BEFORE THE INDEPENDENT HEARING COMMISSIONERS
FOR GISBORNE DISTRICT COUNCIL

IN THE MATTER: of the Resource Management Act 1991

AND

IN THE MATTER: of applications by Gisborne District Council for resource consents associated with wastewater overflows

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STATEMENT OF EVIDENCE OF NEVILLE EDWARD WEST – OVERVIEW OF WASTEWATER NETWORK, ISSUES AND RESPONSES

25 June 2021

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INTRODUCTION

Qualifications and experience

1. My full name is Neville Edward West. I am employed by the Gisborne District Council (**GDC** or **Council**) as the Water Utilities Manager, a position I have held since 2014 and previously 1992 to 2004.

2. From 2004 to 2014 I was a consultant providing asset management advice to Local Government clients. I currently hold qualifications for New Zealand Certificate in Engineering (Civil) and Registered Engineers Associate.

Background to involvement in Wastewater Consents Project

3. In my current role I am responsible for the strategic planning and operation of Councils 4 Waters being Water Supply, Wastewater, Stormwater within urban areas; and Land, Rivers and Coastal. As such, I was responsible for providing further submissions to Council on behalf of the Water Utilities department of Council in relation to the provisions of the Proposed Freshwater Plan (as it then was, now incorporated into the Tairawhiti Resource Management Plan (**TRMP**)). The further submissions focussed on the provisions relating to the emergency wastewater overflows and stormwater discharges.

4. I am familiar with the Overflows Consents Project (**Project**) and have been involved in the formation of the resource consent application for the Project (**Application**) as the key project manager along with Mr Wolfgang Kanz. This Application is required as a result of specific rules that were inserted into the TRMP as a result of the process outlined above. The requirement for consent and the relevant plan provisions are discussed in the evidence of Mr Ian Mayhew.

Purpose and scope of my evidence

5. Evidence is to be given by two other GDC staff members - Dave Wilson and Wolfgang Kanz. Mr Wilson's evidence relates to GDC's strategic objectives; issues relating to governance of the Project; and financial implications of the Project (including GDC's funding processes). Mr Kanz deals with some of the operational matters, including the DrainWise Programme, (the ongoing) engagement with tangata whenua throughout the process and the measures proposed by the Applicant to address the cultural effects of the Application, as

well as some of the other measures undertaken by the Applicant to address the submitters concerns.

6. The purpose of my evidence is to provide an outline of:

   (a) The Gisborne Wastewater Network (Section One);

   (b) Causes of wet weather overflows (**WWO**) and dry weather overflows (**DWO**) (Section Two);

   (c) Overflow management responsibility and the overflow response process (Section Three);

   (d) Past network performance and benchmarking (Section Four);

   (e) Responses to Issues Raised in Submissions and Section 42A Report (Section Five).

   (f) Conclusions (Section Six).

SECTION ONE : GISBORNE'S WASTEWATER NETWORK

7. The Gisborne city population served by the wastewater network is 32,579. We have about 15,278 connections. The network consists of[1]:

   (a) 226km of mains;

   (b) 2856 manholes;

   (c) 91km of laterals;

   (d) 40 pump stations; and

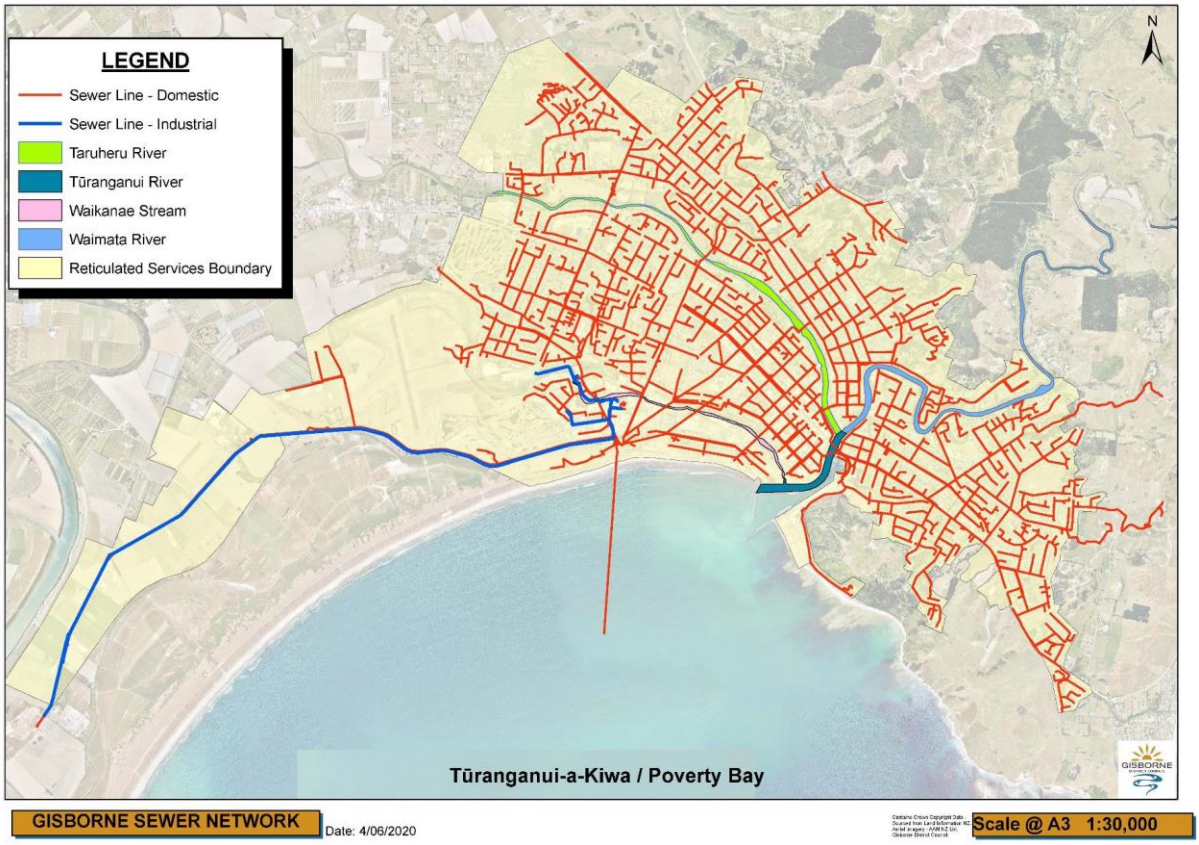
   (e) 1 treatment plant (**WWTP**).

8. Gisborne is divided into three by the location of the Turanganui, Waimata and the Taruheru Rivers. The pipes cross the three main rivers eight times in different locations and can be seen as potential pinch points (where all the flow comes to those locations to cross the rivers).

[1] Refer Table 1 of Application, p7

9. A map of the Gisborne Wastewater Network was included as Figure 3 to the Application and is reproduced below:

Figure 1: Map of the Gisborne Wastewater Network



10. Council owns and manages 50% of the wastewater network. The remaining 50% is owned and managed by individual landowners – for example lateral pipes and gully traps on private land that connect into the public system at the property boundary. That is, there is as much sewer pipe on private property as there is owned by Council.

11. Approximately one third of the wastewater network has its sewage pumped (40 Sewer Pump Stations) excluding the marine outfall, and the remainder relies on gravity to get to the WWTP. The network is shown in Figure 2 below.

