PPC3 3 Waters Updated Growth Assessment

29 October 2026

To	Rangitikei District Council	**Contact no.**	+64 06 355 7181
Copy to	Tiffany Gower	**Email**	reiko.baugham@ghd.com
From	Reiko Baugham	**Project no.**	12626710
Project name	RDC 3 Waters Growth Strategy		
Subject	Updated Growth Assessment		

1. Introduction

Rangitikei District Council (RDC) notified Proposed Plan Change 3 – Urban Growth (PPC3) on 12 March 2026 based on spatial strategies developed for three of their townships: Bulls, Marton and Taihape. GHD Limited (GHD) were commissioned by RDC to complete a three waters infrastructure assessment considering the various planned growth areas (including the Mangaweka and Hunterville urban townships) to identify infrastructure upgrades required to service the proposed growth. Details of the assessment were provided in the report, *RDC 3 Waters Growth Strategy – Growth Assessment* (Rev 0, GHD, 17 February 2026)[1].

Submissions on PPC3 were received in May and June of 2026. In response to those submissions, RDC completed their section 42A report (5 October 2026) which included a reduction in yield in some growth areas. The change in yield from the original February 2026 assessment is presented in Table 1 below.

Table 1 Dwelling yield changes

Growth Area	2025 Dwelling Yield	2026 Dwelling Yield (% of 2025 Yield[2])
MAR01 (part)	591	84 (14%)
MAR02	362	306 (85%)
MAR04[3] (part)	19	20 (105%)
MAR07 (part)	291	138 (47%)
BUL02 (part)	429	118 (27%)
BUL03 (part)	22	46 (209%)

RDC have now engaged GHD to assess the impact of the change in yield on the infrastructure upgrades identified in the original assessment.

[1] Other assessments carried out by GHD to inform the growth strategy include *RDC 3 Waters Growth Strategy – Stage 1 Status Quo Assessment: Workshop 1 and 2 Summary* meeting minutes and presentations (GHD, 10 May 2024), *RDC 3 Waters Growth Strategy – Stage 2: Bulls Water Treatment Plant Capacity Assessment* (Rev P01, GHD, 2 October 2024), *RDC 3 Waters Growth Strategy - Marton, Bulls and Taihape WWTP Assessment* (Rev 0, 17 February 2026)

[2] The final report for the *RDC 3 Waters Growth Strategy – Growth Assessment* did not materially change from the draft report (Rev A) issued 26 May 2025. For the purposes of this report, the original yield adopted for the growth assessment is therefore referred to as the '2025 yield' since the original assessment was carried out in 2024-2025.

[3] In the original assessment MAR04 was only modelled in a combined growth scenario with the MAR01, MAR02, MAR03 (partial) and MAR07 growth areas.

1.1 Purpose of this report

The updated yield has reduced in most of the notified growth areas, as indicated in Table 1 above. However, the number has more than doubled for one area in Bulls. Significant changes to the resultant water demand and wastewater loading from those growth areas will have an impact on the existing network and potentially any upgrades that had been identified under the previous assessment. The purpose of this report is to document the findings of a high-level assessment of the change in yield and the potential impact on the upgrades recommended in the original study.

2. Scope and limitations

2.1 Scope of work

The scope of work is to:

– provide a high-level commentary on the implications of the updated yield on the water and wastewater infrastructure yields in Marton and Bulls; and
– carry out hydraulic modelling of the updated yield for the Bulls township.

This report is intended to be an addendum to the February 2026 growth assessment completed by GHD. The methodology and assumptions from the original assessment have been carried through. As such, this report should be read in conjunction with the original assessment.

2.2 Limitations

This report: has been prepared by GHD for Rangitikei District Council and may only be used and relied on by Rangitikei District Council for the purpose agreed between GHD and Rangitikei District Council as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Rangitikei District Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 2.3 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Rangitikei District Council and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

GHD has not been involved in the preparation of PPC3 and has had no contribution to, or review of the section 32, section 42A or other expert evidence, other than in the original 3 Waters Growth Strategy report by GHD. GHD shall not be liable to any person for any error in, omission from, or false or misleading statement in, any other part of the PPC3 documentation.

This report is subject to the assumptions and limitations noted in the initial assessment and documented in RDC 3 Waters Growth Strategy – Growth Assessment (Rev 0, GHD, 17 February 2026).

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

2.3 Assumptions

The following assumptions / exclusions apply:

– The report is intended to be an addendum to the original work carried out by GHD; it is not a substitute.

– As with the previous study, only upgrades to the existing network were considered – we have not allowed for any optioneering.
– With the exception of Bulls growth areas BUL02 and BUL03, a qualitative analysis has been carried out for the growth areas in Marton that only references the previous upgrades recommended. We have not remodelled or determined the upgrades for the updated yield in the Marton growth areas.
– With the exception of the yield in the growth areas BUL02 and BUL03 in Bulls, we have not made any updates to the model used in the previous assessment. We have assumed that the growth models used in the previous assessment are suitable for use. The models used in this assessment have not been calibrated or validated.
– Assumptions from the original work carried out by GHD are assumed to be still applicable.
– The current study focusses on achieving a level of system performance that is comparable to existing levels of service. Reservoir performance has not been assessed in this study.

3. Growth projections

RDC provided revised greenfield growth projections for Marton and Bulls. Based on a population density of 2.7 people per dwelling, the projected population in the Marton and Bulls growth areas has been amended as shown in Table 2.

Table 2 Updated greenfield growth projections

Town	Growth Area	Original Assessment		Updated Assessment	
		Dwelling Yield	Population	Dwelling Yield	Population
Marton	MAR01 (partial)	591	1596	84	227
	MAR02	362	977	306	826
	MAR04 (partial)	19	52	20	54
	MAR07 (partial)	291	786	138	372
Bulls	BUL02 (partial)	429	1157	118	318
	BUL03 (partial)	22	58	46	124

4. Water and wastewater network performance and upgrades

4.1 Marton

The existing network performance in Marton for water and wastewater is summarised in Table 3. The network performance under greenfield growth and implications to the previously identified upgrades is summarised in Table 4.

4.1.1 Existing network assessment

The system performance of the existing network has not changed from the previous assessment. The following has been extracted from the original assessment.

Table 3 Marton existing network assessment

Water Supply Network	Wastewater Network
Refer to Attachment 1[4] Figure 1.1.1 for the system performance results of the existing network and Attachment	Refer to Attachment 1[3] Figure 1.2.1 and Figure 1.2.2 for the dry weather and wet weather flow results.

[4] Although the figures show the growth areas, this is for spatial reference only. The modelled results presented are for the existing network. Inclusion of the growth area visually is to indicate, at a high level, where the growth areas would connect to the network and the level of service currently being provided.

Water Supply Network	Wastewater Network
1 Figure 1.1.2 for the fire flow assessment results of the existing network. – The topography of Marton decreases away from the Marton Reservoir to the north. It is lowest at the southern end of the network which results in higher pressures. – Pressures throughout the Marton network are sufficiently high (between 25 m and 60 m) and even higher in the south. – Headloss is not an issue as network pressures in Marton remain sufficiently high. The highest headlosses are predicted along the Marton trunk main feeding the township and in local areas between Cuba Street and Beaven Street. – Hydrants within the network can support FW2 fire flow except hydrants along Calico Line which are unable to provide sufficient flow at 10 m pressure to meet the firefighting code of practice. Other hydrants not meeting the firefighting code of practice are situated at the ends of Milne Street, Tennent Court, Melody Place, Goldings Line and Princess Street.	– Significant wet weather pipe surcharge is predicted in many parts of the network. – Wet weather manhole spilling is predicted near the Wellington Road and Hawkestone Road intersection, and on Hammond Street. – The constructed overflow discharging to the Tutaenui Stream is predicted to spill approximately 86 m^3 in the wet weather flow scenario. – Network upgrades are required before growth should be considered.

4.1.2 Greenfield growth assessment

When compared to the original assessment, the projected yields are either negligibly different to or lesser than the original figures provided by RDC. Results showing the existing network system performance for the water supply and wastewater networks relative to the location of greenfield growth areas are presented in Attachment 1, Figures 1.1.1 and 1.1.2 for water supply and 1.2.1 and 1.2.2 for wastewater. It is important to note that these results do not include demand / flow from the growth areas – they are meant to indicate, at a high level, where the growth areas would connect to the network and the level of service currently being provided.

Given the existing network's system performance, the revised yields are not expected to materially change the proposed upgrades from the original assessment. Commentary for the updated growth areas as it relates to the original study is provided in the table below.

Table 4 Marton greenfield growth assessment and updated yield implications

Growth Area	Percentage of 2025 Yield	Water Supply Network	Wastewater Network
MAR01 (partial)	14%	– Existing low pressure along the trunk main indicates that any growth supplied at this end of the network will result in pressure drops. – Similarly, headloss increases along the Marton trunk main are still expected with the updated yield, however are unlikely to be as great given the reduced yield projected.	– In dry weather, the existing network may have sufficient capacity to accommodate the reduced yield; however, network surcharging in wet weather is still anticipated to increase even with the reduced yield. – The volume being spilled (and potential number of manholes) may be significantly reduced due to the reduced yield. – Given the network is spilling along the trunk at the downstream end, any additional flow may require upgrades.
MAR02	85%	– Existing low pressure along the trunk main indicates that any growth supplied at this end of the network will result in pressure drops. – Pressure drops at the connection point are still anticipated, including potentially negative pressures at peak time. – Headlosses are expected to still increase along the trunk main, Bond	– Because the updated yield is 85% of the previously assessed yield, pipe surcharge is likely to still increase in dry weather and wet weather. – Similarly, because the updated yield is 85% of the previously assessed yield, additional manhole spilling in the previous assessment may still occur

Growth Area	Percentage of 2025 Yield	Water Supply Network	Wastewater Network
		Street and Milne Street given the updated yield is 85% of the previous assessment.	given the existing surcharging predicted in the model.
MAR04 (partial)	105%	– MAR04 had been modelled as a combined growth assessment, and it is therefore difficult to know what system performance impact can be solely attributed to this area. – Only 1 dwelling has been added to the updated yield, and therefore only slight decreases in the system performance in the previous assessment are anticipated. – Existing low pressure along the trunk main indicates that any growth supplied at this end of the network will result in pressure drops. However, the magnitude could be minor. – Pressure will drop along Calico Line, however the impact could be relatively minor given that the yield is small and the other growth areas (with much bigger yield but further away) still had an impact but within an acceptable range. – The existing network along Calico Line is unable to achieve acceptable fire flow with sufficient residual pressure, which is expected to be further exacerbated by the development.	– Only 1 dwelling has been added to the updated yield, and therefore only minimal changes are anticipated from the system performance assessment. – Although MAR04 had been modelled as a combined growth assessment, a minor increase in pipe surcharge can be expected in wet weather. – Manhole spilling increase in wet weather is not anticipated with the addition of 1 dwelling. – Given the network is spilling along the trunk at the downstream end, any additional flow may require upgrades.
MAR07 (partial)	47%	– Existing low pressure along the trunk main indicates that any growth supplied at this end of the network will result in pressure drops. – Pressure drops at the connection point are still anticipated, including negative pressures at peak time. – Headlosses are expected to still increase along the trunk main, Bond Street and Milne Street.	– Increased pipe surcharge is still expected in dry weather and wet weather despite the reduced yield. – Given the existing network is spilling along the trunk at the downstream end, any additional flow may require upgrades, even with the reduced yield.

4.1.3 Upgrades

Because modelling has not been carried out for the updated yields, a qualitative assessment has been carried out instead to identify how the required upgrades from the initial assessment may be impacted. The implications of the updated yields on the previously identified upgrades are presented in Table 5 below.

Table 5 Updated yield implications for the proposed upgrades for the Marton growth areas

Growth Area	Percentage of 2025 Yield	Water Supply Network*	Wastewater Network
Status Quo	N/A	Not assessed (not part of water supply scope)	– Original 2025 yield • Upgrade 540 m length of pipeline from 300 mm diameter to 450 mm diameter on Wellington Road near Hawkestone Road. • Upgrade 710 m length of pipeline from 150 mm diameter to 225 mm diameter on Hammond Street.

