

ENVIRONMENT AND INFRASTRUCTURE COMMITTEE AGENDA

6 SEPTEMBER 2012

AT 9AM

IN COMMITTEE ROOM 1, SECOND FLOOR, CIVIC OFFICES, 53 HEREFORD STREET

Committee: Councillor Claudia Reid (Chair)
Councillors Sally Buck, Jimmy Chen, Barry Corbett, Aaron Keown (Deputy Chair), and Sue Wells.

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- PART A - MATTERS REQUIRING A COUNCIL DECISION
- PART B - REPORTS FOR INFORMATION
- PART C - DELEGATED DECISIONS

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1. APOLOGIES
2. DEPUTATIONS BY APPOINTMENT

ENVIRONMENT AND INFRASTRUCTURE COMMITTEE 6. 9. 2012

3. KRUSE'S STREAM LANDSCAPING PROPOSAL

General Manager responsible:	General Manager, City Environment Group, DDI 941-8608
Officer responsible:	Unit Manager, Transport and Greenspace
Author:	Philippa Upton, Consultation Leader - Transport

PURPOSE OF REPORT

1. The purpose of this report is for the Environment and Infrastructure Committee to consider a name for the neighbourhood park to recommend for Council adoption. The Shirley/Papanui Community Board has under delegated authority approved the concept plan for the Kruses Stream Landscaping Proposal at 5 Vagues Road.

EXECUTIVE SUMMARY

2. The Council recently purchased the property at 5 Vagues Road beside Kruses Drain to continue a stream naturalisation project completed south of the site on numbers 125-131 Main North Road. This provided an opportunity to enhance the drain, increase storm water capacity and develop a small park, with views from the street to the waterway. A previous concept plan utilising the existing waterway was not considered viable owing to possible undermining of a neighbouring property.
3. Public green space is needed in Papanui to match increasing housing densities. This proposal has been developed to provide a neighbourhood park that is safe, accessible, attractive and multi-purpose. It encourages community interaction and will provide indigenous biodiversity and natural ecosystems to support the waterway enhancements.
4. The proposed landscaping design (**attachment 1**) includes open views and pedestrian access from the street to encourage use and safety. The plan has been developed to meet the Council's Parks and Waterways Access Policy, Maintenance and Safety standards and Crime Prevention Through Environmental Design (CPTED) requirements.
5. The majority of submitters approved of the plan as an asset for the neighbourhood. There were some questions about lighting and concerns about possible undesirable use of the park. Several security and unwanted access concerns were also raised and are addressed in Sections 14 – 23 Consultation Fulfilment, and **attachment 2** summary of submitter feedback and project team response.
6. Changes to the landscaping proposal, including removal of the sloping beach and increasing the capacity of the stream, have been made as a result of information gathered about flooding issues in the drain during consultation, and these will help mitigate security and access concerns.
7. Further investigation revealed the effects of increased storm water from the surrounding area, and the need for improved alignment of the stream with the pipe under Vagues Road to help alleviate flooding issues in adjacent properties.
8. The project team has been working with affected residents to find acceptable solutions for both parties while carrying out the necessary work on the waterway.

FINANCIAL IMPLICATION

9. Funding for the proposed development is provided within the 2009-19 LTCCP Neighbourhood Parks renewal and Replacements Programme as shown below.
 - (a) 2011/12 = \$80,000
 - (b) 2012/13 = \$170,000

Do the Recommendations of this Report Align with 2009-19 LTCCP budgets?

10. Yes, as above.

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LEGAL CONSIDERATIONS

Have you considered the legal implications of the issue under consideration?

11. No legal considerations have been identified. No resource or building consent issues have been identified.

ALIGNMENT WITH LTCCP AND ACTIVITY MANAGEMENT PLANS

Do the recommendations of this report support a level of service or project in the 2009-19 LTCCP?

12. The project aligns with the Long Term Plan 2009 – 2019.
13. Parks, open spaces and waterways.
- (a) Safety – by ensuring that our parks, open spaces and waterways are healthy and safe places.
 - (b) Community – by providing spaces for communities to gather and interact.
 - (c) Environment – by enabling people to contribute to projects that improve our environment.
 - (d) Governance – by involving people in decision-making about parks, open spaces and waterways.
 - (e) Health – by providing areas for people to engage in healthy activities.
 - (f) Recreation – by offering a range of recreational opportunities in parks, open spaces and Waterways.
 - (g) City Development – by providing an inviting, pleasant and well cared-for environment.
14. Measures
- (a) Neighbourhood parks are satisfactorily maintained.
 - (b) Overall customer satisfaction with neighbourhood parks.

ALIGNMENT WITH STRATEGIES

Do the recommendations align with the Council's strategies?

15. This project has primary alignment with the following Council strategies and policies:
- (a) Safer Christchurch Strategy.
 - (b) Parks and Waterways Access Policy.
 - (c) Environmental Policy Statement.

CONSULTATION FULFILMENT

16. Following a seminar with the Shirley/Papanui Community Board on 15 February consultation was carried out during a two and a half week period ending on 12 March. Consultation leaflets were delivered to approximately 105 residents and sent to relevant internal and external stakeholders including St Joseph's School and Church. The project was posted on the Christchurch City Council Have Your Say Website.
17. A meeting was held with St Joseph's School principal and a Board of Trustees Representative who expressed support for the proposal.

3 Cont'd

18. A drop in public information meeting about the landscaping proposal was held on site on 6 March 2012 between 5pm and 6pm, attended by six residents and a representative of the church.
19. During the consultation period 28 submissions were received and 23 submitters approved of the plan, with 16 in full support and seven providing additional suggestions or questions. One submitter did not specify and four did not approve of the project.
20. Those indicating full support for the plan included comments showing they expect the park to enhance the neighbourhood and provide a welcome amenity for locals and the school.
21. A request for additional seating was not followed up because in addition to the seat in the grassed area, three other curved bench seats are located in the gravelled space near the road. Steps down to the stream could also be used as informal seating.
22. The project team's response to concerns about lack of lighting in the park is that national guidelines for Crime Prevention through Environmental Design (CPTED), recommend not lighting parks as it can give a false sense of safety.
23. There was a question about the change from an earlier concept plan which did not include 5 Vagues Road, and which was preferred by one neighbour. However the revised plan was necessary to avoid undermining of a neighbouring property. The updated concept is more visually accessible. Fencing is available for adjacent residents, including open pool style. Planting and increased stream width will help deter access, including close planting of the stream edge which replaces the sloping beach.
24. Changes to the proposed park were made in response to concerns raised about the drain during consultation on the landscaping. This resulted in the need to consider flooding issues, including increasing the capacity of the stream through this reach.
25. Changes to the proposal which have resulted in the final Plan for Board Approval are as follows:
 - (a) The stream bed has been widened.
 - (b) The top of the bank has been changed to anticipate the possibility of flooding to higher levels at the site.
 - (c) The rock steps will be modified to allow for use during high water flows.
 - (d) The sloping gravel beach has been removed and the north bank modified slightly and planted.
26. All other aspects of the park remain unchanged.
27. A summary letter has been sent to all submitters, together with a table of consultation feedback and response, the Plan for Board Approval, and details of the Board meeting including how to ask for speaking rights.

STAFF RECOMMENDATION

It is recommended that the Council adopt the name Kruses Stream Reserve for the new pocket park at 5 Vagues Road.

BOARD CONSIDERATION

The Board approved the landscaping proposal. However, instead of confirming the staff recommendation for the name Kruses Stream Reserve, the Board considered proposing the name Withers Family Park. The Board agreed to change the staff recommendation and forward the suggestion to the Council, once it was confirmed that it was appropriate to put forward the proposed name.

3 Cont'd**BOARD RECOMMENDATION**

It was decided that the Board recommend to the Council that the name of the Reserve at 5 Vagues Road be Withers Family Park.

FURTHER STAFF ADVICE

Following the Board's recommendation a letter was sent to all submitters explaining the Board's recommendation, the reason for the choice of name, and a summary of the process to be followed for approval by Council. No responses or objections to the letter were received from the submitters. Given there were no objections received staff agree with the Board recommendation.

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ATTACHMENT 1 TO CLAUSE 3 ENVIRONMENT AND INFRASTRUCTURE COMMITTEE 6. 9. 2012



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ATTACHMENT 2 TO CLAUSE 3 ENVIRONMENT AND INFRASTRUCTURE COMMITTEE 6. 9. 2012

Proposed Kruses Stream Reserve landscaping proposal consultation summary of consultation feedback and project team response

28 submissions were received

23 submitters approve of plan (16 fully approve, 7 approved with questions or suggestions)

1 submitter did not specify

4 submitters do not approve

Summary of Community Feedback and Project Team Response to plan for landscaping of reserve			
Support/Op pose	Ref	Comment/Issue	Project Team Response
Full Support for plan			
	1,3, 4,5,8,9,10, 12,13,15, 16, 20,23,24 27, 28	No additional comment, or positive comments only eg ' it will enhance the neighbourhood,' 'and boost property value,' 'Great idea,' 'Very good 'Delighted to have a park in our neighbourhood' 'Lovely spot to walk and relax' 'Looks good and practical and safe' 'I think it's a great idea and something to enjoy very much!' Fully support the venture. A superb environmental resource so close to our school.	Thanks

Supports plan with suggested improvements, see comments/suggestions below :			
	2,6,18,22, 7,21,17		
Did not specify, comment only			
	25		
Do not support the plan, see comments/suggestions below:			
	11, 14,19, 26		

Submitter suggestions			
		Seating	
	2	More seating would be appropriate	Thanks. There are three curved bench seats at location 2 on the plan, as well as a seat at location 4 which are considered adequate

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			There will be steps down to the river which could be used for informal seating
		Lighting and security	
	6	Please consider lighting and security issues – don't want area to be a hangout for wayward individuals at night	The National Guideline for Crime Prevention through Environmental Design (CPTED) recommends not lighting parks as it can give a false sense of safety .
	22	Proper or adequate night lighting requested at the park and Vagues Road from the corner of Main North Road up to Nyoli Street	See above Street lighting is outside scope of project The CCC assets manager has been informed
	26	At night time the middle and the back of the reserve are completely dark	See above
	26	'Original scheme has stream and residents living together with enhance stream boundaries and looking after the flood danger. New scheme has residents behind security fences and planting to protect them.' 'The result if to take the timber out of the drain and shift security fences back thereby making the enhancement not available to anyone other than those walking along the drain bed. This result for Main North Road and 13 Vagues Residents is worse than farcical as it takes 15 metres off their property to fence.'	The original concept was carefully considered but was not a viable option owing to concerns about resulting undermining of a neighbouring property. This led to the Council purchase of 5 Vagues Road and the preparation of a revised concept. The fencing is at the request of the residents and according to CCC policy. Open pool style fencing was an option. The revised proposal is more visually accessible and the existing easement will not change as a result of these works.
		Unwanted access via park	
	18	Concern about the possibility of people coming up the stream to property via park	Plantings and increased stream width will help deter access. The sloping beach near the southern end has been removed and replaced with plantings along the bank. This will help discourage access to the stream
	14	'No Park unless it is fenced off from the houses'	See above

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		Need to prevent unwanted access to properties from stream including dogs	
		Maintenance and weed control	
	7	Ensure regular maintenance of waterway upstream of proposed park. Rubbish debris builds up in vegetation along banks. Also control noxious weeds such as convolvulus	The waterways maintenance team have been advised of these issues. There will be a formal maintenance contract for 12 months directly associated with the project and after that it will be handed over to the appropriate CCC maintenance team
	21	Approval conditional on having a plan to maintain the park area and trees be put in place	See above – maintenance programme
	11	'A rubbish-collecting, rambling area of ugly plants that fight against the weeds and grasses the CCC fail to keep under control of care for!!'	See above – maintenance programme
	14	..'would like to see the mess that is there cleaned up before you start anything.. yet to see one plan that was on the original draft plan growing..put down weed mat..' Needs care and attention.	See above – maintenance programme
		Rubbish in park	
	17	Need for rubbish bin in park to cater for those eating in park eg lunchtime picnickers	A rubbish bin will be installed inside the park but if household rubbish is left it will be removed prior to the end of the twelve month maintenance contract
		Plantings	
	18	Interested in trying to keep the magnolia tree	The tree will need to be removed to allow for the re-aligned stream, however magnolias will be included in the planting scheme in the park
		Use of park	
	25	Strongly expressed opinion that the park may be dominated by some neighbours to the detriment of other users	The project team has worked positively with the relevant neighbours who support the neighbourhood park
		Seating area	

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	11	'..will only give place for the unruly youths of the surrounding area to hang-out, take drugs, drink, smoke and mostly annoy the neighbours.."	The design of the park is open and encourages passive surveillance, also it is not lit at night (See CPTED standards).
		Flooding concern	
	19	Neighbour for 40 years has seen the five houses numbers 1 to 11 surrounded by water many times. Also the church school grounds and road. 'The amount of the water coming out of the drain is too much for the pipe under the road to take.' Concern that proposed sloping beach beside stream could create more flooding risk, and this could affect her neighbouring house which is 'straight in line' with the beach. Comment that in general increased housing has created more runoff from properties in the stream catchment.	Additional investigations have highlighted highlighted issues within the carriageway not directly related to the stream The CCC contracts manager for drainage has been informed and the sumps will be cleaned and the situation monitored
	26	Residents sections are flooded after rainstorms This has got worse since the Northland Mall and with on-going developments is not going to get better (Other information about neighbourhood flooding provided) Acknowledges the reserve will allow additional storage and will reduce short term flooding but believes the pipe to carry the water from the park does not have the capacity to handle existing flows from moderate rainfall	The sloping beach has been removed and the stream widened to for allow for increased capacity to help reduce flooding. The pipe under Vagues Road is outside the scope of this project, however the situation will be monitored (see above)
		Safety concern	
	26	Current is 'quite terrifying' – concern that person could lose their footing and be dragged down to the grill, especially at night	The park will not be lit at night. See above, lighting and security: The National Guidelines for Crime Prevention through Environmental Design (CPTED) recommend not lighting parks as it can give a false sense of safety. Steps are provided to allow anyone to get out if necessary

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	28	Just to ensure that there is something in place to prevent children walking in the river (stream) through the piping at the southern end. A great proposal - thank-you.	The sloping beach near the southern end has been removed and replaced with plantings along the bank. This will help discourage access to the stream
		Adjacent resident	
	26	Concerns about loss of privacy and security and exposure to park, and possible loss of land value as a result of the reserve	Planting and fencing options have been offered to all affected residents
		General oppose comment	
	11	Strong opposition... 'apply some common sense to pretty basic planning and building. The CCC should be ashamed of themselves for constructing such an eyesore/first section, only to be continued in pictured plan..' '...the flowing effect of this stream has been hindered by these alterations'	Principles of design are according to CCC waterways standards. Consultation feedback from the community about the concept plan has been generally positive. See above – the recommended changes to the drain will improve the flow and capacity of the stream
	26	'Sham consultation. Expensive and unnecessary use of ratepayer money. Why not Number 1 Vagues Road or a rear section going through to the undeveloped land Leander Street?' Concern lack of consultation on drain is deliberate strategy to avoid the examination of the 480? residents that should have a say about the money spent and the location of the reserve. The separation also limits discussion on flooding and related issues. Thinks the CCC should have a cost-free-resident preferred swap with the unused road reserve instead of the proposed reserve beside the stream, and that the proposed reserve is not needed or wanted by residents. Believes the house is being demolished in an underhand manner 'to make certain the residents' apathy is enhanced', that the proposal is being split up	This issue has been addressed previously The consultation was appropriate and included the Community Board. The Council does not consult when works are required in drains, however standard consultation process has been carried out with the community regarding the park This matter has been addressed with the submitter in previous correspondence The Property was purchased to allow the Council the opportunity to increase the drain capacity and reduce the

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	<p>to avoid questions and to justify previous underhand decisions that should have been made public by the CCC'</p> <p>States that the Community board cannot now make a decision to return the property to private hands without a 'serious loss' resulting from their 'previous rubber stamping.'</p>	<p>risk of flooding and impact on neighbouring properties. It also helps to get better alignment to the existing pipe under Vagues Road</p> <p>The Community Board has been kept informed during the process and will be involved in decisions where it has the relevant authority - for example approving the concept plan for the park</p>
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Feedback for naming the park

Seventeen of the submissions approved of the suggested option **Kruses Stream Reserve**

One also suggested that it would be good idea to provide an explanation of the name - ie the history behind it.

Submitter request for reason for suggested naming of the park

Kruses Stream Reserve was suggested as a possible option because a key feature of the park is the naturalised drain. Which runs through the property and the neighbourhood.

By 1857 most of the trees in the Papanui Bush had been felled and the Papanui Area continued developing into a grain cropping, market gardening and orchard farming community. Owing to the swampy nature of the ground, drains and ditches needed to be dug before some areas could be farmed.

Two of the major drains in the area were named after local land owners, one being Horner's drain, which went North from Papanui to the Styx River, and Kruse's drain which interconnected with the Horner's drain. The Kruse family owned land around the area of Winters and Grimseys Roads, near St Bedes College.

Other suggestions

One submitter suggested **Northlands Park** because it 'matches the area. The major shopping mall instantly identifies where it is.'

One submitter suggested **St Josephs Park** to identify with the 'icon' church across the road from the proposed park

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4. PAPANUI ROAD RIGHT TURN SIGNAL REQUEST AT BEALEY AVENUE/PAPANUI ROAD/VICTORIA STREET INTERSECTION

General Manager responsible:	General Manager, City Environment Group, DDI 941 8608
Officer responsible:	Unit Manager, Transport and Greenspace
Author:	Sean Lewis, Traffic Systems Team Leader

PURPOSE OF REPORT

1. At the Fendalton/Waimairi Community Board meeting on 30 April 2012, the following request was made: *"...the Board decided to request staff to investigate the feasibility of a right hand turn arrow at the Papanui Road/Bealey Avenue intersection to alleviate traffic congestion during peak times, and that this report be presented to the 12 June 2012 meeting."*
2. The purpose of this report is to present to the Hagley/Ferrymead Community Board the expected effects of installing this right turn signal, to highlight the on-street work which will be required, and to seek a recommendation to the Council on this matter.
3. This report was considered by the Fendalton/Waimairi Community Board on 30 July, and a joint report will be presented to the Council, as this intersection is on the boundary of the two wards.

EXECUTIVE SUMMARY

4. Following the February 2011 earthquakes, there has been a steady increase in the volume of vehicles making a right turn from Papanui Road onto Bealey Avenue towards Riccarton. Pre-quake, staff had been resistant to installing right turn signals (green arrows) for Papanui Road because of the low traffic volumes and the inefficiencies associated with green arrows. With the changed travel patterns, and demands at this intersection, staff are now supportive of the installation of these right turn signals.
5. Installing green arrows requires time to be taken away from other green-time allocated at the intersection. This requires a conscious decision to remove green-time from each other approach to the intersection, or to choose a specific approach to be disadvantaged.
6. It is not possible to reduce the green time given to Bealey Avenue, as this is a co-ordinated corridor, and the effects of reducing this green-time would impact the entire length of Bealey Avenue, and further. In this case, staff have made a conscious decision to reduce the green-time allocated to traffic exiting Victoria Street at Bealey Avenue. All modelling data presented is made with this assumption.
7. The modelling results show an increase in the average wait time for vehicles exiting Victoria Street at this intersection. This increase in average delays across the modelled time periods shows a general increase in average delays per vehicles of 40 seconds in the AM peak, 10 seconds in the inter-peak period, and 75 seconds in the PM peak. **Attachment 1** has the modelled Levels Of Service (LOS) results per period.
8. If there is no change to the traffic volumes on Victoria Street, there will be longer delays for vehicles exiting Victoria Street at Bealey Avenue. It is expected that some drivers will avoid this approach to the intersection, preferring to use Montreal Street through to Bealey Avenue instead. This will reduce the demand at this approach, therefore reducing the delays experienced.
9. As part of the project, temporary signage will be erected at the Montreal Street approach to Victoria Street warning of the potential delays, and advising the recommended route.
10. This proposal requires the Bealey Avenue pedestrian crossing facilities to be split, creating what is called a staggered-crossing. Separate green-man time is given to crossing each half of the road. This makes the crossing safer for pedestrians, as they will have a facility in the centre median to stop and rest. The proposed new layout is shown in **Attachment 2**.

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4. Cont'd

11. There will be more opportunities in each signal-cycle for pedestrians to cross these split sections of Bealey Avenue as pedestrians will be able to cross the shorter sections during several different signal phases. To permit these additional crossing opportunities, U-turns on Bealey Avenue will have to be banned.
12. Care will be taken to ensure that work performed while improving the waiting areas in the centre median will be done without harming the protected trees.

FINANCIAL IMPLICATIONS

13. The estimated costs of installing the right turn signals, and associated roading and street-light works is estimated to be \$160,000.

Do the Recommendations of this Report Align with 2009-19 LTCCP budgets?

14. The installation or removal of road markings, signs, and traffic signals is within the LTCCP Streets and Transport Operational Budgets, and would be programmed to be completed in the 2012/2013 financial year.

LEGAL CONSIDERATIONS

15. Subject to the Local Government Act 1974 and 2002. Subject to the Land Transport Rule 54002, Traffic Control Devices.
16. The Community Boards do not have the delegated authority from the Council to make alterations to traffic control facilities on an arterial road. Therefore, the Community Boards must make a recommendation to the Council.

Have you considered the legal implications of the issue under consideration?

17. As above.

ALIGNMENT WITH LTCCP AND ACTIVITY MANAGEMENT PLANS

18. Aligns with the Streets and Transport activities by contributing to the Council's Community Outcomes - Safety and Community.
19. The down-grading of the attractiveness of Victoria Street as a traffic through-route from Montreal Street to Bealey Avenue is in accordance with the 'Main Street' ambitions of the Draft Central City Plan.

Do the recommendations of this report support a level of service or project in the 2009-19 LTCCP?

20. As above.

ALIGNMENT WITH STRATEGIES

21. The recommendations align with the Council Strategies including the Pedestrian Strategy 2001, Road Safety Strategy 2004 and the Safer Christchurch Strategy 2005.

Do the recommendations align with the Council's strategies?

22. As above.

CONSULTATION FULFILMENT

23. As the improvements are network wide, and of minimal local effect, no consultation has been undertaken.

4 Cont'd**STAFF RECOMMENDATION**

That the Council approve:

- (a) That the pedestrian crossing facilities across Bealey Avenue at the intersection of Papanui Road and Victoria Street are realigned (refer **Attachment 2**).
- (b) That the U-turning of vehicles travelling east or west on Bealey Avenue at its intersection with Papanui Road and Victoria Street, be banned.

Both of these recommendations are required to ensure the green arrows for Papanui Road can be safely installed.

HAGLEY FERRYMEAD COMMUNITY BOARD RECOMMENDATION

It was decided that the Board recommend to the Council that the staff recommendation be adopted.