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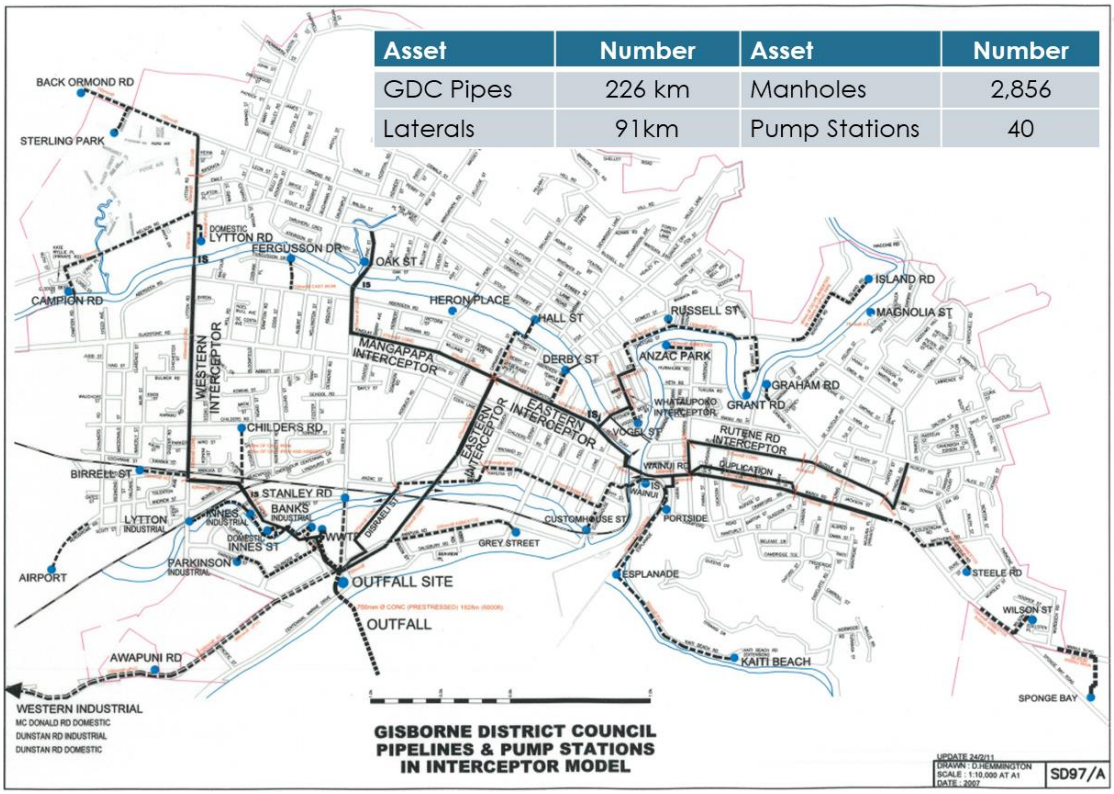
Figure 2: Network Schematic



12. Domestic wastewater is conveyed to the WWTP that Council installed in 2010 (at a cost of $40M). The WWTP incorporates a Biological Trickling Filter (BTF)[2] which treats the wastewater prior to its discharge through a 1.8km marine outfall in Tūranganui a Kiwa / Poverty Bay. Several major industries have a dedicated trade waste line which bypasses the BTF and is pumped directly to the marine outfall. These industries are responsible for the treatment of their own wastewater, which is managed through trade waste agreements. The average discharge volume per day from the WWTP is around 13,000 cubic metres (including industrial).

13. As required by its own separate resource consents for the discharge from the WWTP, Council is currently designing a major upgrade ($38M) to the WWTP to install solids removal and ultraviolet light treatment. This upgrade will substantially improve the quality of treated wastewater discharge. Construction of the new plant is due to commence shortly.

[2] The trickling filter system enables fine wastewater solids to be transformed into plant-like matter in a process known as biotransformation.

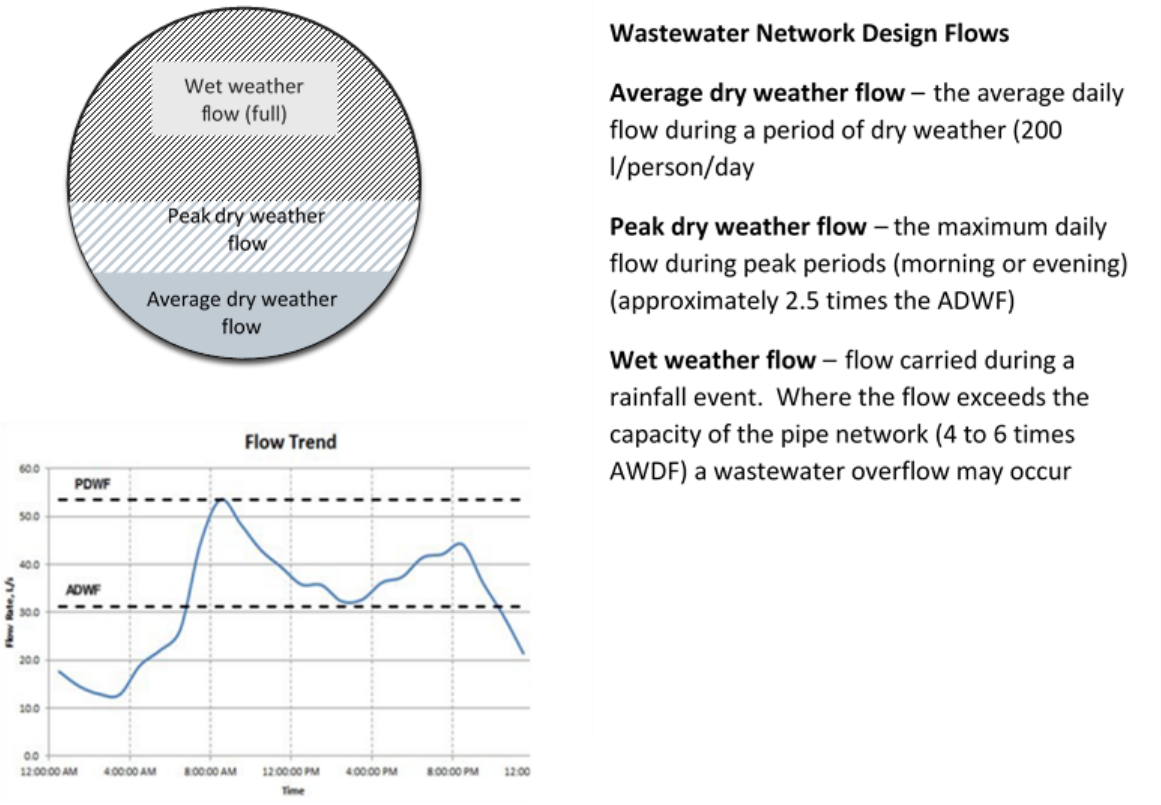
14. Council is continuing investigating alternative use and disposal options as part of its WWTP consent and has made provision in Year 9-10 of the 2021 LTP of $2.6M to progress construction of the Wetlands with further budget proposed in following years.

15. I have outlined the above to provide a context to the network. The discharge from the WWTP does not form part of this Application, which is to provide authorisation for both wet weather overflows (**WWO**) and dry weather overflows (**DWO**) from the reticulated wastewater network, as I explain further below.

SECTION TWO : CAUSES OF WET WEATHER OVERFLOWS (WWO) AND DRY WEATHER OVERFLOWS (DWO)

16. The Gisborne City wastewater network has been designed and built to manage the wastewater needs of Gisborne households and businesses for growth through to 2050, but is currently under review due to recent growth projections due to aging population. It is standard practice to design and size wastewater networks to accommodate flows in excess of the flows that they carry. This shown in Figure 1 of the Application, which I have also provided below as Figure 3.

Figure 3: Pipe Capacity Design Allocation



17. As can be seen from this diagram, the wastewater network is designed to carry a component of stormwater in addition to wastewater. This is done as it is inevitable that stormwater will get into the system at some stage through inflow and infiltration – commonly referred to as I&I. The sources of I&I are

discussed in the evidence of Mr Garside and in the Water New Zealand Infiltration and Inflow Control Manual[3], but at a high level:

(a) Inflow enters the wastewater system directly, e.g. via illegally or misconnected storm water drains with a fast response and very short time of concentration to rainfall;

(b) Infiltration typically has a longer response time than that of inflow and also has a longer effect on the network and is generally due to either groundwater or rainfall entering through cracks and joints.

18. As detailed in the Application and Mr Garside's evidence, Council's wastewater network is designed and sized in accordance with national practice to carry between 4 and 6 times average dry weather flow (**ADWF**) from the contributing catchment. The Application and Mr Garside's evidence also outline that the modelling confirms that the network is designed and constructed adequately to convey six times ADWF without overflowing. However, as I discuss below, wastewater overflows can occur from the network in some circumstances.

