
INVESTMENT CASE – PROPOSED SCHEME UPGRADES

NOVEMBER 2018

INTRODUCTION

The water permits for MGI's abstraction from the Waitaki River at Stonewall and Bells Pond expire in April 2028. The maximum rate of abstraction and the annual volume will be reviewed in accordance with the criteria in Schedule 10 of the Canterbury Regional Land and Water Plan (LWRP). Under Schedule 10 of the LWRP the whole irrigation scheme area will be assessed at the spray irrigation rate and based on the seasonal soil moisture deficit, so the volume of water available for irrigation purposes will be reduced. This reduction in annual volume should be aligned with actual irrigation requirements so in its own right it is not detrimental to MGI.

However, because MGI is a gravity scheme we also need Environment Canterbury to grant the new consent with an adequate conveyancing flow that allows for by-wash at the end. At the moment, for every 1 m³ of water that we irrigate, we by-wash an additional 1 m³. The only way to reduce the by-wash component is to pipe some of the scheme to eliminate unnecessary discharges. Bywash to the Waihao River and Wainono Lagoon is currently seen as a good environmental outcome so we can exploit this benefit and avoid piping the entire scheme.

Unfortunately, the irrigation scheme is not very efficient, so in addition to irrigation (1 m³) and bywash (1m³), we also cannot account for an additional 1 m³ of water. MGI assessments indicate that we lose water to:

- Race leakage, particularly the main race from Bells Pond and also Ikawai Bypass canal;
- Bywash canals that are not monitored, particularly the coastal laterals;
- Borderdyke gates that deliver more than the 500 L/s design flow; and
- Ambient losses and measurement accuracy.

MGI will have a great deal of difficulty gaining a consent for 3x the flow that is allowed under Schedule 10 of the LWRP. It is imperative that we approve our water statistics by improving the “plumbing” of the scheme and reducing or eliminating bywash and losses. The actions that MGI needs to take to improve the outcomes during consent renewal and secure reliable supply for all shareholders:

- a) Comply with our consents and improve our water use statistics
- b) Invest in scheme upgrades that reduce or eliminate water loss and bywash
- c) Promote a positive environmental profile in the wider community
- d) Phase out inefficient irrigation such as borderdyke by 2025¹

¹ Borderdyke does not comply with the CWMS targets at 2020, does not comply with the pending MGI scheme-wide nutrient discharge permit, it does not comply with the annual volume in Schedule 10 of the LWRP, and it generally does not comply with the minimum 80% irrigation efficiency. There is no possibility that ECan will allocate 810 – 1000mm seasonal applications for borderdyke irrigation because the LWRP will not allow it.



The goal for the consent renewal in 2028 is to secure a reliable water supply that includes an annual volume that is sufficient for the reasonable needs of all shareholders and a maximum abstraction rate that allows us to operate whenever we need to. It is recognised that the Waitaki River is not water short, however, abstractions from the river must still be justified and must comply with the various criteria of the Regional Plan as well as meet the expectations of the community.

This investment addresses the scheme inefficiencies by reducing bywash and leakage. It is perhaps one of the most significant decisions for all shareholders of MGI because it will help determine the sustainable future of the Company beyond 2028 and for future generations of shareholders.

An important consideration for this investment case is:

- The minimum level of investment to achieve the environmental targets and reduce overall water wastage, which is in the interests of all shareholders; and,
- The additional investment to deliver pressure to certain farms, which only benefits those particular shareholders.

SCOPING STUDY

Since June 2018, MGI has been conducting a Scoping Study which has considered a large range of infrastructure upgrades that could improve the efficiency of water supply within the current command area, further growth was not a primary consideration for the Scoping Study. Dozens of configurations were considered including piping the entire scheme, and the high-level economics of each case was assessed. This investment case sets out the recommended investment case only.

Total elimination of discharges and losses is only possible if the entire scheme is piped. The Stonewall intake is at 100 metres above sea-level and so a good pressure benefit is obtained from gravity. However, this scenario is very expensive (\$120M to \$150M) due to the scale of the scheme and so the cost of finance is much greater than the electricity or environmental benefits and the project makes no economic sense. Such a project would only be contemplated if there was no other option for securing resource consent.

A better option is to only pipe the lower reaches of the scheme in order to eliminate the coastal by-washes and to perform a range of other pipe or liner initiatives on the Bells Pond mainrace and within the Redcliffs scheme to address water loss zones. This suite of projects are known as the “environmental projects”.



INVESTMENT FOR ENVIRONMENTAL PURPOSES

This investment proposal is primarily to improve water use efficiency by addressing the scheme “plumbing”. There are other environmental initiatives as well, including:

Water	Initiatives
Irrigation	<ul style="list-style-type: none"> • Borderdyke is using up to 10x more water per hectare than spray, phase out by 2025 • Promote soil moisture monitoring and deficit irrigation for spray
By-wash	<ul style="list-style-type: none"> • Operators have KPI’s to only abstract the volume of water required for irrigation • Eliminate discharges by closed pipe systems
Losses	<ul style="list-style-type: none"> • Upgrade leaky canals with liner or pipe

The proposed environmental investment addresses the bywash and loss initiatives highlighted above and therefore assists to secure our sustainable future by driving down the volume of water we need to take from the river. This investment is important for all shareholders, whether or not they are located near the proposed capital works because it is to enable the resource consent renewal to occur on favourable terms.

In addition to reducing water wastage due to by-wash and leakage, the proposed pipelines give rise to some other benefits to MGI and particular shareholders, such as:

- Assisting to secure our water permits in 2028;
- Reduced operating and maintenance costs because the pipelines are easy to operate so long as there is water in the Lower Mainrace and there are less canals and discharge points to maintain;
- The pipelines release 56 hectares of land back to farmers (the formed area of the canals that will become redundant) but MGI will need to retain the easements in case access is required in the future.

The pipelines will enable 56km of canal to be retired and given that most formed easements average 10m width, this is 56 hectares of land that can be returned to farming. The preferred construction method is to install and bury the new pipelines within the footprint of existing canals. Except on occasions where realignment makes sense, this means that pipelines can be fed through existing culverts and road crossings and this keeps the construction costs down and also avoids the need for new easements. The buried pipelines will be contoured as close as possible to the existing ground surface and then farmers will need to topsoil and re-sow.

