

Report No.	19-133
Information Only - No Decision Required	

RIVER AND DRAINAGE ENGINEERING REPORT

1. PURPOSE

- 1.1. The purpose of this item is to report on progress with river and drainage activities for the months of June, July and August 2019.

2. RECOMMENDATION

That the Committee recommends that Council:

- a. receives the information contained in Report No. 19-133.

3. FINANCIAL IMPACT

- 3.1. Funding provision for all activities reported on in this item is either included in the River and Drainage General or River and Drainage Schemes Activity sections of the 2018-28 **Long-term Plan (LTP)**; is covered by an approved carry-forward of unexpended budget from the 2018-19 financial year; or additional approval will be specifically sought by way of recommendation in the item.

4. SIGNIFICANT BUSINESS RISK IMPACT

- 4.1. There are no significant risks relating to the adoption of the recommendations contained in this report.

5. DISCUSSION

- 5.1. Much of the focus over the period has been on procurement, in particular initiatives that better align the use of casual plant/ equipment hire with updated organisational policy. Much of Horizons operational river management activity requires the direct engagement of contractors, a function of the type of work, it's largely reactive nature and the administrative cost/ complexity of running formal tender processes for individual work packages.
- 5.2. The refresh has involved the use of an external procurement consultant to assist staff, ensuring cross-pollination/ application of best practice as it applies across the government/ local government sector. It involves the establishment of supplier panels for work categories and districts, using an industry-standard pre-qualification process. The refresh has a few aims, looking to build depth in regard to contractor capability/ capacity but also having a more robust framework around contractor selection and performance, endeavouring to balance transparency with efficiency.
- 5.3. Aligned with that, a term maintenance contract has been awarded for pump station electrical maintenance. Something of a first for river management, others are in the pipeline, identifying programmable and easily definable activities that are more appropriate to administer as term maintenance contracts. The intention is to continue to add activities

that are compatible with a term maintenance contract approach over the next 2 to 3 years. While the concept is new to staff the merits of the new arrangement are already evident.

- 5.4. At the June meeting I noted to members some of the consideration being given to environmental enhancement projects in and around Foxton; ways in which the quality of the discharge from Horizons Purcell Street drain to the Foxton loop could be improved. Added to that, an approach has been made around the scope that might exist to develop an area of wetland at the bottom end of the Moutoa floodway. That coincides with issues being flagged by staff around the remaining life of the pump station and the structure known as the wet gates at the bottom end of the floodway.
- 5.5. Those issues relate to the condition of the current structures and the challenges associated with continuing to provide land drainage to an area that will be impacted by sea level rise. The proposal would seem to have considerable merit to it, subject to confirmation that it does not materially impact either floodway conveyance or sediment build up. Although the actual change may be some years off consideration now is timely - not investing too much into structures that may in future be surplus to requirements.
- 5.6. Linked to that, the **Horowhenua District Council (HDC)** have engaged a consultant to progress, in a more unified way, a **Provincial Growth Fund (PGF)** application for Foxton. The development of that application (in many ways an economic development plan for the town) has involved conversations with a wide range of parties, including river management. While those discussions have in part focused on the link channel between the river and the loop, they have also covered the opportunities associated with the RAMSAR site beside the reach of the Manawatu River upstream of the mouth and how River Management might be able to assist.
- 5.7. Initiatives to reduce the flood hazard risk for Foxton continue to progress; a staff technical workshop took place in June where the engineering consultant engaged to review the outline approach (and then undertake the detailed design) provided an overview of technical work completed to date. That work included reviewing both the 2019-20 Annual Plan and 2018-28 LTP submissions that referenced the proposals for Foxton and offered alternatives, as well as meeting with the Chair of the Foxton Community Board and others with views on what the best mitigation approach for the town might look like.
- 5.8. A second technical workshop is planned for September to collectively test thinking around a preferred mitigation approach. Specifically, identifying the different elements that would constitute an effective mitigation strategy and considering their merits, including to what degree they address current operating issues/ risks (and what new issues/ risks they might create), as well as considering sequence, timing and likely cost.
- 5.9. In short, the detailed hydraulic modelling provided by the consultant at the June workshop identified that the Cook Street pipeline as originally sized is likely to become overloaded by relatively modest flow events in Kings Canal. Providing effective mitigation would require a very large diameter pipeline - one that would, with all of the site constraints that exist, probably be prohibitively expensive.
- 5.10. The broad concept suggested a shorter section of pipeline for Cook Street that does not connect to Kings Canal but instead provides the platform for stormwater improvements for that part of the town. Initial thinking is that the best solution may be to upgrade/ extend Kings Canal to the south of the town, linking with the Whirokino Scheme, a modification to the original mitigation concept that has logic to it but that will also add both cost and complexity (when compared to the original mitigation approach).
- 5.11. As noted to the June meeting, Massey University hosted a two-day river practitioners workshop in June, an event well attended and well praised. More broadly, the sector

initiatives around working together more effectively, setting/ influencing the national research agenda, workforce capability and capacity and raising the profile of the sector continue. In July, I facilitated a workshop hosted by Environment Canterbury looking at ways in which tertiary institutes can better meet the needs of the sector. That advanced the idea of looking to have the overlap between the engineering and science components more broadly addressed by way of an ongoing, rotating post-graduate education programme that encompasses a number of universities.

- 5.12. Implementation of the new **Asset Management Information System (AMIS)** continues, with the focus shifting to the use of the scheduled tasks function that the software has. That begins to tie in other earlier (the dams assessment work) and current/ future initiatives (application of the dam safety guidelines to Palmerston North's stopbanks – the subject of a separate presentation to members – and the development of scheme Operations and Maintenance Manuals). That brings the threads of a more systematic operational approach together, consistent with the reliability theme outlined in the Infrastructure Strategy.
- 5.13. On the subject of dams, over the period the **Ministry for Business, Innovation and (MBIE)** sought comment on a proposed regulatory framework for dam safety. Horizons provided comment on that proposal, in both capacities (regulator and asset owner). The regulations contain relatively short timeframes for implementation, although the earlier work undertaken makes that a relatively easy proposition for Horizons (as asset owner).
- 5.14. The June meeting agenda contained, amongst other things, a presentation from GNS Science staff on work to assess the potential for landslide dams in the Manawatu Gorge. Funded by way of a grant from the Ministry for Civil Defence and Emergency Management's Resilience Fund, the work concluded that the risk to communities on either side of the gorge is low, even considering maximum credible scenarios. The final report defines/ confirms more precisely (using a LiDAR generated digital terrain model) the threat to Ashhurst (which is essentially zero).
- 5.15. Staff are also progressing discussions with GNS Science, NIWA and the University of Canterbury Quake Centre around obtaining a better understanding of the likely scale/ extent of damage to river management assets from a major earthquake. Risk exposure is relatively high for the **Lower Manawatu Scheme (LMS)**, a function of the nature of the assets, their location, the soil types they are founded on and the high seismic risk. Options to prevent earthquake damage are in general very expensive – the focus is on ensuring adequate insurance cover.
- 5.16. In a similar vein to the Tararua District-wide Scheme, staff have also begun looking at the consents/ approvals needed for the new Ruapehu District-wide Scheme and the Ohakune Scheme introduced with the 2019-20 financial year, with staff meeting with **Ruapehu District Council's (RDC)** Iwi Liaison Officer in early July. The previous very limited scope of river management activity in the district combined with the number of Iwi/ hapu and the statutory requirements associated with Te Awa Tupua will constrain particularly large scale work in the first year but also provides an opportunity to set a firm foundation for Iwi/ hapu involvement with the new entity.
- 5.17. Existing relationships with Ngāti Hauā and Ngāti Rangi are strong and staff are also establishing strong relationships with **Ngā Tāngata Tiaki o Whanganui (NTT)** staff. New relationships will need to be developed (at a hapu level) with Uenuku, Ngāti Maniapoto and Ngāti Tūwharetoa; how those discussions progress will drive whether a single district-wide consent is obtained or whether more of a sub-catchment approach is adopted.
- 5.18. From a resourcing perspective, the 2019-20 financial year is proving (at least to start with) something of a juggling act, particularly for the northern team, with Engineering Officer Daniel MacKay resigning his position and Dougal Ross seeking (and having been

approved) a years' leave without pay to travel. Replacements for both are currently being sought. The change to the River Management organisational structure (creating the position of Operations Manager) has been confirmed; the initial round of recruitment for that position proved unsuccessful with a second round of advertising due to begin shortly.

6. INVESTIGATIONS AND DESIGN

6.1. The Investigations and Design team has a large and complex programme of works for delivery this financial year. As well as a programme of scheme and classification reviews, there are also a number of design tasks that are required to support the River Management teams. The following summarises the work that the team has undertaken during this reporting period.

LMS – APPLICATION OF DAM SAFETY GUIDELINES TO PALMERSTON NORTH STOPBANKS

6.2. A draft of the report has been received from Tonkin & Taylor, who will present their findings as a separate item to Committee members. One of the deliverables from this project is a surveillance and maintenance regime for the stopbanks in Palmerston North. This regime will be incorporated into the LMS Operations and Maintenance Manual that is being developed as a separate project.

SEDIMENTATION IN THE LOWER MANAWATŪ AND OROUA RIVERS

6.3. Following on from the sedimentation work that Tonkin & Taylor presented to the last Catchment Operations Committee meeting, staff have begun the process of building the sediment management strategy identified in the Infrastructure Strategy. To inform this strategy, a series of workshops with internal and external stakeholders are being organised.