Location of Formal Overflow Points

19. As set out in the Application, it is standard wastewater design practice to install overflow relief points in wastewater networks to protect public health[4] and to protect important infrastructure components.

20. The GWS is no different and contains formal overflow points that are used to control discharges of wastewater/stormwater where necessary, in preference to uncontrolled overflows (including on private property). The operation of the system has been developed and refined by Council over time so that overflows are now managed to primarily occur in a hierarchy being:

(a) Through two primary overflow points (utilised only where necessary);

[3] Volume One Overview, Background, Theory, 2nd Edition March 2015. ISBN NUMBER: 978-0-473-31903-8

[4] Noting that GDC has obligations and responsibilities under the Health Act 1956 to provide sanitary works. This matter will be addressed further in legal submissions.

(b) Via two secondary points, utilised only in large events (between the 5% and 10% AEP events - 2-year and 10 year ARI) as circumstances require; and

(c) Up to six tertiary overflow points, which may be required to be opened in very large rainfall events (larger than the 10% AEP/10-year ARI).

21. These primary, secondary and tertiary overflow points, which all require manual opening and closing, are listed in Table 1 and their locations shown in Figure 4.

Category	Street Name	Asset Code	Easting[5]	Northing
Primary Overflow Point	Wainui Road	WNUIDO005	2037659.42	5707953.16
	Seymour/Turenne	SEYMDO015	2039016.11	5708096.55
Secondary Overflow Points	Palmerston Road/Peel Street	PALMSO003	2037498.91	5708376.11
	Oak Street	OAK_SO074	2036347.09	5710062.17
Tertiary Overflow Points	Oak Street	OAK_SO080	2036346.60	5710057.28
	Lytton Road	LYTTSO045	2035240.87	5710498.71
	Childers Road	CHILSO264	2035080.77	5709303.76
	Stafford Street	RUSSSO001	2038219.38	5708824.47
	Derby Street	DERBSO001	2037424.05	5708825.96
	Fitzherbert Street	FITZDO115	2037565.64	5708371.24

Table 1: WWO locations

22. Figure 4 from the Application[6], which shows the location of the primary, secondary and tertiary overflows is reproduced below as Figure 4.

[5] NZTM 2000
[6] Application, p11 – this version has been enhanced to better show the P1 and P2 overflow locations

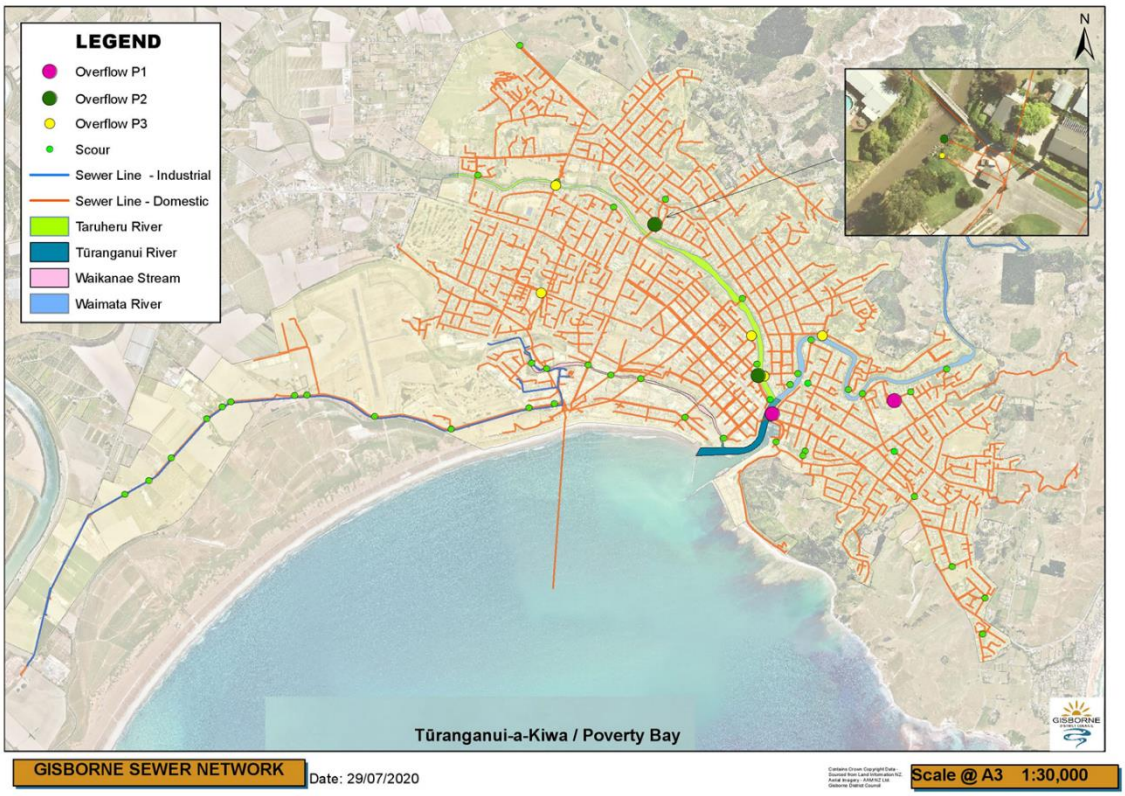


Figure 4: WWO locations (current)

23. Figure 4 shows the identification of two primary overflows (Overflow P1) at Wainui Road (at the river confluence) and Seymour/Turenne (to the east). As set out in the evidence of Mr Kanz, as a result of submissions GDC is currently undertaking a work programme to remove the Seymour Road as a primary overflow point, and relocate it to become a tertiary overflow location.

24. Figure 4 also shows the location of operational 'scour' valves (green dots) which enable access to the system for maintenance and repair purposes, but are not utilised as WWO points.

Wet Weather Overflows (WWO)

25. WWOs occur where the network cannot cope with the amount of water going through it - namely the large volume of stormwater that gets into the wastewater network during heavy rainfall events. There are several entry points for stormwater to get into the wastewater network:

    (a) Property flood waters (even minor) flowing over and into gully traps;

(b) Water getting into cracked and leaking gully traps;

(c) Roof water being piped straight into the wastewater system through gully traps which are readily visible or stormwater pipes connected to lateral wastewater pipes which are generally below ground and rely on smoke testing to identify (i.e. illegal connections);

(d) Lateral wastewater pipes from houses to the main network leaking;

(e) Council's wastewater system leaking at main wastewater pipes and access points.

26. When large volumes of stormwater enter the wastewater network it can back up and cause wastewater to flow onto private property from gully traps or, in rare occasions, at toilets. This represents a health risk to people coming into direct contact with untreated sewage. To prevent this Council discharges from the network to rivers and streams.

27. In the past a large number of these discharges occurred automatically during wet weather. However as part of significant upgrades undertaken to Council's sewer mains between 1995 to 2005, the network interconnections between the stormwater and the wastewater mains were plugged off. All automatic discharges of wastewater into stormwater are now either plugged or valved off and to discharge wastewater requires manual operation.

28. A summary of the history of network improvements are provided at Section 2.3.2 of the Application (p13 onwards). It is important to note that this has been a significant work and capital investment programme on Council's part, with the initial focus being largely on Council's assets.

29. As outlined in the evidence of Mr Kanz[7] Council's focus has now shifted to resolving issues originating on private property, through the DrainWise Programme. I address the management of WWO and Council's response protocols further at Section Three of my evidence.

[7] Evidence of Mr Kanz, para 15

Dry Weather Overflows (DWO)

30. Dry weather overflows (**DWO**) occur as a result of unexpected problems in the wastewater network resulting in wastewater being discharged from manholes or gully traps and, in extreme cases, pump stations.

31. The Reporting Officer's s42A Report states 'much of the risk of dry weather overflows can be managed by the Applicant'.[8] That is not entirely correct, Council has 226km of sewer piped network and 91km of sewer laterals, and it is not practical or affordable to inspect and/or clean every metre of pipe.

