

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER Proposed Plan Change 56 – Lockerbie, Morrinsville

STATEMENT OF EVIDENCE OF GUNASANTHA AGAS

Dated 13 July 2022

INTRODUCTION

1. My name is Gunasantha Agas. I hold a Master of Science degree (Civil Engineering) from Moscow Institute of Civil Engineering and Master of Science degree in Urban Engineering from Loughborough University of Technology in the UK. I am also a Member of Engineering New Zealand.
2. I have over 30 years' experience in civil engineering and over 19 years' experience in water, wastewater and stormwater (3 waters) engineering in New Zealand.
3. From March 2021 to date, I worked as an Asset Engineer Utilities in Matamata Piako District Council (MPDC).
4. I worked in Colombo Municipal Council as a civil engineer from 1983 in different positions until migrating to New Zealand in 2003.
5. I have held senior positions in planning, managing and service delivery of 3 waters services in Whakatane District Council and Napier City Council before joining MPDC.
6. My particular experience in 3 waters covers:
 - Strategy development,
 - Master planning including growth, risk management and resilience,
 - Asset management planning,
 - Network management,
7. While I was working in Whakatane District Council and Napier City Council, I was involved in District Plan changes and feasibility studies on growth from a 3 waters perspective.
8. In my current role in MPDC, I have been involved in the following activities:
 - Advice on development and subdivision applications from a stormwater perspective,
 - Advice on plan changes from a 3 waters perspective,
 - Project managing of the development of strategies for water conservation, 3 waters operational resilience, wastewater inflow and infiltration reduction,
 - Project managing water and wastewater masterplans for MPDC,
 - Providing planning and technical inputs into various MPDC documents and submissions from a 3 waters perspective.

