Inspections of Stormwater Treatment Devices on Non-Industrial Private Land 2024-2025

Comprehensive Stormwater Network Discharge Consent (CSNDC), CRC252424, Schedule 4J

Christchurch City Council

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Executive Summary

Under the Comprehensive Stormwater Network Discharge Consent (CSNDC) Schedule 4J – Source Control Investigations, Christchurch City Council (Council) is required to develop and implement a programme for the operational inspection of a representative sample of privately owned stormwater treatment and/or retention devices located on non-industrial sites. These sites include commercial business complexes, rest homes, residential dwellings and multi-apartment buildings, education centres and similar properties. The purpose of this programme is to ensure that stormwater treatment devices are functioning as designed and are being appropriately maintained.

In each of 2024 and 2025, 24 representative stormwater treatment devices (both proprietary and non-proprietary), approved between 2013 and 2023/24, were inspected across a range of different stormwater and waterways catchments.

During 2024, all inspected devices were found to be fully compliant (100%) with the relevant regulatory requirements. Three devices were excluded from assessment due to factors such as the associated property being vacant, the installation being temporary, or the device being relatively new and not yet requiring inspection.

In 2025, three devices were not investigated further due to co-ownership and unclear management responsibility. Of the remaining devices, inspection reports for three sites are yet to be received.

Details of the inspection sites and the types of devices inspected are provided in Table 3 and Table 4.

Overall, awareness of operation and maintenance requirements for private stormwater treatment devices remains strong, and property owners continue to demonstrate a high level of engagement with the programme.

In 2026, Council will focus stormwater inspections on commercial properties, as residential sites are considered lower risk and are already addressed through existing stormwater discharge guidance. Improvements are also planned to address non-compliance and co-owned properties, develop device-specific maintenance manuals, and centralise stormwater device records.

1. Introduction

The Comprehensive Stormwater Network Discharge Consent, CSNDC (CRC252424) was granted to the Christchurch City Council on 20 December 2019. The consent defines the conditions under which the council may discharge Stormwater into the territory's water bodies, into the land, and to the coast. The CSNDC includes a requirement to develop an ongoing programme for the operational inspection of a sample of private stormwater treatment and/or retention devices on non-industrial sites for the purposes of ensuring proper function and maintenance. The requirements of the programme are set out in Schedule 4J and have a specified timeline to instigate the project: The inspection and maintenance programme was introduced in 2022 in response to CSNDC requirements. Its primary objective is to establish and sustain an ongoing programme that ensures effective operation and long-term performance of installed stormwater treatment devices located on non- industrial private land.

The programme was developed in 2021 and has now been in operation for four years. Over this period, it has provided a structured framework for monitoring and maintaining approved stormwater devices to ensure continued compliance and functionality. The secondary objectives of the programme are to:

- Implement and maintain a consistent and systematic inspection and maintenance process
- access the current conditions and performance of representative samples of approved stormwater treatment devices on non-industrial private lands; and
- evaluate device performance over time since installation, identify any non-compliance, and report findings accordingly.

Table 1 Description of the project and the timeline

Description	Action Start Date	Action Completion Date
Stormwater treatment devices on non-industrial private lands Schedule: 4j Develop a programme for the operational inspection of retention devices on non-industrial sites for the purpose of inspection and maintenance	Within 2 years of the commencement of the resource consent 19 December 2021	ongoing

2. Background

2.1. Project Description

The scope of work for the inspection and maintenance programme was prepared by the council in 2021 and peer-reviewed by the external reviewer panel to ensure compliance with CSNDC requirements. The scope of the work identified the processes, strategies, and technical inputs to establish the programme and implement it as a long-term, sustainable initiative.

The scoping document identified existing gaps in knowledge and practice and informed the development of a robust framework that meets both CSNDC requirements and the Council's internal objectives. This framework supports a consistent and systematic approach to understanding the long-term performance of Council- approved stormwater treatment devices located on non-industrial private land, including commercial business complexes, rest homes, residential homes and multi-apartment developments, education facilities and similar land uses.

The programme was initiated in 2022 and has now been operating for four years. Over this period, it has continued to perform as intended by improving oversight of privately owned stormwater treatment devices and strengthening the Council's ability to monitor compliance, functionality, and maintenance practices over time.

