



SPECIAL MEETING

AGENDA

18 MARCH 2014

Your attendance is required at a Special meeting of Council to be held in the Council Chambers, 232 Bolsover Street, Rockhampton on 18 March 2014 commencing at 9:00am for transaction of the enclosed business.

A handwritten signature in black ink, appearing to be "C. R.", written in a cursive style.

CHIEF EXECUTIVE OFFICER
13 March 2014

Please note:

In accordance with the *Local Government Regulation 2012*, please be advised that all discussion held during the meeting is recorded for the purpose of verifying the minutes. This will include any discussion involving a Councillor, staff member or a member of the public.

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1 OPENING

2 PRESENT

Members Present:

The Mayor, Councillor M F Strelow (Chairperson)

Councillor C E Smith

Councillor C R Rutherford

Councillor G A Belz

Councillor S J Schwarten

Councillor A P Williams

Councillor N K Fisher

In Attendance:

Mr E Pardon – Chief Executive Officer

3 APOLOGIES AND LEAVE OF ABSENCE

Leave of Absence for the meeting was previously granted to Councillor Rose Swadling.

4 DECLARATIONS OF INTEREST IN MATTERS ON THE AGENDA

5 OFFICERS' REPORTS

5.1 SOUTH ROCKHAMPTON FLOOD LEVEE ISSUES IDENTIFICATION

File No:	1743
Attachments:	Nil
Authorising Officer:	Michael Rowe - Acting Chief Executive Officer
Author:	Robert Holmes - General Manager Regional Services

SUMMARY

It is advised that towards the end of last calendar year the Council appointed consultants to undertake the hydraulic modelling and design stages of the project. Since that time the consultants have investigated a range of options including a level of impact assessment for those options and these were presented to a workshop held 17 March 2014.

The consultants have also been engaged to investigate mitigation measures for the North Rockhampton area with such measures to include flood valves on drainage outlets and this was also outlined at the workshop.

OFFICER'S RECOMMENDATION

1. THAT the information be noted in relation to the status of the South Rockhampton Flood Levee project and the flood mitigation investigations for the North Rockhampton area.
2. THAT the Council endorse for further investigation and subsequent funding application, the preferred levee alignment identified at the workshop held 17 March 2014 and as outlined on the plan attached to these minutes.

COMMENTARY

In late January the consultants appointed for this project, AECOM, undertook an issues identification workshop for stakeholders who had responsibility for major infrastructure that may be impacted by the proposed levee to identify any issues that could impact on the viability or operation of the proposed levee.

This was based on the original alignment of the levee; however, since that time there has been a considerable amount of work done on investigating options to address some of the issues raised at the workshop held in January and a status report on those options was presented to the workshop.

The workshop held on 17 March addressed a range of issues including an update on:

- Flood modelling;
- Geotechnical investigations;
- Environmental issues;
- Civil and structural design;
- Economic factors; and
- Community engagement.

It is now considered that a preferred alignment needs to be agreed upon to enable the more detailed work to be undertaken so that the information for the community can be developed to enable a full picture to be provided.

5.2 FUTURE UPGRADING OF THE ROCKHAMPTON AND GRACEMERE SEWAGE TREATMENT PLANTS

File No:	10456
Attachments:	1. STP Budget Planning Table - March 2014 2. STP Strategy Council Workshop - March 2014
Authorising Officer:	Nimish Chand - Manager FRW Robert Holmes - General Manager Regional Services
Author:	Jason Plumb - Coordinator Treatment and Supply

SUMMARY

The four sewage treatment plants (STPs) that service the communities of Rockhampton and Gracemere need to be upgraded and augmented to ensure they can continue to meet the future needs of the community. Fitzroy River Water (FRW) has recently completed some strategic planning to provide a more detailed understanding of the future requirements for each of the four STPs and also the timing and quantum of capital investment required in the coming years. This report provides a summary of the upgrade and augmentation works that are required in the short, medium and long term, the process undertaken to engender support for this STP strategy and the associated budget allocations required in the coming decade for its delivery. These were detailed at the workshop held 3 March and the Council's endorsement of the inclusion of the modified strategy works is sought.

OFFICER'S RECOMMENDATION

THAT Council adopt the proposed upgrade and augmentation strategy for Rockhampton and Gracemere STPs and approve the re-allocation of capital funding in the current capital budget as outlined in this report to enable commencement of the interim upgrade of the South Rockhampton STP and the completion of further design work for the augmentation of the Gracemere STP in the 2014-15 financial year.

BACKGROUND

A report was presented to the Water Committee of Council on 5 February which outlined the development of a strategy for the future upgrading of Rockhampton and Gracemere STPs in order to meet the future sewage treatment needs of each community. This report made specific recommendations on the upgrade works required to meet short-term and long-term needs for Rockhampton and Gracemere STPs and provided detail on the budget allocations required to complete these upgrades. At a subsequent Council Meeting on 11 February Council adopted to convene a Council Workshop on the proposed STP strategy to allow due consideration to be given to requirements for the 2014/15 Budget. A Council Workshop was held on 3 March to provide comprehensive detail on the development of the STP strategy to inform Council of the need, extent, timeframe and indicative cost of the STP strategy. A copy of the Workshop presentation is attached to this report. The Workshop was well received and since then budget planning for the 2014/15 financial year and beyond has been completed accordingly.

PROPOSED UPGRADING AND AUGMENTATION OF STP INFRASTRUCTURE

Strategic planning for the future of the Rockhampton and Gracemere STPs has identified a staged approach to the upgrading, augmentation and where appropriate the decommissioning of existing STP infrastructure. The information provided in Table 1 provides some detail of the extent, timing and cost of capital works that have been identified as being required to ensure the ongoing compliant operation of the STPs to meet the future needs of the community up to the year 2027. The following text provides a brief description of the key projects identified in the STP strategy.

