te kaunihera ā-rohe o
matamata-piako
district council

IN THE MATTERof the Resource Management Act 1991

AND

IN THE MATTER Proposed Plan Change 58 – Avenue Business Park, Morrinsville

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STATEMENT OF EVIDENCE OF GUNASANTHA AGAS

Dated 31 January 2024

Gunasantha Agas

1. Introduction

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.

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. From March 2021 to date, I worked as an Asset Engineer Utilities in Matamata Piako District Council (MPDC).

I worked in Colombo Municipal Council as a civil engineer from 1983 in different positions until migrating to New Zealand in 2003.

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.

My particular experience in 3 waters covers:

- Strategy development,
- Master planning including growth, risk management and resilience,
- Asset management planning,
- Network management,

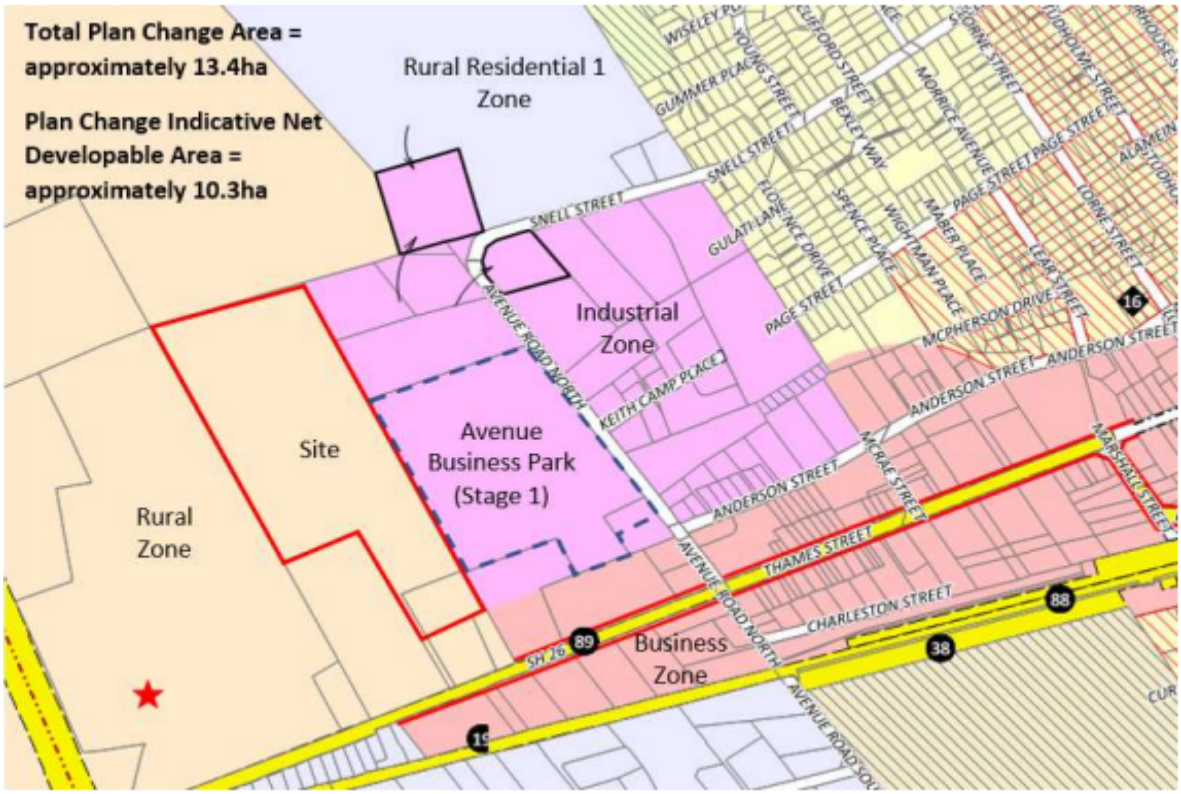
While I was working in Whakatane District Council and Napier City Council, I was involved in District Plan changes and feasibility studies on growth from a 3 waters perspective.

2. Background

The purpose of this report is to provide comments on the feasibility of servicing the development as proposed in PPC 58 from a 3 waters perspective.

In preparing this report, I used information in the Infrastructure Report prepared by Tektus Consultants Limited which was appended to the PPC 58 application as Appendix 5, 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.

The Infrastructure Report prepared by Tektus Consultants Limited as part of the PPC 58 application will be referred to as IR in this report. An image showing the site location provided in the PPC 58 application is shown below.