Growth Area	Percentage of 2025 Yield	Water Supply Network*	Wastewater Network
			– Updated yield • This is still required for all growth areas, regardless of updated yield.
MAR01 (partial)	14%	– Original 2025 yield • Duplicate the Marton trunk main with 2.7 km of 450 mm diameter and 300 m of 400 mm diameter pipe. – Updated yield • Duplication of the Marton trunk main likely still required, but to a lesser extent.	– Original 2025 yield • Upgrade 1.31 km length of pipeline from 150 mm to 225 mm on Tutaenui Road. • Upgrade 1 km length of pipeline from 175 mm to 225 mm diameter on Hair Street to Lower Beaven Street. – Updated yield • Upgrade of main on Tutaenui Road likely still required, but for a shorter extent. • Upgrade of Hair Street to Lower Beaven Street potentially still required, but to a lesser extent.
MAR02	85%	– Original 2025 yield • Duplicate the Marton trunk main with 1.5 km of 450 mm diameter and 600 m of 400 mm diameter pipe. • Upgrade 1 km length of pipes between 50 mm and 150 mm to 355 mm on Bond / Milne Street. – Updated yield • Duplication of the Marton trunk main likely still required, but to a slightly lesser extent. • Upgrade of Bond / Milne Street water main likely still required.	– Original 2025 yield • Upgrade 790 m length of pipeline from 150 mm diameter to 225 mm diameter on Wanganui Road. – Updated yield • Upgrade of main on Wanganui Road likely still required, but to a slightly lesser extent.
MAR04[t] (partial)	105%	– Original 2025 yield • Duplicate the Marton trunk main, potentially less than 1.5 km of 450 mm diameter and 600 mm of 500 mm diameter pipe. – Updated yield • Duplication of the Marton trunk main likely still required.	– Original 2025 yield • None required – Updated yield • No change
MAR07 (partial)	47%	– Original 2025 yield • Duplicate the Marton trunk main with 1.5 km of 450 mm diameter and 600 m of 400 mm diameter. • Upgrade 1 km length of pipe between 50 mm and 150 mm to 355 mm on Bond / Milne Street. – Updated yield • Duplication of the Marton trunk main likely still required, but to a slightly lesser extent. • Upgrade of Bond / Milne Street water main likely still required.	– Original 2025 yield • None required – Updated yield • No change

* For the water supply network, two options were originally considered for upgrades. Duplication of the Marton trunk main from the Marton Reservoir to the Marton township was considered the preferred option over using the additional source at Calico Line as it improves resilience and continuity of service.

ł The upgrades for MAR04 in isolation were not determined under the original study, and therefore likely upgrades attributable to the MAR04 growth area only have been assumed.

4.2 Bulls

The existing network performance in Bulls for water and wastewater is summarised in Table 6. The network performance under greenfield growth and implications to the previously identified upgrades is summarised in Table 7.

4.2.1 Existing network assessment

The system performance of the existing network has not changed from the previous assessment.

Table 6 Bulls existing network assessment

Water Supply Network	Wastewater Network
Refer to Attachment 2[3] Figure 1.1.1 for the system performance results of the existing network and Attachment 2 Figure 1.1.2 for the fire flow assessment results of the existing network. – The topography of Bulls is lowest in the southern end of the township where the Taumaihi Street booster pump station will be. – Due to increasing topography towards the north, pressures are expectedly decreasing away from the Bulls booster pump station. – Model results of the existing network suggest pressure deficiencies (< 25 m) north of High Street and towards the east along High Street and Watson Street. – Headloss is not an issue within the existing network as high headloss is only predicted by the model in areas where pressures are sufficient (> 25 m). The network along Brandon Hall Road experiences the highest headloss, with pressures at the extremity dropping below 25 m (22.96 m RL). – Hydrants within the Bulls network can generally support FW2 fire flow, particularly in the central part of the network. Hydrants at the extremity of the network along Watson Street, George Street and the west of High Street towards Brandon Hall Road are unable to provide sufficient flow at 10 m residual pressure to meet the firefighting code of practice. – It is understood that if a large central town fire occurs, the fire tank near the visitor information at 4 Criterion Street can assist.	Refer to Attachment 2[3] Figure 1.2.1 and Figure 1.2.2 for the dry weather and wet weather flow results. – There is high inflow/infiltration on the western branch of the network based on the 2019/2020 flow monitoring. – Wet weather network surcharging is predicted in the Gorton Street/Hammond Street network and the downstream network to the wastewater treatment plant. – There is no predicted manhole spilling in the dry weather or wet weather flow scenarios.

4.2.2 Greenfield growth assessment

Of the two proposed growth areas in Bulls, BUL02 has reduced in yield by approximately 75% while BUL03 has doubled in yield. Results showing the existing network system performance for the water supply and wastewater networks relative to the location of greenfield growth areas are presented Attachment 1, Figures 1.1.1 and 1.1.2 for water supply and 1.2.1 and 1.2.2 for wastewater. It is important to note that these results do not include demand / flow from the growth areas – they are meant to indicate, at a high level, where the growth areas would connect to the network and the level of service currently being provided.

Commentary for the updated growth areas as it relates to the original study is provided in the table below.

Table 7 Bulls greenfield growth assessment and updated yield implications

Growth Area	Percentage of 2025 Yield	Water Supply Network	Wastewater Network
BUL02 (partial)	27%	– Existing pressures at the top end are already low. Any additional demand will likely make these worse, and therefore upgrades would still be needed. – The growth at BUL02 had a significant impact on the network based on the 2025 growth areas. With the yield now reduced by nearly 75%, the extent of upgrades required could be significantly less.	– The 2025 yield indicated manhole spilling. With 27% of the original yield projected, upgrades may not be required.
BUL03 (partial)	209%	– The increase may require additional upgrades given the existing pressure issues.	– Surcharging was predicted with the existing network, however the original yield had not predicted any network spilling with the added growth. With the updated yield now double, there could be upgrades required.

Given the potential implications of the updated yield noted in the table above, further modelling was carried out for BUL03 to assess the system performance and upgrades required to accommodate the updated yield, as well as a combined scenario of both BUL02 and BUL03 together. The network performance with the updated growth areas is summarised in Table 8.

Table 8 Bulls update greenfield growth assessment

Growth Area	Water Supply Network	Wastewater Network
BUL03 (partial)	Refer to Attachment 2 Figure 2.1.1 for the system performance results under the BUL03 growth scenario. – The addition of BUL03 has a negligible impact on system performance of the network and the network's firefighting capacity.	Refer to Attachment 2 Figure 2.2.1 and Figure 2.2.2 for the dry weather and wet weather flow results under the BUL03 growth scenario. – There is existing wet weather pipe surcharge in the western mains, specifically on Gorton Street/ Hammond Street area where BUL03 is proposed to be connected. – Additional flow from BUL03 causes pipe surcharge in dry weather at the point of connection. – There is no predicted manhole spilling in dry weather or wet weather.
BUL02+03 combined	Refer to Attachment 2 Figure 3.1.1 for the system performance results under the combined BUL02 and BUL03 growth scenario. – The addition of the BUL02 and BUL03 growth causes a minimum pressure drop of up to 5 metres along Watson Street and between 3 and 4 metres in the northern part of the Bulls network. – As a result of the growth, high headlosses can be observed in the Bulls network. Headlosses have increased in the central part of the network (between High Street and Taumaihi Street). Headloss (up to 4 m/km) on Watson Street cause low pressure issues downstream of the network, indicating that upgrades are required to support BUL02 growth. – The growth causes a decrease in network firefighting capacity. Three additional hydrants located on Fagan Street, the end of Trickers Road and Watson Street now fail FW2	Refer to Attachment 2 Figure 3.2.1 and Figure 3.2.2 for the dry weather and wet weather flow results under the combined BUL02 and BUL03 growth scenario. – BUL02 and BUL03 combined does not result in further pipe surcharge or additional manhole spilling in the downstream network in dry weather or wet weather.

Growth Area	Water Supply Network	Wastewater Network
	firefighting requirements. The growth exacerbates existing fire flow issues by 2.5 L/s on average.	

4.2.3 Upgrades

The proposed network upgrades to address issues in the water supply and wastewater networks are summarised in Table 9. Network performance maps with the proposed upgrades in place are provided in Attachment 2.

Table 9 Proposed upgrades for Bulls update greenfield growth assessment

Growth Area	Water Supply Network*	Wastewater Network
Status Quo	Not assessed (not part of water supply scope)	– No upgrades required.
BUL03 (partial)	Refer to Attachment 2 Figure 2.1.2 and Figure 2.1.3 for the system performance and fire flow results under the BUL03 growth with upgrades scenario. – Upgrade the following 15 metres of delivery main from the Bulls booster pump station to DN 355 (ID: 301.6 mm).	– No upgrades required.
BUL02+03 combined	Refer to Attachment 2 Figure 3.1.2 and Figure 3.1.3 for the system performance and fire flow results under the BUL02+03 growth with upgrades scenario. – Upgrade 550 metres of AC and steel mains (< 150 mm) from the Bulls booster pump station along Kittyhawk Row until High Street to DN355 (ID: 301.6 mm). – Upgrade 500 metres of DN150 AC mains from 1 High Street until 19 Watson Street to DN315 (ID: 267.6 mm). – Note that 170 mm of DN150 AC main between 147 High Street and 127 High Street is predicted to experience high headloss and can be upgraded to an internal diameter of 200 mm if RDC desires. This main has not been proposed to be upgraded as the headloss does not cause network pressures issues and velocities through this main remain below 1 m/s outside of the peak hour demand.	Refer to Attachment 2 Figure 3.2.3 for the wet weather flow results under the BUL02+03 growth with upgrades scenario. – Domain Road pump station capacity increase to 5 L/s (the existing pump rate to be confirmed by RDC).

* The current modelling assessment has focused solely on the previous study's proposed pipe upgrades. An alternative upgrade option of increasing the delivery head of the Bulls booster pump station to 93 metres was previously considered and was expected to provide a greater improvement in network system performance than the proposed pipe upgrades. It is therefore expected that an upgrade of the Bulls booster pump station will also be able to facilitate the proposed greenfield growth and improve network system performance beyond the existing network system performance.

5. Conclusions

The system performance and upgrades of the Marton and Bulls water supply and wastewater networks have been revisited with the updated yield projections following the February 2026 growth assessment.

– Marton
  - A high-level qualitative review was carried out to determine the implications of the reduced yield and the upgrades that were recommended in the original growth assessment.
  - Despite there being a general decrease in the yield being projected for the Marton growth areas, the current system performance and issues observed in the network have identified that upgrades will still be required (potentially to a lesser extent) for both water and wastewater infrastructure in Marton.

- Updated modelling will be required in the future to confirm the upgrades required.

– Bulls
  - A high-level qualitative review was carried out to determine the implications of the reduced yield and the upgrades that were recommended in the original growth assessment. The increase in yield in BUL03 indicated that there could be additional upgrades required to service the additional yield. Conversely, the decrease in yield in BUL02 and upgrades identified in the original study indicated that the new yield could require fewer upgrades. As such, modelling was carried out to determine the upgrades required for BUL03 and a combined scenario for BUL02 and BUL03.
  - BUL03 growth scenario
    – The doubling in yield of BUL03 results in increased pipe surcharge in the wastewater network, however it does not result in any additional network upgrades beyond what was previously proposed. The upgrade proposed to facilitate a doubled BUL03 yield is the original DN355 immediately of the Bulls booster pump station.
  - Combined BUL02 + BUL03 growth scenario
    – The combination of the latest BUL02 reduced yield and BUL03 increased yield results in fewer upgrades to the wastewater network. Specifically, the predicted wastewater spilling can be resolved by upgrading the Domain Road Pump Station capacity, noting that the existing capacity of the pump station still needs to be confirmed by RDC. Network upgrades are not required.
    – The combination of the latest BUL02 reduced yield and BUL03 increased yield means water supply network upgrades are only required along Kittyhawk Row to High Street and from 1 High Street to 19 Watson Street. Modelling of these upgrades shows that network performance with the BUL02 and BUL03 growth is similar to the existing network system performance.