South Rockhampton STP Interim Upgrade

As indicated above, the performance of the South Rockhampton STP has declined over recent years due largely to its inability to consistently remove nitrogen from the final effluent. The proposed interim upgrade involves converting the existing conventional activated sludge design into a design that is capable of consistently removing total nitrogen from the final effluent to consistently meet environmental discharge limits. This interim upgrade can be achieved at a relatively low cost (and is expected to provide sufficient treatment capacity (up to ~28,000 EP) for the next 8 to 10 years before the completion of further upgrade works would be required.

Gracemere STP Augmentation

The existing Gracemere STP needs to be augmented to ensure it has sufficient treatment capacity to cater for the continued population growth that is expected in the Gracemere area. Key components of this capital investment include the construction of a new STP inlet structure to handle the increases in the rates of inflow and the addition of further treatment capacity (up to ~16,000EP) through either the duplication of the existing process technology or the installation of a constructed wetland to increase treatment capacity. The preferred augmentation option will be determined in the coming months. This level of augmentation would provide sufficient treatment capacity until at least 2025.

West Rockhampton STP Diversion to South Rockhampton STP

This project involves the construction of a new sewer rising main to divert the raw sewage inflows from the West Rockhampton STP to the South Rockhampton STP. The upgrading of the Jardine Park Sewerage Pump Station would also be required to pump the sewage the additional distance to the South Rockhampton STP. Design of the rising main is to be completed in 2015 with construction work to commence in 2016 with completion in 2017.

North Rockhampton STP Augmentation

The North Rockhampton STP will require augmentation within the next 10 years to ensure it has sufficient treatment capacity to cater for population growth in North Rockhampton. The exact timing for this augmentation will be influenced by the rate of population growth that occurs in the coming 3 to 5 years. This augmentation project will be a major capital investment to increase the treatment capacity to ensure it can meet the future needs of the community. This augmentation would require the construction of new tank structures and other on-site facilities to house new equipment required for increase in treatment capacity.

The majority of the future population growth in Rockhampton is expected to occur in North Rockhampton, with a number of residential developments currently under construction, (e.g. Edenbrook, Crestwood and Northridge to name a few) or in the final stages of planning and approval (e.g. Ellida). By the year 2021, the increase in residential population served by the North Rockhampton Sewerage Scheme is estimated to be almost 8000 people. It is therefore critical that STP infrastructure with sufficient capacity exists to meet this forecast population growth.

South Rockhampton STP Augmentation

Following the diversion of the West Rockhampton STP sewage inflows to the South Rockhampton STP, and with the expected population growth over the coming years, the South Rockhampton STP is likely to need augmentation between the years of 2020 and 2025 when the population being served by this STP is expected to exceed 27,000 EP. This augmentation project will be a significant upgrade project that is likely to cost in excess of \$40 million and would deliver an increase in capacity to cater for growth in population up to the year 2042.

Recycled Water Schemes

The Gracemere STP already has an established recycled water scheme with virtually 100% of the treated effluent currently disposed to land via irrigation. No recycled water schemes have yet been established for any of the Rockhampton STPs.

Recycled water use has the potential to provide an effective long term, low cost means of reducing the volume of treated effluent discharged to the Fitzroy River, and thus defer the high cost augmentation and process upgrades of the STPs that would be required in order ensure environmental discharge limits are met for the Rockhampton STPs.

Three clear opportunities exist to expand existing (Gracemere STP), or create new recycled water schemes (each of North Rockhampton and South Rockhampton STPs) to avoid or reduce the need to discharge effluent to receiving waters respectively. The construction of a recycled water main from the Gracemere STP to recycled water users in South Rockhampton (e.g. Rockhampton Golf Club) will enable significant expansion of the Gracemere Recycled Water Scheme. The creation of a recycled water scheme at each of the North Rockhampton and South Rockhampton STP has the potential to make use of the sporting fields in North Rockhampton (e.g. Callaghan Park Racecourse, Cyril Connel and Norbridge Parks) and adjacent grazing lands in South Rockhampton. Construction of the infrastructure to establish these schemes is estimated to cost between \$1.0M and \$1.5M in total.

LEGISLATIVE IMPLICATIONS

The three Rockhampton STPs share a consolidated load-based environmental licence which was introduced in 2007 to enable the individual effluent streams from each STP to be regulated as a combined discharge to the Fitzroy River estuary. Currently 100% of the effluent produced by the three Rockhampton STPs is discharged to the Fitzroy River estuary. Recently, FRW has worked closely with the Department of Environment and Heritage Protection and in December 2013 received confirmation that the existing environmental licence for the Rockhampton STPs can be retained for the foreseeable future. It is conceivable that this environmental licence can be retained indefinitely through well-considered and timely future initiatives (e.g. recycled water scheme development) that limit the volumes of treated effluent that need to be discharged to the Fitzroy River estuary.

The Gracemere STP has a separate environmental licence and currently consistently meets all licence discharge limits with all flows disposed of to land. Augmentation of the Gracemere STP is likely to trigger a material change of use due to the increased capacity that will be achieved following the completion of the augmentation works. There is good potential to continue to increase the use of recycled water produced by this STP in the coming years, through local use around Gracemere and possibly also via the supply of recycled water to key potential end-users in South Rockhampton via a recycled water pipeline.

Completion of upgrade works to the Rockhampton and Gracemere STPs may lead to short durations of non-compliance whilst key construction activities are undertaken on existing treatment infrastructure. In mid-2013 FRW submitted a voluntary Transitional Environmental Program (TEP) to the regulator to cover brief periods of non-compliances while minor upgrades were being completed to the Rockhampton and Gracemere STPs. FRW has recently sought an extension to this TEP to cover the period required for future works that have the potential to lead to periods of non-compliant STP operation.

BUDGET IMPLICATIONS

As indicated in Table 1, a total of \$800,000 is required within the 2013-14 financial years for the completion of the proposed upgrade works to the SRSTP and the design of the augmentation works for the Gracemere STP. Funds to cover this expenditure can be made available by re-allocating capital funding from two other projects. These projects were originally proposed prior to the completion of the strategic planning study which has led to re-prioritisation or change in sequence of these projects. It is therefore proposed that the \$800,000 be obtained by re-allocating funding from the following projects with the remaining funds to be deferred to help fund projects next financial year.

