

## **OTAGO REGIONAL COUNCIL**

### **Agenda for a meeting of the Technical Committee to be held in the Council Chamber, 70 Stafford Street, Dunedin on Wednesday, 3 May 2017, following the Regulatory Committee**

**Membership:**

- Cr Stephen Woodhead (Deputy Chairperson)**
- Cr Graeme Bell**
- Cr Doug Brown**
- Cr Michael Deaker**
- Cr Carmen Hope**
- Cr Trevor Kempton**
- Cr Michael Laws**
- Cr Sam Neill**
- Cr Andrew Noone**
- Cr Gretchen Robertson**
- Cr Bryan Scott**

**Apologies:**

**In attendance:**

**Please note that there is an embargo on agenda items until 8.30 am on  
Monday, 1 May 2017**

**CONFIRMATION OF AGENDA**

**CONFLICT OF INTEREST**

**PUBLIC FORUM**

**MINUTES**

Minutes of the meeting held on 22 March 2017, having been circulated for adoption.

**ACTIONS**

Status report of resolutions of the Technical Committee.

| Report No.  | Meeting  | Resolution  | Status  |
|---|----------|---|---|
| 2016/1138<br>Terms of Reference for the Technical Committee | 23/11/16 | <i>That the Terms of Reference for the Technical Committee be considered a final version to be presented to the Council on 7 December 2016 for adoption</i> | Terms of Reference adopted by Council 7/12/16 |

## **PART A ITEMS FOR NOTING**

Item 3  
2017/0739 **Director's report on progress, DEHS, 20/04/17** -

The report provides information about the Clutha bioenergetics and instream habitat modelling; weather events; Leith Flood Protection Scheme, and the Dunedin City District Plan Natural Hazards.

## OTAGO REGIONAL COUNCIL

### Minutes of a meeting of the Technical Committee held in the Council Chamber, 70 Stafford Street, Dunedin on Wednesday, 22 March 2017, commencing at 10:14am

**Membership:** Cr Stephen Woodhead (Deputy Chairperson)  
Cr Graeme Bell  
Cr Doug Brown  
Cr Michael Deaker  
Cr Carmen Hope  
Cr Trevor Kempton  
Cr Michael Laws  
Cr Sam Neill  
Cr Andrew Noone  
Cr Bryan Scott  
Cr Gretchen Robertson

**Apologies:** Nil

**Leave of Absence:** Nil

**In attendance:** Peter Bodeker  
Nick Donnelly  
Gavin Palmer  
Scott MacLean  
Caroline Rowe  
Marian Weaver (for Director PPRM)  
Lauren McDonald (Committee Secretary)  
Adam Uytendaal  
Dean Olsen  
Jean Luc Payan  
Sharon Hornblow

#### **CONFIRMATION OF AGENDA**

The agenda was confirmed.

#### **CONFLICT OF INTEREST**

No conflicts of interest were advised.

#### **PUBLIC FORUM**

No public forum held.

#### **MINUTES**

Minutes of the meeting held on 8 February 2017, having been circulated were adopted on the motion of Crs Bell and Hope.

## **PART A      ITEMS FOR RECOMMENDATION**

Item 1  
2017/0705      **Lake snow technical workshop proceedings and research priorities – recommendations and programme cost estimates, DEHS, 15/03/17**      -

The report summarised the outcomes of the expert workshop convened by the ORC in December 2016 and sought Council endorsement for inclusion of a research work programme in the Draft Annual Plan 2017/18.

The full report entitled “*Lake Snow Technical Workshop, 20 December 2016, report on workshop discussions and outcomes, March 2017*” was circulated separately with the agenda.

Staff commented on the report and responded to questions from Councillors.