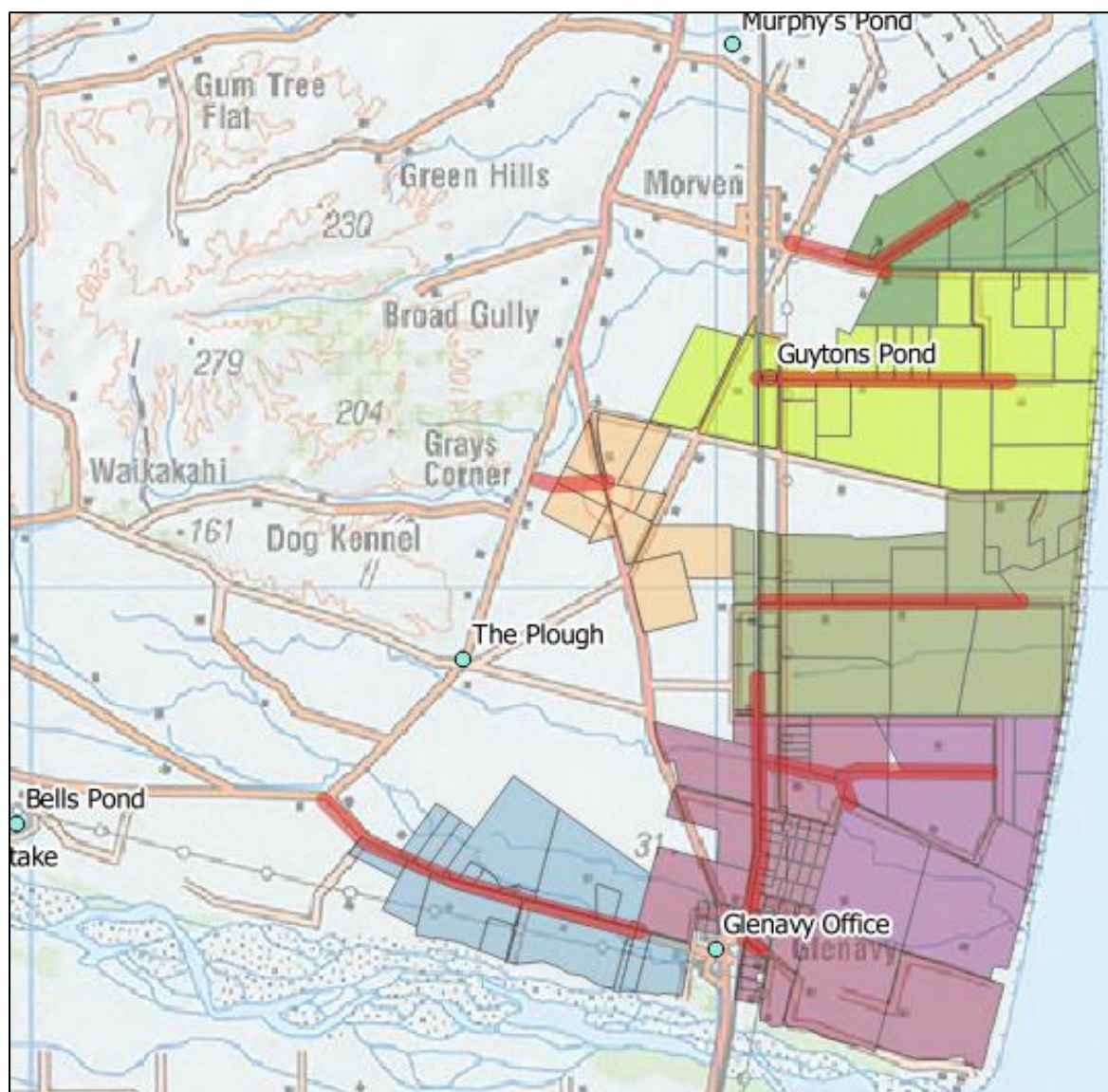


Figure 1: Areas of the scheme that will be serviced from the proposed pipeline network.

INVESTMENT FOR COMMERCIAL PURPOSES

Although the primary purpose of the pipelines along the coast are to eliminate by-wash, they do have some fall and so they produce a small pressure head. The pressure from this gravity head alone is not enough to operate spray irrigation. The Scoping Study considered options to extend the pipe network upstream but the capital cost outweighs the pressure benefit. However, if the coastal pipelines are pressurised with a central pumping station at each intake, then the capital cost is well below the value obtained from the pressure benefit and the investment makes commercial sense. This commercialisation of the environmental project is like a “bolt-on” that adds value but it only benefits the farms along the pipeline supply. Therefore, the incremental cost (the “commercial investment”) to pressurise the pipeline should only be borne by the beneficiary shareholders.

The incremental cost to pressurise each pipeline to a minimum design pressure of 35m with a central pump station is shown in the information tables. The design pressure of 35m is

chosen because it is enough to operate most pivot or lateral irrigators, however, K-line systems may still require boost pumping. The final design pressure will be negotiated with the affected landowners prior to final design and construction and by agreement it could be higher or lower. Similarly, some shareholders may decide they don't want a central pump station and they would prefer to stick with on-farm pumping systems.

Since the central pump stations are upstream, then even after some head loss in the pipelines they are still able to deliver water more cost effectively than if each farm had its own pumping system. It is cheaper for a farmer to be supplied pressured water than to do themselves and this sensitivity is shown in the information tables. It also means that farms with new spray irrigation do not need to invest in electricity infrastructure such as lines and transformers and in pump stations. However, those farms that already have spray irrigation will find that they have redundant electricity and pump infrastructure. There may be an opportunity to sell surplus equipment to other MGI shareholders who are not within the pipeline supply area and are converting from borderdyke to spray.

As is the case for the Northern Extension Pumped area near Waimate and Waihao Downs, the pressurisation costs will be levied on the beneficiaries as a differential charge over and above the standard MGI water fee. The differential charge is made up of:

- The shareholders portion of the interest and principle costs payable by MGI for the incremental capital that is spent on pressurisation; and
- The shareholders portion of the additional fixed costs of pressurisation like pump insurance, maintenance and electricity lines charges; and
- The shareholders portion of the variable electricity cost of operating the pumps, which is based on metered water usage. If a shareholder uses no water during a month, then they would have no variable electricity charges.

The information tables show the forecast operating costs. It is difficult to forecast electricity charges because they are dependent on the weather and the number of irrigation days in the season, the forecast is based on 155-days of irrigation at peak water consumption. For most of the proposed pressurised pipelines the annual electricity savings are greater than the incremental finance cost of pressurisation. In other words, it is better value to pressurise the whole pipeline than for farmers to each have their own on-farm pump.

EFFECTS ON WATER CHARGES

Figure 2 shows how an irrigator with 17-day borderdyke currently pays MGI water charges of \$67/ha per year. Over the next few years all shareholders will be changing over to spray irrigation so the volumes of water will change, the 4mm/day spray charge would become \$53/ha (subject to any other inflationary adjustments).