3. Water Supply

3.1 General

The proposed development is situated close to the existing public water infrastructure and can be easily connected to it.

Morrinsville water supply provides water to residential, commercial and industrial properties within Morrinsville urban area and also supply to some industrial and rural properties outside the urban area. At present, there are some supply issues during the dry summer periods which is described in below section 2.3.

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. 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.

3.2 Water Sources and Water Take Consents

MPDC holds resource consents to take water from three water sources namely Topehaehae Stream source, Scott Road bore source and Lockerbie bore source.

Topehaehae Stream Source - 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. The consent issued to take water from Topehaehae Stream expires on 14 August 2053 and the maximum take up volume must not exceed 10,000 m^3 per day.

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 for taking water during very dry periods and the main reason for water restrictions during certain periods of the year.

The current maximum production capacity of the Waterworks Road treatment plant is 7,600m^3 per day. Therefore, the current maximum take of water from this water source is limited to 7,600m^3 per day.

Scott Road Water Source - The Scott Road water take consent to take water from a bore expires on 30 April 2033 and the maximum take up volume must not exceed 1,000m^3 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 90,000m^3 during this period. The Scott Road water treatment plant has capacity to treat the full capacity of water that is allowed in the consent.

Lockerbie Water Source – The resource consent to take water from this bore expires on 14 August 2053 and the maximum take up volume must not exceed 4,000 m^3 per day. The total combined daily volume that is allowed to take from this ground water source and Topehaehae surface water source must not exceed 10,000m^3 per day.

At present, maximum of 1,000m^3 per day of water is supplied to the network from this bore through a temporary water treatment plant installed at the site with a capacity of 1,000m^3 per day. A permanent treatment plant is being constructed close to the site with a maximum capacity of 4,000m^3 per day and expected to be completed in year 2024. This water source will be able to supply 4,000m^3 per day of water to the Morrinsville supply when the new water treatment plant is commissioned.

3.3 Current Supply Constraints

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 take restrictions from Topehaehae water source as mentioned in above section 2.2.

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

Imposing of water restrictions and the level of restrictions are mainly depend on the summer weather and flow volumes of Topehaehae Stream.

When the new water treatment plant is commissioned in 2024, it is anticipated that the current full demand in Morrinsville can be met without severe water restrictions due to water take issues.

3.4 Future Water Demand

Future water demand will be mainly based on residential and dry industrial growth within the township. At present, there is no capacity in the water system to supply for additional large scale wet industries without affecting the existing customers.

Future water demand (up to 2055) based on a high growth scenario including PPC 58 land is given in the following table:

Description	**2022 Figures**	**Estimated 2055 Figures**
Average daily residential and non-metered customer usage	2,218 m^3 per day	2,858 m^3 per day
Average daily metered commercial and light industrial/dry industrial usage	1,763 m^3 per day	2,195 m^3 per day
Average daily large wet industrial usage	1,086 m^3 per day	1,306 m^3 per day
Total average daily usage	5,067 m^3 per day	6,359 m^3 per day
Total peak daily usage	7,601 m^3 per day	9,539 m^3 per day

Note: In calculating these demands, a conservative approach has been adopted and demand reduction due to potential universal metering of the supply has not been taken into account. Following assumptions also have been made:

- The population figures of Waikato Regional Council's population projection report is accurate enough for the purpose of this report,
- No additional large wet industries within the supply area are allowed, but an allowance has been made for additional demand from the existing large industries.

From the above table, it can be seen that the current consented 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 some water restrictions. This is not uncommon in water supplies across the country.

3.5 Water Supply Master Plan

MPDC has up to date and calibrated water hydraulic models for Morrinsville and Matamata. These models have been used to develop a water master plan for Morrinsville and Matamata. The objectives of the master plan are to;

- Meet current and future demand,
- Increase resilience of supply,
- ensure water quality targets are met,
- Optimise network performance,
- Reduce compliance risk
- Reduce the risk of climate change effects on water supply.

The main recommendations of the master plan are:

- Investigate and add a new water source to supplement existing water sources to increase resilience and reliability of the supply,
- Implement the pipe upgrade programme identified in the master plan to meet future demand and ensure the required levels of service are met,
- Increase the storage capacity as suggested in the master plan,
- Implement the water conservation strategy and leak detection programme

The water master plan has identified the time frames to implement these recommendations.

