APPENDIX J

Additional flood modelling information

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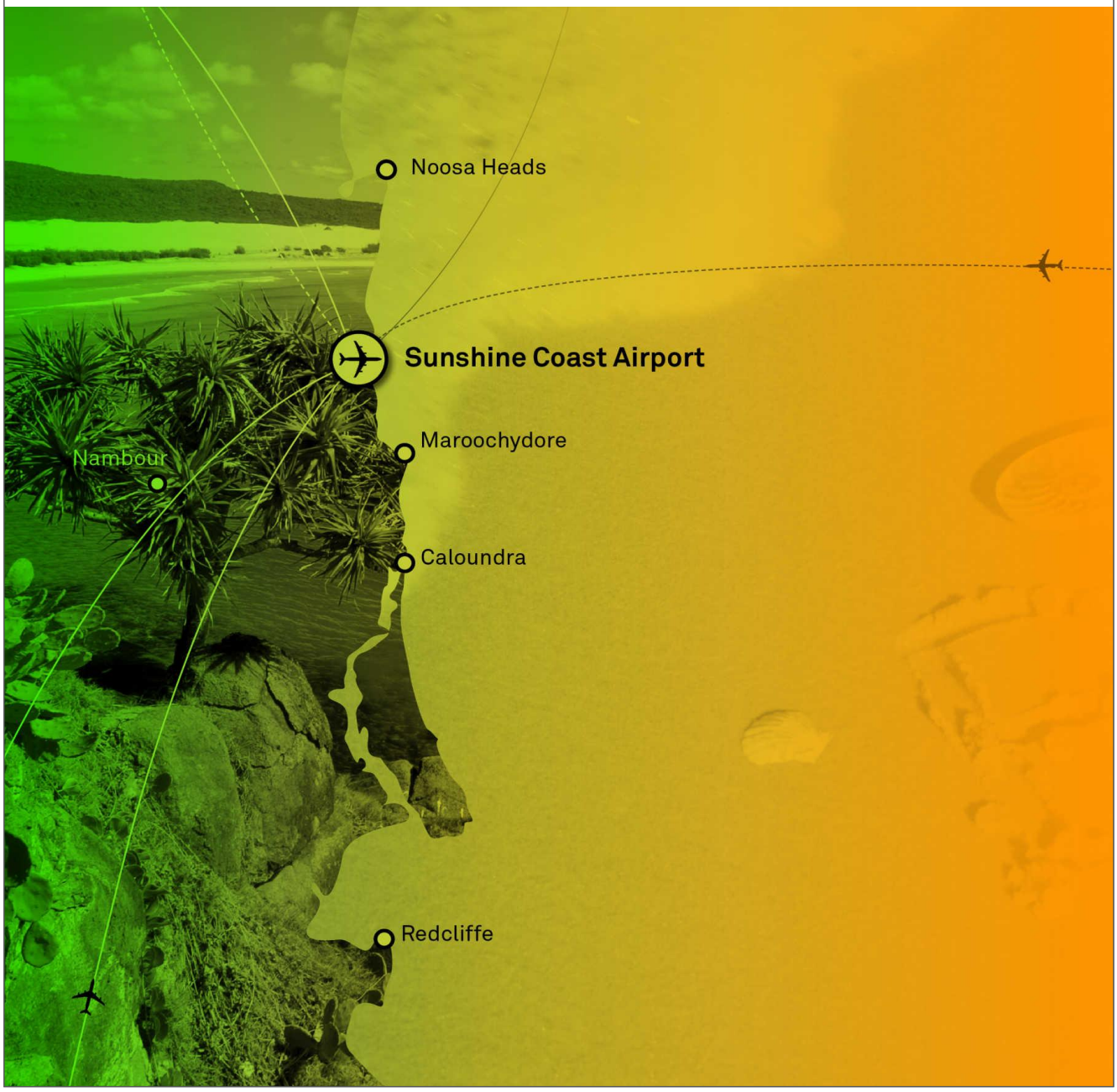
Sunshine Coast Airport Expansion Project
Environmental Impact Statement
Sunshine Coast Council
19-Dec-2014

Flood Modelling Information Package

Prepared for the Department of Transport and Main Roads



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Additional flood modelling information (continued)

Flood Modelling Information Package

Prepared for the Department of Transport and Main Roads

Client: Sunshine Coast Council

ABN: 37 876 973 913

Prepared by

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19-Dec-2014

Job No.: 60248594

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Quality Information

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Date	19-Dec-2014
Prepared by	Sam Knight
Reviewed by	Robyn Bussey

Revision History

Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
A	19-Dec-2014	For Information	Rowan Cossins Associate Director	

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1.0 Introduction

1.1 Background

AECOM Australia Pty Ltd completed the flood impact assessment to support the Sunshine Coast Airport (SCA) Expansion Project Environmental Impact Statement (EIS) for Sunshine Coast Council. Subsequent to submission of the EIS, the Department of Transport and Main Roads (TMR) requested additional supporting information about the development and results of the flood modelling assessment.