If the environmental projects are implemented and the finance costs (\$29/ha) levied across all shareholders², the 4mm spray rate would become \$82/hectare (around the year 2024). For shareholders that farm outside of the pipeline area (except for Waihao Downs), this would become their annual water charge.

The final cost of the environmental projects is still subject to final design and contract pricing. It is hoped that the costs will be reduced through value engineering, pipe selection and market tender.

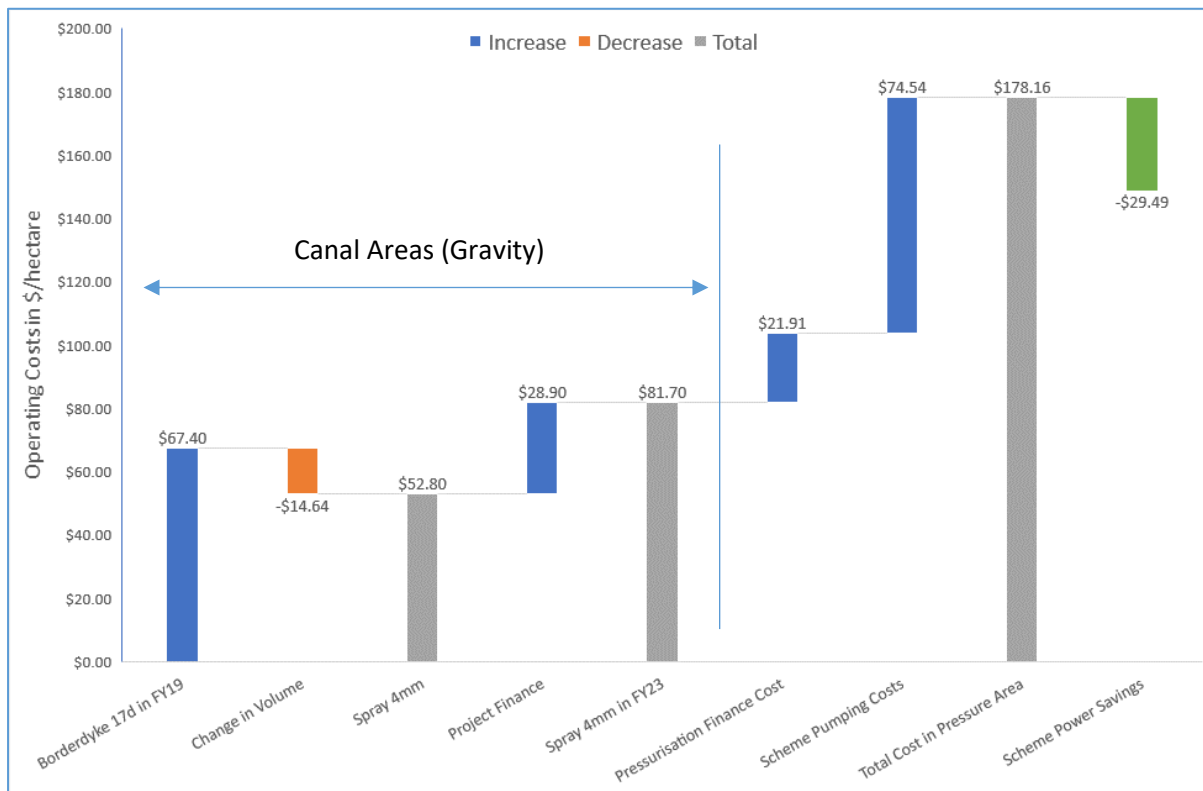


Figure 2: Waterfall chart showing average change in annual operating cost for borderdyke 17d and spray 4mm.

For shareholders that are within the proposed piped areas in Morven Glenavy, the commercial finance and operating costs are added on as differential charges, the same as they are in the Northern Extension Pressure and Waihao Downs scheme areas. Figure 2 shows these additional costs, averaged across all of the pipelines, shareholders need to refer to the information tables for the specific information on their pipeline.

Since the pumping costs are lower with a central pump station and the fall of a water pipeline, the scheme provides those farmers with a cost saving when compared with pumping from a canal. The average saving is \$29.49/hectare per annum. This does not take into account situations where farmers would have additional capital costs of their own to bring electricity to their farm and to build their own pump stations, this cost is avoided with the scheme system. Conversely, there are farmers that already have this investment in place because they are already spray irrigating.

² Excluding the Waihao Downs Irrigation area



Some of the pipelines are more marginal investments than others because they lack sufficient fall to yield much of a power saving. The only advantage to shareholders in these locations is that they can avoid constructing their own electricity supply and pump stations.

The proposed cost to MGI water fees still benchmarks well compared to irrigation schemes in New Zealand where the Irrigation New Zealand 2016 cost survey shows a mean price of \$780/ha/year (Figure 3). Subject to any other inflationary movement, spray irrigation in the Redcliffs and Morven Glenavy canal areas would be about \$82/ha and in the proposed piped areas an average of \$187/ha (including power).

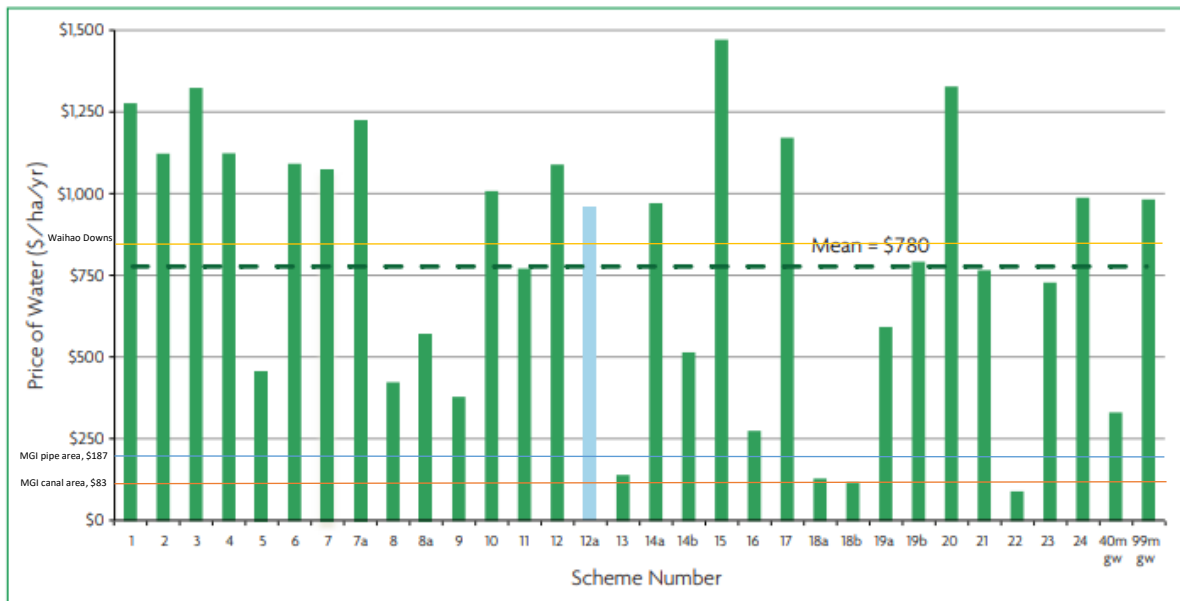


Figure 3: Cost of irrigation scheme water delivery in New Zealand (Source: Irrigation New Zealand, 2016).



