inflow and infiltration is used to describe unwanted surface water, stormwater or groundwater that enters the sewerage network. While Water and Waste can and do remediate inflow and infiltration sources in public sewers, the effectiveness of such work, especially for inflow reduction, is found to be limited if private sewer defects remain unaddressed. Water and Waste aim to develop an Inflow Reduction Implementation Plan that will formalise the process for future remediation and mitigation of inflow in private property. The approved inspection program will provide Council with an effective means of:

- Undertaking property inspections in a transparent, open and least disruptive manner.
- Gaining greater understanding of inflow to develop a prudent and effective Inflow Reduction Implementation Plan.
16  **RECOMMENDATION**

It is recommended that Council resolves as follows:

That the property inspection methodology be approved in accordance with section 134(4) of the *Local Government Act 2009*, and the particulars of the approved inspection program are:

a  **The purpose of the program**

   To improve the level of compliance with section 193(2) of the *Water Supply (Safety and Reliability) Act 2008*, which stipulates that a person must not discharge a prohibited substance (including stormwater) into a service provider’s infrastructure.

b  **When the program starts**

   Inspection to start 1 October 2018.

c  **The objective criteria for selecting the properties to be entered and inspected**

   This program is a “selective inspection program” pursuant to section 134(3) of the Local Government Act 2009 that “allows an authorised person to enter and inspect those properties in the local government area that have been selected in accordance with the objective criteria specified in the resolution”. The City ensures the sewerage network complies with the SEQ Design and Construct Code that stipulates the minimum network capacity to convey five times average dry weather flow. The City will inspect areas with repeated wet weather sewage overflows and/or wet weather flows greater than eight times average dry weather flow, which suggest excessive inflow with unacceptable risks to public health and the environment as well as a likelihood of non-compliance with the requirements of section 193 of the Water Supply (Safety and Reliability) Act 2008. All premises within the program area will be inspected.

d  **The period (of not more than 3 months or another period prescribed under a regulation) over which the program is to be carried out**

   Three (3) months.

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Authors: 
Amelia Kok  
Integrated Water Planning Officer

Authorised by:  
Paul Heaton  
Director Water and Waste

Kathy Baker  
Manager Service Sustainability  
17 May 2018

TRACKS REF: #68026016
COMMITTEE RECOMMENDATION WW18.0524.005
moved Cr PJ Young seconded Cr Boulton

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Three (3) months.

CARRIED
ITEM 5 (CONTINUED)
APPROVED INSPECTION PROGRAM FOR PRIVATE SEWERAGE PLUMBING
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Hotspots areas

Attachment 1

[Map Image]

Legend
- [Legend Description]

Councillor Electoral Divisions
Inflow / Infiltration Hotspots

Produced by: Gold Coast Water & Waste
Production Date: 07 May 2018
Service Code: 06082018
Prepared: MGR/84 Zone 94
ITEM 5 (CONTINUED)
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Attachment 2.1

Excerpt of Section 193 of Water Supply (Safety and Reliability) Act 2008 on the discharging prohibited substances

Water Supply (Safety and Reliability) Act 2008
Chapter 2 Infrastructure and service

[§ 193]

(2) A person must not, without the written consent of a service provider, build over, interfere with access to, increase or reduce the cover over, or change the surface of land in a way causing ponding of water over an access chamber for, a service provider’s infrastructure.

Maximum penalty—500 penalty units.

(3) However, despite subsections (1) and (2), a person does not require the written consent of the service provider if the person carries out building work for a building or structure on a lot that contains, or is adjacent to a lot that contains, a sewer or water main of the service provider.

(4) In this section—
building see the Building Act 1975, schedule 2.
building work see the Building Act 1975, section 5.
structure see the Building Act 1975, schedule 2.

193 Discharging particular substances

(1) A person must not discharge trade waste or seepage water into a sewerage service provider’s infrastructure without the sewerage service provider’s approval under section 180.

Maximum penalty—1,665 penalty units.