Moved Cr Woodhead  
Seconded Cr Kempton

*That Council:*

- 1) *That the outcomes of the expert workshop convened by ORC in December 2016 are noted.*
- 2) *That inclusion of the programme of further research described in this report in the Draft 2017/18 Annual Plan is endorsed.*

**Motion carried**

## **PART B      ITEMS FOR NOTING**

Item 2  
2017/0678      **Morphology of the Clutha River/Mata-Au between Roxburgh Dam and the Pacific Ocean. DEHS, 02/03/17**

The report covered the recent changes in channel morphology, how those changes sat within longer-term trends, and compared the changes in bed level that occurred between the last two surveys (2005 – 2014).

The full report entitled ‘*Morphology of the Clutha River/Mata-Au between Roxburgh Dam and the Pacific Ocean*’ prepared by ORC to summarise the results of the latest survey as per the 2016/17 Annual Plan target M1 – 10. The full report was circulated separately with the agenda.

Discussion was held in regard to scheme management of gravel build up, extraction and erosion in the river. Staff responded to questions from Councillors.

Moved Cr Woodhead  
Seconded Cr Brown

*That this report be received and noted.*

**Motion carried**

Item 3  
2017/0660 **Director's report on progress, DEHS, 15/03/17** -

The report provided information about the technical work underway with the DCC on the South Dunedin Future programme; Dunedin City District Plan Natural Hazards; River morphology and riparian management strategies for the Waianakarua and Cardrona catchments.

Discussion included hazard investigations, sea level rise and additional methods to control groundwater in South Dunedin. Staff advised the international review information was intended to be available by the end of June, and would be shared with the community.

Staff responded to questions from Councillors.

Moved Cr Noone  
Seconded Cr Woodhead

*That this report be noted.*

**Motion carried**

The meeting was declared closed at 11:00am.

Chairperson

## REPORT

Document Id: A991475

Report Number: 2017/0739

Prepared For: Technical Committee

Prepared By: Dr Jean-Luc Payan, Manager Natural Hazards  
Dr Dean Olsen, Manager Resource Science  
Chris Valentine, Manager Engineering

