

Flood Control Activity

Why we do it

To protect people and properties (including productive land and infrastructure) from flooding and from possible damage caused by coastal erosion.

What we do

The Flood Control Activity covers:

- ▶ flood control schemes
- ▶ rivers alignment control
- ▶ land drainage
- ▶ coastal erosion protection

Gisborne District Council (GDC) monitors and manages the rivers and streams in the district and plans for, constructs and maintains flood control and bank protection works to control and minimise the impacts of extreme river flows.

The flood control schemes assets (mainly stopbanks) are maintained to their design standards utilising the most cost-effective, long-term asset management options. River monitoring also provides flood warnings to the community for specified rivers in a timely and effective manner.

Council also constructs, administers and maintains a network of open drains across private farmland. This activity is funded by the owners of the serviced land.

Coastal erosion is monitored on a regular schedule and where required, foredune protection works are undertaken. Currently, protection works are confined to the Wainui Beach area.

Community Outcomes

This activity contributes to the following community outcomes:



Connected
Tairāwhiti



Safe
Tairāwhiti



Prosperous
Tairāwhiti



Environmentally
Sustainable
Tairāwhiti

Where we are now

Flood Control Schemes

There are three main flood control schemes. The Waipaoa River Flood Control Scheme (WRFLC) was constructed between 1953 and the mid 1960s to control the extensive flooding of the Poverty Bay Flats, and was followed by the Te Karaka Flood Control Scheme (TKFCS) in 1987/88 and the Tūrangānuī/Taruheru Rivers Scheme (TTRS) between 1998 and 2002.

These schemes consist of about 67kms of stopbanks to contain floodwaters, with some 790 pipes and flap gates laid through them to provide for local drainage. The stopbanks and pipes are in good condition. The current operating and maintenance regime is considered to be appropriate to keep these assets in good condition.

In the urban area of Gisborne, the Tūrangānuī/Taruheru River Scheme provides timber and concrete revetment walls along the banks of the rivers to contain and control flood flows. The revetment walls are in poor to average condition and works are scheduled to upgrade them.

- ▶ Farming areas alongside the lower reaches of the Waipaoa are protected up to the level of a 70-year return period storm.
- ▶ Urban and farmed areas in Te Karaka alongside the Waipaoa River are protected up to the level of a 100-year return period storm.

Rivers Alignment Control

This is the area of activity that monitors 206kms of rivers and streams throughout the district and installs limited riverbank protection works and riverbed raking to address local erosion concerns.

A key element of this work is the provision of river level measurement equipment that sends warnings when river levels are rising towards flood levels.

The key service outcomes include:

- ▶ minimising and mitigating bank erosion impacts on agricultural land and roading infrastructure in the lower reaches of the following rivers:
 - ~ Waipaoa River main channel
 - ~ Waipaoa upper tributaries
 - ~ Lower Taruheru River
 - ~ Waimatā River
 - ~ East Coast rivers such as the Uawa, Waiapu and Waikohu
- ▶ controlling bed erosion and aggradation; river bed raking to minimise erosion and flood impacts in the above listed rivers
- ▶ minimising the impact of private and public land alongside the Tūrangānuī - Taruheru Rivers in the urban area of Gisborne city
- ▶ providing flow warnings for the:
 - ~ Waipaoa River
 - ~ Te Ārai River
 - ~ Taruheru River
 - ~ Waimatā River
 - ~ Hikuwai River
 - ~ Uawa River
 - ~ and some smaller streams
- ▶ providing warnings to all nominated landowners within Council's floodwarning areas whenever the nominated rivers exceed trigger flood levels and are continuing to rise appreciably.

Land Drainage

Land drains are open ditches formed across flat farmland and connected to the nearest watercourse. They take surface water from low lying land and provide a discharge point for subsoil field drains laid by the landowners to lower the groundwater and improve the suitability of the land for horticulture or farming.

The artificial land drainage provides capacity to convey surface water from a five-year return period storm into adjacent rivers and streams. This is for the land occupied by landowners who have entered into funding agreements to pay for drains.

Currently the serviced areas are:

- | | |
|---------------------|------------------|
| ■ Ormond/Mahunga | ■ Ngātapa |
| ■ Eastern Taruheru | ■ Manutuke |
| ■ Western Taruheru | ■ Muriwai |
| ■ Willows | ■ Paramata |
| ■ Waikanae/Mākaraka | ■ Wharekākā |
| ■ City/Wainui | ■ Mangaōpeka |
| ■ Taruheru River | ■ Mangaheia |
| ■ Waipaoa | ■ Waiapu General |
| ■ Patutahi | |

The total length of land drains is about 330kms. Four pump stations were installed between 1975 and 1984 to drain areas that cannot flow by gravity to the relevant watercourse. Overall the land drainage system is judged to be in good condition.

