

30 January 2025

Dugan Weitz  
Hawke's Bay Regional Council

Dear Dugan,

### Proposal for Broughton Bridge Scour Assessment

Thank you for the opportunity to present our proposal to carry out a scour assessment of Broughton Bridge (HDC Bridge ID 234).



*Figure 1 - Approximate location of Bridge ID 234*

### Introduction

WSP understands that due to recent flood events and subsequent reviews of stopbank schemes in the area, Hawke's Bay Regional Council (HBRC) wishes to assess the capacity of the Broughton Bridge to withstand future flood events, with consideration to the wider flood protection scheme. The purpose of this assessment is to provide assurance to the community and bridge users who rely on this asset as part of their daily travels and connection to neighbouring towns. As the assessment relates to the wider flood management scheme assessments being undertaken by HBRC, it is being addressed by HBRC rather than the Hastings District Council (HDC) who are responsible for the asset.

This scour assessment utilises a TUFLOW model which has been prepared by another consultant, Tonkin + Taylor, and will be provided to WSP to use for the assessment.



## Scope of Work and Methodology

### Scour Assessment

WSP will undertake a bridge scour assessment for Broughton Bridge, utilising the supplied TUFLOW model.

The scour assessment will include:

- Review of the TUFLOW model schema for the scour assessment (piers, abutment, and deck). If any modification is required for the assessment, WSP will inform HBRC at that time.
- Export and conversion of 2-dimensional model results to 1D equivalent values
- Scour assessment as per the Melville and Coleman methodology (this includes pier scour, abutment scour, and pressure scour if required) with allowance for debris rafts following the NZTA Bridge Manual
- Look at sensitivity to the  $D_{50}$  parameter
- Commentary on historic performance
- Commentary on 1D analysis approach vs more computational demanding / costly approaches to scour estimation

The scour assessment results will be summarised, along with any risks identified, in the form of a letter report which is intended for sharing with stakeholders. .

Please note, contraction scour is excluded (due to being an existing structure) and long-term changes to bed elevation will not form part of this scope.

### Key Dates and Deliverables

The scour assessment will be provided within three weeks following acceptance of offer and receipt of all required information outlined below.

## Fees and Personnel

Our proposed team is set out in the table below. Anna Kempt will be the Project Manager and will be your main point of contact. Nicky Smith will be overseeing the work as Project Director.

Bryce Warner is our Senior Water Resources Engineer and is responsible for the delivery of the assessment. Bryce will be supported by Mark Groves as the technical reviewer for the work.

Resource	Position	Location	Role Summary
Mark Groves	Technical Principal - Stormwater & Flood Risk Management	Christchurch	Technical Reviewer
Bryce Warner	Senior Water Resources Engineer	Christchurch	Project Engineer
Anna Kempt	Senior Project Manager	Nelson	Project Manager
Nicky Smith	Major Projects Director	Napier	Project Director

We propose to carry this work out as a fixed fee proposal. The fee for this work is presented below. All fees in this proposal exclude GST.

Fee Estimate	Estimated Fees (excluding GST)
Scour Assessment	\$13,850.00
<b>Total Fees</b>	<b>\$13,850.00</b>

## Conditions of Engagement

WSP's proposal is subject to the terms and conditions of the ACENZ Short Form Agreement, December 2017 (SFA) with WSP's standard amendments. The services will commence once both parties have signed the contract. A copy of the proposed contract is appended to this proposal.

## Assumptions and Clarifications

In preparing this Proposal and calculating the Fees WSP has relied on the following assumptions and qualifications:

- HBRC will provide the model and all associated files required to run the model for the assessment.
- Bridge as-builts will be supplied prior to commencement of the work.
- WSP have assumed the supplied model is fit for purpose. If it is found to not be fit for purpose, WSP will inform HBRC.
- WSP will not make any changes to the model.
- The scour assessment is a 1D analysis of scour only using Melville and Coleman methodologies.
- No 2D or 3D hydraulic modelling or scour assessment.



- Bridge is IL2.
- Our assessment is limited to analysis of SLS and ULS events only of supplied hydrology (2 no. events max.) as agreed with HBRC. The SLS and ULS events may be interpolated from the supplied hydrology if not covered by the existing model. This proposal does not include review of the supplied hydrology.
- No structural analysis is being carried out.
- No allowance for client meetings or formal progress reporting due to the short deliverable timeframes. Any meetings will be virtual.
- Our assessment is desktop only, no site visit will be carried out as part of this work.
- HBRC has permission from HDC to carry out this assessment of their asset.
- WSP recommends that the Peer Review of the TUFLOW Model (being carried out as a separate engagement) is carried out prior to commencing the Scour Assessment. HBRC understands that if the Peer Review finds the model to be unfit for purpose, and if the Scour Assessment has commenced prior to the Peer Review, then re-work may be required for the Scour Assessment, resulting in additional fees.

The Proposal set out in this letter is valid for 30 days from the date of its issue. Any changes to the assumptions and clarifications above, commercial terms or any other matter set out in this Proposal, including any amendments to the terms and conditions of contract proposed, may result in an adjustment to the Fees and/or Programme.

Yours sincerely

A handwritten signature in black ink that reads 'AKempt'.

Anna Kempt  
Senior Project Manager