



Technical and Approvals Consultancy  
Services: Parkes to Narromine  
Flood Study Report Volume 2

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## Prepared for

Australian Rail Track Corporation

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## Glossary

AEP	Annual Exceedance Probability
ARTC	Australian Rail Track Corporation
CoA	Conditions of Approval
EIS	Environmental Impact Statement
IFC	Issue for Construction
IRDJV	Inland Rail Design Joint Venture – A joint venture of WSP Australia and Mott MacDonald set up to deliver the detailed design for the project
MCA	Multi Criteria Analysis
TA	Technical Adviser

# 1 Introduction

## 1.1 Purpose of Report

The purpose of this report is to provide supplementary flood mapping data for the Flood Study Report (3-0001-240-IHY-00-RP-0003). The Flood Study Report contains flood mapping for the 39, 10 and 1% Annual Exceedance Probability (AEP) events and the 1% AEP event with climate change allowance. This addendum provides flood maps for the intermediate and additional events as required by the Project Services Brief, namely the 18%, 5%, 2% and 0.05% AEP events.

The flood impact assessment for the project is documented in the Flood Study Report. The impact mapping presented in this addendum for the intermediate 18%, 5% and 2% AEP events show similar trends in impacts on flood level, velocity and duration to those documented in the Flood Study Report for the 39%, 10% and 1% AEP events.

This report has been updated primarily to address the changes that have been requested by ARTC following submission of the IFC design, to amend culvert designs and the alignment at Peak Hill. The associated design updates have been incorporated into the flood models, the results of which are captured in this document.

## 1.2 Related Documents

This report should be read in conjunction with the following additional project documentation:

- Hydrological and Hydraulic Investigation Plan (3-0001-240-IHY-00-PL-0001): This plan set out the methodology adopted for the hydrological and hydraulic modelling analyses and introduced the flood management objectives (or flood impact limits) that were later refined on receipt of the Environmental Impact Statement (EIS) Conditions of Approval (CoA);
- Hydrological Calibration Report (3-0001-240-IHY-00-RP-0001): This report provides an update of the hydrological modelling methodology, a summary of the review of hydrological data used to build and calibrate the hydrological models, a description of the hydrological model calibration process and the results achieved, and a description of additional verification checks on the results of the hydrological and hydraulic modelling of the existing flooding conditions within the project area. This is a key document that is required to give Australian Rail Track Corporation (ARTC) and the Technical Advisor (TA) confidence in the hydrological modelling and design flow estimates before proceeding to adopt the hydrological model for the detailed design; and
- Flood Study Report (3-0001-240-IHY-00-RP-0003): This report describes the methodologies used for the design flood modelling and documents the results of the rail formation flood immunity assessment, the flood impact assessment and the compliance of the cross drainage design and flood modelling with the Requirements Analysis, Allocation and Traceability Matrix, ARTC's Flood Multi Criteria Analysis (MCA) outcomes and the flood management objectives. It contains existing conditions and design conditions flood mapping for the 39%, 10% and 1% AEP events and the 1% AEP event with climate change allowance.

## 1.3 Status of Report

The report is currently at Issue for Construction (IFC) Detailed Design stage draft status and is subject to review by ARTC and the TA.

## 2 List of Flood Maps

The following tables list the flood maps provided in Appendices A and B.

**Table 2.1** List of existing conditions flood map sets contained in Appendix A

Set	Description	Figure / Map References
A01	Existing flood depth for 18% AEP event	EX18L1 to EX18L25
A02	Existing flood depth for 5% AEP event	EX5L1 to EX5L25
A03	Existing flood depth for 2% AEP event	EX2L1 to EX2L25
A04	Existing flood depth for 0.05% AEP event	EX0.05L1 to EX0.05L25
A05	Existing flood velocity for 18% AEP event	EX18V1 to EX18V25
A06	Existing flood velocity for 5% AEP event	EX5V1 to EX5V25
A07	Existing flood velocity for 2% AEP event	EX2V1 to EX2V25
A08	Existing flood velocity for 0.05% AEP event	EX0.05V1 to EX0.05V25
A09	Existing flood duration for 18% AEP event	EX18D1 to EX18D25
A10	Existing flood duration for 5% AEP event	EX5D1 to EX5D25
A11	Existing flood duration for 2% AEP event	EX2D1 to EX2D25
A12	Existing flood duration for 0.05% AEP event	EX0.05D1 to EX0.05D25

**Table 2.2** List of design conditions flood map sets contained in Appendix B

Set	Description	Figure / Map References
B01	Flood level change (afflux) for 18% AEP event	DE18A1 to DE18A25
B02	Flood level change (afflux) for 5% AEP event	DE5A1 to DE5A25
B03	Flood level change (afflux) for 2% AEP event	DE2A1 to DE2A25
B04	Flood level change (afflux) for 0.05% AEP event	DE0.05A1 to DE0.05A25
B05	Flood velocity change for 18% AEP event	DE18VC1 to DE18VC25
B06	Flood velocity change for 5% AEP event	DE5VC1 to DE5VC25
B07	Flood velocity change for 2% AEP event	DE2VC1 to DE2VC25
B08	Flood velocity change for 0.05% AEP event	DE0.05VC1 to DE0.05VC25
B09	Flood duration change for 18% AEP event	DE18DC1 to DE18DC25
B10	Flood duration change for 5% AEP event	DE5DC1 to DE5DC25
B11	Flood duration change for 2% AEP event	DE2DC1 to DE2DC25
B12	Flood duration change for 0.05% AEP event	DE0.05DC1 to DE0.05DC25