This ongoing oversight is required by the Council's Stormwater and Land Drainage Bylaw 2022. Under Sections 23 and 25 of the Bylaw, the occupier(s) of any property with a private stormwater system are required to ensure that the system is maintained in good operating condition and that stormwater can flow freely. Property owners are responsible for all maintenance, repairs, and associated costs relating to the private stormwater infrastructure within the property boundaries, right up to the point of discharge.

These responsibilities are reinforced through stormwater connection and discharge approvals, (Stormwater connections and discharge approval). where consent conditions may be imposed to manage the effects of stormwater on the wider network. Such conditions can include requirements for on-site rainwater storage to avoid increasing downstream flooding, or the installation of stormwater treatment systems designed to remove contaminants from stormwater runoff. To support compliance with these consent requirements, the Council has approved a range of acceptable proprietary and non-proprietary treatment options, as outlined in Table 2.

Table 2 Council approved non-proprietary and proprietary stormwater treatment devices (as of September 2024)

Systems Approved for Basic Treatment (private ownership & operation)	**Treatment Ability**
Atlan Filter	5mm/hr
Atlan Flowfilter	5mm/hr
Atlan Flowguard	5mm/hr
Hynds Up-Flo Filter with CPZ Media	5mm/hr
Oldcastle/Austin Bluewater Perk Filter	5mm/hr
Oldcastle/Austin Bluewater Biopod	5mm/hr
Stormwater 360 Filterra/Bioscape	5mm/hr
Stormwater 360 Jellyfish	5mm/hr
Stormwater 360 Stormfilter with ZPG Media	5mm/hr
Systems Approved for Enhanced Treatment (private ownership & operation)	**Treatment Ability**
CCC Rain Garden	20mm
Oldcastle/Austin Bluewater Biopod	5mm/hr
Stormwater 360 Filterra/Bioscape	5mm/hr
StormwateRx Aquip	5mm/hr
Systems Approved for Public Treatment (owned and operated by CCC)	
First Flush Basin + Stormwater Wetland Treatment Train	25mm
Soil Adsorption Basin	25mm
Hynds Up-Flo Filter with CPZ Media*	5mm/hr
Stormwater 360 Filterra/Bioscape*	5mm/hr
Stormwater 360 Stormwater with ZPG Media*	5mm/hr

**with specific dispensation*

Specialised treatment systems require treatment trains or specific engineering and may include combinations of Basic/Enhanced devices or specialised treatment systems targeting specific contaminants, i.e., American Petroleum Institute (API) compliant oil/water separators. These types of systems are unlikely to be used on non-industrial sites.

The acceptable Attenuation- Water Quantity options are:

- Storage
- Balance Tank

Non -proprietary Stormwater Treatment devices

- A rain garden or tree pit designed to Council's Rain Garden and/or Tree Pit Design Criteria
- Soil adsorption or sedimentation basin designed to capture the runoff from the first 25 mm of rainfall
- A vegetated swale designed in general accordance with Auckland Council's TP10 to treat the runoff from a 5 mm/hr intensity storm

2.2. Gaps

The following gaps were identified during a peer-reviewed process.

- Although the council has statutory obligations under the Stormwater and Land Drainage Bylaw 2022 to inspect privately owned stormwater systems and enforce compliance (including penalties of up to $20,000, under the Local Government Act 2002), enforcement of these requirements has been limited.
- At the commencement of the programme, the Council lacked formal plans or documented processes to record maintenance requirements or manage non-compliant. While progress has been made, work is still underway to strengthen non-compliance management and internal guidance.
- The council initially held limited information on stormwater treatment devices that were not performing as intended due to design deficiencies, construction issues, or inadequate maintenance. Addressing this information gap has been a key driver of the programme.
- Publicly available guidance on the council's website was minimal with limited information on consent requirements, legal and compliance obligations, construction standards, documentation, monitoring, or technical guidance for private stormwater treatment devices.
- Property owners' maintenance responsibilities were not clearly communicated at the time of consent approval (APPENDIX I), nor were owners engaged in subsequent years to reinforce ongoing maintenance obligations.

2.3. Assumptions and Limitations

There are a few assumptions and limitations to the current consent approval process.

Approximately 80% of consent applications are received through the Building Consent application process. The consenting team does not have a process in place to capture maintenance requirements under the property's building warrant of fitness.

Although there are no maintenance schedules in place, it is believed that all the installed devices are performing well as we have not heard otherwise.

