Taranaki June 2015 Flood Event

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Summary

The key points to be taken from the Taranaki June 2015 Flood Event are:

- A high intensity rainfall event occurred between the 19-20 June and was concentrated on an area including the lower and mid reaches of the Whenuakura and Waitotara catchments, throughout the Patea catchment, in the hill country between Toko and Whangamomona, and in the upper Waitara catchment.
- Across the affected band, recorded rainfalls were much higher than both the 2004 and 2006 events however the worst effects were localised. The 2004 event had a much more severe overall impact because the amount of rainfall received for the *whole* of the month was extreme, and much higher than 2006 and 2015.
- Timing of the event was exacerbated by already low feed levels going into winter and road slips prevented some farmers from undertaking normal seasonal work such as shearing and mustering.
- A relief package totalling up to $500,000 was provided by Taranaki Regional Council to affected farmers for slope stability plantings, soil slip debris trail re-vegetation, and replacement of riparian plants on the ring plain.
- The Ministry for Primary Industries estimates the total on-farm cost of the event in the Taranaki and Horizons regions at approximately $70 million. The cost for local district councils reached approximately $17 million.

Objectives

The main objectives of this report are to:

(a) Provide an historical record of the event
(b) Provide an overview of the effects of the June 2015 event throughout the region
(c) Provide a summary of the various relevant agency reports
(d) Outline the assistance package Council has provided and the follow-up service provided by the River Control and Flood Maintenance and Land Management teams
(e) Outline any further issues needing to be addressed.

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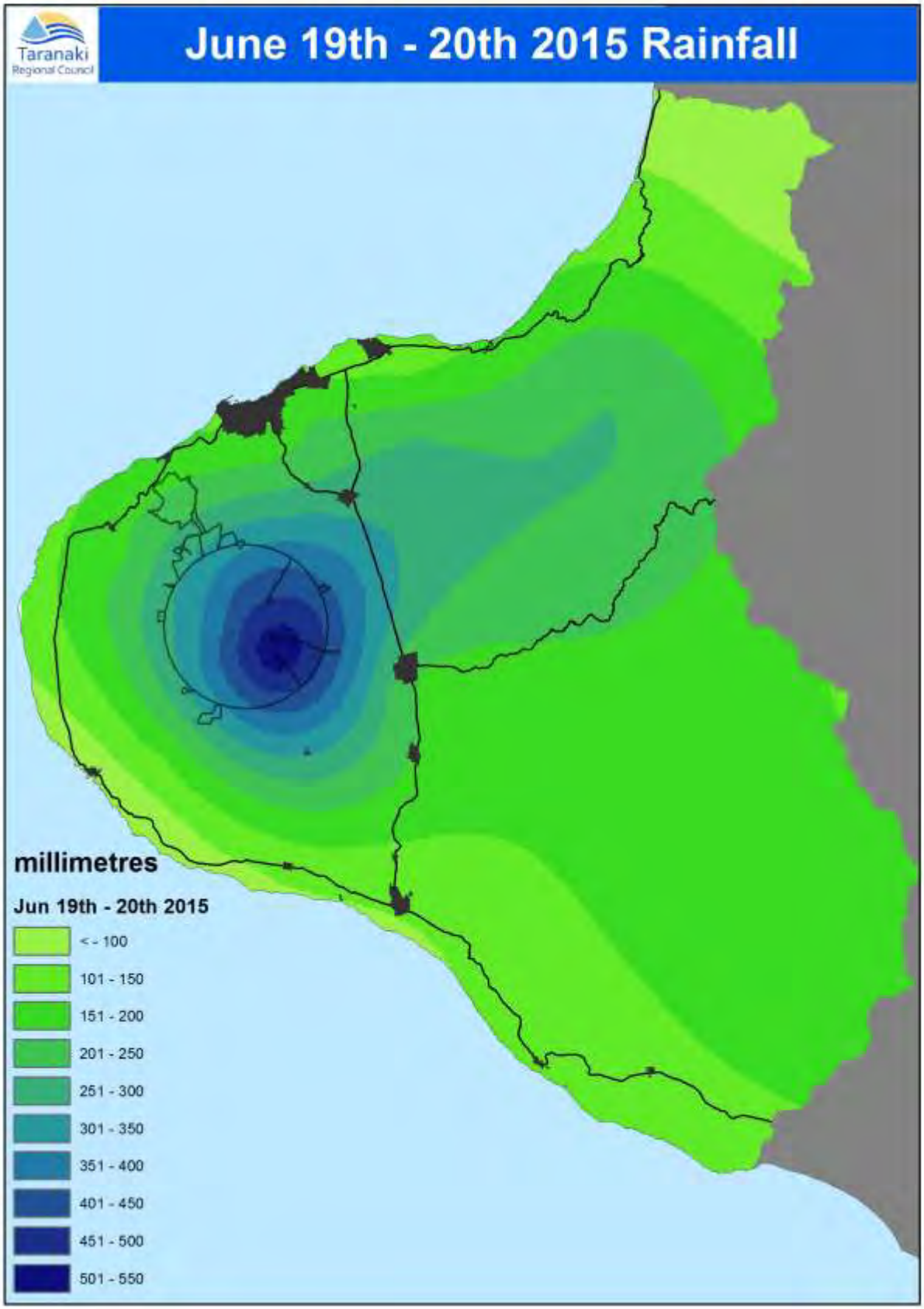
Taranaki
Regional Council
June 19th - 20th 2015 Rainfall
millimetres
Jun 19th - 20th 2015
< - 100
101 - 150
151 - 200
201 - 250
251 - 300
301 - 350
351 - 400
401 - 450
451 - 500
501 - 550

1. Introduction

On Friday 19 and Saturday 20 June 2015 the inland South Taranaki area received a significant proportion of its annual rainfall in one weekend. Preceding the event, the region had received over 100 percent of its usual June rainfall – even by the end of May rainfall was at 121% of normal for the year – and mean river flows were already well up, with several new high flow values recorded.

During 19 and 20 June most of TRC's hydrology sites recorded over half the month's normal total rainfall. Monthly river flows were double the normal levels and some recording equipment was washed away and destroyed. Rainfall in the Taranaki region for the year to June was 133% of normal levels.

Rainfall in this event was concentrated through the lower and mid reaches of the Whenuakura and Waitotara catchments, throughout the Patea catchment, in the hill country between Toko and Whangamomona, and in the upper Waitara catchment. The intense rainfall fell consistently between 8 am on Friday 19 June and did not cease until approximately 9 pm on Saturday 20 June. This resulted in flooding of the Waitotara River and Township and the flood plain below, a large area in the Eastern hill country and Uruti areas, and some flooding in the Waitara River.

Although recorded rainfall through these areas during the event was generally heavier than that of February 2004 and July 2006, it was much more localised in its effects. Rainfall return periods were only in the order of 9-25 years for Riminui, Pohokura and Ngutuwera (other sites do not have a sufficiently long record to make a robust comparison). Water level return periods were in the order of 28-93 years. Riminui was approx. 37 years, Whenuakura between 73 and 93 years, Waitara at Purangi 28 years, and Patea at McColls Bridge (downstream Patea Dam) was 51 years.

The rain event caused significant damage to infrastructure including bridges and roads being washed out or damaged by flooding, and power disruptions. Massive slips and landslides, and surface flooding, blocked local roads and State Highway 3. A state of emergency was declared on 20 June and the Waitotara Township was evacuated prior to flooding. Several properties were affected and repairs have taken some time to be completed.

The Government declared a medium-scale adverse weather event in June and provided additional funding to assist farmers to recover from the event.

2. GNS Landsliding Report

Along with Horizons Regional Council, Taranaki Regional Council engaged GNS Science to assess the distribution and severity of landslides in their regions following the 19-20 June storm. GNS Science undertook two reconnaissance flights as part of a GeoNet Landslide Response and GeoNet funded the flights, satellite imagery, and aerial photography. The findings were included in a report completed by GNS in September 2015.[1]

2.1 Extent of landsliding

The report noted that areas of severe landsliding generally corresponded with areas where 48 hour rainfall totals exceeded 150 mm, and in Taranaki these occurred in the lower and mid reaches of the Whenuakura and Waitotara catchments, throughout the Patea catchment, in the hill country between Toko and Whangamomona, and in the upper Waitara catchment. Streambank erosion was severe in the mid and lower reaches of the larger rivers in our region.

Within these catchments, the main areas affected by landsliding were in the mid reaches of the Mimitangiatua River near Uruti, inland from Stratford in the upper reaches of the Patea and Waitara Rivers near Strathmore, and in the lower reaches of the Patea, Whenuakura and Waitotara rivers and their tributaries. The most severe localised landslides occurred near Strathmore and near Uruti, north of Waitara, and corresponded with the areas of highest rainfall.

GNS commented in their report that in the Waitotara Valley, the areas where willows were removed from streambanks (between 2007 and 2012), were the areas where there was significant streambank erosion in the June 2015 storm.[2] In some locations in the Waitotara Valley streambank erosion may have occurred as a result of the willow removal. However the large majority of what appeared to be erosion of the Waitotara River banks was actually slumping of the saturated riverbank sediments caused by the rapid drawdown of the water level as the flood receded. Comments from local residents indicated that the river level dropped rapidly once it started to drop.

There were several large deep-seated landslides in the Taranaki region on hill country inland from Stratford, and debris from two of these blocked streams, causing small lakes to form. However most landslides were shallow and occurred on steep north-facing slopes, on terrace edges, or on steep hillsides adjacent to river channels. Areas in pasture or recently planted or logged forest were more likely to landslide than areas of indigenous forest and scrub or closed canopy exotic plantation forest.

2.2 Landslide-dammed lakes

Outlets of two prehistoric landslide-dammed lakes in our region eroded during the storm and the lakes either substantially dropped in volume or disappeared entirely.

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[1] Page M J, Rosser B J, Townsend D B, Carey J M, Ries W F, (2015), 'Reconnaissance report on landsliding caused by the 19-20 June 2015 rainstorm in the Taranaki-Whanganui-Manawatu region', *GNS Science Consultancy Report* 2015/172.

[2] Page et al, 'Reconnaissance report', GNS Report 2015/172, p 36.

GNS recommended that these events be investigated further, to understand the potential for downstream flood hazards of the many other landslide-dammed lakes that exist, and to compile a storm history for the region.

Lake Mangawhio is a small (8.3ha) lake north of Waitotara township, at the head of a tributary of the Weraweraonga Stream, which drains into the Waitotara River. The lake is administered by the Department of Conservation and the access road was upgraded by South Taranaki District Council around 2006, when they replaced the bridge crossing the outlet stream with a culvert. During the June storm the outlet eroded and the culvert 'blew out' with a loss of approximately 500,000 m^3 of water. GNS was not able to ascertain how far any sediment extended or what downstream impact the water drainage has had. GNS reported that the landowner is concerned about further erosion and loss of lake water.

The other, much smaller (2.1 ha), unnamed lake is located between the Kaikanui and Hetore Streams on the Whenuakura River. The outlet of this lake eroded during the storm and the lake has completely drained.[3]

2.3 Flights and satellite imagery

The flight path over the Taranaki region on 23 July went along the upper Whanganui River as far as Tahora, west to Uruti in north Taranaki, along the main rivers in the eastern hill country and south to the Waitotara River. Weather conditions did not enable good satellite coverage and resolution was marginal, especially for identification of landslides. Maps provided in the GNS report are therefore largely based on the oblique photographs taken during the flight, together with spatial information using storm rainfall, and terrain characteristics. Major areas of landsliding were identified using maps, media reports, agency damage reports, and Regional Council information.

2.4 Rainfall characteristics

GNS estimated that the rainfall for the 19–20 June flood event was between 150 mm and 250 mm in the hill country of north Taranaki, and between 100 and 200 mm in the hill country of south Taranaki. The highest 48-hour rainfall in Taranaki occurred near the Whangamomona Saddle (200-220 mm). Return periods for the 48-hour rainfall totals, for the south Taranaki Region, were estimated at 20–50 years[4]. For the central Taranaki area near Stratford, the return periods were estimated at 10–15 years. Rainfall in the area of localised severe landsliding near Uruti had a return period of about 35 years.

2.5 Comparison with February 2004 storm

GNS noted that the June 2015 storm was the largest to occur in the region since the February 2004 storm and floods. And, although the scale of the 2015 event was not as extensive as in 2004 (landsliding occurred only over half the area affected in 2004)[5], some farmers reported that landsliding in the 2015 event was worse. GNS commented that this pattern happens when intense rainstorms occur within a broader rainfall

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[3] 'Reconnaissance report on landsliding caused by the 19-20 June 2015 rainstorm in the Taranaki-Whanganui-Manawatu region', *GNS Science Consultancy Report* 2015/172, p 44

[4] Estimated from HIRDS – High Intensity Rainfall Design System, http://hirds.niwa.co.nz)

[5] 'Reconnaissance report', *GNS Science Consultancy Report* 2015/172, p 43

system. The main difference between the two events is that the 2015 event also affected the eastern Taranaki hill country as far north as Waitara and Urenui, and only as far as Woodville in the south east.

2.6 GNS Conclusions and recommendations

GNS noted the varying severity of flooding, landslides, and erosion that occurred across the regions in the 2015 event. They reported that sediment-generating processes operating in major watercourses were also significantly affected. GNS noted that although the precise number of landslides caused by the event was unknown their work to date indicated that the event was of national significance. Further data collection would be useful to improve the understanding of these processes.

GNS recommended that quantitative analysis of key sites be undertaken so as to provide the necessary data to quantify sediment contributions from landslides and stream-bank erosion. The recommended work would support and inform the Sustainable Land Use Initiative (SLUI), and improve SedNetNZ, which is used to model sediment generation and distribution. Collection of the data would be of national benefit as SedNet NZ is used by a number of Councils.

The study also identified two locations (see section 2.2 above) where flooding was likely exacerbated by the breaching of landslide-dammed lakes. The report suggested that a study be undertaken to identify the potential for other breaches and downstream hazards associated with remaining landslide-dammed lakes in the Taranaki region.

3. MPI primary sector impact assessment Report

The purpose of this report was to "quantify the scale and severity of the June 2015 storm event on the primary industries".[6] The key message was set out at the top of the summary section:

> *The Ministry for Primary Industries estimates the total on-farm cost of the June 2015 storm in the Taranaki and Horizons regions at approximately $70 million.*

Unfortunately a regional breakdown of this cost is not provided. Although there are four paragraphs in the 'Dairy Farm Impacts' section (p 14) that cover a range of issues, they did not specify which region they occurred in. This makes it difficult to determine whether they affected the Taranaki region.

The report stated that its analysis of the impacts was limited to direct production losses or replacement costs. The analysis was an estimate only and was "… based on a collation of data, views and opinions from a range of stakeholders".[7] This description included reference to the GNS Science report summarised above (see section 2). There was no estimate of increased on-farm repair and maintenance or vehicle-related costs.

The timing of the event meant that high rainfall, both prior to and following the event itself, also impacted on farmers' feed levels, and their ability to complete the clean-up and recovery. The closure of roads (estimated at about 30% in South Taranaki[8]) also had an effect on farmers' ability to move stock and feed and undertake normal seasonal work.

3.1 Sheep and beef

The report notes the greatest impact was on sheep and beef farms due to landslides and damage to infrastructure such as fences, bridges or culverts. Subsequent inability to control or move stock affected productivity. Some of the damage was also created by forestry slash swept down waterways. The estimated on-farm impact for sheep and beef farms was estimated at $57.6 million, with $37 million in infrastructure damage, and $20.6 million in production losses. The number of sheep and beef farms impacted were as follows:

Region/district	Total farm numbers (Source: B+LNZ)	Farms impacted (%)	Farms impacted (number of farms)
Taranaki	355	49%	175
Wanganui	179	92%	165
Rangitikei	448	22%	100
Manawatu	379	5%	20
	1361	**34%**	**460**

[6] Ministry for Primary Industries, 'June 2015 Taranaki and Horizons Regions Storm - Primary Sector Impact Assessment', *MPI Technical Paper No. 2015/28*, p 1

[7] 'June 2015 Taranaki and Horizons Regions Storm - Primary Sector Impact Assessment', p 4

[8] 'June 2015 Taranaki and Horizons Regions Storm - Primary Sector Impact Assessment', p 4

The report stated that one Taranaki sheep and beef farm lost a bridge due to forestry slash that will cost $700,000 to replace and it was not insurable for replacement loss. It was estimated that 50 Taranaki farms lost bridges due to varying levels of damage and some of these were not insurable because they did not have 'sides'. Many farms also lost large culverts with an average value of $175,000.[9]

Although low numbers of stock were lost during the storm, it was estimated that feed constraints over winter, and during lambing and calving, would reduce lambing and calving percentages by 4%.

3.2 Dairy

According to the report, dairy farms were mainly impacted by silt and the on-farm impact of this was estimated at $6.4 million. However the report states that there was "little disruption to milking on winter milking farms and the timing of the storm will have little impact on the regions['] annual milk production."[10] This is despite the fact that the rail line to the Hawera dairy factory [Fonterra] was closed for 7-10 days.

The report stated that three farms in the Taranaki region received more than moderate impacts from the storm but it does not provide any location details. It noted that farmers were already managing the very wet conditions prior to the event.

The report commented further:

> *A large number of farms (200) suffered low levels of damage ($2500-$10,000) that is considered normal business risk when farming in these regions,* ***particularly on flood plains****. These impacts could arguably be discounted for the purpose of this analysis, however, we have included these impacts in the assessment.*[11]
> [emphasis added]

The impact on production was noted as being "very small at 0.08 percent for the season."[12] The short inundation period and low temperatures helped pasture remain alive.

3.3 Forestry

Forestry less than five years' old was worst hit and 800-900 hectares of plantation forest were damaged. This equated to one percent of the 83,000 hectares located in both regions.

The estimate of $1.2 million needed to re-establish damaged forests, (at $2,000 per hectare), did not include damage to forestry roads or infrastructure. The report noted that some sites will not be re-established due to poor economic viability.

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[9] 'June 2015 Taranaki and Horizons Regions Storm - Primary Sector Impact Assessment', p 9
[10] 'June 2015 Taranaki and Horizons Regions Storm - Primary Sector Impact Assessment', p 2
[11] 'June 2015 Taranaki and Horizons Regions Storm - Primary Sector Impact Assessment' , p 13
[12] 'June 2015 Taranaki and Horizons Regions Storm - Primary Sector Impact Assessment' , p 14

The report sets out the plantation forestry affected in both regions[13]:

District	Total hectares	1-5 years age class (%)	Estimated hectares 1-5 years
Manawatu	5,215	9.63%	502
Rangitikei	22,441	5.90%	1,324
Ruapehu	48,975	17.72%	1,104*
South Taranaki	13,589	3.52%	478
Stratford	7,104	0.31%	22
Wanganui	28,081	9.23%	2,592
Total	125,405		6,022

3.4 Horticulture

There was little overall damage to the horticultural sector and the cost of crop losses was estimated to total $1.2 million. Most of the damage occurred south of Wanganui. The impact assessment did not include clean-up, or infrastructure repair costs, or the financial impact of any disruption to vegetable crop schedules.

3.5 Apiculture

Approximately 3000 beehives in the Wanganui District were lost in the storm event, with an on-farm impact of $2.5 million. Manuka blocks for honey production received less slip and landslide damage than pastoral land. The report does not refer to any apiculture industry damage in Taranaki.

3.6 Deer and other

Some Taranaki farms rear deer alongside sheep and beef, however most are located in coastal areas, and these were not so badly impacted by the storm. Any impact on these farms has been collated in the report with the impact on sheep and beef farms.