KOPUTAROA SCHEME REVIEW

6.4. Staff have continued work on this Scheme Review primarily looking at how the scheme will need to function to meet changing and evolving expectations and demands over the coming years. These challenges include those driven by changing community expectations in terms of environmental management as well as those related to the predicted economic growth in the Horowhenua district and the anticipated land use changes.

6.5. Work on this review has slowed somewhat over the past couple of months however, consultation with local iwi has begun with a view to getting the Scheme Review completed by the end of this calendar year.

OROUA GRAVEL RESOURCE

6.6. The Oroua River Gravel Resource Study has been completed and is presented as a separate item.

REID LINE FLOODWAY MODELLING

6.7. Following the completion of the 2 dimensional hydraulic model of the Reid Line Floodway, engineering consultants Jacobs have used that model to simulate how potential modifications to the drop structure would affect the flood profile along the floodway. This information will be used to inform discussions with landowners potentially impacted by the upgrade project.

ASSET MANAGEMENT

- 6.8. During this reporting period, staff have been working closely with Finance and Corporate staff around year end processes as well as the development of the Annual Report.
- 6.9. Additionally, staff have worked closely with our insurers, AON, around the renewal of our infrastructural asset insurance policies. This has included the provision of data relating to asset valuations, condition, as well as geospatial data. The provision and explanation of this data will ensure that we receive the necessary cover for the best price.
- 6.10. Work has also continued to help the migration to the new AMIS. During this reporting period, work has gone into user acceptance testing as well as the scheduling of tasks and the development of a business process around the management of geospatial asset information.
- 6.11. Staff have also been working on the integration of the recommendations from last year's Dam Safety Review into the new AMIS.

HAZARD MAPPING – UPPER MANGAONE & EAST OF LEVIN MODELLING

- 6.12. The modelling work is being done as part of the cross-organisational Hazard Mapping Project. Jacobs have been engaged to undertake this work, which will provide modelled information about the flood hazard in these two areas.
- 6.13. Staff will work with the consultants, and with Horizons' Survey team, to acquire the data necessary to build the models, before the modelling work itself is commenced later this calendar year.

MATARAWA SCHEME

- 6.14. During this reporting period, staff have worked with the Northern Area team looking at the potential to increase the amount of flood flow diverted from the Matarawa Stream to the Mateongaonga Stream. The outcomes of this work, which will be delivered in the next month, will help to inform the future management of the Matarawa Scheme, which is of interest to WDC and the future development of the eastern areas of the city.

POHANGINA RIVER BANK PROTECTION

- 6.15. As reported to the last Committee meeting, a 'geogrid' solution has been implemented at an erosion site on the Pohangina River. During this reporting period, the Pohangina River has seen a number of 'fresh' flows and staff have been involved with monitoring performance to determine the practicalities of its potential use in other situations.

LOWER WHANGANUI DESIGN WORK

- 6.16. During this reporting period, work has begun on a number of designs for the Lower Whanganui Scheme.
- 6.17. The first of these design jobs has been to look at the practicalities of replacing the 'WIPP' flood barriers at Kowhai Park, part of a wider, long-term initiative to reduce the number of 'moving parts' in the event of a flood. Staff are working with the Northern Area team to investigate necessary changes to roading geometry associated with a potential raising of the stopbanks where the WIPPs are currently deployed.

- 6.18. The second design job in Whanganui is to develop a design that will allow the Kowhai Park area to drain following a flood event. The need for this work was made evident in 2015 when the downstream end of the Kowhai Park stopbanking needed to be breached to enable the park to be drained when flood levels in the Whanganui River receded.
- 6.19. The other design work that has begun in Whanganui seeks to develop a flood mitigation solution for the Taupo Quay area. There are a number of constraints that make this a difficult task not least the physical constraints around the tram tracks, as well as the desire to maintain the openness of the area and connectivity to the river. To date, most of the work has focused on a desktop study of different flood defences that have been successfully implemented elsewhere.

MANAWATU DRAINAGE SCHEME MODELLING

- 6.20. During this reporting period, staff have facilitated an interactive tender process to appoint a suitably qualified and experienced consultant to undertake the necessary modelling work. This has involved staff from the Investigations and Design team as well as from the Southern Area team. The three consultants involved in this process have now been invited to provide an offer of service through a **Request For Proposal (RFP)** process.

REGULATORY ADVICE

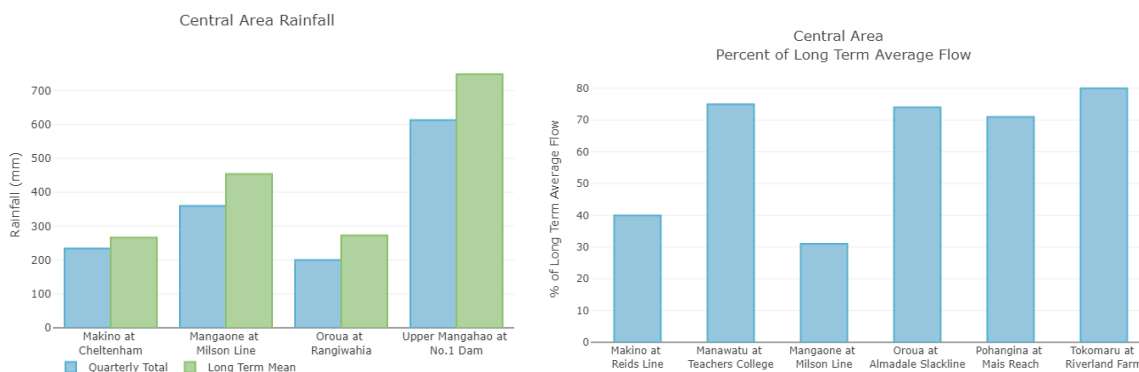
- 6.21. During this reporting period, advice was provided on a number of substantive matters. This regulatory work has included specialist advice on flood risk and the production of technical reports for consent applications, rezoning and subdivisions.

LOWER MANAWATU SCHEME RURAL FLOOD PROTECTION UPGRADE PROJECT

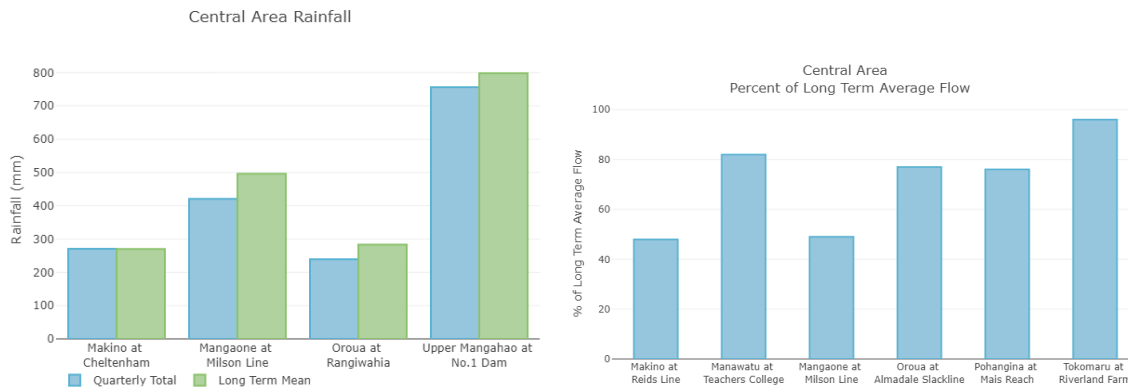
- 6.22. Through the past winter month’s, staff have been working to ensure that this year’s project works are delivered as efficiently as possible, as well as completing a number of jobs carried over from the last financial year. To ensure the delivery of the **Rural Upgrade Project (RUP)** this financial year staff have been developing tender documents for the largest packages of works remaining in the project. The intention is to go out to tender for these works as soon as possible to ensure a good response.
- 6.23. Given the good progression of key projects, river management staff have also begun discussing with Communications staff the mechanics of celebrating the completion of the RUP. This is envisaged to take place April/ May next year, primarily focussing on the Oroua component of the upgrade work.