Attachment 1

Marton Maps

Attachment 1 Figure List

Figure	Description
1.1.1	Marton Existing Water Supply System Performance – Peak Day Demand
1.1.2	Marton Existing Fire Flow (FW2) Assessment
1.2.1	Marton Existing Wastewater Network Performance – Dry Weather Flow
1.2.2	Marton Existing Wastewater Network Performance – Wet Weather Flow

Figure 1.1.1 Marton Existing Water Supply System Performance - Peak Day Demand

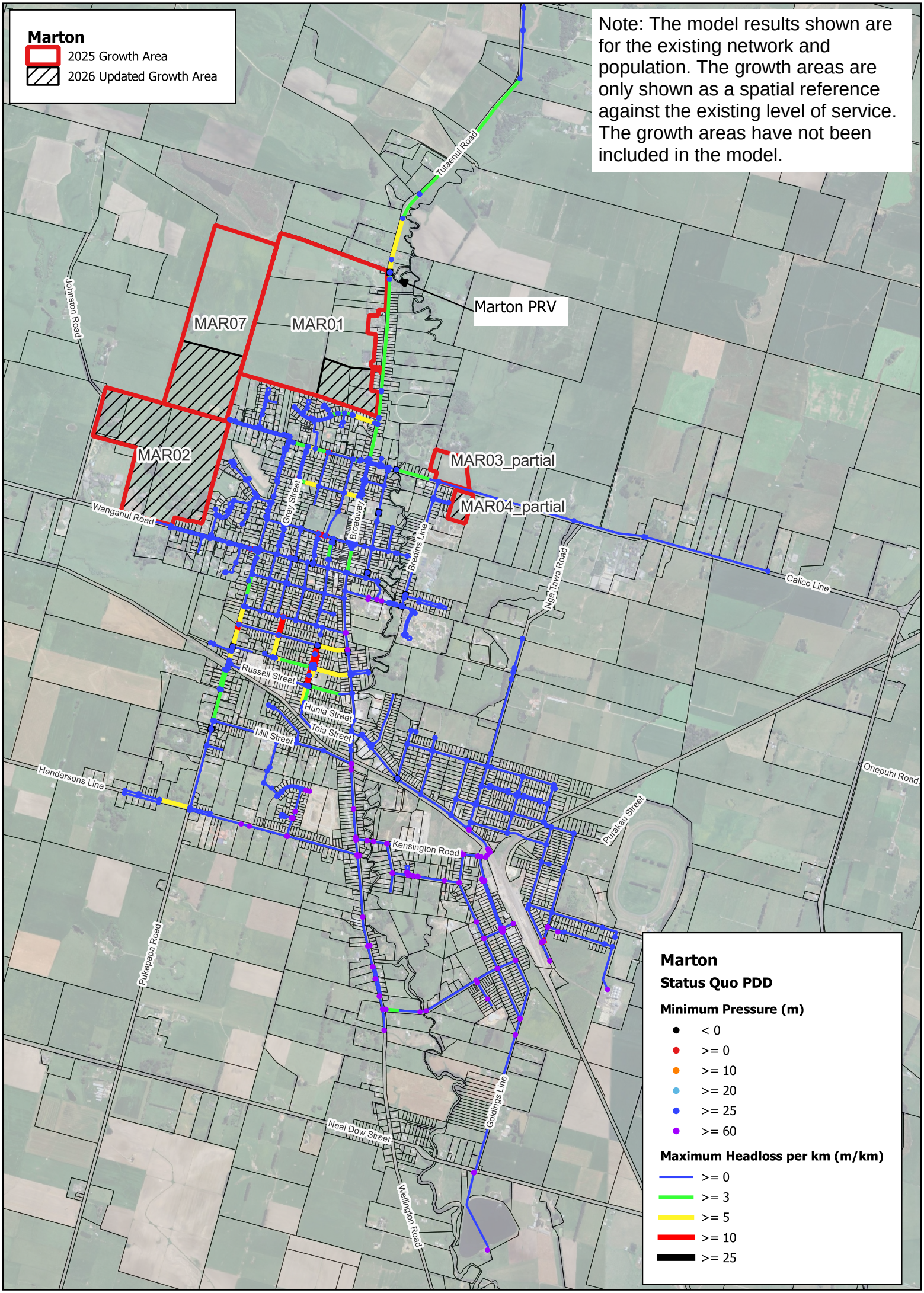


Figure 1.1.2 Marton Existing Fire Flow (FW2) Assessment

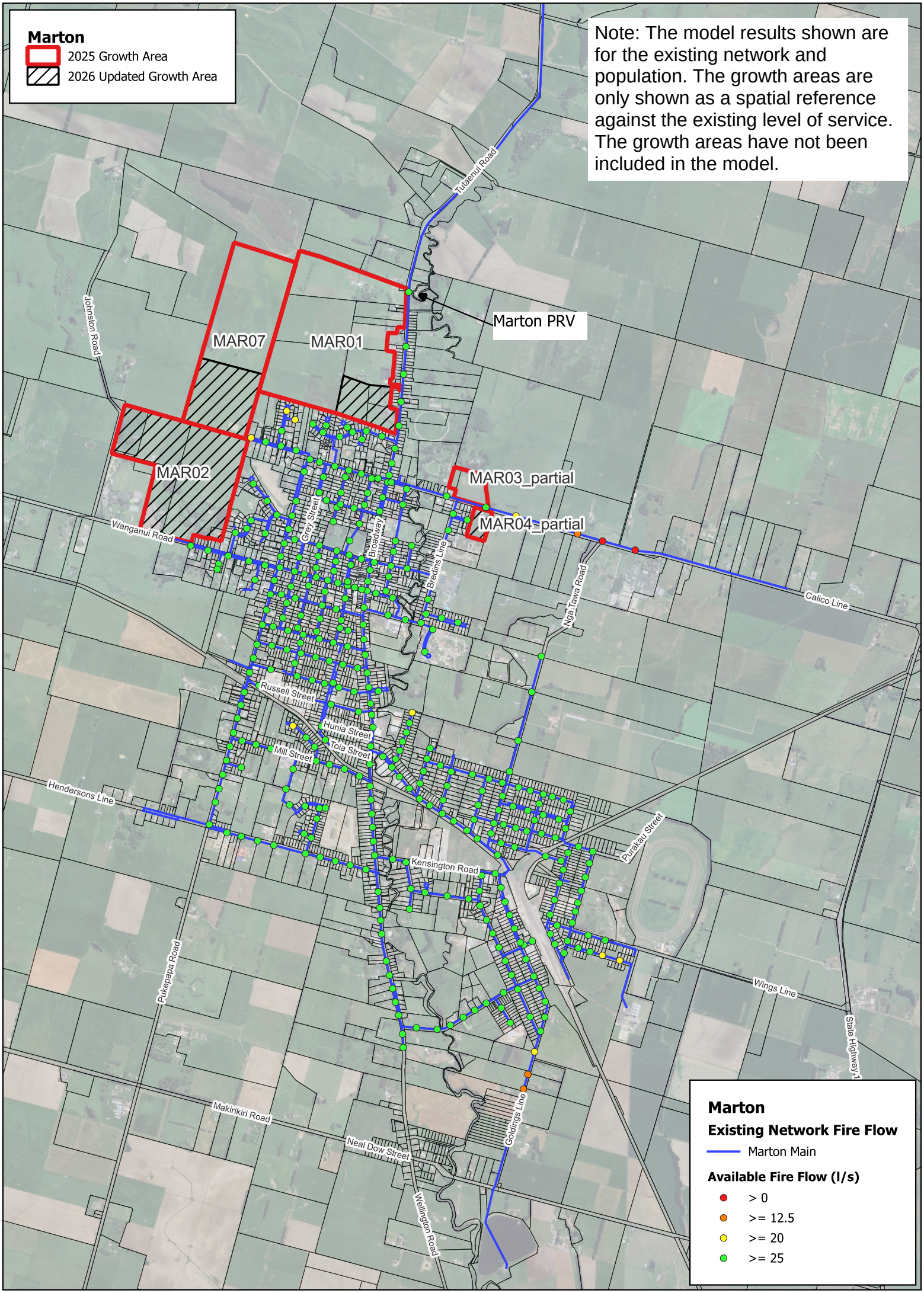


Figure 1.2.1 Marton Existing Wastewater Network Performance - Dry Weather Flow

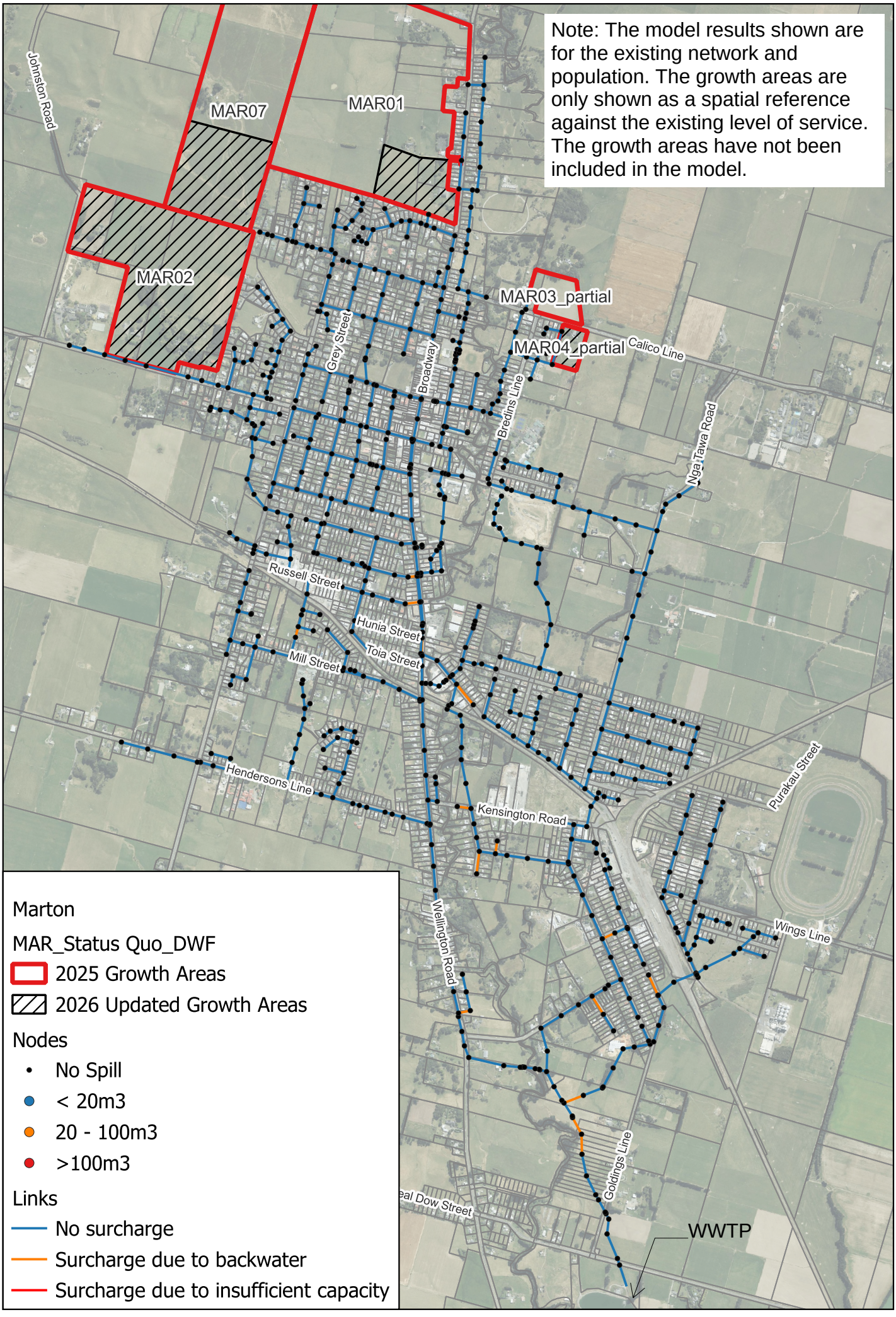
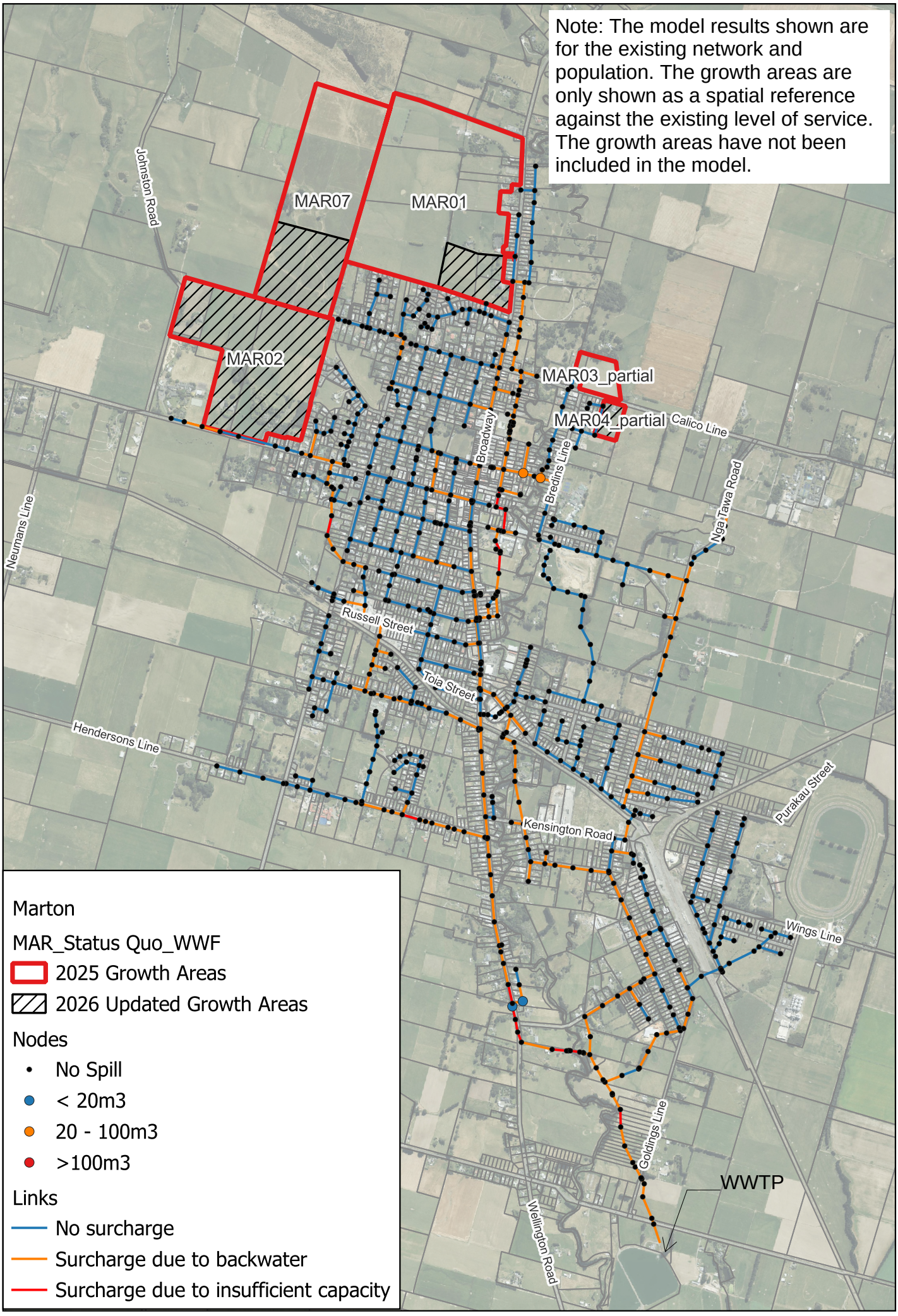