INDICATIVE PROGRAMME

Planning	Winter 2019	Winter 2020	Winter 2021	Winter 2022	Winter 2023
Contracts	Lateral 1	Lateral 9	Lateral 7		Lateral 13
Financing	Lateral 7b	Lateral 3a	Ikawai Bypass		
Procurement	Lateral 11	Mainrace			

The timetable may change by agreement with affected shareholders and if there are any delays procuring long lead equipment like pipe or pumps. A high level of consultation with affected shareholders will be required during this project execution process.

If the investment is approved, then MGI will arrange group meetings with each of the proposed pipelines to optimise the commercial case, before the contract is awarded it will be necessary to meet with shareholders and:

- a) Decide if a central pump is worthwhile or leave it as farm pumps only;
- b) Agree the best delivery pressure for the central pump system (if applicable);
- c) Check irrigated areas and turnout locations.

Most projects require winter construction to avoid delays or impacts on the irrigation season, so they are staggered in order to spread the risk, cashflow and to line up with forecast borderdyke conversions.

It is proposed that the design and construction packages are tendered to preferred contractors and so it will be a competitive market process.



INFORMATION TABLES

Project Capital Expenditure

Project: (\$m real)	Environmental	Commercial	Total	Total ha	Commercial Capex per ha (\$)
Lateral 1	1.8	0.4	2.2	586	649
Lateral 7 & 7b	3.8	1.3	5.2	2,190	608
Lateral 9	2.1	0.5	2.6	1,444	321
Lateral 11	1.1	0.3	1.5	1,387	246
Lateral 13	1.2	0.3	1.5	636	404
Lateral 3a (LP)	0.3	0.0	0.3	190	-
Other	0.5	0.0	0.5	25,311	-
Total	10.9	2.8	13.7		

Figure 4: Project Cost Summary (including contingency).

The capital estimates are based on a basic level of engineering design and hydraulic modelling and are Class 3 level (with Class 1 being the highest level). However, MGI had REL perform a review of the quantities and pricing in order to improve the quality of the estimate. Nonetheless, it is hoped that the true costs will be reduced through value engineering and considering alternative types of pipe, the estimate is currently based on a combination of PE and GRP pipe.

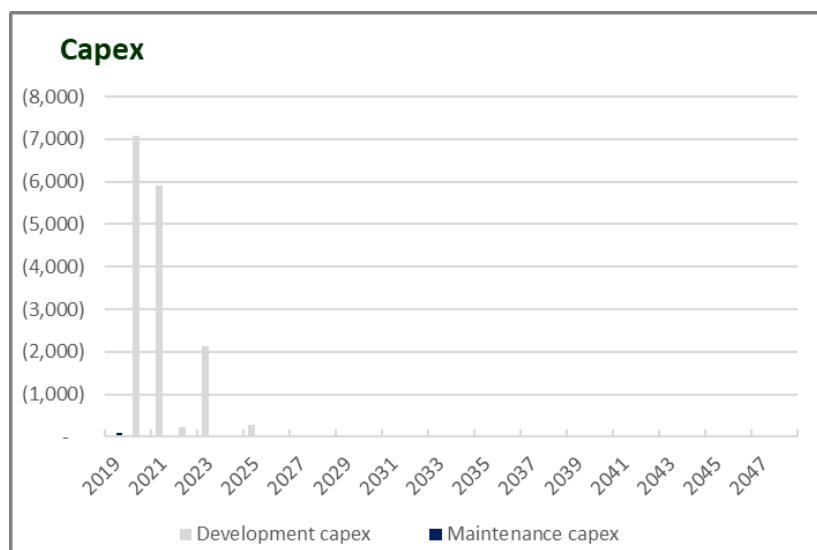


Figure 5: Capital expenditure profile.

Project Funding

MGI has received professional advice on funding options ranging from commercial debt, bond listing, preferential shares and shareholder equity. The recommended outcome is to obtain

finance from a commercial bank and to leverage the Waihao Downs debt into a refinance package. MGI is well positioned to finance the proposal using debt. If the project is approved, then MGI will execute a funding strategy to realise a market competitive debt structure.

The debt profile is shown in Figure 6. This profile will probably change during detailed planning, particularly if certain central pump stations are determined not to be required.

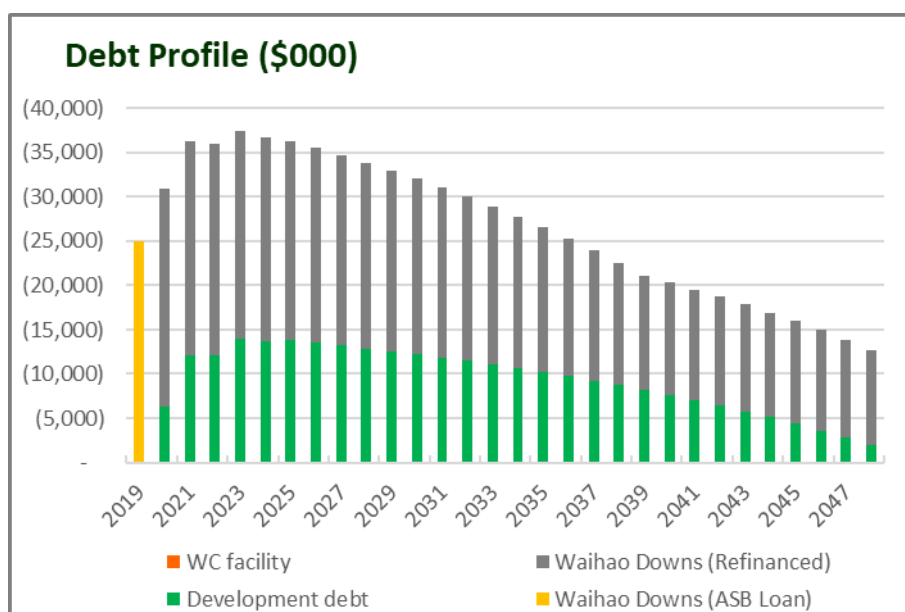


Figure 6: MGI debt profile forecast including refinancing of Waihao Downs (subsidiary).