7. CENTRAL

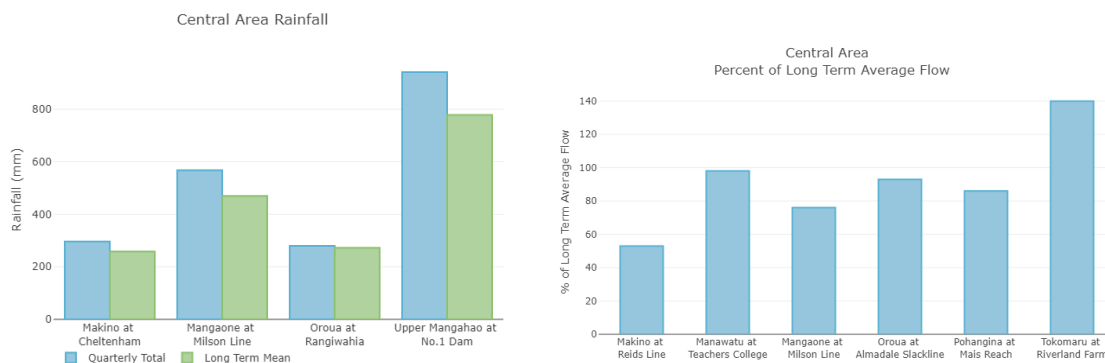
7.1. June Rainfall/Flow



7.2. July Rainfall/Flow



7.3. August Rainfall/Flow



- 7.4. This reporting period was characterised by frequent periods of heavy rain bands moving across the region resulting in a number of river flow peaks, separated by fine spells allowing levels to return to normal. In spite of the fine breaks, there were still two events where river levels were high enough to close SH 56 at Opiki where it crosses the Manawatu.
- 7.5. The willow pole planting season has had a slow start with only 400-500 poles being planted so far. Several smaller sites have been completed in combination with other works. The main factors delaying progress are ground conditions restricting access to a majority of locations and the continuing unsettled weather.
- 7.6. The **River Asset and Amenity Partnership (RAAP)** meetings between scheme staff and **Palmerston North City Council (PNCC)** are continuing, the most recent in July being the first for this financial year. Given the recent restructure at PNCC, this meeting provided an opportunity to meet new PNCC staff members, discuss the memorandum of understanding for activities in the river channel between PNCC and Horizons, and to forge new relationships.
- 7.7. Public enquiries have been numerous this period with topics ranging from accretion claims and resource consent conditions to grazing of stopbanks. The number of enquiries around stopbank grazing has noticeably increased since the updated Stopbank Grazing Guidelines leaflet was sent out to landowners. The majority of these communications have been positive and mainly centred around seeking permission to graze the stopbanks. Since the leaflet has been sent, only a few instances of minor stock damage have been reported to or discovered by scheme staff.

- 7.8. Staff fielded a number of accretion claim enquiries over the period. Accretion claims are made by landowners adjacent to a reach of river who seek to add to their title land that has slowly and imperceptibly been added along their boundary as a river has migrated. Erosion can also be claimed however, this is extremely rare for obvious reasons, unless it had occurred on the same parcel of land as the accretion is being claimed. Each new accretion claim has the effect of reducing the buffer zone for the river, as there is an expectation that as the landowner now owns the land, it will be protected from erosion. A solution would be to include an esplanade strip that moves with the river to any accretion claim. Central staff are currently mapping the accretion claim process to set-up a mechanism whereby esplanade strips are added to any claim.
- 7.9. The last three months have seen staff keep up-to-date with training requirements and take opportunities to improve job knowledge though both internally and externally presented workshops. Refresher training courses included four wheel driving, safe use of trailers and the Hytera radio system. A local archaeologist gave an insightful presentation to scheme staff around their knowledge of sites around the local area and region, and how different types of archaeological artefacts and evidence are pieced together to form larger scale patterns of the behaviours of previous inhabitants. Some staff also attended a LINZ run hui around New Zealand's new nationwide vertical datum, NZD2016.
- 7.10. Internally run workshops included a presentation by the River Management Investigations & Design team around hydraulic modelling. This provided a basic overview of the methods used, pros, cons and misconceptions around modelled outputs. The Freshwater unconference held at Regional House was another highlight with breakout workshops tackling various initiatives to improve freshwater in the region.
- 7.11. The Freshwater Team and River Management team also met to coordinate and cooperate on a number of tree clearing, planting, fish passage and fencing works across the region.
- 7.12. This reporting period saw the completion of the schemes' annual asset inspection programme. This task takes up a large portion of staff time at this time of year, however is pivotal in keeping a track of the overall state of the scheme and to enable reprioritisation of the works programme if required. The results of the inspections showed that the condition of stopbanks and existing assets had improved when compared with last year; that there was a large amount of pole planting to be undertaken this year, and that the increased size of gravel beaches has opened up new areas of erosion.

LOWER MANAWATU SCHEME

- 7.13. Works undertaken on the various rivers within the scheme this period include the following.

MANAWATŪ RIVER

- 7.14. A jet boat inspection was carried out in August from the Whirikino Trestle Bridge to the Ashhurst Domain, covering 90 km of the 99 km of the Manawatū River. This reach of the Manawatū River was in a good condition, with the spray programme effectively controlling vegetation on the inside of bends. The inspection identified planting locations, and new erosion locations that may need rock in the future.
- 7.15. The secondary stopbank located on Ruamahanga Crescent to Ruahine Street at Fitzroy Bend in Palmerston North is due for its detailed inspection, undertaken every five years. All property owners will receive a letter advising them of the inspection, seeking permission to enter the property and encouraging the owner to be present during the inspection. The secondary stopbank was the primary flood protection structure until the 1990s, when new stopbanks were constructed closer to the river. The stopbank is still an important structure, providing a second line of defence to the city known as the Fitzroy Bend Special Project.

- 7.16. Works were undertaken during July and August at the confluence of the Pohangina and Manawatū Rivers adjacent to Ashhurst Domain to help stabilise alignments and repair existing erosion which was threatening to outflank existing river control assets. These works included rope and rail fences with tied trees and a gravel bund with rock reinforcement. Additional planting is planned for this planting season, along with further tied tree groynes, above the upstream rock groyne. Inspections show that this top rock groyne is working hard and providing good protection to the domain, while the tied tree works upstream on the Manawatu are proving effective at deflecting the flow away from the bank. Additional work will be required in the coming construction season, with funds looking to be carried forward to stockpile rock.
- 7.17. Staff presented an overview of the recent history and works undertaken to manage the Manawatū River at Ashhurst Domain during the field trip portion of this year's River Practitioners Workshop held in June. This workshop was attended by river management staff around the country.
- 7.18. The pedestrian bridge over the Manawatū River and connecting pathway to Massey and Linton was officially opened on 7 June. This is a major milestone for the He Ara Kotahi Project that scheme staff have been involved with over the last few years. Staff have and will continue to work with PNCC regarding further works along the pathways and around the various bridge structures.
- 7.19. Engineers have continued maintenance tasks along the Manawatū River, floodway; and around the Moutoa sluice gates and tower, including scheduled general running checks and inspections. Fence lines in the spillway have been cleaned up and the remaining debris from the last gate opening has been burned or buried. Due to the time of year and resulting ground and vegetation growth conditions, the rural stopbank mowing program has taken a back seat but will recommence as conditions improve.
- 7.20. The willow mulching and vegetation maintenance programme has continued along the lower reaches of the Manawatū River. This work involves the layering and/or mulching of the existing willows to control their size while maintaining a strong root structure. This live vegetation provides cost-effective bank stability and is the first line of protection against river edge erosion. Areas of work was on the true left bank of the Manawatū River, between Koputaroa Pump Stations 2 and 3.
- 7.21. Supplementary maintenance and repair works were undertaken at some sites during the programmed mulching, these included fence removal, repairs and reinstatement; berm and stopbank vegetation removal; debris burning; layering and supplementary pole planting. Other works have included minor stopbank repairs, hard facing of ramps and tracks and one floodgate replacement.
- 7.22. High flow channels that were created at several sites earlier in the year appear to be working well during recent high flow events. These high flow channels were shaped across several gravel beaches that are building up on the inside bend. Widening beaches can place increased pressure on the opposite riverbank. In some places, this has led to extensive areas of erosion. As gravel moves through the river system, these channels can refill with material and will require reshaping in the drier months to remain effective.
- 7.23. PNCC are proposing to rezone land between the BUPA Retirement Village and Leafland Nursery to enable residential development. A meeting was held with Horizons to understand the scheme's requirements and to see what recreational opportunities there might be for walkways along the stopbank and around the oxbow. Horizons advocated for PNCC to include protections for the stopbank and integrate these into the structure plan as well as designate the stopbank in the plan change.

- 7.24. An inspection of the Awapuni quarry was undertaken to check compliance with resource consent conditions. Outstanding works included vegetation clearance and a reduction in aggregate stockpile heights.
- 7.25. Debris on the new bridge at Whirokino Bridge across the Manawatu at Foxton has been causing some concern for road users. Horizons are monitoring the situation, but do not believe that it is compromising flood protection standards. The contractor is currently removing the temporary bridge which will assist matters.

OROUA RIVER

- 7.26. Inspections have been undertaken of all assets on the Oroua River. There are a few minor repairs that need to be made to some stopbanks and bank protection works, but the general state of the river is good. Without any major flooding events, a lot of maintenance and upkeep work has been completed, such as mulching and layering which is often the first item to lose funding to flood repairs.
- 7.27. A repair of two scour holes and longitudinal bank erosion commenced but has been put on hold due to river conditions. Rope and rail groynes are to be installed with tied tree works and concrete riprap to add extra protection. Willows that were encroaching onto the beach, interfering with flood flows and causing erosion issues have also been mulched. These willows will also be sprayed once they have started to leaf.
- 7.28. Gorse spraying has been undertaken on the Oroua true right stopbank. This will be accompanied by spot spraying on both banks as small amounts of gorse are beginning to appear in the system.
- 7.29. The Oroua Flood Action Plan is in the final stages of review as the RUP has significantly altered potential issues and areas affected in a flood event. With the RUP due to be completed in the upcoming construction season, areas potentially affected by a flood less than a 1% AEP will be greatly reduced which is reflected in the updated Flood Action Plan.
- 7.30. On one of the stopbank upgrade sites completed this summer, several types of work were undertaken including; earthworks on the fill borrow sites; the burning of the stockpiled trees from the vegetation clearing works; and the re-fencing of the property following the construction works.
- 7.31. Concrete blocks to be used for erosion repairs were stockpiled at the Boness Road stockpile site.