Note—
A sewerage service provider can not give a person an approval, under section 180, to discharge seepage water from a mining activity or petroleum activity, within the meaning of the Environmental Protection Act 1994, into sewerage infrastructure.

(2) A person must not discharge a prohibited substance, surface water, soil, sand or rock into a service provider’s infrastructure.

Maximum penalty—1,665 penalty units.

(3) A person must not discharge water from an ornamental pond, a swimming pool or the filtration system of a swimming pool into a service provider’s infrastructure without the written consent of the service provider.
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APPROVED INSPECTION PROGRAM FOR PRIVATE SEWERAGE PLUMBING
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Attachment 2.2

Excerpt of Schedule 1 of Water Supply (Safety and Reliability) Act 2008 on types of prohibited substances

Schedule 1  Prohibited substances

schedule 3, def prohibited substance

1 A solid or viscous substance in a quantity, or of a size, that can obstruct sewerage, or interfere with the operation of sewerage.
   Examples of solids or viscous substances that are prohibited substances if of a size or in the quantity mentioned in item 1—
   • ash, cinders, sand, mud, straw and shavings
   • metal, glass and plastics
   • paper and plastic dishes, cups and milk containers whether whole or ground by garbage grinders
   • rags, feathers, tar and wood
   • whole blood, paunch manure, hair and entrails
   • oil and grease
   • cement laden waste water, including, wash down from exposed aggregate concrete surfaces

2 A flammable or explosive solid, liquid or gaseous substance, including petrol.

3 Floodwater, rainwater, roof water, stormwater, subsoil water and surface water.

4 A substance that, given its quantity, is capable alone, or by interaction with another substance discharged into sewerage, of—
   (a) inhibiting or interfering with a sewage treatment process; or
   (b) causing damage or a hazard to sewerage; or
   (c) causing a hazard for humans or animals; or
   (d) creating a public nuisance; or
   (e) creating a hazard in waters into which it is discharged; or

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Key strategic activities for inflow and infiltration reduction

- Sewage Overflow Management Plan
- Inflow and Infiltration Reduction Plan
- Inflow
- Infiltration

Other initiatives to manage and mitigate spills include:
- Controlled overflow structures
- Environmental Management Plans
- Asset maintenance strategies
- Formalised spill monitoring

Ongoing activities
- Tidal Ingress Reduction Study
  - Using Paradise Point as the study area, evaluate effectiveness of sewer rehabilitation works on reducing groundwater infiltration
- Prioritised Sewer Rehabilitation Programs
  - CCTV and relining of gravity mains
  - Maintenance hole condition assessment and refurbishment
- Hotspots Program
  - RemEDIATE areas with excessive wet weather spills occurring at undesirable or public-impacted locations (see Attachment 2 for Hotspot areas)
- Network Performance Analysis
  - Evaluate effectiveness of remediation to improve on future programs

Proposed activities
- Rain-dependent Inflow Management Pilot (RIMP)
  - Develop a prudent and effective Inflow Reduction Implementation Plan
- Inflow Reduction Implementation Plan
  - Capture a systematic way in applying resources to reduce inflow

Other initiatives to manage and mitigate spills include:
- Controlled overflow structures
- Environmental Management Plans
- Asset maintenance strategies
- Formalised spill monitoring
ITEM 5 (CONTINUED)
APPROVED INSPECTION PROGRAM FOR PRIVATE SEWERAGE PLUMBING
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Attachment 4

Excerpt of Sections 133 and 134 of Local Government Act 2009 on approved inspection programs

Local Government Act 2009
Chapter 5 Monitoring and enforcing the Local Government Acts

[s 133]

(ii) that the authorised person is authorised under this Act to enter the property without the permission of the occupier; and

(b) may enter a home that is on the property only if the occupier of the relevant part of the property accompanies the authorised person.

133 Entering property under an approved inspection program

(1) An authorised person may enter a property (other than a home on the property) without the permission of the occupier of the property, at any reasonable time of the day or night, under an approved inspection program.

(2) An approved inspection program is a program, approved by a local government, under which an authorised person may enter and inspect properties in the local government area to ensure the Local Government Acts are being complied with.