Effects on MGI Profit & Loss

Profit and Loss	Units	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Water user charges	\$000	1,539	1,578	1,728	1,841	1,954	2,148	2,180	2,294	2,327	2,361
Telemetry fee income	\$000	49	53	56	60	62	64	66	68	70	71
Annual fixed charges	\$000	250	253	258	263	268	274	279	285	291	297
Annual variable charges	\$000	2,192	2,494	2,594	2,602	2,672	2,654	2,688	2,696	2,703	2,712
Miscellaneous income	\$000	138	138	138	138	138	138	138	138	138	138
Total Income	\$000	4,166	4,515	4,774	4,903	5,094	5,307	5,351	5,480	5,527	5,578
Operating costs	\$000	(1,717)	(1,739)	(1,774)	(1,810)	(1,846)	(1,883)	(1,921)	(1,960)	(2,000)	(2,040)
Fixed annual charges	\$000	(250)	(253)	(258)	(263)	(268)	(274)	(279)	(285)	(291)	(297)
Power charges	\$000	(930)	(1,173)	(1,368)	(1,395)	(1,486)	(1,516)	(1,545)	(1,577)	(1,609)	(1,642)
Margin	\$000	1,270	1,351	1,374	1,435	1,494	1,634	1,604	1,657	1,628	1,600
Gross Margin	%	30%	30%	29%	29%	29%	31%	30%	30%	29%	29%
Other income / expenses	\$000	665	-	-	-	-	-	-	-	-	-
EBITDA	\$000	1,935	1,351	1,374	1,435	1,494	1,634	1,604	1,657	1,628	1,600
EBITDA Margin	%	46%	30%	29%	29%	29%	31%	30%	30%	29%	29%
Depreciation & Amortisation	\$000	(715)	(806)	(937)	(990)	(1,022)	(1,046)	(1,060)	(1,073)	(1,085)	(1,096)
EBIT	\$000	1,220	545	437	446	472	588	544	584	543	503
EBIT Margin	%	79%	35%	25%	24%	24%	27%	25%	25%	23%	21%
Net Finance costs	\$000	(1,210)	(1,223)	(1,069)	(1,006)	(960)	(922)	(888)	(856)	(826)	(800)
NPBT	\$000	10	(679)	(632)	(561)	(488)	(334)	(343)	(272)	(283)	(296)
Leverage %*	%	68%	72%	75%	75%	75%	74%	73%	71%	70%	68%
Debt service coverage ratio	x	1.08	0.96	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Water price	\$/ ML	8.0	8.3	9.2	9.8	10.4	11.5	11.6	12.2	12.3	12.4
Share prices											
Morven Glenavy	\$/ ha	55.5	74.9	101.8	111.1	119.8	127.7	128.2	131.4	131.4	131.4
Northern Extension	\$/ ha	188.5	198.8	216.4	229.2	237.8	248.1	251.5	257.4	260.3	263.3
Waihao Downs	\$/ ha	842.1	825.0	834.7	845.2	855.5	869.1	876.3	886.7	894.6	903.2

*Note – Leverage overstated due to the book value of assets not reflecting the true value of the underlying infrastructure.

Detailed Operating Cost Forecasts (\$/ha)

To breakdown the costs relate them to the waterfall chart in Figure 2, use the following reference costs (in \$/ha, nominally FY21 – FY23):

	Lateral 1	Lateral 7 & 7b	Lateral 9	Lateral 11	Lateral 13	Rest of MGI ³
Spray 4mm	\$81.66	\$81.66	\$81.66	\$81.66	\$81.66	\$81.66
Or, Spray 5mm	\$94.98	\$94.98	\$94.98	\$94.98	\$94.98	\$94.98
Commercial Project Finance		\$43.22	\$17.72	\$19.90	\$28.73	
Scheme Power (Forecast)		\$76.01	\$62.05	\$73.90	\$91.64	
Total, Spray 4mm	\$81.66	\$200.89	\$161.43	\$175.46	\$202.04	\$81.66
Total, Spray 5mm	\$94.98	\$214.20	\$174.74	\$188.78	\$215.36	\$94.98

³ Except for Waihao Downs Irrigation area

Morven Glenavy Pipeline (part of a combined pipeline)

Replaces	Lateral 7
Alignment	Parallel to Morven Glenavy Road
Area Supplied	1,200 ha
Length	4,388m
Pump Power Required	344.4 kW (with Lateral 7b)