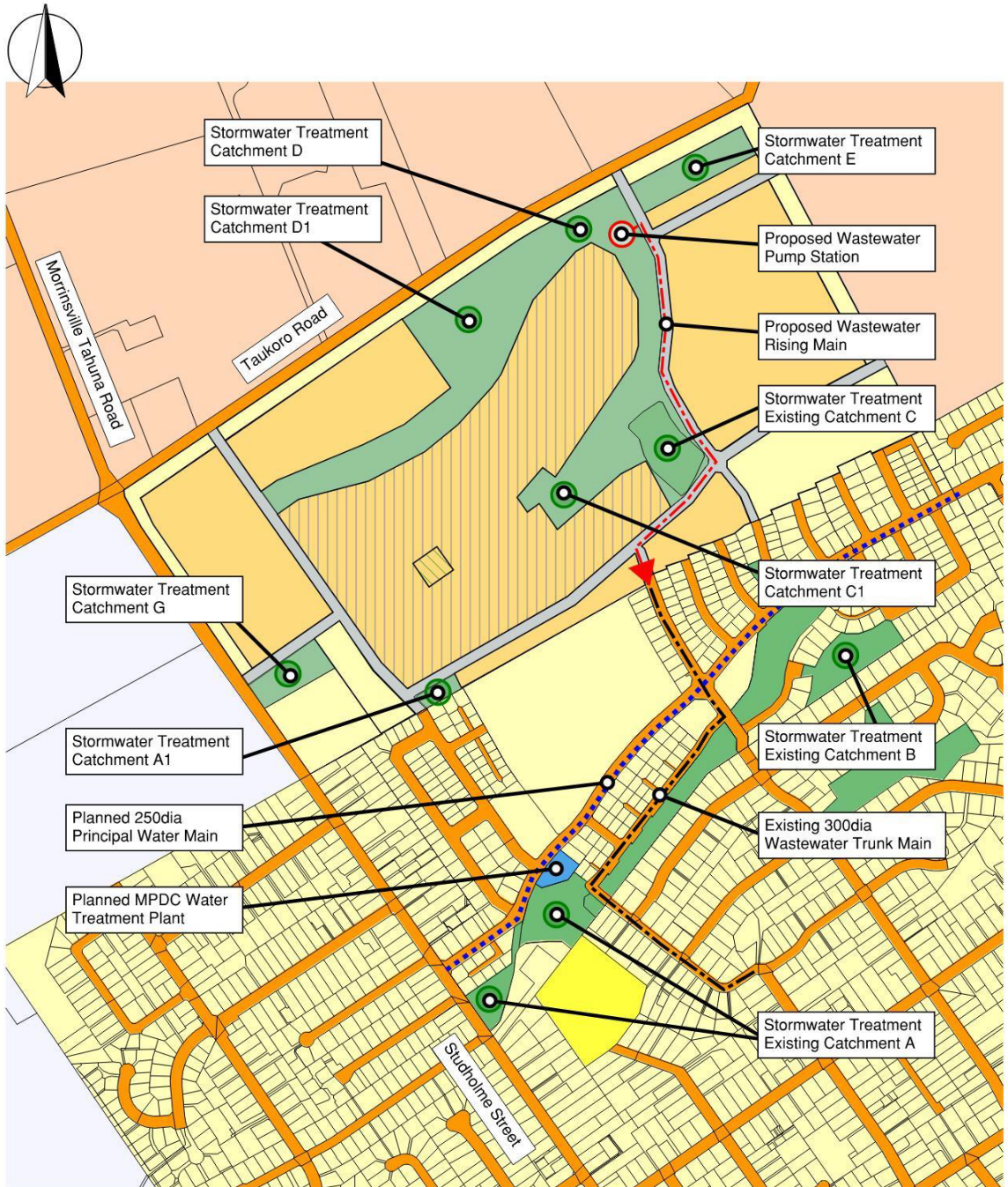
Expert Code of Conduct

9. I confirm that I have read and am familiar with the Code of Conduct for Expert Witnesses in the Environment Court, Practice Note (2014), and agree to comply with that Code of Conduct. I state where I have relied on the statements of evidence of others for my

assessment. I have not omitted to consider material facts known to me that might alter or detract from my opinions.

BACKGROUND

10. The purpose of this report is to provide comments on the feasibility of servicing the development as proposed in PPC 56 and address concerns raised in public submissions on the application from a 3 waters perspective.
11. In preparing this expert report, I used information in the Infrastructure Report prepared by Maven Consultants which was appended to the PPC 56 application as Appendix D, meetings I had with developer's representatives, my personal experience and knowledge of the MPDC water, wastewater and stormwater systems and input received from other MPDC staff.
12. The Infrastructure Report prepared by Maven Consultants will be referred to as IR in this report.
13. An image of Figure 3 of the IR "3 Waters Plan" is provided below.



LOCKERBIE ESTATE LIMITED 3 WATERS

WATER

General

14. At present, the MPDC public water network has not been extended to the PPC 56 land. However, the proposed development is very close to the existing public water infrastructure and can be easily connected to it. There are no external pipe network upgrades required to service the PC Area.
15. In 2022, the Waikato Regional Council granted the Lockerbie bore consent (AUTH142378.01.01). The bore is situated within a road reserve in Lockerbie's current development area. The consent permits a maximum take of 4,000m³ per day with a condition limiting the maximum combined take of water from Topehaehae Stream and Lockerbie bore to 10,000m³ per day. This bore is currently not in use. When commissioned, this bore and Topehaehae water sources will provide adequate water for Morrinsville, to meet the current demand and the future demand including PPC 56 area.

