

STAFF REPORT

TO: Chair and Members, Engineering Services Committee

FROM: Gary Clark, Transportation Manager

REFERENCE: R605-1

DATE: 01 November 2010

SUBJECT: **Motueka Flood Control – RESC-10-11-09**
Report prepared for meeting of 11 November 2010

1 PURPOSE

- 1.1 The purpose of this report is to provide information on the Motueka Flood Control Project and to seek the Committee's agreement to the problems and objectives of the project.

2 BACKGROUND

- 2.1 As you will be aware from previous reports on this subject, the project involves investigating flood control options to provide an affordable scheme for the Motueka River that meets the risks that the community is prepared to accept with regard to flood protection.
- 2.2 As an important part of managing this project staff are required to report back to the Council on the progress of the project. This is required under Section 78 of the Local Government Act.
- 2.3 In the 2009 Ten Year Plan Council identified the need to undertake work to protect the Motueka community from a possible failure of the Motueka stopbanks. Budgets were set aside for carrying out investigations of the stopbank, preparation of flood modelling and extensive consultation to understand the needs of the community in relation to any possible upgrade of the flood control system. We were also tasked to look at costs and affordability issues.
- 2.4 Section 78 of the Local Government Act sets out the requirements that a local authority, in the course of its decision-making process to give consideration to the views and preferences of persons likely to be affected. Consideration must be given at the following stages in the process:
- 2.4.1 The stage at which the problems and objectives related to the matter are defined;
- 2.4.2 The stage at which the options that may be reasonably practicable options of achieving an objective are identified;
- 2.4.3 The stage at which reasonably practicable options are assessed and proposals developed; and

2.4.4 The stage at which proposals of the kind described in paragraph above are adopted.

2.5 Accordingly staff need to report to Council and seek decisions from you at these important decision points. This report provides information on the problems associated with the stopbanks and the objectives in protecting the community (stage 1).

3 PROBLEM

- 3.1 The current stopbanks were constructed in the 1950s in response to the possible flooding of the Motueka township from a large event. Since the stopbanks were constructed there have been three relatively large flood events where waters were seen lapping at the beams under the bridge on State Highway 60. These events occurred in 1957, 1983 and 1990. The 1983 event was considered to be a 1-in-100 year event, however, noting that it was of short duration.
- 3.2 In the 1957 event there was a bank failure where the banks collapsed at one section of the system. The estimated time that the river was close to its maximum flood height was less than six hours. The failure of the bank occurred two hours after the flood peak with water spilling out over the plains.
- 3.3 The biggest known flood occurred in 1877 when there were no stopbanks.
- 3.4 Between 1877 and 1955, when the stopbanks were completed, an average one flood every twenty years would affect the Motueka township. These events were linked to a high tide.
- 3.5 The existing stopbanks were designed to hold a 50-year flood with a 600mm freeboard (margin of safety from water level to top of bank). Most of the stopbank system can accommodate a one-in-100 year event with a lower freeboard of 300mm.
- 3.6 The stopbanks were constructed with the appropriate technology of the time. This would involve compacting separate layers of the stop bank system with a bulldozer carrying a scraper. This has led to poorly compacted soils in the middle of the stopbank which allow water to flow through this layer. Site investigations of the stopbank have shown that the structure cannot hold water. The tests showed that the stopbanks would not hold for two high tides during a flood. This would mean a likely failure of the stopbank system if there was a large flood that lasted more than six hours.
- 3.7 Another issue with the stopbanks is during large floods when piping occurs at the base of the structure. This is where water is flows through and around the stopbank structure as a result of increased water pressure from the flood.
- 3.8 The current stopbanks are maintained to the same standard that they were originally constructed.
- 3.9 The upgrading of the stopbanks was identified in the Ten Year Plan and was consulted on with the community. The community expressed concern to the Council about the affordability of the scheme during the Ten Year Plan preparation. Council needs to provide an appropriate level of protection to the community, however it must be affordable.

- 3.10 The community may accept a greater risk of flooding, ie a lower design of the stop bank structure in order to make the project more affordable. This can be taken into account provided the community, Council and insurers of property understand the consequences in this reduction of standard.
- 3.11 A report from MWH is attached to this report providing more details of the problems definition associated with this project.

4 OBJECTIVES

- 4.1 The main objective of this project is to develop an affordable scheme that meets an acceptable level of risk to all interested parties.
- 4.2 The project must provide a system that protects property and infrastructure from most events. Whether it will protect the community from a 1-in-100 year event will be decided as part of the consultation process. The 1-in-100 year event is based on the Resource Management Act requirement that development cannot occur on land that may be inundated in 1-in-100 year events.
- 4.3 The community may decide to accept a design that is less than 1-in-100 years which would result in a less expensive design solution. This will need to come from the community as part of the consultation process. This would meet the community's objective of finding an affordable solution, however there is a risk associated with that lesser standard.

5 UPDATE

- 5.1 Extensive consultation has been undertaken with the community, key stakeholders and iwi. The consultation has involved meetings, workshops and public displays to gain feedback from the affected parties.
- 5.2 The Motueka Flood Control project team is currently working through in identifying options that can be evaluated, tested and cost estimated. These options will need to meet a fatal flaw analysis. These options must be reasonably practicable in accordance with Section 78 (b) and (c) of the Local Government Act and will be presented to Council for its information, discussion and approval in due course.

6 RECOMMENDATION

- 6.1 THAT the report RESC10-11-09, Motueka Flood Control Project is received.**
- 6.2 THAT the Engineering Services Committee note the problems and objectives that are outlined the report, RESC10-11-09.**
- 6.3 THAT the Engineering Services Committee approves the definition of the problems and the objectives as noted in the report RESC10-11-09.**

Gary Clark
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