

**Chairperson and Committee Members**  
CORPORATE BUSINESS COMMITTEE

19 NOVEMBER 2015

Meeting Status: **Public**

Purpose of Report: For Decision

**WAIKANAЕ DUPLICATE RISING MAIN CONSTRUCTION  
ADVANCEMENT**

**PURPOSE OF REPORT**

- 1 To seek approval for the reprioritisation of the 2015-2018 wastewater capital budgets to advance the construction of Waikanae Duplicate Rising Main ('WDRM').

**DELEGATION**

- 2 The Corporate Business Committee has delegated authority to consider this report under the following delegation in the Governance Structure:

**Section B.3.7 Annual Planning**

*7.2 Authority to re-allocate funding already approved by the Council as part of the Annual Budget process provided that the re-allocation of funds does not increase the overall monies committed in the budget and is consistent with the existing LTP strategic and policy framework.*

**BACKGROUND**

- 3 The Rauparaha wastewater pumping station transfers all wastewater effluent generated by Waikanae to the Paraparaumu Wastewater treatment plant for treatment.
- 4 The wastewater is pumped along a single 5km long "rising main" pipe to the treatment plant and there is no redundancy for the pipe.
- 5 The capacity of the existing pumping station is limited by firstly the power supply to the station and the pressure rating and size of the existing rising main. The existing pumping station has a pumping capacity of 137 litres per second ('l/s').
- 6 A three stage approach to upgrading the pumping station was developed with the first two stages now completed.
- 7 Stage one included the construction of 200m<sup>3</sup> of emergency storage at the pumping station to provide buffering of flows during wet weather or pump station outage.
- 8 Stage two included the construction of a second wet well with new pumps, refurbishment of the existing wet well and associated pipework and odour control for the station. This upgrade provides redundancy for the existing pumps and additional pumping capacity in preparation for the installation of the duplicate rising main in stage three. The additional capacity provide by the second stage

of the Rauparaha pumping station upgrades can not be fully utilised until the duplicate rising main is constructed.

- 9 Stage three includes the installation of a duplicate rising main and upgrading of the power supply to the station that allows the additional capacity in stage 2 to be fully utilised. Stage three was designed to provide additional capacity for future growth in Waikanae to 2061 and was originally planned for commencing in 2016/2017 in the 2012 Long Term Plan.
- 10 With the development of the Mackays to Peka Peka ('M2PP') Expressway programme, the opportunity to coordinate with construction activities to take advantage of potential synergies/savings was identified. The rising main installation was advanced in the 2015 Long Term Plan with the programme information available at the time.
- 11 This was split into two stages with stage one providing limited advanced works at existing roads crossings at Otaihangā Road and the Te Moana Interchange in years one and two of the 2015 Long Term Plan. This sought to minimise future traffic disruption with the completion of intermediate lengths along the services corridor and Cycleways/Walkways/Bridleways ('CWB') adjacent to the Expressway planned for years three and four.
- 12 Limited early works were undertaken in 2014/2015 using surplus funds from Te Roto Wastewater Pumping Station upgrade project. This allowed a duct to be constructed under the Expressway at the wastewater treatment plant with the main Expressway earthworks in preparation for the installation of the duplicate rising main.

## ISSUES AND OPTIONS

### Issues

- 13 The Council have been working closely with M2PP Expressway Alliance as they have refined their construction programme. It has become evident following the adoption of the 2015 Long Term Plan that significant benefits exist for advancing further sections of the duplicate rising main while the Expressway is under construction before the road is open to traffic. These include crossing the Waikanae Bridge and the section along the CWB north of the Waikanae Bridge adjacent to the 510 Retaining Wall.
- 14 Discussions are also underway with New Zealand Transport Agency ('NZTA') to assist with funding to complete the balance of the duplicate rising main as a matter of urgency rather than returning at a later date to complete the sections along the CWB and local roads. To date, no formal offer to provide advanced funding has been made.