MANGAONE STREAM

- 7.32. Annual inspections have been completed for the Mangaone Stream. The stream continues to be inspected regularly by scheme engineers and, overall, remains in a good condition.
- 7.33. A recent rabbit population boom above Rangitikei Line, that caused damage to the true right stopbank last reporting period, has continued. Repairs and fumigation of the burrows was undertaken late last period however, there is evidence to suggest the problem will not be an easy or quick fix with burrows being re-dug soon after repairs were completed. Different poisoning techniques are currently being employed in an attempt to eradicate or at least significantly decrease the population size. Horizons' Pest Management team is assisting.
- 7.34. During recent heavy rain events, a hole appeared in the lime pathway on the downstream left bank of Rangitikei Line Bridge. It was discovered that unconsented works had been undertaken to install services soon after the last known and approved works in the area

had been carried out. The contractor involved was contacted, advised of the issue and requested to repair the damage in a timely and approved manner. Staff met with the contractor onsite before the works were completed. During this process, advice was sought from Horizons' Compliance team as to possible courses of action if repairs were not done to time or standard. The area will continue to be monitored to ensure the repair is successful.

- 7.35. Scheme staff met with members of a local charity group who were interested in installing distance markers along the Mangaone Stream walkway. Scheme staff were supportive of the initiative and discussed appropriate placement of the markers in order to not interfere with stopbank maintenance activities. Similar markers were previously installed along PNCC's pathway adjacent to the Manawatū River. PNCC had advised the community group to contact Horizons before installing the markers, which is testament to the positive relationship and ongoing regular communications between PNCC and Horizons' River Management staff.

MAKINO STREAM

- 7.36. All assets were inspected and found to be in a good condition. An existing floodgated culvert on the Makino Floodway was extended and upgraded.
- 7.37. The issue of previously unidentified subsoil drains beneath the Reid Line Floodway stopbank has arisen in the past few months, firstly via Mayor Worboys meeting with a Reid Line resident on another matter and then in the course of landowner discussions relating to the upgrade of the Reid Line Floodway. The issue identified through Mayor Worboys was investigated and the drains plugged; the more recent issue raised is still being investigated.

STONEY CREEK

- 7.38. All assets were inspected and found to be in a good condition. Repairs to a damaged floodgate on Stoney Creek were completed.

KARA CREEK & MANGAPUKATEA

- 7.39. Annual inspections of floodgates and assets have been completed. A large log was removed from the channel near a flood control structure.

MANGAORE STREAM

- 7.40. Annual inspections of floodgates and assets have been completed. Spraying of gorse and the removal of weed from channel has been undertaken.

LINTON MAIN DRAIN

- 7.41. Annual inspections of floodgates and assets have been completed.

TOKOMARU RIVER

- 7.42. Annual inspections of floodgates and assets have been completed.

LOWER KIWITEA STREAM SCHEME

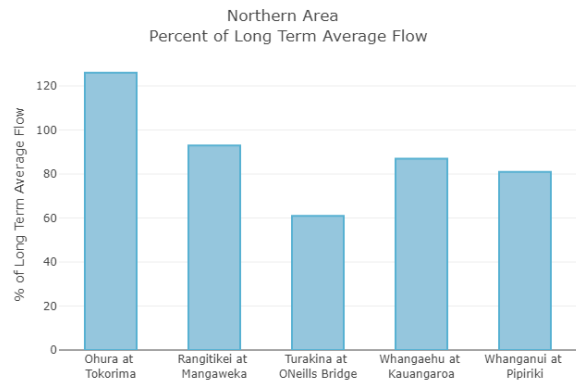
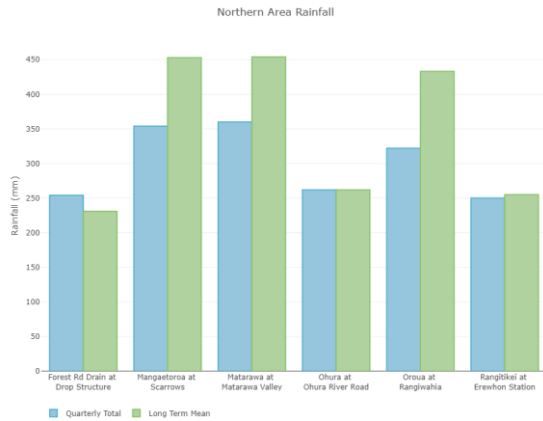
- 7.43. Assets were inspected and found to be in a good condition, with two sites requiring the clearing of wattle regrowth, as it was suppressing the willow plantings.
- 7.44. Gravel extraction was completed at one site to correct the stream alignment.

ASHHURST STREAM SCHEME

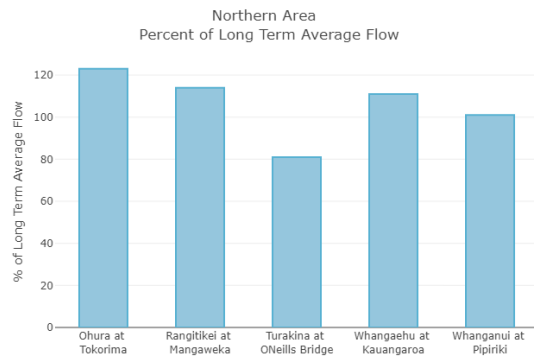
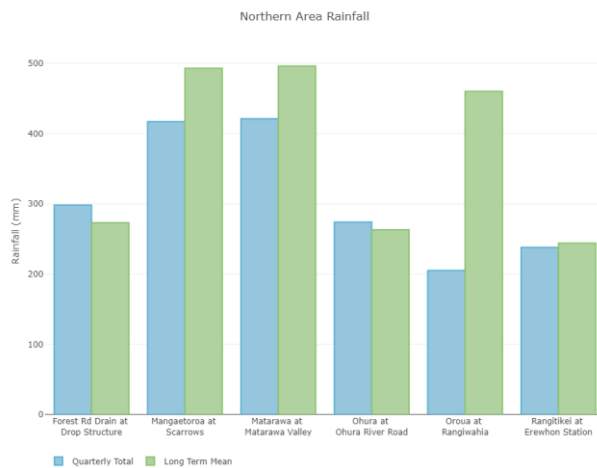
7.45. The programme of inspecting and reporting on the ‘condition’ of all scheme assets was completed.

8. NORTHERN AREA

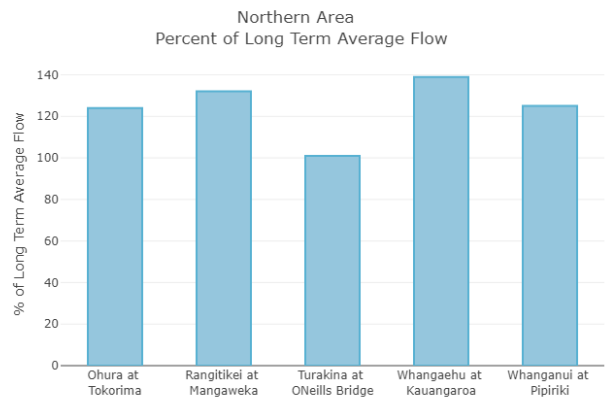
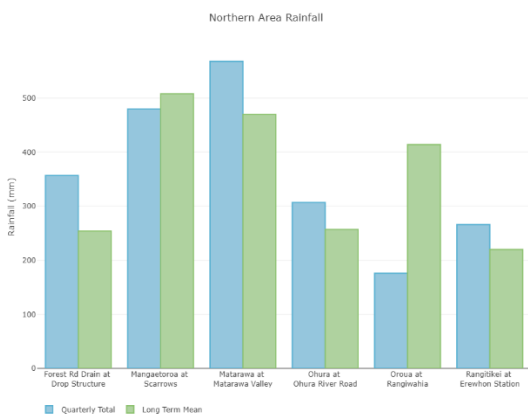
8.1. June Rainfall/Flow



8.2. July Rainfall/Flow



8.3. August Rainfall/Flow



- 8.4. The winter months have seen a change in the weather patterns from a very dry and warm autumn to the colder temperatures expected for this time of year with prolonged periods of wet weather. These wet days have not manifested into any flood 'events' as such but they have resulted in river levels remaining elevated for long periods. Staff have been busy completing asset inspections and preparing the work programmes for the coming year. Our field staff and contractors have also been kept busy planting around repaired river bank erosion sites and maintaining field nurseries.

COMMUNITY INVOLVEMENT

- 8.5. The development of the 2019 Swim Spot site at "The Channels" in Taumarunui is progressing well. The changing facility is now fabricated and is programmed to be installed over the next few months.