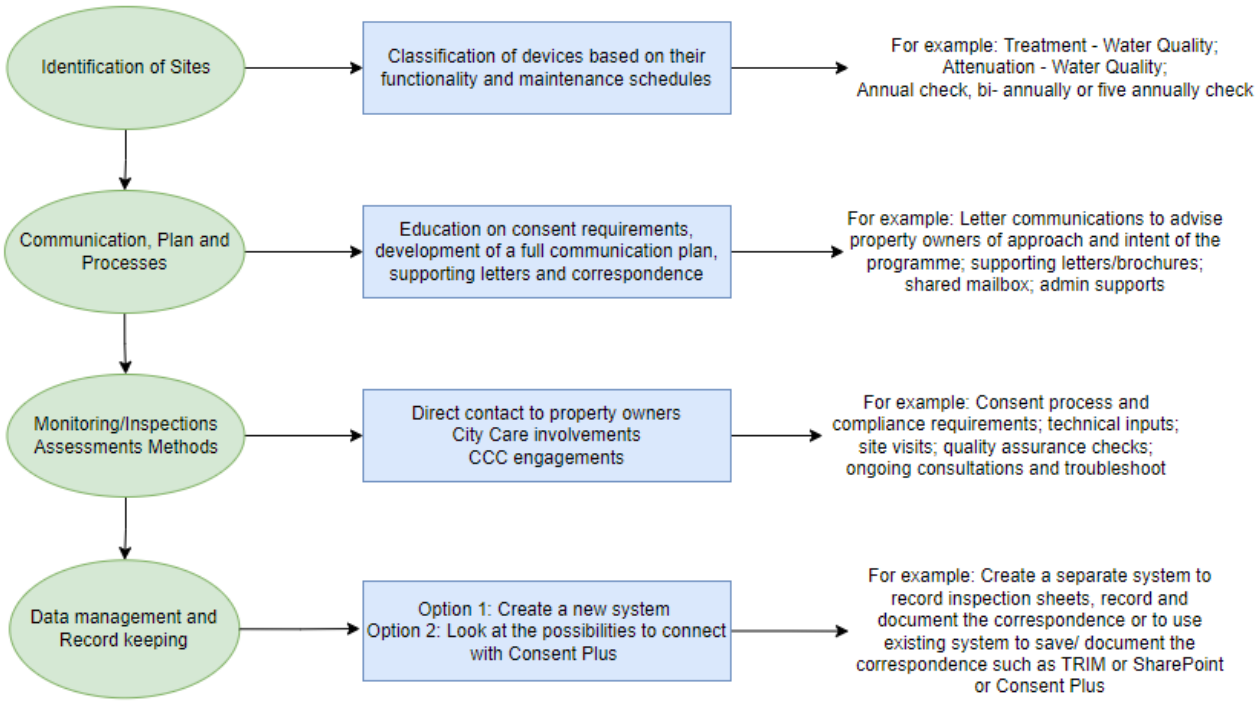
For smaller private properties (except for larger subdivisions), it is perceived that all the installed devices have followed appropriate design guidelines, methodologies, and legal compliance requirements.

3. Methods

To address the identified gaps and limitations, the council established a high-level project workflow at the outset of the programme. This workflow has been consistently applied since the programme commenced and continues to operate effectively. The process consists of four key steps. 1) Identification of sites 2) Communication, plan, and processes 3) Collation of inspection and maintenance reports, 4) Data management and record keeping. This workflow is illustrated in Figure 1, APPENDIX II. To support consistent implementation, brief description of the operational inspection and maintenance requirements for each stormwater treatment device type was also developed (APPENDIX III).

In 2024 and 2025 calendar years, 24 stormwater treatment devices (both proprietary and non-proprietary) were selected for inspection each year. These devices were distributed across the city's major catchments; (Ōtākaro/Avon, Ōpāwaho/Heathcote, Pūharakekenui/ Styx, and Coastal). This approach ensured representative coverage across catchments and supported informed assessments of stormwater treatment device performance.

Figure 2 High Level Workflow



3.1 List of the devices inspected January 2024-December 2024

In 2024, 24 representative stormwater treatment devices were inspected as required by the consent. A summary of land use and stormwater catchment characteristics is in Table 3.