Resource Consents and Supply and Water Take Constrains

16. MPDC holds resource consents to take water from three water sources namely Topehaehae Stream source, Scott Road bore source and Lockerbie bore source.
17. At present, MPDC is using Topehaehae Stream and Scott Road bore water sources and planning to use the Lockerbie water source from 2023 to augment its supply to Morrinsville.
18. The consent issued to take water from Topehaehae Stream (AUTH120720.02.01) expires on 14 August 2053 and the maximum take up volume must not exceed 10,000 m³ per day
19. The main water source for Morrinsville is Topehaehae Stream and a dam has been built across the stream to create water storage. Water from the Topehaehae water storage facility is treated at the treatment plant situated at Waterworks Road and gravity fed to Morrinsville Township. At present, this water source is supplying over 85% of the current maximum daily demand when the Scott Road water bore is operating and 100% when the Scott Road water source is not operating. See section 22 below for Scott Road water consent details.
20. One of the conditions of the Topehaehae Stream resource consent is:
 - Until 31 December 2030 the consent holder must ensure that the minimum residual flow downstream of the dam is no less than 30 litres per second except for up to 100 days per year when the minimum residual flow must be no less than 7 litres per second.

At present, this condition is the major limiting factor to taking water during very dry periods and the main reason for water restrictions during certain periods of the year. I consider that with the introduction of the Lockerbie bore in 2023, this issue will be resolved.

21. The current maximum production capacity of the Waterworks Road treatment plant is 7,600m³ per day. Therefore, the maximum take from this water source is limited to 7,600m³ per day.
22. The Scott Road water take consent expires on 30 April 2033 and the maximum take up volume must not exceed 1,000m³ per day. The consent allows MPDC to take water from this source from 1 November through to 31 May of each year and the maximum take of water shall not exceed 90,000m³ during this period.
23. The current total water production capacity in Morrinsville when both treatment plants at Waterworks Road and Scott Road are in operation is 8,600m³ per day.
24. At present, there is no restriction in pipe reticulation to supply the current Morrinsville demand.
25. The water supply in Morrinsville can produce sufficient quantities of treated water to supply winter demand but water restrictions have to be introduced in prolonged dry periods due to water abstraction restrictions from Topehaehae water source as mentioned in above paragraph 20.
26. The present water restriction levels are as follows:
 - Level 1 – Water conservation
 - Level 2 – Usage of sprinklers on alternative days
 - Level 3 – Total ban of sprinklers
 - Level 4 – Total ban of outside water usage
27. In 2022, the Waikato Regional Council granted the Lockerbie bore consent. The bore is situated within a road reserve in Lockerbie's current development area. The consent permits a maximum take of 4,000m³ per day with a condition limiting the maximum combined take of water from Topehaehae Stream and Lockerbie bore to 10,000m³ per day.

Future Water Demand

28. Future water demand will be mainly based on residential and dry industrial growth within the township. Large wet industries are unlikely to be developed within the township due to the unavailability of sufficient water.
29. Future water demand (up to 2055) based on a high growth scenario including Lockerbie PPC 56 land is given in the following table:

Scenario	Demand Profile
Current consent limit	10,000 m ³ per day
Population served with public water in 2018	7,980
Average daily water abstraction in 2018/19	5,476 m ³ per day
Maximum raw water abstraction in 2018/19	7,524 m ³ per day
Estimated population served with public water in 2055 (including PPC 56 area)	12,111
Estimated additional population served with public water supply in 2055 (including PPC 56 area)	4,131
Current per capita consumption (gross)	485 lit/day
Estimated increased water demand in 2055	2,004 m ³ per day
Estimated total water demand in 2055	9,528 m ³ per day

Note:

The gross per capita consumption of 485 litres per day has been used for the calculation of future demand. This conservative approach was used for the purpose of this report.

The population figures are derived from Waikato Regional Council's population projection report and based on a high growth scenario.

30. From the above table, it can be seen that the current allocated water take is sufficient for the future demand up to 2055. However in exceptional circumstances such as a critical asset failure or unusual seasonal water demand may require the imposition of some water restrictions. This is not uncommon in water supplies across the country.

Water Conservation

31. A number of submitters raised concerns about water sustainability in their submissions.
32. In 2022, MPDC developed a Water Conservation Strategy (WCS) for all of the water supplies owned and managed by the Council. The WCS aligns with MPDC's overarching Water Strategy and establishes long-term goals for the sustainable delivery of water supplies to the community.
33. The main objectives of the WCS are:
- Comply with all legislative and regulatory requirements for taking freshwater for potable water supply purposes,
 - Protect the mauri of the water and its surrounding and supporting environment,
 - Managing the sustainable long term take and use of freshwater across the district,
 - Educate and engage the wider community on our water resources, their true value, how water is used and solutions for reducing our collective take and impact on the environment.