Coastal Erosion Protection

For the overall district, this activity surveys beaches every two years to monitor erosion and possible damage patterns. The following beaches are surveyed:

- | | |
|---------------|----------------|
| ■ Wainui | ■ Tolaga Bay |
| ■ Poverty Bay | ■ Anaura Bay |
| ■ Kaiti | ■ Tokomaru Bay |

More specifically, for the Wainui Beach foredune area, a number of erosion control measures are planned.

These are being installed to supplement existing structures which are mostly at the end of their economic life and are not performing well. The new assets will be paid for by a target rate on the properties requesting erosion protection.

Where we want to be

The current management focus is to operate and maintain rivers and land drainage assets in a suitable condition.

Most of the capital spending is on renewals and replacements of existing assets.

New capital works envisaged include river control work for the Waiapu River at Ruatōria and increasing the protection provided by the Waipaoa Flood Protection Scheme to above the current 70 year return period storm.

The trends influencing the future are:

- ▶ increased demand for food production – reflected in changing agricultural practices
- ▶ increased demand for coastal residential development.

The effect of these trends is thought to be relatively limited for the activity.

Looking ahead the performance of the flood control schemes is slowly reducing and augmentation of their capacity may be needed to achieve the same level of service as they were designed for. The installation of new flood control and land drainage schemes is possible at some time in the future to meet demands for protection of additional land for more agricultural production.

The small population growth forecast for the district is not foreseen to require the extension of the rivers and drainage asset base, but may influence the monitoring component of the activity.

Increased coastal development pressure is expected to be controlled by land use planning rather than increasing the level of coastal erosion protection.

How we plan to get there

- ▶ By collecting and maintaining information to support the asset replacement programme and risk management in a robust, consistent manner using well-defined processes and standards.
- ▶ Given that the future situation of the rivers and land drainage assets is foreseen to be substantially the same as it is today; the changes in the future impact of the activity on the community is not expected to be significant.
- ▶ No departure from current practices is anticipated. Most new capital works will be funded with targeted rates or charges on the direct beneficiaries. The general rating burden on the community will not vary significantly from that currently supported.
- ▶ Undertake programmed capital works including river control work for the Waiapu River at Ruatōria and increasing the protection provided by the Waipaoa Flood Protection Scheme to above the current 70 year return period storm.

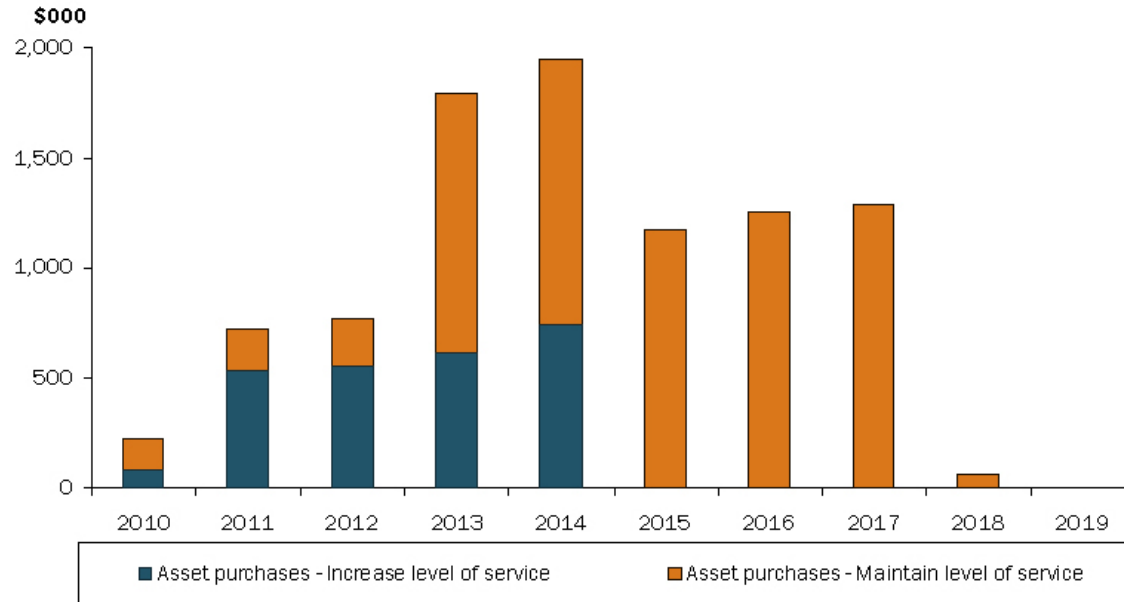
Significant negative effects

There are no significant negative effects from this activity.