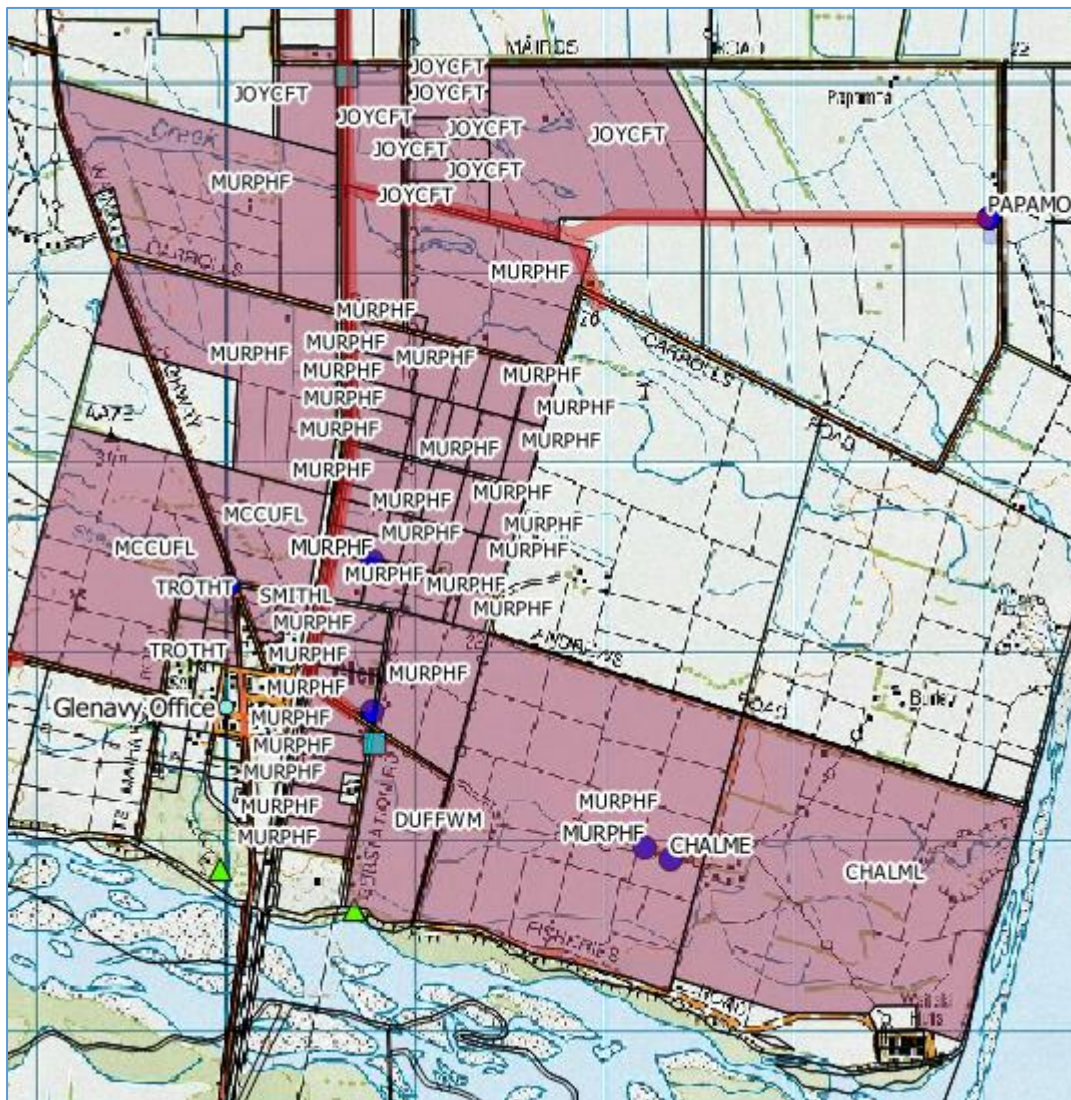


Figure 8: Morven Glenavy Pipeline Area (replaces Lateral 7 and is main trunk for Carrolls Road pipeline).

Farm or Shareholder	Joyce Westbrook	L & Y Smith	Trotter	Glen Ayr	Murphy Ramawhenua (Part from Lat6)
Area (hectares)	159	5	10	140	192
Application Rate	4mm	4mm	4mm	4mm	4mm



Farm or Shareholder	Joyce Westbrook	L & Y Smith	Trotter	Glen Ayr	Murphy Ramawhenua (Part from Lat6)
Calculated Pressure (m)	32.04	34.96	34.96	34.96	31.28

Farm or Shareholder	Ramawhenua Runoff	Murphy Rivercliff	Seacliff (Chalmers)	Murphy Rivercliff2	Duff
Area (hectares)	208	147	198	110	31
Application Rate	4mm	4mm	5mm	5mm	4mm
Calculated Pressure (m)	34.96	37.11	37.28	37.28	38.16

It is proposed that the Carroll's Road Pipeline (Lateral 7b) extended up to the junction of the Lower Mainrace and Lateral 7 is constructed as Stage 1, including the pump station. A short section of parallel race and pipeline will be required to enable the staging. Stage 2 will be to construct the Morven Glenavy pipeline by extending from the junction with Carroll's Road pipeline and expanding the pump capacity as required.

Carroll’s Road Pipeline (part of a combined pipeline)

Replaces	Lateral 7b, Lateral 7c
Alignment	Carroll’s Road (supplied from Morven Glenavy pipeline)
Area Supplied	928 ha
Length	3,457m
Pump Power Required	344.4 kW (with Lateral 7)

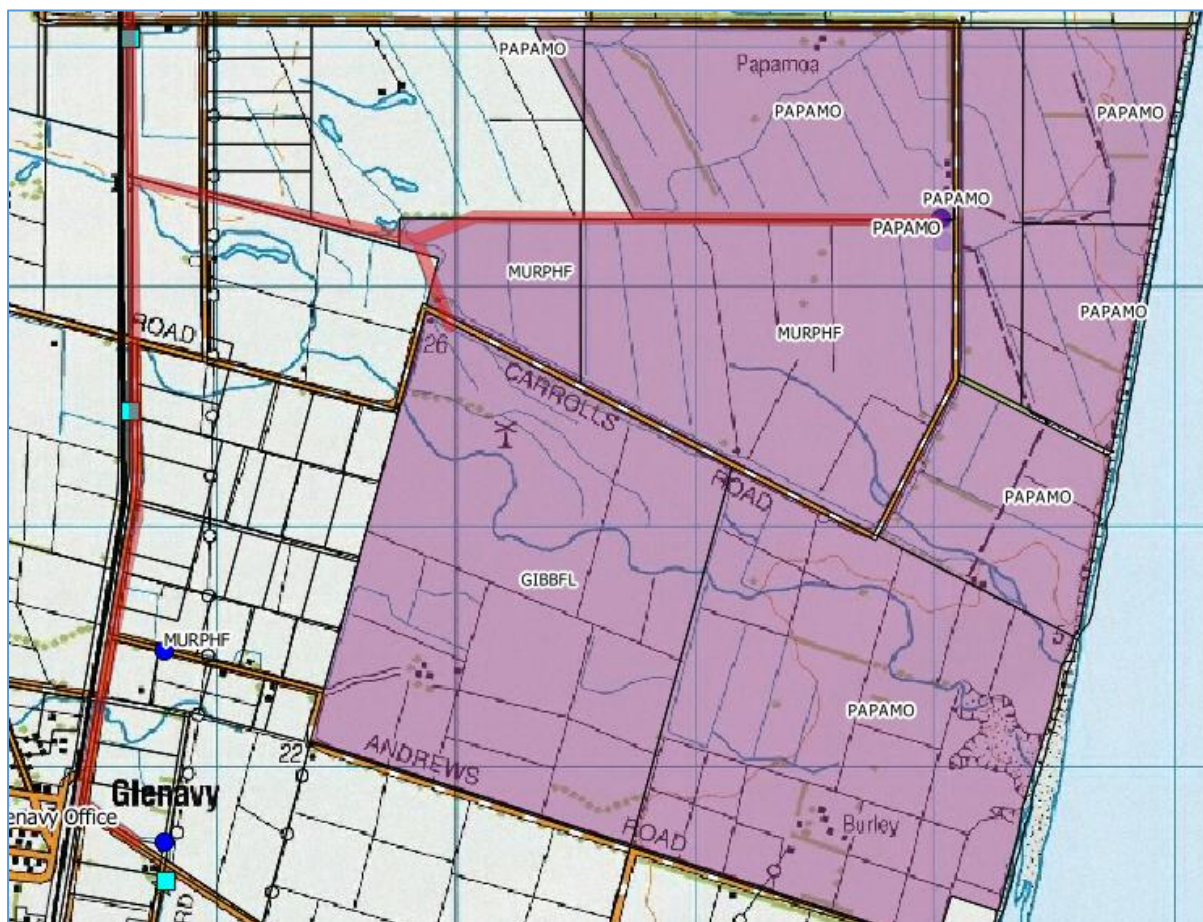


Figure 9: Carrolls Road Pipeline Area (replaces Lateral 7b and is a junction from Morven Glenavy pipeline).