32. Council has aligned with best practice by adopting an Asset Management System that was implemented in the late 90's and has recorded all work undertaken on the network. This is regularly reviewed to assist in confirming Council's ongoing maintenance programme such as jet cleaning, which is based on repetitive blockages and if needed to use CCTV to confirm potential condition issues to support repairs and/or replacements (renewals).

33. While Council is proactive in preventing DWOs, they are impossible to eliminate – the aim is to reducing DWOs as far as practicable. A good example is Council actively manages commercial grease traps to ensure they are maintained and do not add to problems of fat build-up within the network. However we can't prevent private property owners disposing of oils and grease down the sink, which contribute to blockages, and our only tool is to educate.

34. In Gisborne DWOs generally occur when there is a blockage in the network, mostly associated with a third party putting a foreign object in the wastewater system or fat build-up or a break in the network. A large portion of the piped network is relatively flat, resulting in a build-up of material in pipelines and increasing the risk of DWOs. It is not possible to increase grades to overcome this issue but results in higher maintenance costs for increased jet cleaning. As noted above, Council has regular jet cleaning regimes as part of its maintenance programme.

35. DWO's at Pump Stations are rare, this is because there are already significant levels of redundancy built into the onsite infrastructure. This includes real time alarm annunciation and response, as well as contingency measures such as

[8] Section 42A Report at [9.19].

the availability of 4 portable generators, bypass pumping, suction trucks, and on site storage to allow for appropriate responses by Council's maintenance contractor. The greatest risk to a pump station would be a fire to the electrical switchboard; however Council actively uses Infrared monitoring to identify hotspots that could lead to faults. By way of example, the city of Gisborne lost power for 30 hours and the 40 pump stations were able to be managed with no DWOs from them. Council also has an active pump station inspection and maintenance programme.

36. The last mechanical failure that led to a DWO was in 2015 from Steele Rd Pump Station as a result of human error. This raised concerns that the operation of the pump station could be overridden in such a manner and further improvements were undertaken as a result.

37. As noted above, DWOs generally occur where there are blockages in the network. Some examples of some of the items associated with such blockages are provided at Figure 10 of the Application, as shown below:

Sewer main in Stanley Road. Mainly composed of rags and wet wipes

Childers Rd Pump Station caught in pump impellors. Rags, clothing, wet wipes, rope and more

Oak St Interceptor collection items people discard into the sewer

Ballance St. Solidified fat caught on rugs of manhole

38. The Application outlines, at Table 6, the number of DWOs that have occurred since GDC began formally cataloguing them in 2015/16. Of the DWOs that have occurred since 2015/16, blockages of the wastewater system remain the leading cause of DWOs. This is a New Zealand wide issue and industry efforts to address the causes of blockages, such as wet-wipe flushing, remain as important as ever. As demonstrated in the WaterNZ National Performance review 2018/19 set out below, blockages remain the predominant cause of DWO nationwide:

Dry-Weather Wastewater Overflows[8]	**1,628**
Overflows caused by blockages	1,444
Overflows caused by mechanical failures	114
Wet-Weather Wastewater Overflows	**1,218**
Overflows from combined stormwater and wastewater networks	350
Overflows from wastewater networks	868
Total wastewater network overflows	***2,846***

39. Council has a comprehensive public education campaign to address third party behaviour which can impact on the network, which is set out in Section 3 of the Application, with some examples provided as part of the final Report on the DrainWise programme included as Appendix R to the Application. As can

be seen in Appendix R, this has included a 5 part mini-series on various aspects (which relate to DWOs and WWOs), with each mini-series accompanied by its own 2 minute video, posters, double-sided flyers and billboards. This also includes social media messaging, mailbox drops, radio interviews and Gisborne Herald advertisements. Mr Kanz addresses this further in his evidence.

40. In addition, as set out in the Application at Sections 2.5.1 and 2.5.2 Council undertakes the following actions to prevent DWOs and far as possible and to respond to them, if and when they occur. I consider that this multi-pronged approach demonstrates that Council has adopted all practical and best practice methods to manage the potential risks of DWOs, as raised in the s42A Report[9]. It includes all the aspects mentioned by the Reporting Officer, including regular maintenance and inspection of the wastewater network, contingency measures for any foreseeable breakdowns/equipment failure; and response protocols. Council's approach includes:

    (a) Pro-active maintenance (e.g. jet-cleaning regimes) and surveillance (e.g. monitoring key manholes) to reduce risk of overflows. Much of Gisborne's wastewater network is constructed at low grades which increases the potential for build-up of sediment, fat and other material, Council undertakes regular jet-cleaning of critical components and known problem areas to maintain pipe capacity and conveyance and reduce the risk of DWO.

    (b) System controls and duplication. These are controls that are built into the design of key elements of the system to provide advance warning of potential problems and enable these to be addressed before an overflow occurs. An example of this is the multiple control systems and alarms that are built into pump stations, providing sequential warnings in respect of pump station levels (Figure 11 of Application[10]).

    (c) A recent addition has been the introduction of a level measuring device in a key manhole in De Lautour/Turenne St linked back to Council's Telemetry. The trial has been successful and further

[9] Section 42A Report at [9.18]
[10] Application p28

indicator manholes will have level measuring introduced. I discuss this matter further at paragraph 93 below.

(d) Trade waste compliance. Ensuring commercial activities (for example cafes and restaurants) have grease traps and other facilities in place to manage their discharge to the wastewater network.

(e) Public education, as outlined in paragraph 39 above.

(f) Prompt response and clean-up. This is described further in Section 3 below, but as DWOs can occur anywhere at any time, a key method of minimising effects is responding promptly, containing the discharge as fast as possible, fixing the problem and cleaning up the discharge; as well as public notification if there is a health risk. As the overflows can occur from gully traps and manholes, and contain undiluted wastewater, they can pose risks to human health (and the environment should they enter small waterways). Accordingly, prompt and effective response is a critical element of Council's wastewater network management contracts and is detailed further in Section 3 below.

SECTION THREE - OVERFLOW MANAGEMENT RESPONSIBILITY AND OVERFLOW RESPONSE PROCESS

41. Council's governance structure and management responsibilities are set out in the evidence of Mr Wilson for GDC. My evidence sets out Council's overflow management responsibilities and the processes and protocols followed by GDC. In this Section I will briefly discuss the following aspects:

    (a) Operations and Maintenance Procedures;

    (b) WWO Management and Response, including Overflow Opening Protocols;

    (c) DWO Management and Response.

Operations and Maintenance Procedures

42. Council's asset management approach is set out at Section 3.2 of the Application. The WW network is maintained by GDC with the assistance of a dedicated Tier 1 Contractor (currently Fulton Hogan). The contract is for 7 years (2019-2026) to encourage investment by the contractor into new and modern equipment and to ensure that network familiarity can be developed.

43. As outlined in the Application, the maintenance strategy is both preventative (proactive) and reactive. The Contract outlines the levels of service Council wishes to maintain, response times, material standards, workmanship, and health and safety requirements. This is supported by a series of Operation Maintenance and Management Plans (**OMMP**) designed to simplify the processes and procedures for contractor's staffs without the need to refer to an extensive contract document. An example of an OMMP has been provided as Appendix 1.

44. As summarised in the Application[11] preventative or proactive maintenance focuses on regular inspection, cleaning and/or servicing linked to the criticality of the asset to ensure performance is maintained. This is particularly important for management of DWOs to reduce the risk of overflows and for WWO to ensure capacity and performance of the network is maintained when

[11] Application, p33

most needed. These are programmed into Council's Asset Management System (**ASM**), and work orders are generated and dispatched to the contractor. The contractor is required to log the work undertaken and identify any additional work/repairs required, so that they can be scheduled for resolution. Areas where preventative maintenance are undertaken include:

(a) Sewer pump stations;

(b) WWTP and oxidation ponds;

(c) Jet cleaning parts of the piped network;

(d) Pre wet weather inspections and preparedness;

(e) Standby generators;

(f) Telemetry / supervisory control and data acquisition (**SCADA**);

(g) Condition assessments;

(h) Performance Inspections;

(i) Inspections critical assets (pipe bridges etc); and

(j) Odour management.