Figure 1.2.2 Marton Existing Wastewater Network Performance - Wet Weather Flow



Attachment 2

Bulls Maps

Attachment 2 Figure List

Figure	Description
1.1.1	Bulls Existing Water Supply System Performance – Peak Day Demand
1.1.2	Bulls Existing Fire Flow (FW2) Assessment
1.2.1	Bulls Existing Wastewater Network Performance – Dry Weather Flow
1.2.2	Bulls Existing Wastewater Network Performance – Wet Weather Flow
2.1.1	BUL03 Water Supply System Performance – Peak Day Demand
2.1.2	BUL03 Water Supply Option 2 System Performance with Proposed Upgrades
2.1.3	BUL03 Water Supply Option 2 Fire Flow (FW2) Assessment with Proposed Upgrades
2.2.1	BUL03 Wastewater Network Performance – Dry Weather Flow
2.2.2	BUL03 Wastewater Network Performance – Wet Weather Flow
3.1.1	BUL02 and BUL03 Water Supply System Performance – Peak Day Demand
3.1.2	BUL02 and BUL03 Water Supply Option 2 System Performance with Proposed Upgrades
3.1.3	BUL02 and BUL03 Water Supply Option 2 Fire Flow (FW2) Assessment with Proposed Upgrades
3.2.1	BUL02 and BUL03 Wastewater Network Performance – Dry Weather Flow
3.2.2	BUL02 and BUL03 Wastewater Network Performance – Wet Weather Flow
3.2.3	BUL02 and BUL03 Wastewater Network with Proposed Upgrades – Wet Weather Flow