Farm or Shareholder	Gibberslea	Horizon Murphy	Papamoa
Area (hectares)	181	197	550
Application Rate	4mm	4mm	4mm
Calculated Pressure (m)	33.34	32.63	39.59

Archibald Road Pipeline

Replaces	Lateral 9
Alignment	Archibald Road
Area Supplied	1,344 ha
Length	3,925m
Pump Power Required	169.8 kW

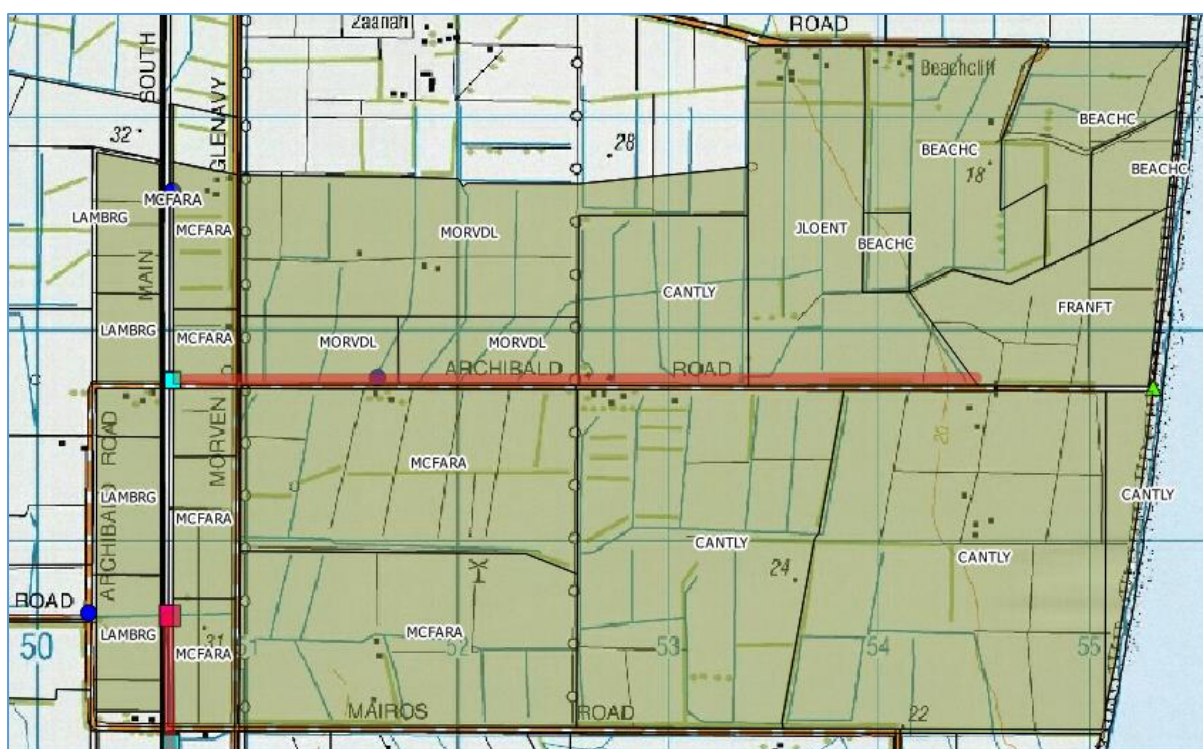


Figure 10: Archibald Road Pipeline Area (replaces Lateral 9).

Farm or Shareholder	Mairos McFarlane	Morven Dairies	JLO Enterprises	Cantly & Sunrise	Beachcliff	Lamb (Part) Extn West
Area (hectares)	297	170	104	481	213	79
Application Rate	4mm	4mm	4mm	5mm	4mm	4mm
Calculated Pressure (m)	30.22	30.22	36.32	37.10	36.36	27.34

Morris Road Pipeline

Replaces	Lateral 11, Lateral 10a, Part Lateral 3a
Alignment	Morris Road
Area Supplied	1,387 ha
Length	3,355m
Pump Power Required	194.3 kW

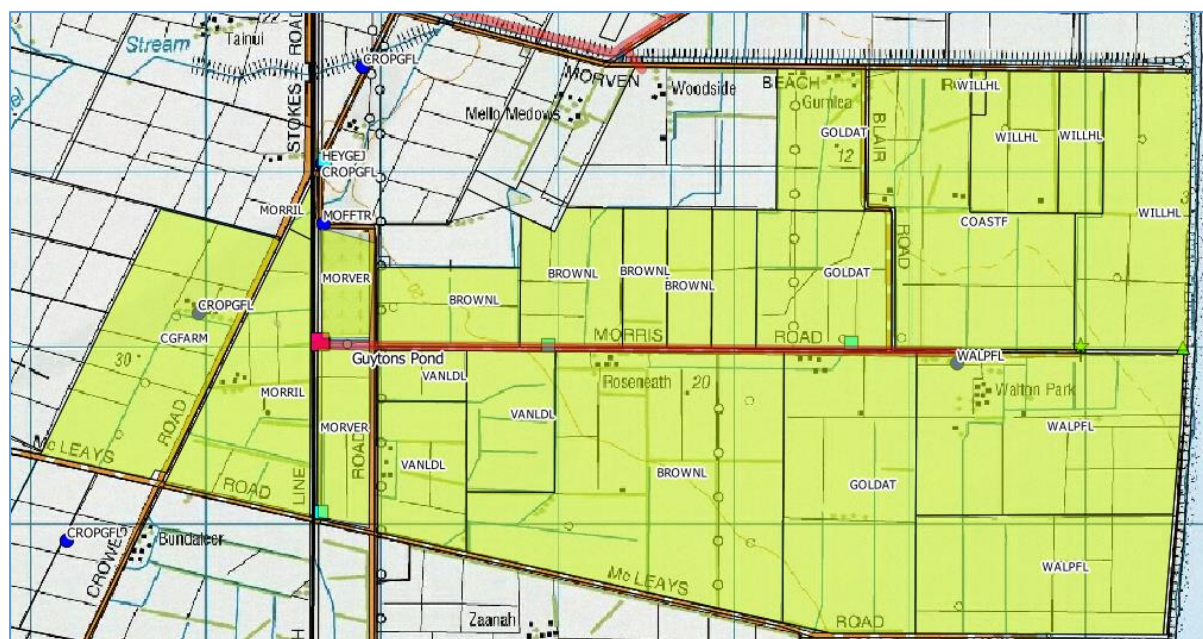


Figure 11: Morris Road Pipeline Area (replaces Lateral 11).