- C0959212 R-S GSTP Augmentation (\$793,233)
- C0640283 R-STP Rton South Pipeline from WRSTP (\$667,745)

Budget planning for the following financial years has been completed and is presented in Table 1 above.

The budget allocations in later years may be subject to change in response to population growth rates and decisions subsequently made on the exact timing of each individual project, however, the budget planning is considered accurate based on currently available information.

CONCLUSION

Future upgrading and augmentation of the Rockhampton and Gracemere STPs is required to ensure they continue to meet the needs of our growing community. Strategic planning has been completed to define the timing and quantum of the capital investment that will be required to deliver these upgrades in a timely manner. If adopted, the delivery of the strategy for the future upgrading of STPs in Rockhampton and Gracemere will commence immediately.

FUTURE UPGRADING OF THE ROCKHAMPTON AND GRACEMERE SEWAGE TREATMENT PLANTS

STP Budget Planning Table - March 2014

Meeting Date: 18 March 2014

Attachment No: 1

Table 1. Capital Works Planned and Budget Allocations (in \$0,000,000s) for Rockhampton and Gracemere STPs

Project	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
SRSTP Interim Upgrade	\$0.60	\$0.30									
GSTP Augmentation	\$0.20	\$3.00	\$1.50								
G Recycled Water Scheme	\$0.26	\$0.12	\$0.82								
WRSTP Diversion		\$0.20	\$1.30	\$1.00	\$1.50						
R'ton Recycled Water			\$0.80		\$0.78						
NRSTP Augmentation			\$0.50	\$1.50	\$9.25	\$9.25	\$9.76	\$9.76	\$9.76		
SRSTP Augmentation							\$7.00	\$7.00	\$7.00	\$8.67	\$8.67
Total	\$1.06	\$3.62	\$4.92	\$2.50	\$11.53	\$9.25	\$16.76	\$16.76	\$16.76	\$8.67	\$8.67

**FUTURE UPGRADING OF THE
ROCKHAMPTON AND GRACEMERE
SEWAGE TREATMENT PLANTS**

**STP Strategy Council Workshop -
March 2014**

Meeting Date: 18 March 2014

Attachment No: 2



Rockhampton and Gracemere STP Strategy Workshop

Ensuring STPs meet current and future needs

Overview

- Water and sewerage assets overview
- Rockhampton and Gracemere STPs
- Past investment and SAMP forecasts
- STP investment elsewhere in Qld
- Strategy development and considerations
- Strategy study outcomes - refinements
- Recommendations going forward
- Costs compared to SAMP forecasts
- Recycled water scheme opportunities
- Where to from here?

Water and Sewerage Assets

Drinking Water Schemes (RWSS and MMWSS)

- Fitzroy Barrage, No. 7 Dam, Fletchers Ck Weir
- 2 Water Treatment Plants
- 20 reservoirs with ~130 ML capacity
- 41 water pump stations
- ~900 km of water mains and services
- 34,269 access charges
- ~76,000 population supplied
- ~48.5 ML/d average consumption
- Current replacement cost = \$441,000,000

FRW

Water and Sewerage Assets

Sewerage Schemes (NRSS, SRSS, WRSS, GSS, MMSS)

- 5 Sewage Treatment Plants
- 56 Sewerage Pump Stations
- ~710 km of sewerage mains
- 41,895 access connections
- ~80,000 population served
- ~18 ML/d total sewage inflow
- 3 schemes 100% discharge to Fitzroy River
- 2 schemes 100% discharge to land
- Current replacement cost = \$320,000,000

FRW

R'ton and Gracemere STPs

Characteristics	North Rockhampton STP	South Rockhampton STP	West Rockhampton STP	Gracemere STP
Year Built	1986	1983	1962	1984, 2004
Design	Extended Aeration	Activated Sludge	Trickling Biofilter	Extended Aeration
Contaminants Removed^a	SS, BOD, N, Bacterial Pathogens	SS, BOD, Bacterial Pathogens	SS, BOD, Bacterial Pathogens	SS, BOD, N, Bacterial Pathogens
Original Capacity (Equiv. Persons)	50,000	34,000 (no Nitrogen removal)	11,000 (no Nitrogen removal)	8,100
Current Utilisation (Equiv. Persons)	46,000	19,120	6,172	8,000
Structural Condition	Fair to Good	Poor to Good	Poor to Fair	Fair to Good

^aSS = suspended solids, BOD = biodegradable organic carbon, N = total Nitrogen, Bacterial Pathogens = indicators of faecal contamination such as *E. coli*.

EP or Equivalent Persons

- *Environmental Protection Regulation 2008*
EP = $V/200$ (V = Average Dry Weather Flow)
or
EP = $M/2.5$ (M = g of P treated in one day)
- WSAA suggest using 180 L/EP/d
- North Rockhampton STP
 - 1986 capacity = 47,000 EP (270 L/EP)
 - Effluent target quality BOD, TSS, pH, DO, Cl
 - No P removal ability so EP based on flow