RANGITIKEI RIVER CONTROL SCHEME

- 8.6. The extended periods of elevated river levels usually associated with winter are beginning to take their toll on the scheme. Flood damaged areas resulting from the 2018 winter events remain exposed as the banks consolidate/stabilise. Reports from landowners will be followed up as weather conditions improve and access again becomes possible. Until then, field staff have worked continuously on vegetation works to ensure the annual planting targets are achieved.
- 8.7. Asset inspections and condition ratings were completed in June, providing the basis for the 2019-20 work programme. This was completed by a mixture of on the water jet boat inspection and on the ground 4x4 vehicle visits to individual sites.
- 8.8. Work to open up Paul Murphy's existing irrigation channel is working well with more than one third of the flow now using this channel and starting to erode the beach for a more favored river alignment.
- 8.9. The second diversion has been completed and work to create the third has commenced. Total gravel extraction volumes are: 15,015 m³ from Diversion 1 and 15,560 m³ from Diversion 2. Unfortunately, the silt bund built behind the tied tree works gave way following the event in early July. This area is scheduled to be planted with willow trees to try and enhance the stabilization of the bank behind the tied tree works.
- 8.10. The channel formed to divert river flow away from the Rata rubbish dump had mixed success over autumn and winter. The original bund formed to assist guiding the direction of flow into the diversion channel was washed away in a small event with flow returning to the original channel. A second bund has now been formed to continue encouraging flow through the man-made diversion. It is important to maintain some flow through this diversion to keep the channel open and to take pressure off the eroding river bend. This will assist the RDC if the option is chosen to construct a revetment to prevent further erosion (as opposed to relocating the dump). RDC expect to receive a repair option report from their consultant shortly.
- 8.11. Harvesting work is underway at Haylock's Nursery. An estimated 5,000 - 7,000 willow poles will be harvested from one block at Haylock's. Extra effort and attention is being taken to improve conditions with this block to make general maintenance easier in the long-term. These improved conditions will lead to better quality willow poles in the future.
- 8.12. Inspections of the floodgates through the Parewanui stopbank and at Tangimoana were carried out twice following periods of high flow. A significant blockage was cleared from the drain on the Tonui Farms property following an inspection. Drain cleaning was also completed at Scotts Ferry to remove silt and improve the effectiveness of the drain.

- 8.13. The completion of layering at John McManaway's has been delayed due to budget constraints and resourcing issues. This work is scheduled to be completed in spring, when the trees are in leaf and therefore less brittle.
- 8.14. In regard to the Parewanui stopbank upgrade project, work over summer 2019 was located on Walmac Farm near Scotts Ferry. The contract saw 500 m of stopbank upgraded, under budget, by Holland Earthmoving Ltd. Work commenced on 14 January 2019 and final completion was awarded on 25 June 2019.
- 8.15. A request for proposal was sent out on 22 November 2018 for design of a concrete wall to span the section of stopbank that intersects the high pressure gas main from Taranaki. A consultant has been engaged with the draft design now received and a peer review being conducted by another consultant. When finalised a contractor will be engaged with construction intended to be concluded by the end of the calendar year.
- 8.16. The next stage of the Parewanui stopbank upgrade is located on Horizons Regional Council leased land just upstream of Scotts Ferry. It is estimated that the contract will see 1,000 m of stopbank upgraded. Tender documents will be compiled in August and September, and contractors will be invited to tender in October. Work will be completed in the summer of 2019-20.
- 8.17. No gravel was extracted from the river under the scheme consent this reporting period.
- 8.18. Good Earth Matters have been engaged to prepare and lodge a global resource consent application to enable gravel extraction, for river management purposes, from the Rangitikei River over a series of reaches extending from the Makahikato Stream to the mouth of the river. A draft application is being prepared and will be ongoing while consultation takes place.

POHANGINA-OROUA RIVER CONTROL SCHEME

- 8.19. Scheme work over the winter months has focused around willow planting in areas where river bank erosion repairs took place last year. Work in the river channel is limited at this time of year as trout spawning is underway until 30 September.
- 8.20. During this period no major engineering repairs have been undertaken in the river channel due to the rise in river levels, the emergence of dotterels, and the need to remove mobile machinery from the river channel during the 1 May to 30 September trout spawning season. That said, work is planned at the Ward Property for a minor repair on the left bank and we have commenced pole planting along the section which was damaged during the 12 June event last year. A nursery area is also being planted at the downstream boundary of the Ward MacDonald property and planting of approximately 1000 new willow poles for future repair stock material along this section is also planned.
- 8.21. We have also been planting the repaired area below the bluffs on the left bank opposite the Fairless property with 1000 willow poles planted already. In late July, gravel has been extracted along the Ward section of the river and has resulted in a re-profiled low flow channel out in the center of the river. Some gravel has also been removed opposite the Fairless section in the hope that the abrupt turn into the Ward property will be minimized and form a low-flow channel down the center of the river, thus allowing our remedial tree planting and repair works to be successful.
- 8.22. A list of tree bank protection repairs for the coming year has been identified on the Pohangina at the Spelman, Mia, Fairless and Rutherford properties which we are currently pricing up. The pole planting season is now upon us and most of the repair sites completed

last year will require willow pole planting to safeguard and protect them in the years to come.

8.23. Programmed works will see approximately 7000 willow poles planted this financial year on the Pohangina River.

8.24. 10,100 m³ of gravel extraction has occurred from the Pohangina River this reporting period.

OROUA RIVER

8.25. Last year saw the completion of most of the major 2018 flood event repairs including the Miln and McDougall properties. However, there are still a couple of tree bank protection projects at Hoggards and at the Landcorp Cheltenham property with work on these projects commencing in late August. A large tree bank repair project of some 300 m in length has just been completed at Genets property on the Oroua River. The Landcorp repair works also involves tree bank erosion protection which is an extension of work completed last year.

8.26. It is intended to plant approximately 9000 willow poles this financial year on the Oroua River.

8.27. 6,752 m³ of gravel extraction has occurred from the Oroua River this reporting period.

TOTARA RESERVE

8.28. At Totara Reserve a tree bank protection repair job is shortly to commence at the old camp ground area along with some channel maintenance work to protect the work that was completed last year. We also intend to plant approximately 1200 willow poles at the same area and shore up a small nursery area with additional planting.

UPPER WHANGANUI RIVER MANAGEMENT SCHEME

8.29. The Lines Company and Horizons have entered into a joint venture to maintain willow growth under the main power supply feed to Taumarunui, along the left bank of the Ongarue River, at the western approach to Taumarunui. Treescape were engaged to undertake the works for us, operating under our Code of Practice, with the work completed in June.

8.30. Funding for a cattle fence along the right bank of the Whanganui River, at the end of Porou Street, has been granted, with the cost being shared between the Fresh Water team and the scheme. The lease holder appears to be content with the arrangement. A contractor has been approached to install the fence in August/September, when the weather is more favourable.

8.31. Taumarunui Hire Centre has completed several maintenance jobs on the Upper Whanganui Scheme. These include drilling and poisoning of wattles, layering of poplars and willows upstream of Cherry Grove and upstream of Victory Bridge and the removal of debris piles at Manunui.

8.32. Staff are continuing to work with RuDC staff on stormwater matters near Tuku Street, Taumarunui. RuDC staff are currently consulting with the landowner in order for work to progress. Tender documents will be compiled following this approval and let for tender. Construction is anticipated to be summer 2019-20. The work is fully funded by RuDC.

MATARAWA FLOOD CONTROL SCHEME

- 8.33. Asset inspections and condition ratings were completed in July. This information was used to form the work programme for the year 2019-20.
- 8.34. A minor tree blockage was removed from the Matarawa Stream behind a property in Gerse Street.

TUTAENUI FLOOD CONTROL SCHEME

- 8.35. There has been no significant work done on the scheme during the June-August period. However, channel clearing work is being planned for some of the Marton urban stream reaches and the rural reach areas to the west of Bulls Township when the weather improves. The wet, windy weather conditions have seen trees fall into the waterway partly blocking the channel that have required action by staff to remove. It is often during these types of works that landowners request that Horizons addresses stream bank erosion issues, an activity not currently rated for. These requests have become more frequent with the influx of new residents to Marton and consideration is now being given to how that can be best communicated.

MAKIRIKIRI FLOOD CONTROL SCHEME

- 8.36. No physical work during this reporting period. Cutting and pasting (poisoning) of some small willows is scheduled for August.
- 8.37. Asset inspections and condition ratings were completed in June, providing the basis for the 2019-20 work programme.

POREWA FLOOD CONTROL SCHEME

- 8.38. Asset inspections and condition ratings were completed in July. This information was used to form the work programme for the year 2019-20.
- 8.39. No physical work has been completed. Landowners south of Hunterville have advised Horizons of a tree blockage on the Porewa Stream that will be removed when conditions permit.

WHANGAEHU MANGAWHERO RIVER MANAGEMENT SCHEME

- 8.40. A new resource consent for aerial spraying of the Whangaehu-Mangawhero Scheme is required, as the previous one lapsed in mid-2018. The resource consent application has been accepted and is being processed.
- 8.41. Work on the Mangawhero River (accessed from both Mangawhero and Te Rimu Roads) to remove a large tree, that spanned the entire breadth of the river, was undertaken in June. This was a large operation and while machinery was already on site, many smaller debris piles within the reach were also removed.
- 8.42. Two trees on Te Rimu Road were also felled to prevent this from happening again in the near future.

TURAKINA RIVER MANAGEMENT SCHEME

- 8.43. A log in the Turakina River, downstream of the SH3 road bridge, will be removed in early spring. This work will also encompass removal of debris up to and including under the SH3 road bridge.

- 8.44. A landowner has expressed a desire for debris further downstream in the Turakina River to be considered for removal later into spring.