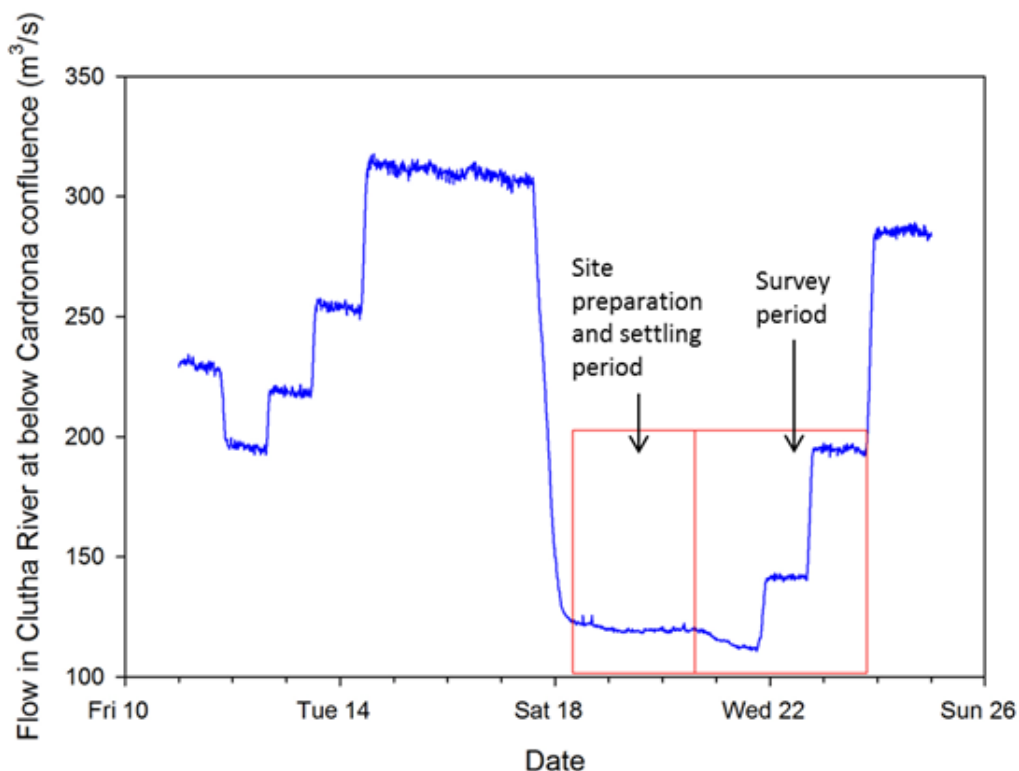
Date: 20 April 2017

Subject: **Director's Report on Progress**

---

### 1. Clutha bioenergetics and instream habitat modelling

The Cawthron Institute took advantage of low flows in the upper Clutha in mid-March to undertake invertebrate surveys in the upper Clutha River. The data gathered will be used to calibrate part of the trout bioenergetics model they are developing to inform flow-setting processes for the upper Clutha River. Contact Energy Ltd assisted in making this work possible by manipulating outflows from Lake Hawea so that river flows reduced to 120 m<sup>3</sup>/s for three days to allow invertebrates in the survey reach to settle. Drift measurements were then undertaken at three different flows on the 22<sup>nd</sup> (120 m<sup>3</sup>/s), 23<sup>rd</sup> (145 m<sup>3</sup>/s), and 24<sup>th</sup> (195 m<sup>3</sup>/s) (Figure 1). The results of the bioenergetics modelling are expected to be available late in 2017.



**Figure 1:** Flows in the upper Clutha River near Queensberry during the invertebrate drift surveys undertaken in mid-March 2017.

The bioenergetics modelling being undertaken in the upper Clutha will ultimately predict the number of trout that the upper Clutha River can support at different flows. The bioenergetics model sits on top of a more traditional instream habitat model being developed for the upper Clutha by NIWA. Instream habitat modelling will be used to understand the effects of different flows in upper Clutha on instream values including habitat for fish, invertebrates, periphyton as well as riverine birds and recreation (e.g. jet boating, kayaking).

## 2. Weather Events

Prolonged rainfall between 12 and 14 April (about 65 hours - June 2015<sup>1</sup> lasted about 31 hours) was observed in East Otago causing some rivers and streams to rise. Although heavy rainfall was predicted by MetService, the observed amount of rain and associated intensities were not exceptional (Table 1). River flows were high but did not cause any significant flooding (Table 2).

**Table 1. Summary of the 12-14 April 2017 rainfall event characteristics and comparison with the June 2015 event**

|   | <b>Pine Hill<br/>(Water<br/>of Leith)</b>        | <b>Sullivans<br/>Dam<br/>(Water<br/>of Leith)</b> | <b>Musselb<br/>urgh<br/>(South<br/>Dunedin)</b> | <b>Swampy<br/>Spur<br/>(Silver<br/>Stream)</b> | <b>Deep<br/>Stream<br/>(Taieri)</b> | <b>Clifton<br/>Falls<br/>(Kakanui)</b> | <b>Table<br/>Hill<br/>(Tokom<br/>airiro)</b> | <b>Balclutha<br/>(Clutha)</b> | <b>Moa Flat<br/>(Pomahaka)</b> |
|---|--|---|---|--|-------------------------------------|--|--|-------------------------------|--------------------------------|
| <b>Total rain<br/>(mm)<br/>(June<br/>2015<br/>totals in<br/>brackets)</b> | 132 over<br>65 hrs<br>(183.5,<br>over 31<br>hrs) | 131 over<br>65 hrs<br>(175,<br>over 31<br>hrs)    | 114<br>(143.8)                                  | 105.5<br>(187.5)                               | 32<br>(88)                          | 39<br>(16)                             | 37.5<br>(99.5)                               | 39<br>(68.5)                  | 20<br>(56)                     |
| <b>Peak<br/>Rainfall<br/>Intensity<br/>(mm/hr)</b>                        | 7.5<br>(15)                                      | 6<br>(14.5)                                       | 5.6<br>(11.8)                                   | 5.5<br>(12)                                    | 4.5<br>(11)                         | 4<br>(3)                               | 4<br>(8.5)                                   | 4<br>(7)                      | 3<br>(4.5)                     |
| <b>Max 24<br/>hr<br/>rainfall<br/>(mm)</b>                                | 74.5<br>(179.5)                                  | 72.5<br>(171.5)                                   | 64<br>(142)                                     | 53<br>(181.5)                                  | 26<br>(87.5)                        | 22.5<br>(16)                           | 28<br>(97.5)                                 | 30<br>(68)                    | 16<br>(55)                     |