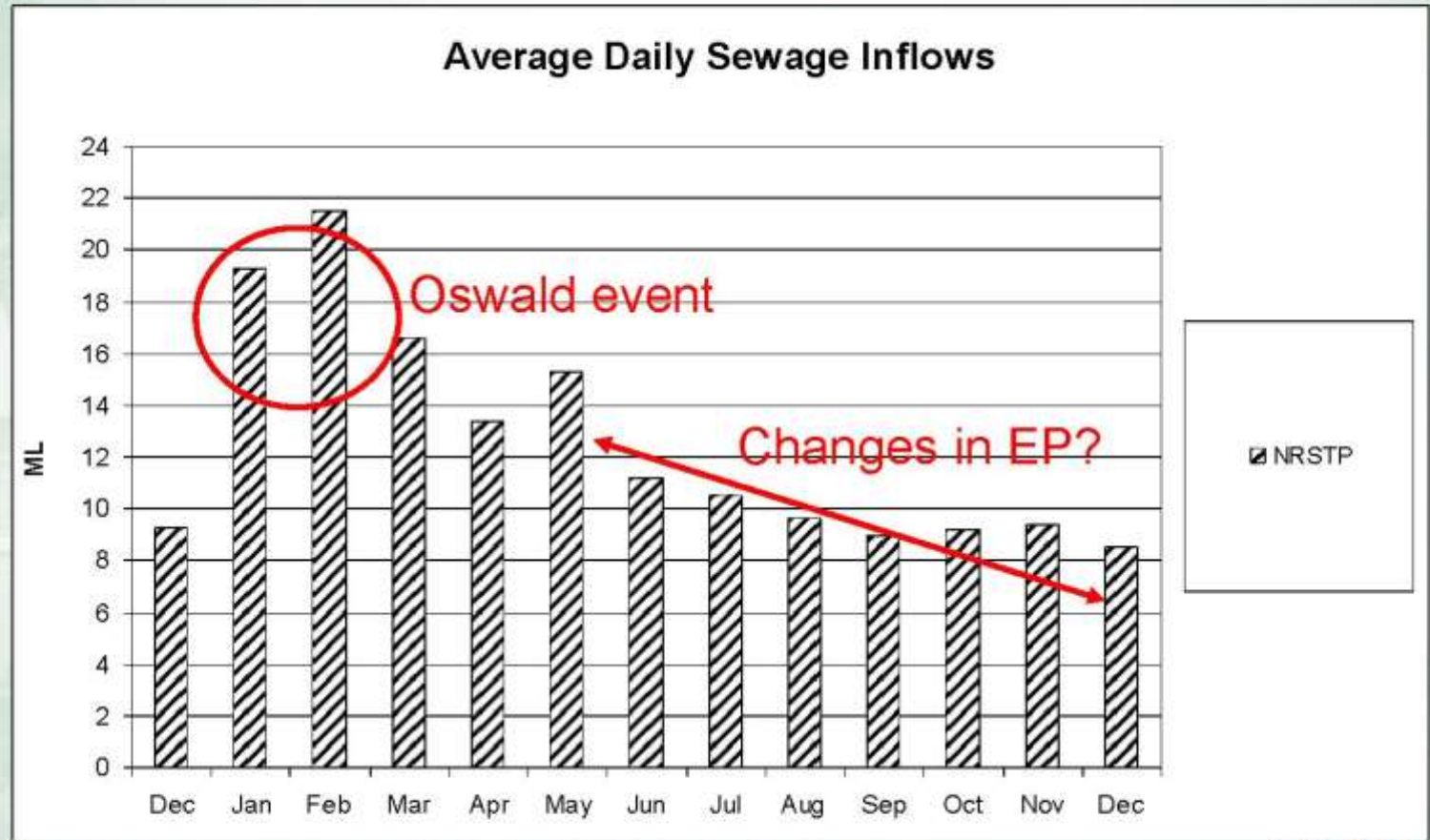
NRSTP Volume and Content

Characteristics	Original Design Capacity	Current Utilisation
Equivalent Persons	47,000	43,200
Litres per EP per day	270	220
Average Dry Weather Flow (ML/d)	12.7	~9.5
Raw Sewage Content	260 BOD 300 SS 44 TKN	350 BOD 420 SS 55 TKN

- Sewage volume and content changed since 1986.
- Changes can influence effect on EP rating.
- STP designed using flow and content numbers



NRSTP Ave. Daily Inflow 2013



- Sewage content strength changes with levels of inflow



Environmental Compliance

- R'ton STPs share a consolidated Environmental Authority based on 100% discharge to Fitzroy River estuary
- Gracemere STP has a separate Environmental Authority based on 100% land disposal
- Receiving environment (i.e. water or land) determines the stringency of discharge quality limits in order to protect the environment
- Discharge limits for water always more stringent
- But more lenient limits for the nutrient rich Fitzroy estuary
- Sufficient distance away from Great Barrier Reef



STPs Performance

Limit or Results	BOD mg/L	TSS mg/L	pH	DO mg/L	Cl mg/L	Total N kg/week	Total P kg/week	E.Coli /100mL
R'ton STPs	20	30	6.5-8.5	>6	<0.7	1380 (50%ile) 4140 (Max.)	1000 (50%ile) 3000 (Max.)	1000
2013 %	100	94	100	100	98	27 100	100 100	100
GSTP	20	30	6.5-8.5	-	<0.7	20 mg/L (80%ile)	8 mg/L (80%ile)	100
2013 %	96	100	100	-	98	69	82	96