Some flood damage was reported for one pig farm and one poultry farm in the Taranaki region but no further details are provided in the report.

3.7 Government response

The Government classified the storm as a 'medium-scale adverse event' under the Primary Sector Recovery Policy. Funding was made available to support groups already working in rural recovery; to provide additional co-ordinating assistance; to assist infrastructure repairs on farms severely affected; to provide Enhance Task Force Green clean-up assistance; to provide Rural Assistance Payments for those with severe financial need; and to build resilience to similar events in the future.

Grants were also made to regional councils through the Hill Country Erosion Fund for land management initiatives (see Section 12).

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[13] 'June 2015 Taranaki and Horizons Regions Storm - Primary Sector Impact Assessment', p 15, 'Table 7, Plantation Forestry in Taranaki and Horizons regions'

4. Beef + Lamb New Zealand report

4.1 Scope of the report

The Beef & Lamb report provided "interim costings of the impact of the June 2015 storm behind the farm gate for the Sheep & Beef Sector."[14] Elsewhere the report noted that the full costs of the event would not be quantified until 30 June 2016.[15] The report also made some recommendations about the agency response and recovery phases.

In large part the report expressed similar farm issues and concerns to those in the MPI report (refer section 3). It also expanded on the issue of damage caused by forestry slash. It discusses farmers' concerns around the use of Enhanced Task Force Green teams, and suggests that the government fund fencing contractors and aerial support for repair work, as an alternative.

4.2 Overview

The report estimated the distribution of total costs to sheep and beef farms in Taranaki at $28.41 million or 35% of the total approximate cost of $81.5 million. The cost of infrastructure reinstatement alone was estimated at $52.4 million, of which the Taranaki portion was $18.25 million, or $107,175 per farm.

Total additional costs for each sheep and beef farm, including the infrastructure figure, were estimated at up to $167,000. The report suggested that the on-farm infrastructure repairs may require re-financing and this will have a continuing impact on the productive capacity of the farm.

The report also set out farmers' frustration with the amount of questionnaires and surveys they had to engage in compared to the small amount of practical help actually provided.

The report was reviewed by Taranaki Rural Support Trust, Taranaki Federated Farmers and Manawatu Federated Farmers.

4.3 Farm reinstatement costs

This section of the report provided more detail of estimated short-term emergency temporary repair and longer-term reinstatement repair costs. These included costs for digger and fencer contracts, helicopters, and fencing equipment.

4.4 Production impacts

Short-term production impacts were estimated at $9.7 million overall, equating to $19,000 per farm, of farms affected. This figure represented the short-term reduction in carrying capacity on affected sheep and beef farms. This section of the report also estimated short-term stock reduction at $6.4 million but did not provide a regional

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[14] Beef + Lamb New Zealand, 'Interim Impact Report: Western North Island June 2015 Storm', 27 July 2015.

[15] Beef + Lamb New Zealand, 'Interim Impact Report', page 4.

estimate. The percentage of land damaged due to slips and silt was estimated at 5%, with 1.3% of flat land affected. This land damage also affected stock unit capacity.

Stock production impacts over the longer term were estimated to reach $4.9 million, or $10,100 per farm, of farms affected. The winter timing of the storm may mean that further weather events in spring may compound existing issues.

4.5 Cost of land damage

The cost of land damage was estimated to cost $14.5 million in total, which equated to $29,700 per farm, of farms affected. The report estimated the reduction in equity to be $5,000 per hectare, or approximately $29,700 per farm, of farms affected.

4.6 Stakeholder response and recovery phase observations

This part of the report set out the issues which had concerned stakeholders. In summary these were:

- Initial CDEM and council response was reasonably good, however none of the surveys gathered "behind the gate farm issues".[16]

- The Government's declaration of a medium adverse event was based on the geographical scope of the damage and this meant that on-farm assistance was under-resourced.

- Farmers considered that local government requirements to strictly comply with planning rules and regulations in terms of slip and silt removal overrode other more practical solutions and impeded road recovery. Farmers' urgent needs in terms of public infrastructure were not sufficiently prioritised.

- People volunteering to help did not have the right knowledge and were not well utilised.

- Questionnaires & surveys were not fit for purpose.

- There was a lot of pressure on farmers to provide information but no discussion or confirmation from authorities about how they would use, and store, the data provided–especially data provided on a confidential basis.

- Stakeholder organisations had limited human resources, and lacked clear structure, systems management and clearly-defined roles and responsibilities. "This has resulted in a lot of inefficient use of time, duplication and miscommunication and a very slow coordinated response in some cases."[17]

- Poor communication, collaboration, and coordination was compounded by people unfamiliar with the people involved or the work needed.

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[16] Beef + Lamb New Zealand, 'Interim Impact Report', page 9.
[17] Beef + Lamb New Zealand, 'Interim Impact Report', page 9.

- Farmers considered it was a case of 'too much talk, not much action'. The report stated that "the current national structure" limited the ability of capable staff to provide effective and efficient assistance.

4.7 Recommendations

The report provided four main, and several supporting, recommendations. The main recommendations were as follows:

1. "The government contributes 20% of the total cost of the storm [*ie $16.3 million*] for on-farm costs in loss of production, stock losses, stock reduction, and farm re-instatement".

2. Clear protocols, policies, guidelines and signed contracts are formed around data security and confidentiality of information and the way it can be used.

3. There should be efficient and effective database management which could be linked to mapping technology for the recovery phase. [*This refers to phone or tablet 'apps'; linking aerial photography to mapping layers for quick assessments of scale and extent of damage; and links that allow the completion of roading contracts to be communicated to the database.*]

4. All stakeholder groups should be independently facilitated to establish adverse event workshops. [*This recommendation includes work to define adverse event roles and responsibilities; to match people's skills to the role required; a strategy to overcome turnover of response and recovery staff; development of adverse event management and mapping systems; and ongoing training*].

5. Rainfall information for the June event

Table 1 Rainfall comparisons for February 2004, July 2006, and June 2015

	14th – 16th February 2004	4th – 7th July 2006	19th & 20th June 2015
Riminui	152.0	153.0	174.0
Ngutuwera	115.0	158.0	153.5
Charlies	n/a	90.0	161.5
Moana Trig	n/a	163.5	172.5
Kaka Rd	82.5	55.5	244.5
Pohokura	93.0	63.5	231.0
Kotare	85.0	60.5	113.0
Stony	117.0	61.0	199.0
Waiwhakaiho	85.0	38.0	238.5
Everett Park	84.5	40.5	260.0
North Egmont	345.5	187.5	456.0
Dawson Falls	207.0	283.0	531.5
Kahui Hut	n/a	220.5	366.0

It is important to note that the reason why the February 2004 event had a much more severe impact was because the overall rainfall received for the whole of the month, as opposed to just during the two-day flood event, was extreme and much higher than 2006 and 2015– see Table 2 below:

Table 2: February 2004 monthly rainfall and percentage of normal

Site	Feb 2004 Rainfall	Feb 2004 % of normal
North Egmont	1879.5	476%
Dawson Falls	1588.5	483%
Mangorei	517.5	450%
Wastewater	448.5	498%
Motunui	387	466%

Site	Feb 2004 Rainfall	Feb 2004 % of normal
Egmont Village	692	455%
Everett Park	654.1	550%
Inglewood	675.5	453%
Stratford	609	487%
Mangaehu (Toko)	502.5	493%
Kotare	619.5	534%
Kaka Rd	668.5	488%
Pohokura Saddle	605	488%
Stony	355	348%
Kapoaiaia	324.5	357%
Kaupokonui	290	500%
Duffys (Hawera)	233	388%
Patea	222	376%
Riminui	363.5	466%
Ngutuwera	313	460%
Midhirst	830	597%
Waitanguru	599.5	476%
	Minimum	348%
	Maximum	597%
	Mean	461%

The hydrograph and rainfall graphs for the Taranaki Regional Council recording stations are shown in Appendix II.

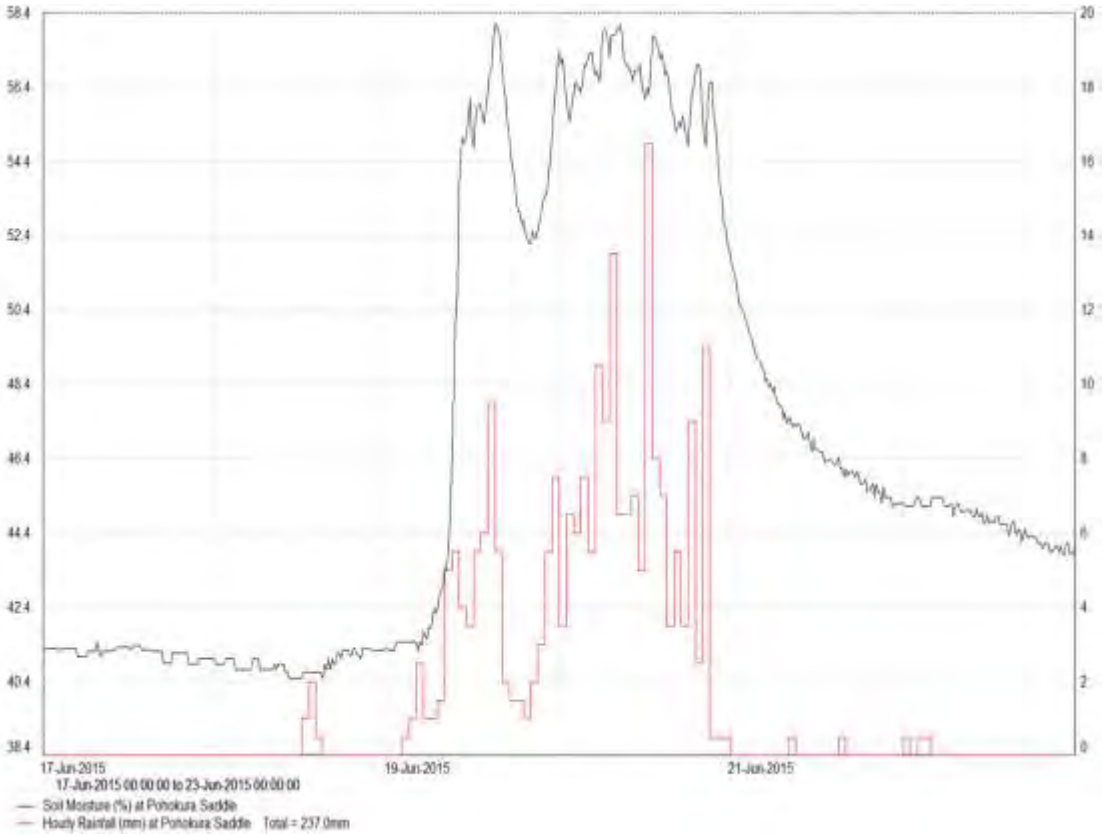
Table 3 Rainfall for May and June 2015

Rainfall for May and June 2015						
	May Rain days	May RF (mm)	% monthly normal	June Rain days	June RF (mm)	% monthly normal
Riminui	17	183	146%	19	307.5	226%
Ngutuwera	14	134.5	116%	19	261.1	209%
Charlies	N/A	N/A	N/A	25	303.0	171%
Moana Trig	21	201	125%	21	324.0	181%
Kaka Rd	15	255.0	130%	18	367.5	188%
Pohokura	17	256.0	152%	20	379	213%

Rainfall for May and June 2015						
	May Rain days	May RF (mm)	% monthly normal	June Rain days	June RF (mm)	% monthly normal
Stony	17	256.0	152%	20	379	213%
Waiwhakaiho	18	248.5	116%	26	371.5	157%
Manganui	17	202.5	109%	24	369.0	190%

6. Soil moisture levels

Soil moisture levels were not unusually high. We consider that this was because although moisture levels did respond to the high rainfall they fell reasonably well when the rain eased or stopped. However we note that rainfall was generally localised to the eastern hill country blocks and there are no soil moisture sensors in these locations.



The above graph shows a snap shot of the Rainfall vs the Soil Moisture at Pohokura. Soil moisture scale is on the left axis. (The maximum level that the soil moisture scale can reach is 60%).

7. Impacts of the June 2015 event - Waitotara

7.1 Flood levels

The Waitotara River peaked just after 4 pm on Saturday 20 June 2015 with 15.192m recorded as stage height at Riminui station, in the middle of the Waitotara catchment. This compared with 13.5m at the same site recorded in 2004 and 10.8 in July 2006.This was the highest water level recorded since the site was installed in 1993. Riminui recorded a total rainfall of 307.5mm (226% of normal) for the month of June, with 174 mm of that total falling over the 19-20 June period.

Despite the high levels of rain and river flow, the peak flood levels in the Waitotara Township were lower than those of February 2004. As in the 2006 event the mid-winter flood deposition could not be re-sown until the silt dried out sufficiently and the soil temperatures increased enough to enable germination. The continual high rainfall from June to the end of September made that difficult.

Three houses in the Township were issued with Section 124 notices under the Building Act by the South Taranaki District Council. They were initially uninhabited and as long as they remain uninhabited there is no health risk. If someone seeks to reside in them again, South Taranaki District Council officers will issue a 'notice to fix', either for repair or demolition. At least one landlord resides in Australia.

7.2 River management and flood information

7.2.1 Data restrictions

There were restrictions on the flood data available at the time of the event, beyond the 11.5m level recorded at 9am on Saturday 20 June, because telemetry communications ceased as a result of a satellite internet connection that failed due to a power outage. The TRC Whenuakura at Nicholson Rd recorder site was completely lost. The maximum height recorded was 10.494m, and BTW surveyed and estimated the water level height as 12.516m. The water level topped out at Patea at the McColls Bridge recorder at 12.166m. BTW surveyed and estimated the maximum height reached at this site to be 12.753m.

Whilst the telemetry failed, the recorder at the site continued to operate and recorded a peak of 15.192m. The estimated return period at Riminui was a 1-in- 37 year event. However this was based only on stage, and not corrected for flow or changes within the river system. The channel clearing works may have increased the rate of flow and at the same time, normal continuous river bank erosion worked to slow it down.

7.2.1.1 River level data

The topography of the Waitotara catchment makes it extremely difficult if not impossible to establish sites for river level recording, with telemetry capability, which are suitable for flood prediction purposes. In addition, the instability of the channel, and the lack of accessibility to reach both sides of the river and measure the flows safely and accurately, makes it difficult to establish accurate ratings. There are similar difficulties in finding a site to obtain flood gauging anywhere other than at the State Highway Bridge. The State Highway Bridge site is also affected by tides, so

although it is useful for measuring water levels, it is difficult to accurately measure flows.

Robust forecasting of flood levels requires analysis of the Riminui data, data on adjacent rainfall sites, and supporting information from tributary catchments upstream of SH 3.

7.2.1.2 River flow data

It should be noted that Riminui is not an official flow site because there is no easy way to measure flow there. Some recent gaugings have been done by kayak, using the M9 (acoustic Doppler current profiler (ADCP)), however this monitoring method is not safe or practical at higher flows. High-flow river monitoring requires the implementation of methods such as a slackline cableway.

7.2.2 Background to the river level and flow recording

The difficulty of obtaining river flow information in the Waitotara Catchment area led to an early decision by the Regional Council to depend upon rainfall data from an increased number of sites around the catchment. It has been possible to establish sites that can provide actual time data remotely and it is intended that over time, an information base can be developed to enable a level of prediction based on rainfall/runoff relationships, and consequent channel flows/river levels. A significant and sustained level of information is needed to provide accurate high-flow flood data and the required information is not yet available.

Investigations in the early 1990s also confirmed that the impact from the Moumahaki sub-catchment alone (which represents 20% of the total catchment) could be significant enough to cause flooding in the Waitotara Township. River management officers consider that high flows entering the confluence of the Moumahaki and Werewereonga streams (which both flow into the Waitotara River) may have been a factor in the recent flood event. Neither of these streams is monitored.

The Riminui recording site was originally established to provide an early warning mechanism for the Ngamatapouri School so that children could get home before floodwaters closed the road down to State Highway 3. Stretches of the Waitotara Valley Rd go under water around 7.5 metres especially around the school. The Riminui site was not intended as a device for primary warning, or prediction of flooding in the Township or flood plain, and Council officers do not consider that it has appropriate predictive capacity.

7.3 How the scheme held up

The value of Taranaki Regional Council's channel clearing programme on the Waitotara River has been demonstrated by successive flood events. It is evident that the channel-clearing work has increased the flood-carrying capacity of the channel and this resulted in less flooding in the Township and the low-lying river flats. Patches of lateral erosion do require attention to protect assets but the economics and effectiveness of such work must be carefully considered. River management officers

do not consider that the extensive plantings along the riverbank should be re-established.

Western Diversion
The post-2004 diversion put in place to reduce the volume of runoff entering the Waitotara township appeared to have performed to a limited degree. Siltation in the lower reaches had however impacted on its effectiveness. The exit of the drain to the river had never had a satisfactory alignment and had no floodgate to prevent backflow from the river. Any diversion to a discharge point further downstream will have similar limitations. High river levels will always prevent free discharge and cause upstream ponding and overflow into the village. Some limited banking and drain improvement may assist in smaller events.

Natural Channel
The channel that naturally carried runoff from the hills to the west of the Township was the historic cause of inundation of the village, by backflow from the Waitotara River, until it was piped and blocked (with a flapgate) post-2006. The channel also carried runoff that is now diverted by the Western Diversion described above. The control can only provide relief while the river levels are below the low areas within the Township. Piped stormwater systems within the township discharging to that channel also become ineffective when their outlets are submerged by floodwaters.

Officers are aware that silt had been placed in the channel and/or on the vacant section upstream of the outlet. This action had removed a ponding area, albeit a small one, and will increase flooding upstream when the outlet is closed by high river levels. Houses affected in previous floods flooded again in 2015. Council officers have discussed river management issues within the Township with officers from the South Taranaki District Council and these will be followed up to improve the effectiveness of the Western Diversion and gated outlet.

Channel Erosion
Council officers inspected the channel upstream of the river from the Limestone Bridge to the Riminui water level recorder and including the Moumahaki Stream up to the confluence with the Weraweraonga Stream. Extensive slumping of channel slopes occurred. As most of the slumped material is generally in-situ, officers consider it was caused by the rapid draw down in the saturated silts after the floodwaters dropped. Lateral erosion occurred on bends and where flow was diverted by trees or flood debris.

The alignment of the channel at the Limestone Bridge was badly affected and although the bridge has been repaired and the riverbank stabilized, the South Taranaki District Council has investigated a new access route to Beach Road and the Wai-inu Beach settlement.

Siltation
Based on experience and observation of the area following the event, the siltation in the lower floodplain of the Moumahaki Stream (between its confluence and the confluence of the Werewereonga Stream with the Waitotara River), was the most severe that Council officers have seen since 1990. It was apparent that the Werewereonga Stream has been the greatest contributor to the siltation deposits,

possibly by way of drainage from the Lake Mangawhio breach, (an event which was unknown to Council officers at initial inspection – see GNS report section 2).

Disposal of silt needs to be carefully managed to avoid adverse effects on adjoining and surrounding properties and re-grassing of silt deposited on river flats is a significant physical and financial issue. It is possible that the provision of more waste bins, for the disposal of flood-damaged property and flood debris, may have been useful for occupants of the Township.