Table 3 List of the devices inspected January 2024- December 2024

SN	Site	Consent start Date	Stormwater Catchment Area	District Plan Zone Activity	Device
1	Ferry Road, Woolston, Christchurch	2012	Ōpāwaho/Heathcote	Commercial	Oil and Grit Interceptor
2	Curletts Road, Upper Riccarton, Christchurch	2013	Ōpāwaho/Heathcote	Commercial	Oil and Grit Interceptor
3	Papanui Road, St Albans, Christchurch	2013	Ōtākaro/ Avon	Residential	Oil and Grit Interceptor
4	Ferry Road, Woolston, Christchurch	2013	Ōpāwaho/Heathcote	Commercial	Oil and Grit Interceptor
5	Rimu Street, Riccarton, Christchurch	2013	Ōtākaro/ Avon	Commercial	Oil and Grit Interceptor
6	Marshland Road, Marshland, Christchurch	2014	Pūharakekenui/ Styx	Rural	Swale
7	Lichfield Street, Central City, Christchurch	2015	Ōtākaro/ Avon	Mixed Use	Hynds Up-Flow Filter
8	Kilmore Street, Central City, Christchurch	2015	Ōtākaro/ Avon	Commercial	Hynds Up-Flow Filter
9	Kirk Road, Templeton, Christchurch	2015	Huritini / Halswell	Commercial	SW360 Stormfilter
10	Ferry Road, Central City, Christchurch	2016	Ōpāwaho/Heathcote	Mixed Use	Hynds Up-Flow Filter

11	Awatea Road, Hornby, Christchurch	2016	Huritini / Halswell	Residential	SW360 Stormfilter
12	Brougham Street, Sydenham, Christchurch	2018	Ōpāwaho/Heathcote	Commercial	Hynds Up-Flow Filter
13	Main North Road, Redwood, Christchurch	2018	Pūharakekenui/ Styx	Residential	SW360 Jellyfish
14	Main North Road, Papanui, Christchurch	2018	Pūharakekenui/ Styx	Residential	Hynds Smart Pod
15	Johns Road, Belfast, Christchurch	2018	Pūharakekenui/ Styx	Specific Purpose	SW360 Stormfilter
16	Quaifes Road, Halswell, Christchurch	2018	Huritini / Halswell	Rural	Swale

SN	Site	Consent Start Date	Stormwater Catchment Area	District Plan Zone Activity	Device
17	Savills Road, Harewood, Christchurch	2019	Ōtūkaikino	Rural	SW360 Stormfilter
18	Riccarton Road, Riccarton, Christchurch	2020	Ōtākaro/ Avon	Residential	Hynds Up-Flow Filter
19	Bengal Drive, Cashmere, Christchurch	2020	Ōpāwaho/Heathcote	Residential	Hynds Up-Flow Filter
20	Wharenui Road, Upper Riccarton, Christchurch	2021	Ōtākaro/ Avon	Residential	Hynds Up-Flow Filter
21	Bunyan Street, Waltham, Christchurch	2021	Ōpāwaho/Heathcote	Residential	Hynds Up-Flow Filter
22	Johns Road, Belfast, Christchurch	2021	Ōtūkaikino	Residential	Soil Absorption or Sedimentation Basin
23	Main North Road, Redwood, Christchurch	2021	Pūharakekenui/ Styx	Specific Purpose	SW360 Stormfilter
24	Johns Road, Belfast, Christchurch	2023	Ōtūkaikino	Residential	Stormwater 360 Filterra

3.2 List of the devices inspected January 2025-December 2025

In 2025, 24 representative stormwater treatment devices were inspected. A summary of land use and stormwater catchment characteristics is in Table 4.