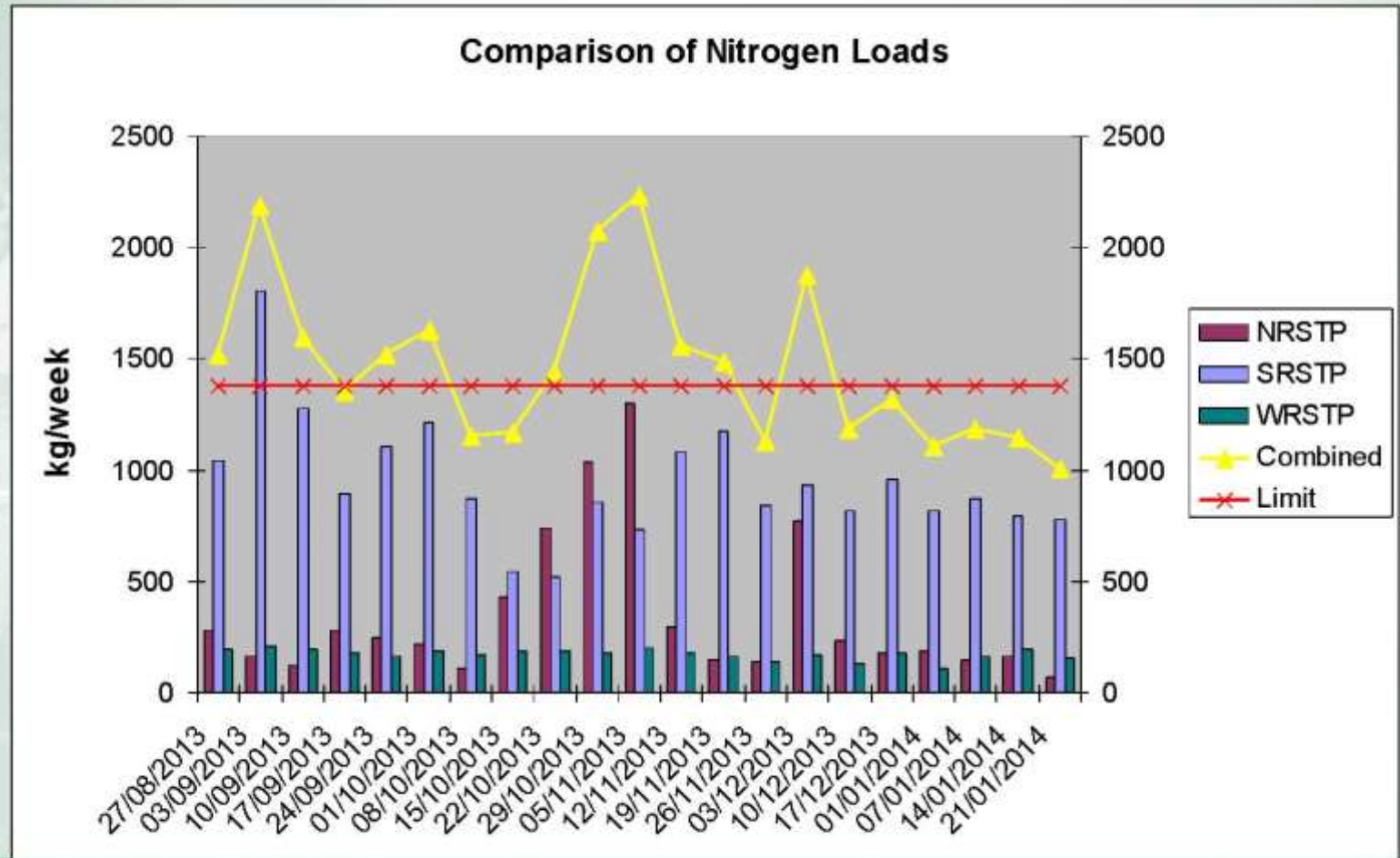


R'ton STPs Performance

- All 3 STPs generally meet all licence limits except for the long term 50%ile weekly load limit for Total Nitrogen
- Decrease in ability to meet 50%ile Total Nitrogen limit over last two years (>1380 kg/week for >26 weeks p.a.)
- 2012-13 reporting year the first that the long-term 50%ile Total Nitrogen limit not met
- Occasional minor exceedances due to operational or seasonal events (e.g. mechanical failure, rain/floods)
- NRSTP “shouldering the load” with poor performance from SRSTP and WRSTP (not designed for N-removal)
- Heavy reliance on good NRSTP N-removal unsustainable
- Minor mechanical and electrical renewals underway