Erosion and landslides
The channel bank slumping on the Waitotara River occurred as the water levels dropped and therefore was not the source of silt deposited on the elevated flood plains. Observations of the hill country downstream of Riminui station showed only a relatively light level of landslide damage. Tributary channels also failed to show signs of significant discharges of floodwaters or debris. As noted by an upper catchment landholder, the locals classed this event as a "Bush Flood" – ie, generated by discharges centred in the top third of the catchment. Evidence of debris and deposition closer to Riminui would support this view.

7.4 Mitigation of adverse flooding effects

Warning system
Investigations have determined that the existing flood warning system did not work as well as expected. The Council's hydrology team have amended its procedures since then to take account of the outcome of those investigations. Council officers suggest that it would be useful to capitalise on the extensive river knowledge held by some longstanding inhabitants of the area during a future event.

Maintenance of channel capacity
The most important action required in order to minimise damage from inundation by floodwaters is to maintain channel capacity and the Council's flood management work has succeeded in this goal. Where it is not possible to avoid the flooding then the removal of the threatened assets or infrastructure from the risk is the only other practical, if not politically feasible, option.

Protection of State Highway 3
The Moumahaki convergence - where the Moumahakai and Werewereonga converge with the Waitotara River - is only 5 km upstream from State Highway 3. Rainfall centred over that catchment, as it was during this event, represents a significant risk for protection of the highway. Council officers consider that it would be useful to install additional rain and river gauges in this area to investigate how much of an impact the tributaries have on flooding in the Township and lower valley area, and to provide greater warning of floods that would affect State Highway 3.

Protection of the Kaipo Marae
A building on the lower part of the Kaipo Marae site was partly flooded. Residents of the marae are considering the building of a protective contoured bank in the middle of the site as recommended by river management officers.

Maintenance of stormwater and culvert systems
Monitoring and management of the downstream stormwater and culvert structures is the District Council's responsibility and the Regional Council will need to be assured that South Taranaki District Council is undertaking this work.

Financial considerations
It is noted that the cost of additional warning systems could be anywhere from $30,000-$50,000. This cost could perhaps be covered by financial assistance available from central Government. Funding could also be used to improve the data collection system so as to enhance warning capacity. Projects could include a rainfall and run-off relationship study and additional data collection instruments (see above).

7.5 Scheme Review

Since the completion of the major channel clearing works in 2012/13, scheme works have been confined to minor clearing and maintenance of the cleared river channel to prevent willow re-infestation and erosion at key sites. The June 2015 flood event, however, caused significant erosion at a small number of sites, severely affected the channel alignment at one site in particular, and caused congestion problems at various locations along the river. It is therefore planned that a comprehensive review of the scheme will be undertaken to determine the future direction of the scheme and to ensure that it meets the needs of the Waitotara Catchment community. The review will be completed by December 2016.

Channel Alignment problems
At the first significant bend in the Waitotara River, downstream of SH3, extensive erosion of the river bank occurred. This has significantly shortened the river channel and consequently steepened the grade of the channel. The result of this is that the channel upstream will degrade, resulting in the river banks becoming more vulnerable to slumping and erosion. To prevent further loss of channel length extensive planting has been undertaken to reduce the likelihood of further erosion of the bend. This planting has been subsidised by the Scheme. A large build-up of flood debris has occurred in the channel downstream of the bend that is affecting the channel alignment. The build-up is being monitored but at date of this report there is no plan to remove it.

Slumped Tree control
The extensive slumping that has occurred along the riverbanks has resulted in many large trees falling or partly falling into the river channel. These will need to be destroyed by aerial spraying in 2016/17 to avoid them causing significant channel blockages.

7.6 Recommendations

That the Taranaki Regional Council –

- Undertakes erosion control works to maintain a stable river alignment and to assist with the protection of public infrastructure;
- Works closely with the South Taranaki District Council in respect of the stormwater infrastructure;

- Considers installing additional rain and river gauges in the Paparangi catchment and the Waitotara catchment convergence area (Moumahaki and/or Werewereonga), to
    - investigate how much of an impact the tributaries have on flooding in the Township and lower valley area, and
    - to provide greater warning of floods that would affect State Highway 3;
- Applies to central government for funding to undertake additional warning system improvements, particularly in relation to the safety at the State Highway 3 bridge; and
- Considers instituting a high-flow river monitoring programme to improve predictive and warning capacity.

Two initial recommendations have already been implemented:

- A solar-powered system has been instituted for the Riminui gauge; and
- A water-level monitoring site has been installed at the SH3 bridge.

8. Impacts of the June 2015 event - Waitara

8.1 Flood levels

On the weekend of 19-20 June, the Bertrand Road flow recording site on the river recorded the highest June flow on record, which was calculated to be a 1 in 16 year event. This is the second highest flow since the site was installed back in 1980–only the March 1990 flood was bigger. At the Purangi site, upstream of Bertrand Road (6-10hr flood travel time), the flow recorded was the highest since the recorder was installed in 1999. This was calculated as a 1 in 28 year event. The Manganui River at Everett Park (which is mountain-fed and flows into the Waitara River), also recorded a new June high-flow record, but this was only a 1 in 4 year event. These flow levels demonstrate that rain on the mountain had far less effect on river flows than had been the case in previous events.

Recorded Flows (m^3/sec: cumecs)				
River and site	**Maximum - June 2015**	**Minimum - June 2015**	**Mean - June 2015**	**Records began**
Waitara at Bertrand Rd	1669.863	16.427	152.427	Feb 80
Manganui at Everett Park	848.108	6.674	45.722	Jun 91

8.2 How the Flood Protection Scheme held up

The formal Waitara River Flood Protection Scheme extends downstream from SH3. Various flood protection work has occurred on the River since the 1960s and Waitara has had formal flood protection since 1972.[18] During 2010 it was decided to upgrade the level of flood protection to accommodate a Climate Change 1%AEP Standard by raising the height of defences to 3840 cumecs capacity. Although incomplete, the majority of this upgrade was in place at the time of the June event and worked well.

Although the June 2015 event is one of the higher flow events since recording began, the peak flow was about 400 cumecs less than that of the 1990 event, which was contained within the stopbank system existing at that time. The June 2015 event had less significant effects on the lower river floodplain than the 1990 event. Floodwater spilt from the channel upstream of SH3 to cover parts of the Karaka Flats (the extent of this inundation is influenced by the SH3 embankment restricting natural berm flow – since 1983/4) and spread as backwater up the Mangahinau flats to the highway.

Direct comparisons cannot be made in the realigned reach directly downstream of the SH3 bridge where there was heavy siltation, however substantial channel capacity remained even though the peak flow was about 1 – 2 metres above the toe of the stopbank. Floodwaters covered the berm in Toohill Park and caused some damage to improvements. The 1992 realignment and associated groyne sets works functioned to design and performed well.

[18] The full history of the Scheme and its precedent schemes is contained in a report by the Taranaki Regional Council: the *Lower Waitara River Flood Protection Scheme, May 2012*.

Downstream of the Town Bridge about 1.5 metres of freeboard remained on the older bank defences and about double that on the upgraded stopbanks.

A low level of minor damage to facilities occurred within the floodway between the SH3 and Town Bridges and repairs are being addressed. The floodable areas of the township were protected from river flooding and relatively small localised areas were affected by surface water ponding.

8.2.1 Surface water flooding within Waitara Township

Run off/surface water from within the urban area is normally discharged into the Waitara River through two pumping stations and a number of gravity flow culverts which are mostly gated by floodgates. The purpose of the floodgates is to close and prevent the intrusion of river water during high flow events. Mechanical pumps can operate regardless of river level but are subject to continued power supply.

Unfortunately floodgates can malfunction or may not close properly to seal the culvert and prevent river water entry. When the floodgates close, no discharge to the river can occur and once the piped system is full, run off remains, or 'ponds', on the surface of low-lying areas. This accumulates until the culverts are once again able to discharge when the river level has fallen. If the floodgate does not close, river water flows back up the system to its own level, compounding surface flooding issues.

No free flowing river floodwater has entered the township since the construction of the stopbank system in 1973. However Council officers are aware that a limited amount of water has entered the township on a few occasions, during high river flow events, due to floodgate malfunctions. These occurrences have been masked by the ponding of surface water caused by malfunctioning floodgates.

Improvements have been made to the stormwater system within lower-lying areas in recent years to increase efficiency but where gravity outfall to the river continues the issues outlined above will remain.

8.3 Flood monitoring in the Waitara Catchment

Whilst there are a number of river level recording sites in the Waitara Catchment, the accuracy of the gaugings that relate level to flow is not high.

8.4 Recommendations

Improved gauging sites are likely to be required to ensure that the Council is able to provide accurate and timely flood warnings to the Waitara community. It is recommended that an investigation be undertaken to determine what is required to ensure accurate and timely flood warning provision. It is recommended that this investigation be undertaken with some urgency.

9. Impacts of the June 2015 event – Eastern Hill Country

9.1 Degree and severity of impact

The farms either side of, and around, Strathmore Saddle incurred severe erosion and several roads (Brewer Road, Soldiers Road, Ohura Road, Mangaehu and Upper Mangaehu Road) remained unrepaired for some time due to repeating winter rains preventing access. Wet weather hampered general recovery in the area. Some farmers eventually cleared routes across their farm but silt remained on flats for some time. It took time for many broken culverts to be cleared and access ways repaired. Feed had to be imported and Rural Support Trust outreach was constant in this area.

A large amount of logging was taking place in the Waikere Road area (on Roger Dickie's forest). The Ngutuwera, Lakes and Waikere roads are located in the valley north-east of the Waitotara Valley. A significant level of silt remained on farms on the Ngutuwera, Moumahaki, Mangawhio, 8 block and Weraweraonga roads and this prevented re-sowing of pasture for some time. The continuing wet weather also prevented farmers in Lakes Road from beginning repairs and this situation was compounded by the large amount of silt left on their farms by roading contractors. An extensive amount of boundary, and riparian, fencing was damaged along with fences around cattle and sheep yards.

Rural Support Trust workers reported that farmer frustration levels in the Eastern Hill Country were moderate to high. Farmers were particularly angry about the damage caused to bridges and along rivers by forestry slash. The ongoing impact of falling trees and slash travelling down the river was considerable. Farmers have not only had to pay for power line and fence repairs but for bridge abutments damaged by slash floating down the river. This last form of damage is the most costly.

10. Impacts of the June 2015 event – Uruti, North Taranaki

10.1 Degree and severity of erosion

Thirty-two farms in North Taranaki were damaged by the June storm event. Fourteen of the 32 had reported moderate to severe damage, with access ways covered by erosion, silt covering pasture and stock losses. One farmer had severe damage due to forestry slash hitting a bridge over the Mimitangiatua River and this bridge was the only access to the farm and home. He made temporary repairs to allow pedestrian and animal traffic and obtained a repair of the sides. A claim was made for further funding to complete the repairs.

The worst damage in the wider Uruti area occurred in the Mangahia and lower Moki Road. One family will remain evacuated for some time as there was a large slip beside the home and the septic tanks fell half way down this slip. Initially the occupiers were living in a caravan in Waitara as they are unable to leave the area. The insurers (FMG) and EQC indicated that the repair timeframe may be up to 12 months or more.

The erosion damage is lighter further east however the heavy metal surface put onto Kiwi Road made travel uncomfortable for farmers in the area.

11. Cost of the 2015 Flood Event

As noted earlier in this report, the Ministry for Primary Industries estimated the total on-farm cost of the event in the Taranaki and Horizons regions at approximately $70 million. The cost for local district councils reached approximately $17 million as follows:

Council	Cost (millions)
South Taranaki District Council	$9.5
New Plymouth District Council	$4.62
Stratford District Council	$3

11.1 South Taranaki District Council

The costs for the South Taranaki District Council included an approximate amount of $1.4m to either completely rebuild the Limeworks Bridge on Wai-inu Beach Rd, or to build an alternate route to reach the Wai-inu Beach settlement.

It is hoped that all repairs can be completed over a one year period, however the shortage of available contractors creates the risk of a longer completion time.

11.2 New Plymouth District Council

In the New Plymouth district the storm damage was mainly confined to the Inglewood and Uruti valley areas but the costs for all known slips and bridge repairs have been submitted to the NZ Transport Agency for funding approval.

New Plymouth District Council will use funds in its Emergency Reinstatement, and Roading Emergency Reinstatement budgets, as well as the Disaster Recovery Fund. Any outstanding balance may be added to the rates cost in the next annual plan.

11.3 Stratford District Council

Clean-up and general reinstatement of roads, including removing over-slips, clearing blocked culverts, re-metalling roads and clearing water tables has cost approximately $1.3 m. A further $1.7m will be spent on capital works for things such as new retaining walls and culverts, and major earthworks where road width has been reduced or the whole road has been destroyed.

The council expected the work would be completed by February 2016.

11.4 Taranaki CDEM Group

The Taranaki CDEM Group has recently finalised the payment of all costs associated with the event. Costs incurred by the District Councils for their CDEM response and recovery work may be covered by government funding.

12. Taranaki Regional Council

12.1 Storm assistance package

In August 2015 the Regional Council approved a $395,000 storm assistance package to help Taranaki farmers recover from June's extreme weather. Farmers that applied to the Regional Council received assistance to reinstate or reduce damage to work that was carried out under Regional Council programmes. Assistance available to farmers under the recovery package included:

- Supply of replacement riparian plants for riparian plan holders
- Assistance with riparian planting
- Supply of poplar poles and protective sleeves for erosion control and soil conservation
- Assistance with delivery and planting of poplar poles
- Replacement of damaged fencing originally completed under the South Taranaki Regional Erosion Support Scheme (STRESS)
- Supply of grass seed for re-grassing in spring.

Details of the assessment criteria and implementation framework for the package are contained in Appendix V.

13. Central government and other assistance

13.1 Ministries for Primary Industries and Civil Defence

Having declared the emergency a medium-scale adverse event, the Ministry for Primary Industries initially provided $100,000 to local Rural Support Trusts to support the farming community, and this was followed by a further sum of $145,000. The Ministry has also provided $8.8 million in funding grants over four years to help regional councils deal with hill country erosion.

The Ministry for Primary Industries and the Ministry for Civil Defence & Emergency Management jointly provided an additional $2.6 million of Government support for all three regions affected by the storm (Taranaki/Wanganui/Manawatu). This sum included $1.28 million to repair rural infrastructure.

13.2 Taranaki Disaster Relief Fund Board

The Taranaki Disaster Relief Fund Board is made up of the three District Mayors and the Chair of the Taranaki Regional Council and seeks to help local people affected by a disaster such as the June 2015 heavy flooding and storm damage. The fund is focused around hardship and uninsured losses and is a way to acknowledge the impact families are experiencing. The grants are capped at $2,000 and applications were decided on a case by case basis.

In October 2015 Taranaki was allocated 32.5% of the $1.28 million infrastructure fund– $416,000– and the Taranaki Regional Council, Horizons Regional Council and the Ministry for Primary Industries agreed on uniform criteria to govern its distribution. These included:

- Grants were for repairs to uninsurable items only, such as fences, tracks and dams, the re-establishment of pasture, crops and forestry, and the clean-up of silt and debris.
- Priority was given to roadside boundary fencing, access tracks and clearing silted pastures.
- Funds were targeted to farms with the most severe damage to productive capacity or infrastructure.
- Farmers needed to contribute at least 50% of the cost of the work.
- Applications were for a minimum of $25,000 damage and grants were capped at $100,000 for any one farm.

Government criteria for allocation of funding for rural infrastructure repair and a template funding application form are attached as Appendix VI.

13.3 Enhanced Task Force Green

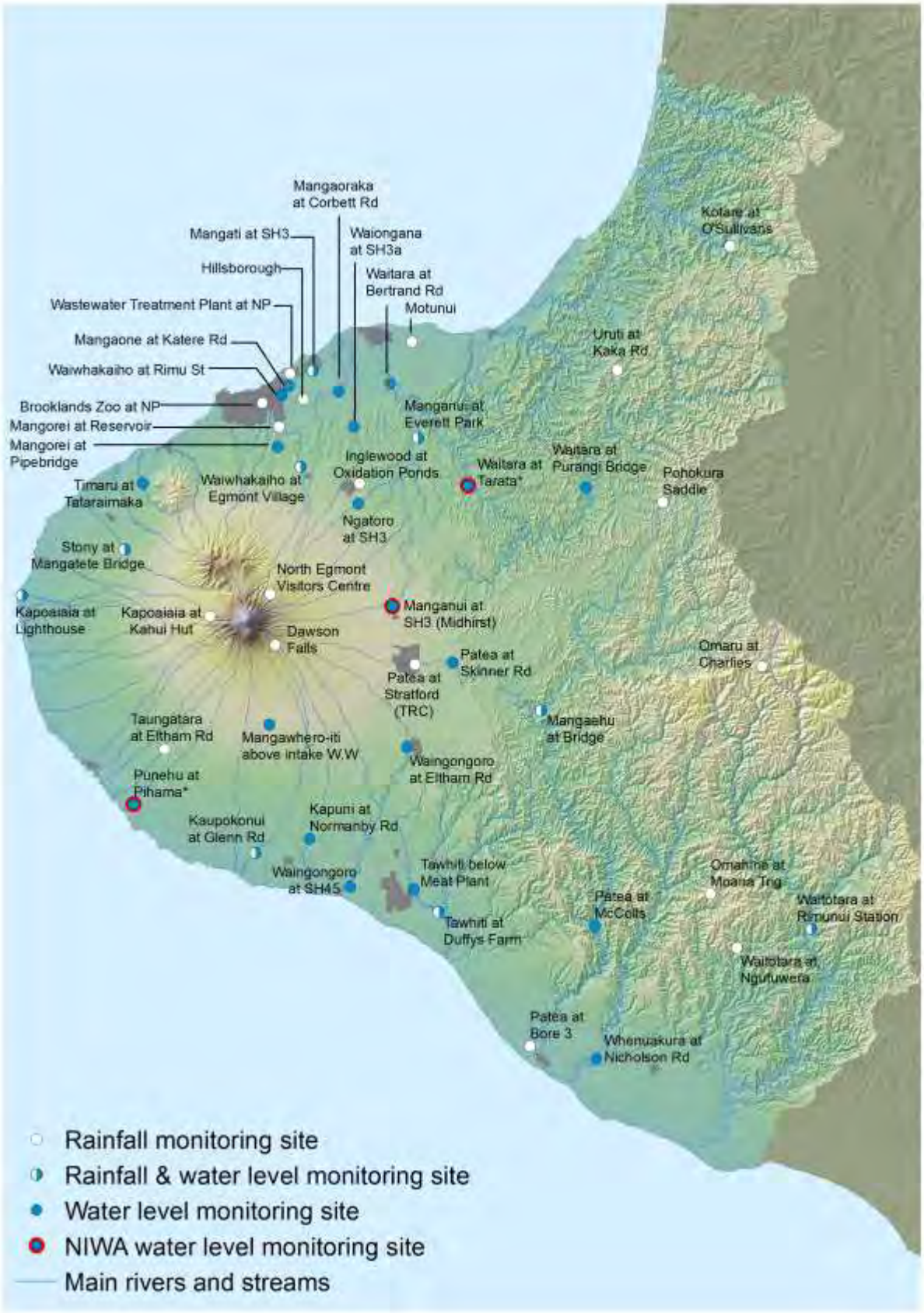
The Ministry of Social Development initially provided $250,000 of funding for Enhanced Task Force Green work and this was later increased to $500,000. Enhanced

Task Force Green is a temporary employment programme run through Work and Income. Enhanced Task Force Green teams are made available to assist with clean-up activities such as fence clearance and repair, and tree and debris removal on farms, Marae, orchards, parks and reserves.