FENDALTON WAIMAIRI COMMUNITY BOARD RECOMMENDATION

It was decided by the Board that the report continue to lie on the table to enable further feedback from staff on the issues associated with banning U-turns on Bealey Avenue for local residents. (This is scheduled to be received at the 3 September Board meeting. The recommendation from that meeting will be provided to the Environment and Infrastructure Committee meeting on 6 September)

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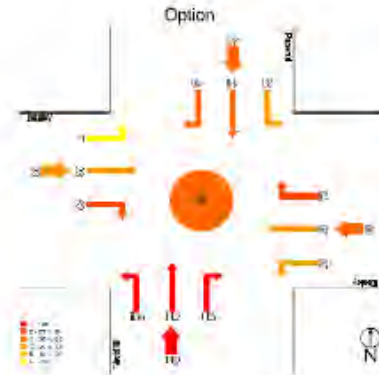
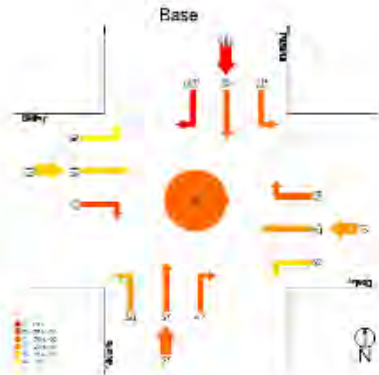
ATTACHMENT 1 TO CLAUSE 4 ENVIRONMENT AND INFRASTRUCTURE COMMITTEE 6. 9. 2012

Right Turn Signal Phasing
Christchurch City Council

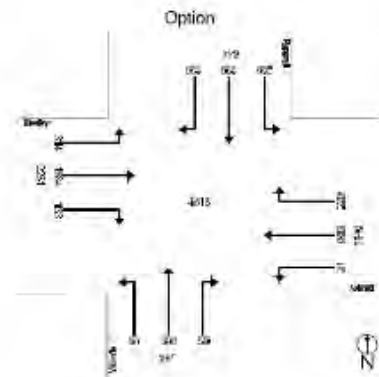
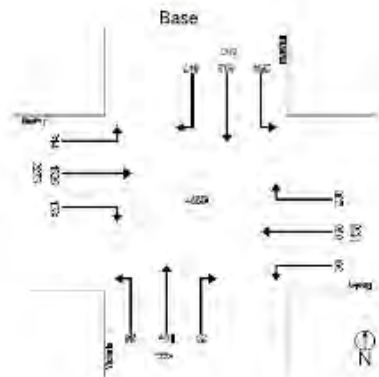
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Bealey/Papanui/Victoria
Level of Service and Volumes

PM Peak



Level of Service

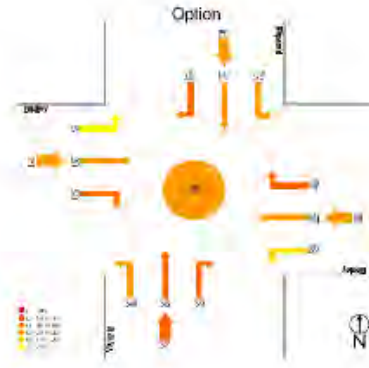
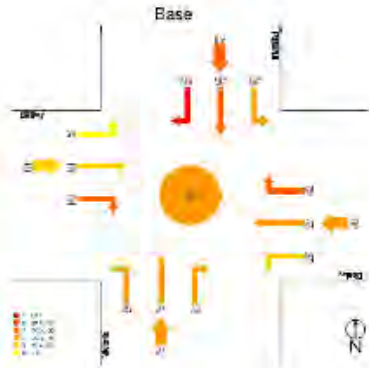


Peak Hour Volumes

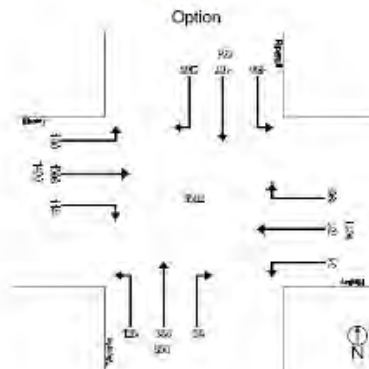
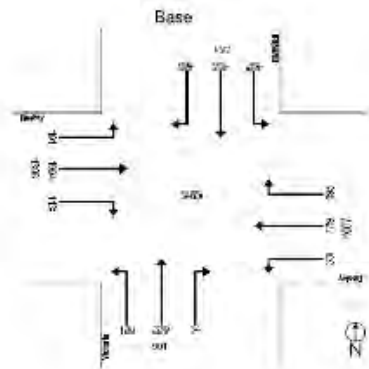
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Bealey/Papanui/Victoria
Level of Service and Volumes

IP Peak



Level of Service



Peak Hour Volumes



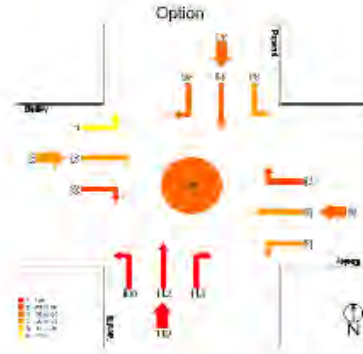
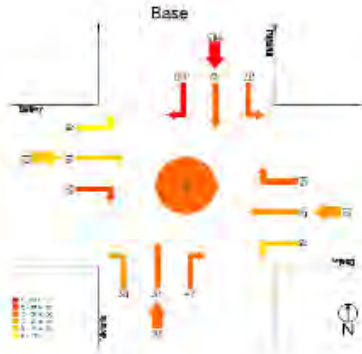
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Right Turn Signal Phasing
Christchurch City Council

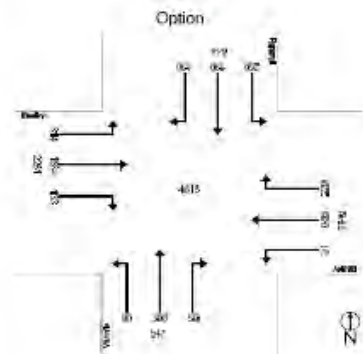
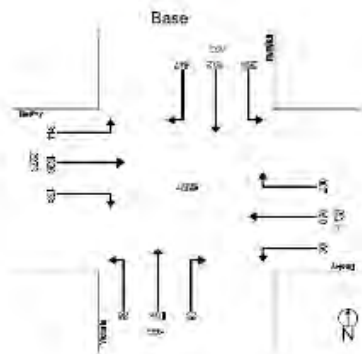
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Bealey/Papanui/Victoria
Level of Service and Volumes

PM Peak



Level of Service

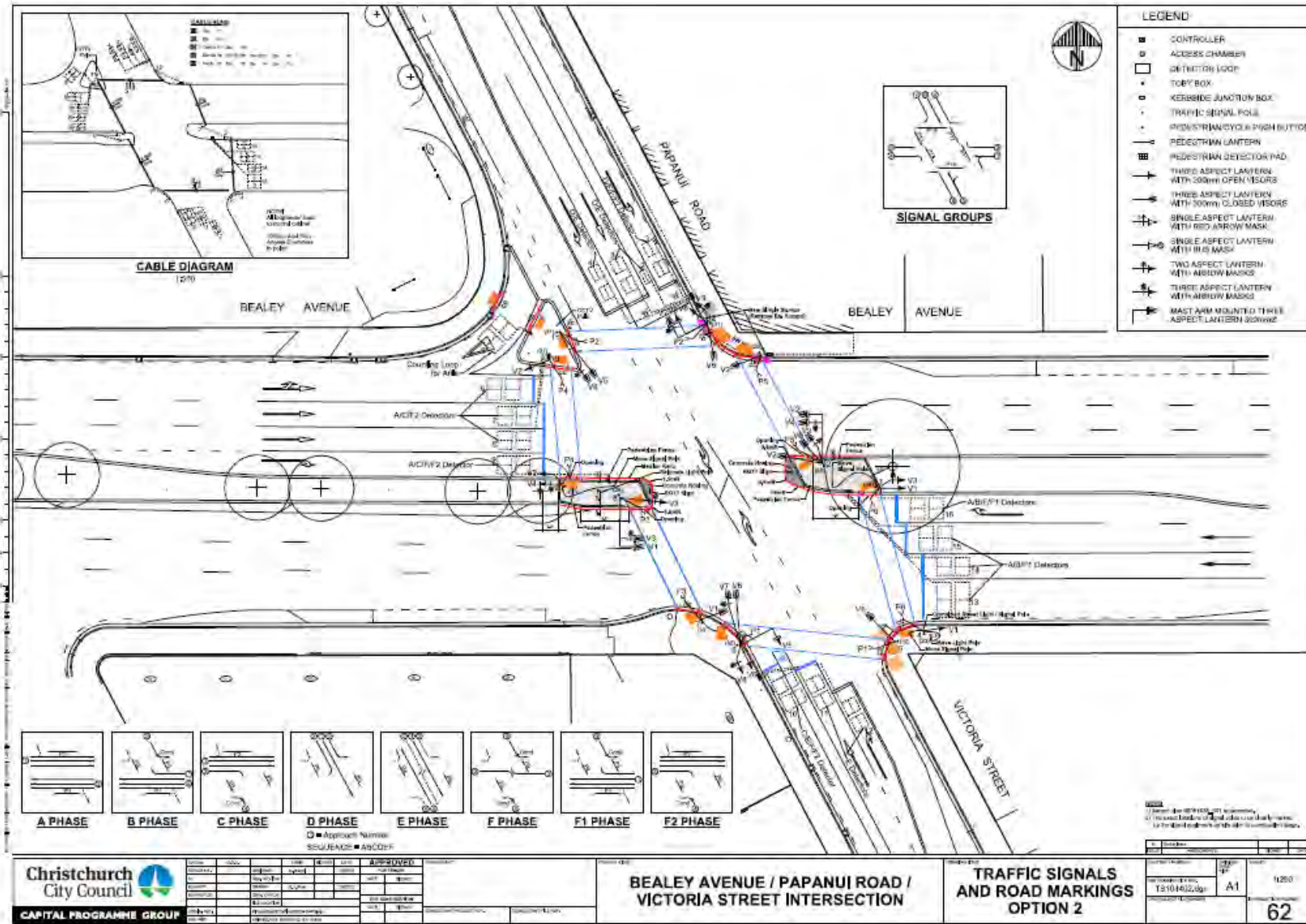


Peak Hour Volumes



4. 7. 2012

ATTACHMENT 2 TO CLAUSE 4 ENVIRONMENT AND INFRASTRUCTURE COMMITTEE 6. 9. 2012



ENVIRONMENT AND INFRASTRUCTURE COMMITTEE 6. 9. 2012

5. DRAFT WASTEWATER STRATEGY

General Manager responsible:	General Manager, Strategy and Planning Group, DDI 941-8281
Officer responsible:	Healthy Environment Programme Manager, Strategy and Planning Group
Author:	Diane Shelander, Senior Policy Analyst, Strategy and Planning Group

PURPOSE OF REPORT

1. The purpose of this report is to advise the Committee of the preparation of a Draft Wastewater Strategy (Attachment 1) and to seek the Committee's recommendation to the Council that the Draft Strategy is released for public consultation.

EXECUTIVE SUMMARY

2. Wastewater is used water collected from internal drains in homes, business and commercial/industrial properties.
3. The need for a Council Wastewater Strategy is driven primarily by:
 - the Independent Advisory Panel's suggestion that the plan to develop a Council Wastewater Strategy as the key instrument for managing Christchurch's wastewater system be accelerated due to the impact of the Christchurch earthquake sequence;
 - a lack of an overarching strategy. This strategy had been planned for development and delivery in 2010-2011 but earthquakes interrupted this work;
 - the need for updated analysis regarding the ability of the existing wastewater collection, treatment and disposal systems to meet future capacity in the medium and long term; and
 - a need to incorporate the learnings from the Christchurch earthquakes into a strategy for these services that recognises the heightened risks to the wastewater infrastructure that have eventuated in the Christchurch seismic environment.
4. A collaborative approach has been taken throughout the development of the Draft Wastewater Strategy (Draft Strategy) with the Stronger Christchurch Infrastructure Rebuild Team (SCIRT), Canterbury Earthquake Recovery Authority (CERA), Selwyn District Council (SDC), Waimakariri District Council (WDC), and Mahaanui Kurataiao Ltd (MKT). At each stage in the process, consensus among the parties has been critical to the development of the Draft Strategy.
5. The aim of the Draft Strategy is to establish the Council's strategic direction for sustainably managing wastewater over the next 10, 30 and 100 years.
6. The vision of the Draft Strategy is an affordable, reliable, culturally acceptable, sustainable and resilient wastewater system that protects public health and meets the needs of present and future communities.
7. The Draft Strategy's guiding principles can be summarised as follows:
 - delivering cost effective wastewater services;
 - minimising environmental effects;
 - working collaboratively;
 - planning and implementing affordable maintenance, renewals and expansion works;
 - optimising infrastructure resilience;
 - taking a flexible approach to new technologies;
 - supporting a sustainable economy.
8. The Draft Strategy identifies three primary goals, that the City's wastewater system:
 - protects public health effectively;
 - is resilient and meets community needs for environmental, social and cultural sustainability;
 - supports the future growth and economic wellbeing of the City.

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9. Five key issues have been identified, for which options are explored and actions recommended in the Draft Strategy:
 - Wet weather overflows;
 - Sewer system resilience;
 - Long term wastewater treatment and disposal;
 - Banks Peninsula wastewater;
 - Treatment product reuse (water and biosolids).
10. The Draft Wastewater Strategy was produced in August 2012 following the preparation of a situational analysis report, an issues and options report, two external stakeholder workshops, two huis, a Combined Community Board seminar, a Water and Wastewater Committee seminar and a Council seminar between December 2011 and July 2012.

FINANCIAL IMPLICATIONS

11. As with any strategy, implementation of the Draft Strategy is dependent on balancing the goals against the ability to achieve the outcomes. The Draft Strategy builds on established principles and practices, but continues to develop these to address emerging standards, pressures and issues.
12. Implementation beyond current resources will need to be addressed as part of the 2013 - 22 and future Long Term Plans.

Do the Recommendations of this Report Align with 2009-19 LTCCP budgets?

13. Funding to support the development of the Wastewater Strategy aligns with the current LTCCP budget. However implementation of the strategy will require funding in the 2013 - 22 Long Term Plan.

LEGAL CONSIDERATIONS

14. The Draft Strategy provides policy guidance for the Council on wastewater matters pursuant to the Local Government Act 2002 (LGA 2002) and the Resource Management Act 1991 (RMA 1991).
15. LGA 2002 as amended requires that local authorities promote the social, economic, environmental and cultural well-being of current and future generations (Section 10b) and to consider the impact of their decisions on the four well-beings (Sections 11c and 14).
16. LGA 2002 also requires that local authorities have particular regard to the contribution that the core services, including network infrastructure, make to its communities (section 11A). RMA 1991 promotes the sustainable management of natural and physical resources, and requires the Council to manage the use, development and protection of these resources.

Have you considered the legal implications of the issue under consideration?

17. As above.

ALIGNMENT WITH LTCCP AND ACTIVITY MANAGEMENT PLANS

18. Preparation of the Draft Strategy is in line with three activity management plans in the current 2009 – 19 Long Term Council Community Plan (09-19 LTCCP): Wastewater Collection, Wastewater Treatment and Disposal, and City and Community Long-term Policy and Planning Activities.
19. The actions in the Draft Strategy are anticipated to be considered in the Wastewater Collection and Wastewater Treatment and Disposal Activity Management Plans for the proposed 2013-22 Long Term Plan.

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Do the recommendations of this report support a level of service or project in the 2009-19 LTCCP?

20. Yes. Activities 11.0 Wastewater Collection and 11.1 Wastewater Treatment and Disposal.

ALIGNMENT WITH STRATEGIES

21. The Draft Strategy aligns with other Council strategies and policies including the Greater Christchurch Urban Development Strategy, the Council Sustainability Policy, and other Healthy Environment Strategies:
- Biodiversity Strategy, adopted in 2008;
 - Water Supply Strategy, adopted in 2009;
 - Surface Water Strategy, adopted in 2009;
 - Open Space Strategy, adopted in 2010;
 - Climate Smart Strategy, adopted in 2010.
22. The Draft Strategy also aligns with infrastructure recovery plans and strategies, such as the *Stronger Christchurch Infrastructure Rebuild Plan* (Stronger Christchurch Infrastructure Rebuild Team] and *Recovery Strategy for Greater Christchurch* (Canterbury Earthquake Recovery Authority).

Do the recommendations align with the Council's strategies?

23. As above.

CONSULTATION FULFILMENT

24. SCIRT, CERA, SDC, WDC, and MKT have been actively involved in the development of the Draft Strategy, with representation on the Wastewater Strategy project team and/or the Wastewater Strategy Advisory Group.
25. Consultation with key external stakeholders has been undertaken over the last 7 months, and includes two external stakeholder workshops in March and June 2012, and two hui with local rūnanga in June and July 2012.
26. Consultation with the community as a whole will be undertaken on the Draft Strategy, once it has been approved for release by the Council.

STAFF RECOMMENDATION

It is recommended that the Committee:

- (a) Recommend to the Council that the Draft Wastewater Strategy is approved for release for public consultation.
- (b) Recommend to the Council that a public consultation period is over 30 calendar days starting no later than four weeks after Council approval. Indicative dates are 8 October through 4 November 2012. This will be a non-statutory process and not a special consultative procedure.
- (c) Recommend to the Council that a Hearings Panel is formed no earlier than two weeks following the close of the submission period to hear oral submissions and consider written submissions.

5 Cont'd

BACKGROUND

27. The Wastewater Strategy will be the third of the water-related strategies to be developed as a part of the Healthy Environment Strategies programme, joining the Water Supply Strategy and the Surface Water Strategies that were adopted by the Council in 2009.
28. Wastewater is used water that is collected from internal drains in homes, businesses and commercial/industrial properties including sinks, basins, toilets, tubs, showers, washing machines and dishwashers. It also includes trade waste. Wastewater is also known as sewage. Wastewater is not stormwater, which is rainwater collected by external drains.
29. There were several drivers for the development of a Wastewater Strategy, including a request from the Independent Advisory Panel that the Council Wastewater Strategy, as a key instrument for managing Christchurch's wastewater system reconstruction post earthquakes, be accelerated.
30. Other drivers for a Wastewater Strategy were:
 - Lack of overarching strategy. Although various management plans have been developed for the wastewater system, the Council lacks an overarching wastewater management strategy. This strategy was about to start development just prior to the September 2010 earthquake.
 - Future capacity requirements. With anticipated future population growth and changes to the settlement patterns for the City, a strategic review was needed to consider the manner in which the wastewater system is able to meet medium and long term future collection treatment and disposal needs.
 - Risk profile. As a consequence of the 2010 and 2011 earthquakes, there was a need to incorporate the learnings from the Christchurch earthquakes into a strategy for these services that recognises the heightened risks to the wastewater infrastructure that have eventuated in the Christchurch seismic environment.
31. The development of the Draft Strategy has been informed throughout the process by a collaborative approach that included the active participation of representatives of Stronger Christchurch Infrastructure Rebuild Team (SCIRT), Canterbury Earthquake Recovery Authority (CERA), Selwyn District Council (SDC), Waimakariri District Council (WDC), and Mahaanui Kurataiao Ltd (MKT). At each stage in the process, consensus among the parties has been critical to the development of the Draft Strategy.
32. A project team comprised of Council staff from the City Water and Waste Unit, the Asset and Network Planning Unit and the Strategy and Planning Group plus a representative of MKT were involved in the development of the Draft Strategy.
33. A consultant was engaged to prepare a series of reports critical to the formation of the Draft Strategy: a situational analysis report, an issues and options report and a draft strategy report.
34. An Advisory Group that provided overview and guidance during the development of the Draft Strategy included senior Council staff and representatives from SCIRT, CERA, SDC, WDC and MKT.
35. The development of the Draft Strategy began with the preparation of an analysis of the current state of the wastewater system. The *Christchurch City Council Wastewater Strategy: Situational Analysis* (CH2M Beca, 2012) was completed with input from:
 - an issues definition workshop and a situational analysis review in February 2012 by Council staff and representatives from SCIRT, CERA, SDC, WDC, and MKT; and
 - an external stakeholder wastewater issues workshop in March 2012 that included representatives from local community groups and professional organisations.

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36. Five key wastewater issues emerged:
- Wet weather overflows;
 - Sewer system resilience;
 - Long term wastewater treatment and disposal;
 - Banks Peninsula wastewater; and
 - Treatment product reuse (water and biosolids).
37. The next phase of the strategy development process was an examination of the key issues facing the wastewater system, approaches that are being taken or could be taken to address the issues and recommended actions for the future. The *Christchurch City Council Wastewater Strategy – Issues and Options* (CH2M Beca 2012) report was the product of:
- a options development workshop in April 2012 and an options review workshop in June 2012 with Council staff and representatives from SCIRT, CERA, SDC, WDC and MKT;
 - a seminar for the Combined Community Board meeting in April 2012;
 - a seminar for the Water and Wastewater Committee in May 2012;
 - a Council workshop in May 2012;
 - a briefing to the MKT Board of Directors in May 2012;
 - a hui with Ngāi Tūāhuriri and Te Taumutu Rūnanga in June 2012; and
 - a wastewater options workshop with external stakeholders in June 2012.
38. The final phase in the development process was the completion of a Draft Strategy, which was based on the *Christchurch City Council - Draft Wastewater Strategy* report (CH2M Beca, 2012). The report was informed by:
- a strategy review workshop in July 2012 with Council staff and representatives from SCIRT, CERA, SDC, WDC and MKT; and
 - a hui with Banks Peninsula rūnanga that was held in July 2012.
39. The Draft Strategy aims to establish the Council's strategic direction for sustainably managing wastewater over the next 10, 30 and 100 years.
40. The Draft Strategy establishes the Council's vision for sustainable management of the City's wastewater system: to provide an affordable, reliable, culturally acceptable, ecologically sustainable and resilient wastewater system that protects public health and meets the needs of present and future communities.
41. Seven guiding principles provide the framework for the Draft Strategy:
- Wastewater services will be delivered cost effectively while balancing social, cultural and environmental effects.
 - Effects on the environment from wastewater systems will be minimised.
 - The Council will work collaboratively with communities, businesses and other stakeholders to achieve wastewater management goals and objectives.
 - Maintenance, renewals and expansion works will be planned and implemented so that costs are affordable and appropriately distributed over time.
 - Infrastructure resilience will be optimised using standardised risk assessment methods to categorise system risks and develop and implement risk management solutions that are efficient and represent best value.
 - The Council will take a flexible approach to new technologies for conveyance, treatment, reuse and disposal and will consider adoption of new technologies in future where the benefits and risk are well defined.
 - The Council will develop infrastructure that supports a sustainable economy.
42. To achieve this strategic vision, the Draft Strategy sets out three keys goals:
- The wastewater system manages public health risks effectively;
 - The wastewater system is resilient and meets community needs for environmental, social and cultural sustainability;
 - The wastewater system supports the future growth and economic wellbeing of Christchurch City.