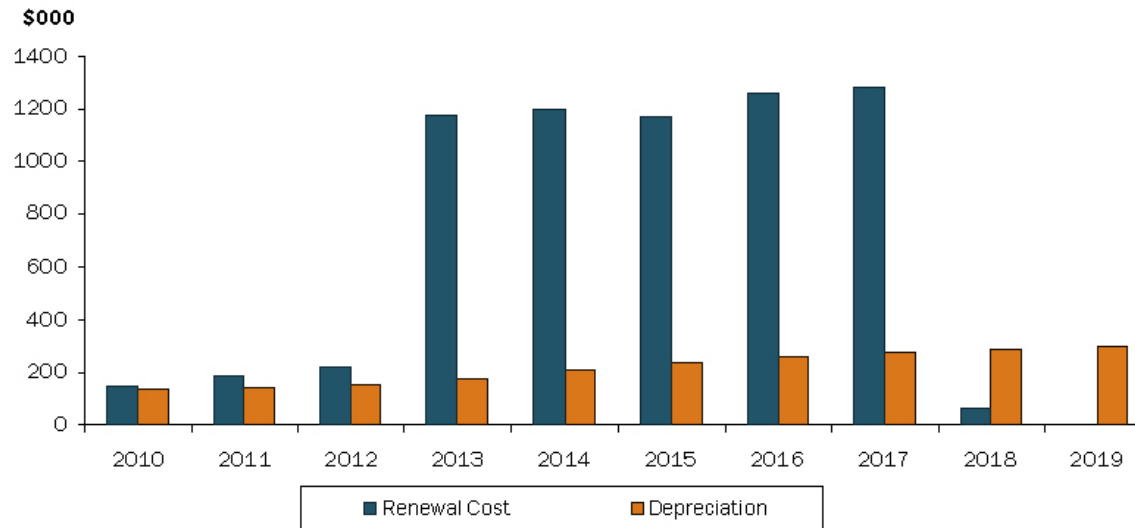
Summary of Forecasted Financial Performance for the 10 Years 2010 to 2019

	2010 \$000	2011 \$000	2012 \$000	2013 \$000	2014 \$000	2015 \$000	2016 \$000	2017 \$000	2018 \$000	2019 \$000
FLOOD CONTROL										
OPERATIONS										
Operating Revenue										
Activity revenue	-156	-160	-165	-169	-175	-180	-186	-192	-198	-205
Grants and subsidies	0	0	0	0	0	0	0	0	0	0
Other revenue	0	0	0	0	0	0	0	0	0	0
Total Operating Revenue	-156	-160	-165	-169	-175	-180	-186	-192	-198	-205
Operating expenditure										
Depreciation	136	140	156	175	205	239	256	273	291	297
Interest	219	227	257	329	437	524	585	648	672	657
Operating costs	1,006	1,048	1,083	1,111	1,147	1,196	1,298	1,339	1,381	1,425
Total Operating Expenditure	1,361	1,415	1,496	1,615	1,789	1,959	2,139	2,260	2,344	2,379
Net Internal Charges/(Recoveries)	628	649	684	754	786	811	875	939	1,074	1,165
Net Cost of Service	1,833	1,904	2,015	2,200	2,400	2,590	2,828	3,007	3,220	3,339
Funded by:										
Rates income	-1,833	-1,904	-2,047	-2,232	-2,448	-2,653	-2,891	-3,070	-3,236	-3,339
Transfers to/(from) reserves	0	0	0	0	0	0	0	0	0	0
Depreciation not funded	0	0	0	0	0	0	0	0	0	0
(Increase)/decrease in deficits carried forward	0	0	32	32	48	63	63	63	16	0
TOTAL OPERATIONS FUNDING	-1,833	-1,904	-2,015	-2,200	-2,400	-2,590	-2,828	-3,007	-3,220	-3,339
CAPITAL										
Capital Outgoings										
Asset purchases - Increase level of service	78	535	547	616	744	0	0	0	0	0
Asset purchases - Maintain level of service	150	187	219	1,176	1,201	1,169	1,256	1,285	64	0
Total asset purchases	228	722	766	1,792	1,945	1,169	1,256	1,285	64	0
Loan repayments	284	282	217	245	276	313	313	299	226	226
Total Capital Outgoings	512	1,004	983	2,037	2,221	1,482	1,569	1,584	290	226
Funded by:										
Rates income	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10
Development contribution income	0	0	0	0	0	0	0	0	0	0
Transfers to/(from) development contribution reserve	0	0	0	0	0	0	0	0	0	0
Capital grants and donations	0	0	0	0	0	0	0	0	0	0
Other capital revenue	0	-134	0	0	0	0	0	0	0	0
Loan funding	-228	-588	-766	-1,736	-1,888	-1,169	-1,196	-1,224	0	0
Transfer from depreciation reserve	-274	-272	-207	-291	-323	-303	-363	-350	-280	-216
Transfer to/(from) other reserves	0	0	0	0	0	0	0	0	0	0
TOTAL CAPITAL FUNDING	-512	-1,004	-983	-2,037	-2,221	-1,482	-1,569	-1,584	-290	-226