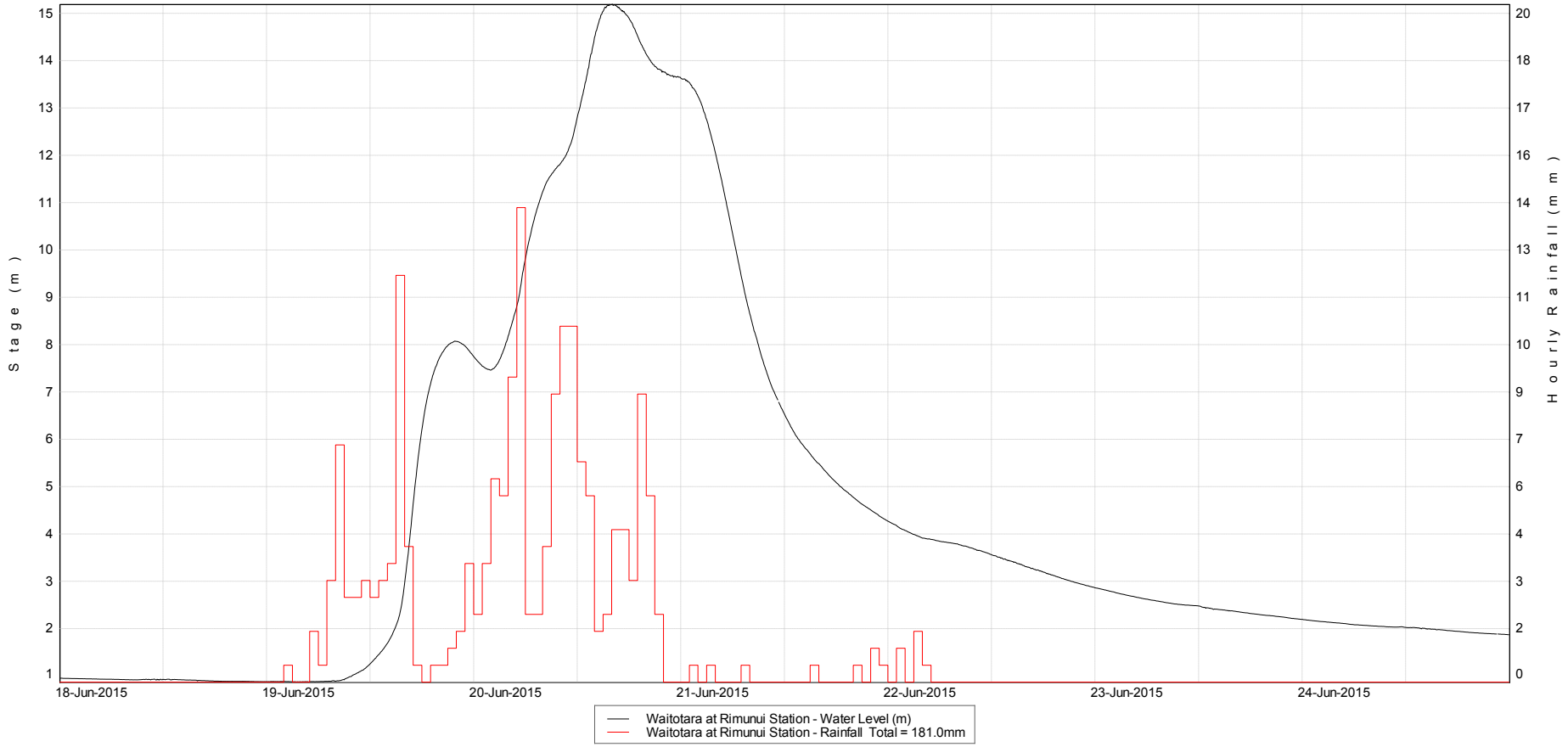
One Enhanced Task Force Green crew of six people, supervised by an employee of South Taranaki District Council, worked within the South Taranaki hill country after completing clean-up work in the Waitotara Township. This contract was eventually extended to 16 weeks.

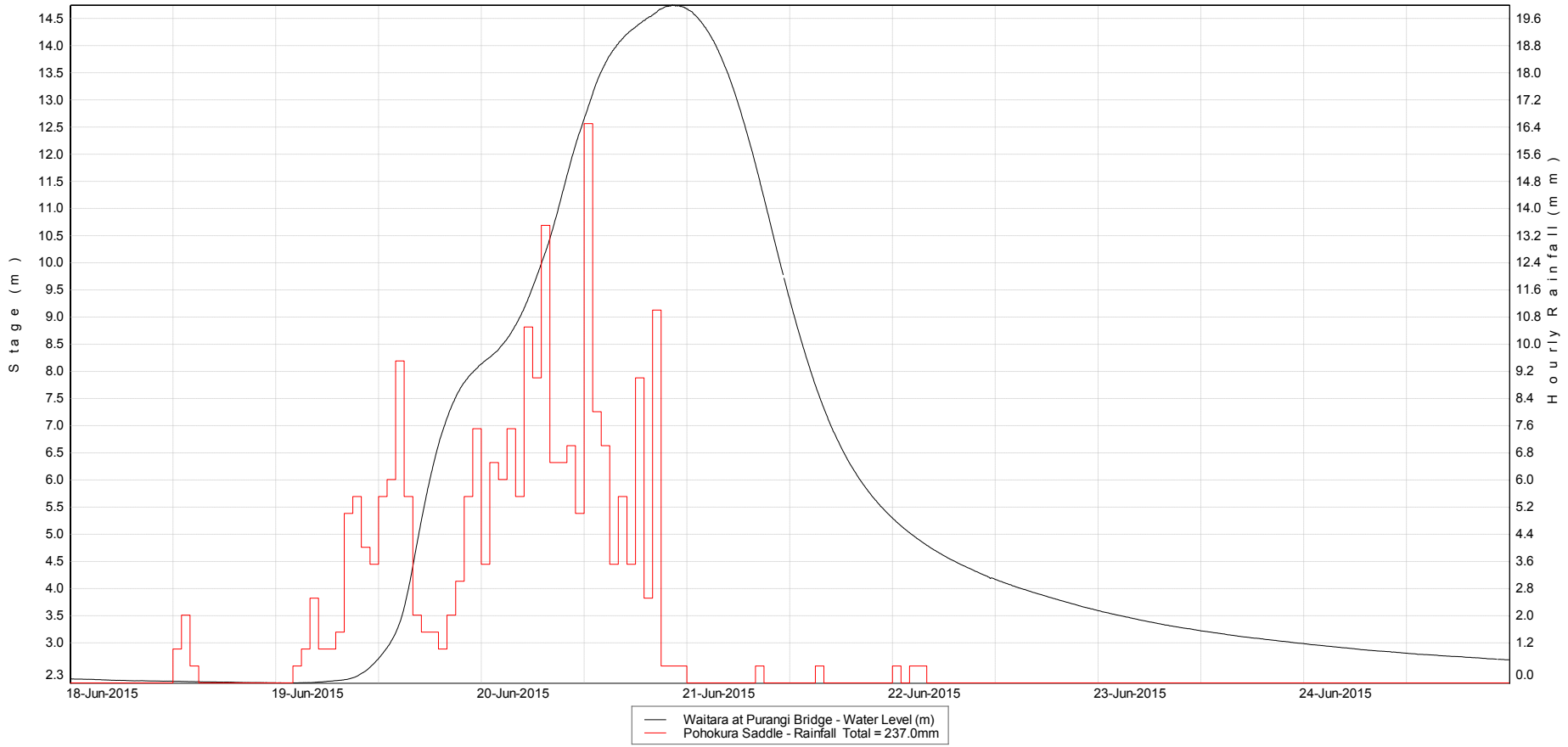
A further short extension to this work was granted by the Ministry of Social Development for work to be undertaken in North Taranaki and New Plymouth District Council employed a co-ordinator for this work.

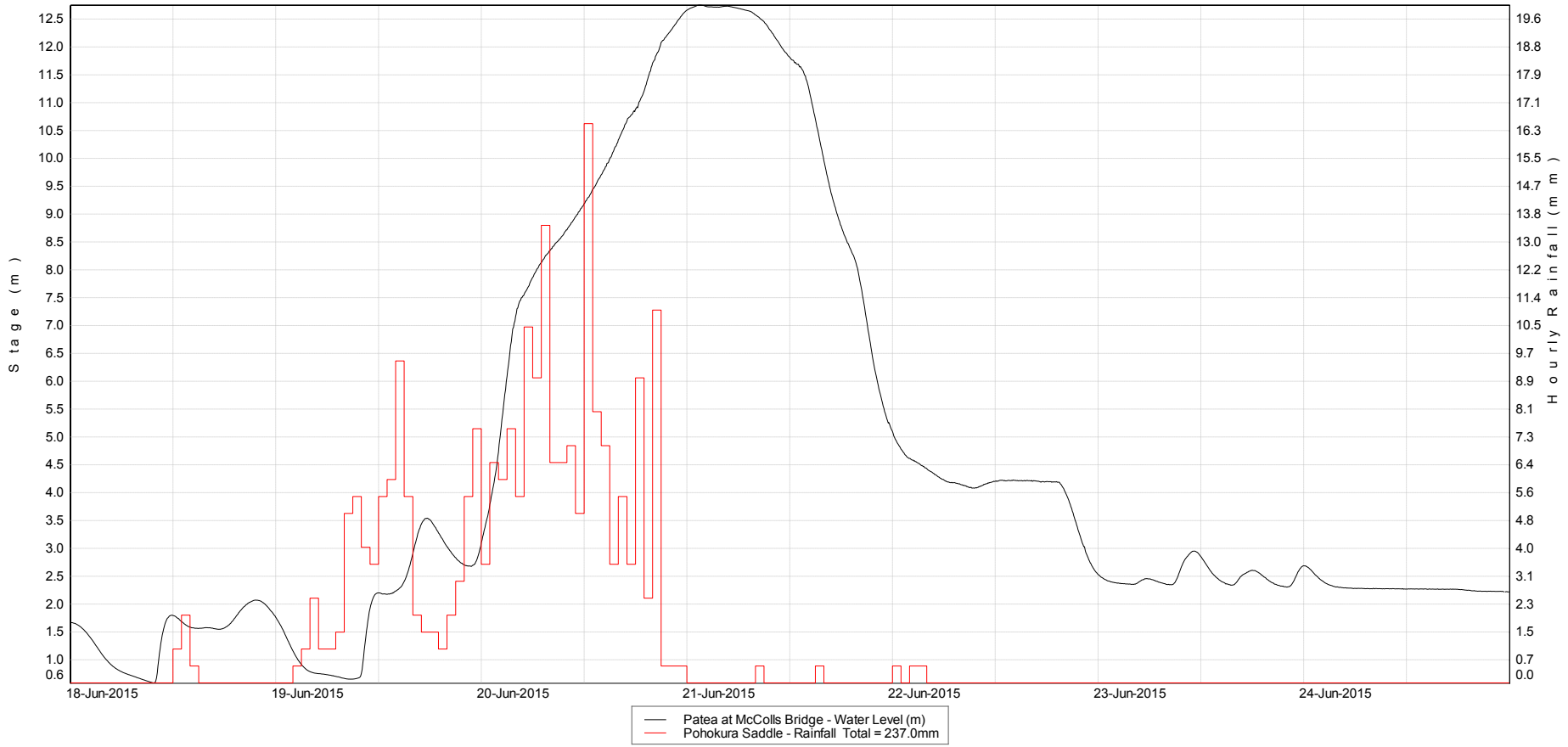
Appendix I
Map of telemetered hydrology sites

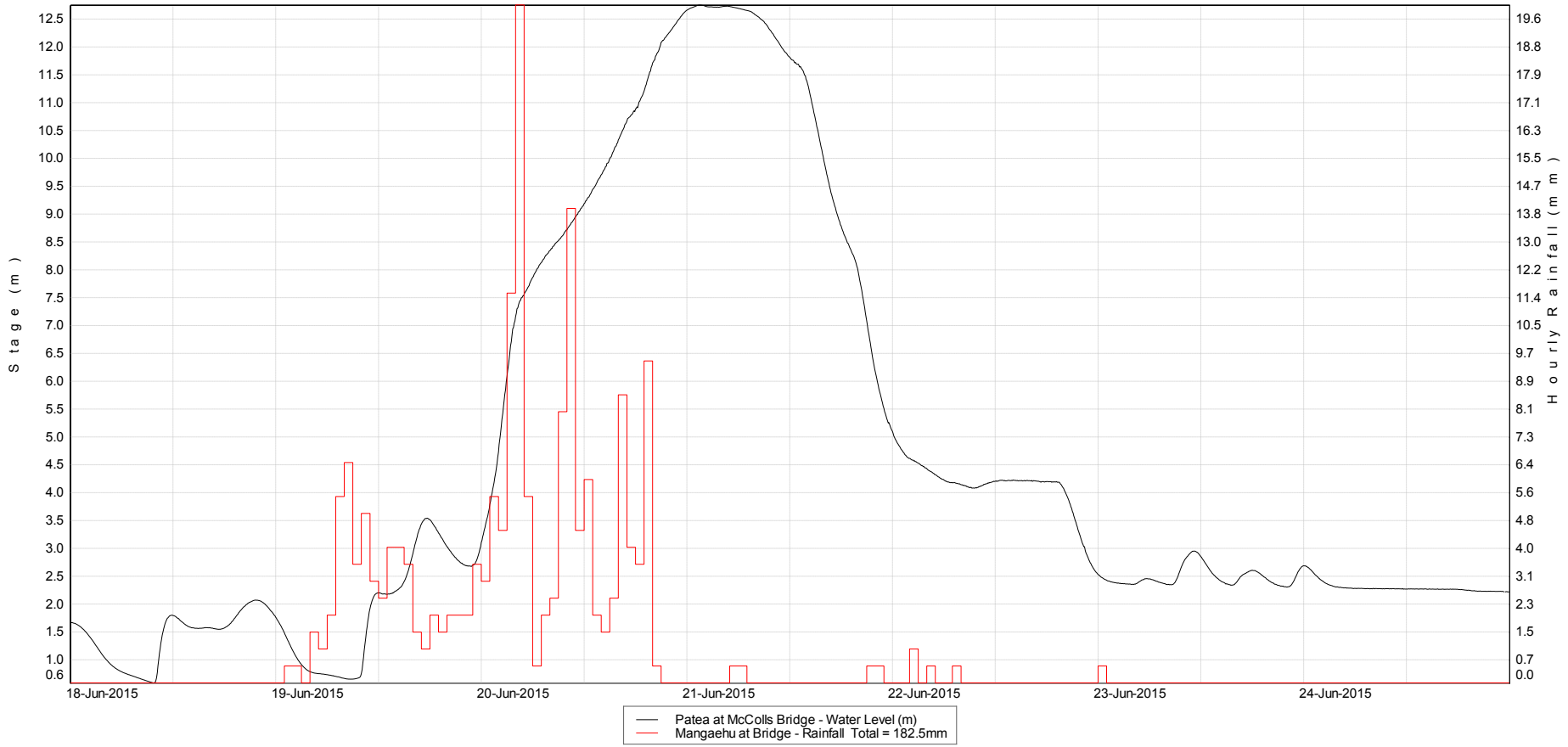

Mangaoraka at Corbett Rd
Mangati at SH3
Waiongana at SH3a
Hillsborough
Waitara at Bertrand Rd
Wastewater Treatment Plant at NP
Motunui
Mangaone at Katere Rd
Waiwhakaiho at Rimu St
Brooklands Zoo at NP
Mangorei at Reservoir
Mangorei at Pipebridge
Manganui at Everett Park
Inglewood at Oxidation Ponds
Waitara at Tarata*
Waitara at Purangi Bridge
Pohokura Saddle
Timaru at Tataraimaka
Waiwhakaiho at Egmont Village
Ngatoro at SH3
Stony at Mangatete Bridge
North Egmont Visitors Centre
Kapoaiaia at Lighthouse
Kapoaiaia at Kahui Hut
Manganui at SH3 (Midhirst)
Dawson Falls
Patea at Skinner Rd
Patea at Stratford (TRC)
Taungatara at Eltham Rd
Mangawhero-iti above intake W.W
Mangaehu at Bridge
Waingongoro at Eltham Rd
Punehu at Pihama*
Kaupokonui at Glenn Rd
Kapuni at Normanby Rd
Waingongoro at SH45
Tawhiti below Meat Plant
Tawhiti at Duffys Farm
Patea at McColls
Patea at Bore 3
Whenuakura at Nicholson Rd
Kotare at O'Sullivans
Uruti at Kaka Rd
Omaru at Charles
Omahine at Moana Trig
Waitotara at Rimunui Station
Waitotara at Ngutuwera
Rainfall monitoring site
Rainfall & water level monitoring site
Water level monitoring site
NIWA water level monitoring site
Main rivers and streams

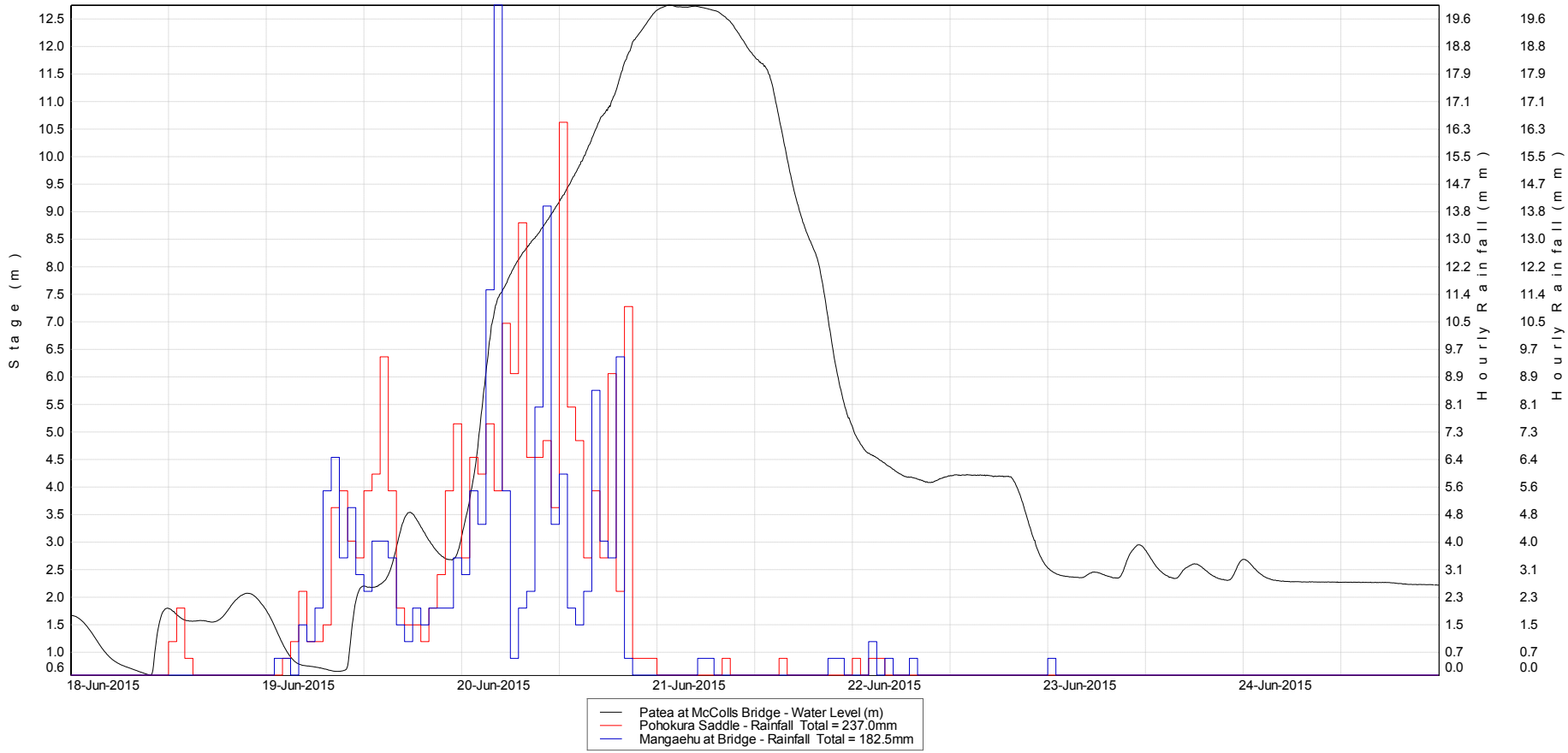
Appendix II
Hydrograph and rainfall records