Example of an approved inspection program—

a program to ensure that swimming pools are fenced in accordance with a local law

(3) The local government must give, or must make a reasonable attempt to give, the occupier of the property a written notice that informs the occupier of the following—

(a) the local government’s intention to enter the property;

(b) the reason for entering the property;

(c) an estimation of when the property will be entered.

Example—

A local government may give the written notice to an occupier of a property by dropping a flyer in the letterbox for the property.

(4) The local government must give, or make a reasonable attempt to give, the written notice to the occupier within a reasonable time before the property is to be entered.

(5) The authorised person—

(a) must, as soon as the authorised person enters the property, inform any occupier of the property—
Local Government Act 2009
Chapter 5 Monitoring and enforcing the Local Government Acts

[§ 134]

(i) of the reason for entering the property; and
(ii) that the authorised person is authorised under this Act to enter the property without the permission of the occupier; and
(b) may enter a budget accommodation building on the property only to monitor compliance with the Building Act, chapter 7.

134 Approving an inspection program

(1) A local government may, by resolution, approve the following types of inspection programs—
   (a) a systematic inspection program;
   (b) a selective inspection program.

(2) A systematic inspection program allows an authorised person to enter and inspect all properties, or all properties of a certain type, in the local government area.

(3) A selective inspection program allows an authorised person to enter and inspect those properties in the local government area that have been selected in accordance with objective criteria specified in the resolution.

(4) The resolution must state—
   (a) the purpose of the program; and
   (b) when the program starts; and
   (c) for a systematic inspection program that allows a type of property to be entered and inspected—a description of the type of property; and
   (d) for a selective inspection program—the objective criteria for selecting the properties to be entered and inspected; and
   (e) the period (of not more than 3 months or another period prescribed under a regulation) over which the program is to be carried out.
(5) The local government must give the public notice of the approval of an inspection program, at least 14 days, but not more than 28 days, before the approved inspection program starts.

(6) The notice must be published—
   (a) in a newspaper that is circulating generally in the local government area; and
   (b) on the local government’s website.

(7) The notice must state the following—
   (a) the name of the local government;
   (b) the purpose and scope of the program, in general terms;
   (c) when the program starts;
   (d) the period over which the program is to be carried out;
   (e) that the public may inspect a copy of the resolution that approved the program at the local government’s public office until the end of the program;
   (f) that a copy of the resolution that approved the program may be purchased at the local government’s public office until the end of the program;
   (g) the price of a copy of the resolution that approved the program.

(8) The price of a copy of the resolution that approved the program must be no more than the cost to the local government of making the copy available for purchase.

(9) From the time when the notice is published in the newspaper until the end of the program—
   (a) the public may inspect a copy of the resolution that approved the program at the local government’s public office; and
   (b) copies of the resolution that approved the program must be available for purchase at the local government’s public office at the price stated in the notice.
Proposed methodology for Inflow Reduction Implementation Plan

**Water & Waste**

Inflow Reduction Implementation Plan Methodology Flowchart

<table>
<thead>
<tr>
<th>Rain-Dependent Inflow</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preliminary Desktop Analysis</strong></td>
</tr>
<tr>
<td>- Pump station analysis</td>
</tr>
<tr>
<td>- W&amp;W Spillage Database</td>
</tr>
<tr>
<td>- Hotspot areas</td>
</tr>
<tr>
<td>- Workshops</td>
</tr>
<tr>
<td><strong>Selection of program areas</strong></td>
</tr>
</tbody>
</table>

**Public Sewer Remediation**

- CCTV and relining of sewer gravity mains
- Assessment and refurbishment of maintenance holes
- Remediation of defective overflow structures

**Network performance review**

Does program area still exhibit excessive inflow issues?