R'ton STPs Performance

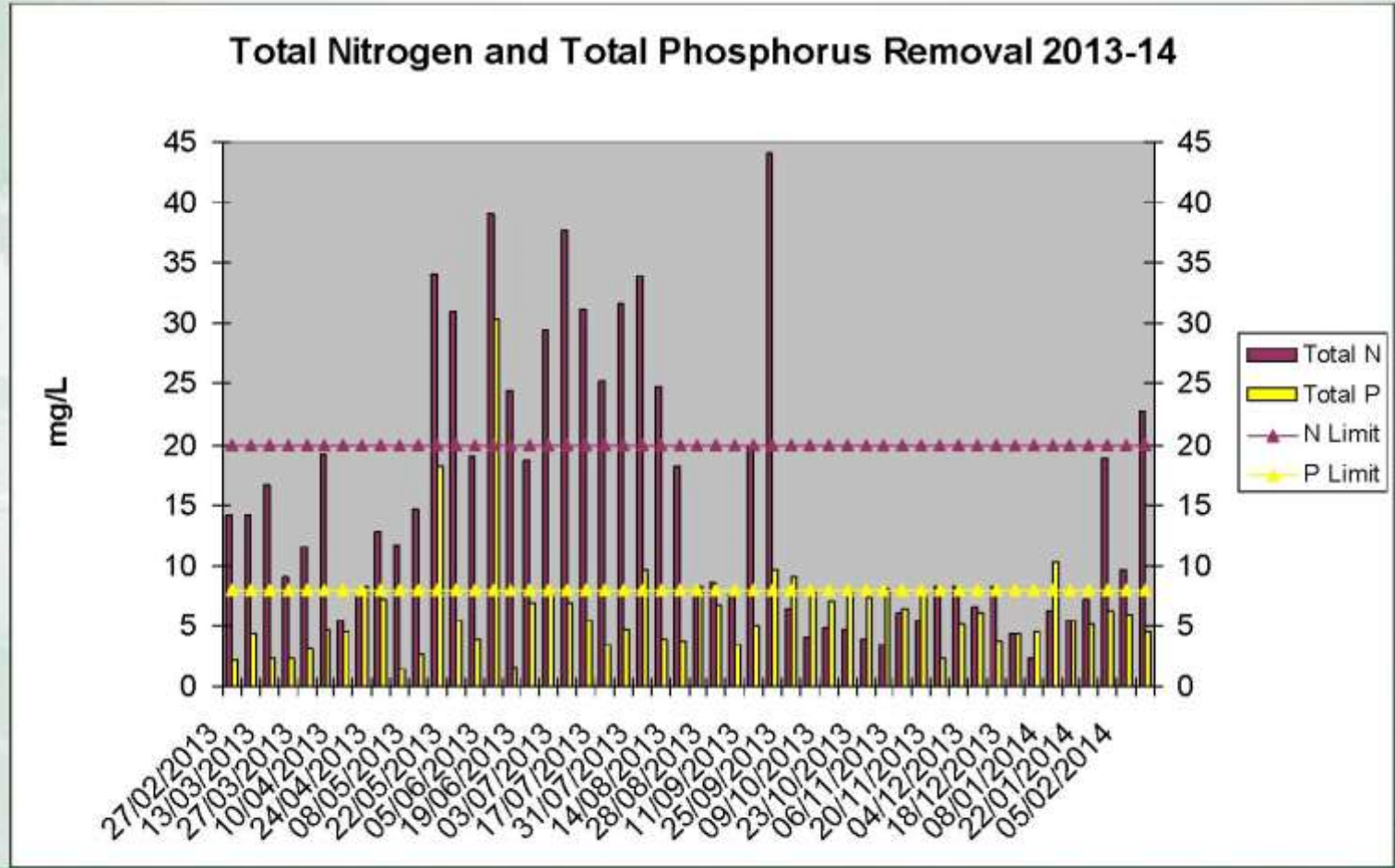


GSTP Performance

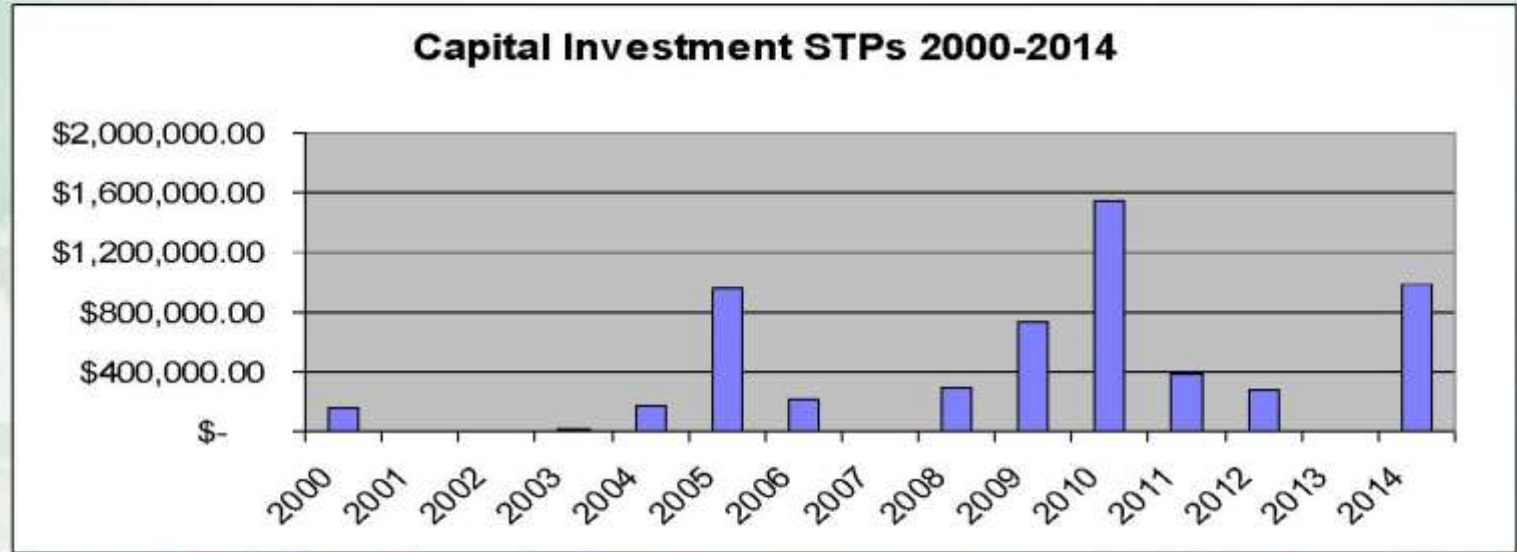
- Generally meets licence limits although previous problems meeting Total Nitrogen and Total Phosphorus
- Mechanical failures, wet weather events and design limitations overcome in the short term
- Some renewal of aerators and redesign by relocation of aerators has improved Total Nitrogen removal
- SCADA upgrade in mid-2013 improved performance
- Electrical upgrade to recycled water pumps and disinfection control nearing completion
- Consistently compliant performance now, but augmentation required now to meet population growth and ensure compliant operation

The logo for FRW (Franklin Regional Water) is located in the bottom right corner of the slide. It consists of the letters 'FRW' in a bold, sans-serif font, with a horizontal line passing through the middle of the letters.

GSTP Performance



Recent Capital Investment



STP	Year	Project	Cost
NRSTP	2013/14	Installation of mechanical sludge dewatering	\$685,000
	2013/14	Replacement of failed aerator/gearboxes	\$110,000
SRSTP	2009/10	Electrical upgrade following switchboard fire	\$2,000,000
	2010/11	Replacement of failed/corroded aerators	\$180,000
GSTP	2004/05	Clarifier constructed to augment STP to 8100 EP	\$767,000
WRSTP	2007/08	Installation of automated inlet screen	\$150,000

SAMP – R'ton & G'mere STPs

Year	Project	Capital Investment
2012-13	NRSTP aerator replacement	100,000
2012-13	NRSTP inlet screen renewal	60,000
2012-13	SRSTP renew corroded railings	22,000
2012-13	GSTP recycled WPS electrical	150,000
2016-17	NRSTP mech & elec renewal	80,000
Total Renewals		\$412,000
2012-13	NRSTP mechanical dewatering	800,000
2012-13	GSTP safety upgrades	24,000
2012-15	GSTP augmentation	10,150,000
2013-14	NRSTP effluent reuse scheme	220,000
2013-15	WRSTP to SRSTP rising main	2,700,000
2021-22	NRSTP augmentation	29,300,000
2021-22	SRSTP augmentation	21,000,000
Total New		\$64,194,000

STP Investment Elsewhere

Year	Upgrade Project	Cost (\$M)
2005-06	Yeppoon New STP 21,000 EP (strict limits)	18
2008-09	Cairns augmentation of 3 STPs (strict limits)	188
2008-10	Mackay New Bakers Creek STP & Rising Mains	135
2008-10	Hervey Bay New Nikenbah STP 25,000 EP (strict limits)	33.5
2008-14	Townsville Cleveland Bay STP augmentation (strict limits)	110 + 52?
2010-14	Emu Park New STP 9900 EP (lenient limits)	8?
2011-13	Goodna STP 30,000 EP augmentation (strict limits)	97
2013-15	Sarina New STP ~8,000 EP (strict limits)	25

- Most projects funded under WASP program (up to 40% subsidy)
- Range from augmentations through to new greenfield STPs
- Strict limits for Great Barrier Reef discharge lead to great expense!
- Increased risk associated with pushing the limits of technology (e.g. Cleveland Bay capacity issues ongoing)
- Going rate ranges from ~\$1000 to \$3000 per EP!