3.6 Feasibility of Supply of Water to PPC 58 Area

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 and my comments are discussed below.

3.6.1 Water Demand

The IR provides estimated design flows for the proposed development as follows:

- Average daily demand – 1.65 l/s
- Peak daily demand – 8.26 l/s

These figures are based on population equivalent of 45 people per hectare for industrial zone demand calculation.

In the current situation, this demand can have some adverse effects on Morrinsville supply during dry periods. At the initial meetings with the developer, MPDC has advised the developer that the maximum amount that can be supplied from the MPDC water should be limited to 10 m^3 per day per lot. Generally, this limitation would not affect negatively on dry industries.

There is a plan to introduce universal water metering in the urban supplies in the district within the next 5 years. If universal water metering is introduced in the future, MPDC can reassess the supply limit for the industrial lots in PPC 58 area, as the town demand is expected to be reduced due to reduction of water wastage from the users who are not currently on water meters.

3.6.2 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 and flow and needs to be confirmed through the detailed design. Proposed connections to the MPDC supply are as follows:

- Two connections on eastern side of the land by extending the existing 150mm water mains on either side of the internal road of Avenue Road business park,
- One connection to 150mm along SH26 on the southern side of the land.

These are appropriate locations for the connections to the proposed development and ensure a better circulation of water and increased resilience for the internal supply of the PPC 58 area.

Connections to the lots should be in accordance with (Regional Infrastructure Technical Standards) RITS requirements and specifications.

3.6.3 Firefighting requirements

It is likely that most buildings within the PPC 58 area will fall under fire hazard category of FHC3 and require fire flow of FW3 or higher according to fire code of practice.

PPC 58 area can be provided with FW2 fire flow requirements from MPDC water supply. MPDC also can supply FW3 fire flow requirements in some parts of the low lying areas of the development, but would not be able to supply FW3 fire flow in elevated areas of the development.

Providing firefighting flow in accordance with New Zealand fire code of practice SNS PAS 4509:2008 is a compulsory requirement. Therefore, for the lots within the development where appropriate fire flow is not available from MPDC system, the developer needs to propose and agree with MPDC a suitable option/options for meeting firefighting requirements of the fire code of practice. This can be done as part of the resource consent approval process.

3.6.4 Water Efficiency

Water efficiency can be achieved by implementing following measures:

- Water meters installed in all connections (this is the current MPDC policy for industrial connections),
- Water efficient fixtures to a 3 star standard under the Water Efficiency Labelling Scheme in all buildings,
- Installation of rain water tanks for using water for non-potable water requirements (IR also proposes this measure).

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

4. Wastewater

4.1 General

At present, there are no public wastewater infrastructure installed within the PPC 58 area. However, the proposed development is very close to the existing public wastewater infrastructure and there are a couple of options to connect. These options are discussed in below section 3.3.

Wastewater from Morrinsville is discharged into Piako River after treatment at the treatment plant situated at Roache Road.

A wastewater hydraulic model has been constructed for Morrinsville, which can be used to understand current network capacity and future capacity constraints due to the growth.

A wastewater treatment plant capacity assessment has been completed for Morrinsville in 2022. At present, MPDC is preparing a wastewater masterplan for Morrinsville and Matamata Townships. The master plan will be completed in mid-2024.

4.2 Wastewater Discharge Consent and capacity of the existing MPDC Wastewater system

4.2.1 Wastewater Treatment

The permit to discharge treated wastewater from Morrinsville into the Piako River will expire in 2024.

The current wastewater treatment plant does not have capacity to treat the wastewater from future growth areas to the required standards without upgrades.

MPDC is in the process of preparing an application to renew the existing consent. The application to replace the existing consent will take into account future growth and requirements.

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.

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).

The report made some recommendations to carry out upgrades to the existing treatment plants and MPDC has allocated budget in the long term plan to carry out upgrades to the treatment plants.

4.2.2 Wastewater Reticulation

The existing MPDC reticulation has sufficient capacity for dry weather flow for current situation.

At present, there are 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.

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. This new infrastructure will also address some of the overflow issues in the network. This project is now nearly complete and new assets will be commissioned soon.

A project is planned to upgrade the Allen Street pump station which pumps all wastewater from Morrinsville into the treatment plant. The current capacity of this pump station is sufficient for dry

weather flows. The objectives of this upgrade are to allow for future growth in the township and reduce wet weather overflows. The upgrade requirement of this pump station will be confirmed through the wastewater master plan.