- Provide more capacity for future demand by efficient use of water.
34. A District Water Management Plan (DWMP) was prepared in 2022 by GHD Consultants as per the requirements of the resource consent conditions and the DWMP is reviewed periodically. The DWMP includes action plans and targets for water savings.
35. The DWMP has a target of annual reduction of water losses from the MPDC network by 3% of the previous year's water loss.
36. The DWMP has identified action items to promote and educate consumers on water conservation. These actions are planned to be implemented in the coming years.
37. I have been involved in discussions with the developer's representatives on water conservation measures in the development. We agreed with the developer:
- Rainwater tanks will be installed in all residential units. Each individual dwelling will have a minimum of one 5,000 litre tank and duplex or terrace housing unit will have a minimum of one 2,000 litre tank. The water from these tanks will be used outside the dwellings.
 - To use water efficiency devices in all dwellings,
 - Install water meters in all dwellings.

These measures are in line with our WCS and will help to reduce the demand and ensure sustainable water usage within the development.

38. With the implementation of the water conservation strategy in the wider community, we can expect less water usage in Morrinsville and other council supply areas, freeing up more water for growth.

Planned and Future Capacity of MPDC Water Supply in Morrinsville

39. At present, a project is underway to develop a production bore and a treatment plant within the Lockerbie development site.
40. Tenders have been called for the construction of these facilities and it is anticipated that the treated water from this source will be connected to the existing reticulation in December 2023.
41. The Lockerbie water source will be able to supply up to 4,000m³ of water per day subject to the resource consent condition as mentioned in paragraph 20 above.
42. The new Lockerbie bore and Scott Road bore sources can supply approximately 66% of current maximum daily water demand and 52% of the 2055 maximum daily water demand. Therefore, when the Lockerbie bore is introduced in late 2023, the supply risk for present and future customers and water restrictions will be greatly reduced.

43. The likely future scenario of supplying water to Morrinsville is 50% of water from Lockerbie and Scott Road water sources and the balance of 50% from Topehaehae water source. This will be confirmed through the water master plan for Morrinsville. See sections 47 to 50.
44. The MPDC has an up to date and calibrated water hydraulic model. This is a very useful tool to assess the pipe capacity for different development scenarios.
45. The model has been used to assess the reticulation upgrade requirements due to the growth in the current District Plan growth areas and future PPC 56 area.
46. At present, MPDC is in the process of developing a water master plan for Matamata and Morrinsville. MPDC is working with WSP Consultants in developing the masterplan and I am involved in this project and contributing to the outcomes together with other relevant MPDC staff.
47. There are multiple drivers for the master plan. Some of the drivers are; growth pressure due to existing growth zones and plan changes, efficient viable use of water sources, resilience supply, water quality, network and operational optimisation, compliance with present and future consents and an action plan to reduce the risk of climate change effects on water supply.
48. Although the introduction of the Lockerbie bore source will minimise the supply risk due to low flow in the Topehaehae Stream during very dry periods, the water master plan will be considering the following options to further reduce this risk;
- Investigate and introduce another water source,
 - Increase the water storage of the Topehaehae water reservoir by increasing the dam height,
 - A combination of above two options.
- Funds (\$1.5m) have been allocated in the MPDC's current Long Term Plan in year 2031 to implement the preferred option.