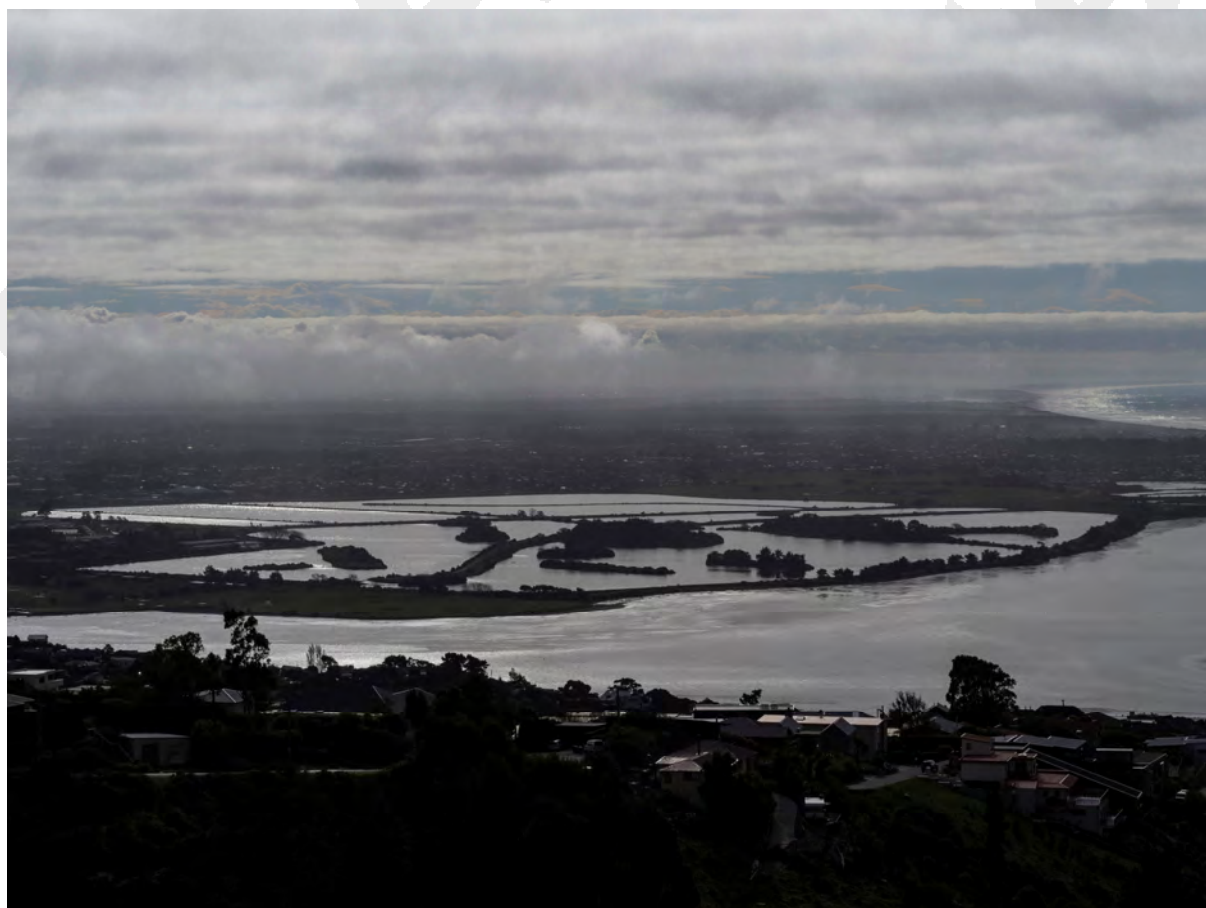
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43. Following the Council's approval for public release of the Draft Wastewater Strategy, a process of general public consultation will be undertaken. This process will encompass community and social organisations, environmental organisations, Government agencies, iwi, residents, business and commercial organisations, and other stakeholders.
44. It is recommended that consultation on the Draft Strategy will commence within 30 days of the Council decision to release the document for a period of 30 calendar days. Indicative dates are 8 October through 4 November 2012. This will be a non-statutory process and not a special consultation process.
45. A Hearing Panel is proposed to consider oral and written submissions on the Draft Strategy.
46. It is intended that the final draft of the Wastewater Strategy will be completed by early 2013.

Draft Wastewater Strategy

August 2012

DRAFT FOR ENVIRONMENT AND INFRASTRUCTURE COMMITTEE



DRAFT
for
Committee

Executive Summary

The Christchurch City Council's Wastewater Strategy (the strategy) will guide future asset management, planning and investment processes for the wastewater system.

The strategy applies to the public wastewater system within the jurisdictional boundaries of the Christchurch City Council, including urban Christchurch and Banks Peninsula.

The strategy's aim is to establish Council's strategic direction for sustainably managing wastewater over the next 10, 30 and 100 years. The Wastewater Strategy is one of the Healthy Environment Strategies developed by Council.

The strategy's vision is for the Council to provide an affordable, reliable, culturally acceptable, ecologically sustainable and resilient wastewater system that protects public health and meets the needs of present and future communities.

The three goals of the strategy are:

- The wastewater system manages public health risks effectively
- The wastewater system is resilient and meets community needs for environmental, social and cultural sustainability
- The wastewater system supports the future growth and economic wellbeing of Christchurch City.

The five key issues identified in the development of the strategy are:

- sewer system resilience
- wet weather overflows
- Christchurch urban area long-term wastewater treatment and disposal
- Banks Peninsula long-term wastewater treatment and disposal
- reuse of treatment products (e.g. treated wastewater, biosolids).

Each of these key issues is described in the strategy, along with the options considered and selected.

An Implementation Plan has also been developed, which sets out the action plan for implementing the strategy, including timeframes and indicative costs that will inform and guide future Long Term Plans.

The strategy will be formally reviewed on a five-yearly basis, with the first formal review scheduled for 2017. The Implementation Plan will be reviewed annually.

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1 Introduction

1.1 Background

1.1.1 What is wastewater?

Wastewater is all the used water collected in internal drains from homes, businesses and commercial and industrial properties, such as water from sinks, basins, tubs, toilets, washing machines and dishwashers, and also includes trade waste. It is also known as sewage. Wastewater is not stormwater, which is rainwater collected by external drains.

1.1.2 History

Christchurch's wastewater system has grown over time, beginning with the city's first permanent sewerage system in 1882 that served an area of approximately 200 acres including parts of St. Albans and Sydenham along with small portions of Addington and Linwood as shown in Figure 1.1. The sewerage system was devised to protect public health. By the mid-to-late 1800s Christchurch had the highest death rate of any New Zealand town, and water-borne diseases such as dysentery, typhoid and diphtheria were more prevalent than elsewhere in the country. A typhoid epidemic in 1875 was the impetus for the move to a permanent public sewerage system.

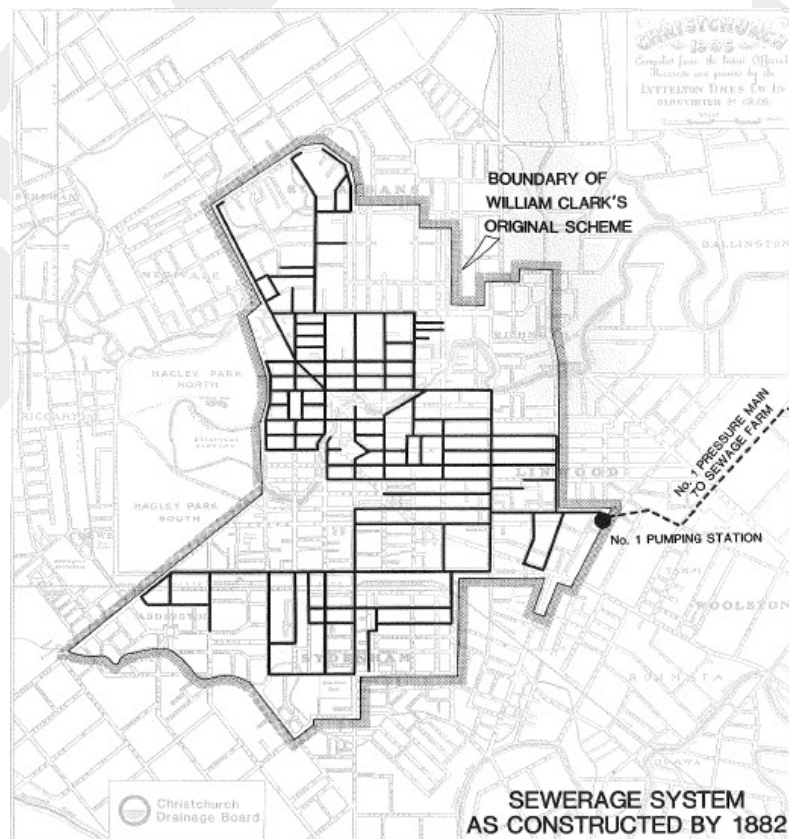


Figure 1.1 Sewerage system in 1882¹

¹ from *Christchurch Swamp to City – A Short History of the Christchurch Drainage Board 1875 – 1989*.

The Christchurch and Banks Peninsula wastewater systems now comprise of eight treatment plants, 120 pump stations, over 25,000 manholes and more than 2700 kilometres of piping.

1.2 Scope of strategy

The scope of the strategy is:

1.2.1 Direction

- a) To provide Council's vision, strategic direction and desired outcomes for sustainably managing the City's wastewater system over the next 10, 30 and 100 years. This work will be informed by stakeholder input.
- b) To establish the key steps and methods for implementing the strategy. This will recognise not only the Council's responsibilities and impact on the Council's resources, but also those of the community and private sector, to promote long-term integration of water resource management by taking into account the other Healthy Environment Strategies.
- c) To monitor, review and report progress towards achieving the strategy outcomes.
- d) To inform future Council Long Term Plans (LTPs) relating to capital and operational investment and expenditure.
- e) To form a component of the Council's future Three Waters Strategy. This will incorporate three separate but inter-related documents: the Water Supply Strategy, the Surface Water Strategy and the Wastewater Strategy.

1.2.2 Coverage

- a) To encompass within the Council's boundaries, the resources managed by the Council for wastewater reticulation, treatment and disposal purposes.
- b) To include all Council owned wastewater treatment systems within the Council's territorial boundaries.
- c) To include the continued sustainable management of biosolids and options for the use of this material, and potential re-use of treated effluent.
- d) To continue the management of trade waste entering the wastewater system.
- e) To cover 10, 30 and 100 year periods and be regularly reviewed to take into account the present and future social, economic, environmental and cultural aspirations of the community and to align outcomes with the Greater Christchurch Urban Development Strategy, relevant Council LTP outcomes and other key strategies as listed in Section 3.5. Consideration will need to be given to securing and/or identifying options for managing increased volumes of wastewater as the population grows or the industrial base of Christchurch changes or relocates.
- f) To include consideration of effects and mitigation of stormwater inflow and groundwater infiltration on the wastewater system, and the influence of wastewater discharge events on the water quality of the receiving environment.
- g) To develop a position on the extension of reticulated services in currently unserved areas.
- h) To consider a policy on the condition of private onsite septic systems and their impact on groundwater.

- i) To include wastewater system asset condition and the integrity of the system in the context of a life of the Long Term Plan (LTP) assets/renewals programme.

1.2.3 Alignment

- a) To recognise potential conflicts between wastewater management and the management of other water resources used by the Council, other key stakeholders, and the wider community.
- b) To gain community and private sector support and commitment for the integrated management of water and wastewater through participative and innovative approaches.

1.3 Timeframe

Allowances are normally made in a strategy for the growth and expansion of wastewater infrastructure but the development of this strategy has been confounded by the earthquake sequence following September 2010. There is the short-term need to address the effects of earthquake on the system and the long-term need to provide for future growth, without precluding technologies and opportunities that are not currently available.

The strategy is being developed based on three timeframes. The first timeframe will address the next 10 years as the operation of the existing wastewater system returns to "normal" and the city transitions to its new shape (its geography and demography).

The second timeframe is for 30 years, based on currently estimated population growth in the Greater Christchurch Urban Development Strategy. This timeframe assumes population distribution is non-uniform, reflecting the new red zones and expected areas of accelerating development in the south, west and north of the city.

The third timeframe reflects the long-life nature of wastewater assets – particularly gravity sewers and rising mains – which will be needed in response to the changed (post-quake) urban development patterns which will be decided in the first 10 years of the strategy. By forecasting what the 100 year wastewater system will look like, including treatment plants and receiving environments, the Council can determine if the 30 year system plan is compatible with the long-term vision, and is consistent with the major decisions made over the next 10 years. The Council's LTP) and Annual Plan processes will be aligned with the wastewater strategy as they are progressively developed and implemented.

The strategy will be formally reviewed on a five-yearly basis, with the first formal review scheduled for 2017. The Implementation Plan will be reviewed annually to assess whether there are additional approaches that can be taken, or whether changes to current methods are required.



Oxidation pond at Bromley

1.4 Process of development

The Council has developed this draft Wastewater Strategy for Christchurch communities, as part of its Healthy Environment Strategies programme. This involved preparing a series of four documents:

- Situational Analysis report – this describes the current situation and defines the key issues
- Issues and Options report – this takes each of the key issues from the Situational Analysis report and explores options to address those issues, along with cost estimates and recommendations
- Wastewater Strategy – this describes the recommendations in more detail

Representatives from the Council, Stronger Christchurch Infrastructure Rebuild Team (SCIRT), Mahaanui Kurataiao Ltd (MKT), CH2M Beca Ltd, Canterbury Earthquake Recovery Authority (CERA), Waimakariri District Council (WDC), Selwyn District Council (SDC), MKT and CH2M Beca Ltd participated in the crafting of each report.

1.4.1 Consultation

As this draft strategy was being developed, informal consultation was conducted with community and interest groups. Two workshops were held with external stakeholders in March and June 2012 to examine wastewater issues and alternatives to address those issues. Two hui with urban Christchurch and Banks Peninsula iwi were held in June and July 2012.

There was also a workshop for the Combined Community Boards in April 2012 and a Council seminar in May 2012.

This draft strategy will be released for public consultation later in financial year 2012–13 pending the approval of the Council.

1.4.2 Project participants

A project team and an advisory group were established to assist with developing the Wastewater Strategy. The project team consisted of representatives from the Council, SCIRT, MKT and CH2M Beca Ltd. The advisory group consisted of representatives from Christchurch City Council, CERA, WDC, SDC, MKT and CH2M Beca Ltd.

1.5 Key Issues

Five key issues have been identified:

- sewer system resilience
- wet weather overflows
- Christchurch urban area long-term wastewater treatment and disposal
- Banks Peninsula long-term wastewater treatment and disposal
- reuse of treatment products (e.g. treated wastewater, biosolids).

These are described in more detail in section four, along with the options considered and recommended.

1.6 Relationship to other strategies and plans

A number of related plans and strategies were taken into account in the development of this wastewater strategy. Key strategies with links to this strategy are summarised below.

1.6.1 Healthy Environment Strategies

This strategy is one of the Council's suite of Healthy Environment Strategies, which include the Biodiversity, Water Supply, Public Open Space, Surface Water and Climate Smart strategies. The Council's Healthy Environment Strategies were developed to guide the sustainable management of the city's environmental resources, including water supply, surface water, open spaces and biodiversity, as well as wastewater management. These strategies overlap in various ways, particularly those related to water.

1.6.2 Relationship to other water strategies

Human activities (domestic, commercial and industrial) using water generates wastewater, which eventually returns to the wider environment, as illustrated in Figure 3.1. In an urban environment, this wastewater is collected and conveyed by a reticulation system to a treatment plant, which removes contaminants from the water before it is discharged to the environment. If this collection and treatment system fails, through overflows, leaks, damage or insufficient treatment, there may be uncontrolled wastewater discharges that introduce contaminants into the local environment. These contaminants can find their way into surface or groundwater either directly or through stormwater runoff. Contaminants from wastewater include pathogens, nutrients (which promote eutrophication of waterways) and toxins.

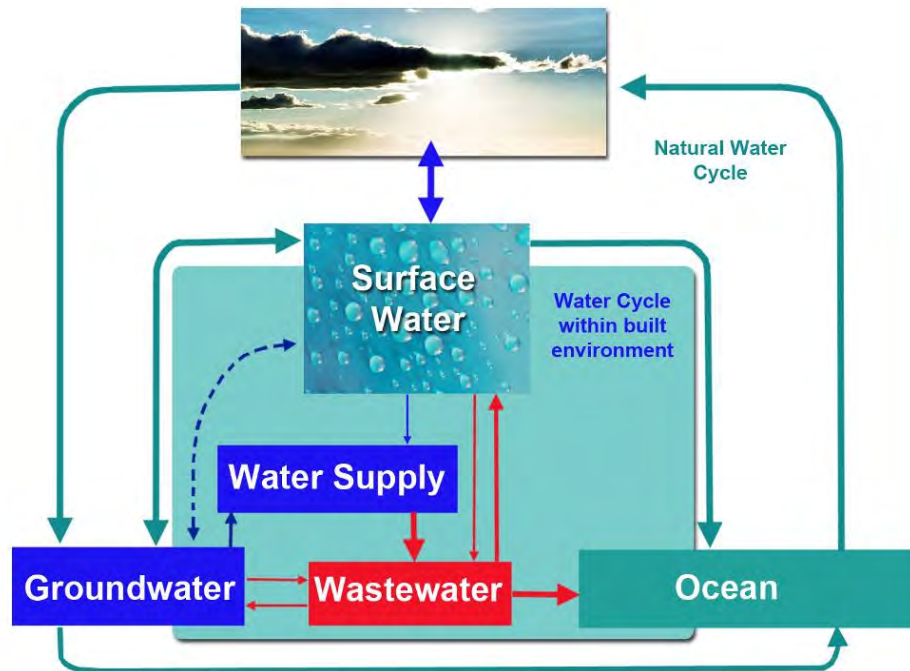


Figure 1.1 - Simplified water cycle relationships

It is important that this strategy recognises the impact of discharges on the quality of water bodies that may be used as a source for drinking water and for industrial, recreational or other use. In addition to coordinating the current strategies, opportunities to further integrate the Council's role in the management of the 'three waters', i.e. surface water, drinking water and wastewater will be explored.

1.6.3 Relationship to other plans and strategies

While this report forms part of a wastewater strategy for the Council, the plans and strategies of the neighbouring Selwyn District Council and Waimakariri District Council were taken into account, as well as CERA's Recovery Plans.

1.7 Policy framework

1.7.1 National legislation

The Resource Management Act 1991 (RMA) is the most relevant legislation for the management of wastewater discharges. The RMA's purpose is to promote the sustainable management of natural and physical resources. It provides for the preparation of national policy statements and environmental standards, regional policy statements and plans and district plans. The control of specific activities is achieved through rules in regional and district plans and through resource consents. The RMA does not explicitly provide for the management of wastewater, rather it provides for the management of environmental effects, including those which arise from the discharge of wastewater to land or water.

Section 15 of the RMA provides for the discharge of contaminants (such as wastewater, biosolids, or odour) into the environment and stipulates that no person may discharge any contaminants into water, onto land where it may enter water, or from an industrial premises into air or onto land unless the discharge is expressly allowed by a national environmental standard (NES), a rule in a regional plan or a resource consent. Therefore, unless the relevant regional plan or NES specifies the

discharge as permitted, resource consent will be required for any discharge from a wastewater treatment facility.

The Canterbury Earthquake Recovery Act 2011 was enacted as a response to the Canterbury earthquakes. The purpose of the Act is wide ranging but is generally to provide appropriate measures to enable a focused, timely and expedited recovery of greater Christchurch from the impacts of the Canterbury earthquakes.

1.7.2 Recovery plans

The Canterbury Earthquake Recovery Act 2011 gives the Minister the power to direct a recovery plan to be prepared for a particular infrastructure. At the time of writing a recovery plan to cover the Council's wastewater infrastructure has not been initiated. If a recovery plan was implemented this would have precedence over other documents prepared under the RMA. The Council must not act inconsistently with a recovery plan including making decisions / recommendations on resource consent applications, notices of requirement, plans and policy statements. If a recovery plan directs, Council must amend a plan or policy statement to change (include or delete) and objectives, policies or methods. This must be undertaken as soon as practicable and without the RMA Schedule 1 process.

1.7.3 The Council's LTP

Section 130 of the Local Government Act 2002 requires Council to assess the provision of sanitary services within its district and most often this forms part of the Council's LTP. Based on input from the community, the LTP is a statement of how the Council plans to meet community needs and lists the activities it intends to undertake over a 10 year period. The plan sets out the cost of these activities and the standard of performance that is expected. A review is carried out every three years and in interim years the Council publishes an Annual Plan, focusing on year-to-year budgets and performance. The most recent LTP was adopted in June 2009.

The reason for the Council's wastewater collection and treatment activities is given in the LTP as: "the Council collects and treats wastewater to safeguard public health and protect the environment. Untreated wastewater would cause outbreaks of disease and environmental pollution."

The current LTP objectives for wastewater collection and treatment are to provide reliable and efficient wastewater collection, treatment and disposal services that:

- protect public health
- are environmentally sustainable
- are culturally acceptable
- meet the needs of present and future generations.

The key community outcomes for the Council's wastewater collection and treatment activities include:

- safety: provides a sanitary wastewater collection and treatment service
- community: provides equal access to wastewater services
- environment: protects the environment by treating wastewater
- governance: enables community participation in decision-making by consulting on wastewater plans and projects
- prosperity: provides wastewater services for commercial users, helping businesses to function smoothly
- health: provides a sanitary wastewater collection and treatment service

- knowledge: raises awareness of water conservation
- city development: beautifies the wastewater ponds and manages sewer overflows.

1.7.4 National policy statements

A national policy statement (NPS) enables central government to prescribe objectives and policies for resource management matters of national significance. Two NPS are relevant to wastewater; the New Zealand Coastal Policy Statement 2010 (NZCPS), and the National Policy Statement for Freshwater Management. These are discussed further below.

The purpose of the NZCPS is to achieve the purpose of the RMA in relation to the coastal environment of New Zealand. The NZCPS contains seven objectives and 29 policies.

The NZCPS recognises one of the key issues facing the coastal environment is poor and declining coastal water quality in many areas as a consequence of point and diffuse sources of contamination (such as wastewater discharges). A number of the objectives and policies contained in the NZCPS are relevant to wastewater discharges to the coastal environment and seek to maintain coastal water quality and enhance it where it has deteriorated due to discharges associated with human activity.

In managing discharges of human sewage, the NZCPS directs that a discharge directly to the coastal environment without treatment is not allowed. The discharge of treated sewage to water in the coastal environment is only allowed where there has been adequate consideration of alternative methods, sites and routes and the values of tangata whenua are taken into account.

The National Policy Statement for Freshwater Management (NPS Freshwater Management) sets out the objectives and policies that direct local government to manage water in an integrated and sustainable way. This NPS contains eight objectives and 15 policies. In particular, the NPS Freshwater Management seeks to safeguard the life-supporting capacity, ecosystem processes and indigenous species in sustainably managing the discharge of contaminants.

The NPS Freshwater Management directs regional councils to make rules requiring the adoption of the best practicable option to prevent or minimise adverse effects on the environment of any discharge of a contaminant into freshwater or onto land where it may enter freshwater. The NPS Freshwater Management also recognises the values of tangata whenua in relation to freshwater and seeks that they are involved and their interests are reflected in the management of freshwater.

1.7.5 Regional policy statements

Regional policy statements set out the resource management issues, objectives and policies for a particular region and must not be inconsistent with an NPS (section 62(3) of RMA). The relevant policy statements for Christchurch are the Operative Canterbury Regional Policy Statement 1998, and the Proposed Canterbury Regional Policy Statement 2011.

The Operative Canterbury Regional Policy Statement 1998 (Operative CRPS) provides an overview of Canterbury's resource management issues and sets out how natural and physical resources are to be managed in an integrated way, with the aim of sustainable management. The Operative CRPS recognises that in Canterbury the discharge of contaminants (such as wastewater) into water or onto land can adversely affect water bodies and coastal water, and may adversely affect the life supporting capacity of marine ecosystems, amenity, recreational and cultural values. It also contains objectives and policies and sets out the methods for addressing this issue.

In October 2011, CERA incorporated Proposed Change 1 into the Operative CRPS as Chapter 12A with minor amendments. This chapter addresses land use and urban growth management in greater Christchurch for the next 35 years. Chapter 12A promotes the intensification of land use

within existing urban areas and also identifies appropriate areas for greenfield developments to accommodate projected growth and population relocation. It requires consideration of environmental challenges (including liquefaction and rockfall) so as to avoid areas of risk. It sets urban limits and requires territorial authorities to provide for sequencing of urban development within those limits and to restrain urban activities locating outside these limits.

The Proposed Canterbury Regional Policy Statement 2011 (Proposed CRPS) will replace the Operative CRPS, as the RMA requires that regional policy statements be reviewed every ten years. Hearings on the Proposed CRPS have been held. Appeals have been lodged that will be dealt with through the High Court. The Proposed CRPS will not be made operative until the appeal process has been resolved.