4.3 Feasibility of Providing Wastewater Services to PPC 58 Area

According to IR, the design flow of wastewater from the proposed area are as follows:

- Average Daily Flow – 137.3 m^3 per day
- Peak Daily Flow – 3.9 l/s
- Peak wet weather flow – 6.2 l/s

These flows have been calculated in accordance with RITS based on the area of the development.

The IR proposes a gravity wastewater pipe system, a new pump station at a low point within the development area and a pumping main from the pump station to convey wastewater from the development to the public wastewater system.

Two possible connection points to the public wastewater system have been identified in the IR. They are as follows:

Option1 – Connection into newly built 150mm diameter gravity wastewater pipes of the Avenue Business Park Development which conveys wastewater to an existing wastewater pump station at Avenue Road.

Option 2 – Connection into the 200mm diameter gravity wastewater main located at the intersection of Avenue Road North and Thames Street.

Conceptually, both of these options are feasible subject to specific engineering assessment and design.

With both options, an assessment of downstream capacity of the wastewater network is required. With option 1, it is likely that the pump station at Avenue Road North and the pumping main need to be upgraded to accommodate new flow from the PPC 58 area.

Option 2 involves installation of a pumping main along SH 26 which is not desirable from MPDC's perspective as maintenance of assets within the State Highway corridors is difficult due to traffic management requirements and safety reasons.

Considering both options, MPDC's preferred option is option 1. The main reason for this is to avoid having public wastewater assets within the SH corridor.

The new pump station is proposed to be located at the southern side of the development and close to the proposed Stormwater treatment system. This location is suitable from conveying of gravity wastewater flows into the pump station point of view. However, pump station site is right next to a critical Stormwater facility and risk of contamination of Stormwater in case wastewater overflows due to a pump station failure or any other reason is high. This risk can be mitigated with a proper design of the pump station and surrounding Stormwater assets.

The wastewater quality from industrial sites can be significantly varied and can have adverse impacts on wastewater system and receiving environment. MPDC has wastewater Bylaw to manage this risk.

Wastewater from the PPC 58 area can be connected to the existing public wastewater system subject to the following upgrades:

- Proposed planned upgrades to wastewater treatment plant,
- Upgrading of existing wastewater pump station at Avenue Road and downstream pipes as necessary. These upgrade requirements need to be confirmed following a capacity assessment of the pump station and pipes using MPDC's calibrated hydraulic model. These can be done at the design stage.

5. Stormwater

5.1 General

The subject land is situated within the Morrinsville Stream catchment. At present, there is no public Stormwater system in operation in the PPC 58 area. Stormwater in the PPC 58 land is conveyed through some farm drains and ultimately discharged into Morrinsville Stream and Piako River.

Since proposed plan change is for a business park, the potential for Stormwater contamination is high. Therefore, a proper catchment management plan need to be prepared taking into account all the risks.

5.2 Stormwater Consent and Capacity of the Stormwater System

The resource consent to discharge Stormwater from Morrinsville urban catchment is expiring in June 2024. MPDC is currently preparing an application to the Regional Council to renew this consent with a comprehensive discharge consent.

Two of the conditions in the current consent in relation to Stormwater system diversion or discharge activities are:

a) *The new diversion or discharge is consistent with the conditions of the existing consent,*

b) *The new diversion or discharge does not increase peak discharge rates to, or flow volumes in receiving waters above those that would occur at the time of application for the existing consent, unless it is demonstrated that there shall be no additional adverse effects on the environment or downstream properties as a result of such increase.*

There are other conditions in the current consent to protect the receiving environment and downstream properties. All new developments must ensure that these conditions are not breached as a result of activities in the new developments.

At present, MPDC has a Stormwater quality monitoring programme. More work has been done in the recent past to understand the contamination risks and update the existing Stormwater quality monitoring programme accordingly. The new monitoring programme will be implemented in 2024 and this will enable the ability of MPDC to detect contamination sources quickly and take appropriate actions to mitigate risks.

5.3 Assessment of Impact of Proposed Development in PPC 58 Area on Overall Stormwater System

The IR proposes to design the Stormwater system within the development in accordance with RITS guidelines and Waikato Stormwater Management Guidelines (WSMG). RITS and WSMG ensures that new Stormwater systems meet the most requirements of the Regional Council. All Stormwater designs from new developers are reviewed by either MPDC staff or MPDC's nominated consultants to ensure the Stormwater designs meet the requirements of Stormwater discharge consent conditions and other Regional Council requirements.

