

To: Bryce Taplin

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Project: New Bridgewater Bridge Date: 10 November 2021

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From: James Burbury

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Subject: Comparison of 'Chosen Design' to Completed Assessment of Coastal Inundation

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Dear Bryce,

As requested, we have reviewed the 'chosen design' provided to us on 25 October 2021 and have completed an analysis comparing it to the assessment we undertook as detailed in our report, *New Bridgewater Bridge Marine Safety Assessment Report, November 2021*.

Our assessment was based on the reference design and the proposal description provided to us and included in the Major Project Impact Statement.

The 'chosen design' provided refines the extent of works and enables us to make comment regarding any changes we believe may be required to the identified potential impacts, proposed mitigations or the findings generally.

## 1. Summary

We have provided a summary of our comparison in the table, below.

Item	Current Assessment	'Chosen Design'
Potential Impacts	No impact on coastal inundation with the proposed new Bridgewater Bridge. Major impacts for coastal inundation relate to flooding.  The existing causeway will be the most susceptible area to inundation in the future.	No change.
Proposed Mitigations	Nil.	Detailed design phase should consider areas within the design and construction areas at risk to future inundation and provide provision for adaptation or mitigation.
Findings and Conclusions	No increased risk to coastal inundation.	No increased risk to coastal inundation.

In summary, we believe that the assessment we have completed (as outlined in our report), generally covers the expected impacts of the 'chosen design'.

We recommend the following changes to the conclusion:

- The recommendations from the Entura Flood Report (Appendix S) should be considered for any areas identified as at risk to flooding.
- Options may include design for adaptation (i.e. protection and/or raising of the design levels) should be included to limit the requirements for removal or relocation in the event of increased sea levels.

## 2. Introduction

During the preparation of our report, the Early Contractor Involvement (ECI) process was either yet to begin or was underway but not concluded. As a result, a ‘chosen design’ was not available for us to assess the impacts of and so we undertook an assessment of Coastal Inundation based on the reference design and the proposal description provided to us and included in the Major Project Impact Statement.

We understand that the reference design and the proposal description were developed to generally cover both of the tenderer design alignments and broadly the construction methods, and expected that the ‘chosen design’ will mostly accord with our assessment completed.

In particular, we expected to see a refinement of the alignment of the works (the size of intersections and the alignment over water were broader areas) and more detail on the construction methodology to be used.

This comparison has been completed to test these expectations and identify how well our assessment aligns with the ‘chosen design’.

## 3. Background

The ‘chosen design’ was shared with us on 25 October 2021, and included selected plans, sections, elevations, renders and management plans. In general, the ‘chosen design’ follows a design similar to the Reference Design. It:

- is a four-lane bridge crossing the River Derwent, with a posted speed limit of 80km/h
- includes changes to the intersections at the southern and northern extents of the bridge to allow for grade separation
- includes a shared path as part of the crossing, connecting into the local surrounding network
- involves the demolition of selected buildings and structures as originally proposed.

The following is where the ‘chosen design’ differs from what we assessed.

- The alignment of the bridge. The alignment is more refined that was previously advised. In comparison to the Reference Design, the alignment is further east at the southern extent but similar at the northern extent.
- The extent of the intersection works. The extent of work is more refined that was previously advised. The layout of the intersections are generally similar to the reference design.
- The bridge type is confirmed. This includes the bridge pier spacing and number and type of piles.

## 4. Potential Impacts

In our prior assessment, the proposed development presented no increased risk to coastal inundation of the Project Site. We did not assess specifically the design footprint or levels as these were not available at the time of the assessment.

In reviewing the ‘chosen design’ we have identified the following changes to impacts.

Impacts	Change to impact
Final design levels for roads, footpaths and drainage outfalls below 1% AEP flood levels	A section of road on the southern interchange will be at risk to coastal inundation due to sea level rise and flooding under 1% AEP flood conditions. This will coincide with flooding of additional areas of the existing road network immediately adjacent to the project site and is therefore a broader consideration than just the proposed development.

As can be seen from the above table, the impacts are expected to be similar to those assessed as part of the original assessment.

## 5. Proposed Mitigations

In reviewing the 'chosen design' we have identified the following changes to those mitigations.

Mitigations	Change to mitigations
Review of design levels	The detailed design phase should consider any design and construction areas at risk to flooding and inundation in the future and make provision for design change or adaption of the design to support future sea level and flooding levels.

Kind Regards,



**James Burbury**  
*Managing Director*  
**Burbury Consulting**