The Proposed CRPS recognises patterns of development can impact on the efficiency and effectiveness of public sewerage (and other) infrastructure and requires these services to be designed, built, managed and upgraded to maximise their on-going effectiveness. Sewerage infrastructure should be designed, located, developed and used so adverse effects on significant natural and physical resources are avoided or mitigated and other adverse effects on the environment are appropriately controlled.

The Proposed CRPS also recognises the direct discharge of human sewage into the coastal marine area is highly undesirable, although it may be necessary and justified in some cases. The CRPS identifies that the discharge of contaminants, particularly treated and untreated sewage, is offensive to the values of Ngāi Tahu as tangata whenua.

In relation to odour, the Proposed CRPS notes that odour generated from waste treatment and disposal may cause localised health and nuisance effects on social, cultural and amenity values.

The Proposed CRPS states that waste management in the region could be more efficient and integrated to reduce the likelihood of adverse effects occurring on the environment and the social, economic and cultural wellbeing of people and communities.

1.7.6 Regional plans

Regional plans are intended to give effect to NPSs and the RPS. All Canterbury's regional plans must be consistent with each other (Sections 67(3) and (4) of RMA). Currently there are three regional plans that are relevant to the Council's wastewater services: the Natural Resources Regional Plan, the Regional Coastal Environment Plan and the Waimakariri River Regional Plan.

The Natural Resources Regional Plan (NRRP) contains objectives, policies and rules for the management of natural resources such as water, and consists of eight chapters which address sustainable management of natural resources in the Canterbury Region. Chapters 3 (Air Quality) and 4 (Water Quality) are the most relevant to wastewater management.

The rules which are relevant to the discharge of wastewater include WQL14 – WQL16 and WQL45 of Chapter 4. According to these rules, any new discharge of treated sewage to land or water will require resource consent. Any new discharge of untreated sewage is a prohibited activity, unless it is a spill or overflow, in which case resource consent is required. Rules AQL63 – AQL69 in Chapter 3 provide for discharges to air from waste management processes. Municipal sewage treatment facilities and land application of effluent are likely to require resource consent.

It is proposed to replace Chapters 1, 2 and 4 – 8 of the NRRP with a new Land and Water Regional Plan (LWRP) by 2013. The plan is likely to be publicly notified in August 2012. The Regional Coastal Environment Plan (Coastal Plan) sets out the issues, objectives, policies and rules relating to the protection, development and enhancement of Canterbury's coastal marine area, which is generally defined as the seaward side of mean highwater springs. This includes the control of the

discharge of contaminants to the coastal marine area. In particular Rules 7.3 and 7.6 require resource consent for the discharge of wastewater to the coastal marine area. The Waimakariri River Regional Plan controls point and non-point source discharges of contaminants to water bodies in the Waimakariri River catchment although currently the Council does not discharge any wastewater to the Waimakariri River or its tributaries.

1.7.7 Resource consents held

Christchurch City Council holds resource consents to authorise the discharge of wastewater from their treatment plants in Christchurch City (including Banks Peninsula) to the CMA. The Council also holds consents to authorise the discharge of sewage in the event of wet weather to water bodies such as the Avon and Heathcote Rivers. These consents require renewal periodically or when the nature of the activities changes.

1.7.8 District plans

District plans are generally concerned with land use and subdivision. The Council is responsible for both the Christchurch City Plan (City Plan) and the Banks Peninsula District Plan (BPDP).

The City Plan provides special provisions for utilities such as the pipe network and pumping stations in recognition that the on-going operation of utilities needs to be protected. Resource consent is generally not required for underground utilities but may be required for large scale utilities which could generate adverse effects on the environment.

The Christchurch Wastewater Treatment Plant (CWTP) is contained within the Conservation 1B (Bromley) Zone. This zone covers a large and strategically placed area adjacent to the Avon Heathcote Estuary and recognises both the sewage treatment facilities and the significant wildlife values. The Council's wastewater network/facilities (including the sewage treatment facilities) are not designated under the City Plan.

The BPDP recognises that basic services (including wastewater) are fundamental to the health and welfare of the residents and are a critical constraint upon future growth and development. The BPDP generally designates wastewater facilities rather than relying on a zoning/resource consent procedure.

1.7.9 Bylaws

A) Council Water Related Services Bylaw 2008

The purpose of this bylaw is to manage and regulate the Council's water supply, wastewater and stormwater drainage (excluding matters provided for under other Acts). Under this bylaw, approval is required from the Council to connect to the wastewater network for those activities that are generally not normal household or commercial activities.

B) Council Trade Waste Bylaw 2006

This bylaw regulates the discharge of trade waste to a sewerage system operated by the Council and requires approval from the Council to discharge trade waste to the sewerage system where this is not a permitted discharge. This normally applies to industrial discharges.

1.7.10 Canterbury Water Management Strategy

The Canterbury Water Management Strategy (CWMS) establishes a framework for addressing Canterbury's water resources issues to enable present and future generations to gain the greatest social, economic, recreational and cultural benefits from the water resources within an environmentally sustainable framework. The strategy sets out targets for water management in

Canterbury for the next 30 years. The strategy establishes 10 zone committees made of community members, council representatives and Rūnanga. The role of these committees is to make consensus-based decisions about water management within the applicable zone. Each committee will produce a set of water management recommendations that will be submitted to the relevant councils in the form of a Zone Implementation Programme (ZIP). This is a non-statutory² document that outlines actions, responsibilities and timeframes for activities to achieve the principles, targets, and goals set out in the CWMS. The ZIPs will primarily focus on water allocation but will address issues such as wastewater discharges.

The three zone committees which have been established for the greater Christchurch area are the Christchurch-West Melton Zone Committee, the Banks-Peninsula Zone Committee and the Selwyn-Waihora Zone Committee. The Selwyn-Waihora Zone Committee formally presented their ZIP to Environment Canterbury (ECan) in December 2011 and Selwyn District Council in early 2012. The Christchurch-West Melton and Banks-Peninsula Zone Committees are recently formed and have yet to prepare ZIPs.

1.7.11 Iwi management plans

Ngāi Tahu have prepared a freshwater policy statement which sets out tribal policies with respect to freshwater for the whole of the Ngāi Tahu takiwa. Ngāi Tahu consider this policy statement to be an iwi management plan. The policy statement describes Ngāi Tahu's association with freshwater resources, the ways in which Ngāi Tahu want to participate in freshwater management and the outcomes sought. In general, Ngāi Tahu seek to restore, maintain and protect the mauri of freshwater and protect, restore and enhance mahinga kai habitats and generally oppose wastewater discharges to water, preferring a discharge to land.

1.7.12 Cross-boundary options

During the development of the Wastewater Strategy, opportunities to connect to treatment and disposal schemes in neighbouring districts were considered in collaboration with representatives from Waimakariri District Council and Selwyn District Council.

1.7.13 Waimakariri District Council

The WDC completed a major upgrade to the Eastern District Sewage Scheme in 2005 with a 30 year design horizon, including upgrading four wastewater treatment plants and building a new ocean outfall for disposal from all four plants. Since then the population served by this wastewater infrastructure has grown faster than anticipated and the system is going to reach capacity significantly ahead of the original design horizon. As a result there is little obvious synergy between Christchurch wastewater treatment requirements and those of WDC. Furthermore, the separation distance between the two networks is significant, with the additional barrier of the Waimakariri River also needing to be addressed for any network cross connection. Taking these factors into account, provision of a cross connection between Christchurch City and Waimakariri District, for use as a contingency or other purpose, would be very costly to implement with limited potential benefits.

1.7.14 Selwyn District Council

The SDC operates the Pines wastewater treatment plant and land disposal scheme near Rolleston. This scheme is being progressively upgraded over time to reach an ultimate population equivalent

² Although ZIP's are non-statutory documents, options are being investigated to give ZIP's appropriate legal status under the Local Government Act 2002 and the Resource Management Act 1991.

of 60,000. Additional capacity is being phased in over time to meet the load requirements for the expanding population at Rolleston. Several of the Christchurch satellite treatment schemes identified in this report indicate that there could be the potential for a facility based on a one cubic metre per second satellite scheme to be located somewhere to the southwest or west of the city near Rolleston. This would typically be located separate from SDC's facility. However, if a one cubic metre per second treatment scheme in this area was to be investigated in the future, one option may include the opportunity to collaborate with SDC on the future management of such schemes to achieve operational efficiencies, provided that the strategic interests of both the Council and SDC can continue to be met, and a suitable operational and cost-sharing model can be put in place..

DRAFT
for
Committee

2 Aim, vision and principles

2.1 Aim

The aim of this strategy is to establish the Council's strategic direction for sustainably managing wastewater over the next 10, 30 and 100 years.

2.2 Vision

The strategic vision is an affordable, reliable, culturally acceptable, sustainable and resilient wastewater system that protects public health and meets the needs of present and future communities.

2.3 Guiding principles

The following guiding principles are taken into account in this strategy:

- Wastewater services will be delivered cost effectively while balancing social, cultural and environmental effects
- Effects on the environment from wastewater systems will be minimised
- The Council will work collaboratively with communities, businesses and other stakeholders to achieve wastewater management goals and objectives
- Maintenance, renewals and expansion works will be planned and implemented so costs are affordable and appropriately distributed over time
- Infrastructure resilience will be optimised using standardised risk assessment methods to categorise system risks and develop and implement risk management solutions that are efficient and represent best value
- The Council will take a flexible approach to new technologies for conveyance, treatment, reuse and disposal and will consider adopting new technologies in future where the benefits and risk are well defined
- The Council will develop infrastructure that supports a sustainable economy.

3 Goals and Objectives

To meet desired outcomes for the community, as defined in Council plans, strategies and bylaws³, the following set of goals and objectives were developed.

Goal 1: The wastewater system protects public health effectively

Objectives

- Conveyance, treatment and disposal facilities provide efficient and reliable service under normal operating conditions and are resilient to natural hazards.
- A loss of service from system failure and the impact of earthquakes or other natural hazards will be minimised as far as is practicable.
- A consistent risk management approach will be applied to decision making over system renewals and expansion, to ensure risks are properly identified and the optimal degree of risk reduction is achieved for the lowest cost.
- Where loss of service cannot be avoided during major adverse events due to inherent risks, business continuity plans will be regularly reviewed and tested, to manage potential public health risks.
- Sludge, biosolids and other treatment by-products are managed in an efficient and sustainable way.

Goal 2: The wastewater system is resilient and meets community needs for environmental, social and cultural sustainability

Objectives

- The Council will progressively improve the resilience of the wastewater system through renewals, maintenance and expansion activities implemented over the life of the system.
- An appropriate balance between economic costs and benefits, environmental, social and cultural effects of wastewater systems will be maintained.
- The Council will consult with community stakeholders about the level of service provided and future wastewater developments to make well informed decisions in economic, social, cultural and environmental terms.
- Wastewater conveyance, treatment and disposal facilities comply with their resource consents.
- The Council will monitor scientific evidence regarding emerging contaminants.

Goal 3: The wastewater system supports the future growth and economic wellbeing of Christchurch

Objectives

- The wastewater system will be developed to support the planned growth of the city, both in terms of location and timing.
- Trade waste policies and mechanisms will encourage cleaner production for the benefit of industry and the environment.
- Renewals, maintenance, and expansion of the wastewater system will be planned for and implemented so costs to the community are affordable and spread over time.

³ <http://www.ccc.govt.nz/thecouncil/policiesreportsstrategies/index.aspx>

- The Council will consider future alternative treatment, conveyance and disposal or reuse options and technologies on their merits, where the risks and benefits are well defined.
- Wastewater reuse by the Council or by others will be considered where the public health risks can be managed effectively, and where it is economically viable and environmentally sustainable.



Christchurch Wastewater Treatment Plant

4 Analysis of current situation

The Situational Analysis report described the current situation and summarised the key issues for Christchurch (including Banks Peninsula) wastewater. The Christchurch wastewater system, which incorporates a gravity sewer network, pumping stations, treatment and disposal facilities, has been severely affected by the Christchurch earthquake sequence in 2010 and 2011.

The Issues and Options report described the options to address each issue, and made recommendations. These are summarised below.

4.1 Sewer system resilience

4.1.1 Description of issue

The wastewater collection and conveyance system suffered significant damage due to earthquakes. Figures 4.1 and 4.2 show a schematic of the Christchurch wastewater system and the post-earthquake state of the wastewater system. Reconstructed infrastructure should be more resilient in future earthquakes and also to other natural hazards. Resilience is a significant consideration for all key issues.

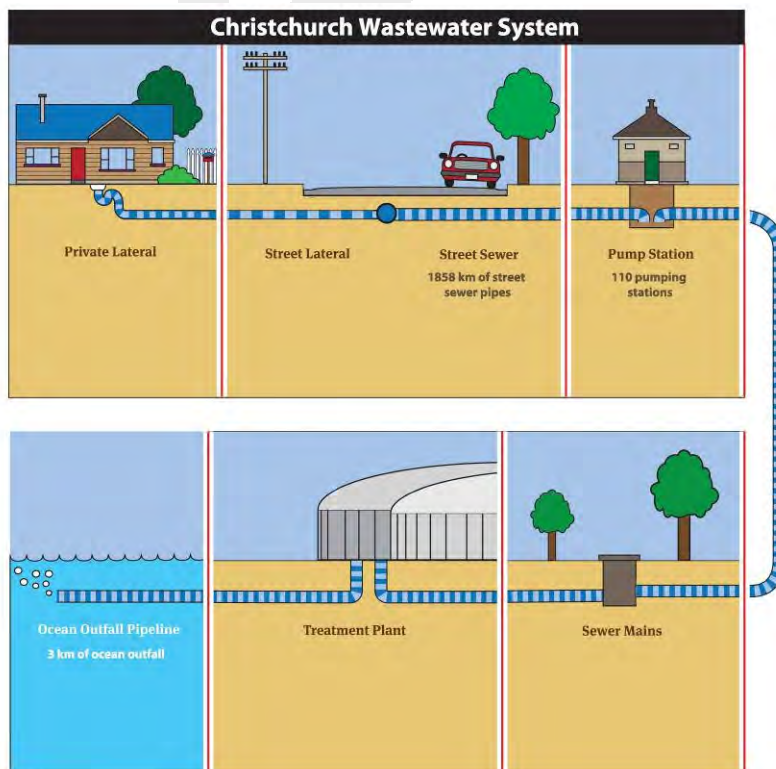


Figure 4.1 – Schematic of Christchurch wastewater system

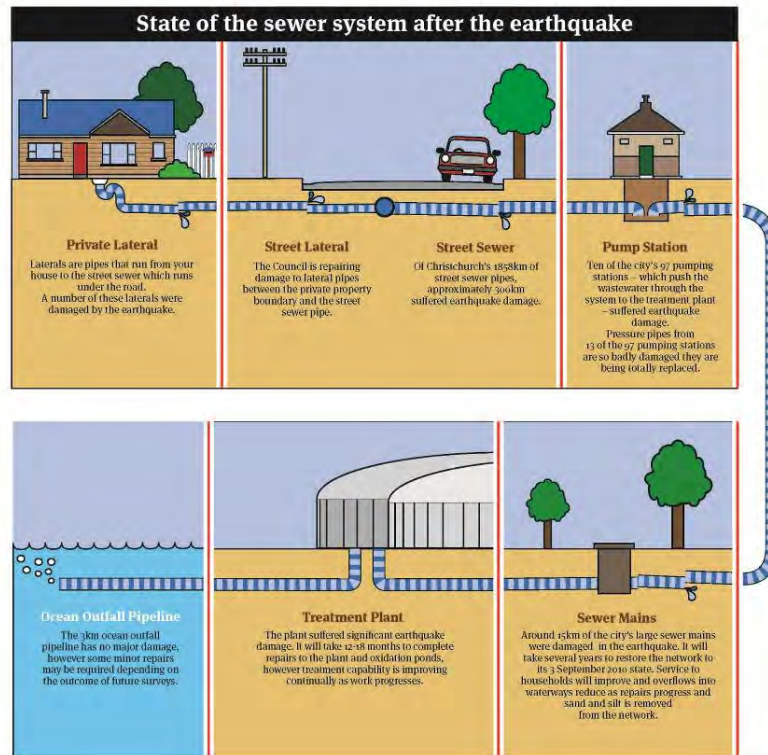


Figure 4.2 – State of Christchurch wastewater system after earthquakes

4.1.2 Options

SCIRT is developing options for repairing and rebuilding the earthquake-damaged wastewater network and is also responsible for implementing repairs once they have been approved by the Council. There are several ways the repair methods being employed will improve the resilience of the network:

- More ductile/flexible materials may be used for pipe repair or replacement (e.g. PVC and welded polyethylene pipes). Ductile materials are more resistant to earthquake damage.
- Pipeline and pump station design options are being developed to cope better with earthquakes, including more flexible connections at manholes and pump stations, which are a common failure point in earthquakes.
- Rebuilt pump stations in areas of significant land damage (e.g. alongside rivers) may be relocated to areas with improved ground conditions.
- Gravity sewers may be constructed at shallower depths, where this is practicable, so they would be easier to repair after an earthquake.
- Alternatives to traditional wastewater conveyance are being considered, including vacuum systems and pressure systems for areas where the ground conditions pose high risk of further infrastructure damage during ongoing aftershocks. As these are constructed using welded polyethylene, and can cope with level changes occurring due to earthquake-induced ground settlement, they may be more cost-effective for repairing damaged sewers in vulnerable areas than conventional gravity sewers.

4.1.3 Recommendations

- Alternative sewer options will be assessed on an area-by-area basis and specified for use as determined using whole-of-life or net present value (NPV) cost analysis. The NPV analysis should take into account the comparative cost of future earthquake damage repairs as well as comparative capital and operating costs over their operating life.
- Ductile pipe materials will be used for repairs or replacements providing they represent best value for the community in terms of balancing risk reduction and increased costs.
- Pump station relocation and redesign decisions will be based on a standardised risk assessment method to ensure that design and location options.
- An analysis of network asset criticality and seismic vulnerability will be undertaken and recorded in a Wastewater System Asset Risk Register. (Asset criticality in this instance is defined as the risk to the whole of wastewater system operation if a particular asset that is part of the system fails.) The risk register will inform decisions over renewals and maintenance work as well as for expansion or replacement works.

4.2 Wet weather overflows

4.2.1 Description of issue

Average dry weather wastewater flows in Christchurch are currently about 40 per cent higher than pre-earthquake, primarily due to damage to the wastewater conveyance systems resulting in increased inflow of groundwater through cracked pipes and damaged joints.⁴ With flows already relatively high during dry weather, when wet weather comes there are more frequent overflows into the Avon and Heathcote Rivers. These will require major remedial efforts to meet the currently consented two year average return interval overflow frequency within the next ten to twelve years

4.2.2 Options considered

The options considered for addressing wet weather overflows were:

- A compliance strategy has been negotiated with Environment Canterbury, which will give the Council five years' relief from compliance requirements with its current overflow discharge consent. This is on the basis that earthquake damage to the network is preventing the Council from achieving the required overflow standard. This gives the Council the opportunity to monitor the impact of SCIRT's rebuild on overflow compliance and to develop and implement a network upgrade programme to comply with the overflow containment standards at the end of the specified five year time frame.
- Improvements to the conveyance network due to earthquake repairs undertaken by SCIRT as described in Section 4.1.2 will reduce wastewater overflows by reducing the inflow of stormwater and the infiltration of groundwater. These options include using more ductile materials for repairs and replacements, using shallow gravity sewers and considering alternatives to traditional gravity sewers where these alternatives may be more cost-effective than conventional resewering on a whole-of-life cost basis, or where these are the most suitable option for greenfield subdivisions. The option available to the Council is to consider the benefits of repair and replacement options in terms of reduced wet weather overflows and take this into account in repair decisions.

⁴ Mike Bourke, Christchurch City Council, pers. comm. 2/7/12

- The Council is reviewing options to accelerate the construction of the Wairakei Diversion sewer line to allow the Northern Relief sewer line to be partially bypassed to allow earthquake-related investigation and repair works. This project provides for a new trunk sewer that will link the Northern Relief to the new Fendalton Duplication and Western Interceptor. This will allow part of the flow to be diverted away from the Northern Relief, which is expected to result in a reduction in overflows from the Northern Relief in the short to medium term, particularly at the Grassmere and River Road overflows.
- The Council is also developing a hydraulic computer model of the wastewater network. Once calibrated, the model will be able to predict the current frequency and scale of wet weather overflows from the wastewater network to check the current status against the two year annual recurrence interval (ARI) consent requirement. The model will also be able to predict future overflow performance as sewer repair and replacement works are put in place.
- The hydraulic model can be extended to consider further options for overflow mitigation such as interconnecting branches of the network or providing network storage. Adding storage tanks at overflow locations reduces overflow frequency by providing local wastewater storage during peak flow periods. Once peak flows have abated, the storage tank is emptied into the wastewater system.
- Other options to manage overflows involve reducing inflows and infiltration on private property sewers. This is a challenging area for the Council as they have no jurisdiction over the private lateral since it is owned by the private landowner and is located on private property. This could involve undertaking closed circuit television CCTV inspection or pressure testing of the private laterals.
- Work on options to reduce inflow and infiltration in Banks Peninsula has been focused on Diamond Harbour and Akaroa townships. Good progress has been made in reducing inflow and infiltration effects on the networks in these settlements. Inflow and infiltration are particularly high in Lyttelton and it is planned to address this area as work completes in Akaroa and Diamond Harbour.
- Areas prone to stormwater flooding that adds to stormwater inflow to the sewers in wet weather should be identified and addressed.

Overall, a considerable amount of further work is required to develop a comprehensive wet weather overflow strategy and agree on timelines and funding for its implementations. Long term objectives are described in this document and further computer modelling will be required as the SCIRT rebuild progresses to refine these.

4.2.3 Recommendations

- The Council will annually review the status of network overflows to confirm the position with respect to compliance or lack of compliance with the two year ARI network overflow standard. If necessary, prior to the expiry of the ECan compliance agreement, the Council will renegotiate the agreement to account for the actual progress made in reducing overflows and to incorporate revised and achievable standards and timelines.
- Sewer system repairs and replacement using alternative options (likely to include pressure and vacuum sewer systems for vulnerable parts of the network and greenfield areas) will contribute to reduced inflows of stormwater and infiltration of groundwater and will assist the Council in meeting the wet weather overflow standard. The Council will develop a process for incorporating potential benefits in reducing wet weather overflows into repair and replacement decisions. The purpose of this activity is to make the most cost-effective choices overall for repair and replacement works.
- The Council will implement the Wairakei Diversion commencing in 2013.
- The Council will carry out a performance assessment of the network in its current condition using the wastewater network hydraulic model to establish the current ARI for each overflow point.

The Council will also use the model to assess the effectiveness of the improvements in the wastewater network from the SCIRT rebuild and capital projects (e.g. Wairakei Diversion).

- Level and discharge volume data will be collected at each of the consented overflow locations, as required by the conditions of the overflow discharge consent.
- The hydraulic model will be updated and recalibrated as necessary during the next five years to confirm the status of overflows and progress towards the two year ARI performance standard.
- Once the SCIRT design programme is complete, the model will be re-run to establish the revised ARI for each overflow point, and will then be used as a basis to identify further works that may be required to reduce overflows to a two year ARI (e.g. network storage).