Total Capital Projects



Depreciation v Renewal Capital Projects



Capital Expenditure Programme

Description	LOS	Total Cost	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Loan & Reserve Funding
FLOOD CONTROL													
Onepoto Drains Hicks Bay	INC	57,200					57,200						100%
Flood Control - Ruatōria Flood Protection Provide a means of halting/slowing down erosion	INC	2,291,125	77,625	534,500	547,000	560,000	572,000						100%
Waipaoa River Flood Protection	MAINT	298,400				56,000	57,200		59,800	61,200	64,200		100%
Waikanae Creek	INC	170,400				56,000	114,400						100%
Taruheru River Revetments	MAINT	98,325	98,325										100%
Tūranganui River Revetments	MAINT	133,625		133,625									100%
Waipaoa River Flood Protection	MAINT	6,177,000	51,730	53,450	218,800	1,120,000	1,144,000	1,169,000	1,196,000	1,224,000			100%
Totals:		9,226,075	227,700	721,575	765,800	1,792,000	1,944,800	1,169,000	1,255,800	1,285,200	64,200		

Asset management

This activity has a comprehensive asset / activity management plan which is the key tool for ensuring that capital funding and existing assets are used as efficiently and effectively as possible.

Activity Area	Assets	Description
Flood Control	Stopbanks	67kms of earth embankments
	Outlet culverts	789 pipes
	Groyne rail and cable	800m total length of flow control features
	Timber river bank revetments	155m of timber walls
	Concrete river bank revetments	650m of concrete wall
Rivers Control Alignment	Telemetry	Radios, units, modems
	Hydrological	Pressure transducers, rain gauges
	Other equipment	Solar arrays, power supplies
	Infrastructure	Concrete huts, staff gauges, mounting plates etc
Land Drainage	Land drains	329km
	Pump stations	Structure
	Pump stations	Equipment: mechanical and electrical
Coastal Erosion Protection	Log/Rail Wall	
	Rock Revetment	
	Gabions	
	Timber Wall	
	Groyne 1	
	Concrete Groyne 27	

FLOOD CONTROL ACTIVITY

Levels of Service Statement	Performance Measure		Current Performance	Targets				Mechanism to Achieve Target
	Customer	Technical		Yr 1 2009-10	Yr 2 2010-11	Yr 3 2011-12	Yr 4-10 2012-18	
LOS (1) - Reliability Monitor drainage of rivers and streams. Ensure minimal flood risk and coastal erosion to the community.	Percentage of Requests for Service resolved within target timeframes.		79% (2008)	79%	80%	80%	85%	Maintenance works.
	Percentage of customers who rate Requests for Service responses as excellent/good.		82% (2008)	82%	90%	90%	90%	Maintenance works.
	Percentage of customers who are satisfied with Council's foredunes protection measures.		New Measure	50%	55%	60%	65%	The Wainui Beach Management Strategy.
		Land drains contain a 1 in 5 year flood.	100% (2007)	100%	100%	100%	100%	
		Council commitments within Wainui Beach Management Strategy are met.	Achieved (2007)	Achieved	Achieved	Achieved	Achieved	The Wainui Beach Management Strategy.
		Percentage of flood control stopbank length that is maintained to 70-year protection standard.	New Measure	90%	100%	100%	100%	
		Percentage of identified river flow impediments corrected, or removal costs included in approved annual budgets for following year.	New Measure	70%	75%	80%	90%	Process to record and budget for river flow impediment removal.