Figure 1.1.1 Bulls Existing Water Supply System Performance - Peak Day Demand

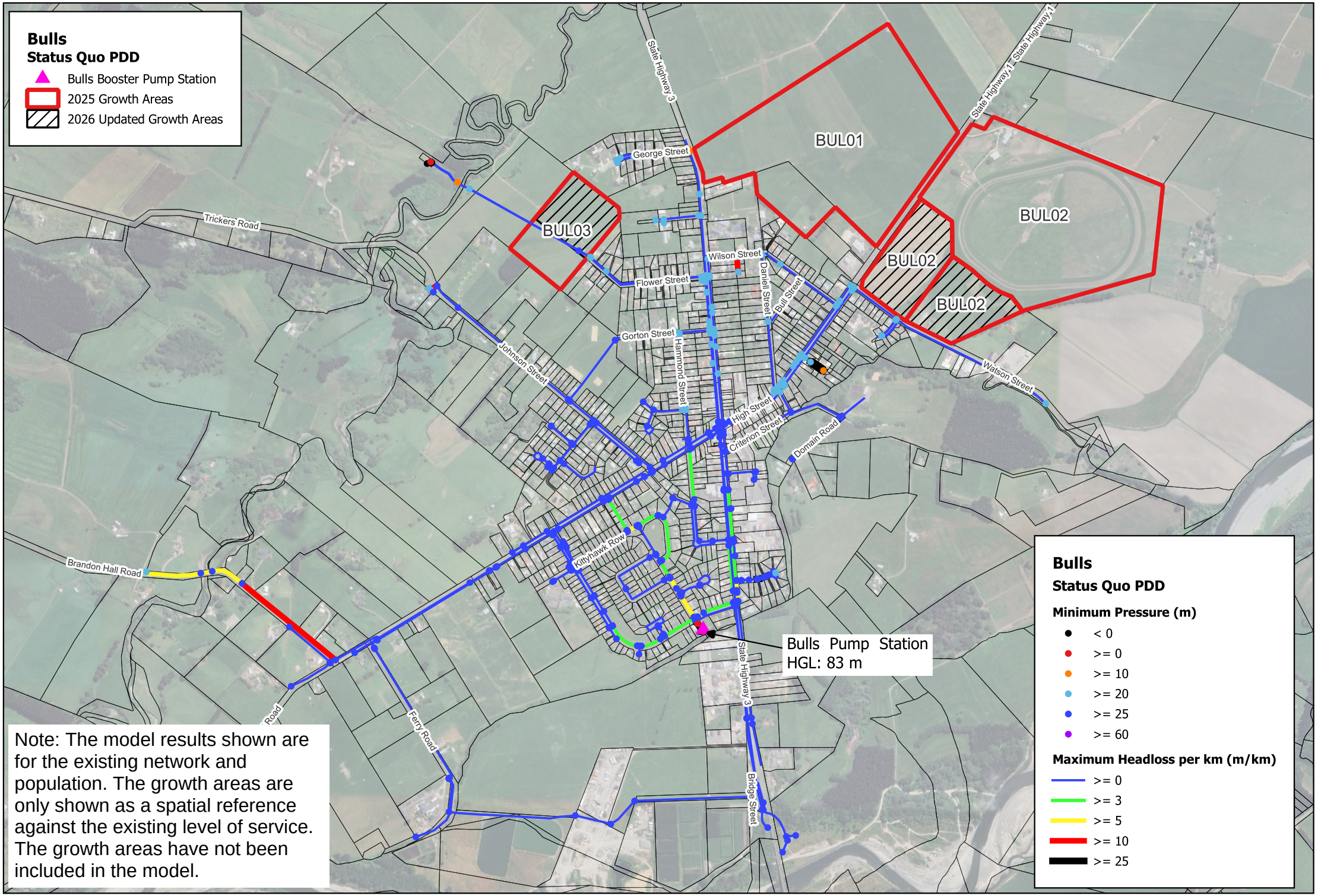


Figure 1.1.2 Bulls Existing Fire Flow (FW2) Assessment

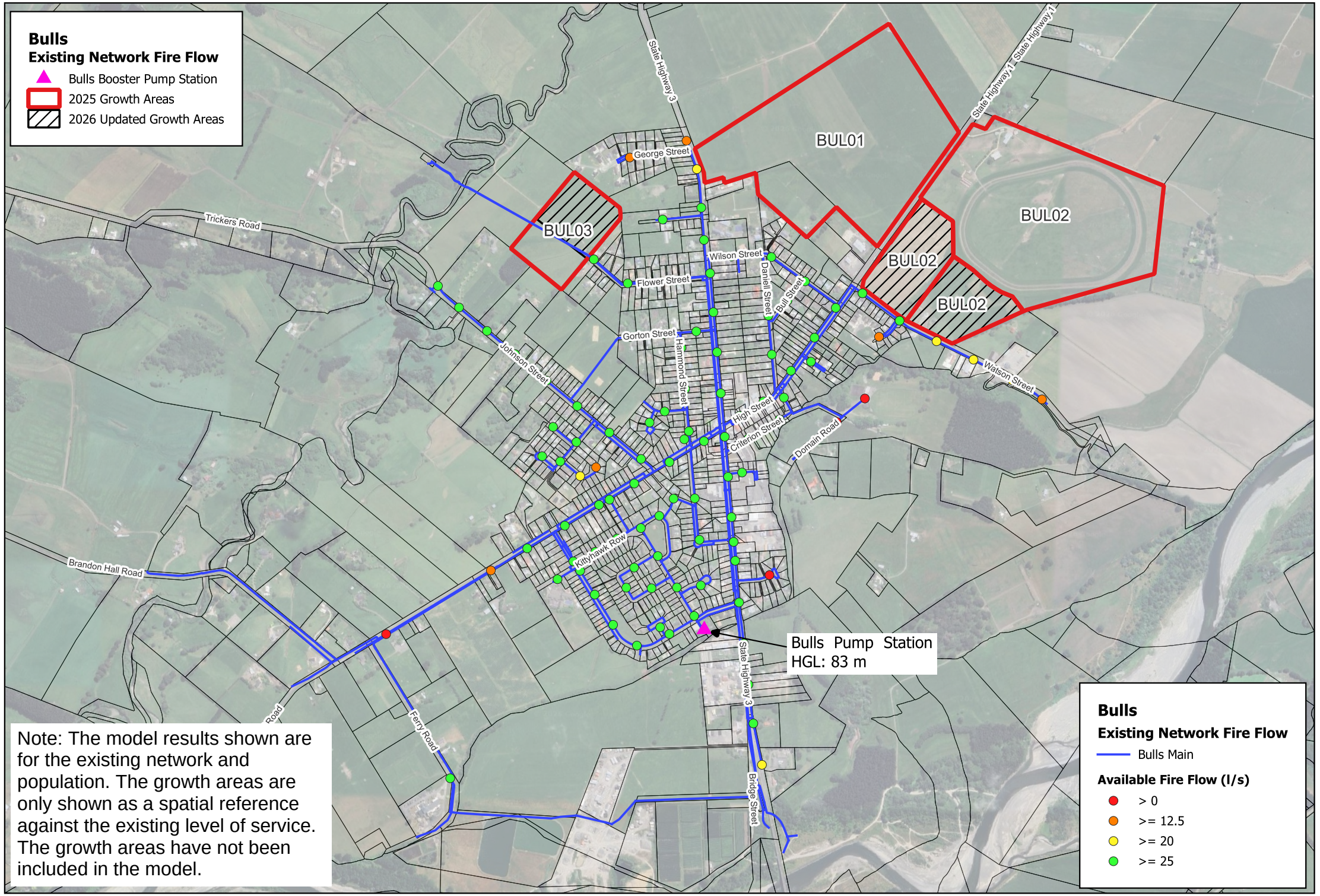


Figure 1.2.1 Bulls Existing Wastewater Network Performance - Dry Weather Flow

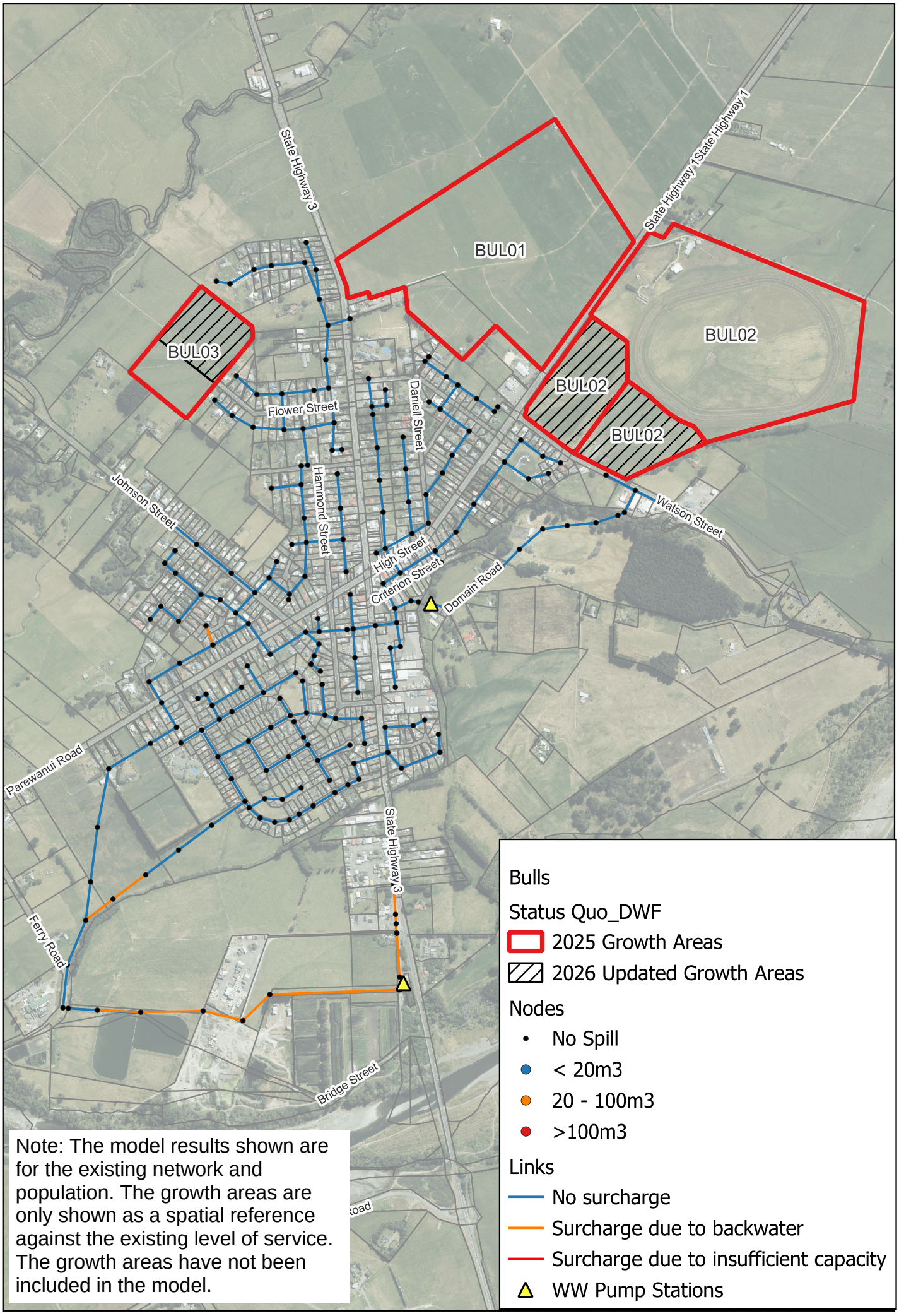


Figure 1.2.2 Bulls Existing Wastewater Network Performance - Wet Weather Flow

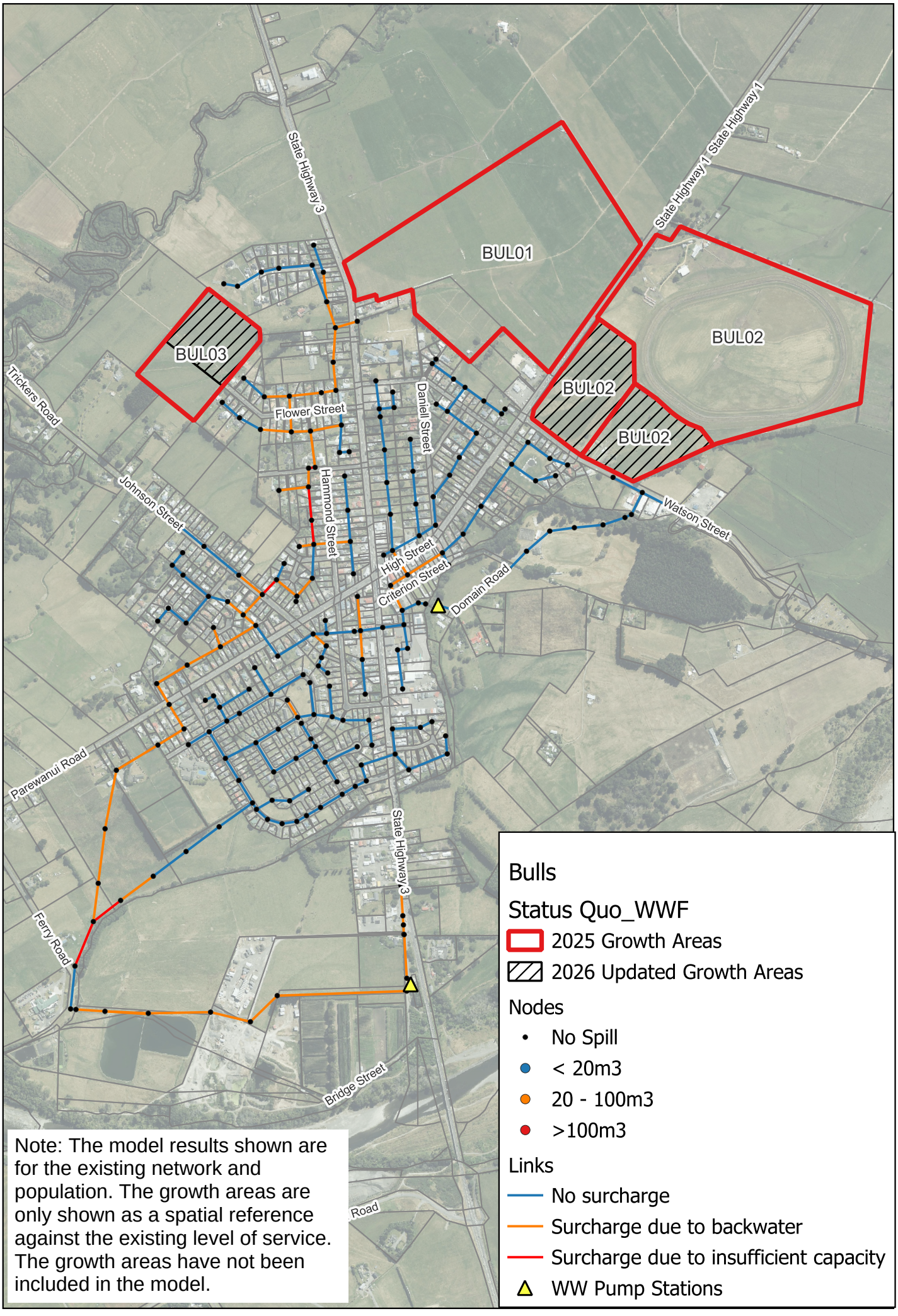


Figure 2.1.1 BUL03 Water Supply System Performance - Peak Day Demand

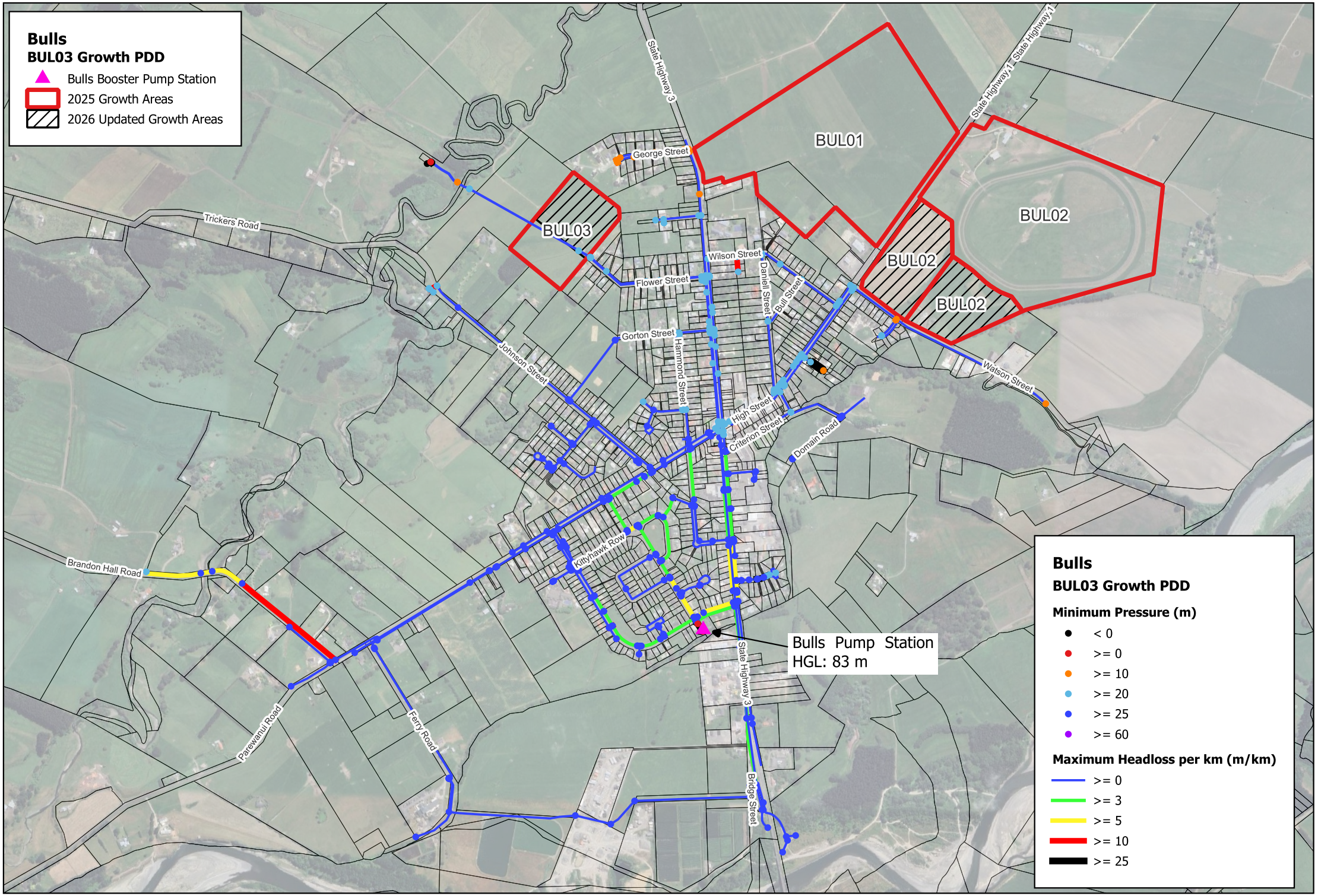


Figure 2.1.2 BUL03 Water Supply Option 2 System Performance with Proposed Upgrades