49. The final master plan will be ready in 2023.

Proposed Water Supply Network within PPC 56 Area

50. The IR provides a high level description of the proposed water supply within the development area and how the supply will be connected to the MPDC network. The proposals in the IR are discussed in the following sub-sections 52 to 56
51. Design flow – The IR does not provide design flows or water demand details. However, the report identifies insufficient capacity in the MPDC network to service the PPC 56 area as an issue and relies on the planned upgrades to the MPDC system. The planned upgrades to the MPDC water system are discussed in section headed **“Planned and Future Capacity of MPDC**

Water Supply in Morrinsville” above. The water demand of the proposed development is calculated as 576 m³ per day based on current per capita consumption of 485 litres per day. This figure is a conservative figure and does not account for the reduction in water usage as a result of water conservation measures proposed in the development. National figures suggest that the water consumption in metered supplies is at least 30% less than unmetered supplies.

52. Water Reticulation - The IR proposes to install pipes with nominal diameters of 250mm, 180mm, 125mm and 63mm. These pipe sizes appear to be sufficient to provide the required level of service in terms of pressure, flow and firefighting capacity (FW2 requirement). This needs to be confirmed through detailed design.

The water reticulation network of the development is proposed to connect to the MPDC water reticulation by connecting to the 250mm and 180mm pipes in the Lockerbie Stage 1 to 3 development areas. These are appropriate locations for the connection of the new reticulation and will be able to provide the required level of service.

53. In the IR report, water infrastructure is proposed to be installed as the stages progress to service the new dwellings. This is an acceptable method in large subdivisions. In the IR report there is no information provided on the staging of installation of water infrastructure. However, this can be agreed with MPDC before detailed design is carried out. Therefore, I consider that this is not an issue at this stage.

54. The detailed design of the water network has to be submitted to MPDC for approval before each stage and construction.

55. Water Efficiency – The IR briefly discusses the following water efficiency measures which could be implemented to reduce the water demand in the development area:

- Metering of new dwellings,
- Water efficient fixtures to a 3 star standard under the Water Efficiency Labelling Scheme in new dwellings,
- Installation of rain water tanks for using water for non-potable water requirements.

These measures will help water conservation and are in line with MPDC’s WCS.

56. Connections to the dwellings will be in accordance with (Regional Infrastructure Technical Standards) RITS requirements and specifications.

57. I consider the proposal for the internal pipe network in the IR is reasonable.

WASTEWATER

General

- 58. At present, there are no public wastewater systems installed in the PPC 56 area. However, the proposed development is very close to the existing public wastewater infrastructure and can be connected easily.
- 59. A new reticulation pipe is currently being installed from Lockerbie through to the terminal pump station before the treatment plant. This new pipe will have capacity to also service PPC 56.
- 60. Upgrades to the Wastewater treatment plant are also required to be completed in the short term.

Wastewater Discharge Consent and capacity of the existing MPDC Wastewater system

- 61. The permit to discharge treated wastewater from Morrinsville into the Piako River will expire in 2024.
- 62. The current wastewater treatment plant does not have capacity to treat the wastewater from future growth to the required standards without upgrades.
- 63. MPDC is in the process of preparing a strategy for the application for a new consent. This strategy takes into account future growth when applying for the new consent.
- 64. As part of developing the consenting strategy, MPDC engaged PDP Consultants to review the capacity of existing treatment plants in Matamata and Morrinsville and make recommendations for upgrade requirements to meet potential legislative and growth requirements.
- 65. In March 2022, PDP Consultants produced a report titled "Population Pressure Demands on Matamata and Morrinsville Existing Wastewater Treatment Capacity and Upgrade Options Pathway" (PDP Report).
- 66. The report made some recommendations to carry out upgrades to the existing treatment plants and MPDC is committed to carry out these upgrades and will include these upgrades in our future work programme.
- 67. The existing MPDC reticulation has sufficient capacity for dry weather flow for current wastewater flow.
- 68. At present, I am aware of issues with overflows during very high rainfall events due to inflow and infiltration (I&I) of stormwater into the system. This is not a developer's problem and the Council has prepared an I&I reduction strategy and a programme to address this issue.