LOWER WHANGANUI VEGETATION MANAGEMENT AND FLOOD PROTECTION PROGRAMME

- 8.45. Asset inspections and condition ratings were completed in June, providing the basis for the 2019-20 work programme.
- 8.46. Repairs on Balgownie knee breakers, planter box capping, stopbank ramps have been carried out. Vehicle damage on the Kowhai Park stopbank by the Matarawa Stream has also been repaired.
- 8.47. Papaiti vegetation clearance has been delayed along with other work until regulatory matters are addressed.
- 8.48. Rock lining at the sailing club has also been postponed due to consenting issues surrounding the Lower Whanganui Scheme. A consent application was compiled over the months of June and July. The work was discussed at a Hui between Te Runanga o Tūpoho and Horizons with approval granted following this. A response is still to be received from NTT. The consent will be lodged once approval is obtained from NTT.
- 8.49. A LiDAR survey of the river mouth and adjoining sections of coastline has been organized, scheduled for August/September. This data will be overlaid with previous data sets to determine rates of erosion.
- 8.50. The Te Kaihau o Kupe Waka Ama group has approached Horizons for advice in regards to an access gate through the floodwall asset on Wharf Street in Whanganui. Modifications will permit direct access to the slipway for Waka launching. Costs have been obtained and the construction will be managed by Horizons.
- 8.51. Following the transfer of assets from WDC to Horizons, the assets (predominantly bank protection) located on the South Spit have now been surveyed and condition rated for addition into Horizons' asset management system.
- 8.52. The North Mole and South Spit Interface Wall investigations have been completed with the design of both commencing in July 2018. Work summary is as follows:
- Investigation and surveying of existing rock structures below and above water has been completed;
 - Wave height modelling and assessment for rock sizing calculations has been completed;
 - Conceptual design profile sketches for various batter treatment of the North Mole have been completed;
 - Development of plans for the repair/strengthening of the South Spit Interface Wall and the reinstatement of the Tanae Groyne have been completed;
 - The survey and associated construction drawings for the interface wall and Tanae Groyne are completed;
 - Public consultation has commenced;
 - Terrestrial and Aquatic Ecological Assessments have been completed with final reports received May 2019;
 - The identification of resource consent requirements is completed and the draft consent application is complete;
 - Consultation with Maritime NZ is substantially complete;
 - Final design of the North Mole and revetment;
 - Construction methodologies and estimates have been finalised; and

PAKIHI SCHEME

8.53. Asset inspections and condition ratings were completed in July, with this information used to form the work programme for the year 2019-20. It has been planned to mow Punch’s Dam crest as the entire embankment is fenced off from stock. Prices are being sought.

FOREST ROAD DRAINAGE SCHEME

8.54. Nil work during the reporting period. Spraying will be undertaken in spring.

8.55. Asset inspections and condition ratings were completed in June providing the basis for the 2019-20 work programme.

HAUNUI DRAINAGE SCHEME

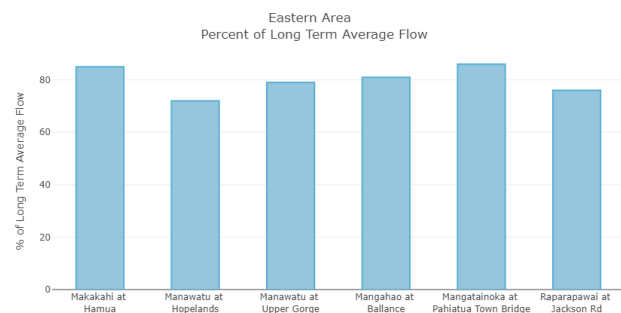
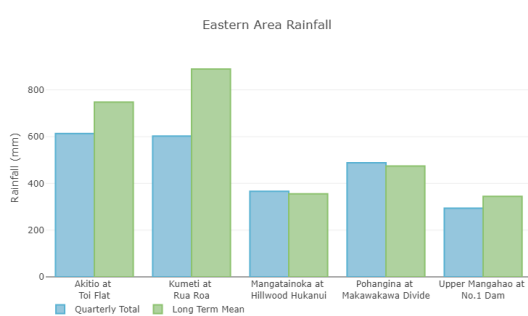
8.56. No work completed on this scheme this reporting period. We are however, looking to do a mechanical clean on a drain on Atkinson’s property by a local contractor who has just been accepted onto the plant hire register. This will be completed when the scheme water levels drop. Inspections to be completed shortly to see if a scheme spray is required during September.

ENGINEERING ADVICE

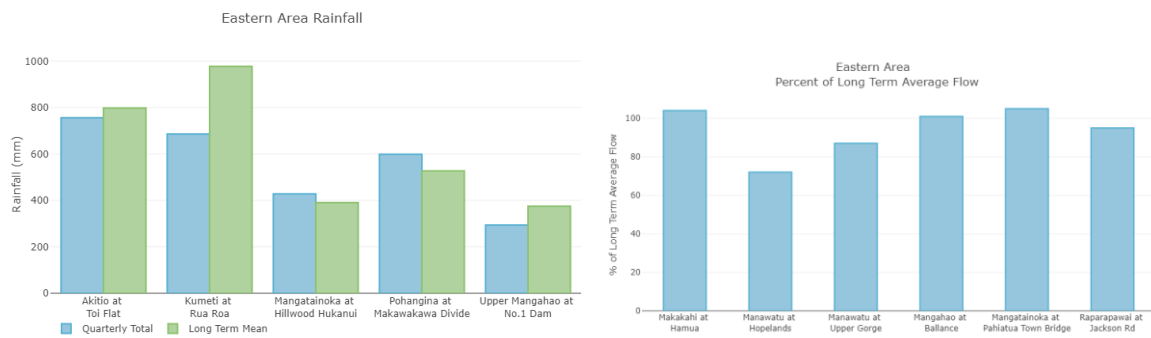
8.57. During the last two months, there have been continued requests for advice on a variety of issues including rural flooding in non-scheme areas, involving clearing blocked culverts, clearing stream channels of vegetation and fallen trees, diversion queries, compliance issues and flood damage work. Specifically, these include the Calliope Slipway upgrade in Whanganui, technical erosion advice on the Kukuta Bend in Whanganui, and erosion concerns on the Mateongaonga Stream in Okoia.

9. EASTERN AREA

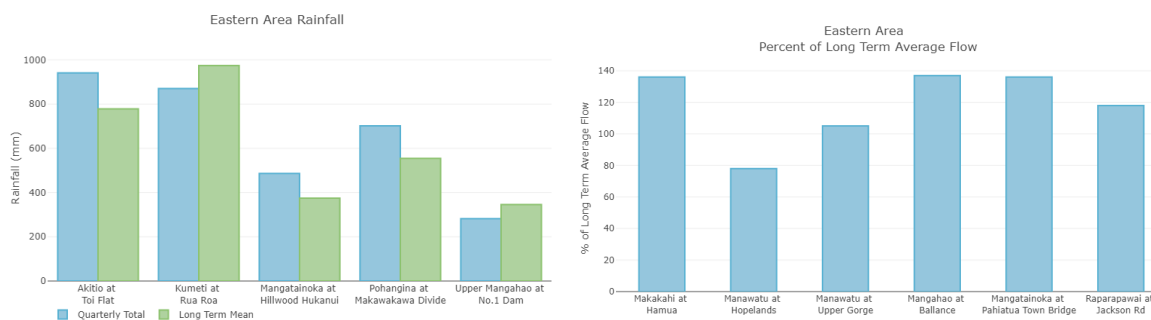
9.1. June Rainfall/Flow



9.2. July Rainfall/Flow



9.3. August Rainfall/Flow



- 9.4. The generally dry weather continued through May and rivers in the district remained at low levels. The start of June marked the beginning of rainfall within the Tararua district, and has seen consistent rainfall since. On 13 June, the Southern Ruahine ranges experienced some heavy rainfall, with figures of 130 mm recording having fallen over 8h in the Coppermine Valley area.
- 9.5. The net effect of this was extremely high flows in the Mangapapa Stream, Manga-Atua River and the Raparapawai Stream. The Mangapapa and Manga-Atua recorded flows at levels as high as those recorded in the 2004 flood events – and as such, overtopped their banks and flooded both farmland and roads for a period of 12 hours.
- 9.6. This rainfall event also created issues on the Raparapawai and Oruakeretaki Streams.
- 9.7. Large stretches of river bank along the Mangapapa Stream and Manga-Atua River have required remedial works, which have been started. Works on the Raparapawai and Oruakeretaki Streams will have to wait until the end of trout spawning and Galaxias spawning times – which is in January 2020.
- 9.8. The first Tararua River Management Community Group meeting was held on 13 June at the Woodville Service Centre which received a good attendance and some energetic discussion.
- 9.9. The last couple of months of the financial year saw works taper off in some streams, as trout spawning restrictions came into effect, though works on riparian edges were still able to be completed. Staff were busy completing works in all of the schemes, except the Tawataia-Mangaone, up until the last week of June.
- 9.10. The new financial year has started will willow planting, and it has been fortunate that the weather has turned creating softer ground.

- 9.11. Requests for miscellaneous issues and engineering advice has continued over the last two months, with some of the issues raised being around the removal of debris from non-scheme rivers, erosion, fencing, the removal of landslide materials from waterways and potential environmental grant work.