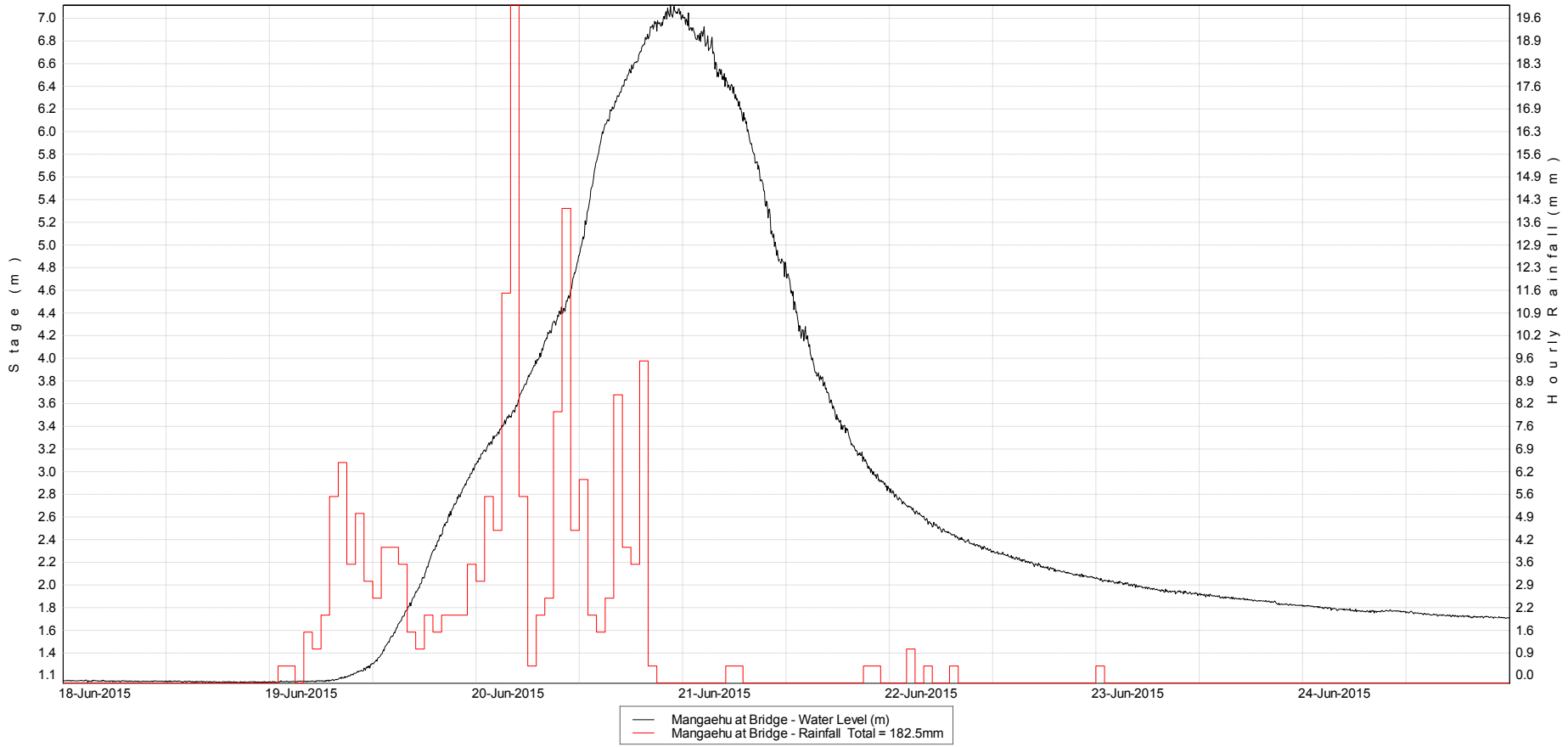

Stage (m)
Hourly Rainfall (mm)
18-Jun-2015
19-Jun-2015
20-Jun-2015
21-Jun-2015
22-Jun-2015
23-Jun-2015
24-Jun-2015
Waitotara at Rimunui Station - Water Level (m)
Waitotara at Rimunui Station - Rainfall Total = 181.0mm

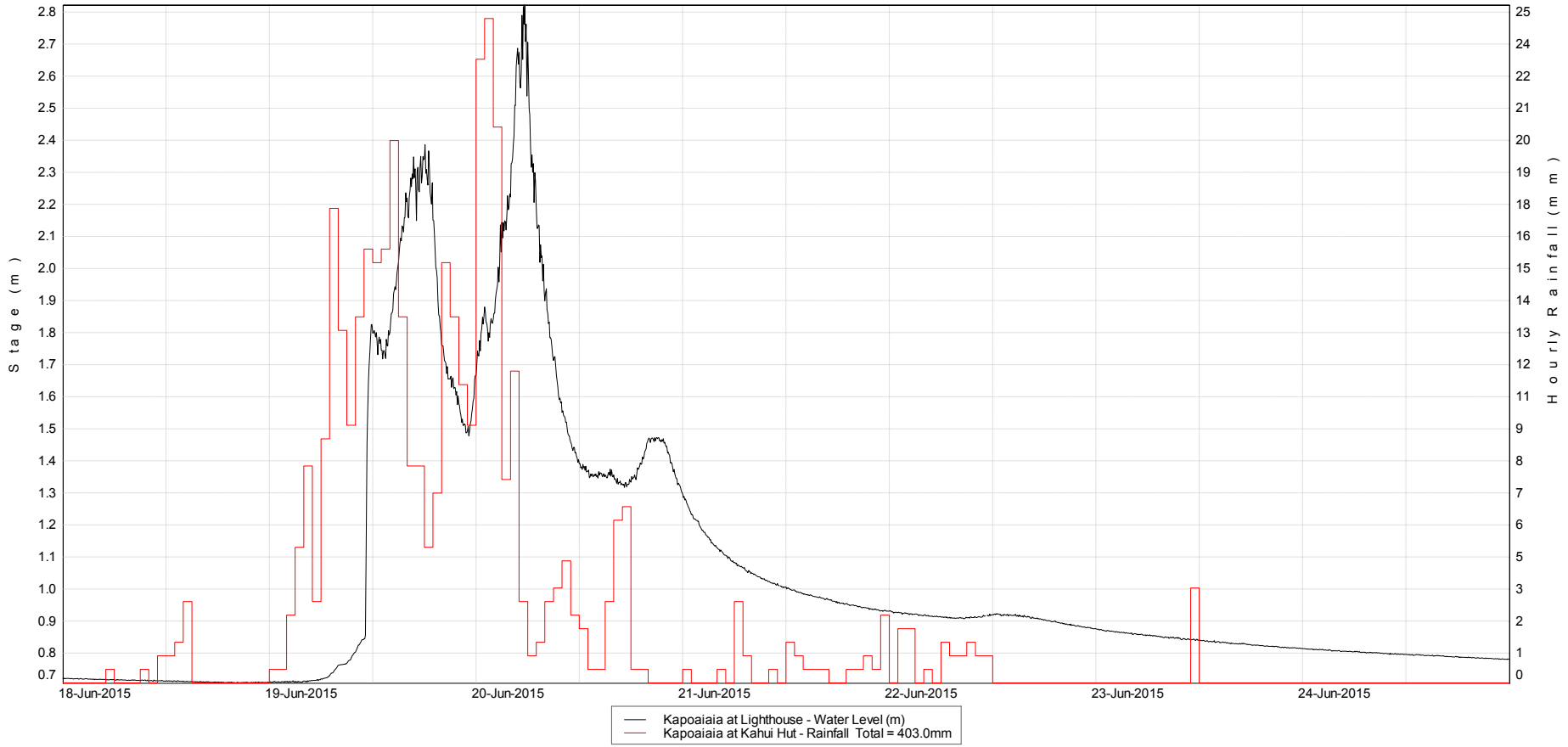

Stage (m)
Hourly Rainfall (mm)
14.5
14.0
13.5
13.0
12.5
12.0
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.3
19.6
18.8
18.0
17.2
16.4
15.6
14.8
14.0
13.2
12.4
11.6
10.8
10.0
9.2
8.4
7.6
6.8
6.0
5.2
4.4
3.6
2.8
2.0
1.2
0.0
18-Jun-2015
19-Jun-2015
20-Jun-2015
21-Jun-2015
22-Jun-2015
23-Jun-2015
24-Jun-2015
Waitara at Purangi Bridge - Water Level (m)
Pohokura Saddle - Rainfall Total = 237.0mm


Stage (m)
Hourly Rainfall (mm)
12.5
12.0
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.6
19.6
18.8
17.9
17.1
16.3
15.5
14.7
13.8
13.0
12.2
11.4
10.5
9.7
8.9
8.1
7.3
6.4
5.6
4.8
4.0
3.1
2.3
1.5
0.7
0.0
18-Jun-2015
19-Jun-2015
20-Jun-2015
21-Jun-2015
22-Jun-2015
23-Jun-2015
24-Jun-2015
Patea at McColls Bridge - Water Level (m)
Pohokura Saddle - Rainfall Total = 237.0mm

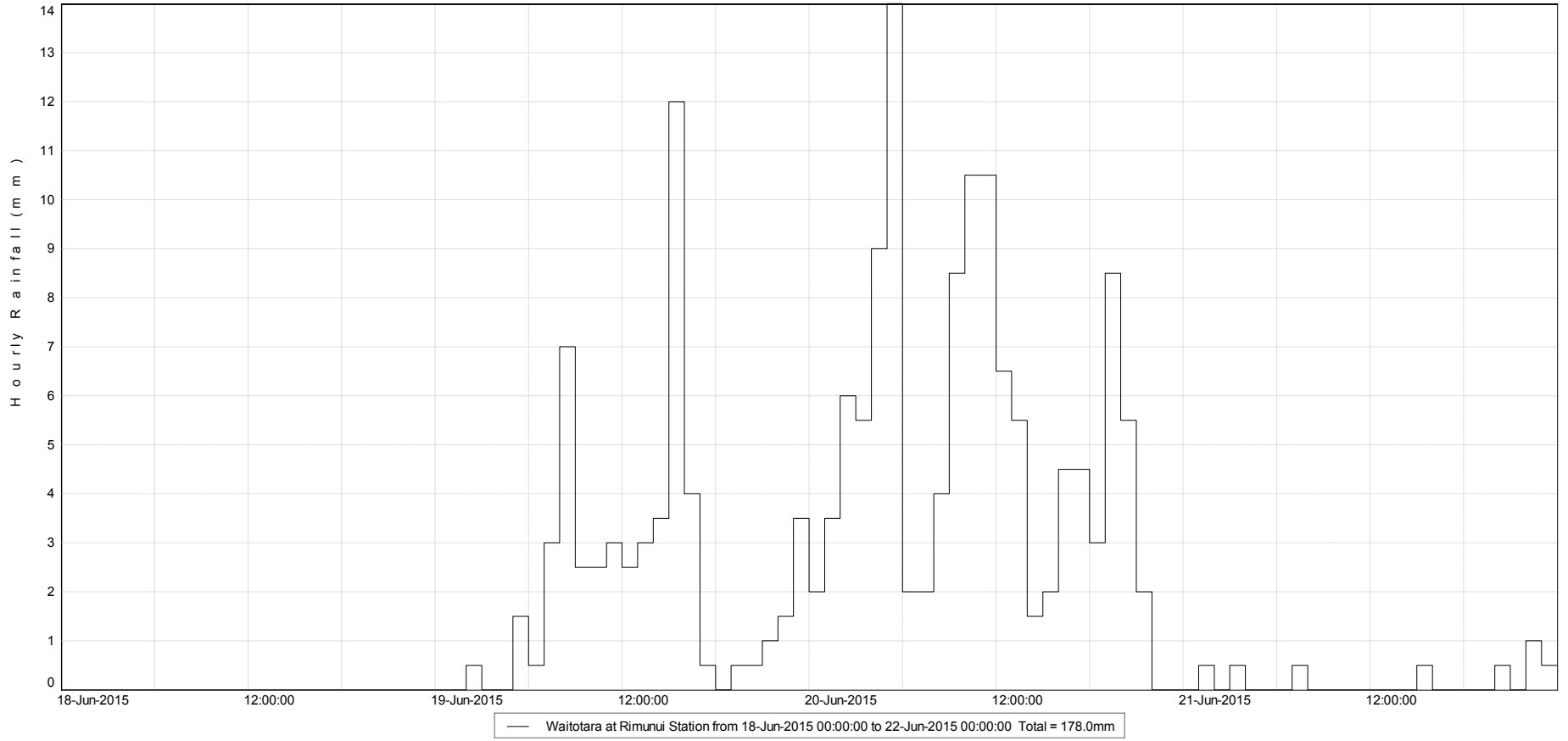

Stage (m)
Hourly Rainfall (mm)
12.5
12.0
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.6
19.6
18.8
17.9
17.1
16.3
15.5
14.7
13.8
13.0
12.2
11.4
10.5
9.7
8.9
8.1
7.3
6.4
5.6
4.8
4.0
3.1
2.3
1.5
0.7
0.0
18-Jun-2015
19-Jun-2015
20-Jun-2015
21-Jun-2015
22-Jun-2015
23-Jun-2015
24-Jun-2015
Patea at McColls Bridge - Water Level (m)
Mangaehu at Bridge - Rainfall Total = 182.5mm

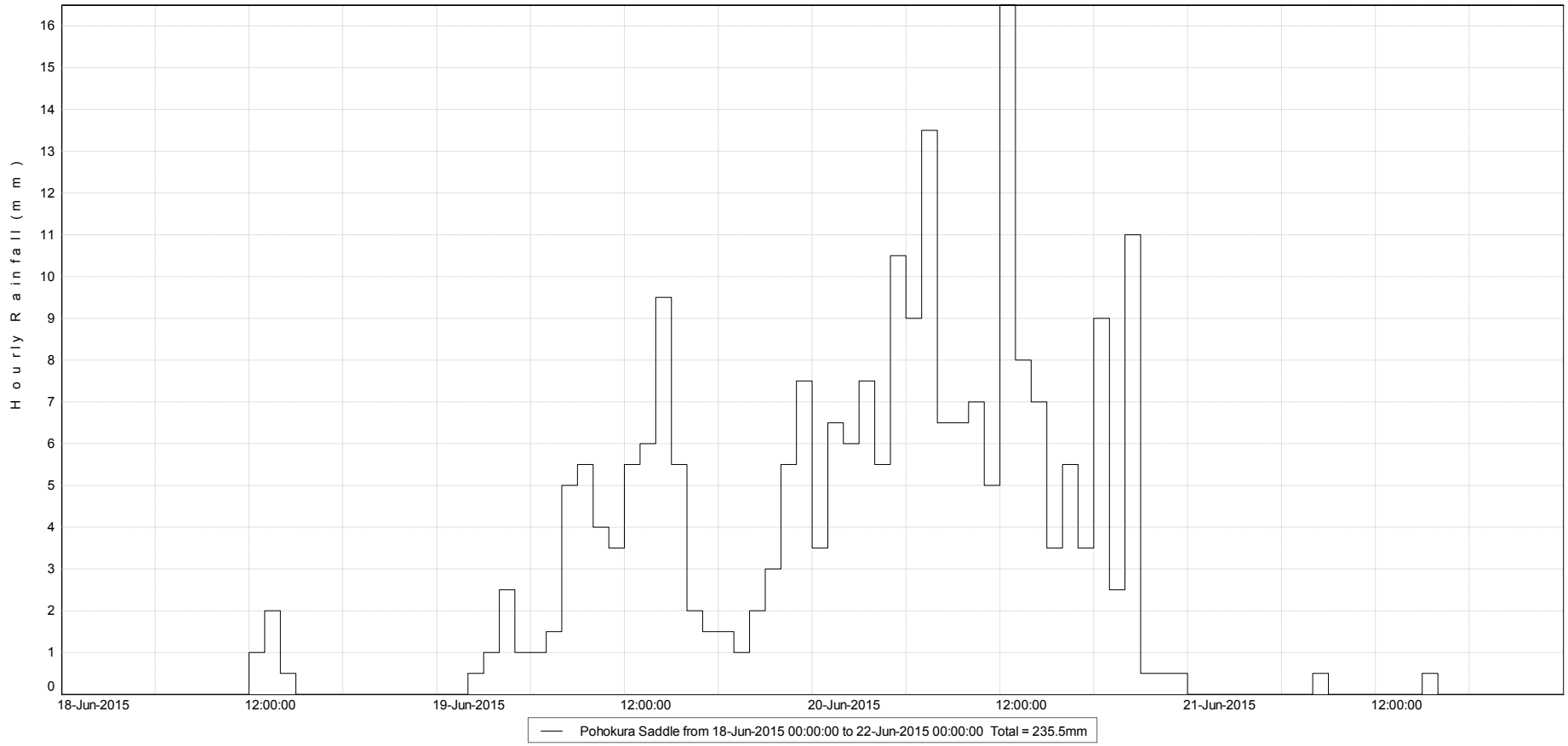

Stage (m)
Hourly Rainfall (mm)
Hourly Rainfall (mm)
18-Jun-2015
19-Jun-2015
20-Jun-2015
21-Jun-2015
22-Jun-2015
23-Jun-2015
24-Jun-2015
Patea at McColls Bridge - Water Level (m)
Pohokura Saddle - Rainfall Total = 237.0mm
Mangaehu at Bridge - Rainfall Total = 182.5mm