- Yes
- No

**Community Education**

- Communication and education
  - Public notice in local newspaper
  - Mail out of notice letter and FAQs
  - Councillor briefings

**Approved inspection program**

- Visual inspection of sewerage plumbing
- Smoke and dye testing

**Private Sewer Remediation**

- "Hold Point" Review non-compliances with stakeholders and Councillors to determine suitable resolution methods

**Direction of remedial works**

Actioned by Plumbing and Drainage (EP&E)

**Post-Rehabilitation Review**

- Network performance review
  - Flow monitoring pre- and post-rehabilitation
  - Align outcomes with W&W Asset Management Plan

**Refine method for Inflow Reduction Implementation Plan**
Trial catchments of approved inspection program

The four proposed program areas are the W40, SS6, PA12 and OX16 sewerage catchments. For the purpose of the Rain-Dependent Pilot Trial, trial catchments must:

- Have wet weather peaking factors of 8 or greater
- Have an equivalent person (EP) load of 500 to 1000
- Be located at the beginning of the gravity sewer line (does not receive sewage load from upstream catchments)

### W40 Program Area Description:

<table>
<thead>
<tr>
<th>Catchment</th>
<th>W40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Council Division</td>
<td>5 (Cr. Peter Young)</td>
</tr>
<tr>
<td>Suburb</td>
<td>Nerang</td>
</tr>
<tr>
<td>Type</td>
<td>Established residential developments: Inflow and infiltration is most critical in established areas where unauthorised connections and sewer defects tend to be the most numerous. The financial responsibility of property defect rectification falls on the property owner, some of which may have no knowledge of the non-compliance. The matter can become more complicated when the property is purchased along with the defect without the knowledge of the new owner.</td>
</tr>
<tr>
<td>General Characteristics</td>
<td>W40 is a low density residential area with 215 properties receiving sewerage services. In the southern region of the catchment, there are 10 properties with private sewer mains, including a retirement village.</td>
</tr>
</tbody>
</table>
| Potential inflow sources / contributors | - Leaky maintenance hole lids and rims
- Unauthorised stormwater connections to the sewer
- Damaged or uncapped inspection openings
- Low-lying overflow relief gullies
- Clay soil with low permeability
- Hilly terrain directing runoff from high to low lying areas |

Aerial
W40 Flow Analysis:

Flow diurnals generated during dry and weather show significant responses to rainfall, with instantaneous wet weather peaking factors reaching up to 12 times average dry weather flow. W40 is a high-priority area in the Hotspots program.
SS6 Program Area Description:

<table>
<thead>
<tr>
<th>Catchment</th>
<th>SS6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Council Division</td>
<td>12 (Cr. Pauline Young)</td>
</tr>
<tr>
<td>Type</td>
<td>Commercial properties: In addition to illegal connections, industrial areas are often covered with large surface area of roof and impermeable concrete ground. Heavy vehicles and industrial operations also increase the risk of damage to maintenance holes and near-surface level pipes.</td>
</tr>
<tr>
<td>General Characteristics</td>
<td>SS6 is a low and medium impact commercial area in Burleigh Heads with 167 properties receiving sewerage services. There are 59 trade waste customers and 108 non-trade waste customers.</td>
</tr>
</tbody>
</table>
| Potential inflow sources / contributors | • Unauthorised stormwater connections to the sewer  
• Damaged or uncapped inspection openings  
• Leaky maintenance hole lids and rims  
• Broken pipework near ground surface  
• Large surface area of roof and impermeable concrete ground  
• Clay and shale soils with low permeability |
| Aerial | ![Aerial Image] |
Flow diurnals generated during dry and weather show significant responses to rainfall, with instantaneous wet weather peaking factors reaching up to **25 times** average dry weather flow.
ITEM 5 (CONTINUED)
APPROVED INSPECTION PROGRAM FOR PRIVATE SEWERAGE PLUMBING
WSS382/343/08(P1)

PA12 Program Area Description:

<table>
<thead>
<tr>
<th>Catchment</th>
<th>PA12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Council Division</td>
<td>1 (Cr. Donna Gates)</td>
</tr>
</tbody>
</table>

**Type**

New residential developments (<6 years old): In Queensland, properties are legally within their defects liability period for six years. Within this time, property owners have the right to go back to their respective builder and demand remediation works if the defect or unauthorised connection was performed by the builder. This removes the responsibility and financial burden of remediation from the owner and Council as well as encourages builders to comply more diligently with sewer connection regulation in future works.