In addition, it is recommended the following programmes are put in place:

- undertake CCTV inspection or pressure testing of all laterals connecting to rebuilt pressure and vacuum sewer networks, and require the property owner to repair any damage on their property through their insurance cover
- encourage property owners with gravity laterals to CCTV their private lateral and repair under their insurance policy as required
- continue inflow and infiltration reduction on Banks Peninsula, particularly for Lyttelton once Akaroa is completed
- analyse the relative environmental benefits of improving stormwater discharge quality and reducing wastewater overflow frequency
- identify and mitigate areas prone to stormwater flooding that adds to stormwater inflow to the sewers in wet weather.

4.3 Long-term wastewater treatment and disposal

4.3.1 Description of issue

The CWTP has proven to be reasonably resilient through the 2010–11 earthquake sequence and provides cost-effective and reliable treatment of Christchurch wastewater on a day-to-day basis. Structures that were significantly damaged including the secondary clarifiers and oxidation pond embankments have been repaired and strengthened against further earthquake damage. Nevertheless, as the urban area expands increasingly to the north and southwest, the costs of reticulating wastewater from these peripheral areas to CWTP will increase and options to provide separate or satellite treatment facilities in these areas warrant consideration.



Oxidation pond at Bromley

As a baseline for comparison purposes, the strengths and weaknesses of CWTP are discussed below. The essential strengths of CWTP are as follows:

- The plant has existing capacity to treat forecast flows and loads to Year 2035.
- Network connections to the treatment plant have been strengthened post-earthquake.
- The treatment process is multi-layered with a number of treatment stages acting in series and a high level of redundancy provided within many of the individual treatment stages. If any stage

suffers partial failure the downstream stages are able to respond to mitigate the impact on treated wastewater quality.

- The site’s infrastructure is robust.
- The CWTP oxidation pond system provides treatment backup as well as hydraulic buffering.

The essential weaknesses of CWTP are as follows:

- It is vulnerable to sand ingress following earthquakes, and this poses risks to treatment processes.
- Poor ground conditions enhance the risk of structural damage during future earthquakes. However, steps have been taken to reduce seismic risks by strengthening the clarifiers and oxidation ponds and associated structures that penetrate below groundwater level.
- The plant is located near the coastline but is still reasonably well elevated and therefore protected against coastal hazards including tsunami and sea level rise.

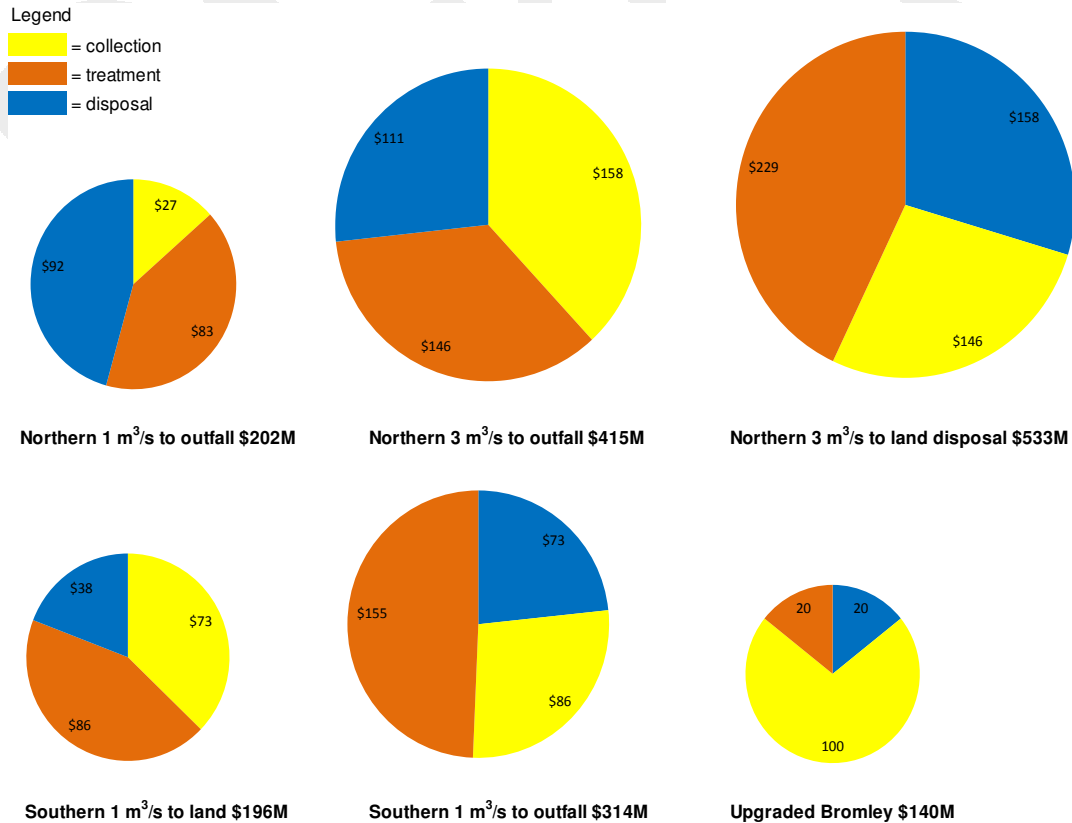
4.3.2 Options

A range of alternatives to the continued development of the CWTP treatment facility have been investigated in terms of resilience, whole of life or NPV cost, and social cultural and environmental performance. These options are:

- A satellite plant at Belfast treating one to three cubic metres per second with discharge to land or sea
- A satellite plant at Rolleston treating one cubic metre per second with discharge to land or sea.

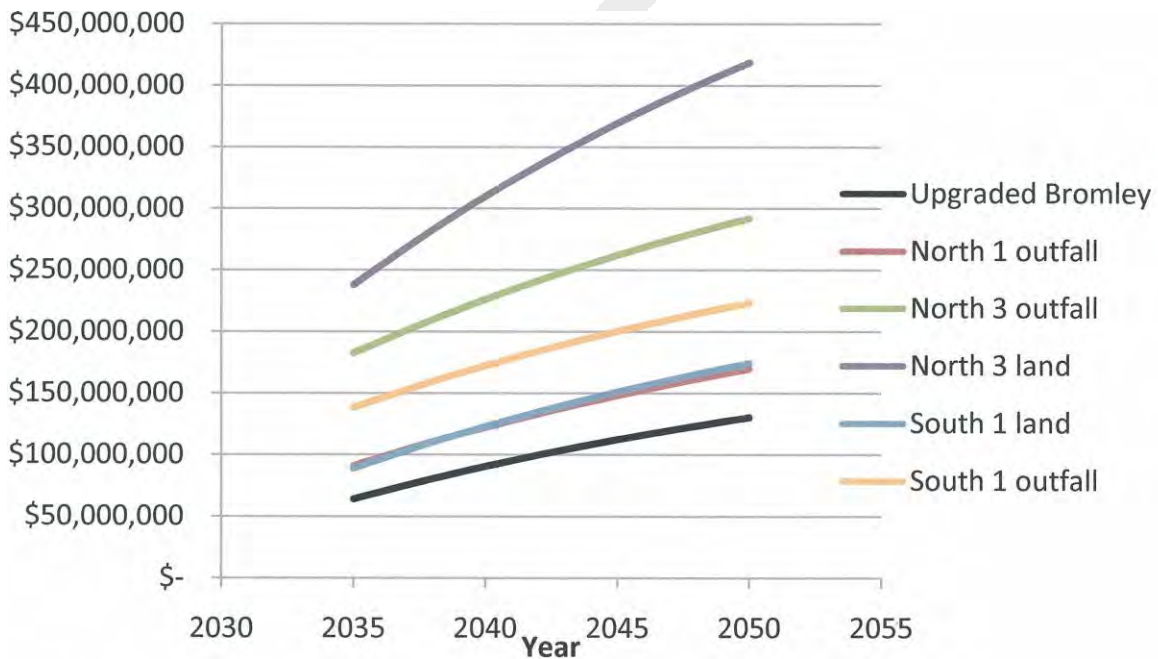
Capital costs for alternative treatment options are summarised in Figure 4.1.

Figure 4.1 - Indicative cost pie charts for wastewater treatment and disposal options



An NPV comparison of the alternative treatment schemes with the centralised and upgraded Bromley treatment facility is provided in Figure 4.2.

Figure 4.2 – Cumulative cash flow curves for treatment scheme options



The NPV comparison is based on the implementation of any chosen treatment scheme in 2035 to match the increase in demand for treatment and incorporates operating costs over 15 years to 2050. The upgraded Bromley treatment plant has the lowest NPV cost of all options analysed.

Treatment schemes have also been ranked overall against cultural, social environmental and economic and resilience parameters as shown in Table 4.1. Options are ranked from one as best to 5 as worst. Colour coding has also been used to indicate the ranking with green as best and red as worst.

The total score for each option was calculated by simply adding the scores together – in other words each attribute has equal weighting. This weighting is considered to represent a balanced assessment against the wastewater strategy goals and objectives. No sensitivity analysis has been conducted. The evaluation of options is summarised below. Schemes involving a satellite treatment plant are based on CWTP continuing to operate and treat residual flows and loads that are not diverted to a satellite treatment plant.

Table 4.1- Preliminary evaluation of wastewater treatment and disposal options

Option	Item	Cultural	Social (including public health)	Environmental	Economic	Resilience	Total Score
Central wastewater treatment plant at Bromley to ocean	Conveyance	3	2	3	1	3	31
	Treatment	1	2	2	1	2	
	Disposal	3	2	2	1	3	
South wastewater treatment plant 1m ³ /s to land	Conveyance	2	2	2	4	3	33
	Treatment	1	2	2	3	2	
	Disposal	2	2	2	2	2	
North wastewater treatment plant 1m ³ /s to ocean	Conveyance	2	1	2	1	3	37
	Treatment	1	3	3	3	2	
	Disposal	3	3	2	5	3	
South wastewater treatment plant 1m ³ /s to ocean	Conveyance	2	2	2	4	3	37
	Treatment	1	2	2	3	2	
	Disposal	3	1	2	5	3	
North wastewater treatment plant 3m ³ /s to land	Conveyance	1	1	1	5	2	38
	Treatment	1	4	4	5	2	
	Disposal	2	3	2	4	1	
North wastewater treatment plant 3m ³ /s to ocean	Conveyance	1	1	1	5	2	44
	Treatment	1	4	4	5	2	
	Disposal	3	4	3	5	3	

4.3.3 Centralised CWTP facility to ocean

A centralised and upgraded treatment facility at Bromley with continuing discharge to Pegasus Bay is ranked first overall. The main factors in this ranking are the lowest NPV cost, a moderate level of resilience and well defined and well managed cultural, social and environmental effects.

4.3.4 Southern treatment plant treating one cubic metre per second to land

A southern treatment plant treating one cubic metre per second combined with the Bromley treatment facility is ranked second overall. This scheme has similar resilience to the centralised CWTP option, with slightly higher costs and slightly improved performance on cultural and environmental effects.

4.3.5 Northern treatment plant treating one cubic metre per second to ocean

A northern treatment plant treating one cubic metre per second with disposal to sea is ranked third overall. Building a new treatment plant to the north as well as a new ocean outfall poses social, environmental and cultural risks. The resilience of this option is similar to the centralised CWTP option.

4.3.6 Southern treatment plant treating one cubic metre per second to ocean

A southern treatment plant treating one cubic metre per second with discharge to ocean, combined with the Bromley treatment facility is ranked fourth overall. The cost of a southern ocean outfall is substantial and this adversely affects the overall scheme's NPV. The resilience of this option is similar to the centralised CWTP option.

4.3.7 Northern treatment plant treating three cubic metre per second to ocean and land

The northern treatment plant schemes treating one cubic metre per second with the continued operation of the Bromley facility are ranked fifth and sixth respectively. These schemes suffer from high NPV costs while being marginally more resilient than the centralised Bromley option. The land disposal-based scheme generally scores lower (is more preferred) than the ocean disposal option in terms of cultural, social and environmental impacts.

4.3.8 Recommendation

The recommended option for future expansion of wastewater treatment facilities in Christchurch is the centralised and upgraded CWTP treatment plant option. A major expansion of the CWTP is likely to be required around 2035. Between 2012 and 2035 renewals and maintenance work should continue to address risks from natural hazards while maintaining the facility in accordance with asset management plan requirements.

This recommendation should be reviewed before the likely expansion of CWTP in 2035 is confirmed when growth factors and other considerations relevant to this decision are more clearly defined.

4.4 Banks Peninsula long-term wastewater treatment and disposal

4.4.1 Description of issue

The Council has conducted extensive consultation and scheme development on Banks Peninsula wastewater systems over the last six years. In summary, the Council proposes to:

- convey untreated wastewater that is currently treated at the Lyttelton, Governors Bay and Diamond Harbour wastewater treatment plants to CWTP
- expand the wastewater reticulation for Diamond Harbour to include Charteris Bay
- remove the Wainui wastewater treatment plant discharge from Akaroa Harbour, and dispose to land instead
- relocate the Akaroa wastewater treatment plant away from Takapuneke Reserve and construct a new mid-harbour outfall
- provide a reticulation and treatment scheme for Little River
- look at options for providing wastewater a scheme for Birdlings Flat.



Akaroa Wastewater Treatment Plant

A key issue for consideration is how overflows are managed in Lyttelton Harbour once the wastewater treatment plants are decommissioned.

4.4.2 Options

Nine options were considered for wastewater for Lyttelton Harbour, including land application and conveying wastewater to CWTP, against a base case option of improved treatment and continued discharge to Lyttelton Harbour (MWH, 2007). Five sub-options for conveying wastewater to CWTP were considered (Harrison Grierson, 2008), all of which involved piping wastewater across the floor of Lyttelton Harbour. Two further options were considered in the Issues and Options report (CH2M Beca, 2012):

- Providing peak flow storage at Diamond Harbour, Governors Bay and Lyttelton and pumping buffered flows from Diamond Harbour and Governors Bay to a pump station at Lyttelton wastewater treatment plant, and the combined flows through the rail tunnel to Pump Station 15 (which has sufficient capacity and is being repaired by SCIRT). This option would also include mothballing the Lyttelton wastewater treatment plant, which could be restarted in a couple of days to provide emergency treatment of the combined flows from Lyttelton, Governors Bay and Diamond Harbour.⁵ This is likely to have a similar cost to the preferred option in the Harrison Grierson (2008) report.
- As above, but instead of piping across the floor of Lyttelton Harbour, pipe in the road corridor from Diamond Harbour to Governors Bay, and from Governors Bay to Lyttelton wastewater treatment plant. While the pipelines are longer, this significantly reduces risks during construction and the risk of tsunami damage. This is likely to be slightly more expensive than the above option, due to the longer pipe lengths.

A preliminary evaluation of these two options was carried out, along with the other five sub-options for conveyance to CWTP, and the option of upgrading the Lyttelton Harbour wastewater treatment plants and continuing to discharge to Lyttelton Harbour. The evaluation took into account cultural, social, environmental, economic, and resilience factors.

The two preferred options are the two additional options described above. This is because these provide the greatest resilience (due to the provision of peak flow storage, and the ability to bring the mothballed Lyttelton wastewater treatment plant back online if the pipeline to CWTP is damaged), are among the lowest cost options (when compared on a like for like basis) and have the least environmental effects (with peak flow storage reducing the likelihood of overflows and all wastewater discharges being removed from Lyttelton Harbour).

4.4.3 Recommendation

It is recommended that the option of providing peak flow storage at Diamond Harbour, Governors Bay and Lyttelton is investigated in more detail. It is also recommended that the option of constructing the pipeline in the road corridor rather than across the harbour is further explored. The Council will investigate the options for Lyttelton Harbour in more detail closer to the planned time of implementation (2016 – 2019).

⁵ (Mike Bourke, Christchurch City Council, pers. comm. 11/6/12)

4.5 Reuse of treatment products

4.5.1 Water reuse

Description of issue

Very little water reuse is practiced in Christchurch due to abundant supply, the low cost, and high quality of fresh water available from aquifers beneath Christchurch. Water reuse is unlikely to be economically viable or widely supported by the community until the structure of supply costs or availability changes.

Options

The Issues and Options report (CH2M Beca, 2012) developed an option of reusing treated wastewater from CWTP to irrigate land in the residential red zone alongside the Avon River.

Given that the future status and use of this land is in doubt, and the widespread community desire to see the eastern suburbs redevelop on the back of a quality greenspace and aquatic environment, this option does not warrant further consideration.

A more acceptable and cost effective reuse option would involve expanding the wastewater reuse scheme at the CWTP to reduce groundwater extraction. This project is already listed in the Christchurch Long Term Plan for Years 2017–18 and 2018–19. Currently about 2,000m³/day of treated wastewater is reused for process cooling. This could be expanded to 5,000m³/day at a cost of about \$2M.

A preliminary evaluation of the two options was carried out, taking into account cultural, social, environmental, economic, and resilience factors. The preferred option is an expanded water reuse scheme at CWTP.

Recommendation

The preferred option is to implement the proposed expansion of the CWTP water reuse scheme in 2018 as this scheme optimises environmental and other benefits while minimising costs. This expansion involves further treatment of final wastewater at CWTP for onsite reuse within wastewater treatment processes (i.e. non-potable reuse).

4.5.2 Biosolids

Description of issue

Significant quantities of biosolids are produced continuously at the eight Christchurch and Banks Peninsula wastewater treatment plants and they require disposal. Dewatered biosolids are pathogen-laden. They are difficult to handle and the costs involved in safe and environmentally sustainable disposal can be significant. There are economies of scale in centrally treating biosolids. Small quantities of biosolids produced at Banks Peninsula treatment plants may optimally be processed at a central site such as CWTP.



Biosolids Drying Facility at Bromley

Options

The Council has developed an overall biosolids management strategy over the last seven years. This has included extensive public consultation specifically about the management of CWTP biosolids which amount to about 80 tonnes per day of material at 20 per cent dry solids. Options reviewed included landfilling, land spreading, biosolids composting, thermal and solar drying, and incineration. Decentralised biosolids processing has not been investigated in depth because the implementation costs are very high on a per-tonne-of-biosolids-processed basis compared with central processing at CWTP.

After extensive investigations a decision was taken to implement a thermal drying facility located at CWTP utilising 100 per cent renewable fuels to process dewatered biosolids into stabilised dried Class Ab biosolids suitable for reuse as a fertiliser or fuel. This facility was commissioned in 2010 and has capacity to process the biosolids from CWTP as well from the outlying treatment plants on Banks Peninsula.

The Council has also explored a range of options for disposing of the drier and stabilised biosolids that include landfilling, reuse in mine rehabilitation and use as fertiliser.

Recommendations

The recommendations for biosolids management are:

- Continue to dry CWTP biosolids at the biosolids drying facility using renewable fuels (landfill gas and wood) for the next 20 years
- In the short term, continue transporting biosolids to the Stockton mine for use in land rehabilitation as agreed under the current reuse contract with Solid Energy
- Continue to explore other reuse methods that can act as a second alternative to Solid Energy including use as a fertiliser and/or incineration over the next five years.

5 Monitoring, evaluation and review

The Implementation Plan should be reviewed annually to assess if there are additional approaches that can be taken, or whether changes to current methods are required. It is intended that this strategy is a living document that can be adjusted in the face of additional information.

The measures developed as part of the LTP process will be employed to review the progress of this strategy, particularly those measures developed for reducing wastewater overflows.

This strategy will be formally reviewed on a five-yearly basis, with the first formal review scheduled for 2017.

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6 Resources and capability

The Council is committed to providing an affordable, reliable, culturally acceptable, ecologically sustainable and resilient wastewater system that protects public health and meets the needs of present and future communities. To achieve this vision the Council will take the following steps:

- Through the Wastewater Strategy Implementation Plan the Council will adopt and prioritise specific tasks and actions required to put this strategy into force.
- The tasks and actions in this strategy will be incorporated into the LTP and Annual Plan using standard Council processes.
- Engagement with stakeholders will be ongoing involving normal consultative processes. Specific consultation activities may be used for particular elements of the programme as required.
- Resources will be allocated to implement the tasks and actions to meet programme and cost goals established by the Council.
- The progress of implementation will be monitored to ensure the goals and objectives of this strategy are achieved.
- This strategy and the Implementation Plan will be regularly reviewed as described in section five, and revised to bring them up to date with the rapidly changing circumstances that apply in Christchurch.

7 Implementation risks and tasks

7.1 Risks

Key risks to delivering this strategy include:

- failure of the Council to provide sufficient resources to address issues
- failure of stakeholders to accept their respective responsibilities
- deferral of actions to future councils and generations
- reliance on a single approach (silver bullet) to address issues
- failure of the community as a whole to recognise the impacts of individual actions
- failure of the Council to secure appropriate resource consents (e.g. for overflows)
- key assumptions about population growth (and associated wastewater flows and loads) are incorrect.

7.2 Tasks

This strategy will be delivered through an Implementation Plan. Resourcing will be determined through the LTP process. Key to this process will be the recognition that budgetary priorities must include not only business-as-usual infrastructure renewals and replacements, but also proactive capital and operational projects to ensure the long-term sustainability of the wastewater system.

List of Abbreviations

ADWF	Average Dry Weather Flow
ARI	Annual Recurrence Interval
BOD	Biochemical oxygen demand
BPDP	Banks Peninsula District Plan
CCTV	Closed circuit television
CERA	Canterbury Earthquake Recovery Authority
Council	Christchurch City Council
CRPS	Canterbury Regional Policy Statement
CWTP	Christchurch Wastewater Treatment Plant
DO	Dissolved oxygen
ECan	Environment Canterbury
GHG	Greenhouse gases
LTP	Long Term Plan
MKT	Mahaanui Kurataiao Ltd
MLWS	Mean low water springs
MHWS	Mean high water springs
NES	National Environmental Standard
NPS	National Policy Statement
NZCPS	National Coastal Policy Statement
m ³	Cubic metres
m ³ /d	Cubic metres per day
m ³ /s	Cubic metres per second
NPV	Net Present Value
NZTA	New Zealand Transport Agency
PPCP	Pharmaceutical and personal care products
PVC	Poly Vinyl Chloride
RMA	Resource Management Act
SCADA	Supervisory Control And Data Acquisition system
SCIRT	Stronger Christchurch Infrastructure Rebuild Team

SDC	Selwyn District Council
UDS	Urban Development Strategy
UV	Ultraviolet
WDC	Waimakariri District Council
WEF	Water Environment Federation
ZIP	Zone Implementation Programme

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Glossary

Biosolids	Sludge is solids separated by wastewater treatment processes; if the sludge is stabilised to reduce pathogens and pest-attraction it is classed as biosolids (which can be beneficially reused)
Conveyance/reticulation	A network of pipes and pumps that collects wastewater from houses, commercial and industrial properties, and conveys it to a wastewater treatment plant
Net Present Value	Today's value of a future amount, before interest earnings and/or charges
Raw sewage	Untreated wastewater
Sewage	Another name for wastewater
Sewer	A pipe which carries wastewater to a wastewater treatment plant
Sewerage system	Another name for wastewater reticulation
Stormwater	Water that originates from rainfall and either soaks into the land surface or results in surface runoff
Treated effluent	Wastewater which has been treated in a wastewater treatment plant to reduce contaminants
Untreated effluent	Another name for raw sewage or raw wastewater
Wastewater system	The whole of the wastewater system including the connections to individual private sewer pipes, sewer networks, pumping stations, rising mains to wastewater treatment plants and disposal facilities to a point where wastewater is released into the environment

ENVIRONMENT AND INFRASTRUCTURE COMMITTEE 6. 9. 2012

6. INFRASTRUCTURE REBUILD MONTHLY REPORT

General Manager responsible:	General Manager Capital Programme
Officer responsible:	Infrastructure Rebuild Client Manager
Author:	Will Doughty

PURPOSE OF REPORT

1. To provide the Environment and Infrastructure Committee and the Council with a monthly update on the infrastructure rebuild.