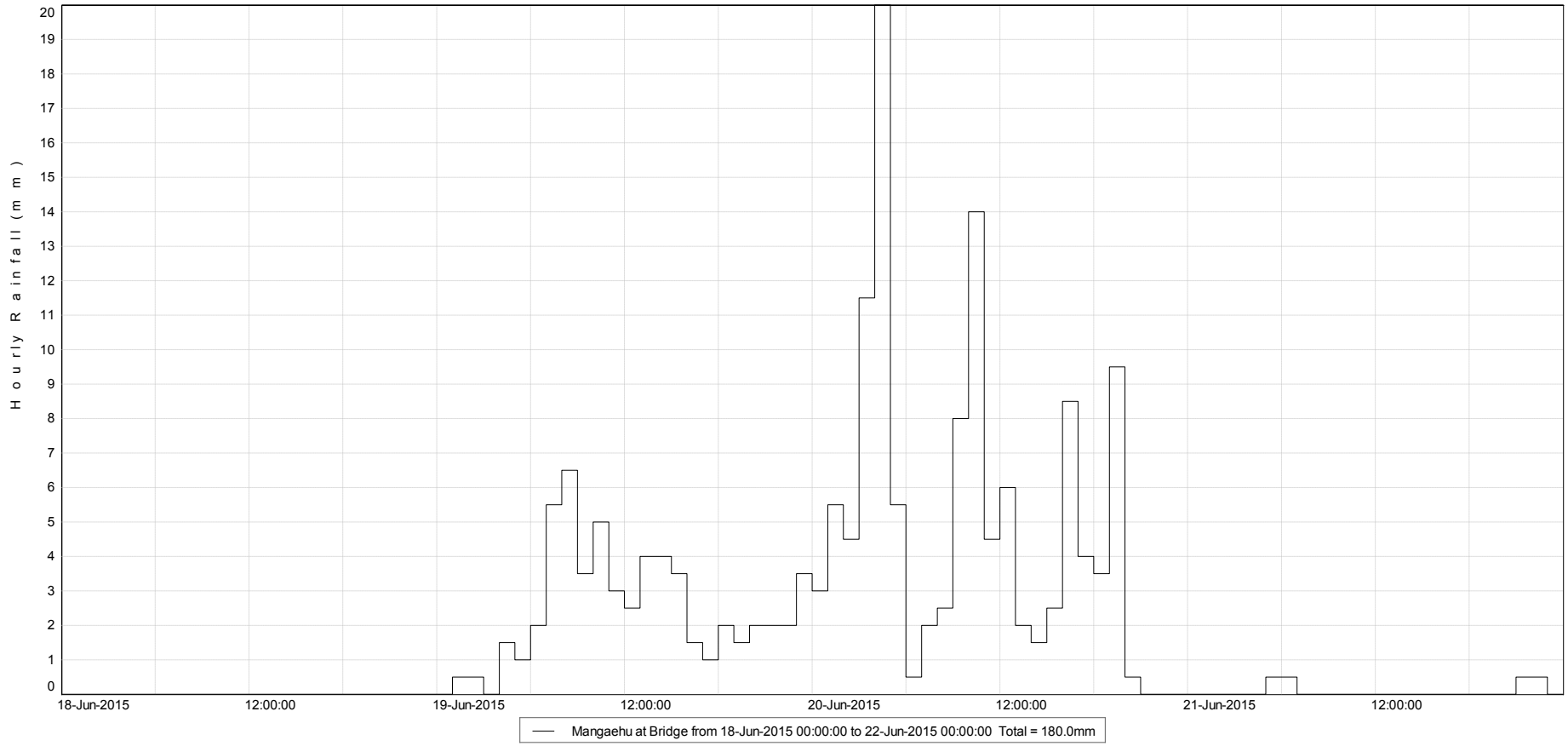

Stage (m)
Hourly Rainfall (mm)
7.0
6.8
6.6
6.4
6.2
6.0
5.8
5.6
5.4
5.2
5.0
4.8
4.6
4.4
4.2
4.0
3.8
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.1
19.6
18.9
18.3
17.6
16.9
16.3
15.6
14.9
14.3
13.6
12.9
12.3
11.6
10.9
10.2
9.6
8.9
8.2
7.6
6.9
6.2
5.6
4.9
4.2
3.6
2.9
2.2
1.6
0.9
0.0
18-Jun-2015
19-Jun-2015
20-Jun-2015
21-Jun-2015
22-Jun-2015
23-Jun-2015
24-Jun-2015
Mangaehu at Bridge - Water Level (m)
Mangaehu at Bridge - Rainfall Total = 182.5mm

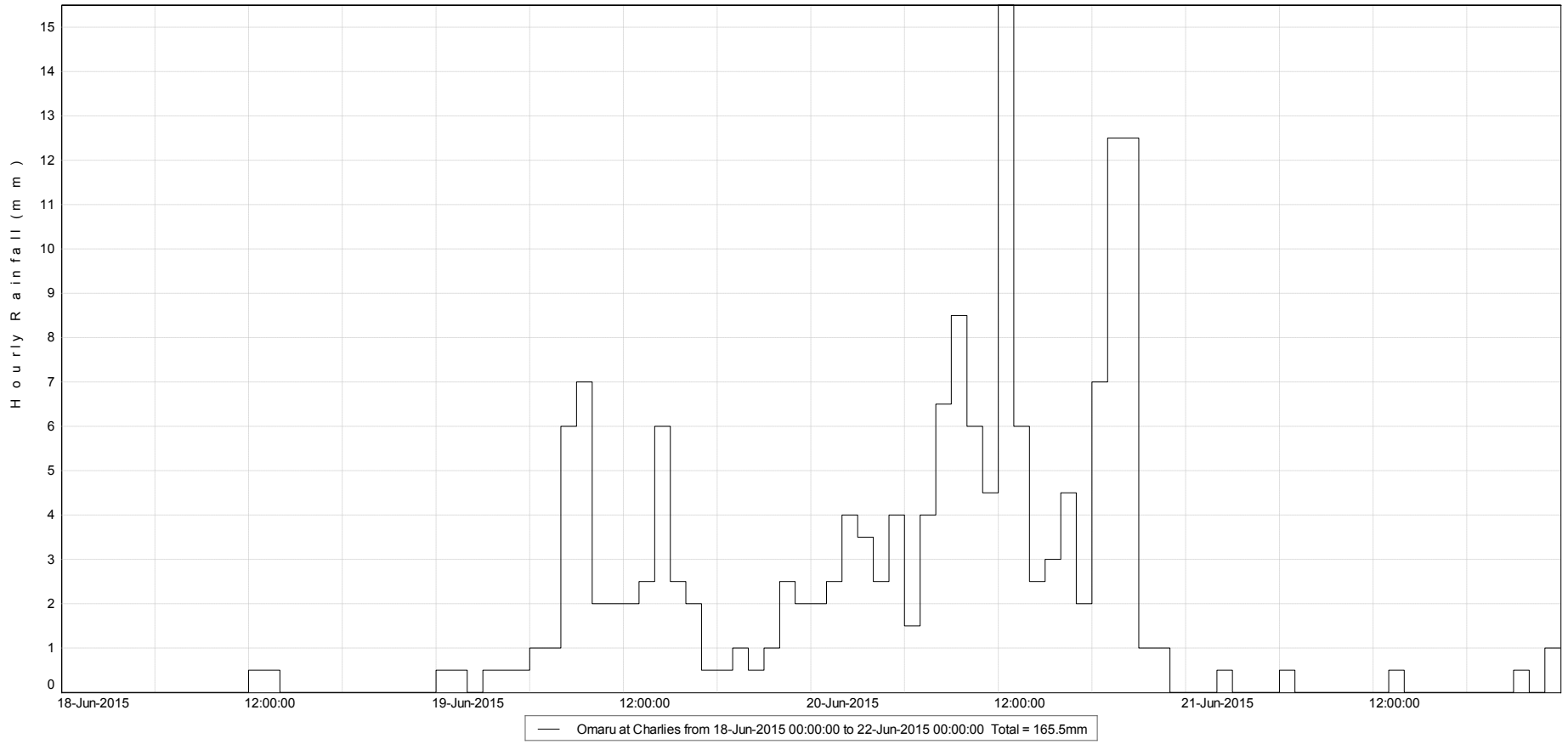

Stage (m)
Hourly Rainfall (mm)
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
2.0
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
25
24
22
21
20
19
18
16
15
14
13
12
11
9
8
7
6
5
3
2
1
0
18-Jun-2015
19-Jun-2015
20-Jun-2015
21-Jun-2015
22-Jun-2015
23-Jun-2015
24-Jun-2015
Kapoaiaia at Lighthouse - Water Level (m)
Kapoaiaia at Kahui Hut - Rainfall Total = 403.0mm

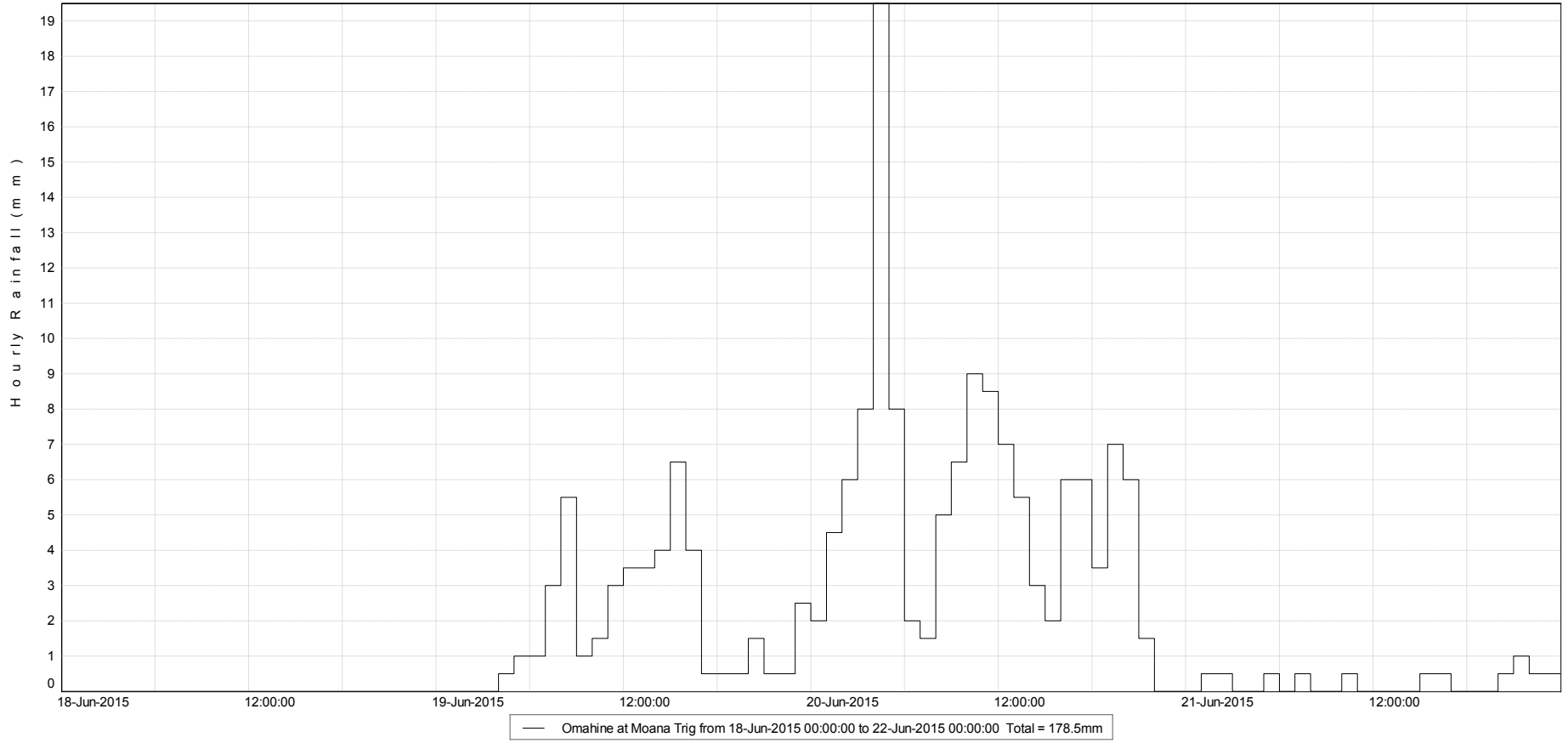
EASTERN HILL COUNTRY RAINFALL SITES



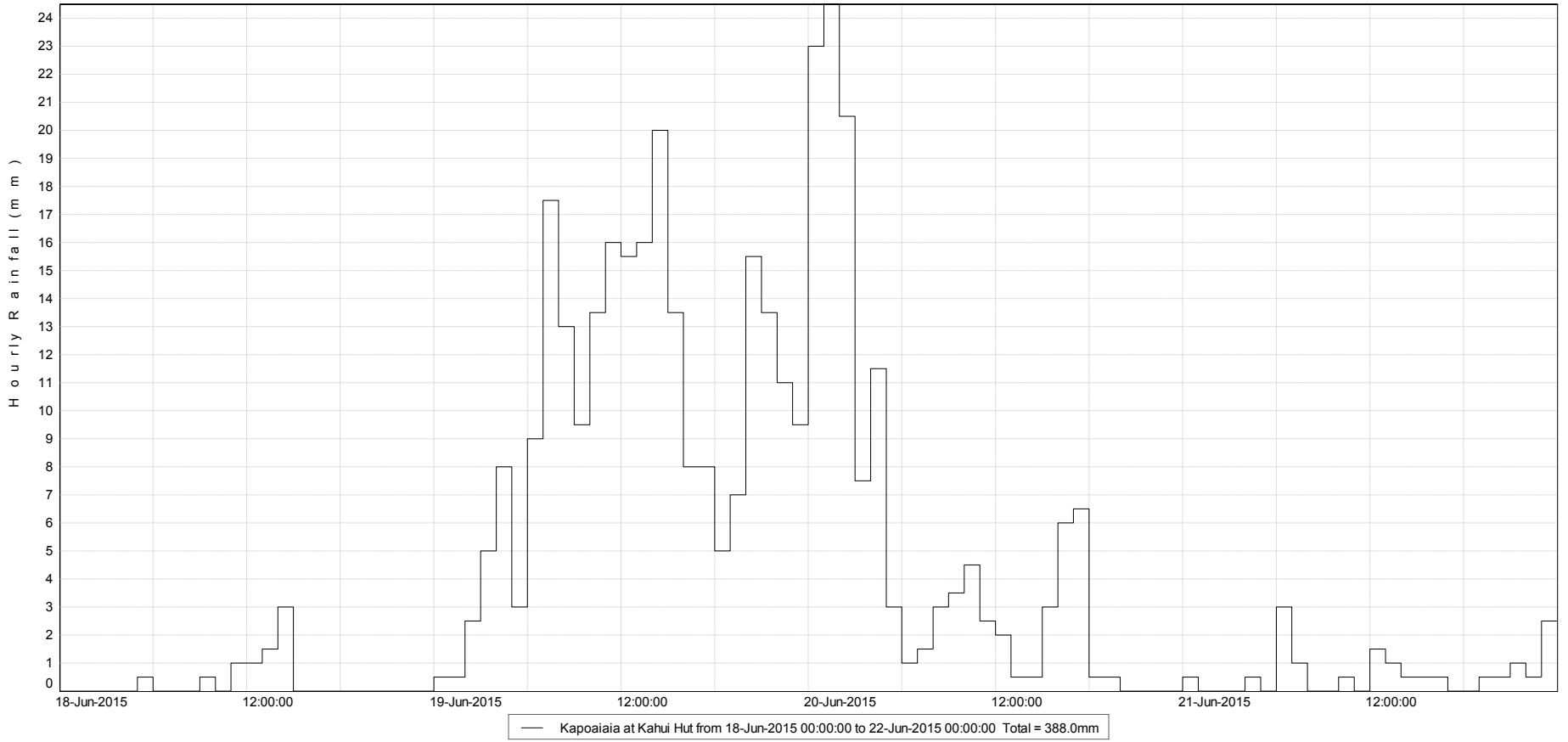

Hourly Rainfall (mm)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
18-Jun-2015
12:00:00
19-Jun-2015
12:00:00
20-Jun-2015
12:00:00
21-Jun-2015
12:00:00
Pohokura Saddle from 18-Jun-2015 00:00:00 to 22-Jun-2015 00:00:00 Total = 235.5mm

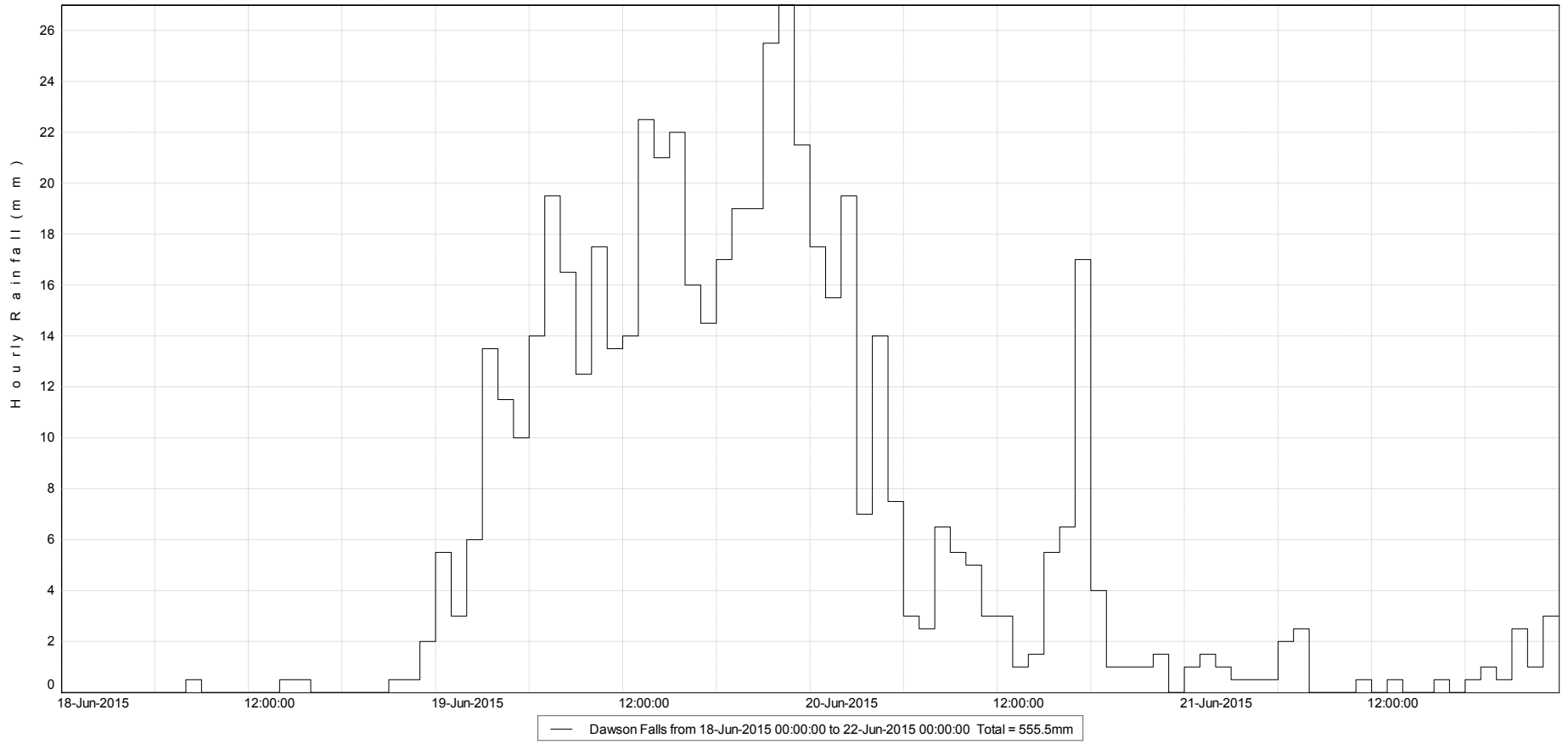

Hourly Rainfall (mm)
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
18-Jun-2015
12:00:00
19-Jun-2015
12:00:00
20-Jun-2015
12:00:00
21-Jun-2015
12:00:00
Mangaehu at Bridge from 18-Jun-2015 00:00:00 to 22-Jun-2015 00:00:00 Total = 180.0mm