69. The IR suggests the wastewater design should be based on 45 persons per hectare as per the requirements of RITS. The PDP Report assessed the wastewater flows based on 45 dwellings per hectare. The PDP report has considered a conservative approach when calculating the wastewater flows and I agree with this approach as we haven't seen the final design of the development. According to the PDP report, the wastewater flow from the PPC 56 area is 786 m³ per day.
70. Some upgrades to the existing MPDC wastewater system are required to accommodate the additional flow from the PPC 56 area. At present, projects are underway to increase the capacity of the existing wastewater system as described in the following section "Planned and Future Capacity of MPDC Wastewater System".

Planned and Future Capacity of MPDC Wastewater System in Morrinsville

71. At present, MPDC is implementing a project to upgrade the reticulation system by installing new pipes and a pump station to accommodate new flows from new developments including the PPC 56 development. This new infrastructure will also address some of the overflow issues in the network.
72. The project will be implemented in 3 stages. Stage 1 of the project, which is installing a 350mm gravity main from the Lockerbie development to Banks Road, has been completed. Stages 2 and 3 are at detailed design stage and it is anticipated that tenders for these stages will be awarded in 2022.
73. A project is underway to upgrade the Allen Street pump station which pumps all wastewater from Morrinsville into the treatment plant. The objectives of this upgrade are to allow for future growth in the township and reduce wet weather overflows.
74. The existing wastewater treatment plant will be upgraded as recommended by the PDP Report.
75. The plant will be upgraded in two stages. Upgrade requirements to meet the next 3 to 5 years will be carried out within the next two years. The next stage will be programmed in the future capital works programme.

Proposed Wastewater System within PPC 56 Area

76. The IR proposes to discharge majority of wastewater from the PPC 56 development area into a new pump station located at the northern side of the development and then pump into the Council's reticulation within Lockerbie stage 1. A small catchment in the south-west corner of the development is proposed to discharge to the MPDC reticulation via a gravity pipe.

77. At this stage, this concept plan seems to be feasible, as there is a potential to gravitate wastewater from most areas to a pump station situated at a lower ground level in the northern side. However, this has to be confirmed at the detailed design stage.
78. In my opinion, what is unknown at this stage is the depths of the proposed gravity mains. The maximum depth of a gravity main should not be more than 3m. If this maximum depth cannot be achieved, a second pump station may be required. This can be confirmed at detailed design stage.
79. The IR proposes to construct the pump station and the rising main in the first stage of the development.
80. The IR also proposes to design the pump station with additional storage capacity to allow off peak discharge into MPDC's reticulation. I consider that this is a good concept which will help to reduce the peak flow in the network. However, consideration should be given to septicity issues during the detailed design stage as the timing of the full development could be very long.
81. The detailed design of the wastewater network will comply with MPDC's development manual and RITS.
82. All lots are proposed to have separate wastewater connections complying with RITS guidelines.
83. I consider the proposal for the internal wastewater network in the IR is reasonable.

STORMWATER

General

84. At present, there is no public stormwater system in operation in the PPC 56 area.
85. Stormwater infrastructure is proposed to be installed as the stages progress to service the new dwellings and new public infrastructure.
86. The detailed design of the stormwater system has to be submitted to MPDC for approval before each stage and construction.

Resource Consent to Discharge Stormwater

87. A resource consent has been obtained from the Waikato Regional Council by the developer to discharge stormwater from 76 Taukoro Road. Stormwater from 76 Taukoro Road flows to the Piako River through the Maungahaumia Stream to the north and through the MPDC stormwater network and the Morrinsville Stream to the south.

88. This resource consent covers the current Lockerbie development area and a part of the PPC 56 area.
89. Maven Consultants has prepared a Stormwater Management Plan (SMP) for the catchments of the area covering 76 Taukoro Road.
90. The developer has to obtain a new consent to discharge water from the remaining land of the PPC 56 area which is the land area of 182 Morrinsville – Tahuna Road.