EXECUTIVE SUMMARY

2. At its April 2011 meeting, Council gave approval for an Alliance to be formed to deliver the reinstatement of the City's damaged infrastructure. It was also agreed that the Chief Executive would report regularly to the Council on progress with regard to the reinstatement work.
3. The report (Attachment A) is the 10th of what will be a regular monthly report that is provided to the Environment and Infrastructure Committee, Council and the Canterbury Earthquake Recovery Authority (CERA).

STAFF RECOMMENDATION

It is recommended that the Committee recommends that the Council receives the Infrastructure rebuild Monthly Report for August 2012.



New Zealand Government

**INFRASTRUCTURE REBUILD PROGRESS REPORT
AUGUST 2012**

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1. INTRODUCTION

The purpose of this report is to provide Council, CERA and NZTA an update on the horizontal infrastructure rebuild. For this month, and going forward, progress on all horizontal infrastructure rebuild work is reported. This includes the work activity being delivered by SCIRT (section 5) and work being delivered under business as usual (BAU) mechanisms (section 6).

2. ACTIVITIES FOR THE MONTH

The ramp up of work in the field is continuing with July exceeding the forecast expenditure for the month by almost 5%. The ramp up is targeted to be complete by the end of the calendar year and SCIRT will then enter a period of steady state delivery at that level.

At the end of June 2012 SCIRT had a combined workforce of 1330 people across the organisation. This is expected to increase as delivery in the field increases. SCIRT is scheduled to commence a recruitment campaign to attract locals and regional south islanders to the construction industry in September. There is an active focus on training and upskilling the local workforce to meet demands.

The release of the forward work programme is being targeted for early September. Once released, a further round of meetings with the community boards will be held to inform them of the upcoming works within their wards. Overall feedback continues to be positive from the community. The ability to restart work on several key retaining walls in Lyttelton is a major positive outcome. Work is continuing to determine the full extent of damage to retaining walls across the city and to determine which of these are publically owned.

Work is ongoing to update the overall Horizontal Infrastructure Rebuild estimate (This includes the programme being delivered by SCIRT and the work being delivered by CCC). It is anticipated that the estimate update will be completed by the end of the calendar year. This estimate will need to be further updated next year once all of the asset investigations are completed.

Overall the infrastructure rebuild is on track. SCIRT is fast approaching its one year anniversary in September. Significant achievements and outcomes have been made over that year. These have only been possible with the commitment of the people involved in all aspects of the Horizontal Infrastructure Rebuild.

3. COMMUNICATION AND COMMUNITY ENGAGEMENT

As at 10 August, a date for the launch of the forward programme of works was still to be set however it is expected to be early in September. The Council, CERA, NZTA and the SCIRT communication team have been working together to prepare for the launch and follow this up with publicity about the programme and progress made so far.

In June, the SCIRT communications team continued to keep residents informed of rebuild progress. During the month the team delivered 45 start work notices to more than 21,000 houses and carried out 244 face-to-face communications, largely through door-knocking. There were 73 web updates and four e-newsletters were distributed. SCIRT also had a display at the July Port Hills land zoning announcement public meetings and staff were available to answer any questions.

Progress was made on retaining walls and ground anchor easements and a media release was issued on 9 August advising that work on Cunningham Terrace in Lyttelton would start soon.

4. FINANCIALS

Below is a summary of the financials for the horizontal infrastructure rebuild.

This month these have been separated into rebuild activities being carried out by SCIRT (including NZTA State Highway rebuild work) and Council infrastructure rebuild activities being undertaken through Council business as usual mechanisms.

The reporting includes a breakdown for the current financial year as per the agreed SCIRT annual budget and the Council Annual Plan in section 4.1 and actual costs to date against the overall infrastructure rebuild estimate (plus additional projects) in section 4.2. For the purpose of this report all indirect costs have been allocated based on portion of the programme estimate per activity.

It is anticipated that this new format of reporting will need to be modified next month.

4.1 Annual Plan 2012/13 - Actual year to date cost against budget

The Council 2012/13 Annual Plan includes a budget for the infrastructure rebuild of \$559.7m. This relates to Council rebuild activities being delivered by both SCIRT and Council business as usual mechanisms.

In addition to the Council infrastructure rebuild Annual Plan, the SCIRT budget for the year also includes NZTA Highway rebuild budget of \$11.1m. For the purpose of this monthly progress report, the total budget reported against for the year is therefore \$570.8m as outlined in Table 1.3.

4.1.2 SCIRT actual year to date costs

The approved annual budget for SCIRT is \$440m. This includes Council rebuild activities and NZTA State Highway rebuild activities. Table 1.1 below presents

the actual costs for each activity for the year to date reported against the agreed annual budget for SCIRT. These costs are up to the end of July 2012.

Table 1.1 Actual costs for year to date of rebuild works by SCIRT

FINANCE AS AT 31 JULY 2012						
SCIRT						
Activity	Description	2012/13 SCIRT Budget	Actual Cost YTD	Forecast Total Spend This Year	Year End Variance	
Road Network	Roading	\$ 110,100,680	\$ 9,203,593	\$ 107,092,823	\$ 3,007,857	
Wastewater Collection		\$ 268,231,468	\$ 18,850,534	\$ 276,948,856	-\$ 8,717,388	
Water Supply	Water Supply	\$ 27,056,061	\$ 2,264,213	\$ 27,266,147	-\$ 210,086	
Waterways & Land Drainage	Stormwater	\$ 23,533,794	\$ 639,482	\$ 24,169,671	-\$ 635,877	
NZTA Highways		\$ 11,077,997	\$ 308,762	\$ 10,913,892	\$ 164,105	
TOTAL SCIRT INFRASTRUCTURE REBUILD PROGRAMME		\$ 440,000,000	\$ 31,266,585	\$ 446,391,389	-\$ 6,391,389	

4.1.3 Non-SCIRT actual year to date costs

The balance of the annual plan budget for the infrastructure rebuild (\$130.8m) is being delivered by Council business as usual mechanisms. Table 1.2 below presents the actual costs for the year to date of the infrastructure rebuild performed by Council for each activity against the 2012/13 Annual Plan budget. These costs are up to the end of July 2012.

Table 1.2 Actual costs for year to date of non-SCIRT rebuild works

FINANCE AS AT 31 JULY 2012						
Non SCIRT						
Activity	Description	2012/13 Approved Budget	Actual Cost YTD	Year End Forecast	Year End Variance	
Road Network	Roading	\$ 38,736,637	\$ 717	\$ 41,744,494	- 3,007,857	
Wastewater Collection		-\$ 38,031,468	\$ 2,979	-\$ 46,748,856	8,717,388	
Parks & Open Spaces	Greenspace	\$ 13,554,101	\$ 1,760	\$ 13,554,101		
Refuse Minimisation & Disposal	Solid Waste	\$ 5,105,263	\$ -	\$ 5,105,263		
Wastewater Treatment & Disposal	WW Treatment Plant	\$ 44,112,171	\$ 118,650	\$ 44,112,171		
Water Supply	Water Supply	\$ 62,369,111	\$ 637,627	\$ 62,159,025	210,086	
Waterways & Land Drainage	Stormwater	\$ 4,956,503	\$ 651,500	\$ 4,320,626	635,877	
TOTAL NON-SCIRT INFRASTRUCTURE REBUILD PROGRAMME		\$ 130,802,318	\$ 1,413,232	\$ 124,246,824	\$ 6,555,494	

4.1.4 Horizontal infrastructure SCIRT and Non - SCIRT

Table 1.3 below presents the actual costs for the year to date for both SCIRT performed and Non SCIRT performed Infrastructure Rebuild including NZTA State Highway rebuild being performed by SCIRT. These costs are up to the end of July 2012.

Table 1.3 Actual costs for year to date of SCIRT and Non-SCIRT work

FINANCE AS AT 31 JULY 2012						
Activity	Description	2011/12 Approved Budget	Actual Cost YTD	Forecast Total Spend This Year	Year End Variance	
Council Rebuild	SCIRT and CCC	\$ 559,724,321	\$ 32,371,054	\$ 559,724,321 -		0
NZTA Highways Rebuild	SCIRT	\$ 11,077,997	\$ 308,762	\$ 10,913,892 -		164,105
GRAND TOTAL		\$ 570,802,318	\$ 32,679,817	\$ 570,638,213 -		164,105

4.2 Overall Infrastructure Rebuild estimate - actual life to date costs against current infrastructure rebuild estimate.

The current estimate for the overall rebuild of the City's horizontal infrastructure is \$2.015 billion (excluding contingency and escalation), plus \$18.163m project budget not included in the horizontal infrastructure cost estimate. In addition to the above there is an estimate of \$25m for NZTA State Highways rebuild. For the purpose of this monthly progress report the current overall estimate reported against is therefore \$2.058 billion as outlined in Table 2.3.

It is anticipated that a revised programme estimate will be completed in Q4 of calendar year 2012 to help inform the long term planning process.

4.2.1 SCIRT actual life to date against estimate

Table 2.1 includes the overall life to date costs against the current estimate for the SCIRT performed rebuild of the City's infrastructure. SCIRT is performing \$1.7b of Council infrastructure rebuild, plus \$25m NZTA Highways rebuild.

Table 2.1 SCIRT Actual life to date costs against estimate

SCIRT								
Activity	Description	Current Estimate of Cost	Actual Cost 2010/11	Actual Cost 2011/12	Actual Cost 2012/13	Total Actual Cost	Forecast Total Spend	Programme Variance
Road Network	Roading	\$ 814,857,143	\$	71,701,403	\$ 9,203,593	\$ 80,904,996	\$ 814,857,143	\$ -
Wastewater Collection		\$ 714,095,238	\$	124,264,847	\$ 18,850,534	\$ 143,115,381	\$ 714,095,238	\$ -
Water Supply	Water Supply	\$ 128,142,857	\$	35,347,203	\$ 2,264,213	\$ 37,611,416	\$ 128,142,857	\$ -
Waterways & Land Drainage	Stormwater	\$ 69,000,000	\$	6,485,377	\$ 639,482	\$ 7,124,860	\$ 69,000,000	\$ -
NZTA Highways Rebuild		\$ 25,000,000	\$	2,168,590	\$ 308,762	\$ 2,477,352	\$ 25,000,000	\$ -
TOTAL		\$ 1,751,095,238	\$ -	\$ 239,967,420	\$ 31,266,585	\$ 271,234,005	\$ 1,751,095,238	\$ -

4.2.2 Non-SCIRT actual life to date against estimate

Table 2.2 includes the overall life to date costs against the current estimate for infrastructure rebuild activities being delivered by Council business as

usual mechanisms. The table also includes three projects and their budgets, not included in the current cost estimate, totalling of \$18.163m.

Table 2.2 Non-SCIRT actual life to date costs against estimate

NON-SCIRT									
Activity	Description	Current Estimate of Cost	Actual Cost 2010/11	Actual Cost 2011/12	Actual Cost 2012/13	Total Actual Cost	Forecast Total Spend	Programme Variance	
Road Network	Roading	\$ 78,589,305	\$ 12,660,306	\$ 1,792,740	\$ 717	\$ 14,453,764	\$ 78,589,305	\$ -	-
Wastewater Collection		\$ -	\$ 12,010,362	\$ 13,757,590	\$ 2,979	\$ 25,770,931	\$ -	\$ -	-
Parks & Open Spaces	Greenspace	\$ 57,884,181	\$ 611,310	\$ 1,835,060	\$ 1,760	\$ 2,448,129	\$ 57,884,181	\$ -	-
Refuse Minimisation & Disposal	Solid Waste	\$ 8,761,905	\$ 2,076,017	\$ 3,091,587	\$ -	\$ 5,167,604	\$ 8,761,905	\$ -	-
Wastewater Treatment & Disposal	WW Treatment Plant	\$ 96,356,381	\$ 4,488,038	\$ 13,249,043	\$ 118,650	\$ 17,855,731	\$ 96,356,381	\$ -	-
Water Supply	Water Supply	\$ 24,095,238	\$ 6,123,984	\$ 830,545	\$ 637,627	\$ 7,592,155	\$ 24,095,238	\$ -	-
Waterways & Land Drainage	Stormwater	\$ 41,619,048	\$ 999,542	\$ 17,109,703	\$ 651,500	\$ 18,760,745	\$ 41,619,048	\$ -	-
TOTAL		\$ 307,306,057	\$ 38,969,560	\$ 51,666,268	\$ 1,413,232	\$ 92,049,060	\$ 307,306,057	\$ -	-

4.2.3 Horizontal Infrastructure – SCIRT and Non-SCIRT actual life to date against estimate

Table 2.3 presents the reconciliation of the budgets. \$2.015b horizontal infrastructure cost estimate, the 18.163m of other Council budgets and SCIRT performed NZTA Highways (\$25 million).

Table 2.3 SCIRT and Non-SCIRT actual life to date against estimate

Activity	Description	Current Estimate of Cost	Actual Cost 2010/11	Actual Cost 2011/12	Actual Cost 2012/13	Total Actual Cost	Forecast Total Spend	Programme Variance	
Council Rebuild		\$ 2,033,401,295	\$ 38,969,560	\$ 289,465,098	\$ 32,371,054	\$ 360,805,712	\$ 2,033,401,295	\$ -	-
NZTA Highways Rebuild		\$ 25,000,000	\$ -	\$ 2,168,590	\$ 308,762	\$ 2,477,352	\$ 25,000,000	\$ -	-
TOTAL		\$ 2,058,401,295	\$ 38,969,560	\$ 291,633,688	\$ 32,679,817	\$ 363,283,064	\$ 2,058,401,295	\$ -	-

5. SCIRT WORK ACTIVITY

5.1 Achievement Report

The progress report for this month includes an achievement report which outlines progress made by the construction projects against key metrics for each asset type.

The information collection process and the key metrics are still being developed in conjunction with SCIRT and the three client organisations and so will continue to be refined.

Asset Type	Asset Sub-Type	Unit	June	July	Life To Date
Storm Water Pump Stations	Pump Station	#	0	0	0
Storm Water Reticulation	Drainage	m	1,012	1,280	3,689
Transport - Roading	Bridges	#	0.0	0.8	1.0
	Pavement	m ²	15,163	11,617	91,990
	Retaining Walls	#	0.2	1.9	6.0
Waste Water Pump Stations	Pump Station	#	1.0	0.4	8.0
Waste Water Reticulation	Gravity	m	2,655	5,203	28,477
	Pressure System	m	918	1,688	9,842
	Siphon System	m	37	0	106
Water Supply Pump & Reservoir Stations	Pump Station	#	0.8	0.4	1.0
	Reservoir	#	0.2	422.0	639.0
Water Supply Reticulation	Mains	m	950	984	11,078
	Pipes	m	599	454	7,570

5.2 Number of Ongoing SCIRT Projects

The following table is a summary of the programme pipeline as at July 31st 2012. It shows how many projects and the total value at each stage of the project lifecycle.

Project Lifecycle Stage	June Estimate	July Estimate	June Estimated Construction Cost	July Estimated Construction Cost
Investigation (Asset Assessment)	37	40	\$19.3m	\$21.7m
Concept Design	64	63	\$525.1m	\$532.3m
Detailed Design	84	80	\$304.5m	\$365.8m
Construction	76	83	\$154.7m	\$185.4m
Handover	190	195	\$74m	\$75.3m
On Hold	52	50	\$46.3 m	\$39.2m
Grand Total	503	511	\$1,123.9m	\$1,219.7

In the table above, the previous monthly report totals have also been included to show the change in activity.

5.3 Ongoing Projects by Ward

5.3.1 Introduction

The progress report this month includes a summary of all SCIRT projects that are currently either in detailed design or construction separated on a Ward basis. A separate table has been included specifically for projects either in detailed design or construction within the central city (within the four avenues). This has been created to assist in the coordination with the Central City Recovery Plan and vertical infrastructure rebuild going forward.

For projects in construction – estimated construction cost (Target Outturn Cost) has been included together with actual Life to Date Costs as at the end of July 2012.

5.3.2 Burwood / Pegasus

DETAILED DESIGN		
Reference	Project	Project Description
10415	Pump Station PS63 (PS)	New replacement PS63 at Beach Road. This project is linked to 10926 for the approximately 4Km long 700mm pressure main.
10585	PS25 - Catchment	Wastewater design for Pumping station 25 Catchment. This area includes sections of Banks Ave and Achillies Street that will be diverted into PS 108. This area also includes the Strathmore Gardens area. The majority of the catchment requires replacement of WW lines.
10620	Pages Rd Bridge	Repair to Pages Rd Bridge, including road network connecting to roundabout on North end of bridge.
10694	PS36 Renewal (WW)	New PS36 to replace existing PS36. New station capacity approximately 900 L/S. This project covers all design for the project and construction for above ground activities. A related project covers 2M of below ground construction works required.
10705	Owles Tce (WW)	Project released from hold March 2012.
10796	NZTA Anzac Bridge Repairs	Ground improvements, removal of landward bridge spans, demolish and rebuild abutments, repair piers, approaches and underpasses
10808	PS25 Catchment RD SW and WS Repairs	Design for repair (some surface reconstruction) of minor to moderate earthquake damage to carriageways, kerbs and channels, and footpaths with some associated storm water and water supply works in 12 streets situated in the New Brighton Rd/Marshland Rd area adjacent to The Palms Shopping Mall. This work will follow construction of wastewater repairs/replacement.
10809	PS28 Catchment RD SW and WS Repairs	Design for repair (some full reconstruction) of minor to severe earthquake damage to carriageways, kerbs and channels, and footpaths with some associated stormwater and water supply works in streets situated in the area from Woodham Rd/Pages Rd north to Wainoni Rd/Breezes Rd. This work will follow construction of wastewater repairs/replacement.
10819	Keyes Road Catchment (RD,SW)	Repair and reinstatement of roads and underground services (excluding wastewater).
10840	PS37 Catchment RD SW WS	Linked to Project 10318 WW for the RD WS and SW elements
10873	Catchment Study - PS36 Catchment, Area NE4 (WW)	Full one pass rebuild of the catchment area (WW element)

CONSTRUCTION						
Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
10314	Keyes Road Catchment (WW, WS)	Repair and/or reinstatement of wastewater system.	5/03/12	20/12/12	\$ 5,243,792	\$3,140,673
10318	PS37 North Catchment (WW)	Wastewater repairs and renewal for northern half of PS37 catchment. Includes one new pump station and approximately 100 pressure sewer pumps.	28/05/12	26/03/13	\$4,289,815	\$1,259,855
10335	PS54 - Catchment	A large waste water catchment of approx 12 streets which all drain to Pump Station 54 in Avondale.	24/11/11	28/08/12	\$10,893,000	\$6,591,262
10363	PS108 Catchment (old PS39 Catchment)	A large waste water catchment of approx 12 streets which all drain to Pump Station 54 in Avondale.	14/11/11	14/09/12	\$5,306,865	\$3,923,488
10421	Estuary Rd Carriageway, PS37 to Bridge Street Catchment (WW)	Estuary Road from Beatty Street to Bridge Street is undergoing the installation of a new deep gravity sewer main. Installation is required as a result of extensive earthquake damage on the existing main, allowing infiltration.	26/09/11	26/09/11	\$2,110,000	\$2,373,986
10430	PS28 - Catchment	PS 28 catchment services residential and industrial land loosely bounded by Pages Rd, Cuffs Rd, Wainoni Rd and Shortland St in the suburb of Wainoni. Other pockets of land are also serviced including 650 m of Wainoni Rd north of Shortland St and 240 m of Breezes Rd, an area west of Wainoni Rd including a portion of Avonside Dr, Newport St, Tenby Pl and Emlyn Pl, 350 m of Wainoni Rd south of Cuffs Rd and an area south of Pages Rd including Price Pl, 180 m of Kearneys Rd and Mecca Pl.	23/07/12	12/07/13	\$15,841,952	\$29,627
10532	Cnr Pages & Cuff - Emergency Repair	A large waste water renewal to a section of gravity pipe in Pages Rd.	30/01/12	29/08/12	\$945,238	\$1,776,631
10557	Gayhurst Road Roding (RD)	Design for road reconstruction to repair moderate to severe earthquake damage to carriageway, kerb and channel, and footpaths from Dallington Bridge	16/07/12	16/05/13	\$2,747,247	\$130,398

CONSTRUCTION						
Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
		northwards to Mundys Road. This project will become part of PS108 Catchment Phase 1 Rooding, Storm Water and Water Supply. This work follows wastewater repairs/replacement.				
10577	PS106 - Woolley	Minor new pump station.	2/07/12	14/09/12	\$ 428,800	\$128,868
10765	PS 108 New Pump Station	Minor new pump station.	16/07/12	12/10/12	\$ 1,056,159	\$7,575
10802	PS54 Stage 1 - Northern Rooding Renewals Incl Breezes Road	Road design for 8 roads in Avondale. New pipe systems are needed in multiple roads requiring asset managers understanding and buy-in. Includes stormwater full dynamic modelling with probable need to restore capacity by optioneering new components (new basin and/or pump upgrading).	13/08/12	14/05/13	\$3,782,598	\$7,717
10803	PS54 Stage 1 Southern Rooding Renewals (South of Breezes Road)	Road design for Pembroke St and Horton Place in Avondale. A new pipe system is needed on Horton St requiring asset managers understanding and buy-in.	18/07/12	4/03/13	\$900,394	\$278,269
10806	Pages & Cuffs Emergency Repair Rooding (RD)	Road design for short section of dual carriageway on Pages Road. Rectification involves re-surfacing with new asphalt and minor adjustments to vertical profile and also a short stormwater pipe to connect to new low point in kerb.	7/05/12	29/10/12	\$433,037	\$259,098
10846	Water Main Replacement Projects - Feb 2012	Water Main replacement projects for: Vivian St, Admirals Way, and Pine Ave. Other streets have been moved to other projects: Port Hills Rd and Flavell St to 10681. Keyes Road to 10314. All others removed.	TBC	TBC	\$705,367	\$575,171
10859	CCC - Private	Investigation and repair of private laterals to valid	TBC	TBC	\$ 100,000	\$20,524

CONSTRUCTION						
Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
	Laterals Keyes Road (WW)	EQC claimants (pilot project). There is no design work associated with this project and TOC allocated. All costs are directly returned to CCC with no Limb 3 allocation. Therefore project is grouped with other CCC BAU capital projects.				
10882	Emergency Work - Beatty Street	Emergency relay of a collapsed sewer on Beatty Street	TBC	TBC	\$161,561	TBC
10896	Demolition of Porrit Park and Snells Footbridges, PS26 and PS27 Pump Stations	Demolition and make safe work for Porrit Park Footbridge, Snells Footbridge, PS26 and PS27. Rebuild of the bridges to be undertaken in separate standard projects.	TBC	TBC	\$223,084	\$6,733
10898	Medway Footbridge Removal	Removal and make safe of the footbridge. Store off site until a decision is made regarding the structure	TBC	TBC	\$82,348	\$5,047

5.3.3 Fendalton / Waimairi

DETAILED DESIGN

Reference	Project	Project Description
10839	Merivale Catchment RD SW WS	Linked to #10485 for the RD SW and WS elements of the One Pass Projects

CONSTRUCTION

Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
10425	Glandovey/ Bryndwr Cluster	Design for repair to severe earthquake damage to wastewater and minor damage to carriageways, kerbs and channels, and footpaths (severity yet to be confirmed) storm water and water supply. This cluster incorporates the 9 streets immediately adjacent to and including Glandovey Road between the Wairarapa Stream and Strowan Road	5/11/12	28/08/13	\$2,817,756	\$47,675
10485	Merivale WW	Approximately 9km of WW gravity system, one new pump station.	14/05/12	2/09/13	\$14,263,822	\$1,286,396
10575	Papanui Rd - Knowles to May (WW)	The area has been broken into wastewater sub-catchments in order to determine the best catchment wide solution. 10575 therefore includes Browns Rd north of Mansfield Ave, McDougal Ave east of Murray Pl, Murray Pl, Innes Rd between Papanui Rd and Browns Rd, Heaton St east of Circuit St, Papanui Rd between Innes Rd and Mays Rd, approximately 230 m of the eastern end of Knowles St, Weston Rd and Chapter St, Approximately 280 m of the western end of Normans Rd and 150 m of the eastern end of Mays Rd.	15/05/12	25/06/13	\$4,795,898	\$730,813

CONSTRUCTION						
Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
10852	Minor Works - Casebrook Block	Minor footpath, ramp and pavement repairs	TBC	TBC	\$226,107	\$59,441
10857	Minor Works - Bridge Minor Works Project Package 02	Minor repair works to 55 bridges that suffered low levels of damage during the EQ events. Delivery team led with input from SCIRT Design teams where required.	TBC	TBC	\$29,231	\$66,021

5.3.4 Central City

DETAILED DESIGN		
Reference	Project	Project Description
10464	F106 Antigua St Footbridge	Replacement of existing structure, or incorporate historical elements into major repair works
10465	F105 Bridge of Remembrance	Major structural repair works
10467	R114 Colombo St (North) Bridge	Major structural repair works Northern Colombo St, over the Avon, heritage bridge near intersection of Oxford Tce & Colombo St.
10482	Triumphal Arch	All works related to both temporary bracing to arch to support the structure and all permanent repair works. In CBD, Heritage structure.
10844	Central City - Kilmore Street Catchment Area	One Pass rebuild for the Kilmore Street Brick Barrel Catchment area in the west of the CBD.