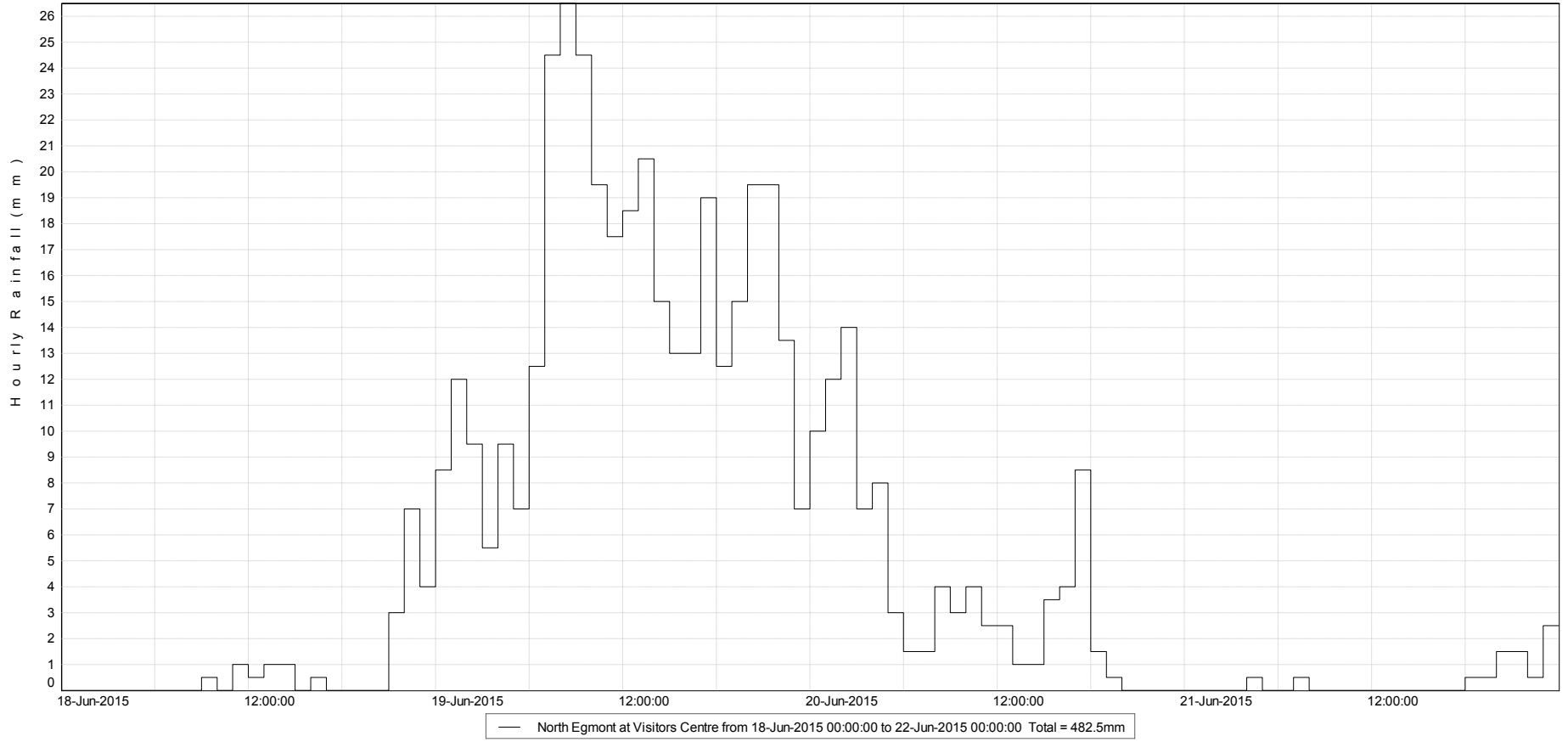

Hourly Rainfall (mm)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
18-Jun-2015
12:00:00
19-Jun-2015
12:00:00
20-Jun-2015
12:00:00
21-Jun-2015
12:00:00
Omaru at Charlies from 18-Jun-2015 00:00:00 to 22-Jun-2015 00:00:00 Total = 165.5mm


Hourly Rainfall (mm)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
18-Jun-2015
12:00:00
19-Jun-2015
12:00:00
20-Jun-2015
12:00:00
21-Jun-2015
12:00:00
Omahine at Moana Trig from 18-Jun-2015 00:00:00 to 22-Jun-2015 00:00:00 Total = 178.5mm

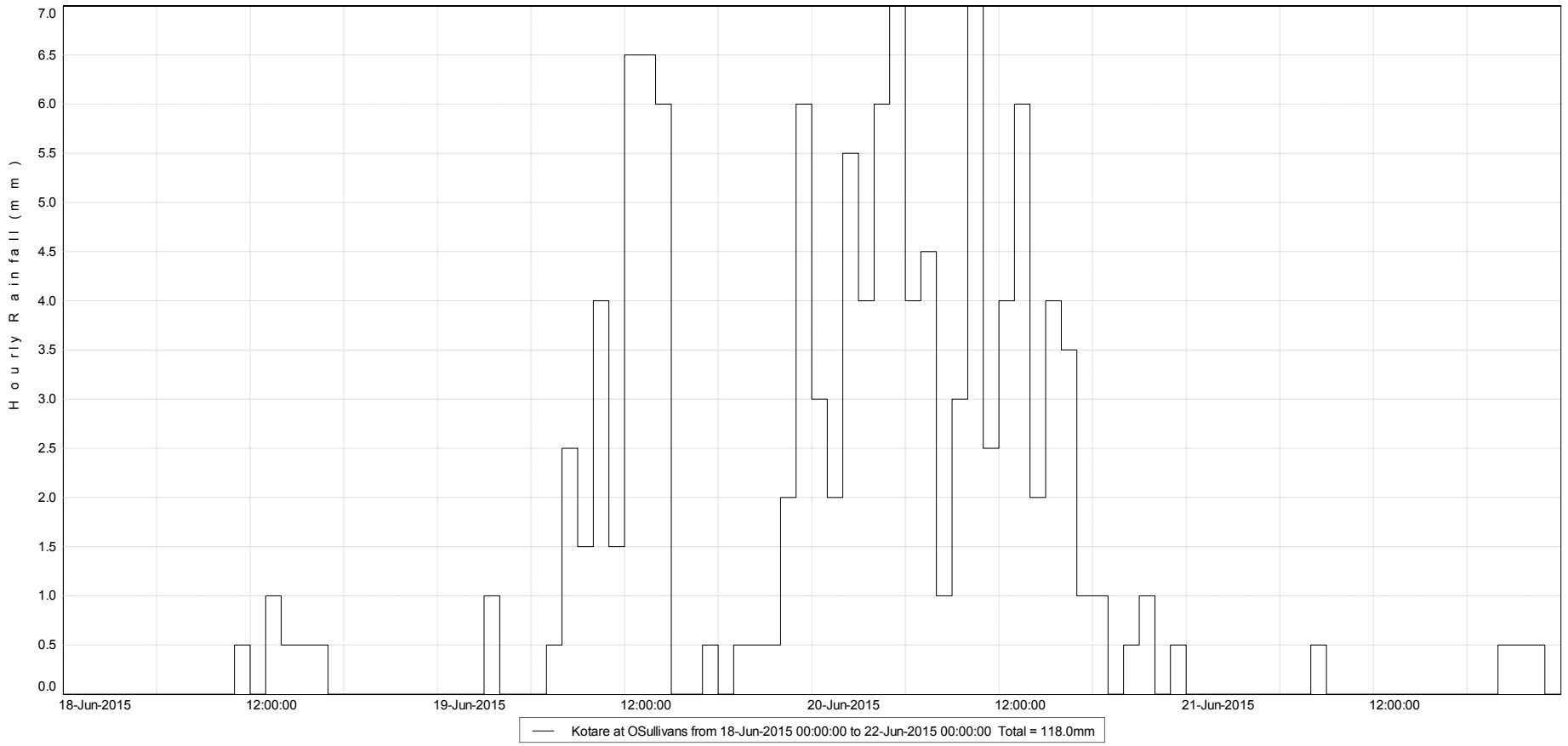
MOUNTAIN RAINFALL SITES

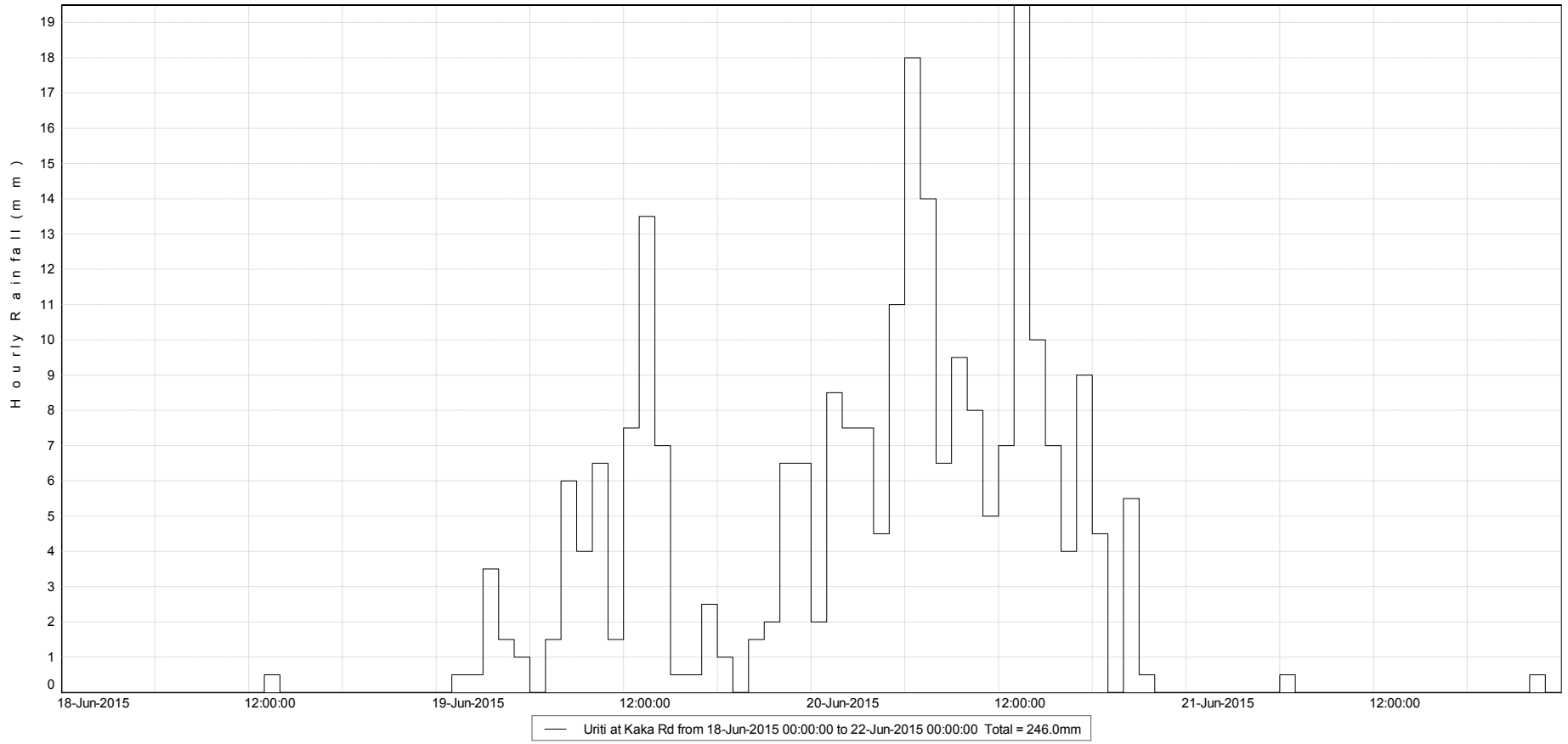


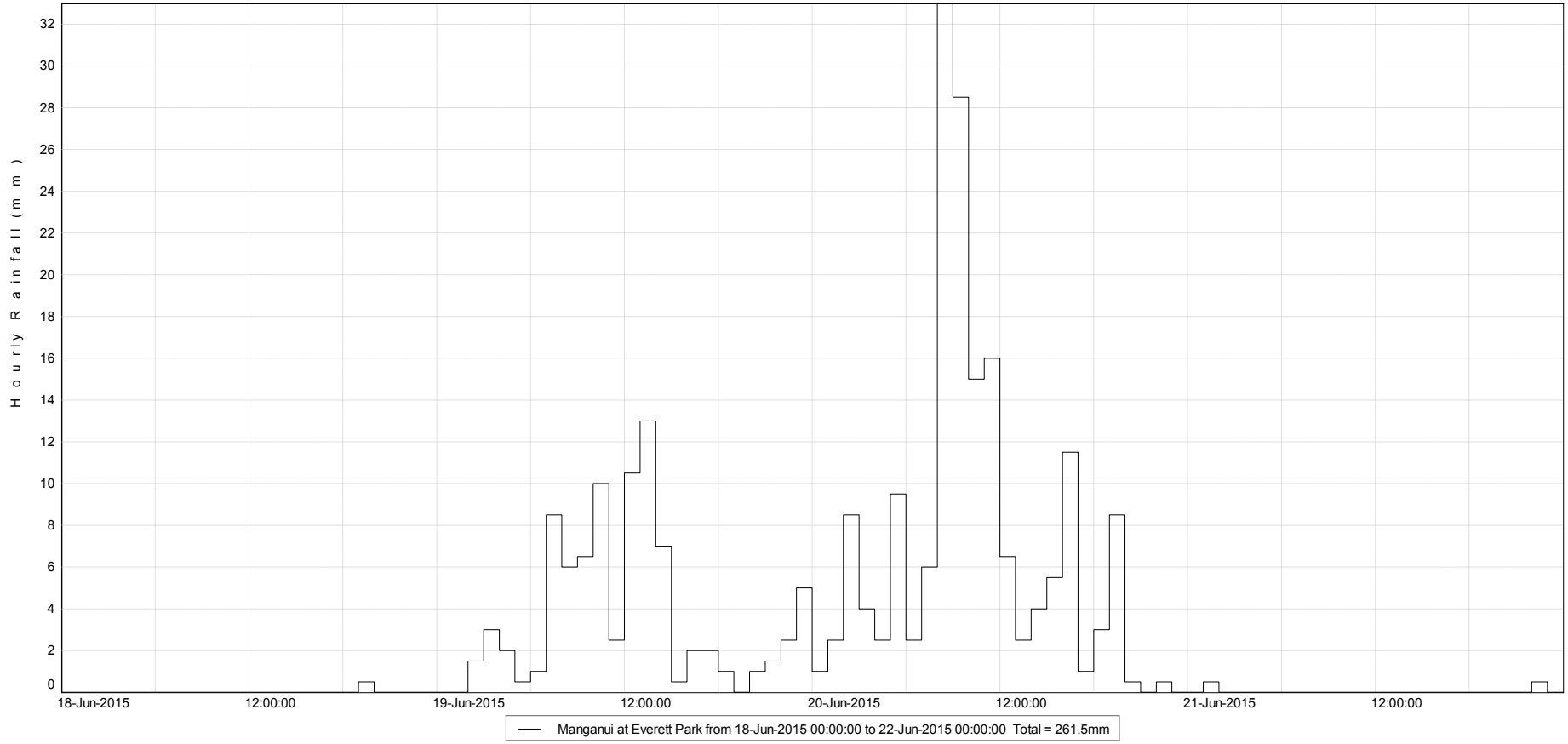

Hourly Rainfall (mm)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
18-Jun-2015
12:00:00
19-Jun-2015
12:00:00
20-Jun-2015
12:00:00
21-Jun-2015
12:00:00
Dawson Falls from 18-Jun-2015 00:00:00 to 22-Jun-2015 00:00:00 Total = 555.5mm


Hourly Rainfall (mm)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
18-Jun-2015
12:00:00
19-Jun-2015
12:00:00
20-Jun-2015
12:00:00
21-Jun-2015
12:00:00
North Egmont at Visitors Centre from 18-Jun-2015 00:00:00 to 22-Jun-2015 00:00:00 Total = 482.5mm

NORTHERN RAINFALL SITES




Hourly Rainfall (mm)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
18-Jun-2015
12:00:00
19-Jun-2015
12:00:00
20-Jun-2015
12:00:00
21-Jun-2015
12:00:00
Uriti at Kaka Rd from 18-Jun-2015 00:00:00 to 22-Jun-2015 00:00:00 Total = 246.0mm


Hourly Rainfall (mm)
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
18-Jun-2015
12:00:00
19-Jun-2015
12:00:00
20-Jun-2015
12:00:00
21-Jun-2015
12:00:00
Manganui at Everett Park from 18-Jun-2015 00:00:00 to 22-Jun-2015 00:00:00 Total = 261.5mm

Appendix III
Land resource information in the Waitotara catchment

Land resource information in the Waitotara catchment

- **Coastal sand country** formed from sand material blown up from the coast and deposited on an older uplifted marine terrace. Sand country soils vary according to formation of dunes or sand flats, height of the water-table, and time for development.

- **Alluvial river flats** are mostly found in the lower reaches of the catchment. Throughout the rest of the catchment small gully systems would be formed from alluvium or colluvium. Soils will vary according to height of water table, width of gully system and the material they are derived from.

- **Marine terraces and tephra mantled downlands** are a series of old marine terraces that have been uplifted from the sea during the past 380 000 years. Generally they have andesitic loess or tephra material overlying sandstone and siltstone material with inter-beds of limestone, shell-rock and conglomerates. The soils formed are some of the most versatile in the Taranaki-Wanganui region.

- **Soft sandstone belt** runs from Waitotara through to Pohangina near Ashhurst. In the Waitotara Valley this belt is located in the lower reaches and is not more than one to two kilometres wide. It is however one of the most vulnerable geological units to erosion in New Zealand. The soft sandstone belt can be easily recognised by the very rounded and often wide ridges.

- **Consolidated sandstone hill country** forms the majority of the Waitotara hill country. It consists of sandstone that is consolidated to very hard. The harder the material the more prone it is to soil slip erosion irrespective of vegetation type. The hard sandstone unit can be recognised by the very sharp and narrow ridges. The very hard sandstone material is mostly located in the mid to upper catchment. Much of the indigenous bush of the Whanganui National Park within the catchment occurs on this unit.

- **Slump prone hill country** is a belt of hill country in the mid to upper catchment reaches that is prone to moderate to severe deep seated slumping. This unit is generally formed from tephra overlying mudstone or siltstone material. Often the slumps are activated through continuous removal of the toe by watercourses. The potential for slumping is accentuated under pasture however the more deep seated slumping will occur under any vegetation.

- **Mudstone, siltstone and moderately consolidated sandstone hill country** units present occur throughout the catchment. Generally, the north facing aspect is prone to moderate soil slip erosion and the southerly or shady faces are prone to both soil slip and slump erosion. The potential erosion severity is very much influenced by vegetation type.