### Existing Project Funding

- 15 The current budget for the duplication of the rising main is \$4,082,000 and is spread out over four years as shown below:

Long Term Plan Year	2015/16 \$000	2016/17 \$000	2017/18 \$000	2018/19 \$000	Total \$000
<b>WDRM</b>	250	717	736	2,378	4,082

- 16 This budget provided for limited advanced works in years one and two followed by the completion of the remaining length of the rising main in years three and four. The advanced works included the road crossings at Otaihanga Road and through the Te Moana Expressway interchange.
- 17 Any further advancement of works would require additional budget to be allocated / sourced in early years to meet the costs of such works.
- 18 The Council has been working with M2PP to further detail the scoping and construction budgets using detailed estimates and recent tender prices. The result of this work has highlighted that the construction rates for completing the rising main in the current market have increased as indicated in the priority works section below with the cost to complete the project now in excess of \$4.5 million. These prices remain estimates of the costs and would need to be confirmed at the time of contract award.
- 19 Further work is being done to review these budgets and consider options to mitigate cost increases to delivering the project. This may include reallocating planned pipe renewal budgets to this project to complete the work or deferral of the completion of the project to a later time when the construction market prices are more favourable after the demand for construction resources has eased after M2PP is complete, although this has not been determined at this time.

### Priorities for advancement of remaining works

- 20 The table below sets out the priorities for remaining works based on the benefits of each type of area the construction is occurring in. The priorities for advancement were set, based on cost and disruption minimisation while balancing the impact on rates and borrowings:

Priority	Type	Benefit of advancing	Locations	Estimate \$000
1	Existing road crossings	Eliminate the need to excavate recently constructed road surfaces Minimise future traffic disruption. Installed with main M2PP construction.	Otaihanga Road crossing	350
2	Expressway crossings	Minimise costs to install at a later date. Installed with main M2PP construction.	Ducting at treatment plant (completed 2014/2015) Te Moana Interchange	350

3	Challenging construction locations	Minimise cost of installation. Installed with main M2PP construction.	Waikanae bridge and approaches. 510 Retaining Wall section	1,050
4	Existing local roads	Single period of disruption. Completion with M2PP. Minimise disruption to traffic	Te Moana Road to Rauparaha pumping station	470
5	Cycleways/ Walkways/ Bridleways	Single period of disruption. Completion with M2PP. Minimise disruption to CWBs	Treatment plant to Otaihanga Road. Otaihanga Road to Waikanae Bridge. Waikanae Bridge to Te Moana interchange	2,350
<b>Estimated total cost to complete the rising main 2015-2017</b>				<b>4,570</b>

21 To advance priorities three to five would require additional funding this year. This could be achieved through either increasing the capital expenditure in the relevant years and/or deferring works in the early years and completing them in later years.

### Sources of funding

22 The total wastewater capital works budget for 2015/2016 is \$3.221 million which is made up of renewals and upgrades both reactive and planned across all asset types such as pipe networks, pumping stations, treatment plants and consents.

23 An examination of the 2015/2016 capital works budgets has identified the following planned projects that could be deferred with minimal risk to provide additional funding in 2015/2016 to undertake further advanced works.

Project	Primary deferral risk	Risk Level	Value \$000
Dissolved Air flotation (DAF) renewal to year two	Exceed current capacity or failure	Low-Medium	700
Annual pipe renewals	Delayed improvement in performance of wastewater network.	Medium-low	500
Wastewater network reconfiguration	Delayed operational performance improvements	Low	300
<b>Total</b>			<b>1,500</b>

- 24 These would provide an additional \$1.5 million of funding in year one giving a total budget for the advanced works of \$1.75 million which represent around 54 percent of 2015/2016 wastewater capital works budget. \$1.75 million would meet the estimate of costs to complete the Waikanae Bridge approach and crossing and 510 Retaining Wall section. The budgets for the first four years of the Long Term Plan for these projects are shown in the table below:

Project / programme	2015/16 \$000	2016/17 \$000	2017/18 \$000	2018/19 \$000	Total \$000	Priority
Dissolved Air flotation (DAF) renewal	700	-	-	-	700	Should / Must
Wastewater pipe renewals	500	513	526	541	2,079	Must
Paraparaumu Wastewater network reconfiguration	300	-	-	-	300	Must
Waikanae duplicate rising main	250	717	736	2,378	4,082	Must
<b>Total</b>	<b>1,750</b>	<b>1,230</b>	<b>1,262</b>	<b>2,919</b>	<b>7,161</b>	

- 25 The deferred works could be re programmed for completion in the following years as set out in the table below that was provided at the Council briefing on 22 October 2015.