45. Reactive maintenance normally occurs when a request for service (Rfs) from the public is lodged, or as a response to an alarm from Council's Telemetry or SCADA system. Performance against agreed response times for the contractor to these events are closely monitored and is a key performance measure of the contract. The response times and procedures focus on minimising disruption to the network so as to maintain its performance and to prevent/contain any health or environmental effects from the disruption such as a sewer overflow. Reasons for reactive maintenance include:

(a) Faults at Pump stations (Telemetry);

(b) Faults at Treatment Plants (SCADA);

(c) Blockages in piped network, mains and laterals (Rfs/inspections);

(d) Surface depressions/collapses most likely due to broken pipes (Rfs);

(e) Odour smells (Rfs/inspections);

(f) Displaced manhole lid or rattling lid (Rfs);

(g) Overflow from Gully trap or manhole (Rfs);

(h) Emptying non-return valve tanks prior or during wet weather events;

(i) Response to power outages.

WWO Management and Response, including Scour Opening Protocols

46. A description of Council's operating procedure and protocol for opening the overflows is set out in Figure 14 (p36) and summarised at page 37 of the Application.

47. Essentially, Council (and its contractor) monitor Metservice for heavy rain warnings and long term forecasts. Heavy rain warning preparation including inspections and networks checks are undertaken to minimise the potential impact of the rain and staff are put on standby.

48. Council has a protocol for opening of overflow valves to discharge to the rivers and streams in these emergency situations. Council's aim is to minimise the time overflow valves are open, prevent overflows on private property and (unlike some other councils) requires direct (manual) intervention. In order to determine whether it is necessary to open the overflow valves the Council uses the following information:

(a) The amount of rainfall the has fallen over the last week/month and the groundwater levels to consider if we have a saturated ground conditions which will mean a faster response to the ingress of stormwater into the wastewater network.;

(b) The status of Council's pump stations by monitoring via Council's real time Telemetry/SCADA system the inflow into those sites and whether there is longer or continuous running of 1 or more pumps and major changes in the daily pattern of operation, with an emphasis on wet well levels and high level alarms;

(c) The number of customer complaints being received from the public on sewer and stormwater issues such as property flooding, slow responding toilet when flushing, gully trap overflowing as an indication of a developing problems requiring intervention;

(d) Weather forecast and monitoring of the rain radar;

(e) Inspection teams monitoring property flooding and levels in sewer manholes;

(f) Monitoring of the flowmeter on Wainui Rd which indicates issues in Kaiti catchment; and

(g) Review rain gauges within the city.

49. The decision to manually open the overflow valves currently resides with the 4 Waters Infrastructure Manager – Operations and his staff, taking into account all of this information. Council previously experienced issues when the protocol was too conservative; and by the time network indicators hit the trigger points, overflows were occurring on private property. The protocol has been reviewed and updated to reflect the requirement to prevent overflows on private property where possible. A copy of Council's Overflow Location and Operation Procedures was included as Appendix E to the Application.

50. Once the overflow valves are open, a detailed communication and monitoring programme is implemented, as set out in the Application and provided as Appendix F. This includes discharge notification protocols, including key contacts and a managed email list of potentially affected parties.

51. Warning signs at discharge points are erected, overflows are communicated to the community and water sampling commences. The sampling protocol is provided as Appendix G to the Application.

52. Monitoring of the key network indicators listed above is undertaken to determine the closure of any open overflow valves and these are generally staged closures to minimise the volume discharged.

53. If a wet weather events escalates to an even larger event Council considers opening additional overflow valves further into the reticulation which discharge into streams or creeks. However, this is now an infrequent occurrence.

54. Overall there has been a reduction in the amount of wastewater being discharged to water, and a reduced number of discharge points that are now used compared with 1992. Progressively from that time the automatic overflows have been removed and discharge points that are opened during wet weather have been reduced. The main discharge points now focus on the 3 main large rivers . The current location of the overflow locations and their description have already been set out in paragraphs 21 to 22 above.

55. We have adopted a three tier category for WWO locations which prioritises what overflows valves will be most used and reflects the most likely sequencing. There are currently two Primary Overflow Points (**POP**) at Wainui Road and Seymour/Turenne; however as outlined in the evidence of Mr Kanz Council intends to remove of Seymour/Turenne as a POP and convert it to a Tertiary Overflow Point (**TOP**). Council is confident that the overflow from this valved manhole is unlikely to occur due to the mitigation work undertaken. Wainui Rd Overflow is the most likely and the first overflow valve to be opened, this is consistent with the fact that this catchment has the highest I&I.

56. There are two Secondary Overflow Points both servicing Whataupoko, which has been identified with the second highest I&I. The Eastern Interceptor supports flows from both Kaiti and Whataupoko, by relieving flows from Kaiti provides spare capacity for Whataupoko hence why we can defer/delay opening of the SOP.

57. There are currently six Tertiary Overflow Points and would be used only in extreme wet weather events and would be used if significant uncontrolled overflows were occurring on private property and manholes were discharging.

DWO Management and Response

58. As outlined in paragraphs 30 to 40 above, DWOs typically occur as a result of unexpected problems in the network, mostly associated with third party behaviour. The provisions GDC have in place to manage DWO, including public awareness campaigns and proactive cleaning and maintenance have already been set out above and in the Application.

59. DWOs have been formally catalogued by Council since 2015/16 and are shown in Table 6 of the Application[12]. As shown in the Table, 12 DWOs occurred in 2015/16, with three reaching waterways via overland flow. Two DWOs occurred in 2019/20, both of which reached a waterway; which demonstrates the variability in these events. DWOs generally occur out of manholes in roads or gully traps on properties. Accordingly, they are readily visible. Gully trap discharges are unlikely to reach water, sewer manholes are closer to stormwater sumps but discharges are generally smaller due to the weight of the lid. DWOs are possible from pump stations (e.g. rags and wet wipes causing blockages) but pump stations are remotely monitored and have as a minimum 2 pumps, 1 as standby and are therefore responded to quickly.

60. Council's protocols for responding to DWOs are set out in the Wastewater Procedure for Dry Weather Discharges and Overflows. This document has recently been created as a stand-alone document to clarify the procedure, including response, notificaton requirements and monitoring/sampling and reporting requirements and contractor training; and will be tabled at, or prior to, the hearing.

61. Table 11 of the Application[13] outlined options considered by GDC as part of the 2018-2028 Long Term Plan (**LTP**) process. The options included increasing surveillance, increased jet cleaning, implementation of emergency storage at some pump stations, and education campaigns (particularly around disposing of fat and rubbish into the wastewater system). The adopted option was to provide a combination of increased proactive maintenance (jet cleaning) and surveillance of both network and trade waste 'hotspots'; to reduce the risk of network blockages. Progressive replacement of the existing earthenware pipes is also continuing. In addition, Council has a signficant public education campaign through the DrainWise programme, which has been outlined in the Application and Mr Kanz's evidence.

62. As an example, Council's increased surveillance regime identified in March 2021 a fatberg near Wainui Road, weighing almost 0.5 Tonne and stretching approximately 15 metres. Council's contractors used picks, shovels and high-pressure hoses to clear the fatberg which constituted solid fat, rags, wet wipes and condoms. It took approximately 3 days to clear and cost Council

[12] Page 27
[13] Application, p51

approximately $15,000 to clear the blockage. Council has proactively jet cleaned in May at the same location prior to winter and removed 200kg of fat.

63. In summary, Council has the following contingency measures in place to address DWO :

- Defined processes and procedures;
- Defined contractor response to secure site and contain any DWO;
- A requirement for contractor's staff trained and equipped to respond with urgency;
- Proactive maintenance is undertaken through Council's AMS to inspect and/or undertake agreed maintenance through a system generated work order process;
- Reviews of work orders are undertaken to identify any trends for additional maintenance or renewals;
- A programme of pipe condition assessments are undertaken to inform a renewal programme;
- Multiple levels of redundancy and resilience are built into Councils' network, especially Sewer Pump Stations;
- A comprehensive and multi-faceted educate programme is undertaken to educate the public to ensure fat, wet wipes, clothing etc are not disposed into the sewer system.