**General Characteristics**

PA12 is a medium density residential area in Pimpama with 190 properties receiving sewerage services. Mirvac Pacific is the developer for the Gainsborough Greens estate where PA12 is located. Development works are estimated to be completed by 2022. The majority of existing properties are six years old or less.

**Potential inflow sources / contributors**

- Unauthorised stormwater connections to sewer
- Low-lying overflow relief gullies
- Leaky maintenance hole lids and rims
- Damaged or uncapped inspection openings

**Aerial**

![Aerial view of PA12 area]
ITEM 5 (CONTINUED)
APPROVED INSPECTION PROGRAM FOR PRIVATE SEWERAGE PLUMBING
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PA12 Flow Analysis:

Flow diurnals generated during dry and weather show significant responses to rainfall, with instantaneous wet weather peaking factors reaching up to **11 times** average dry weather flow.

---

**Flow Diurnal (Dry Weather)**

![Flow Diurnal (Dry Weather) graph]

<table>
<thead>
<tr>
<th>Day</th>
<th>Pump hrs</th>
<th>Rain</th>
</tr>
</thead>
<tbody>
<tr>
<td>15/01/2018</td>
<td>2.2</td>
<td>0</td>
</tr>
<tr>
<td>16/01/2018</td>
<td>2.3</td>
<td>0</td>
</tr>
<tr>
<td>17/01/2018</td>
<td>2.1</td>
<td>0</td>
</tr>
<tr>
<td>18/01/2018</td>
<td>1.9</td>
<td>0</td>
</tr>
<tr>
<td>19/01/2018</td>
<td>2.1</td>
<td>0</td>
</tr>
<tr>
<td>20/01/2018</td>
<td>2.3</td>
<td>0</td>
</tr>
<tr>
<td>21/01/2018</td>
<td>2.4</td>
<td>0</td>
</tr>
</tbody>
</table>

**Flow Diurnal (Wet Weather)**

![Flow Diurnal (Wet Weather) graph]

<table>
<thead>
<tr>
<th>Day</th>
<th>Pump hrs</th>
<th>Rain</th>
</tr>
</thead>
<tbody>
<tr>
<td>29/03/2017</td>
<td>2.5</td>
<td>0</td>
</tr>
<tr>
<td>30/03/2017</td>
<td>10.1</td>
<td>99</td>
</tr>
<tr>
<td>31/03/2017</td>
<td>4.7</td>
<td>116</td>
</tr>
<tr>
<td>1/04/2017</td>
<td>3.3</td>
<td>0</td>
</tr>
<tr>
<td>2/04/2017</td>
<td>3.1</td>
<td>0</td>
</tr>
<tr>
<td>3/04/2017</td>
<td>2.9</td>
<td>0</td>
</tr>
<tr>
<td>4/04/2017</td>
<td>2.5</td>
<td>0</td>
</tr>
</tbody>
</table>
OX16 Program Area Description:

<table>
<thead>
<tr>
<th>Catchment</th>
<th>OX16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Council Division</td>
<td>2 (Cr. William Owen-Jones)</td>
</tr>
<tr>
<td>Type</td>
<td>High number of pools: Pools are suspected to be a significant contributor of inflow. On average, each pool can contribute approximately 1,600L to the sewer during a 50mm rainfall. It is likely that directly before or after a rain event, pool owners with sand filters discharge excess pool water using the backwash system that are legally connected to sewer. W&amp;W aims to trial a community education and awareness program on the social and environmental responsibilities of pool owners in regards to inflow and infiltration and sewage overflows.</td>
</tr>
<tr>
<td>General Characteristics</td>
<td>OX16 is a medium density residential area in Helensvale with 232 properties receiving sewerage services. There are approximately 90 pools, equivalent to 40% of properties.</td>
</tr>
<tr>
<td>Potential inflow sources / contributors</td>
<td>• Pool backwash water  • Unauthorised pool overflow connections to the sewer  • Unauthorised stormwater connections to sewer  • Low-lying overflow relief gullies  • Leaky maintenance hole lids and rims  • Damaged or uncapped inspection openings</td>
</tr>
</tbody>
</table>

Aerial

![Aerial Image](image-url)
OX16 Flow Analysis:

Flow diurnals generated during dry and weather show significant responses to rainfall, with instantaneous wet weather peaking factors reaching up to 23 times average dry weather flow.