<sup>1</sup> The June 2015 event is selected as a reference for this report as it is a recent heavy rainfall/high flow event that affected East Otago. Refer to “*Coastal Otago flood event: 3 June 2015*” (ORC, 2015) for a detailed description of the event.

**Table 2. Summary peak flows recorded during the 12-14 April 2017 rainfall event and comparison with peak flows from the June 2015 event**

|   | Kakanui at Clifton falls | Leith at Leith Street <sup>1</sup> | Lindsay Creek at North Road <sup>2</sup> | Silver Stream at Gordon Road <sup>3</sup> | Taieri at Outram <sup>4</sup> | Tokomairiro at West Branch Bridge | Pomahaka at Glenken | Clutha at Balclutha |
|---|--------------------------|------------------------------------|--|---|-------------------------------|-----------------------------------|---------------------|---------------------|
| Peak flow (m <sup>3</sup> /s) (June 2015 peak flow in brackets) | 37<br>(139)              | 39<br>(98)                         | 10<br>(29)                               | 33<br>(130)                               | 111<br>(740)                  | 3<br>(72)                         | 36<br>(389)         | 576<br>(1621)       |

- 1 The Leith Flood Protection Scheme is increasing the capacity of the Water of Leith to 171m<sup>3</sup>/s.
- 2 Flooding of parts of North East Valley occur whenever flows exceed approximately 25m<sup>3</sup>/s.
- 3 Water flows over the Gordon Road spillway whenever flows exceed approximately 125m<sup>3</sup>/s.
- 4 Water from the Taieri River flows into the East Taieri Upper Pond whenever flows exceed approximately 800m<sup>3</sup>/s.

Early liaison with Dunedin City Council was established in order to provide regular updates on observed and forecast river flows during the event. Staff monitored the flood protection and land drainage schemes, developed forecasts of expected flows for rivers across the affected area, monitored groundwater levels for South Dunedin and issued flood advisories as required. All ORC flood and drainage schemes functioned as intended.

### **3. Leith Flood Protection Scheme**

Engineering works on the Union to Leith Footbridge stage of the Leith Flood Protection Scheme are underway. Site establishment is complete and clearing of vegetation on the left bank upstream of the Information Technology Services (ITS) building has commenced (Figure 2). Pre-emptying the heavy rain on 12 and 14 April the contractor was instructed to breach the haul road crossing the river and remove their temporary culverts. Some damage to temporary site access resulted from the high flows.





**Figure 2:** Left bank vegetation clearance in Memorial Garden on 19 April 2017. Selected trees are being retained and incorporated into the scheme works as requested by the University of Otago

Investigations for the Dundas Street stage of the Scheme are continuing. Arrangements are being made with the University of Auckland Department of Civil and Environmental Engineering to construct and test a scale physical model of the proposed works. The model will be used to refine the design. Field observations made by ORC staff during the high flows on 12 and 14 April will assist with model design.

#### **4. Dunedin City District Plan Natural Hazards**

Staff are continuing to work with Dunedin City Council on addressing and advising on the technical aspects related to natural hazards provision of the second generation District Plan (2GP). Natural Hazards staff presented evidence to the Hearings Panel in relation to the natural hazards information that has been prepared by ORC for DCC.

#### **5. Recommendation**

That this report is noted.

Gavin Palmer  
**Director Engineering, Hazards and Science**