The IR has identified the following objectives and design criteria for the development within the PPC 58 area:

- Two stage water quality treatment
    - Primary treatment at the source
    - Secondary treatment at a central location. The IR has identified a site on the southern side of PPC 58 area for this purpose
- Attenuation of the 2 year, 10 year and 100 year ARI (including the effects of climate change) to pre development peak flows
- Design of primary Stormwater systems to convey 10 year ARI rainfall (including the effects of climate change) peak flows
- Design of secondary Stormwater systems to convey 100 year ARI rainfall (including the effects of climate change) peak flows

- Discharge of treated Stormwater to existing Avenue Business park development conveyance swale.

The above mentioned stormwater system and design criteria are in line with MPDC's current stormwater management policy.

IR provides high level concepts for achieving stormwater outcomes. A comprehensive stormwater modelling exercise using appropriate software needs to be carried out prior to commencement of detailed design to confirm required outcomes can be achieved.

There is a high risk of contaminants entering the Stormwater system due to the activities within the subject land. A comprehensive Stormwater management plan need to be prepared and should be approved by MPDC.

At present MPDC is constructing a 2D hydraulic model for Morrinsville catchment and this work will be completed soon. This model will be available for the developers to help design Stormwater systems for new developments taking into account whole of catchment approach.

There is a minimum risk of increased flooding of the properties downstream due to the proposed development, as the proposed design criteria is based on post development rate of runoff will not exceed the predevelopment rate of runoff.

6. Contributions

Relevant Development Contributions as per Councils Development Contributions Policy will apply at the time of consent. This will cover the Water Treatment plant in Morrinsville and the Wastewater treatment plant and reticulation upgrades.

Costs related to specific upgrades that required to service the PPC 58 area, such as upgrading of wastewater pump station at Avenue Road and associated pipe upgrades will need to be fully funded by the developer. This can be done through the resource consent process by including a consent condition requiring developer to fund these upgrade works.

The general growth related reticulation upgrades will be identified from the water and wastewater masterplans.

7. Conclusions

The PPC 58 area is not currently serviced by MPDC's 3 waters services, but this area can be physically connected to MPDC's 3 waters infrastructure easily due to proximity of the subject land to existing infrastructure. The negative impact on existing 3 waters services by servicing the subject land can be

mitigated by implementing measures described in this report and proper design of internal infrastructure. These are summarised below.

6.1 Water

At present, there are some supply restrictions in Morrinsville during dry periods, but the introduction of new Lockerbie water treatment plant at Lockerbie site in 2024, this constrain will be overcome. Supplying water to development in PPC 58 area is feasible subject to:

- Supply of water to each lot in the PPC 58 area is limited to 10 m^3 per day per lot to avoid future water supply constraints in Morrinsville,
- Meeting of firefighting requirements of the fire code of practice for all lots. For the lots within the development where appropriate fire flow is not available from MPDC system, a suitable alternative option for meeting firefighting standards need to be identified and implemented. This has to be agreed with MPDC, as part of the resource consent approval process,
- Implementing water conservation measures such as
    - All connections are metered (this is the current MPDC policy for industrial connections),
    - Installation of water efficient fixtures to at least 3 star standard under the Water Efficiency Labelling Scheme in all buildings,
    - Installation of rain water tanks for using of water for non-potable water requirements
- Designing of internal water network to comply with RITS.

7.2 Wastewater

The current wastewater infrastructure is sufficient to convey wastewater to the treatment plant during dry weather conditions. I&I is an issue during heavy rain events and continuous work is underway to reduce this issue. Providing wastewater services to PPC 58 area is feasible subject to:

- Upgrading of wastewater treatment plant as planned,
- Upgrading of existing wastewater pump station at Avenue Road and downstream pipes as necessary. These upgrade requirements needs to be confirmed following a capacity assessment of the pump station and pipes using MPDC's calibrated hydraulic model,
- Controlling of wastewater quality discharged from the industries to comply with trade waste Bylaw.

7.3 Stormwater

The design principles of IR is acceptable. The discharge of Stormwater from the PPC 58 area to public Stormwater system is acceptable subject to:

- Design of Stormwater system is complying with RITS,
- Preparing a Stormwater management plan for the subject catchment to the satisfaction of MPDC and complying with Waikato Regional Council requirements.