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Graham Harrington
Christchurch City Council
53 Hereford Street
Christchurch 8013

CSNDC – RESPONSE TO INITIAL COMMENTS ON C-CLM BPI REPORT FROM CANTERBURY REGIONAL COUNCIL

Dear Graham,

Golder Associates (NZ) Limited (Golder) understands there was a meeting with Canterbury Regional Council (CRC) on Monday 17 September 2018, in which the Christchurch Contaminant Load Model – Best Practice Infrastructure (C-CLM BPI) report and an audit of this report by the University of Canterbury (UCan) was discussed. The C-CLM BPI report was prepared and submitted in support of the Comprehensive Stormwater Network Discharge Consent (CSNDC) application.

Brent Pizzey from Christchurch City Council (CCC) has summarised several questions from CRC about the report in his email from 19 September 2018. You have requested us to provide a response to those questions.

Golder would like to note that if we were included in the meeting with CRC, then a number of matters could have been clarified. Consequently, we recommend that Golder meets and discusses the matters raised with CRC's experts in a caucusing setting or similar. Particular matters that we could discuss include:

- The use of Christchurch field data: The available field test information from Christchurch is very limited. UCan has done a study for the Addington catchment, which was not sufficiently comprehensive to use in the city-wide C-CLM. Paul Kennedy may be able to provide further advice in response to this matter. However, the contaminant load rates are not that important in order to assess relative changes (see below).
- The level of detail in the C-CLM report that would enable its replication: We note that the report is extensively based on the Avon SMP report (Golder 2014), which we consider has sufficiently detailed information to readily enable replication of the C-CLM.

Several specific matters were raised in the 17 September meeting as being unclear to CRC, and we have attempted to provide further clarification below:

- The rate of future land use change: Section 4.5.4, page 17 states *'… a linear growth towards the 35 year full development case is assumed…'*
- Areas under construction: Section 4.5.2, page 14 states *'… the proportion of the C-CLM catchment, which was classed as under construction… 0.6% for commercial and industrial properties; and 0.3% for residential properties."*

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- Devices modelled: Table 6 in Section 4.5.4, page 16, lists all devices modelled and their treatment efficiencies.

Additionally, CRC has raised the following matters that we seek clarification on in order to respond:

- High risk sites: It is unclear to us by what is meant with 'high risks' sites. Note that the C-CLM model does not identify 'hotspots' (i.e., problem areas such as specific industrial sites or construction sites with on-going issues), although significant contributing sub-catchments have been be identified.
- Adaption of load rates from Auckland to Christchurch: It is unclear to us on what basis CRC concludes that *"CLM Load rates per land use types aren't adequately adapted from Auckland to Christchurch conditions".*

We have undertaken a high-level sensitivity analysis on the model, but acknowledge this was not included in the report. Conclusions that we reached regarding the analysis are as follows:

- The contaminant loading rates have little influence on the reductions that are achieved by either source control or treatment options. Given that the model assesses relative changes and the C-CLM's intended purpose, there is little benefit in further focus on better contaminant load rates.
- Treatment efficiencies are sensitive, but we note that the efficiencies used in the C-CLM are already at the lower end of the range that we have derived from various reports. Paul Kennedy may be able to provide further advice in response to this matter.

Golder would appreciate the opportunity to see UCan's review of the C-CLM. We anticipate UCan pointed out the complexities of stormwater quality and effects on the receiving environment. As discussed with CRC staff last year (meetings on 22 and 29 September 2017) the C-CLM will not assess the instream water quality, and this was accepted by CRC. It would be helpful to understand if CRC's position on this matter has changed.

We hope this provides the required clarification. We would welcome an opportunity to discuss these matters directly with CRC consenting staff.

Yours sincerely,

Golder Associates (NZ) Limited

Eric van Nieuwkerk
Senior Hydrogeologist