Table 4 List of the devices inspected January 2025- December 2025

SN	Site	Consent start Date	Stormwater Catchment Area	District Plan Zone Activity	Device
1	Pages Road	2012	Coastal	Specific purpose	Rain garden
2	Lyttelton Street	2012	Ōpāwaho/Heathcote	Residential	Hynds Up-Flow Filter
3	Marshland Road	2013	Ōtākaro/ Avon	Commercial	Enviropod Filters
4	Harewood Road	2013	Ōtākaro/ Avon	Residential	Oil & Grit Interceptor
5	Show Place	2013	Ōtākaro/ Avon	Commercial	SW360 Stormfilter
6	Papanui Road	2013	Ōtākaro/ Avon	Residential	Oil & Grit Interceptor
7	Durham Street North	2014	Ōtākaro/ Avon	Specific Purpose	Hynds Up-Flow Filter
8	Montreal 248 Limited	2014	Ōtākaro/ Avon	Commercial	Oil & Grit Interceptor
9	St Asaph Street	2017	Coastal	Mixed use	SW360 Stormfilter
10	Manchester Street	2021	Ōtākaro/ Avon	Commercial	SW360 Stormfilter
11	Hagley Avenue	2021	Ōtākaro/ Avon	Mixed use	SW360 Stormfilter
12	Peterborough Street	2021	Ōtākaro/ Avon	Mixed Use	Hynds Up-Flow Filter
13	Nga Mahi Road	2022	Ōpāwaho/Heathcote	Commercial	SW360 Stormfilter
14	Coppell Place	2022	Ōpāwaho/Heathcote	Commercial	SW360 Stormfilter
15	Westview Place	2022	Ōpāwaho/Heathcote	Residential	Storage

16	Linwood Avenue	2022	Ōtākaro/ Avon	Residential	SW360 Stormfilter
17	Deans Avenue	2022	Ōtākaro/ Avon	Residential	SW360 Jellyfish
18	Ilam Road	2014	Ōtākaro/ Avon	Specific Purpose	SW360 Stormfilter/ SW360 Jellyfish

Figure 5 under investigation devices or/and report yet to be received

Non-compliant	Reasons	Stormwater Catchment Area	District Plan Zone Activity
Wooldridge Road	Construction is not completed as per the approved plan. Need further verification.	Styx	Rural
Hunter Terrace	Reassured that the device will be inspected by the end of March	Ōpāwaho/Heathcote	Residential
Sutherlands Road	Owner has asked for a contractor who installed the device. Waiting for the report.	Ōpāwaho/Heathcote	Residential
Edinburgh Street	Subdivided – No body corporate, resident association or governing body who can take of the shared assets	Ōpāwaho/Heathcote	Residential
Barrington Street	Subdivided – No body corporate, resident association or governing body who can take of the shared assets	Ōpāwaho/Heathcote	Residential
Bunyan Street	Subdivided – No body corporate, resident association or governing body who can take of the shared assets	Ōtākaro/ Avon	Residential

4. Findings

In 2024, 24 representative stormwater treatment devices were selected for inspection. The results showed that all inspected devices were compliant with the relevant regulations in the calendar year. Three devices were exempt from assessment for several reasons, including the property being vacant, the installation being temporary, or the device being relatively new. Consequently, 100% of the inspected devices met the compliance requirements, and no further investigation was required.

The devices reviewed represented a wide range of catchments and device types, including both proprietary and non-proprietary devices. This diversity highlights the comprehensive nature of the inspection programme.

In 2025, 24 representative stormwater treatment (both proprietary and non- proprietary) devices were selected for inspection. Of these, 17 devices were found to be compliant, representing 71% of the total device selected. Three devices were not investigated further because they were shared among multiples units. Inspection reports for the remaining four devices are still outstanding. These delays are due to factors such as the retirement of key contact people, contact being unavailable or overseas travel.

5. Conclusion and recommendations

In 2024 and 2025, 24 representative stormwater treatment devices (both proprietary and non-proprietary) from different catchments were inspected each year. These devices were installed/approved from 2013 to 2024.

In 2024, the results showed that all inspected devices were compliant (100%) with the relevant regulations. Three devices were exempted from assessment for various reasons, including the property being vacant, the installation being temporary, or the device being relatively new.

Similarly, in 2025, three devices were not further investigated due to co-ownership and unclear management responsibility. For the remaining three devices, inspection reports are yet to be received.

Areas for improvement and further actions

The following actions have been identified for further improvement and implementation:

- The council's stormwater planning team has strengthened stormwater discharge requirements for residential properties by including first flush requirements based on the size of the hardstand areas contributing to stormwater runoff. As a result, it has been agreed that residential properties will not be inspected in 2026, allowing resources to be focused on commercial properties for more effective use.
- Improve the council's internal process for addressing non-compliant reporting and managing co-owned properties.
- Develop device specific operation and maintenance manuals to support and guide the inspection process.
- Establish a system to document stormwater treatment devices so that information can be readily transferred during changes in property ownership.