64. Council's view is that all practical steps are being undertaken to minimise the risk of DWOs and it has adopted best practice. Council has also improved areas such as duplication/redundancy in pump stations and has a comprehensive public education campaign to address third party behaviour which can lead to blockages in the network.

SECTION FOUR: PAST NETWORK PERFORMANCE AND BENCHMARKING

Frequency of WWO

65. The frequency of wet weather discharges is set out in the below which was included as Table 4 of the Application:

Year[14]	Number of Events	Date	Number of Overflow Points Activated	Maximum Duration of Overflow (hours)[15]	Estimated Volume (m^3)
2006/07	3	6 July 2006	1	2.17	Not Available
		18 July 2004	1	15.83	
		10 September 2006	2	11.75	
2007/08	1	19 June 2008	1	7	Not Available
2008/09	1	29 June 2009	7	75.50	Not Available
2009/10	2	18 July 2009	2	9	Not Available
		28 May 2010	2	20	Not Available
2010/11	3	13 October 2010	2	19	Not Available
		22 March 2011	5	22	Not Available
		26 April 2011	4	26	29,937
2011/12	4	5 July 2011	4	32	32,922
		23 July 2011	2	22	16,630
		20 March 2012	9	38	46,080
		4 April 2012	10	78	72,288
2012/13	3	24 July 2012	3	93	44,210
		Unknown	1	12	Not Available
		13 November 2013	4	13	14,858
2013/14	4	13 July 2013	4	49	35,551
		11 August 2013	4	25	24,823
		18 April 2014	7	25	35,232
		11 June 2014	12	47	65,222
2014/15	1	4 August 2014	11	44	48,159
2015/16	1	20 September 2015	8	37	42,081
2016/17	4	4 April 2017	8	18	27,253
		13 April 2017	5	12	10,501
		12 May 2017	3	11	9,915

[14] In accordance with asset reporting requirements, and consistent with national practice, overflows are reported over a financial year 1 July to 30 June

[15] The longest time that a single overflow point was open for during an overflow event

		29 May 2017	2	14	7,127
2017/18	3	3 September 2017	1	22	8,931
		4 June 2018	2	26	11,279
		11 June 2018	6	48	36,956
2018/19	3	6 August 2018	1	24	9,680
		7 September 2018	1	43	10,087
		13 June 2019	2	13	6,020
2019/20	1	15 October 2019	1	29.5	9,796

66. As set out in the Application, it is important to note that overflow frequency and performance is not directly comparable from year to year as it is rainfall event related – so WWO will occur more often in years with a larger number of heavy rainfall events and less often in years with fewer heavy rainfall events.

67. Council has also been undertaking a range of improvement measures to reduce the frequency of the overflows and I will discuss these further shortly.

Improvement Works Undertaken and Planned

68. The stormwater and wastewater networks are technically separate but because of the issues already outlined, the issues are related and need to be managed in an integrated way. Improvement works are covered in Mr Kanz's evidence.

69. In October 1988 Gisborne City Council commissioned a report by Steven Fitzmaurice and Partners on sewer issues and the following is a direct quote from that report:

> The discovery that the sanitary sewer system is collecting at least as much of the rainfall as the stormwater sewer system highlights the inadequacy of the stormwater system. If illegal stormwater inflow connections on private property are removed from the sanitary sewer system it is essential that an alternative means of disposal for stormwater be readily available. If an alternative is not available then it is inevitable that the illegal overflow connections will be remade. Thus assessment of the availability of stormwater drainage must be carried out concurrently with the inflow abatement programme. Where necessary, the provision of additional stormwater services would be made during the catchment upgrading works. Connections between the stormwater and sanitary drainage system which permit overflow to the sanitary system must be eliminated.

70. As outlined in the Application, this started the on-going programme of work consistent with Steven Fitzmaurice recommendations which commenced in 1992 following amalgamation of local Councils into one entity (Gisborne District Council). The focus of the improvements since 1992 has largely has been on Council owned assets (80%) and has substantially improved both networks in accordance with best practice. Improvements included:

    (a) Upgrading streams to accept additional stormwater ($5M);

    (b) Upgrading of stormwater catchments with flooding problems ($25M+);

    (c) Capacity upgrade of sewer mains ($10M);

    (d) Renewal of old stormwater and sewer mains ($20M);

    (e) Treatment of Wastewater through a new WWTP in 2010 ($40M) (and noting that further upgrades are scheduled for the WWTP);

    (f) Removing interconnections between wastewater and stormwater which were generally automatic;

    (g) Blocking or valving off any overflow points so they become controlled manually; and

    (h) The development of network models for both Wastewater and Stormwater.

71. More recently this has included upgrading of the Rutene Road stormwater, pump station storage and pumps; works in the Owen Road / Turenne Street area; completed wastewater improvements in Russell Street and Ormond Road; and planned work in Rutene Road and Harris Street.

72. Further work relating to DrainWise as proposed in the draft 2022-2032 LTP is shown below:

Description	Total Cost	Budget 2022	Budget 2023	Budget 2024	Budget 2025	Budget 2026	Budget 2027	Budget 2028	Budget 2029	Budget 2030	Budget 2031
Urban Stormwater											
Stormwater In Drain Structures	**457**	0	0	51	53	54	56	58	59	62	63
Stormwater Localised Urban Upgrades	**1,167**	75	78	80	82	168	173	89	111	115	197
002 Graham/delatour Road	**991**	250	741	0	0	0	0	0	0	0	0
004 Whataupoko	**1,666**	0	0	106	436	1,123	0	0	0	0	0
005 Public Drains On Private Property	**4,134**	540	559	573	589	606	623	643	0	0	0
006 Elgin/cbd/te Hapara Upgrades	**2,683**	0	0	0	0	0	0	179	1,231	1,273	0

Description	Total Cost	Budget 2022	Budget 2023	Budget 2024	Budget 2025	Budget 2026	Budget 2027	Budget 2028	Budget 2029	Budget 2030	Budget 2031
Wastewater											
Localised Urban Upgrades	370	32	33	34	35	36	37	38	40	41	42
Wastewater Pump Station Renewals	2,308	295	114	314	120	332	127	351	135	376	144
Permanent Flow Loggers	128	128	0	0	0	0	0	0	0	0	0
Wastewater Pipeline Renewals	19,821	1,804	1,867	1,915	1,855	1,909	1,962	2,023	2,093	2,164	2,230
Wastewater Wainui Road New Pipeline	705	0	0	0	0	0	62	643	0	0	0
Upgrade Campion Road Pump Station	3,964	0	0	0	0	197	1,298	2,469	0	0	0
Wastewater Kaiti Pipeline Upgrades	200	200	0	0	0	0	0	0	0	0	0
Wastewater Treatment Plant Upgrades	2,065	180	186	191	196	202	208	214	222	229	236
Pump Station Emergency Storage	2,545	0	0	0	0	0	0	0	616	1,273	656

73. The LTP process is set out further in the evidence of Mr Dave Wilson; and as noted in his evidence Council is due to formally adopt the 2022-2032 on 30 June 2021, and according at the time of writing my evidence it is still referred to as the 'draft LTP' (but it will be adopted by the time the hearing occurs).

74. As outlined in the evidence of Mr Kanz, Council's focus through the DrainWise programme is now focusing on the private property component of the network. Mr Kanz's evidence details the further processes that will be undertaken by Council to implement the next stages of the DrainWise programme.

Benchmarking

75. As outlined in Section 2.6 of the Application, to provide a national context for the performance of GDC's network, it has been 'benchmarked' against reported performance from other councils for the 2018/19 financial year, as reported in the Water New Zealand Performance Review 2018/19. The overflow performance is shown in Figure 12[16]. Although some caution should be exercised in drawing comparisons as overflow information is collected and

[16] Page 30 of the Application

reported differently by councils (particularly for WWO); the benchmarking data indicates that Council's WWO and DWO per 1000 connections is at the low (better) range of participant council performance – both in respect of similarly sized councils and across all councils. This indicates that the Council's wastewater system and associated management is comparable to national practice.