Project / programme	2015/16 \$000	2016/17 \$000	2017/18 \$000	2018/19 \$000	Total \$000	Provisional priority
Dissolved Air flotation (DAF) renewal		717			717	Defer to year 2
Wastewater pipe renewals			1,262	818	2080	Defer to years 3-4
Paraparaumu Wastewater network reconfiguration		313			313	Defer to year 2
Waikanae duplicate rising main	1750	200		2,101	4051	Advance years 2-3 to year 1
<b>Total</b>	<b>1,750</b>	<b>1,230</b>	<b>1,262</b>	<b>2,919</b>	<b>7,161</b>	No net change to LTP

- 26 This includes the following funding reprioritisations:

- \$700k for the Dissolved Air flotation (DAF) renewal in 2015/2016 transferred to 2016/2017 and increased for CPI to \$717k
- \$1.13 million of annual pipe renewals from years 2015-2017 transferred into years 2017/18 and 2018/19 to give a yearly budgets of \$1.26m and \$818k respectively.

- \$300k of wastewater network reconfigurations in 2015/2016 transferred to 2016/2017 and increased for CPI to \$313k
  - The \$4.08m funding for the Duplicate rising main redistributed in years 2015-19 as follows: \$1.75m, \$200k, \$0, \$2.1m
- 27 This leaves a balance of the wastewater capital works budget of \$1.47 million. The remaining works are generally related to reactive pipe renewals, on-going wastewater pumping station and treatment plant renewals and upgrades and consenting works which carry a high risk should they be deferred.
- 28 A further \$2.8 million would be required to progress priorities 4 and 5. This exceeds the remaining balance of the wastewater capital works budget of \$1.47 million. To advance this work in 2015/2016, additional funding would need to be raised. Discussions with NZTA are underway to assist with funding to complete the balance of the duplicate rising main as a matter of urgency, rather than returning at a later date to complete the sections along the CWB and local roads.

### Procurement and resourcing

- 29 The construction of the rising main is a substantial project requiring contract management and administrative support processes and resources. The original staging of the construction also allowed the commitment required from the Council to be managed within the existing contract delivery processes and resources related to the M2PP project.
- 30 Advancing the works increases the resource commitment required by Council in the short term. This can be mitigated by working with the M2PP design and procurement teams to take advantage of the Alliances larger resourcing, while maintaining value for money by procurement through competitive tendering. This also brings the benefit of improved coordination of individual works areas with the M2PP programme and mitigates contractual claims from delays or coordination costs.
- 31 This model where Alliance teams manage the procurement and construction of Council infrastructure, under Council guidance, has worked successfully on other works. The Council then reimburse the Alliance for the costs to complete the works.

### Pumping station and rising main capacity

- 32 The requirement to duplicate the rising main is driven by the need to transfer additional flows from growth in Waikanae to the Paraparaumu Wastewater Treatment Plant. Failure to provide additional pumping capacity will compromise the ability of the Waikanae wastewater network to cope with wet weather flows and increase the likelihood and frequency of wet weather overflows from the system.
- 33 The growth projected in the earlier studies has not eventuated as rapidly as projected. In the 2006 census the population of Waikanae was 10,488 and it was projected to reach 13,933 by 2016 and ultimately 18,486 by 2061 which was the 50 year design horizon for the upgrade.
- 34 Based on previous flow modelling the Rauparaha pumping station would require a peak pumping capacity of 158 l/s to meet the 2 year annual recurrence interval

(ARI) storm event without overflowing for the population recorded in the 2006 census.