TARARUA DISTRICT RIVER MANAGEMENT SCHEME

- 9.12. After further consideration of the rules in the One Plan and definitions within the Resource Management Act, staff have concluded that vegetation clearance completed within the bed of a river or stream – but not on the banks of a river or stream – is able to be undertaken as a permitted activity. This interpretation was discussed with Regulatory staff who concur. However, a resource consent will still be required for vegetation clearance on the riparian edge, where the area does not fall under the definition of a river bed, for those rivers and streams which do not have a Schedule B value for Flood Control and Drainage within the One Plan.
- 9.13. This has meant that the removal of willows from the overgrown stream bed of the Mangapuku was able to be completed as a permitted activity.
- 9.14. Discussions with the Te Kaauru – Manawatū River Hapū Collective have been held around improving the amenity value to the Ngaawapurua site at Bluff Road. Previous works have involved some vegetation clearance and weed spraying. The current plan involves having the Bluff Road Whare carpark area lined and a walkway path cut through vegetation to make access to the Manawatū River easier and safer. Currently the shortest path requires a steep drop and the crossing of a swale to access the gravel beach currently sitting on that bend of the river.
- 9.15. The Ormondville Domain has also seen some erosion issues with the bends of the river starting to meander quite sharply. It is intended that a small amount of channel shaping and some planting be done in this area to help support the channel of the stream and protect local efforts in planting the domain with native trees.
- 9.16. It is intended that these two projects contribute to the amenity part of the scheme's objectives.
- 9.17. The first Community Group meeting was held on 13 June, with a representative of each of the Community Boards/Groups, **Tararua District Council (TDC)**, Horizons Regional Council and Federated Farmers. The meeting focused on the nature of the scheme, its objectives and the current version of the activity management plan. Good discussion was had and it was agreed to hold the next meeting at the end of October.
- 9.18. The scheme finished the year slightly favourable to budget and completed 17 separate activities across the district including works undertaken in Ihuraua, Akitio, Eastern Manawatu and Nireaha.

MANGATAINOKA SCHEME

- 9.19. Work slowed as the financial year came to a close and regulatory restrictions came into effect. A small peak in flow on the first of June (2617 mm at Pahiatua Town Bridge) made for a good first test for the recently completed rock lining near Te Hawera Road.
- 9.20. The same peak caused minor issues for a job that had recently been started near Fonterra's waste water treatment plant, near Pahiatua. One of our contractors had nearly completed a section of tied tree groynes when this peak flow came through and undercut a large section of bank upstream of the works. The damage was not major but it made sense to push the job size out in order to complete the works while the required plant was on site.

- 9.21. The other job completed in this period was a small rock lining near the Tiraumea confluence. Unlike other rock linings, it is not on the bank of the active channel. It protects the bank further back and acts as an access point from the farmer's paddock, through a line of protection planting that had been removed to gain access earlier in the season
- 9.22. The scheme finished slightly unfavourable to budget, but still with a health surplus to return to emergency reserves. The scheme achieved a better than target performance measure for asset condition and works completed on the non-financial performance measures, so overall it was a very successful year for the scheme.

SOUTH EASTERN RUAHINE SCHEME

- 9.23. Most of the effect of heavy rainfall on 13 June was seen in the lower half of the South East Ruahines with the rivers south of and including the Oruakeretaki being most affected. Previous works on the Oruakeretaki held up well to the higher flows except for the placement of rock groynes on a property downstream of Aldersons Weir. This area, as well as an area just downstream, were eroded by the flooding. A reach-wide strategy is being considered. Work will not be able to be undertaken on this waterway until the end of trout and dwarf galaxis spawning restrictions in January 2020.
- 9.24. The Raparapawai also struggled to carry floodwaters below SH2, with the river overtopping before the start of the stopbanks, as well as overtopping the stopbanks downstream of Gaisford Road. This impacted on homes on Gaisford Road and blocked access to the road. The Raparapawai also made a new channel downstream of the end of stopbanks. This is now filling a duck pond and leaving gravel strewn across a paddock. Works will not be able to be undertaken on this waterway until the end of trout spawning restrictions on 1 October.
- 9.25. The Mangapapa Stream recorded flows of up to 80 cumecs, which is as high as has been recorded for this stream. The stream overtopped its banks between Oxford Road and SH3 in Woodville and at further stretches between SH3 and its confluence with the Manga-Atua River. Significant damage was seen on a number of properties along this waterway and repair works commenced immediately and are still ongoing. The greatest damage seen was from lateral erosion of banks and removal of established willows, upstream of Oxford Road.
- 9.26. The Manga-Atua received a very large amount of rain reaching a level of 106 cumecs – the highest recorded flow since records began. There was extensive damage in the gravel reserve area with Coppermine Stream receiving most of the water in the catchment area and washing out trees opposite the confluence with the Manga-Atua. These trees then travelled downstream and collected on the Range Road rail bridge and road bridge. This caused the stream to back up and overtop the stopbanks on both sides of the river. This contributed to extensive flooding across Range Road, all the way down to SH2. Due to the subsequent overloading of the drainage system this also caused flooding across Broomfield Road. Both of these roads were closed during this time.
- 9.27. This flood event also highlighted issues with the Vowell and Johnstone Drain and as such, a large amount of channel clearance has happened on the lower stretch of this drain.
- 9.28. It is estimated for the cost of the repairs required from the June 13 flood event will total around \$90,000. The bulk of the works will be completed by November, with those works associated with the Oruakeretaki completed in January – February 2020. The need for any draw on reserves will become clearer as the financial year progresses.
- 9.29. Gravel extraction is still a key issue in the scheme with many parties wanting to extract gravel. The wishes of contractors are needing to be balanced with the degradation of some

rivers – particularly the Oruakeretaki and it has been decided that there will be no extraction on the reach of this river above SH2. With the “opening” of the gravel reserves through the removal of some willows within the reserve plantings, it is hoped that this gravel will start to replenish the river and raise the bed levels to a more sustainable height. The Rokaiwhana is another river that needs to be monitored with one party having had an abatement notice served for improper practice around gravel extraction. Extraction will be paused on this river in the future to help replenish the bed levels, particularly as work was completed to open up the gravel reserve in December 2018.

- 9.30. Other rivers within the area – particularly the Kumeti and the Otomaraho have aggrading bed levels in the upper reaches, with bed heights coming very close to the underside of the road and access bridges.
- 9.31. This also raises the question of weir suitability. With some weirs damaged and others worn we are starting to look into the feasibility of some of the weirs and whether they are still fit for purpose in their current state, need a design change, repairs, or need to be removed.
- 9.32. Willow planting will start in this scheme near the end of August to support river works undertaken in the last financial year and to shore up any spaces in plantings were required.
- 9.33. Asset inspections have been completed for the scheme and the results showed some areas with condition grades of less than that targeted in the non-financial performance measures. Plans are currently being prepared to repair these assets in the next financial year.
- 9.34. The scheme finished the year slightly unfavourable to budget, but still returned a healthy surplus to reserves.

TAWATAIA - MANGAONE SCHEME

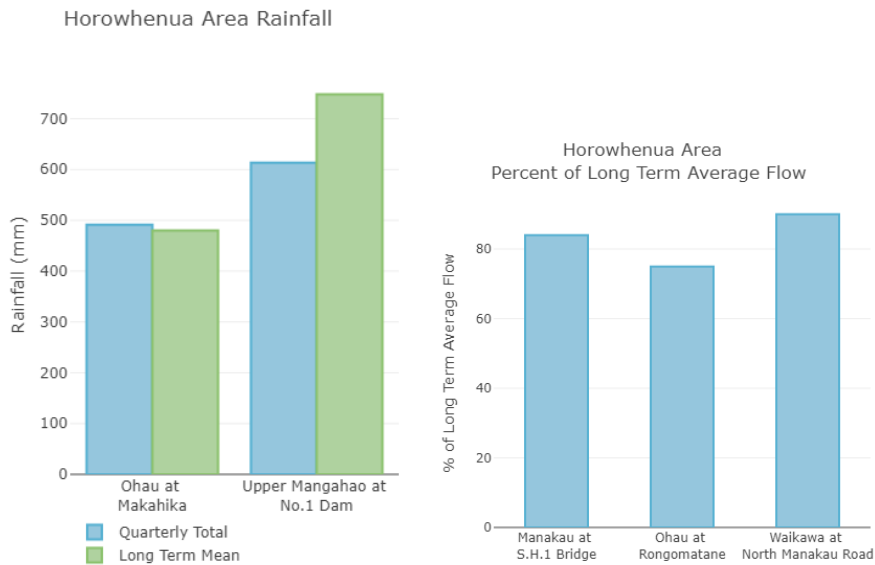
- 9.35. All work has been completed on this scheme for the financial year.
- 9.36. The interim dam inspection was completed by staff in March and this has not highlighted any issues which require work.