**Flow Diurnal (Dry Weather)**

![Flow Diurnal (Dry Weather)]

**Flow Diurnal (Wet Weather)**

![Flow Diurnal (Wet Weather)]
ITEM 5 (CONTINUED)
APPROVED INSPECTION PROGRAM FOR PRIVATE SEWERAGE PLUMBING
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Attachment 7

Project costs of Rain-Dependent Inflow Management Pilot

The following is a brief summary of the estimated project costs of the Rain-Dependent Inflow Management Pilot.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary desktop analysis</td>
<td>Works include network monitoring, workshops with key stakeholders and desktop analysis</td>
<td>$42,000</td>
</tr>
<tr>
<td>Inspection and remediation of public sewer</td>
<td>CCTV and relining of gravity sewer, inspection and refurbishment of maintenance holes, inspection and remediation of overflow structures</td>
<td>$61,000</td>
</tr>
<tr>
<td>Community education</td>
<td>Planning and delivery of community engagement plan including public notice in Gold Coast Bulletin and mail out of notice letters and FAQs</td>
<td>$25,000</td>
</tr>
<tr>
<td>Approved inspection program</td>
<td>Source detection methods including visual inspection, smoke testing and dye testing</td>
<td>$58,500</td>
</tr>
<tr>
<td>Direction of remediation work</td>
<td>Estimated costs of Plumbing and Drainage team to action non-compliances (true costs are dependent on the number of identified non-compliances and necessary actions to enforce remediation work)</td>
<td>$59,000</td>
</tr>
<tr>
<td>Post-remediation network performance analysis</td>
<td>Works include network monitoring, workshops with key stakeholders and development of project completion report</td>
<td>$15,000</td>
</tr>
<tr>
<td>Contingency</td>
<td>50% of total costs (as recommended by QP-2243)</td>
<td>$130,500</td>
</tr>
<tr>
<td><strong>Total costs</strong></td>
<td><strong>Excluding cost contingency</strong></td>
<td><strong>$260,500</strong></td>
</tr>
<tr>
<td><strong>Total costs</strong></td>
<td><strong>Including cost contingency</strong></td>
<td><strong>$391,000</strong></td>
</tr>
</tbody>
</table>
ITEM 5 (CONTINUED)
APPROVED INSPECTION PROGRAM FOR PRIVATE SEWERAGE PLUMBING
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Attachment 8

Proposed customer engagement plan

W&W proposes to undertake a customer engagement plan that will incorporate community based social marketing techniques to:

- Encourage homeowners to disconnect their unauthorised stormwater connections from the sewerage network.
- Raise awareness about the sewage overflows and other impacts of stormwater from private property on the sewerage network and the environment.

Community based social marketing is premised on removing the barrier that prevent an action from taking place, while enhancing the benefits of taking that action. Through the use of tools such as commitments, prompts, norms, incentives and effective communication, this approach will be used by W&W to encourage and empower residents to protect their individual property and contribute as a neighbourhood to the overall protection of the sewerage network. Community based social marketing has been used to promote water conservation, waste reduction, recycling and energy saving.

Some communication tactics that may be implemented are:

- Mail out of notice letters and fact sheet/ FAQs (see following page).
- W&W project page on City website with information about inspection program.
- Councillor messaging for newsletters and social media.
- Key messaging.
- Livepro scripting.
- City news.
- Social media.
- Community news.
ITEM 5 (CONTINUED)
APPROVED INSPECTION PROGRAM FOR PRIVATE SEWERAGE PLUMBING
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Protecting our city against sewage overflows

Sewer and stormwater networks are separate systems. Sewage is water from your toilet, shower or sink that is transported via sewer pipes to a sewage treatment plant.