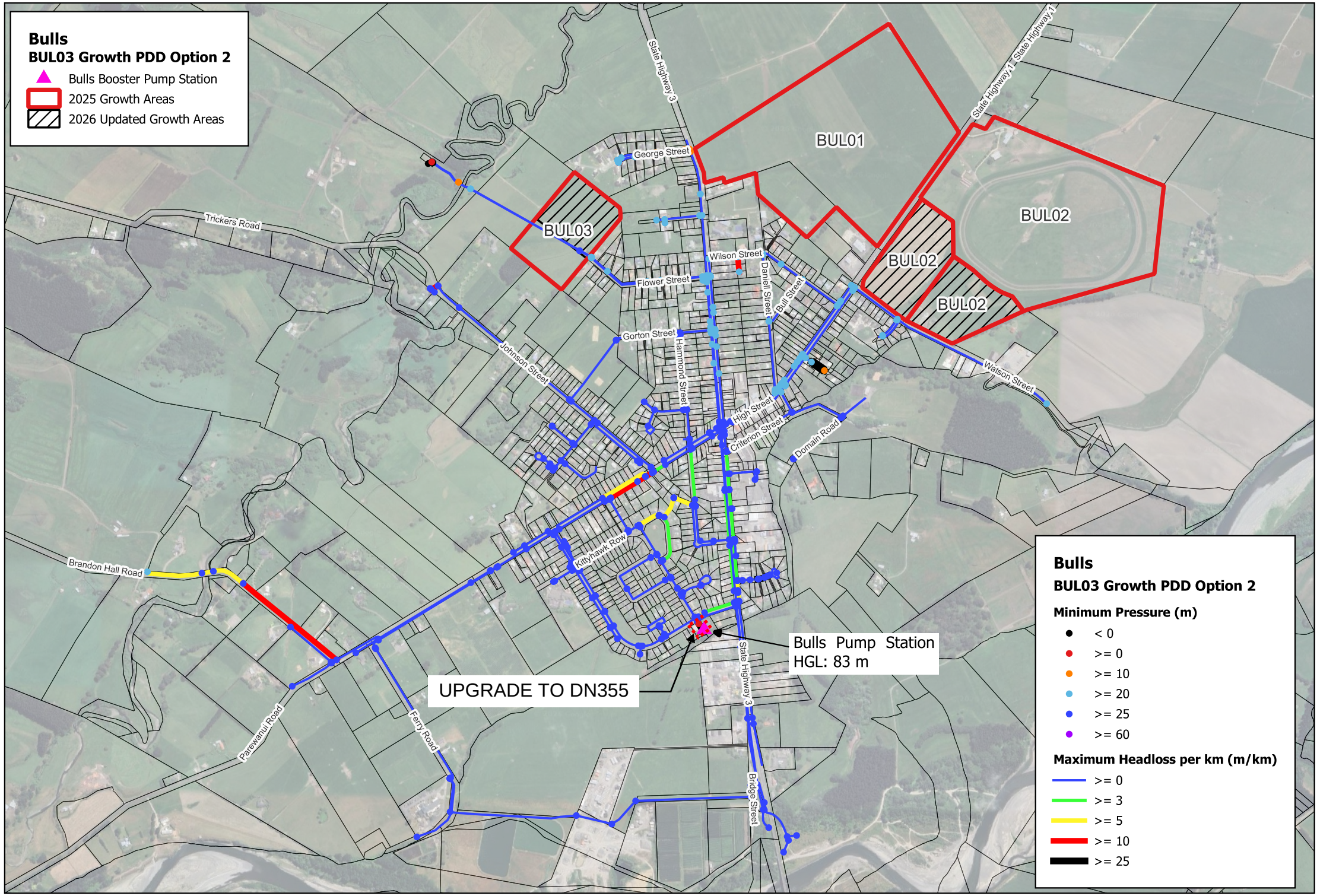


Figure 2.1.3 BUL03 Water Supply Option 2 Fire Flow (FW2) Assessment with Proposed Upgrades