UPPER MANAWATU – LOWER MANGAHAO SCHEME

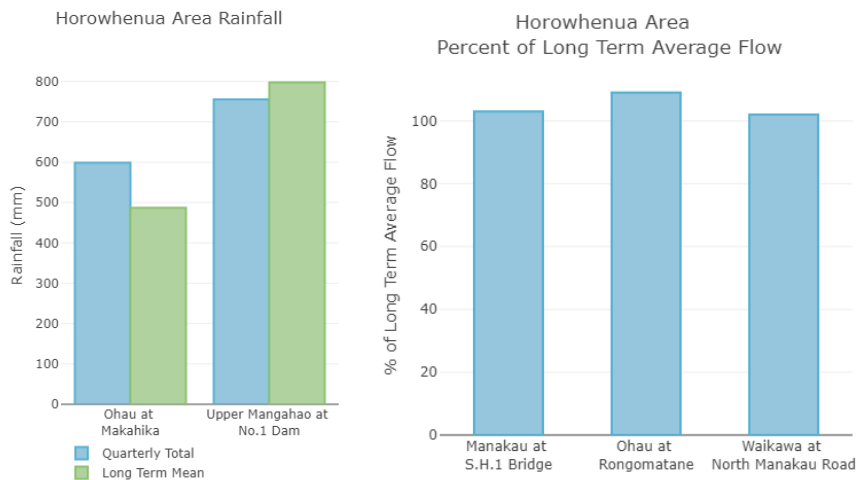
- 9.37. The scheme finished in transition, with works being completed at Blatchfords on the Manawatu between June and July. This work required installing PMU groynes on an undercut area of the bank – this work was delayed in finishing due to constantly rising and falling river levels. It was however completed in time for equipment to be removed before the start of the Dotterel nesting season.
- 9.38. Erosion near the edge of Oete Road, as it enters the access to the Haukopuapua Domain, is also starting to become an issue and we may have to discuss with Tararua Alliance staff ways to work together to fix this before access to this property becomes an issue.
- 9.39. The scheme finished slightly unfavourable to budget, but with a healthy surplus to return to the emergency reserves. Assets inspections for the scheme showed that asset condition was on target and that the scheme was performing well.

10. SOUTHERN AREA

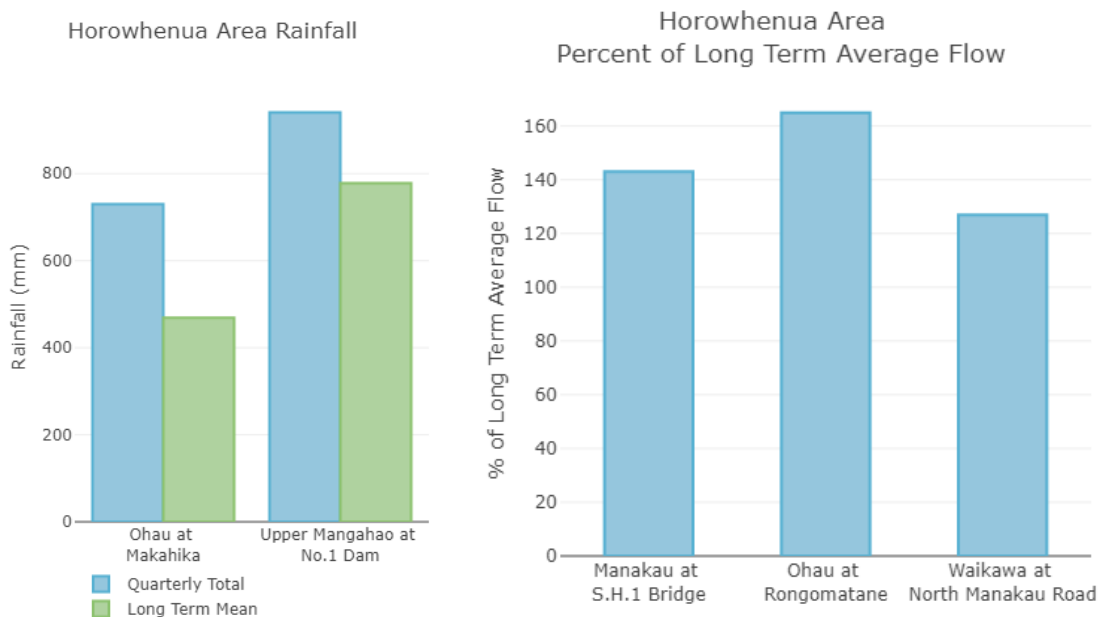
10.1. June Rainfall/Flow



10.2. July Rainfall/Flow



10.3. **August Rainfall/Flow**



- 10.4. Request for engineering advice continued over this period including a number of requests from district council staff around who is responsible for maintaining various drains around the area.
- 10.5. Staff have also been working with the rural upgrade team to repair a retaining wall that was being undermined at the toe of the guide banks on the Mangaone spillway.
- 10.6. Over recent months, River Management staff have been working with procurement consultants Clever Buying to review the processes that River Management uses to engage contractors to undertake unplanned/ reactive maintenance activities. The current process has been to engage contractors who are registered on the Council’s Plant Hire Register however, a review of this process has identified some compatibility issues with the updated procurement policy and as a result, a new process using a Plant and Machinery Supplier Panel is in the process of being implemented.
- 10.7. A number of supplier briefings were run during this current period to advise existing/incumbent contractors and potential new contractors of the process change and to update them on the additional information that they will be required to submit in order to be eligible to undertake routine work on the various River Management schemes. Applications to be considered for the new supplier panel close on 29 August 2019.
- 10.8. Staff continue to work closely with various other teams from within Council and consultants regarding the implementation of the new AMIS. Current focus now is rolling out the task scheduling module.

OHAU-MANAKAU SCHEME

- 10.9. With only minor flood flows occurring over the past year, the river channels within the scheme have remained fairly stable meaning that the annual channel erosion protection work has been less than usual. As a result, this year’s planting program is significantly

down on previous years with only 1,000 willow poles planted along the Ohau middle reach and some poles planted along the Waikawa to be completed next month.

10.10. Machine cleaning of some drains in the Waiwiri area was completed, totaling 3.6 km.

MANAWATU DRAINAGE SCHEME

10.11. Annual inspections of the floodgates and scheme stopbanks were completed this period, and a job list compiled. There have been a number of floodgates flagged as requiring repair or replacement due to their deteriorating condition. Some of this work will require immediate attention while the rest will be completed over the summer period.

10.12. A large weed block formed downstream of the Keri Keri Road bridge in the Whiskey Creek causing the opposite bank to erode. A long reach excavator was brought in to remove the block and prevent further erosion from occurring. When the paddock dries out and the weather conditions are more suitable for machinery, the bank erosion will be repaired with a retaining wall.

10.13. A 300 m section of the Taonui Stream had become significantly over grown with raupo causing water to be held up in the stream. This was machine cleaned and cleanings disposed of in the landowner's paddock.

10.14. Bull holes were repaired in a section of Burkes Drain spillway.

MAKERUA DRAINAGE SCHEME

10.15. Annual inspections of the floodgates were completed and a job list compiled of work that was found.

10.16. This period has seen the pump stations up and running, keeping staff busy with manual and machine cleaning of the weed build up at the pump station screens to ensure the pumps can operate efficiently.

KOPUTAROA DRAINAGE SCHEME

10.17. Winter rain has brought a lot of weed from private drains down to the scheme drains where it can block culverts this time of year. Culverts were required to be cleared on the Aratangata Drain No.3 due to weed build up.

10.18. A lot of work was completed around Pump Station No. 3 including refurbishing a 500 m portion of the access track, refurbishing the entrance to the station and removal of pampas grass starting to grow in the drain leading to the station.

10.19. The gravity and station outlets at Pump Station No. 3 were inspected. The floodgates are continuously under water so they need dewatering to be inspected. The opportunity was also taken to inspect by CCTV the pipelines.

MOUTOA - WHIROKINO DRAINAGE SCHEME

10.20. The focus this period was around ensuring the pump stations were working efficiently with much weed being pulled off station screens.

10.21. The drainage pump at the Pleuger Pump Station was required to be pulled out due to a fault. Repairs were undertaken and the pump put back in.

- 10.22. Work was completed at the Kere Kere Road Pump Station to allow the installation of a submersible pump. The chamber for the pump was made at the time of the original station construction so only some pipe work was required. There is still work to be done on the electrical part of the station to allow for the extra pump which is likely to be done during the next period. This extra pump will allow the station to pump down lower and allow the station to run more efficiently. The pump to be used initially will be a spare pump. If the Scheme Liaison Committee agrees the pump should stay in the station, then a new pump will be required to be purchased.
- 10.23. A blockage was removed in the No.6 Northern Drain.

TE KAWAU DRAINAGE SCHEME

- 10.24. Staff are working with **Manawatu District Council (MDC)** on a cost sharing option to upgrade the culvert on Solders Drain underneath Rongotea Road. MDC are in the process of upgrading the intersection of Rongotea Road and Green Road which presented an excellent opportunity to upgrade the culvert at the same time.
- 10.25. A new 450 mm culvert and two pipes were placed along Main Drain (a section that runs along Taikorea Road). This culvert and floodgate were installed to prevent Main Drain water flowing up into the adjacent landowner's property.

HOKIO CATCHMENT DRAINAGE SCHEME

- 10.26. A preliminary meeting has been held with Council staff from various teams to look at the information that Horizons currently has as part of the Arawhata Sedimentation and Drainage project.
- 10.27. Work was completed to remove weed building up between the Hokio township stream bridge and the mouth of the stream. There had been many requests by locals to remove the weed due to safety and aesthetic concerns.
- 10.28. Weed blockages were removed on the Arawhata stream at the Hokio Beach Road culvert.

FOXTON DRAINAGE SCHEME

- 10.29. A meeting has been held with Alistair Cole from the NZ Landcare Trust to discuss the option of installing a wetland at the outlet of the Purcell Street Drain.
- 10.30. Staff have been working with E2 Consultants, HDC and Horizons Survey team to identify and obtain the remaining survey information required to complete the modelling work on the proposed flood mitigation work for Foxton.

11. SIGNIFICANCE

- 11.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

Ramon Strong
GROUP MANAGER RIVER MANAGEMENT

ANNEXES

There are no attachments to this report.