Proposed Stormwater System within PPC 56 Area

91. Stormwater from the majority of catchments in 182 Morrinsville – Tahuna Road flows into the catchments covered by a resource consent already obtained by the developer (AUTH 141393).
92. The IR proposes to design the stormwater system within the development in accordance with RITS guidelines and the MPDC Development Manual 2010.
93. The primary conveyance is proposed to be through a pipe system with a capacity to convey 10% AEP rainfall event which will discharge to either wetlands or storage ponds. The primary system is to be vested in MPDC.
94. A secondary system is proposed as overland flow paths and detention ponds or wetlands and will service 1% AEP rainfall events.
- 100 The detention ponds/wetlands are proposed to be designed to limit the post development flow from a 1% AEP rainfall event to not exceed 80% of the predevelopment flow rate from a 1% AEP rainfall event.
- 101 Overland flow paths within the development are proposed to be within the future road reserves and internal road network.
- 102 The flow depths of over land flows within the road network will meet the requirements of RITS guidelines for overland flow paths.
- 103 The IR proposes to achieve stormwater quality requirements through raingardens and wetlands.
- 104 Stormwater detention and treatment devices are proposed to be located at appropriate locations as shown in the map in section 13 above.
- 105 The IR states that all stormwater devices will be designed in accordance with “Waikato stormwater management guideline – Detailed design procedure” where the impervious area exceeds 70%.
- 106 The above mentioned stormwater system and design guidelines are in line with MPDC’s current stormwater management policy.

107 Although the IR provides high level concepts for achieving stormwater discharge requirements, flood mitigation and quality achievements, comprehensive stormwater modelling using appropriate software needs to be carried out prior to commencement of detailed design to ensure required outcomes are achieved.

108 With the proposed stormwater management methodology of the IR, there is minimum risk of increased flooding of the properties downstream of the development as the post development rate of runoff from the PPC 56 area will not be increased due to the development.

109 The detailed design of the stormwater system has to be submitted to MPDC for approval before each stage and construction.

110 However, there is a small risk of failure of the proposed stormwater system resulting in flooding of properties as with any stormwater system. This risk can be managed by following appropriate standards when designing stormwater devices.

Conclusions

111 After carefully considering the information provided in the developer's proposals for PPC 56 and assessing MPDC's current situation with the 3 waters services, future demand, climate change effects and other risks, my assessment of the PPC 56 application and responses to the submitters' concerns are as follows:

- a. As discussed in my report, MPDC will be able to provide adequate water for the existing customers, future customers in the growth zones of the current District Plan and additional customers due to development of PPC 56. This can be achieved mainly due to the introduction of a new water source and construction of a new water treatment plant at the current Lockerbie site in 2023.
The WCS of MPDC and water conservation measures in the developer's proposal will further enhance the capability of MPDC to supply Morrinsville.
The introduction of a new water source/increasing the current water source capacity through a master planning process will further reduce the risk of insufficient source water for future demand.
- b. Sustainable use of water will be ensured by implementing measures and actions in MPDC's WCS and WDMP. Compulsory rainwater tanks in PPC 56 area will help to conserve water as well as reduce the stormwater run-off from the development.
- c. The current project undertaken by MPDC to develop a water supply masterplan will take into consideration the effects of climate change on our water sources.

The master plan which is expected to be developed in 2023 will outline a programme and actions to be taken to minimise negative effects on our water supply due to climate change.

- d. As discussed in the report, MPDC is implementing projects to upgrade the wastewater network and treatment plant to be able to increase the flows into the wastewater system. These upgrades will allow for future growth including the new dwellings from PPC 56 area. These upgrades and implementation of I&I strategy will reduce the wastewater overflows from the network.
- e. The proposed PPC56 stormwater system, will not increase the stormwater run-off from the PPC 56 area more than the pre development run-off rate and therefore, the risk of flooding of properties outside the development is minimal.
- f. The quality of stormwater to be discharged from the PPC 56 area is managed through wetlands. This treatment methodology is accepted by MPDC and WRC.

Therefore, the risk of contamination of the receiving environment is minimal.

112 Having considered all of above facts, I have confidence that the proposed development in the PPC 56 area will not have negative impacts on our water, wastewater and stormwater services now or in the future.