Appendix IV
Photographic record of event

Photo 1: Waitotara River / Werewereonga Stream showing effects of Lake Mangawhio culvert failure

Photo 2: Road closure slips on Waitotara Valley Road

Photo 3: Huiroa, Douglas North Road

Photo 4: Road closure & silt on Waitotara Valley Rd

Photo 5: Road closure & silt on Waitotara Valley Rd

Photo 6: Debris avalanche on Waitotara Valley Rd

Photo 7: Frewin property damage, Waitotara Valley Rd

Photo 8: Flooded White property, Waitotara Valley Rd

Photo 9: Puao property damage, Waitotara Valley Road

Photo 10: Damaged bridge on Puao property, Waitotara Valley Rd

Photo 11: Lower Waitotara Valley Rd

Photo 12: Tangahoe Road closure

Photo 13: Piko Road forestry

Photo 14: Okoki Rd, slip threatening Crawford property

Photo 15: Slip, Crawford property

Photo 16: Upper Okoki Road

Photo 17: Makakaho Rd, damaged bridge

Photo 18: Marae, Waitotara Valley Rd

Photo 19: Erosion on harvested forestry block

Photo 20: Waitara River bank damage below SH3

Photo 21: Waitara River embayments after flood

Photo 22: Waitara River below SH3

Photo 23: Waitara River below SH3

Photo 24: Waitara River at Bridge

Photo 25: Damage to Limestone Bridge, Wai-inu Beach Road , Waitotara

Photo 26: Damage to scaffolding on Waitotara SH3 Bridge Waitotara

Photo 27: Flooding around Waitotara School

Photo 28: Rimunui Station bridge, Upper Waitotara Valley Road

Photo 29: Waitotara Valley Road

Photo 30: Waitotara Township 21 June 2015

Photo 31: Waitotara Valley Flood plain

Photo 34: Puao Station, Waitotara River and road

Photo 32: Lake Mangawhio

Photo 35: Flood damage

Photo 33: Flood damage at the McColls

Photo 36: D Wilson property silt deposition - Regionally Significant Wetland Lwr Waitotara Valley

Appendix V
Response package and implementation framework

Response Package

Council approved an assistance package for both hill country farmers and riparian plan holders to help reduce the effects of storm damage suffered from the June 19th to 22nd event. The total budget was up to $500,000 and funded from Council's 2014/2015 surplus. A framework for the operational implementation of the package includes assessment criteria for prioritising assistance and works respectively. Initial meetings were held and information gathered to compile a list of landholders requiring advice and assistance.

Land Management Objectives

1. Provide professional advice on pole planting and recovery of pasture and soil disturbance in the Hill Country and on riparian areas
2. To visit all landholders affected by the event that have requested our offer of assistance
3. To visit all Farm Plan holders in the catchment and offer professional advice or assistance
4. Promote the farm planning process to those landholders who currently do not have a plan.

Hill country implementation framework

Assessment criteria for prioritising assistance to Council planholders who–

1. have incurred erosion and implemented South Taranaki and Regional Erosion Support Scheme (STRESS) soil conservation measures and/or are about to plant STRESS poles;
2. have incurred erosion and have implemented soil conservation measures in the past;
3. have incurred erosion and now want to implement soil conservation works;
4. have not incurred erosion but now want to implement soil conservation works.

Assessment criteria for providing assistance to Non-planholders who–

1. have incurred erosion and now want a plan as well as to implement soil conservation works;
2. have not incurred erosion and now want a plan as well as to implement soil conservation works;
3. have not incurred erosion and now want a farm plan.

Assessment criteria for prioritising hill country works:

1. 2,905 three metre poles (including sleeves) ordered through STRESS plus onsite delivery and planting provided at no cost to landowner.
2. 1000 (or more) extra poles sourced (including sleeves if required), plus onsite delivery and planting on LUC class 6 and 7 land provided at no cost to landowner.
3. Repairs to STRESS retirement fences up to $10 per metre.
4. The provision of %100 of the cost of grass seed for the re-grassing of slip tails.

Operational procedures:

1. An assessment of needs will be determined by land management officers contacting planholders who have notified us of damage sustained - or have indicated through the Rural Support Trust survey – before visiting the site to verify needs.
2. A spreadsheet based on assessment criteria will be set up to record landowner details and needs.
3. A cost code will be set up for the financial administration of the funds whereby landowners will invoice Council following audit by a Land Management Officer and reimbursed on a weekly basis.
4. A communication package will be created and released to advertise assistance package which should stimulate more enquiries.
5. Proposed works will be prioritised according to assessment criteria until all funds are allocated. This may happen in tranches depending on the rate landowners can be contacted or contact Land management.
6. Approval for works to proceed will be made by Land Services Manager and Director of Operations before sign off by Chief Executive.
7. Land management officers will arrange and coordinate the dispatch, on-farm delivery and siting of existing and additional poles and sleeves, on behalf of the farmer. Farmer contracts planting of plant poles and has health and safety obligations.
8. Rebate of $6 per pole for farmer to pay contractor. Farmer may claim rebate directly if they plant poles themselves.
9. Land management officers will authorise and inspect STRESS fence repairs and arrange payment following audit.
10. Land management officers will coordinate and record the demand for grass seed and arrange supply at the appropriate stock firms. Landowners will be reimbursed for 100% of cost once sown and verified by a Land Management Officer.
11. New plan requests will be processed using the current procedure.

Riparian implementation framework

Assessment criteria for prioritising riparian assistance to Council planholders who–

1. have lost native plantings through streambank erosion and have been actively implementing riparian planting;
2. have lost native plantings through streambank erosion and have only just started implementing riparian planting;.
3. have lost soil conservation plantings through streambank erosion and have implemented riparian planting.

Assessment criteria for prioritising riparian assistance to Non-planholders who–

1. have actively been riparian planting.

Assessment criteria for prioritising riparian works:

1. 50,000 native plants available to replace native plants lost through being washed out of holes or streambank erosion;
2. Willows or other soil conservation plantings along rivers for streambank stability lost due to streambank erosion or flooding damage.

Operational procedures:

1. An assessment of needs will be determined by Land management officers contacting planholders who have notified us of damage sustained - or have indicated through Council email query.
2. A spreadsheet based on assessment criteria will be set up to record landowner details and needs before a LMO visits the site to confirm requirements.
3. A cost code will be set up for the financial administration of the funds whereby landowners will invoice Council following audit by a LMO and reimbursed on a weekly basis.
4. A communication package will be created and released to advertise assistance package which should stimulate more enquiries.
5. Proposed works will be prioritised according to assessment criteria until all funds are allocated. This may happen in tranches depending on the rate landowners can be contacted or contact Land management.
6. Approval for works to proceed will be made by Land Services Manager and Director of Operations before sign off by Chief Executive.
7. Land management officers will supervise and coordinate planting contractors to deliver and plant native plants to their specification on behalf of TRC. Council responsible for health and safety of contractor.
8. Land management officers will supervise planting contractors onsite and audit works before their invoice is submitted to Council for planting and delivery.
9. Rebate of $2.50 per plant if plan holder undertakes the planting themselves.

Appendix VI
Government criteria for allocation of funding for rural infrastructure repair and funding application form

Attachment 1

Government Criteria to assist Manawatu-Wanganui and Taranaki regional disaster relief fund decision makers to allocate government funding for rural infrastructure repair as a result of the June 2015 severe weather event

What can be funded

1. Funding will be made available only in respect of the following eligible works:
   A. restoration of uninsurable on-farm infrastructure
   B. re-establishment of uninsurable pasture, crops, and forestry (excluding slips); and
   C. initial clean-up of silt and debris (where uninsurable).
2. Further guidance is provided below. Other eligible work that falls within the scope of paragraph 1, but is not specifically covered in the guidance below, may be claimed, provided clear evidence is provided that this work is uninsurable.
3. These criteria relate to the allocation of one-off funding of $1.28 million for this specific event. The Ministry for Primary Industries will review the Primary Sector Recovery Policy in 2015/16. This will consider what measures are needed during medium-scale events if there are severely affected sectors of the community. These criteria should not be seen as creating a precedent for future events in view of this proposed policy review.

A. Restoration of uninsurable on-farm infrastructure

Access

On-farm access roads are generally not covered by insurance and would include tracks and races.

Developing new access routes, carrying out general maintenance on roads, and any improvements to roads or bridges (e.g. to increase tonnage carried) are excluded.

Access may include the cost to bring in heavy equipment e.g. diggers to clear silt and debris as a result of the event. (See section under equipment below).

Any claim should relate to those lengths of tracks and races actually damaged in the event.

These criteria should not preclude a farmer from choosing a cheaper alternative option so long as it is replacing like with like.

Fencing

Fencing is generally excluded from farm insurance cover or has limited cover for certain perils and is usually capped.

Any claim must have any insurance payment received (or the sum that was eligible for insurance) deducted from the claim. Any capped amount must be specified.

Grants should focus on the supply of materials and delivery to site where damage has occurred. (See below for labour resourcing).

Fences lost/damaged alongside road boundaries should be regarded as a priority because of the public good element.

Fencing costs may be estimated based on indicative rates provided to the allocation panel by a farm consultant, with rates being set for both permanent hill country and electric fencing on dairy farms. This will assist allocation decisions if the repairs are not to be undertaken

until a later date.

Dams or reservoirs

These structures are generally not covered by insurance.

If the event has resulted in the build-up of slash, silt or other debris, then consideration should be given to returning these back to pre-storm status.

Priority should be given to farms where these structures play a significant part in farm business.

B. Re-establishment of uninsurable pasture, crops, and forestry (excluding slips)

Re-sowing grants should be targeted at reinstatement of flood damaged pastures or crops covered by silt.

Reinstatement of heavily silted pastures could be based on the average cost (e.g. of $800 per hectare) for pasture renewal.

Re-sowing of slips is excluded.

The purchase of grass seed for re-sowing pasture where silted pastures can be direct drilled, could be allowed. This does not include grass seed for re-sowing land that has subsided (slips).

Grants should only be made for the cost of reinstating a crop and growing it to the stage at which it was lost (i.e. including fertiliser and pesticides).

In the case of forestry the grant should only be for the cost associated with replanting trees and not subsequent silviculture.

Loss of income resulting from loss of pasture, crops, and forestry is excluded.

C. Initial clean-up of silt and debris (where uninsurable)

Labour

Where Enhanced Task Force Green (ETFG) has been used on the farm, this should be disclosed, including the areas of work they focused on, including but not limited to fencing repairs or replacements, clean-up of silt and debris.

If the farmer had to employ extra resources specifically to assist with on-farm recovery aspects as a result of the event, this needs to be declared with proof of payment made.

If own on-farm labour was used to carry out work as a result of the event, then evidence of how the labour was used, including time and what would normally be paid for that labour must be declared. Grants related to labour could be capped, for example, at $30 per hour.

Equipment

Many farmers have their own equipment e.g. diggers that are being used to undertake eligible work.

Where own equipment was used for undertaking eligible work then a claim could be made based on diesel use, as per the size of the machine.

Clear evidence should be provided that the equipment was used for undertaking eligible works.

Where equipment was hired to assist with undertaking eligible works, then proof of rental or a

contractor's invoice must be provided when seeking a grant.

Principles for how the funding should be allocated

The funding provides for a grant or contribution towards the cost of reinstating uninsurable infrastructure and productive pastures and crops, to enable a more rapid recovery from this event. It should be made clear to potential recipients that any funding provided is not compensation for loss of income or assets, or a reimbursement of expenditure.

Claimants should provide clear evidence that the costs of eligible works being claimed for are uninsurable.

If other grants have already been provided (e.g. from charitable organisations) for the purpose of reinstating productive capacity or infrastructure, the amount of these grants should be disclosed and deducted from the amount being claimed.

The grant per farm will not be greater than 50% of the expenditure on eligible works.

Funds should be targeted to those with the most severe damage to their farm's productive capacity or infrastructure.

In order to target severely affected farms, and to ensure that a greater number of those severely affected farms get some modest assistance within the total government funds available ($1.28 million), decision makers should apply:

a) an excess (minimum threshold amount) of $15,000; and

b) a cap (upper limit amount that may be allocated) of $100,000 per farm.

To meet the above principles the following formula may be used to calculate the maximum eligible grant:

Amount of uninsurable damage not met by other grants	minus	Minimum farmer contribution 50%	minus	Excess $15,000*	equals	Maximum grant that will be assessed within the total funds available

* The excess must be higher than $10,000, or 10% of damage costs, whichever is greater, to be consistent with current government policy. The same calculation of excess should be applied to all claims. The maximum grants calculated (including capped amounts) would then be totalled against available funds and pro-rated if necessary to fit within the funding available.

Priority may be given to items such as boundary fences, access and silted pastures.

Consideration should be given to whether to prioritise funding in circumstances where factors external to the farm resulted in impacts beyond the control of the farmer, such as incomplete flood control works, or forest slash or other debris.

The allocations process used by decision makers should as far as possible aim to ensure that:

c) the majority of farmers likely to be eligible for funding have the opportunity to apply;

d) applications are honestly made and fit the criteria above;

e) decision-making is transparent and fair;

f) a consistent decision-making process is used; and

g) grants are made expeditiously.

Insurance guidelines from FMG Insurance and AON Insurance Brokers

The information contained below is for general information only. Each farmer will need to declare what on-farm infrastructure is covered (or where they are eligible to claim) by their insurance provider.

FMG Insurance Farm Policy coverage – June 2015

Private insurance **will not cover damage to land;** rather it is in place to protect the improvements and livestock on the land.

Insurance will **not** cover damage to farm access roads, tracks, races; land slips; pasture loss; and growing crops are not insured against flooding loss.

The FMG Farm Buildings policy **can** provide specific cover for:

- farm buildings,
- farm fencing,
- underpasses,
- culverts,
- farm bridges,
- shelter belts,
- wells and bore shafts.

There is also cover for other permanent fittings and fixtures such as cattle stops, power poles and underground piping.

Comment

- Some farms may not have fences insured (only covered for 'defined perils' not flood and landslip).
- Cattle yards are considered fencing if not attached to a building and may not be covered.
- Anecdotally some bridges in Taranaki were not insurable for replacement cost and bridges without sides were not insurable
- **There can be policy limits** – e.g. $10,000 for culvert damage (and excess of $2,500) – yet one farm lost 5 culverts with repair estimate of $7,100 each - $35K

The FMG Farm Contents policy **can provide specific cover for farm produce e.g.**

- **baled hay, baled wool,**
- **bee hives, deer velvet,**
- **harvested farm produce or farm milk**.

There is also cover for other **general farm contents** such as tools, plant or equipment and perishable farm stores.

Harvested arable crops are covered for accidental loss, while **growing crops are not insured against flooding losses**.

Livestock is covered against **unexpected flood losses** for both herd and specified animals

Farm vehicles are covered. This coverage extends from road registered vehicles through to specialist agricultural machinery.

AON Insurance Brokers – September 2015

The information provided is what Aon would offer their farming clients, it is not a reflection on what other insurer's or brokers would offer their own clients.

There is a difference in policy for dairy and non-dairy farms however, this is not in relation to infrastructure (this is the same) only in regards to milk benefits.

General private policy exclusions:

Exclusions

- trees or hedges,
- dams, canals, or reservoirs,
- road tunnels or bridges,
- railway tunnels or bridges,
- docks, piers, jetties or wharves,
- mining property located below ground level,
- any land (including topsoil and backfill),
- roading (includes tracks and races).

Loss following any of the following events are excluded:

landslip, subsidence, erosion or expansion of the ground, normal settlement, shrinkage or

expansion of buildings, foundations, walls, pavements, roads and other structural improvements.

Flood arising from the following events are not covered:

- Seepage or artesian water, drains or irrigation races,
- Surface flooding where run off surface water has saturated land

Limited cover:

- Artificial Windbreaks $5,000
- Culverts $10,000
- Fences $5,000

Optional Extensions

- Bridges & Underpasses.
- Standing Timber.
- Harvested trees – only for trees that have been felled but remain on a temporary basis within the compartment being harvested, pending transportation from the forest.
- Live plants - seeds, bulbs and visible growing crops that are contained only in a building specifically designed for the cultivation or storage of such plants or crops.
- Livestock – only for, lighting, explosion, electrocution, impact by aircraft or vehicle and smothering caused by panic.
- Orchard Trees – only for fire, lightning or explosion, thunderbolt
- Produce – can only be covered in a building
- Crops – (not covered under a general policy).

The above points are in relation to what is offered under a standard Farm Package policy.

In regards to Trees, Crops and Produce and livestock, there are specialised insurance policies to cover these risks for all Perils, these polices are generally expensive and carry large excesses.

Application Form for Government Funding for Rural Infrastructure Repair

Following the June 2015 Storm and Flood Event in Taranaki and Manawatu

Note: Funding is only available in respect of:

a) Restoration of **uninsurable** on-farm infrastructure
b) Re-establishment of **uninsurable** pasture (excluding slips), crops, and forestry; and
c) Initial clean-up of silt and debris (where **uninsurable**)

1. Priority will be given to roadside boundary fencing; boundary fencing; internal fencing; access tracks and silted pastures.
2. To be considered for funding assistance any total claim must exceed $25,000.

Name of Business: _____

Contact Person: _____

Farm plan number if you have one:_____

Landline: _____ **Mobile:** _____

Email: _____

Postal Address: _____

_____

_____

Location of Property:_____
(Separate application required
For each Property _____

_____

Bank details for payment (please attach deposit slip to verify account number)

Bank Name:												
Account Name:												
Bank account number:												

Fencing

Fencing	Metres	Price/metre	$ Cost
Road Boundary			
Shared Boundary (x 50%)			$
Internal fence			$
$ Total Cost			**$**
$ Less any payment of insurance on fencing (paid or owing)			
$ Total amount for fencing claimed		**A**	**$**
Other Fencing	**Hours or metres**	**Price/hr or metres**	**$ Cost**
Fence-line clearance			$
Transport of fencing gear			$
Farm labour			$
Temporary fencing			$
$ Total Cost			$
$ Less any payment of insurance on fencing (paid or owing)			$
$ Total amount for <u>other</u> fencing claimed		**B**	**$**
$ Total amount for all fencing claimed		**A + B**	**$**

Internal access/tracks

	$ per hour	Total hours	$ Cost
Digger hours			$
Bulldozer hours			$
Full Contract			$
Farm Machine (diesel cost only)			$
Hired Machine Cost			$
Farm Labour			$
Other roading access costs (please specify)			$
Other roading access costs (please specify)			$
$ Total access/tracks			**$**

Pasture Replacement (flood inundation and silt)

	No. of ha	$ per hectare	$ Cost
Pasture replacement			$
Crop replacement			$
$ Total cost			**$**

Drains and dams

	$ per hour	Total hours	$ Cost
Digger hours			$
Farm machine			$
Hired machine			$
Farm labour			$
$ Total costs			**$**

Bridges

Estimated costs	$	
OR		
Quote from bridge builder	$	(attached quote)
Less: Insurance payout	$	
$ Total cost	**$**	

Culverts

	No. of culverts	$ Total Installation Cost
Culverts		$
Less: Insurance payout		$
$ Total cost		**$**

Forestry

Forest type	No. of ha	$ per hectare	$ Cost
			$
			$
$ Total cost			**$**

Clean up silt and debris

	No. of hours	$ per hour	$ Cost
Farm machinery			$
Farm labour			$
Other eligible costs* (please specify)			$
$ Total cost			**$**

*(Note: production loss and feed purchasing costs are not eligible)

Total uninsurable farm costs

Type	$ Total Cost
All fencing	$
Internal access tracks	$
Pasture replacement	$
Drains/Dams	$
Bridges	$
Culverts	$
Forestry	$
Clean up and silt debris	$
$ Total uninsurable farm costs	**$**

I _____ declare that the information provided is true and correct and is in accordance with my insurance policy for uninsurable items.

Signed _____ Date _____

Office use only

Type	$ Total Cost
Roadside/boundary fencing	$
Internal fencing	$
Internal access tracks	$
Pasture replacement	$
Drains and dams	$
Bridges	$
Culverts	$
Forestry	$
Clean up and silt debris	$
$ Total uninsurable farm costs	$
50% farmer contribution	$
Excess	$
Maximum grant	$