Stormwater is rainwater that runs off surfaces such as lawns, roads, roofs and natural ground surfaces. The stormwater from your roof and backyard should drain into stormwater pipes and to the nearest waterway, not the sewer network.

Protect your homes and waterways
Every time it rains, our sewer is under threat from flooding due to incorrect stormwater connections. Pressure from this additional flow of water causes sewage to back up into private sewer drains and increases the risk of overflows from maintenance holes, backyards and toilets.

Incorrect connections on your property may seem minor, but the combined volume of stormwater flowing into the sewer can be significant. One incorrectly connected roof can direct the same amount of stormwater to the sewer as a pool.

Repairing the faults in your property can:
- reduce costs for pumping and treatment
- avoid sewage backups in your homes
- protect the environment from overflows into our waterways and parks.

Swimming pools connected to sewer
Discharging pool water to the sewer within 48 hours of a rain event can cause a sewage overflow. It is essential to direct only pool water to the sewer. Pool overflow must go into the stormwater network.

Stormwater pipes incorrectly connected to sewer
Your stormwater must flow to a rainwater tank, road kerb or an underground public stormwater system.

Stormwater should never flow into the sewer.

If the downpipe from your roof appears to drain into a sewer pipe or an overflow relief gully, an incorrect connection may exist.

If you think your stormwater pipes are connected to the sewer, please have them inspected by a licensed plumber.

CITY OF GOLDCOAST.
ITEM 5 (CONTINUED)
APPROVED INSPECTION PROGRAM FOR PRIVATE SEWERAGE PLUMBING
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Overflow relief gully
An overflow relief gully (ORG) is not a grate for stormwater. It is a sewer fitting. During the possible event of a sewage backup, your ORG directs the spill outside your home, rather than inside. It has a grated opening and surrounded by concrete, and can be found at ground level (usually close to the external wall of your home).

Correct ORG: The ORG must be positioned at least 75mm above ground.

Incorrect ORG: The ORG is not raised to specification and stormwater is being directed to the ORG.

ORG specifications
- Easily removable grate
- At least 75mm above the ground surrounding it and 150mm lower than the lowest waste outlet fitting in the home
- Clear of debris, pot plants or any obstructing material
- Stormwater is not directed to the ORG.

Are there regulations?
Water Supply (Safety and Reliability) Act 2008 classifies stormwater as a prohibited substance that cannot be discharged into the sewage network.

<table>
<thead>
<tr>
<th>Where can stormwater or pool water enter the sewer?</th>
<th>How do I check if my property is compliant?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swimming pool is connected to sewer</td>
<td>• Pool overflow must be directed to the stormwater network</td>
</tr>
<tr>
<td></td>
<td>• Pool backwash must be directed to the sewer</td>
</tr>
<tr>
<td></td>
<td>• Rainwater from your pool cannot be directed to the sewer. This includes turning on your backwash pump directly after a rain event.</td>
</tr>
</tbody>
</table>

Incorrect stormwater connections to sewer and/or ORG
- Roof downpipes and rainwater tank overflows should not be connected to any sewer pipes or ORG
- Remove pot plants or pavement that may be obstructing your ORG
- Check the surrounding landscape of your ORG to ensure that stormwater is not being directed to it during a rain event
- If you think your ORG is too low, have a licensed plumber to inspect and if necessary, remediate it

For more information
P 1300 000 528
E mail@goldcoast.qld.gov.au
W cityofgoldcoast.com.au/thinkatthesink
Proposed process of remedial work direction

- All complaints received are assessed on their merit
- Non-compliance will not necessarily be actioned by a Show Cause. Non-compliance may proceed directly to Enforcement if the compliant is relating to any condition, device or practice in connection with water supply systems that has the potential to endanger public health