- 35 The current 2015 estimate for population served by the Waikanae wastewater network is now around 11,283 and peak wet weather flows are estimated at 170 l/s which exceeds the current pumping capacity of the station.
- 36 Emergency storage was also constructed at the pumping station during the recent upgrades and along with storage in the network provides some buffering of the peak wet weather flows at the station of just over four hours at current expected flows.
- 37 An upgrade of the power supply at the Rauparaha pumping station would provide the capacity to run more than one of the four pumps at a time. Running two pumps together would increase flows to around 160 l/s while running three would give 175 l/s. This does however increase the pressure in the rising main significantly, bringing it closer to its maximum rated operating pressure. Running the pumping station in this manner would increase the risk of a failure in the main.
- 38 Further emergency storage exists at the Waikanae ponds pumping station upstream of the Rauparaha pumping station and is used currently when the Rauparaha station reaches high levels.
- 39 Future growth will continue to reduce the effectiveness of the emergency storage and the network to buffer wet weather flows and prevent overflowing from the network in the 2 year ARI storm event.
- 40 The duplication of the rising main and upgrading of the power supply will allow multiple pumps to be used concurrently to increase the flows from the pumping station to the 50 year design population without increasing the pressure in or risk of failure of the existing rising main.
- 41 Further modelling is currently underway to assess the current performance of the Waikanae wastewater network and the Rauparaha pumping station at its current stage of upgrade and the results are expected by the end of the year.

## Procurement and resourcing

### Option 1 - Maintain existing programme

- 42 The existing programme would see the completion of Otaihanga Road crossing and Te Moana Interchange in the current year with the installation of other sections of the rising main being undertaken in the future. This would remove the need to excavate recently constructed local road surfaces and the associated traffic disruption.
- 43 Challenging construction issues would need to be resolved to complete the Waikanae Bridge Crossing across in a live Expressway. The installation of the pipe through the 510 Retaining Wall section north of the Waikanae Bridge would be difficult post Expressway construction because of the constraints in this area. Issues such as significant traffic management, the need for alternative construction methods and the potential for additional consenting would introduce further increases in the procurement, installation methodology and construction costs.

- 44 The completion of the rising main along the balance of the CWB adjacent to the Expressway and along Te Moana Road to Rauparaha pumping station would still need to be completed at a later date. This would require the disruption at these locations.
- 45 While there are no changes to current proposed Long Term Plan programme a contingency for additional costs to complete the project within the proposed four year timeframe should be held in reserve until contract prices are confirmed and construction complete. This could be achieved by reallocating deferred pipe renewal budgets to this project or deferral of the completion of the project at a later time when the construction market prices may be more favourable.

### Option 2 - Advance the Waikanae Bridge Crossing and the 510 Retaining Wall sections

- 46 It has become evident that significant benefits exist for advancing the Waikanae Bridge Crossing and the 510 Retaining Wall Sections of the duplicate rising main while the Expressway is under construction and before the road is open to traffic.
- 47 This advanced programme would see the completion of the Otaihanga Road and Waikanae crossings, 510 Retaining Wall section and the Te Moana Interchange in the current year with the installation of other sections of the rising main being undertaken in the future.
- 48 This would take advantage of the construction efficiencies from installing the rising main with the Expressway works. This is particularly relevant at the Waikanae Bridge and 510 Retaining Wall sections where retrospective installation would attract addition costs to manage traffic and alternative construction techniques.
- 49 Furthermore, it would eliminate the need to excavate recently constructed local road surfaces at Otaihanga and complete the crossing of the Te Moana Interchange.
- 50 The completion of the rising main along the balance of the CWB adjacent to the Expressway and along Te Moana Road to Rauparaha pumping station would still need to be completed at a later date. This would require the disruption of the use of these locations.
- 51 This requires the deferral of \$1.5 million of existing projects proposed in year one of the Long Term Plan.
- 52 A contingency for additional costs to complete the project within the proposed 4 year timeframe should be held in reserve until contract prices are confirmed. This could be achieved by reallocating deferred pipe renewal budgets to this project or deferral of the completion of the project at a later time when the construction market prices are more favourable.