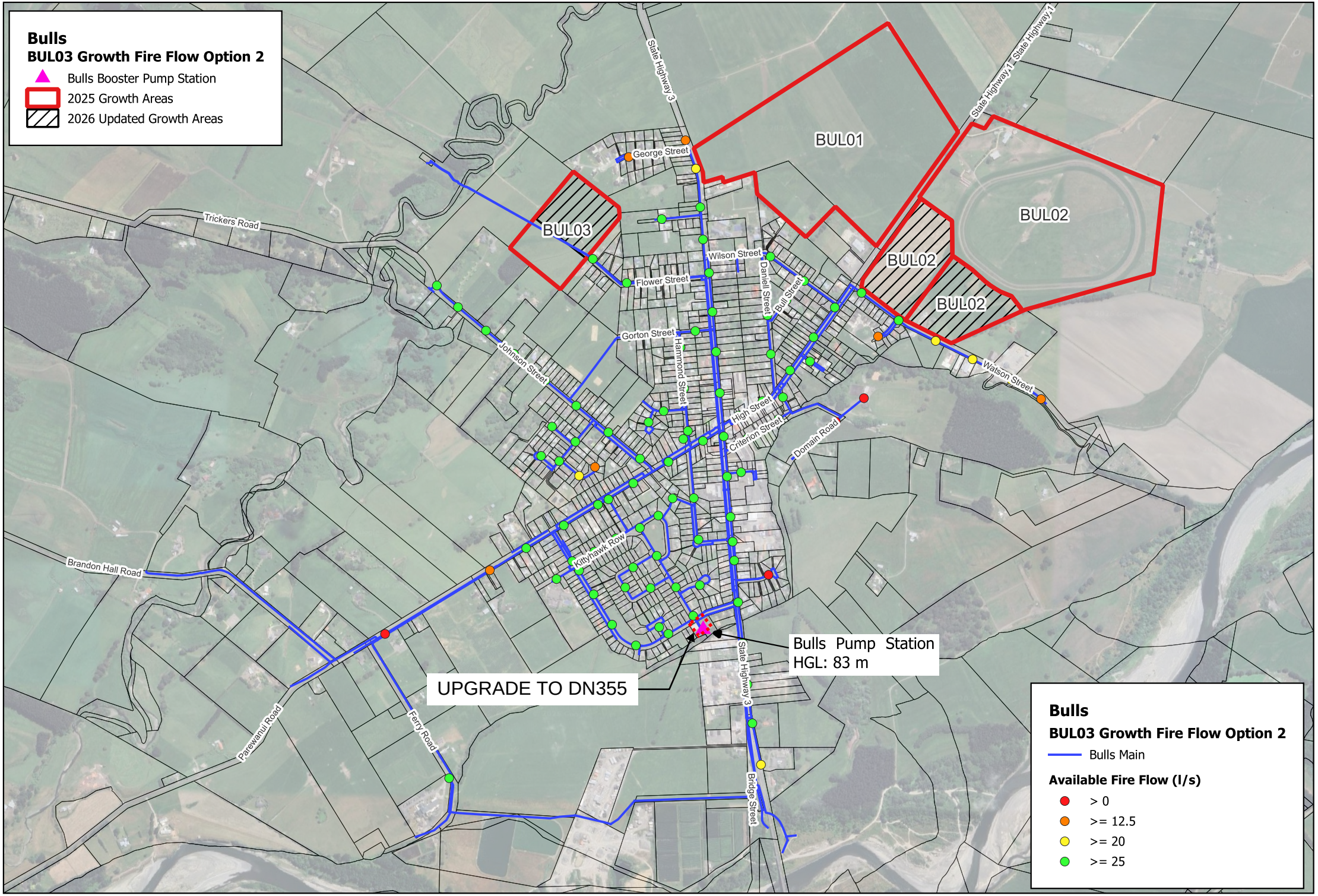


Figure 2.2.1 BUL03 Wastewater Network Performance - Dry Weather Flow

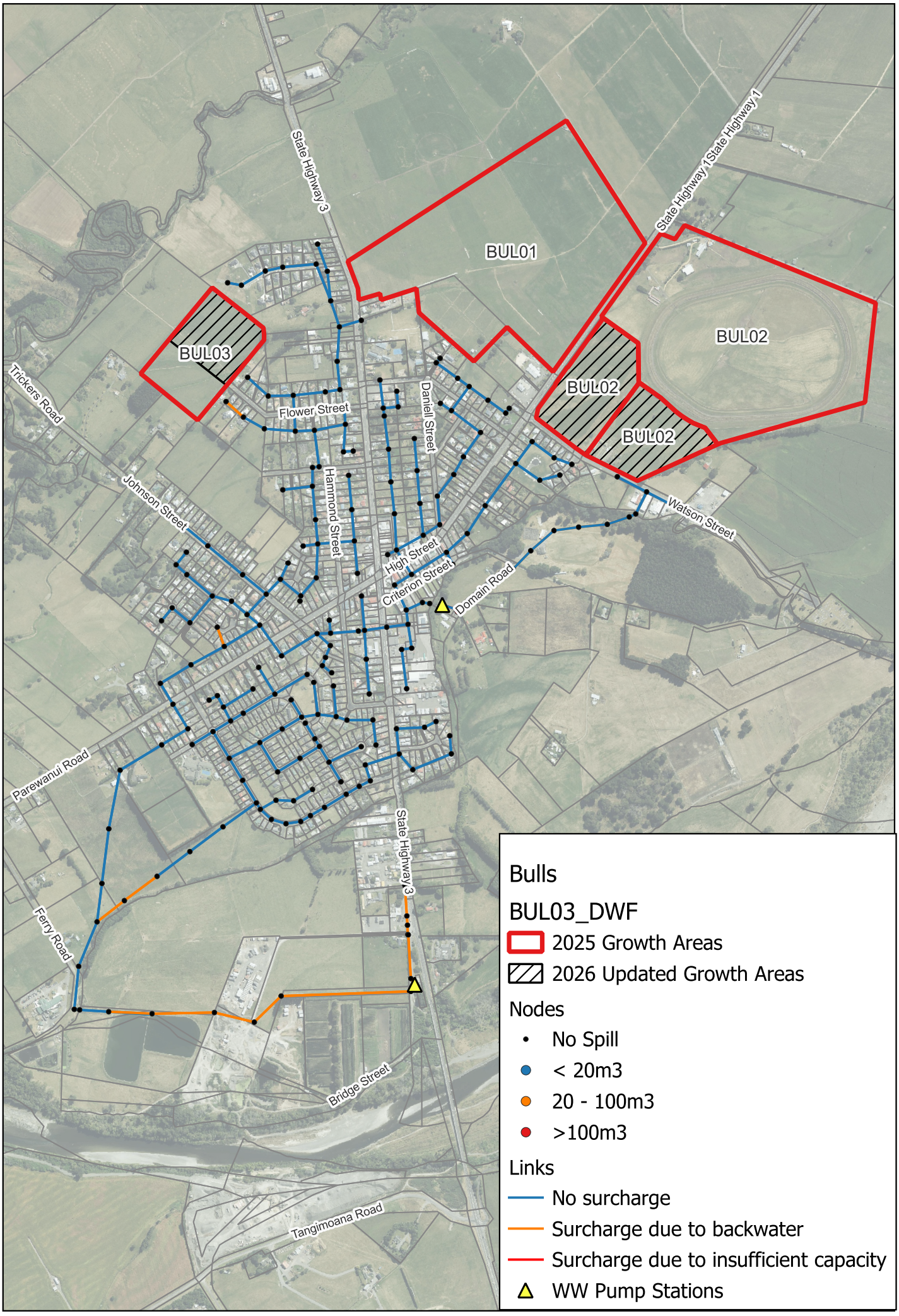


Figure 2.2.2 BUL03 Wastewater Network Perfomance - Wet Weather Flow

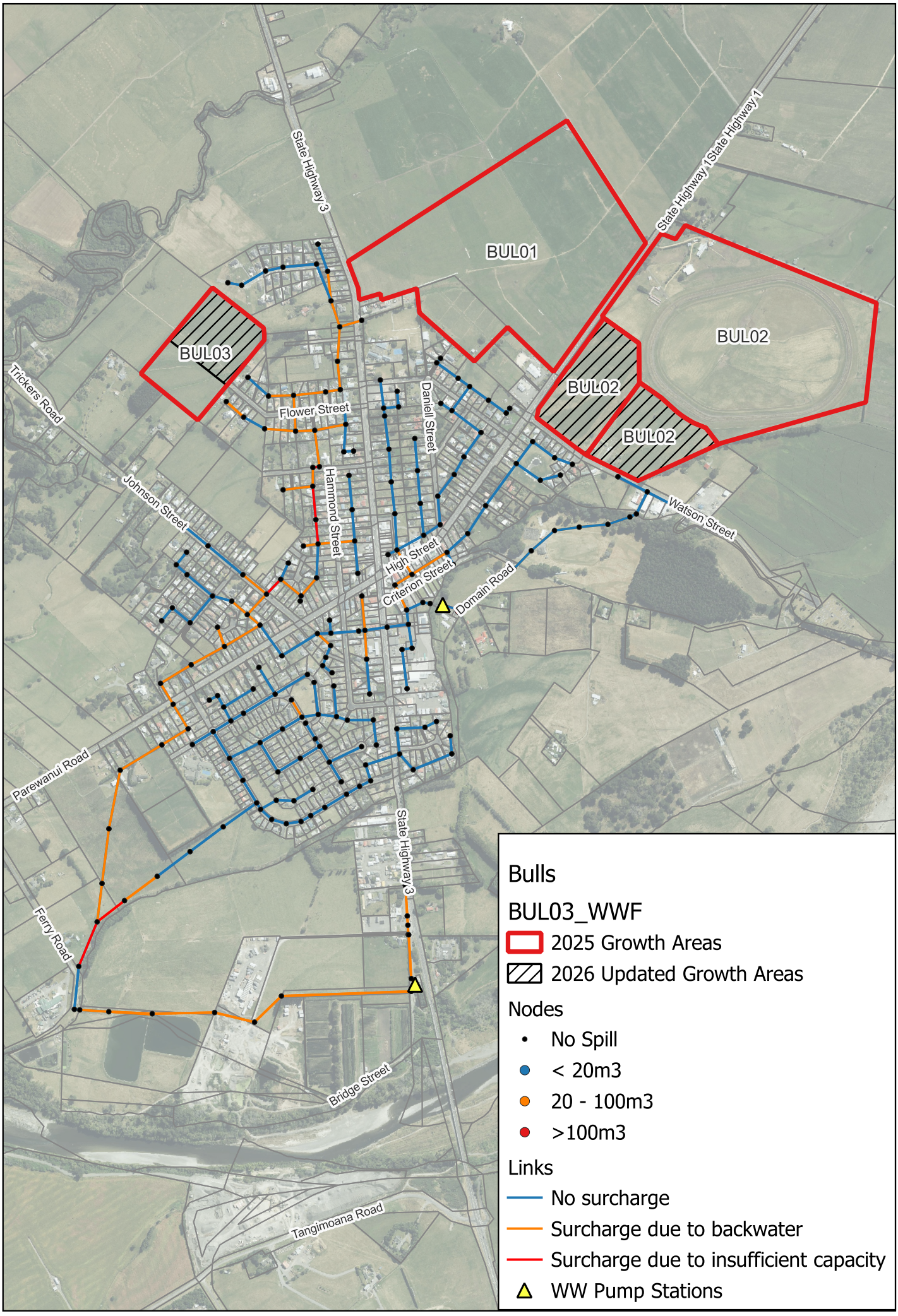


Figure 3.1.1 BUL02 and BUL03 Water Supply System Performance - Peak Day Demand

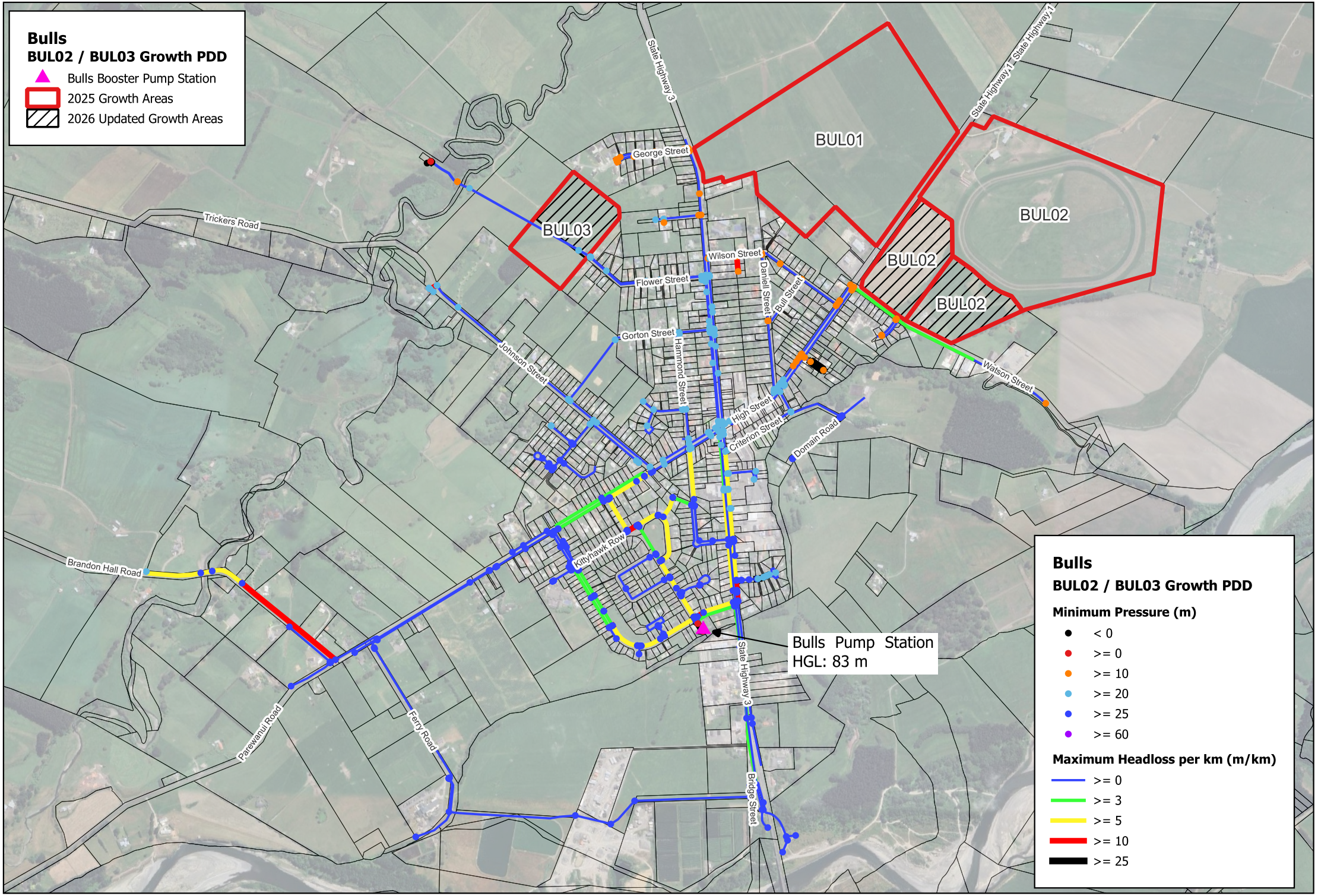


Figure 3.1.2 BUL02 and BUL03 Water Supply Option 2 System Performance with Proposed Upgrades

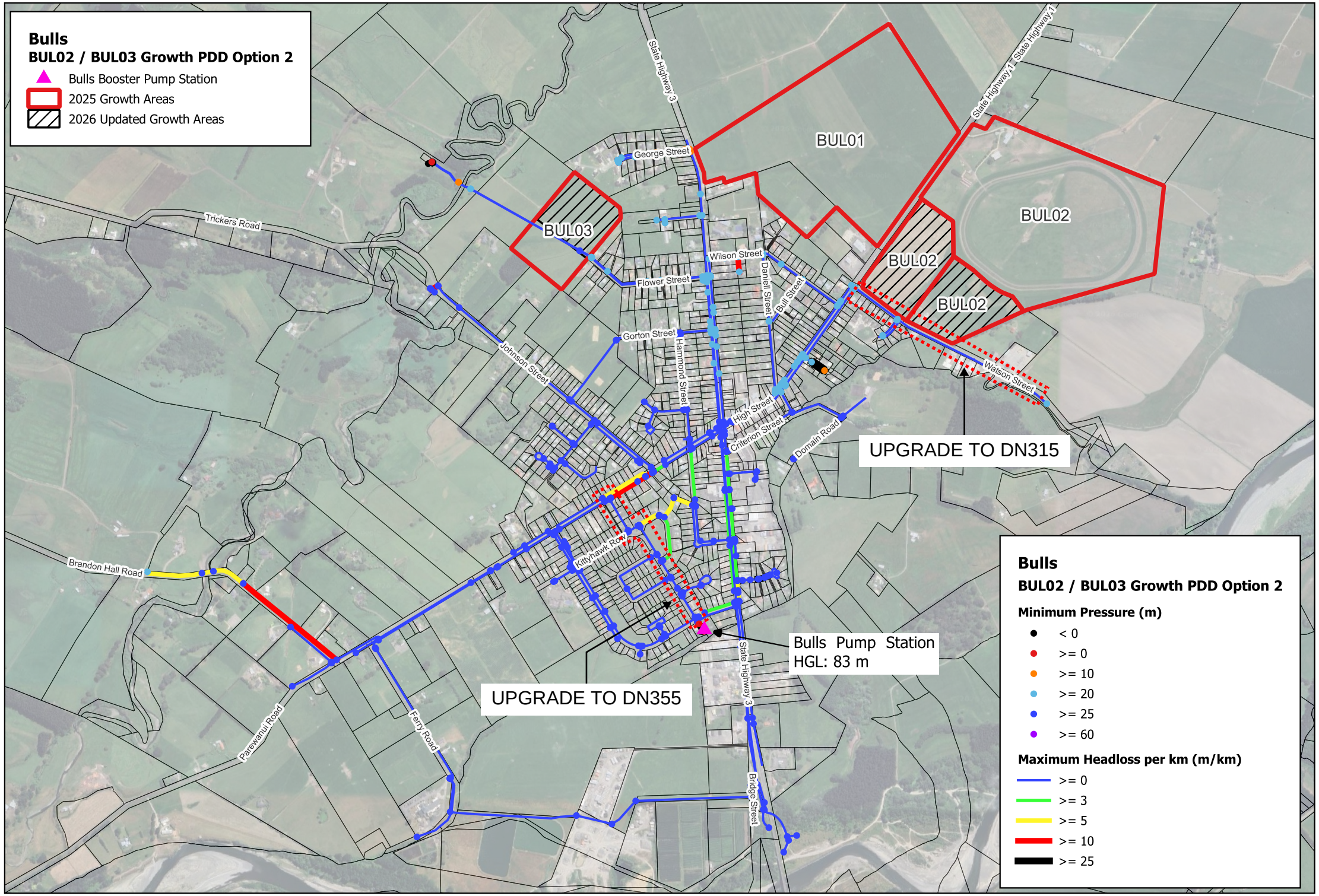


Figure 3.1.3 BUL02 and BUL03 Water Supply Option 2 Fire Flow (FW2) Assessment with Proposed Upgrades