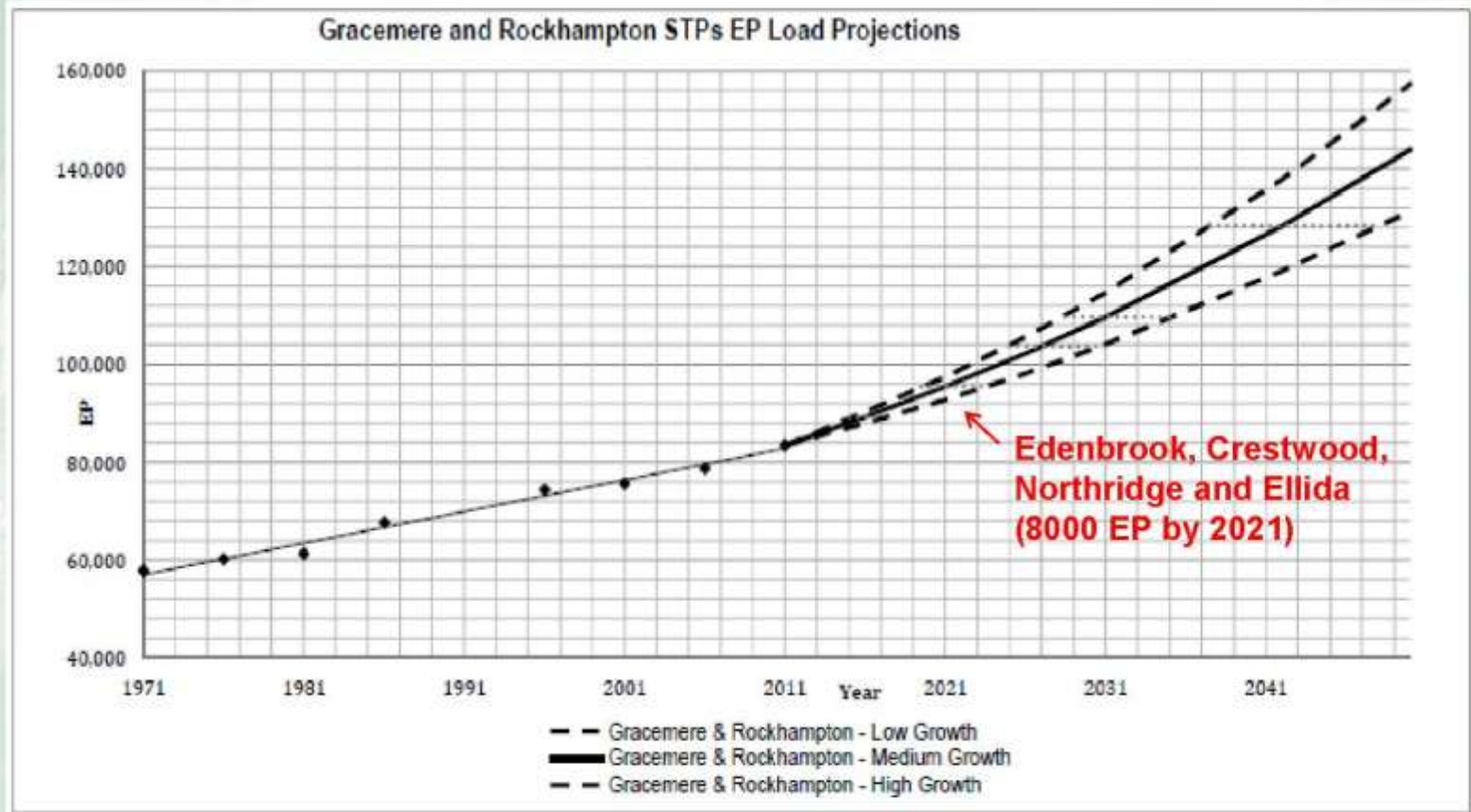
STP Strategy Study - SKM

Objectives and Inclusions

- Master STP strategy up to 2042 to meet demand
- Critical review of population projection data
- Optimal number and location of STPs in R'ton-G'mere
- Two effluent quality targets used – current and strict
- Meeting customer expectations (odour, recycled water)
- Maximising value of existing STP infrastructure
- Staging major works to meet needs and limit high cost
- High level review of existing STPs and performance
- Multi-criteria evaluation of long-term STP options
- Cost estimates (+/- 40%) for selected options



STP Strategy Study - Findings



- “High Growth” curve <10% increase in 2 years!



STP Strategy Study - Findings

Equivalent Population Projections

STP	2011	2016	2027	2042
Gracemere STP	8,200 EP	9,506 EP	13,158 EP	20,501 EP
West Rockhampton STP	6,160 EP	6,191 EP	6,259 EP	6,354 EP
South Rockhampton STP	18,700 EP	19,751 EP	22,277 EP	26,250 EP
North Rockhampton STP	50,430 EP	53,804 EP	62,017 EP	75,276 EP
Total Rockhampton STPs	75,200 EP	79,746 EP	90,553 EP	107,880 EP
Gracemere + Rockhampton STPs	83,400 EP	89,252 EP	103,711 EP	128,381 EP

- WRSTP v. low growth projected – 2% by 2027
- GSTP high growth projected – 60% by 2027
- SRSTP low growth projected – 19% by 2027
- NRSTP low to medium growth – 23% by 2027



