## A screening survey to identify sector priorities for national rainfall and runoff guidelines

A wide range of hydrological (rainfall-runoff) methods are in use in New Zealand, in some cases with little or no concrete evidence of their applicability, accuracy and suitability. This can lead to having multiple answers to the same question (e.g. peak flow estimates differing by a large margin) depending on the method employed. Our aim is to improve the consistency of rainfall-runoff estimation in New Zealand, in order to get more appropriate and repeatable results.

New Zealand does not have the resources to develop comprehensive national rainfall and runoff guidelines as the Australians have done with the ARR ([click here](http://arr.ga.gov.au/arr-guideline)). We are therefore looking to break the work down into more manageable chunks, and to prioritise certain areas. In addition, it is likely that there are some parts of the ARR guidelines that could be adapted for use in New Zealand.

This screening survey aims to identify some priority projects that need New Zealand specific work undertaken, as well as which parts of the ARR could be easily adapted for NZ. This will be followed up with a more detailed gap analysis of the priority topics that emerge from this survey. **Please complete and return your survey to** [**charlotte.cudby@waternz.org.nz**](mailto:charlotte.cudby@waternz.org.nz) **ASAP** (the original deadline has passed and we are analysing the results, however, we do not want to shut the door on your input).

**Question 1** Please rank the following in order of priority from 1 to 4 (most important = 1)

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| --- | --- |
|  | Ranking |
| Pursuing specific technical projects (such as those listed under question 2). |  |
| Developing guidance on how to apply methods and models (such as those listed under question 3). |  |
| Providing training on how to apply methods and models. |  |
| Providing centralised access to existing documents that apply locally and/or nationally. |  |

**Question 2** If we were to focus on pursuing specific technical projects, which of the following do you see as the most important and urgent?

Please use a scale of 1 – 3, where:

1 = High priority – Very important and urgent

2 = Medium priority – Somewhat important but not urgent

3 = Low priority - Can live without national work occuring in this area.

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| **Project** | **Initial description of work needed** | **Priority** |
| Rainfall intensity-frequency-duration | Update intensity-frequency-duration information across NZ (build on HIRDS). |  |
| Spatial patterns of rainfall | Use existing rainfall data to map spatial variability across NZ. Identifying gaps in data to further this work. |  |
| Temporal patterns of rainfall | Develop a range of temporal patterns of rainfall for use around NZ (including nested rainfall patterns), using all available data and models (e.g. HIRDS). |  |
| Continuous rainfall sequences at a point | Develop methodologies for the generation of rainfall data for use in continuous rainfall sequences. |  |
| Regional flood methods | Detailing methodologies for flood estimation at a regional / national scale in areas where data is sparse. |  |
| Loss models for catchment simulation | Confirm curve numbers for use in the SCS method across different parts of NZ, by calibration to measured flows. |  |
| Continuous simulation | Use of continuous simulation for design flow determination or for better understanding of the broad hydrological behaviour of the catchment. |  |
| Rational method developments | Confirm rational formula coefficients for use in the rational method across different parts of NZ, by calibration to measured flows. |  |
| Large to extreme floods in urban areas | Methods for estimating flood flows in urban areas covering the range of available models and data. |  |
| Contaminant modelling | Consider the information required to model contaminants along with runoff. |  |
| Something else? Please specify… |  |  |

**Question 3** If we were to focus on developing guidance, which of the following do you see as being the most important and urgent?

Please use a scale of 1 – 3, where:

1 = High priority – Very important and urgent

2 = Medium priority – Somewhat important but not urgent

3 = Low priority - Can live without national guidelines in this area.

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| **Project** | **Initial description of work needed** | **Priority** |
| Continuous rainfall sequences at a point | Guidance for the use of continuous rainfall sequences including incorporation of climate change scenarios. |  |
| Loss models for catchment simulation | Guidance on how the SCS method should be applied in different regions. |  |
| Baseflow for catchment simulation | Outline methods available for baseflow estimation, links to available data. |  |
| Rational method for runoff analysis | Develop guidance on how the rational method should be applied in different regions. |  |
| Large to extreme floods in urban areas | Guidance on estimating flood flows in urban areas. |  |
| Urban hydraulic modelling | Guidance on modelling complex urban floods. |  |
| Something else? Please specify… |  |  |

**Question 4** Please comment on whether you think any of the topic areas covered by the Australian Rainfall and Runoff guidelines could be adapted for NZ? If so, please specify which topics and what would be needed to adapt the work for NZ.

**Question 5** What would be the NUMBER ONE priority that you would be looking for from this work?