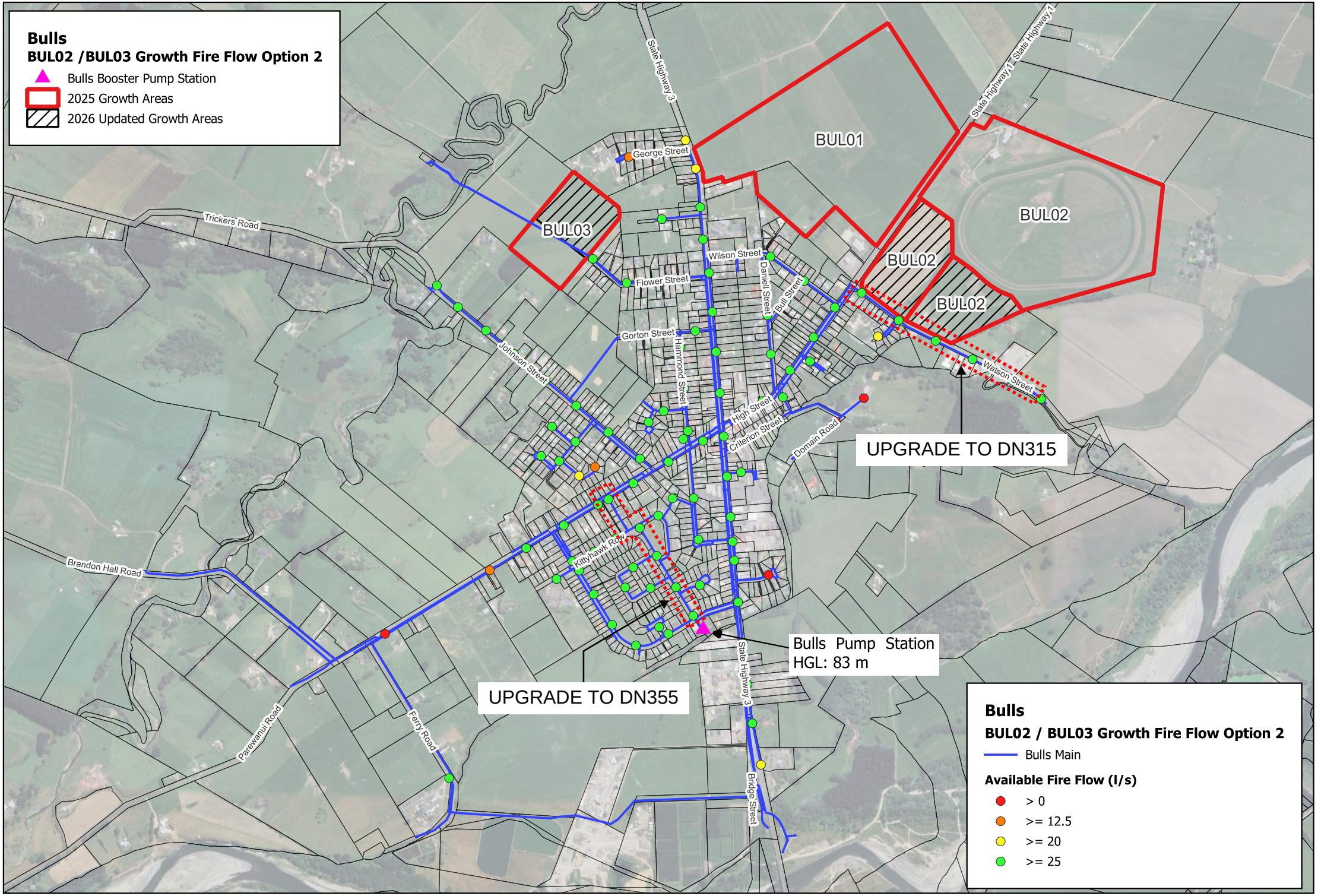


Figure 3.2.1 BUL02 and BUL03 Wastewater Network Performance - Dry Weather Flow

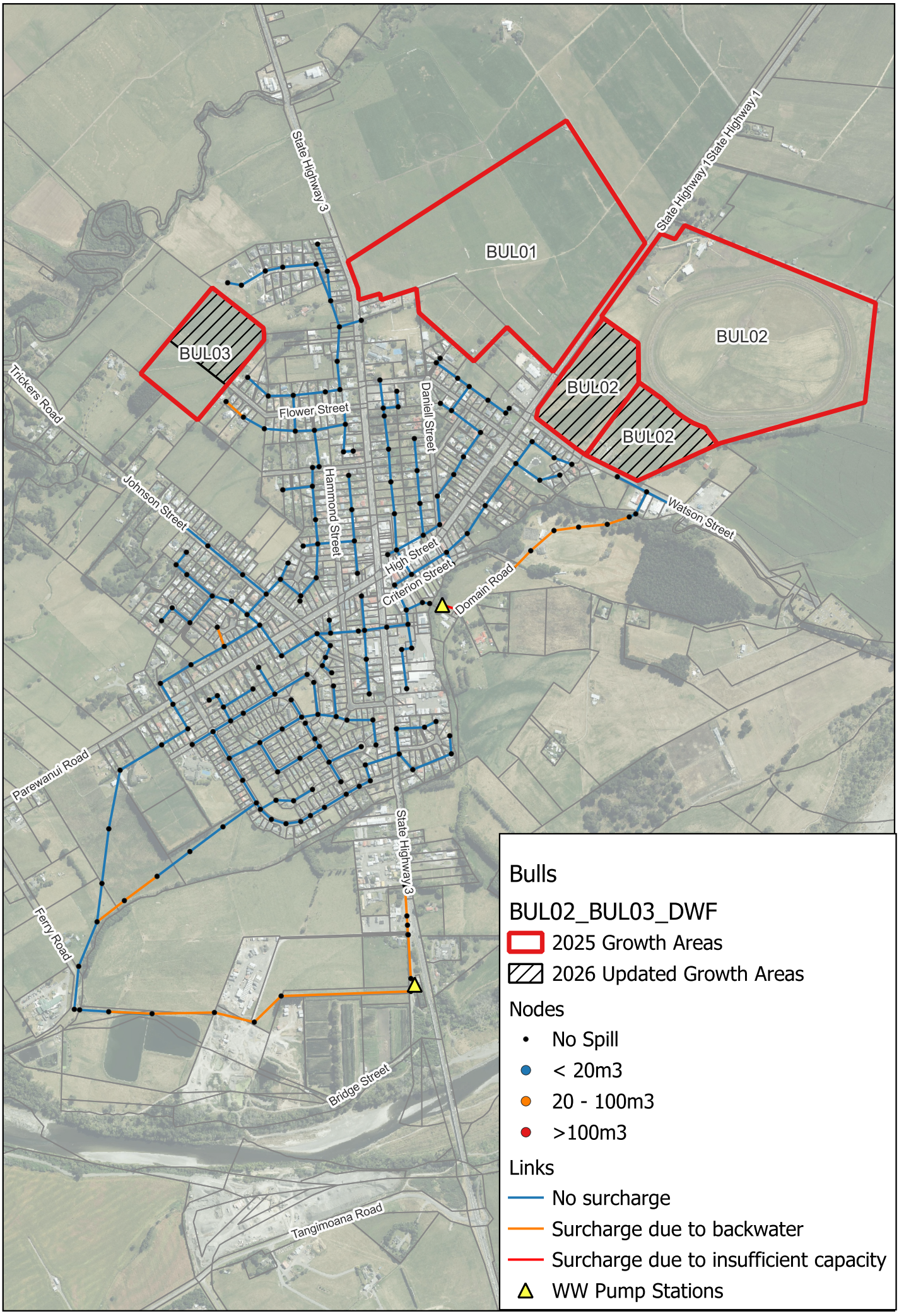


Figure 3.2.2 BUL02 and BUL03 Wastewater Network Performance - Wet Weather Flow

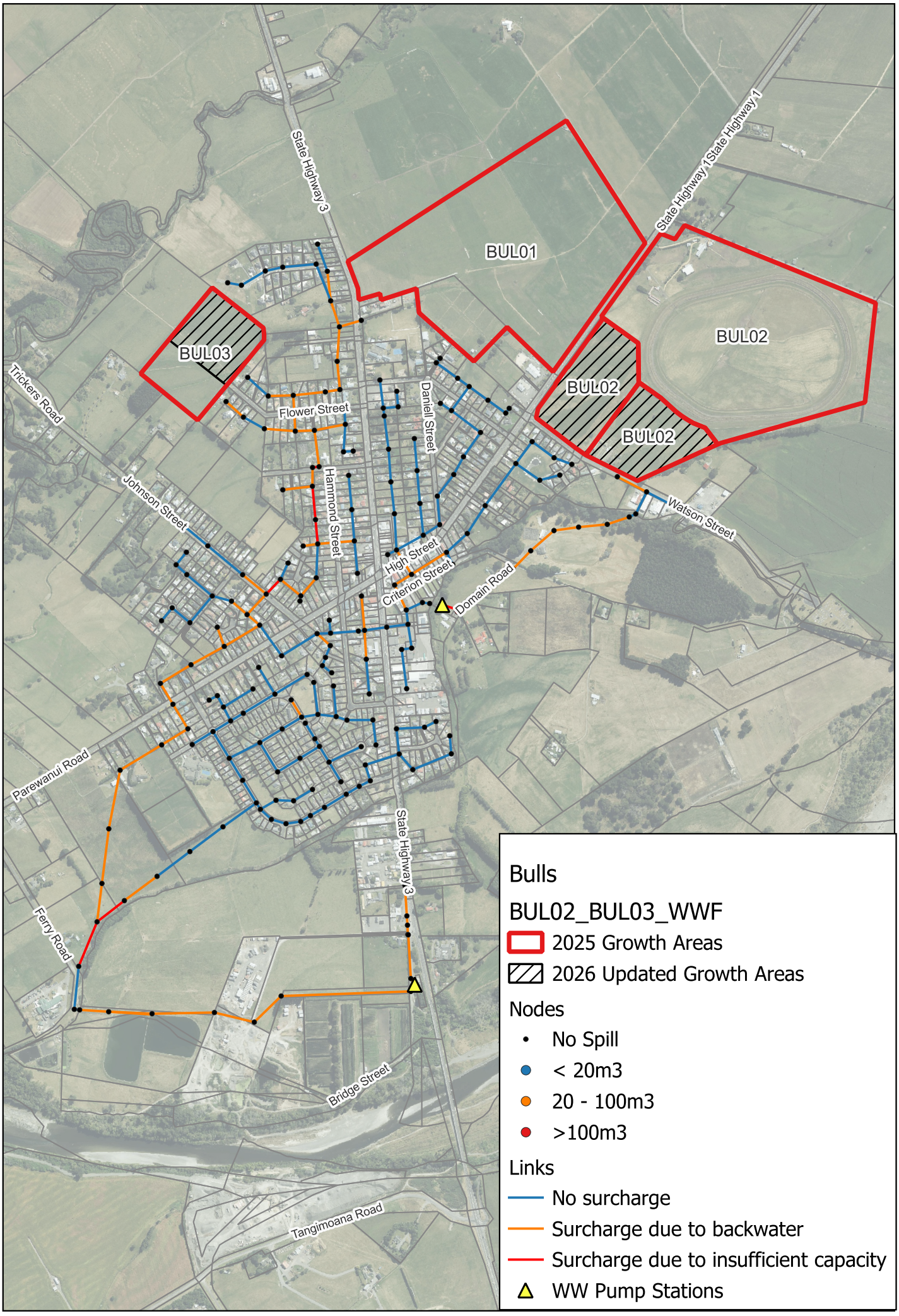
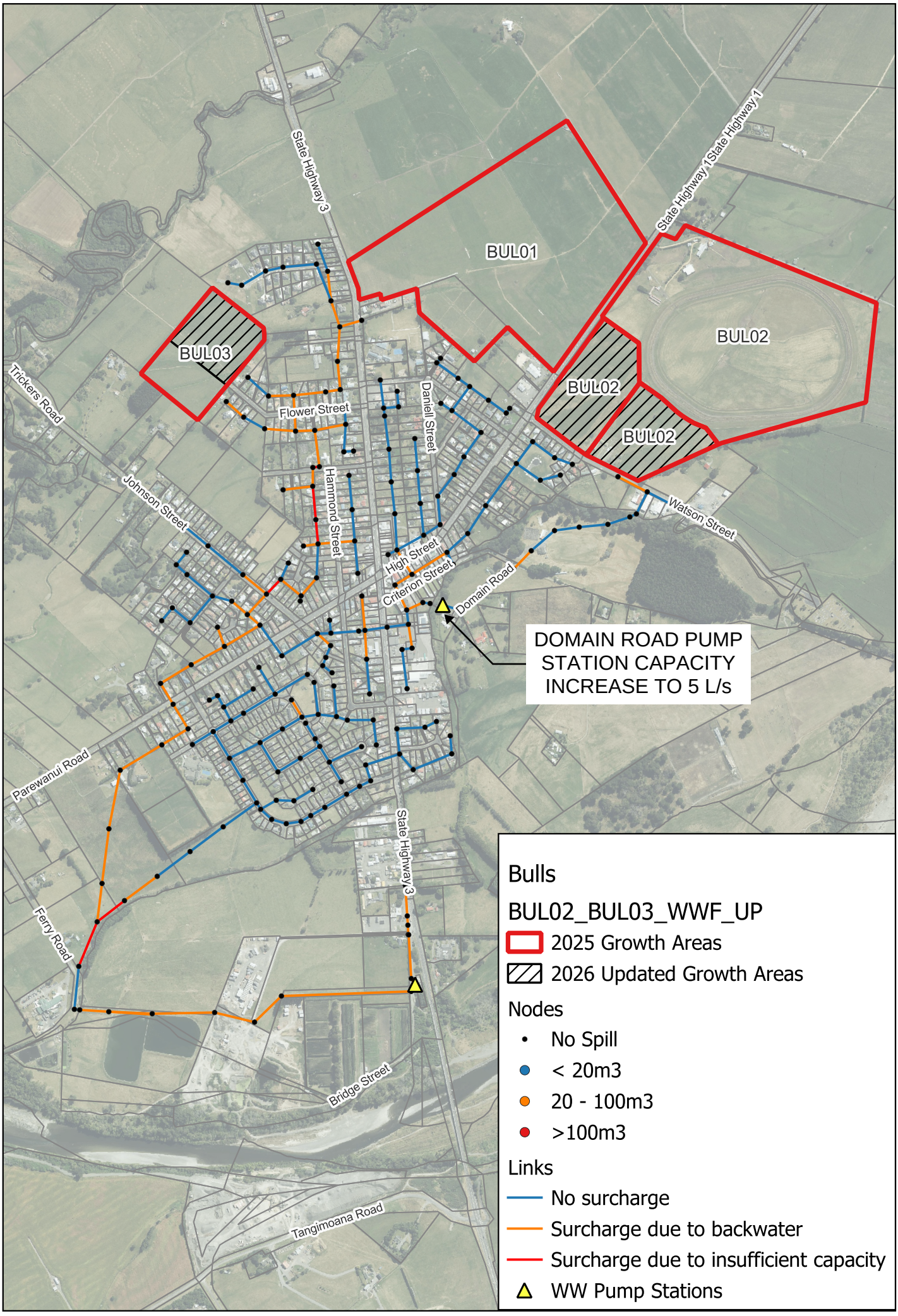
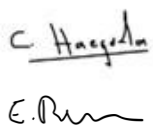


Figure 3.2.3 BUL02 and BUL03 Wastewater Network with Proposed Upgrades - Wet Weather Flow



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GHD Limited
Contact: Reiko Baugham, Senior Water Engineer | GHD
52 The Square, Level 2
Palmerston North, Manawatu 4410, New Zealand
T +64 6 353 1800 | **F** +64 6 353 1801 | **E** palmmail@ghd.com | **ghd.com**

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