6. APPENDICES

APPENDIX I Workflow: A detailed outline of scope, methodology, deliverables, and actions

Scope	Methodology
Identification of sites	Desktop analysis using previous data gathered Selection of 23 Stormwater treatment devices (representative sample which covers both quantity and quality types as well as land use (residential, commercial, mixed,) and catchment types (Ōpāwaho/Heathcote catchment, Pūharakekenui/ Styx, Ōtākaro/ Avon and coastal).
Communications plan and process	Full communication plan was developed and agreed Supporting letters (drafted) for the property owners Set up the shared mailbox
Monitoring/Inspection and assessments methods	Inspection-assessment method to be agreed and documented Establish communication with the property owners Set up an appointment for an inspection
Data management and record-keeping	Setting up a system to accommodate/document all records, checks/inspections sheets such as SharePoint or TRIM Collate additional information as required to support the report such as maintenance sheet
Preparation of final report	Write a summary report Produce a summary report as required by CSNDC condition 4J Submit a final report

APPENDIX II Operational inspection and maintenance requirement for each device type

Name of the device	**Frequency of inspection and maintenance**
Hynds 'Up Flo' Filter	**Inspection -** Regularly during the first year of installation, every six months after the first year of installation **Floatables Removal -** Twice per year or as needed, or following a spill in the drainage area **Sediment Removal -** Twice per year or as needed, or following a spill in the drainage area **Media Pack Replacement -** Once per year or as needed, or following a spill in the drainage area The Council requires documentation of any replacement based on the manufacturer's recommendations to demonstrate compliance.
SPEL Bayfilter	**Standard Inspection**- Standard inspections are conducted at regular four months intervals. **General Cleaning-** After the standard inspection, trigger measures will identify if general cleaning is required, for example, if a build-up of debris/pollutants within the vault is greater than 150 mm or there is an accumulation of debris on the outlet chamber of the SPELFilter Vault. Undertake additional inspections after large storm events, tidal or flooding impacts at the request of the owner. **Cartridge Replacement-** The life of SPELFilter is between 5-7 years (guaranteed 5 years). The Council requires documentation of Cartridge Replacement based on the manufacturer's recommendations to demonstrate compliance.
SPEL Hydrosystem	To be determined.

SW360 Jellyfish	**Inspection-** Twice during the first year of operation, inspection frequency based on the maintenance plan developed in the first year **Maintenance-** Generally, a minimum of once per annum cleaning frequency, filter cartridge cleaning, re-commissioning, or replacement every 12 months or when the automatic backwash feature no longer functions due to cartridge saturation with sediment; whichever occurs first The Council requires documentation of cartridge replacement based on the manufacturer's recommendations to demonstrate compliance.
SW360 Stormfilter	**Inspection-** At least one scheduled inspection should take place per year. **Maintenance-** Based on the results of inspection (the average maintenance lifecycle is approximately 1-3 years). Inspect after major storms. Note: Once an understanding of site characteristics has been established, maintenance may not be needed for one to three years, but inspection is warranted and recommended annually. The Council requires documentation of Cartridge Replacement based on the manufacturer's recommendations to demonstrate compliance.
Rain Garden	Major maintenance: Removal and disposal of sediments every 20 years Complete replanting every 20 years Major maintenance of drainage system e.g. replacement of parts every 10 years Inspection **Filter Media-** should be inspected three monthly or after a rain. **The horticultural-** aspect should be inspected three monthly or as desired for aesthetics. **Drainage-** annually

	The Council requires documentation of the replacement of any parts based on the manufacturer's recommendations to demonstrate compliance.
Swale	**Annually -** inspect once per year
Soak Pit	Soak holes should be cleaned annually where there is a sediment trap/sump chamber or catch-pit manhole. Rock-filled soak-pits as per the NZBC cannot be cleaned annually and will instead need to be monitored for performance and re-built as and when required.
Soil absorption or sedimentation basin	Sediment removal is only required approx. every 5 years (triggers when sediment accumulates to half the basin depth, determined from regular monitoring of sediment depth with a measuring post during maintenance visits).
Oil and Grit Interceptor system	**Inspection:** During the first year of operation, a Hynds Oil and Grit Interceptor system should be inspected monthly or bimonthly to determine the frequency of maintenance.
Storage tanks	**Inspection:** At least annually, clean out and make any repairs as necessary. **Maintenance:** Water supply pumps and associated electrical work and replacements of the filters should be undertaken as per the manufacturer's requirements. The Council requires documentation of the replacement of any parts based on the manufacturer's recommendations to demonstrate compliance.