CONSTRUCTION						
Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
10445	Fitzgerald Ave Wall and Rooding	The works include the replacement of a failed retaining wall and carriageway. Ground stabilization is also being installed with stone columns 12 meters deep.	8/08/11	5/02/13	\$3,130,000	\$3,806,933
10506	Hagley Syphon	Open trenching through Avon and sewer works in North Hagley Park.	23/04/12	23/08/12	\$450,006	\$541,799
10867	Fitzgerald Ave Retaining Wall Footpath	Footpath element of the Retaining Wall project. Linked to Project #10445	TBC	TBC	\$604,414	\$290,831
10893	Minor Works-Bridge Minor Works Project Package 01 Bridging	Minor repairs to bridges requiring little design input. Project to be led by SCIRT Project Manager and Delivery teams	TBC	TBC	\$221,172	\$7,125

5.3.5 Hagley / Ferrymead (*excludes central city)

DETAILED DESIGN		
Reference	Project	Project Description
10347	Gayhurst Rd (Bridge Works - EW)	Retrofit repair to bridge involving new abutments, piles, wingwalls and associated road approaches and services.
10405	Stadium Package 01	Repair of road and all buried services along a section of Ferry Rd and Moorehouse Ave, near the AMI stadium
10449	St Johns (WW)	
10462	Site 228 Rangatira Tce Retaining Wall (RW)	
10498	Woolston South 1	5km WW gravity system and 1 new pump station with associated rising main, and individual pressure pumps for industrial properties; roading repair works with design for 1 road; approximately 350m new WS, and currently unknown extent of SW
10582	PS8 - Catchment	Design for repair to severe earthquake damage to wastewater within Pump Station 8 catchment green zone. The green zone is located to the north-west of the Avon River and generally bounded by Flesher Ave to the east and south, Chrystal St to the west and Medway St to the north.
10584	PS27 Catchment Area (WW)	Assessment and repairs/relay of wastewater services in the catchment of the old pump station 27 on Avonside Drive.
10795	PS57 McCormacks Bay Rd Pump Station Repairs (PS)	Repairs to building at existing pump station.
10798	NZTA Port Hills Overpass Bridges	Pier column refinement, subject to ground investigation results
10799	NZTA Horotane Overpass Bridges	Propping system between piers, subject to ground investigation results
10824	Beachville Catchment Area including Beachville Road & Celia Street (WW,WS,SW,RD)	Full one pass rebuild of the catchment area. Project Includes PS30, WW, SW, RD and Sea Wall assets. Projects already existing in this area which this catchment study will relate to are: 10600 - PS30, 10619 - Beachville Road Eastern Seawall, 10677 - Beachville Watermain WS.
10832	PS15 - Alport Place Pump Station Replacement	Construct a new Pump Station; tie in works, odour control system and demolition of existing PS15.

DETAILED DESIGN

Reference	Project	Project Description
10836	PS27 Catchment Area (RD,SW,WS)	Roading, Stormwater and Water Supply for a one pass approach for the PS27 Catchment. Linked to Project 10584.
10850	Cannon Hill Cres Retaining Walls (RW)	Renewal of 2 collapsed retaining walls on Cannon Hill Road
10854	PS5 Catchment WS, SW & RD	Roading, Water Supply and Storm Water elements for a one pass rebuild of the PS5 WW Catchment area
10855	PS8 Catchment WS, SW & RD	Water Supply, Storm Water and Roding elements for the one pass rebuild of the PS8 WW Catchment

CONSTRUCTION

Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
10303	Site 229 Mt Pleasant Rd Retaining Wall (RW)	60m replacement retaining wall and road reinstatement, in Mt Pleasant	4/02/13	28/05/13	\$458,381	\$935
10306	CCC - PM11 Randolph (WW)	3.6km, 1.2m dia WW pressure main	6/03/12	26/04/13	\$12,831,040	\$5,638,334
10317	Heberden Ave Permanent Solution (WW)	New gravity sewer diversion to replace broken sewer down Scarborough Cliffs.	18/05/12	19/10/12	\$256,733	\$386,819
10356	Woodham Rd (PS5 east of river)	The project scope requires replacement of 960m of damaged waste water from Linwood Ave to Ngarimu St. Road refurbishment will follow sewer works. Traffic diversions are required for this work to be completed safely.	14/11/11	29/10/12	\$3,095,185	\$2,339,069
10388	Richardson Clarendon Syphon	The extent of the work for this work package is the replacement of the 144 Richardson Terrace / 121	1/11/12	8/01/13	\$473,489	\$0

CONSTRUCTION						
Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
10403	Barbour St Water (WS)	Replacement of water mains in two streets to the south and east of AMI Stadium, Waltham.	31/01/13	30/04/13	\$ 174,742	\$683
10442	PS15 Gould Cres Overflow Structure	The overflow for Pump Station 15 was removed after collapsing in Feb quake. This work is replacing the structure in a new location of Gould Cres.	14/11/11	30/09/12	\$203,962	\$210,429
10459	Lower Richmond-Stanmore to Fitzgerald (WW)	Approximately 5km of WW, gravity system; requiring 2 new pump stations	20/03/12	30/05/13	\$11,833,107	\$4,538,093
10472	Charleston	Approx 2.9km WW enhanced gravity system, 1 new pump station; 0.3km SW; 8600m2 carriageway reconstruction, and 1830m2 localised repairs	7/05/12	4/02/13	\$3,737,683	\$918,811
10483	Lower Richmond (Southern Section) WS,SW,RD	Full reconstruction of intersection (80m), and localised repairs on remaining streets; 86m of SW replacement	3/09/12	20/11/12	\$316,261	\$6,719
10541	PS11 - Randolf		11/06/12	4/09/12	\$475,000	\$604,961
10548	Gloucester Street	Design for Wastewater, Stormwater, Water, Rooding along Gloucester Street between Woodham Road and Avonside Drive. Close to complete replacement of all WW and Rooding assets. Stormwater is reasonably intact.	26/06/12	21/09/12	\$1,078,084	\$632,435
10578	PS107	Minor new pump station.	1/08/12	22/11/12	\$563,749	\$14,421
10679	Moncks Spur No. 3	Repair and retrofit of reservoir.	12/04/12	9/08/12	\$217,591	\$166,687
10680	Clifton No. 4 Reservoir	Repair and retrofit of reservoir.	21/03/12	27/11/12	\$437,673	\$254,281
10716	PM 34 Sumner - Replacement		5/03/12	9/08/12	\$1,300,000	\$1,308,994
10820	McCormacks Bay	Tank 1 and 2 and access reinstatement.	TBC	TBC	\$1,106,431	\$17,358

CONSTRUCTION						
Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
	Reservoir Stages 3,4 and 5					
10822	McCormacks Bay Reservoir Stage 2 Walls	Retaining walls and rockfall protection works at reservoir site.	TBC	TBC	\$1,549,159	\$965,869
10830	Minor Works - Bridge Minor Works Project Package 01 Rooding	Minor repair to bridges requiring little design input. Project to be led by SCIRT Project Manager and Delivery teams.	TBC	TBC	\$37,582	TBC
10843	Lower Richmond Catchment RD SW WS	Linked to #10459 for the RD SW and WS elements of the project	TBC	TBC	\$1,573,629	\$8,845
10853	McCormacks Bay Reservoirs - Rock Face Protection Work	Rock protection work to facilitate the repairs to the reservoir tanks	TBC	TBC	\$1,231,910	\$511,093
10863	Charleston Waste Water Pump Station	Pumps Station Construction	TBC	TBC	\$503,092	\$2,407
10864	Woodham Road (SW,RD,WS)	Storm water and water supply elements linked to project 10356 WW & RD	TBC	TBC	\$441,840	\$412,160

5.3.6 Lyttelton / Mt Herbert

DETAILED DESIGN		
Reference	Project	Project Description
10511	RW Package 06 - Selwyn and Ross	Design five retaining walls on Selwyn Street and Ross Terrace, Lyttelton. The walls range in height from 1.5m to 3m, and are of high heritage value. These walls are currently located within the white zone.
10818	NZTA - Norwich & Gladstone Quay State Highway Repair (RD, WW, SW, WS)	Repairs to state highway adjacent to the Port of Lyttelton

CONSTRUCTION						
Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
10394	RW Package 05 - Canterbury Stone Walls (RW)	Project to design three replacement retaining walls on Canterbury Street and one wall on Ripon Street, Lyttelton. The walls are up to 4.5m high and are of high heritage value.	16/05/12	9/11/12	\$1,482,372	\$166,645
10400	RW Package 08 - Lyttelton non-stone (RW)	Design five replacement retaining walls on London Street, Canterbury Street, Hawkhurst Road and Ticehurst Road. Sections of these walls are of high heritage value. The walls on London Street and Canterbury Street are located within the white zone.	12/06/12	30/10/12	\$589,801	\$289,774
10424	Sumner Rd Retaining Wall L	Stage one of new 450m long modular block retaining wall.	25/11/11	1/02/13	\$1,658,595	\$805,150
10427	035 Cunningham Tce retaining wall (RW)	Repair of retaining wall in Cunningham Tce, along with associated buried services	17/08/12	2/04/13	\$1,785,393	\$198,947
10475	Site 079 Coleridge/Dublin St Ret. Walls	200m replacement retaining wall and road reinstatement in Lyttelton	28/09/12	25/07/13	\$1,607,135	\$145,773

CONSTRUCTION						
Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
10905	Sumner Rd Retaining Wall L - Stage 2 Wall and Stage 1 and 2 Roads (RW, RD)	Stage two of new 450m long modular block retaining wall.	TBC	TBC	\$2,054,487	\$331

5.3.7 Riccarton / Wigram

DETAILED DESIGN

Reference	Project	Project Description
	*No projects in Detailed Design	

CONSTRUCTION

Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
10383	PS73 Kennedys Bush	Repair of wastewater PS 73	29/05/12	31/08/12	\$86,242	\$51,004
10409	Halswell WW Package 03	Repair wastewater along a section of Halswell Rd, O'Halloran Dr, & within private properties behind Muir Ave.	12/06/12	5/12/12	\$1,516,362	\$484,096
10909	Minor Works - Port Hills Package 01	Minor road repairs within the Port Hills	TBC	TBC	\$178,770	\$11,735

5.3.8 Shirley / Papanui

DETAILED DESIGN		
Reference	Project	Project Description
10816	PS7 Catchment Phase 4 Waste Water Renewals	Wastewater network remediation in the Pump Station 7 catchment which is situated in Shirley centred upon Stapleton's Road and Shirley Road which bisect the catchment. (Area 4 of 4, central/western quarter of catchment)
10858	Minor Works - Pump Station Demolition and Repairs (WW)	Minor repair works to slightly damaged Pump Stations that require no major works during the rebuild programme. Demolition of 3 PS buildings to make safe in Red Zones. Project led by the delivery team with a SCIRT Design input and coordination. Close liaison with CCC Operations team (Graeme Black) required throughout the project.

CONSTRUCTION						
Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
10344	Edgware Road - Emergency Works	A large complex repair to a sewer trunk main in Edgware Rd.	22/09/11	16/08/12	\$1,734,794	\$1,904,587
10457	Purchas & Madras (Bealey - Edgware)	WW, SW and roading repairs. Includes traffic calming on Purchas St to conform to IDS and City Plan requirements for Local Road widths.	8/11/11	21/12/12	\$2,962,824	\$3,532,525
10534	Innes & Knowles - sub catchment	The local wastewater reticulation on Innes Rd and Knowles St between Philpotts Rd and Bretts Rd suffered earthquake induced damage during the recent seismic events.	26/07/12	5/06/13	\$9,215,965	\$42,575
10535	Rutland Rd - sub catchment	Wastewater repair along a single street east of Papanui. This project area is lightly to be revised.	20/04/12	27/11/12	\$1,556,699	\$813,546
10536	Edgware Rd - WW	This contract is for the supply and installation of approximately 1430m of 150 mm diameter PVC-U to replace the existing wastewater line along Edgware Road. The works include supply and	12/04/12	14/09/12	\$1,770,383	\$1,488,482

CONSTRUCTION						
Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
		installation of new manholes and wastewater pipeline and connection to laterals from adjacent residential properties. The works include any temporary measures required to provide continued operation of the gravity system during construction.				
10810	PS7 Catchment Phase 1 Waste Water Renewal	Wastewater network remediation in the Pump Station 7 catchment which is situated in Shirley centred upon Stapleton's Road and Shirley Road which bisect the catchment. (Area 1 of 4, south of catchment)	29/05/12	8/05/13	\$4,521,962	\$573,993
10812	PS7 Catchment Phase 2 Waste Water Renewal	Wastewater network remediation in the Pump Station 7 catchment which is situated in Shirley centred upon Stapletons Road and Shirley Road which bisect the catchment. (Area 2 of 4, eastern quarter of catchment)	18/06/12	23/05/13	\$5,394,690	\$305,353
10814	PS7 Catchment Phase 3 Waste Water Renewal	Wastewater network remediation in the Pump Station 7 catchment which is situated in Shirley centred upon Stapletons Road and Shirley Road which bisect the catchment. (Area 3 of 4, north western quarter of catchment)	23/07/12	27/09/13	\$6,094,133	\$36,410
10856	Minor Works - Northwood Block	Footpath, ramp and pavement repairs.	TBC	TBC	\$176,033	\$65,369
10899	Minor Works - Lower Styx Road & Turners Road	Pavement repairs	TBC	TBC	\$150,763	TBC

5.3.9 Spreydon / Heathcote

DETAILED DESIGN		
Reference	Project	Project Description
10310	Milton St and Frankleigh St Wastewater Reconstruction (WW)	Repair of road and all buried services along Milton and Frankleigh Streets, including the section of Lyttelton either side of the intersection
10398	Somerfield Package 01 (WW,SW,RD,WS)	Repair and reconstruction of all assets within a small catchment block.
10797	NZTA Heathcote/Opawa Bridge Repairs	Ground improvements, and underpinning and lifting (jacking) of the abutments
10871	Opawa, Hillsborough Catchment SE11 (South) (WW)	Full one pass rebuild of the catchment area - WW element

CONSTRUCTION						
Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
10311	Antigua St / Burke St Arterial Roads (WW,WS,SW,RD)	Repair of road and all buried services along Antigua St (between Moorehouse & Brougham) and Burke St (between Selwyn & Montreal)	19/04/12	7/06/13	\$3,151,988	\$591,745
10379	Fisher Ave & Eastern Tce Syphon (WW)	Repair of Syphon near Fisher Ave	4/05/12	7/09/12	\$455,870	\$463,618
10385	Bewdley Evesham and Dellow	Repair of road and all buried services along Bewdley St, Eversham Cres & Dellow Pl.	20/04/12	18/10/12	\$1,374,176	\$1,238,603
10404	Hollis Ave Water (WS)	The works consist of the replacement of approximately 330 m of existing 100 mm AC water main in Holliss Avenue with 125 mm PE100 PN16 pipe.	13/07/12	20/09/12	\$135,869	\$82,999
10410	Hollis Ave WW	Repair of wastewater along a section of Holliss Ave between Gunns Cres & Centaurus Rd.	19/04/12	31/08/12	\$643,868	\$662,792

CONSTRUCTION						
Reference	Project	Project Description	Estimated Start	Estimated Finish	Estimated Cost	Life To Date
10520	Hoon Hay Package 01	Repair of road and all buried services along a section of Hoon Hay Rd (between Halswell & Sparks), including Penny In, Weir Pl, McBeath Ave, Muirson Ave; Greenpark St.	27/06/12	12/04/13	\$6,767,934	\$110,692
10821	Huntsbury Reservoir Tank No 2 & demolition	New reservoir tank (no.2) constructed in NE corner of old reservoir.	TBC	TBC	\$3,458,765	\$2,013,121

5.4 Projects Complete by Ward

The following section outlines the projects within each ward that have been completed since SCIRT was established on 1st September 2011. It includes both a summary of numbers of projects as well as a list of specific projects. It is anticipated that the completed projects for the last quarter will be reported on a monthly basis.

Ward	June Number of Projects	July Number of Projects	June Projects Life To Date Cost	July Projects Life To Date Cost
Burwood-Pegasus	76	80	\$21,902,166	\$23,235,813
Fendalton-Waimari	2	3	\$179,143	\$209,784
Central City	5	5	\$178,156	\$178,156
Hagley-Ferrymead	62	62	\$16,999,628	\$18,937,501
Lyttelton-Mt Herbert	5	5	\$154,405	\$461,668
Riccarton-Wigram	6	6	\$4,786,831	\$4,808,733
Shirley-Papanui	17	19	\$3,606,667	\$3,914,020
Spreydon-Heathcote	15	16	\$6,232,684	\$6,320,447
Total	187	196	\$54,039,680	\$58,066,121

In the table above, the previous monthly report totals have also been included to show the change in activity.

5.4.1 List of Projects Complete by Ward

Ward	Reference	Project	Project Life to Date Cost
Burwood-Pegasus	10312	Rowes/Tomrich Street Watermain	\$264,247
	10321	PM51 Emergency Repair	\$1,510
	10325	Cresswell Avenue - Watermains	\$148,731
	10327	Pembroke Street	\$146,277
	10328	De Ville Place	\$107,535
	10331	PM39 - Gayhurst Rd	\$1,594,111
	10332	PM54 - Niven-Avonside	\$375,476
	10338	Wainoni Road (WW EW - Ottawa to Avonside)	\$908,330
	10339	Woodham Road (Temp Repairs)	\$4,146,744
	10340	Ottawa Road Sewer Emergency Repair	\$517,444
	10342	Avondale Road (Bridge Emergency Works)	\$0
	10343	PM16 - Oakmont Green	\$4,287
	10346	Fleete Street - Emergency Repair	\$9,243
	10349	PS39 - Birchfield Avenue WW EW	\$218,674
	10351	Ardrossan Street - Temp. Solution	\$347,571
	10355	Landy Street	\$18,738
	10364	Shortland Street	\$343,883
	10366	McBratneys Road - WM	\$348
	10376	PM28	\$1,499,119
	10384	Pacific_Tedder Watermain Replacement	\$528,152
	10440	PS 25C	\$702,670
	10443	PM38_Beach Rd	\$596,770
	10484	Pump Station 25 connection repair	\$8,977
	10551	Avondale Rd (Temp Repair)	\$0
	10576	PM106 - Woolley	\$1,466
	10604	PM 45	\$324,122
	10605	Sylvia Street watermain	\$134,293
	10606	Chadlington Street Water Mains	\$35,376
	10607	PM 37	\$1,907,741
	10608	PM 35	\$1,087,648
10614	Aldershot Street watermain (WS)	\$255,436	
10615	Willryan Avenue Watermain	\$237,336	
10616	Flemington and Ascot Ave Watermains	\$525,892	

Ward	Reference	Project	Project Life to Date Cost
	10617	PM46	\$5,913
	10621	Chartwell Street Water Mains	\$384,531
	10638	630 Pages Road 450mm WW	\$25,397
	10639	23 Leaver Tce WW	\$62,858
	10640	153 Beach RD WW	\$0
	10641	Kirner St WW	\$21,497
	10645	Inwoods Close 450mm WW	\$128,404
	10647	Travis Rd watermains and submains	\$215,845
	10649	Corhampton St watermains and submains	\$261,190
	10650	Water Main on Bridge Street Bridge (WS)	\$207,907
	10664	Saltaire (Bower to Marriots Rd) - WS	\$69,096
	10665	Sinclair (keyes to Rawson) - WS	\$250,841
	10669	Palmers Rd PS Stabilisation	\$16,065
	10670	Major flooding Pratt St.	\$295,425
	10671	Owles Tce Temp. (WW)	\$113,618
	10676	Marine Parade Watermain	\$153,358
	10682	Briarmont St watermain	\$87,815
	10683	Cowes St Watermain and Submains (WS)	\$107,789
	10684	Gresham Terrace Watermain and Submains (WS)	\$161,116
	10685	Inverell Pl Watermain and Submains (WS)	\$63,517
	10686	Orrick St Watermain and Submains (WS)	\$83,284
	10688	Blake St Watermain (WS)	\$343,340
	10689	Pegasus Ave Watermain	\$168,650
	10690	Bassett St Watermain (WS)	\$225,196
	10691	Falcon St Watermain	\$180,757
	10692	Beach Rd Watermain	\$138,143
	10695	Allstone Watermain	\$90,800
	10696	Marriotts Road Watermain	\$37,425
	10700	Hulverstone Drive Emergency Repair	\$22,188
	10702	Rawhiti Water Well Stormwater Outfall	\$147,524
	10706	Bowhill Watermain (WS)	\$149,728
	10708	Rookwood Ave Watermain	\$174,169
	10711	Waitaki St Temp. Sewer	\$0
	10714	Kate Sheppard Emergency Repair (Barkers Lane Temp Works) (WW)	\$187,534

Ward	Reference	Project	Project Life to Date Cost
	10723	Merrington Cres Watermain	\$183,621
	10728	Rowan Ave Emergency Work WW	\$447,340
	10744	PS 36 Gravity Main (Pages Rd)	\$579
	10749	Beach Rd Gravity Sewer (WW)	\$67,291
	10752	Desal plant long term storage	\$83,333
	10756	PM39 Temp Overland Pipe (PM)	\$7,828
	10789	Woodham Road Water Supply Pumping Line Renewal	\$83,862
	10794	Pratt Street (Keyes Road) Water Main from Pumping Station	\$222,864
	10833	Fast Track - PS36 Sewerage Overflow Repairs Pages/Waitaki (WW)	\$3,131
	10834	Minor Works - Stage 1 Schools	\$7,185
	10838	Minor Works - Banks Avenue	\$121,240
	10315	Ferner Street - Emergency Wks	\$223,901
	10336	Kingsford & Liggins Streets (Projects 10336 & 10885)	\$204,574
	10312	Rows/Tomrich St Watermain	\$264,247
Fendalton-Waimari	10354	Papanui Road - Emergency Wk	\$53,511
	10480	R126 Monavale Footbridge	\$30,641
	10590	Thornycroft Street - Pri4 WM	\$125,632
Central City	10447	Fitzgerald Ave Temp Sewer Replacement (WW)	\$22,117
	10455	Fitzgerald Ave Twin Bridges Temp Repairs	\$0
	10726	Stormwater Pump Station 203	\$44,715
	10764	PM3 Temporary Repair (Complex Emergency)	\$3,365
	10790	Liverpool Street Water Main (CBD)	\$107,959
Hagley-Ferrymead	10301	CCC - Tanner Street Replacement Well (WS)	\$15,792
	10319	St Martins Package 01 (WW) Wilsons Rd South, St Martins Rd and Gamblins Rd	\$1,338,475
	10326	Retreat Road	\$678,774
	10333	PM57 - Replacement (Stage 2 March)	\$2,075,207
	10337	Avonside - WW Trunk Sewer	\$204,090
	10341	River Road - Siphon (WW)	\$663,172
	10350	Avonside Drive/Retreat - Gravity Sewer Repair	\$93,588
	10352	Avonside Drive/Morris Bowie - Gravity Sewer Temp. Solution	\$86,006