### Option 3 Defer the installation of the rising main

- 53 Deferral of the completion of the rising main either in whole or in part will reduce the ability of the wastewater network in Waikanae to cope with wet weather flows increasing the likelihood and frequency of wet weather overflows as the population grows.

### Preferred option



## The preferred option is option two

- 54 The advancement of the construction of the Waikanae Bridge Crossing and the 510 Retaining Wall sections of the WDRM in 2015/2016 in conjunction with the construction of the M2PP Expressway.
- 55 Funding for option two is from the re-prioritisation of three existing wastewater capital projects:
- \$700k for the Dissolved Air flotation (DAF) renewal in 2015/2016 to 2016/2017
  - \$1.13 million of annual pipe renewals from years 2015-2017 and spread over 2017-2019
  - \$300k of wastewater network reconfigurations in 2015/2016 to 2016/2017
- 56 The results of the tendering process are expected by the end of the year and will confirm the projected costs to complete the rising main within the four year programme against the original budget.
- 57 A contingency for additional costs to complete the project within the proposed four year timeframe should be held reserve until contract prices are confirmed. This could be achieved by holding the deferred pipe renewal budgets or deferral of the completion of the project at a later time when the construction market prices are more favourable.
- 58 The results of the wastewater modelling will further inform the decision to proceed with the completion of the project in the four year time frame or provide updated evidence to support further deferral of the completion of the project to a later date when potentially construction rates are more favourable.

## CONSIDERATIONS

### Policy considerations

### SIGNIFICANCE & ENGAGEMENT POLICY 2014

- 59 The re-prioritisation of wastewater capital spending to use \$1.5 million of existing budget in 2015/2016 and deferral \$1.5 million of existing projects was reviewed against the significance policy and considered to have a low level of significance.

### Legal considerations

- 60 There are no statutory requirements related to this proposal.

### Financial considerations

- 61 The preferred option is considered to be prudent management of capital investment funding that:
- Minimises the cost of the project by coordinating works with the construction of the M2PP Expressway at critical sections along the alignment and staging completion of the balance of the rising main over four years;
  - Manages the advancement within the 2015 Long Term Plan wastewater capital budgets;

- Delivers the required upgrade to meet the projected growth.

## Tāngata whenua considerations

- 62 There are no known issues for consideration relating to Iwi with the re-prioritisation of these projects.

## Consultation already undertaken

No formal consultation has been undertaken to date.

## Engagement planning

- 63 The staging of the construction of the WDRM and projects now proposed for deferral were set out in the 2015 Long Term Plan which was consulted on prior to adoption.
- 64 The re-prioritisation of the wastewater capital budgets in year one of the plan and deferral of projects to later years does not impact of the level of service to the community and it is considered an engagement plan is not needed to implement this decision. A media release to advise of the community of the results achieved by working with the Alliance to deliver the advanced works may assist in “informing the community” about progress on the long term plan.

## Publicity

- 65 The approach to managing the staging of the construction of the WDRM was publicised in the 2015 Long Term Plan.

## RECOMMENDATIONS

- 66 That the Corporate Business Committee accept the recommendation to proceed with option two.
- 67 Approve the re-prioritisation of wastewater capital projects funding as follows:
- \$700k for the Dissolved Air flotation (DAF) renewal in 2015/2016 transferred to 2016/2017 and increased for CPI to \$717k
  - \$1.13 million of annual pipe renewals from years 2015-2017 transferred into years 2017/18 and 2018/19 to give yearly budgets of \$1.26m and \$818k respectively.
  - \$300k of wastewater network reconfigurations in 2015/2016 transferred to 2016/2017 and increased for CPI to \$313k
  - The \$4.08m funding for the Duplicate rising main redistributed across years 2015-19 as follows: \$1.75m, \$200k, \$100k, \$2.0m

**Report prepared by**

**Approved for submission**

**Approved for submission**

Martyn Cole  
**Water and Wastewater  
Asset Manager**

Kevin Currie  
**Group Manager  
Regulatory Services**

Sean Mallon  
**Group Manager  
Infrastructure Services**

**ATTACHMENT**

**APPENDIX 1: COUNCIL BRIEFING PRESENTATION 22 OCTOBER 2015**