Farm or Shareholder	Morven Reserve	Van Leeuwen McLeays Road (part)	L.V Brown	Goldat	Walton Park Farm	Morven Farming Partnership
Area (hectares)	50	94	339	222	233	264
Application Rate	4mm	4mm	4mm	5mm	4mm	4mm
Calculated Pressure (m)	34.34	34.32	36.22	38.29	37.67	37.65

Farm or Shareholder	Morrison	Part of CG Farm (Crowes Road)
Area (hectares)	78	107
Application Rate	4mm	4mm
Calculated Pressure (m)	30.65	30.87

The Morris Road pipeline will be constructed independent of the race in order to overcome misalignment of borderdyke conversion timetables.

Morven Pipeline

Replaces	Lateral 13, Lateral 14
Alignment	Morven Beach Road and Ryans Road
Area Supplied	636 ha
Length	2,750m
Pump Power Required	110.5 kW



Figure 12: Morven Pipeline Area (formerly Lateral 13).

Farm or Shareholder	Morven Dairy Farm	Deltop Moffat	Huntly Trust	Ryans Road	Leningrad
Area (hectares)	40	76	30	281	209
Application Rate	4mm	4mm	4mm	4mm	4mm
Calculated Pressure (m)	35.45	35.00	35.00	33.74	36.52

Lateral 3a Pipeline

Replaces	Lateral 3a
Alignment	Between Ferry Road and SH1
Area Supplied	381 ha
Length	1,120m
Pump Power Required	Gravity Only (could be pressurised)

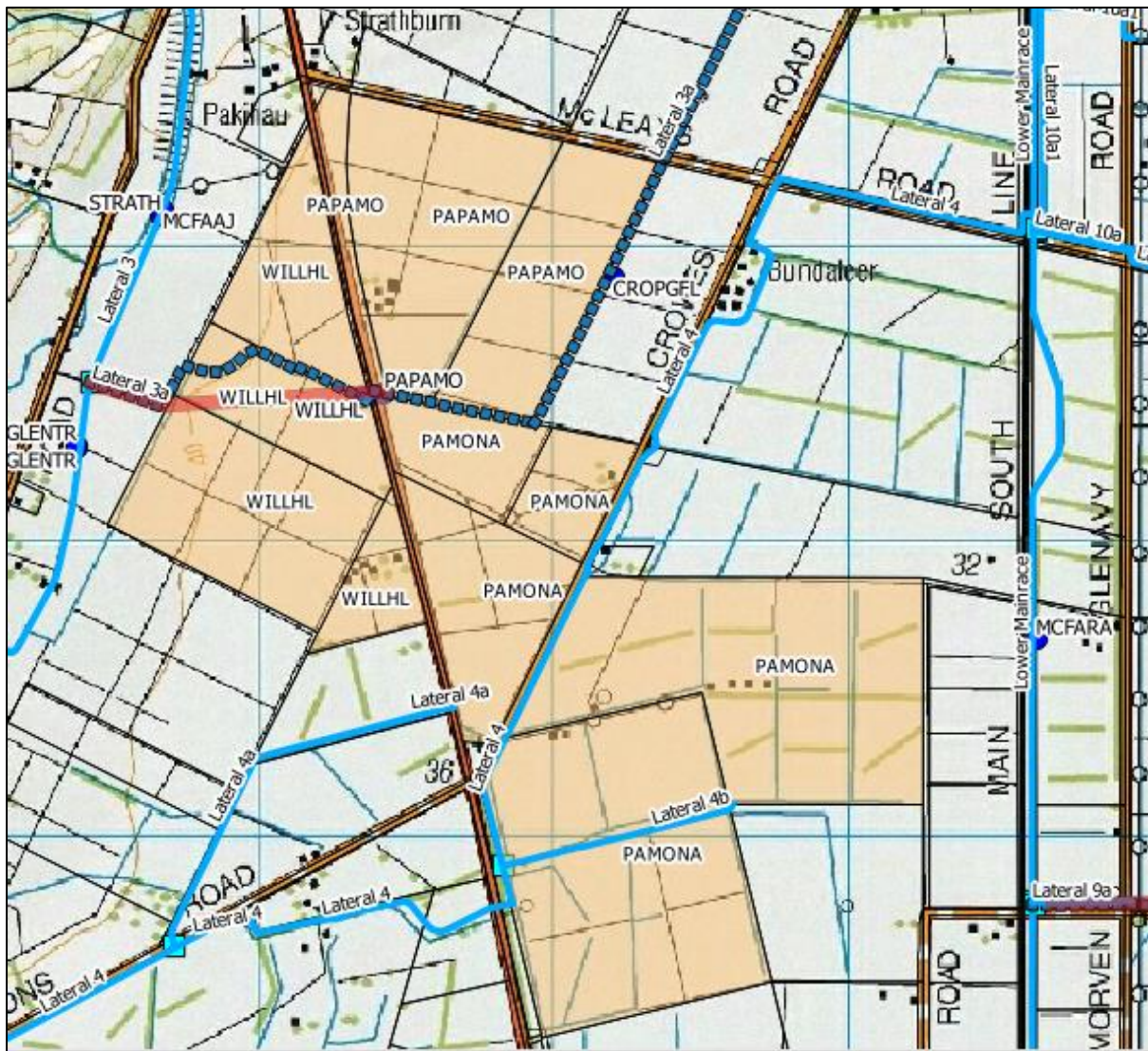


Figure 13: Lateral 3a Pipeline Area (unpressured).

Farm or Shareholder	Willans, Hopping	Papamoa	Pamona
Area (hectares)	105	62	214
Application Rate	4mm	4mm	5mm
Calculated Pressure (m)	1.99	2.65	2.65

Mainrace Lining

The Bells Pond mainrace from Ross Road to Glenavy Tawai Road is leaky and will be lined as part of the environmental project.

Ikawai Bypass Race

The Ikawai Bypass Race in the Redcliffs Scheme area is leaky and needs to be upgraded. Pipeline options were considered but the best option is to expand its capacity and the install a liner. The expanded capacity allows part of Ikawai Lateral 1 through Belvue Farms to be relinquished and rehabilitated.



Figure 14: Map of Ikawai Bypass project - race upgrade and race rehabilitation for environmental purposes.