Ward	Reference	Project	Project Life to Date Cost
	10353	294 Avonside Drive - Temp. Solution	\$241,562
	10358	PS57 - McCormacks Bay Rd Sewer Overflow Renewal	\$170,231
	10361	PS54 Catchment Temp. Solutions	\$877,947
	10362	PS5 - Glade	\$0
	10372	Dacre Street	\$125,100
	10386	St Andrews Hill Rd Sewer (Major Hornbrook)	\$70,826
	10391	Stevens St Watermain	\$164,811
	10402	Moorhouse SW BB 02	\$72,671
	10406	226 Main Road SW	\$4,627
	10411	Clifton Reservoir 3	\$360,172
	10417	Upper Balmoral Reservoir	\$407,316
	10422	PM 31 Renewal Works	\$1,591,347
	10431	PS15 Alport	\$1,281,341
	10434	PS12 Smith	\$545,970
	10441	Ferry Road_873	\$366,749
	10448	PM 12	\$710
	10451	Manning-Ferry	\$16,641
	10452	WW No Service Grafton	\$134,202
	10454	225 Linwood Ave	\$74,062
	10458	31 Stanmore Road	\$48,644
	10463	Hamner Street - waste water relay	\$72,948
	10471	33 River Terrace	\$38,939
	10473	Wickham St Watermain replacement	\$307,303
	10478	F805 McCormacks Bay 1 Footbridge	\$8,795
	10479	F806 McCormacks Bay 2 Footbridge	\$7,959
	10481	R223 Heathcote Barrage	\$4,593
	10496	PS13 Tilford	\$10,073
	10497	PS10 Linwood WW	\$13,699
	10499	Saxon Street Waste Water	\$15,687
	10505	Stanmore Road Lateral	\$0
	10537	Patten Street	\$633,749
	10539	Brittan Street	\$564,450
	10586	PM107	\$261,078
	10609	PM 47	\$24,815
	10612	McCormacks Bay Reservoir No 2-2	\$675,141
	10613	Mt Pleasant Reservoir 2/2	\$95,660
	10618	Beachville Road Pressure + Gravity Main	\$476,693

Ward	Reference	Project	Project Life to Date Cost
	10629	McCormacks Bay Rd WR mains and submains	\$2,177,304
	10644	55 Clark St WW	\$759
	10666	Head Street - Esplanade to Nayland (WS)	\$78,803
	10677	Beachville Watermain (WS)	\$248,863
	10687	Wakefield Ave Watermain (WS)	\$156,900
	10729	WW, Gravity Bridal Path and Cannon	\$250,799
	10734	WW, 262 Main Road	\$0
	10739	Heberden Ave Temporary Solution (WW)	\$102,792
	10743	281 River Rd Siphon (WW)	\$0
	10746	Ruru Ave Repair PM 11	\$42,191
	10747	Bromley Waste Water Treatment	\$23,860
	10753	WW No Service Glendevera (WW)	\$2,081
	10763	Monks Bay Walkway - Temp Repairs	\$45,416
	10779	CCC - Linwood Avenue Water Main	\$454,401
	10782	15 Dunoon Place Emergency Stabilisation / Sewer Repair	\$179,641
	10792	Truro Street Emergency Waste Water Sewer Renewal (Van Asch School)	\$173,582
Lyttelton-Mt Herbert	10382	Lyttelton Treatment Plant Access	\$0
	10636	Priority Roads - Governors Bay Road Rebuild	\$387,073
	10672	Sutton Quay Retaining wall 441 (RW)	\$39,384
	10732	Flat land at base on hill along Main Road - WW	\$0
	10878	Cunningham Terrace & Sumner Rd Temp Access Works	\$35,211
Riccarton-Wigram	10309	Halswell Minor Roding Works - All Areas	\$319,312
	10380	Halswell WW Package 02	\$2,031,254
	10387	Townshend Cres Wastewater	\$46,679
	10389	Sparks Rd Watermain	\$175,935
	10392	Halswell WW Package 1 (WW)	\$2,110,120
	10408	Glovers St water (WS)	\$125,432
Shirley-Papanui	10308	Riselaw Street	\$91,424
	10313	PM6 - Harrison St	\$206,843
	10322	Ranfurly Street	\$118,626
	10323	Chrystal Street	\$83,927

Ward	Reference	Project	Project Life to Date Cost
	10329	Hope street	\$145,208
	10330	Orontes Street - WS	\$90,022
	10334	PM7 - Stapletons Rd	\$242,909
	10345	Nancy Ave / Weston Rd	\$16,297
	10348	Shirley Road - Wastewater (Emergency Repair)	\$696
	10369	Orion Street	\$41,881
	10437	PM 40_Marshlands	\$585,684
	10439	Heyders_29-65_WW	\$320,151
	10446	Brooklands Roding - Temp Repairs	\$364,289
	10460	449 Durham Street North	\$304,376
	10555	Madras Street / Forfar Wastewater	\$588,121
	10805	Madras Street Road, Storm Water & Water Supply Repairs	\$340,372
	10837	Minor Works - Shirley Boys High School	\$115,055
	10851	Minor Works - Marshland Road & Belfast Road	\$257,041
	10581	Catchment Study - PS7 (10810, 10811, 10812, 10813, 10814, 10815, 10816, 10817)	\$1,098
Spreydon-Heathcote	10320	Murray Aynsley Reservoir 2	\$148,173
	10381	Rydal St (WW)	\$921,753
	10390	Centaurus Rd Watermain	\$143,772
	10393	Smartlea WW Emergency Rep	\$109,991
	10396	75 Wilsons Emergency Repair	\$825
	10397	Glenelg Spur 01	\$141,527
	10432	PS19 Beckford	\$3,201
	10433	PS20 Locarno	\$19,259
	10476	F207 Aynsley Tce Footbridge	\$8,319
	10477	F212 Sloan Tce Footbridge	\$593
	10545	PS19 - Syphon	\$0
	10597	Huntsbury Reservoir	\$4,061,037
	10717	Colombo St (South) Bridge - Concept only, no construction work undertaken (RD)	\$2,207
	10745	CCC - Sydenham Stn Replace Wells (WS)	\$236,486
	10755	PS19 Fifield - 171 Fifield - Sheet piling protection of riverbank	\$114,715
	10787	Rydal Street Water Supply, Storm Water and Roding Renewals (SW,WS, RD)	\$408,589
Grand Total			\$58,066,121

6. NON-SCIRT WORK ACTIVITY

6.1 Introduction

The following section of the report included a progress report against infrastructure and other associated rebuild projects that are not being delivered by SCIRT. It includes a report on progress on Greenspace projects, Christchurch Wastewater Treatment Plant and Organics Processing Plant, Burwood Landfill and Water Supply Wells.

6.2 Greenspace

Ward	Work Package Number	Project	Description	Number of projects in package	Phase	Estimated Construction Start	Estimated Construction Finish	Estimated Cost
Banks Peninsula Wards	WP0000537	PARKS Marine Structures Repairs	Marine Structures Repairs	13	BUILD	01/08/2011	30/06/2012	\$462,000
	WP0000551	PARKS Marine Structures Assessments	Marine Structures Assessments	10	COMPLETE	01/08/2011	30/11/2011	\$60,000
	WP0000783	B/P Retaining Walls	Retaining wall repairs in parks and cemeteries on Banks Peninsula	4	INVESTIGATION			\$241,000
Burwood Pegasus	WP0000251	PARKS CEAF 1.1 Sth New Brighton CAPEX	Hard surface and playground under surfacing renewals	8	BUILD	01/10/2011	30/06/2012	\$227,000
	WP0000257	PARKS CEAF 1.2 B/P CAPEX	Bexley, Avondale and Burwood Parks hard surfacing renewals	3	COMPLETE	01/09/2011	31/10/2011	\$60,200
	WP0000258	PARKS CEAF 1.2 B/P OPEX	Hard surface repairs	11	COMPLETE	01/10/2011	29/02/2012	\$131,000
	WP0000284	PARKS CEAF 2.6 TRAVIS CAPEX	Hard surface renewals	5	COMPLETE	01/12/2011	29/02/2012	\$175,500
	WP0000285	PARKS CEAF 2.7 AVON PARK CAPEX	Hard surface renewals	3	INVESTIGATION	01/03/2012	31/05/2012	\$290,550
	WP0000286	PARKS CEAF 2.8 ESTUARY CAPEX	Hard surface renewals	1	INVESTIGATION	01/03/2012	31/05/2012	\$300,000
	City wide	WP0000177	PARKS Playground Softfall - CAPEX	Replacement of contaminated softfall to playgrounds	24	COMPLETE	01/08/2011	30/11/2011
WP0000206		PARKS Playground Softfall - OPEX	Repairs to playground under surfacing	8	COMPLETE	01/08/2011	20/12/2011	\$46,500
WP0000269		PARKS CEAF 2.2 S/P,F/W,R/W,L/M OPEX	Hard surface and minor structural repairs	11	BUILD	01/03/2012	31/05/2012	\$54,500
WP0000312		PARKS Hard Surface Nthn & Sthn - OPEX	Hard surface repairs	58	BUILD	01/03/2012	30/04/2012	\$127,950
WP0000313		PARKS Hard Surfaces Nthn & Sthn CAPEX	Hard surface renewals	14	BUILD	01/03/2012	30/04/2012	\$204,600
WP0000318		PARKS Hard Surfaces Eastern CAPEX	Hard surface renewals	24	BUILD	01/03/2012	31/05/2012	\$902,450
WP0000321		PARKS Hard Surface	Hard surface repairs	76	BUILD	01/03/2012	31/05/2012	\$227,900

Ward	Work Package Number	Project	Description	Number of projects in package	Phase	Estimated Construction Start	Estimated Construction Finish	Estimated Cost
		Eastern - OPEX						
	WP0000323	PARKS City Wide Turf Repairs - OPEX	Repairs to non sports turf surfaces	110	COMPLETE	01/11/2011	31/05/2012	\$393,050
	WP0000357	PARKS Retaining Walls CAPEX	Minor retaining wall renewals	6	BUILD	01/08/2011	30/06/2012	\$262,000
	WP0000358	PARKS Retaining Wall Repairs	Minor retaining wall repairs	26	BUILD	01/08/2011	30/06/2012	\$203,150
	WP0000376	PARKS Minor Structures CAPEX	Minor structures renewals	9	INVESTIGATION	01/08/2011	30/06/2012	\$206,000
	WP0000377	PARKS Minor Structures Repairs	Minor structures repairs	64	BUILD	01/08/2011	30/06/2012	\$275,150
	WP0000571	PARKS 2012 Sports Fields Repairs	Repairs to sports turf 2011/12	45	COMPLETE	01/09/2011	31/03/2012	\$496,614
	WP0000768	PARKS Mature Tree Replacements	Tree renewals at Hagley Park and Sth Brighton Domain	2	BUILD	01/03/2012	30/06/2012	\$100,000
	WP0000769	PARKS Port Hills Restoration	Port Hills rock fencing and planting	2	INVESTIGATION			\$200,000
	WP0000205	PARKS Sports Fields Repair - Moderate	Repairs to sports turf	19	COMPLETE	01/05/2011	31/07/2011	\$254,000
	WP0000207	PARKS Sports Fields Repair - Minor	Repairs to sports turf	23	COMPLETE	01/05/2011	31/07/2011	\$122,550
	WP0000779	Structural	Bridge repairs on Parks City wide	15	INVESTIGATION			\$816,200
	WP0000780	Regional Parks	Repairs to structures and hard surfaces	6	INVESTIGATION			\$465,000
	WP0000781	Trees	City wide tree renewals	1	INVESTIGATION			\$500,000
	WP0000782	Ponds	Repairs to small ponds and outflows in parks	2	BUILD			\$50,000
	WP0000784	Cemeteries - Operational	Repairs and make safe work to headstones in Operational cemeteries	18	BUILD	01/12/2011	30/06/2012	\$250,000

Ward	Work Package Number	Project	Description	Number of projects in package	Phase	Estimated Construction Start	Estimated Construction Finish	Estimated Cost
	WP0000785	Cemeteries - Heritage	Repairs and make safe work to headstones in Heritage cemeteries	3	INVESTIGATION			\$250,000
Hagley Ferrymead	WP0000252	PARKS Victoria Lake CAPEX	Relining Victoria lake	1	COMPLETE	01/07/2011	29/02/2012	\$500,000
	WP0000253	PARKS CEAF 1.3 Hagley Pk/Bot.Gdns CAPEX	Hard surface and playground under surfacing renewals	5	COMPLETE	01/09/2011	29/02/2012	\$295,000
	WP0000254	PARKS CEAF 1.4 Hagley Pk North CAPEX	Irrigation and Turf renewals	2	COMPLETE	01/07/2011	31/07/2011	\$90,000
	WP0000263	PARKS CEAF 1.6 H/F CAPEX	Hard surface renewals	5	COMPLETE	01/10/2011	29/02/2012	\$103,500
	WP0000264	PARKS CEAF 1.6 H/F OPEX	Hard surface, track and minor structure repairs	21	BUILD	01/10/2011	29/02/2012	\$178,499
	WP0000265	PARKS CEAF 1.8 BOT. GARDENS CAPEX	Playground under surfacing repairs	1	COMPLETE	01/10/2011	29/02/2012	\$50,000
	WP0000287	PARKS CEAF 2.9 VICTORIA SQUARE CAPEX	Hard surface, track and minor structure renewals	4	INVESTIGATION			\$727,000
	WP0000288	PARKS CEAF 2.10 CENTRAL CITY PARKS CAPEX	Hard surface renewals	3	ON HOLD			\$15,000
	WP0000289	PARKS CEAF 2.10 CENTRAL CITY PARKS OPEX	Hard surface, track and minor structure repairs	10	ON HOLD			\$14,100
	WP0000767	PARKS Sumner/Scarborough Restoration	Hard surface renewals	9	BUILD	01/12/2011	31/03/2012	\$187,000
Riccarton Wigram	WP0000280	PARKS CEAF 2.5 MONA VALE CAPEX	Hard surface, bridge and wall renewals	5	INVESTIGATION			\$292,000
Shirley Papanui	WP0000255	PARKS CEAF 1.5 Groyne CAPEX	Car Park, Driveway, Turf, Track and Jetty renewals	6	COMPLETE	01/08/2011	30/09/2011	\$106,000
	WP0000256	PARKS CEAF 1.7 Temp Changing Rooms CAPEX	Portable changing facilities for sports parks	2	BUILD	01/02/2012	31/05/2012	\$300,000
	WP0000268	PARKS CEAF 2.1 English Park CAPEX	Car Park renewal	1	COMPLETE	01/08/2011	30/10/2011	\$247,500

Ward	Work Package Number	Project	Description	Number of projects in package	Phase	Estimated Construction Start	Estimated Construction Finish	Estimated Cost
	WP0000277	PARKS CEAF 2.3 S/P OPEX	Hard surface and track repairs	5	COMPLETE	01/03/2012	31/05/2012	\$20,500
	WP0000278	PARKS CEAF 2.3 S/P CAPEX	Hard surface renewals	3	COMPLETE	01/03/2012	31/05/2012	\$90,000
	WP0000778	Roto Kohatu	Repairs to bank works at Roto Kohatu Reserve	1	COMPLETE	01/02/2011	30/04/2011	\$200,000
Spreydon Heathcote	WP0000279	PARKS CEAF 2.4 S/H OPEX	Hard surface and minor structural repairs	11	COMPLETE	01/11/2011	31/03/2012	\$86,000
N/A	N/A	On Hold	Projects on hold due to them being in Red Zoned areas, cordons, rock fall risk etc. Depending on land decisions some of these repairs/renewals may become redundant in the future.	141	ON HOLD			\$6,133,100
				53	Investigation			\$4,287,750
				354	Build			\$4,012,199
				299	Complete			\$3,886,374
				154	On Hold			\$6,162,200
								\$18,348,523

6.3 Wastewater Treatment Plant and Organics Processing Plant

Project	Description	Phase	Estimated Construction Start	Estimated Construction End	Estimated Cost
Clarifiers	C4 - New structural bottom - CIPP repair to influent pipe - Modify Arms to suit new structure.	Complete	Nov 11	3 Feb 12	\$8,982,026
	C3 - New structural bottom - CIPP repairs to influent pipe. - Modify Arms to suit new structure	Complete	24 Jan 12	30 June 12	
	C1 - New structural bottom - CIPP repair to influent pipe - Modify Arms to suit new Structure	Construction	July 12	30 Nov 12	
	C2 - Verify that emergency repairs have returned asset to pre-EQ functionality and asset condition.	Investigation			
Civil & Structural	<ul style="list-style-type: none"> Paving C2 water Crack repairs to structures. Reclad Digester 2 	Construction Complete Construction Complete	Oct 11 Oct 11 April 11 Sept 11	Sept 12 Feb 12 Nov 12 Dec 11	\$3,187,259
Oxidation Ponds	<ul style="list-style-type: none"> Transfer structures 1-4 Transfer Structure 4-5. Pond banks strengthen and reinstate to design levels. Estuary outfall structure Cuthberts Road transfer structure 	Complete Complete Construction Construction Design	Oct 11 Dec 11 Jan 12 July 12 Sept 12	Feb 12 Mar 12 Nov 12 Sept 12 Dec 12	\$18,122,788
Galleries	<ul style="list-style-type: none"> South Gallery – drainage and structural <i>Proposed repair strategy unsuccessful, redesign underway</i> North Gallery – drainage & joints Diagonal Gallery – drainage & joints Pump Stn A – drainage & joints Sludge Rm A – drainage & joints 	Design Construction Design Design Design	Sept 12 June 12 Aug 12 Sept 12 Oct 12	Dec 12 Aug 12 Sept 12 Oct 12 Nov 12	\$1,353,550
Trickling Filters	<ul style="list-style-type: none"> Trickling Filter 1 Trickling Filter 2 	Investigation Investigation	Aug 12 Nov 12	Nov 12 Mar 13	\$1,000,000

Project	Description	Phase	Estimated Construction Start	Estimated Construction End	Estimated Cost
Mechanical & General Repairs	<ul style="list-style-type: none"> • Digesters 2 • Digesters 1 • Digester 4 • Digester 3 • Digesters 5 • Digester 6 • Buffer Tank • Primary Sedimentation Tanks • Bio- Solids Holding Tank 	Construction Investigation Investigation Investigation Investigation Investigation Complete Construction Design	Oct 11 Aug 12 Sept 12 Nov 12 April 13 July 13 July 13 Nov 11 June 11 Sept 12	Sept 12 Nov 12 Jan 13 April 13 July 13 Oct 13 Jan 12 July 12 Feb 12	\$4,088,195
Organics Processing Plant	<ul style="list-style-type: none"> • Demolish & Reconstruct Tunnels • Repair & Strengthen Process Hall • Repair Hard Standing 	Construction	Mar 12	July 13	\$9,518,133
Facilities	<ul style="list-style-type: none"> • Laboratory • Control room • Workshops • Offices/ Cafeteria/ Mtg room 	Investigation Investigation Investigation Investigation	Feb 13 Feb 13 Feb 13 Feb 13	June 13 June 13 June 13 June 13	\$2,741,000
Outlet Structure	<ul style="list-style-type: none"> • Replace Broken Outlet Pipes • New Outlet Structure • Decommission Broken Pipes 	Design	Nov 12	Mar 13	\$2,300,000
	TOTAL				\$51,292,951

In the table above, the bolded text identifies a change in activity since the previous monthly report.

6.4 Burwood Landfill

Project	Description	Material Received (tonnes)	Material Processed (tonnes)	Phase	Estimated Construction Start	Estimated Construction End	Estimated Cost
Burwood Landfill Liquefaction and Infrastructure Rebuild Waste Disposal	<ul style="list-style-type: none"> Prepare areas for disposal Operate and maintain disposal site Restoration and landscaping Resource consent application Consultation documents to affected parties Consultation Feedback documents to affected parties 	362,850	362,850	Completed Operation Investigation Investigation Completed Investigation	Feb 11 Feb 11 Jan 12 Jan 12 Apr 12 Jun 12	Jan 12 Dec 13 Dec 13 Aug 12 Jul 12 Jul 12	Self Funded
Burwood Landfill Residual Demolition Waste Disposal	<ul style="list-style-type: none"> Design of new cell for residual waste Cell construction Operate and maintain disposal site Restoration and landscaping Resource consent application Consultation documents to affected parties Consultation Feedback documents to affected parties 	0	0	Design Design Design Design Submitted Completed Completed	Oct 11 Mar 12 Sep 12 Jul 17 Oct 11 Apr 12	Jun 12 Sep 12 Dec 17 Dec 17 Aug 12 Jul 12 Jul 12	To be funded by Transwaste Canterbury
Burwood Resource Recovery Park Demolition Sorting and Processing Facility	<ul style="list-style-type: none"> Construct areas for storage of material and associated roading Design of sorting plant Construction of sorting plant Sorting operation Rehabilitation and landscaping Resource consent application Consultation documents to affected parties Consultation Feedback documents to affected parties 	331,790	0	Complete Design Construction Operation Design Investigation Completed Investigation	Feb 11 Mar 11 Jul 12 Dec 12 Jul 17 Oct 11 Apr 12 Jun 12	Jun 11 Jun 12 Dec 12 Dec 17 Dec 17 Aug 12 Jul 12 Jul 12	To be funded by Transwaste Canterbury
TOTAL		694,640	362,850				

In the table above, the bolded text identifies a change in activity since the previous monthly report.

6.5 Wells

The damage to wells has been reported separately from the remainder of the non-SCIRT infrastructure rebuild because much of the wells repair work is reactionary due to the ongoing aftershocks.

Forward programming is limited by the reactionary work and the operational requirements of the water supply network, meaning that each package of work is programmed “on the fly” on a prioritised basis before it is issued.

The programme of work must be kept flexible in order to keep as many damaged wells operational as possible while at the same time moving forward with the repair and replacement programme. Only a limited number of wells can be taken out of service at one time to avoid affecting the demand on water supply network, and to minimise water restrictions.

	June At Ground Level	July At Ground Level	June Below Ground Level	July Below Ground Level	June Totals	July Totals
Total number of active wells					154	154
Wells yet to be repaired ⁺ *	32	32	50	43	82	75
Cost Estimate all repairs ⁺	\$4,692,000	\$4,692,000	\$17,329,000	\$17,368,000	\$22,021,000	\$22,060,000
Wells repaired to date ⁺ *	70	70	81	90	151	160
Cost to date ⁺	\$2,628,863	\$2,747,585	\$4,616,247	\$5,912,434	\$7,245,110	\$8,660,019

+ includes replacement wells

* some wells are damaged both at and below ground level