SECTION FIVE : RESPONSE TO ISSUES RAISED IN SUBMISSIONS AND SECTION 42A REPORT

76. Submitters have raised a number of issues relating to Council's operations. In particular, they have raised the following concerns which I have summarised below:

(a) Consideration of alternatives e.g. incentivising rainwater collection, compostable toilets, wetland restoration / stormwater swales (Hannah Kohn; Ngati Oneone);

(b) That a reduced consent term should be provided for a variety of reasons, including to consider better alternatives. Suggestions range from 2 years (Hannah Kohn) to 10 years with specified action points (Margot Ainsworth) or 20 years with further long term reduction targets (Hauora Tairawhiti). Some submitters state that the term is too long but do not suggest what the term should be (Melita Raravula, Gillian Ward). The Section 42A Reporting Officer recommends a 20 year consent term for WWO (subject to stringent conditions) but only a 10 year term for DWO;

(c) Issues with the existing network, including Kaiti (Josie McClutchie);

(d) Issues relating to Turenne Street (Josie McClutchie; Ngati Oneone; Suzanne Orchard; Megan Rangiuia; Ruby Smith; Gordon Webb; Janet Crawford; Colleen and Beverley Dwyer; Ministry of Education);

(e) That DWO should not be covered by the consent (Ngati Oneone) or that it should be limited to a specified number of discharges per year (Sandy Gibson);

(f) Further education should be provided e.g. in relation to fatbergs (Suzanne Orchard).

77. I have already addressed a number of the above issues in the body of my evidence, but will expand further in relation to the issues below.

78. In addition, I also address the following issues from the s42A Report:

(a) Performance Standard of 50% AEP as a target [Schedule 10.4 of Recommendations];

(b) Recommendations of additional matters for Council's consideration including quantification of storage at pump stations; installation of depth sensors; and development of I&I monitoring plans in accordance with I&I Manual [Schedule 4.7 of Recommendations].

Consideration of Alternatives

79. Consideration of alternatives is already addressed in Section 3.5 of the Application in relation to both DWO and WWO. As addressed in the evidence of Mr Garside, wastewater modelling has been undertaken to support the DrainWise programme and the technical review undertaken by Mr Aiken (for the Reporting Officer) is satisfied with the modelling undertaken. Mr Aiken also agrees that the flow monitoring undertaken for model calibration shows that the network is dealing with significant direct stormwater inflow (fast response). As explained in the evidence of Mr Kanz, the DrainWise programme will address the root cause of WWO through a targeted approach, rather that adopting expensive solutions such as additional storage capacity, particularly when (as outlined by Mr Garside) the network is currently sufficiently sized. However, should the target level of stormwater inflow reduction not be achieved, then Council has the backup option of additional network improvements as discussed in Mr Kanz's evidence.

80. In my view, the options suggested such as incentivising compostable toilets and rainwater collection, will not fundamentally address the root causes of the fast response issues. That is not to say that such measures should not be

considered in the future as part of wider sustainability initiatives. Rather, they will not provide a sufficient reduction in stormwater inflow necessary to reduce WWOs.

Term

81. As outlined in the evidence of Mr Garside, reviewing the effectiveness of the DrainWise actions requires an appropriate length of term. This is particularly the case with WWO which occur relatively infrequently. As identified by the Reporting Officer, a blunt approach of a short term of consent is likely to be counterproductive in facilitating positive environmental outcomes in the medium to long term, as it will give Council little certainty to commit significant financial resources when it will be faced with a reconsenting requirement in the short term.

82. I do not agree with Mr Whittaker's recommendation that a term of 10 years is appropriate for DWO with an eradication strategy to be adopted. As outlined in paragraphs 34 to 40 above, in Gisborne DWOs generally occur where there is a blockage in the network, mostly associated with a third party putting a foreign object in the wastewater system or fat build-up or a break in the network. Council has no direct control over third party actions which result in blockages . I consider the appropriate response from Council to DWOs is, as set out in the Application, a comprehensive and dedicated public education campaign; coupled with proactive maintenance and cleaning regimes; a focus on trade waste compliance; and contingency measures (including systems controls and duplications, such as early warning systems at pump stations). These matters all form part of Council's multi-pronged approach to avoiding DWOs as far as that is possible. If DWOs do occur, Council has prompt and effective response procedures and protocols as a critical element of its network management contracts. That includes containment, resolution, clean-up, notification and sampling protocols.

83. Again, I consider these matters can be more effectively addressed through appropriate consent conditions, rather than a shorter consent term.

Kaiti and Turenne Street Overflow

84. I acknowledge Ms McClutchie's concerns regarding drainage in the Kaiti area and agree that this area has been problematic from a drainage perspective. As discussed by Mr Kanz, this area has been identified as a priority for Council as demonstrated by the focus of the DrainWise programme.

85. In respect of the Turenne Street area, as Mr Kanz advises, Council has undertaken significant work in this area and proposes changes to the network that will enable the Seymour/Turenne overflow to be moved and reduced to a tertiary overflow point. As Mr Kanz advises, the physical changes are currently being designed and the works are programmed for the coming financial year. Mr Mayhew has proposed a condition of consent that also confirms the intent to implement these changes.

DWO should not be covered by the consent or should be limited in number and further education re fatbergs

86. Mr Mayhew addresses the requirement for a resource consent under the TRMP. He advises that consent is required under Rule 6.2.3(15) of Part C6 of the TRMP. As such, there is no justification for not including DWOs within Council's consent application, otherwise such discharges would remain unauthorised.

87. I have extensively addressed the causes of DWO in my evidence. Unfortunately DWO occur in every wastewater network, particularly as a result of third party actions. This makes them difficult to predict and control.

88. As outlined above, Council has a demonstrated and appropriate response to such discharges. I acknowledge the submission of Ms Orchard that further education should be provided to the public, for example in relation to fatbergs. I have provided an example in my evidence of a significant fatberg which was located through Council's surveillance regime and removed.

89. Council has a comprehensive public education campaign to address public behaviour, through the DrainWise programme and this includes behaviour which can lead to the formation of fatbergs (e.g. tipping oil/fat down sinks and flushing wipes/towels/rags). I acknowledge that these need to be ongoing and

it is proposed to continue these campaigns through the lifetime of the consent with the aim of managing and changing behaviour over time.

Performance Standard of 50% AEP as a target [Schedule 10.4 of Recommendations]

90. As Mr Mayhew advises in his evidence, the TRMP includes a policy (Policy C6.2.2(9)) that states: *'Discharges of untreated sewage from the reticulated infrastructure network shall be managed to ….b). Achieve performance of an overflow occurrence of no more than 50% probability in any given year;*

91. Accordingly, Council has adopted this WWO target in its DrainWise programme and the Application. The aim is to achieve this within ten years, a timeframe I consider appropriate given the issues relating to poor private drainage, as My Kanz advises.

92. However, this is not the end of the process. As Mr Mayhew advises, Council proposes to review its performance in (before) Year 10 of the consent and reset the overflow targets to work towards further reductions in WWOs. The ability to identify what can be achieved will be clearer once a substantial proportion of stormwater inflow has been removed. As Mr Garside advises, this adaptive approach is consistent with best practice. It is also consistent with Council's strategic aims, as outlined in Mr Dave Wilson's evidence.

Recommendations of additional matters for Council's consideration including quantification of storage at pump stations; installation of depth sensors; and development of I&I monitoring plans in accordance with I&I Manual [Schedule 4.7 of Recommendations].

93. As noted at paragraph 40(c) above, Council has recently installed a trial depth sensor at Turenne/De Lautour at a cost of $20,000, which is monitored via Council's telemetry. The trial was successful and it is promoted to add further units, especially to assist with identification of potential DWO. Accordingly, Council will be developing an implementation plan. However, the installation of such devices will require additional funding over what is currently planned for the network.