STP Strategy Study - Findings

Existing STP Capacity

STP	2011 load	Current capacity
Gracemere STP	8,200 EP	6,500 EP
West Rockhampton STP	6,160 EP	Nil
South Rockhampton STP	18,700 EP	18,000 EP
North Rockhampton STP	50,430 EP	48,000 EP

- GSTP capacity based on existing licence targets prior to minor redesign works
- R'ton STPs based on achieving a 7N, 5P licence (2042)
- Reminder that current R'ton licence requires 12N, 8P
- SKM report prior to EHP confirmation of current licence



STP Strategy Study - Findings

Long Term Options 7N, 5P (to 2027 then 2042)

Option	Description	Capital Cost (\$M)	
		By 2016	By 2027
LT1	All sewage to new "flood proof" North R'ton STP	254.3	356.8
LT2	All sewage to single upgraded STP at SRSTP	-	-
LT3	All sewage to single upgraded STP at NRSTP	-	-
LT4	All sewage to optimised/upgraded NR & SRSTP	-	-
LT5	All sewage to optimised SRSTP/cross river/NRSTP	-	-
LT6	Optimise GSTP+SRSTP/cross river/upgrade NRSTP	139.7	207.7
LT7	Same as LT6 with no cross river but upgrade SRSTP	139.7	185.9

- Scored based on cost, community, environment, regulatory and operations
- WRSTP not part of any option and GSTP only part of LT6 and LT7
- Detailed cost estimates for selected options "book ends"
- 5N, 1P higher quality effluent even more expensive...



STP Strategy Study - Findings

Recommendations – Short Term

- SRSTP interim upgrade for compliance - \$10,000,000
- GSTP optimised and grow effluent reuse - \$4,500,000
- SRSTP and GSTP works should proceed immediately.
- Support 2009 Council decision to decommission WRSTP

Recommendations – Long Term

- Best long term strategy is LT6 or LT7 with GSTP retained and optimisation and upgrading of SRSTP and NRSTP to meet 2027 and 2042 growth
- Effluent quality target great influence on capital costs
- Completion of short term works provides time for detailed design and to plan for future capital investment

The logo for FRW (Frost & Squire) is located in the bottom right corner of the slide. It consists of the letters 'FRW' in a bold, sans-serif font, with a horizontal line passing through the middle of the letters.

Further Refinement of Options

Effluent Quality Target Confirmed by EHP

- The existing R'ton limits of 12N, 8P can be retained for the foreseeable future rather than 7N, 5P or worse!
- Defers need for large augmentation works by 3-5 years but does not remove the need for these upgrades.

SRSTP and GSTP Options Revised

- Alternative upgrade option for SRSTP developed by FRW at ~90% lower cost – endorsed by SKM
- SRSTP re-design to improve Total N removal
- Capital saving helps to fund other upgrade works
- GSTP recycled water scheme expansion to RGC helps to ensure compliant operation after augmentation works



Benefits of Revised Strategy

Cost-Effective Short Term Compliance

- Alternate SRSTP upgrade ensures Total N compliance
- Alternate SRSTP upgrade caters for WRSTP diversion
- SRSTP upgrade and WRSTP decommissioning takes pressure off NRSTP and defers its augmentation
- Significantly reduced capital cost than originally thought

Provides Time For Further Planning

- Defers the need for high cost upgrade works
- Time to gauge population growth and plan for funding
- Time available to develop recycled water schemes in R'ton to further defer high cost capital upgrades
- Provides time to plan to secure current licence limits which are highly defensible.

STP Upgrade Costs vs SAMP

Project	2014-16	2017-19	2020-22	2023-25
SRSTP Interim Upgrade	\$0.9M			
GSTP Augmentation	\$4.7M			
WRSTP Diversion to SRSTP	\$1.5M	\$2.5M		
WRSTP Decommissioning		\$0.8M		
NRSTP Augmentation	\$0.5M	\$20.0M	\$30.0M	
SRSTP Augmentation			\$20.0M	\$26.0M
Recycled Water Schemes	\$1.2M	\$1.5M		
Total	\$8.8M	\$25.3M	\$50.0M	\$26.0M
SKM Study Capital Cost	\$139.7M			~\$200M

- Proposed capital costs consistent with SAMP forecast
- SAMP ~\$64M new capital for STPs up to 2022
- Some deferment of 2020-22 costs possible?
- Significantly lower than SKM forecast cost!



STP Upgrades 2014 to 2016

Project	2013-14	2014-15	2015-16
SRSTP Interim Upgrade Aeration Upgrade, A-recycle, Dividing wall, M&E installations,	\$600,000	\$300,000	
GSTP Augmentation Detailed design, Inlet Works, Treatment Capacity Augmentation	\$200,000	\$4,500,000	
WRSTP Diversion to SRSTP Detailed Design		\$200,000	\$1,300,000
Recycled Water Schemes	\$260,000	\$120,000	\$820,000
NRSTP Augmentation Detailed Design			\$500,000
Total	\$1,060,000	\$5,120,000	\$2,620,000



Recycled Water Options

NRSTP and SRSTP Recycled Water Schemes

- Good opportunities for effluent reuse near each STP
- RJC, Cyril Connell, Norbridge Park near NRSTP
- Grazing lands adjacent to SRSTP, Rosel Park?

Opportunities and Constraints

- Land disposal via reuse can defer future STP upgrades
- Value-adding for community, reduced impact on river
- Not easy to get firm commitment from new users
- May require proactive investment to drive uptake (\$\$\$)
- Does not replace the need for compliant STP operation
- Risks associated with customer longevity, wet weather



Conclusions – next step?

STP Strategy Developed

- External and internal inputs to strategy development
- Critically reviewed and refined already – cost reduced!
- Mix of critical short term and long term projects to ensure compliance and to meet future growth

Timing and Financial Planning Important

- STP infrastructure can be very expensive
- Prudent early investment required to buy time
- Time will enable more detailed planning for investment and possibly some deferment of major CAPEX
- Proposed capital investment consistent with SAMP
- Discuss, agree, adopt, implement...





6 CLOSURE OF MEETING