94. In relation to the recommendation around quantification of available storage at each pump station, Council already has a process of quantifying storage at each of its pump stations. Target storage is for emergency storage of 4 hours at ADWF plus

storage within the wetwell capacity of another 4 hours at ADWF; this does not account for storage within the piped network. These targets are applied when new pump stations are constructed or when existing pump stations are upgraded. Council currently has emergency storage at Russell Street and Steele Road and $2.6 million has been allocated for additional emergency storage. Emergency storage at pump stations will also consider the opportunity to increase storage to help with wet weather events to help reduce overflows.

95. Finally, in relation to recommendation (c) Council agrees in principle with the recommendation but Council takes a more holistic approach – and proposes to install flowmeters at the confluence of major catchments. Kaiti catchment has already been completed and further flowmeters are proposed for Whataupoko (crossing the Peel St Bridge) and the Interceptor crossing Lytton Rd. It should be noted that in the Gisborne context, issues arise from fast response and accordingly Council sees no benefit in managing and monitoring to that level of granularity. It should also be noted that Council has a responsibility to ensure that public funds are spent in the most effective manner, and accordingly it must be mindful of the particular context that it operates within.

96. As such, I consider that the recommendations provided have already been considered and addressed by Council where appropriate.

SECTION SIX : CONCLUSIONS

97. GDC owns and operates an essential wastewater system (the GWS) that services the city of Gisborne, collecting wastewater from houses, businesses and industry and transport this via a series of pipes and pumping stations to the WWTP. The GWS is sized and operated in accordance with current engineering practice.

98. 50% of the reticulated network is located on private property and is owned by the property owner, with Council publicly owning and managing the remaining 50%. The two components operate as one network, which presents specific management challenges.

99. The causes of WWO are understood. WWO occur as a result of excessive rainwater/stormwater entering the network through I&I. This occurs primarily

on private property, as a result of incorrect drainage or illegal connections, flood water overtopping and cracked and leaking gully traps, and infiltration into pipes through cracks and joints.

100. Council has already undertaken a significant work and capital investment programme on Council's part, with the initial focus being largely on Council's assets; and its focus has now shifted to resolving issues originating on private property, through the DrainWise Programme.

101. The causes of DWO are also well understood; and in Gisborne occur predominantly as a result of blockages in the network, mostly associated with a third party putting a foreign object in the wastewater system or fat build-up or a break in the network. Council has a comprehensive multi-faceted approach to managing DWO which includes regular and proactive maintenance and inspection of the wastewater network, contingency measures for any foreseeable breakdowns/equipment failure; and comprehensive response, monitoring and notification protocols.

102. Similarly, as WWO discharges require manual intervention by Council to known discharge locations, they are subject to comprehensive management and responses, including opening protocols, monitoring and notification protocols.

103. The DrainWise programme and other planned network improvements will work to reduce the frequency, duration and volume of overflow events over time. However, this is a substantial programme of improvement, which takes time to implement and evaluate and accordingly a twenty year term is essential. As identified by the Reporting Officer, a blunt approach of a short term of consent is likely to be counterproductive in facilitating positive environmental outcomes of the medium to long term, as it will give Council little certainty to commit significant financial resources when it will be faced with a reconsenting requirement in the short term.

104. Comprehensive consent conditions are proposed by the Applicant, as outlined in the evidence of Mr Mayhew; which will ensure that the network remains effective and efficient and will address the effects of overflows.

Neville West
25 June 2021

APPENDIX 1: Example of an OMMP

NAME OF THE WORK ITEM: Planned Jet Cleaning Programmes

Scope:

- Planned Jet cleaning of wastewater pipelines (interceptors, mains and laterals).
- Adhoc Jet cleaning
- Adhoc Root cutting

Inspection Frequency:

- Monthly, 3-monthly, 6-monthly and annually in accordance with programme
- Unplanned: Reactive

Response Times:

Planned jetting/cleaning:-

- Monthly – within the first or second week of each month
- 3 monthly – within the first or second week of January, April, July and October
- 6 monthly – last week of April and October
- Annual – by mid December
- Adhoc Jet Cleaning/Root Cutting

IPS to record in the group work order the commencement date and completion date.

Payment

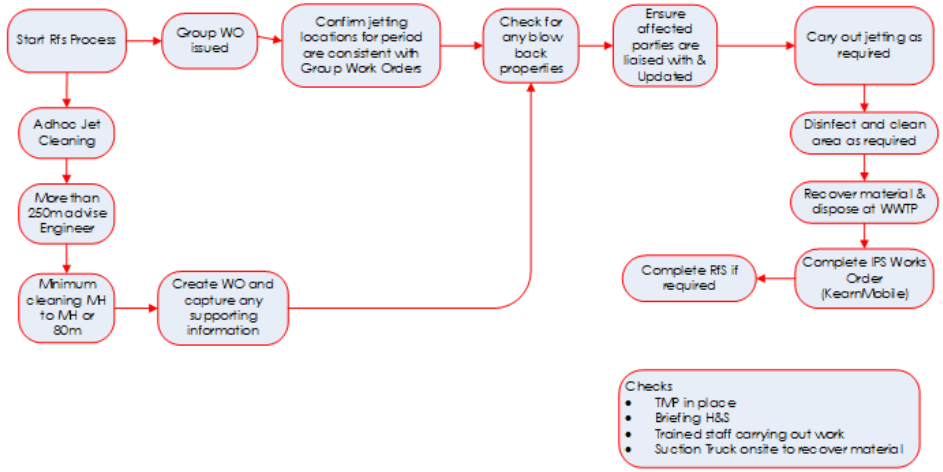
Generally:
S2.2 Scheduled Jet Cleaning
S2.3 Adhoc Jet Cleaning/Root cutting

Performance Criteria: (Outcomes related to KPI's)

KPI No X – Completed within the agreed timeframes.

Data Required/Provided:	Strategies & Mgt Plans:	Job Specific Work Instructions:
• IPS group WO's for Jetting Programme • Proformas PF10 & PF11 and/or FieldGo • Schematics (GIS)	• LTP • Wastewater Activity Management Plan • GDC Engineering Code of Practice • H&S Plan • Communication Plan • RfS Workflow Process	• Traffic Management Plan • Risk Control Plan

Methodology:



Issues & Resolutions:

Specification:

Refer to the following clauses of the Contract:

Scheduled Jetting Programme
The scheduled jetting programme is maintained within IPS as Group Work Orders. These are automatically generated and emailed the contractor as a reminder to undertake the work. Alterations to the jetting programme to be agreed should a variation be required.

The jet cleaning programme includes TMP, the recovering and removal of all matter within the pipe and the disposal of it to Councils WWTP, communication and management of properties that are at risk of blow backs, clean up and disinfection from any spillages

Planned jetting programme to be discussed and confirmed between GDC and FH. The timing for the planned jetting programme to be generally in accordance with the following:-

- Monthly – within the first or second week of each month
- 3 monthly – within the first or second week of January, April, July and October
- 6 monthly – last week of April and October
- Annual – by mid December

All work orders should be closed out real time on site through FieldGo or similar, in the event of system issues proforma's maybe used and retrospectively loaded.
Any changes to the jetting programme shall be date stamped and recorded and version controlled. Unless advised by GDC, FH shall assume that the schedule remains unchanged from the previous month

Adhoc Jet Cleaning
Specification is the same as for the scheduled jet cleaning; this work is a response to a network performance issue and is unplanned. The contractor is delegated to undertake 250m of cleaning before advising the Engineer but as a minimum, any cleaning will be manhole to manhole approximately 80m in length. Contractor must provide a clear statement of material recovered and what they believe was the issue causing the issue, (fat, clothing etc)

Root Cutting
Localised obstruction has been identified normally via CCTV as tree roots or jetting has failed due to an obstruction. The jet cutting is assumed to be manhole to manhole with a minimum of 80 m and includes the removal of the obstruction, the recovery and disposal of the roots/material, TMP, cams, disinfection.
Any repetitive root cleaning that occurs should be identified to the engineer to either investigate a localise repair or put on a cyclic cleaning programme

Interceptor Cleaning
Any jet cleaning undertaken of Councils interceptors or inverted syphons are undertaken on a day works basis