2.0 Flood Model Development

2.1 Model Set Up

The model topography and 1D sections and links for the entire model domain are shown in Figure 1. The runway and surrounds is shown in greater detail in Figure 2.

Figure 3 shows the tie in of the northern perimeter drain with the Marcoola drain. As can be seen, the northern perimeter drain is shallower than the receiving Marcoola drain.

As can be seen in the model topography, the western perimeter drain was not included in the final version of the flood model. However, it was decided to keep this in the Project description to maintain flexibility to include the drain should it be determined to be required during detailed design.

As discussed in Chapter B5 of the EIS, the model set up is based on Sunshine Coast Council's existing Maroochy River flood model, and incorporates the modelling assumptions described in the EIS.

Figure 1 Model topography and 1D sections

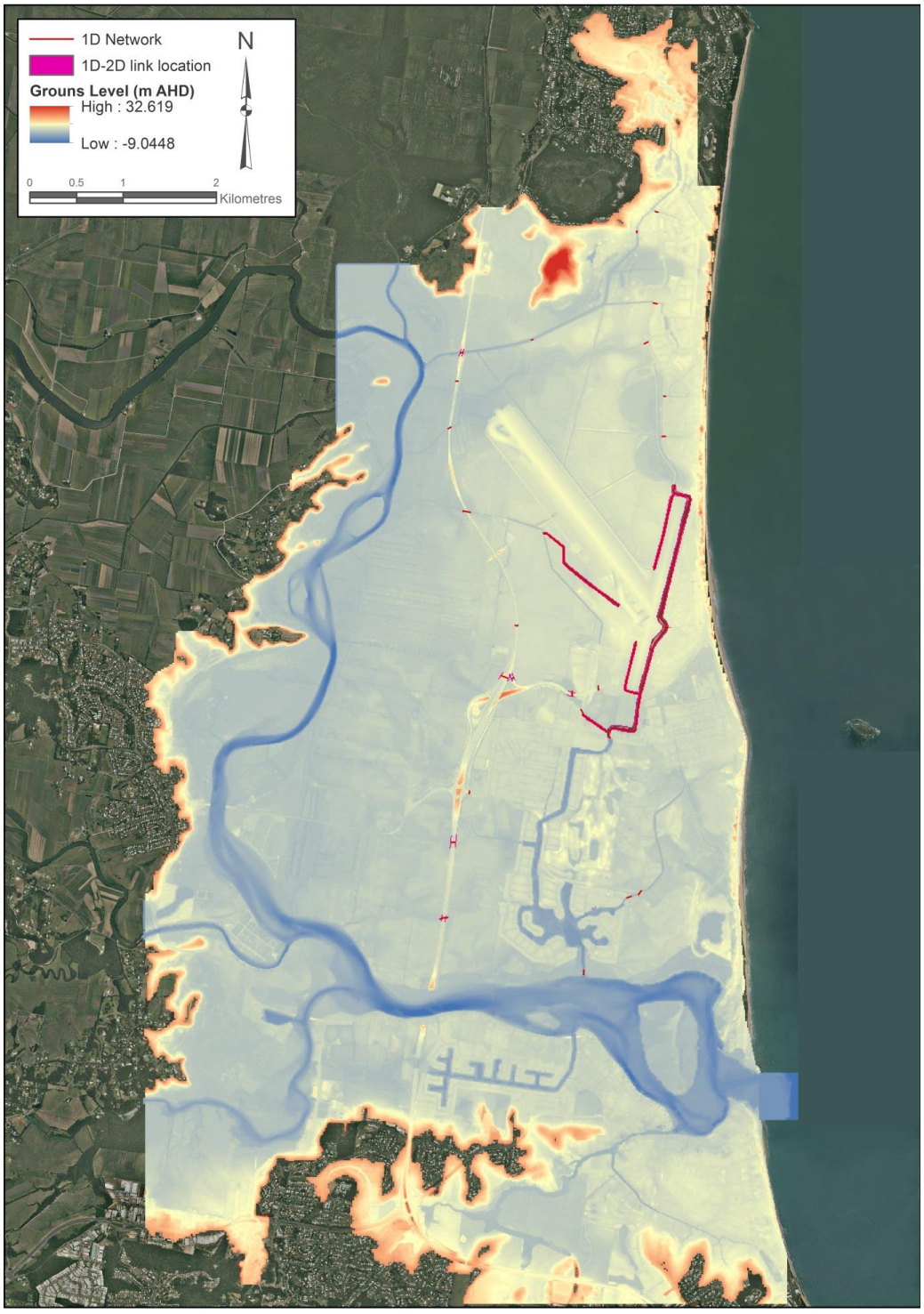

Figure 2 **Model topography and 1D sections near the proposed runway**

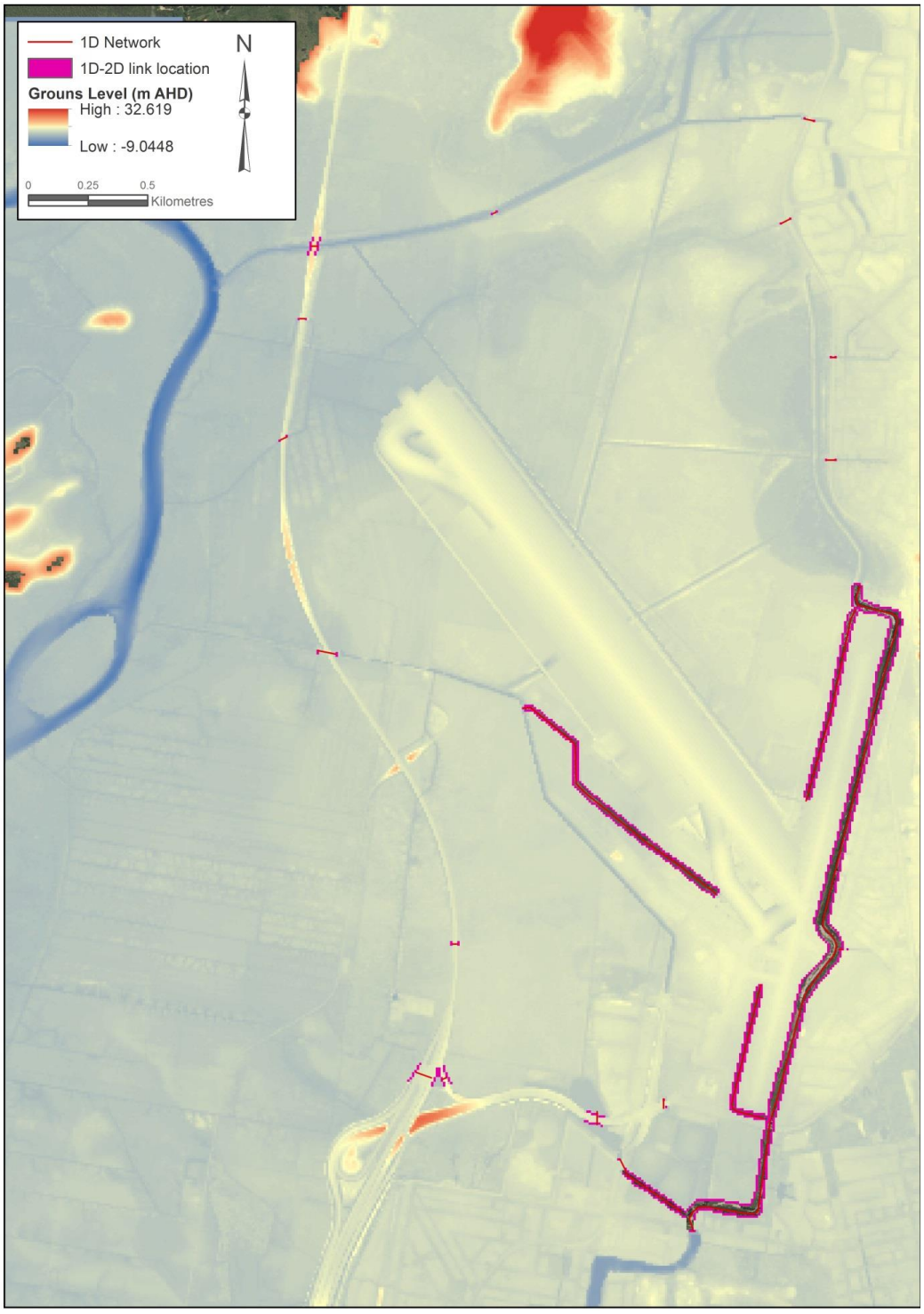

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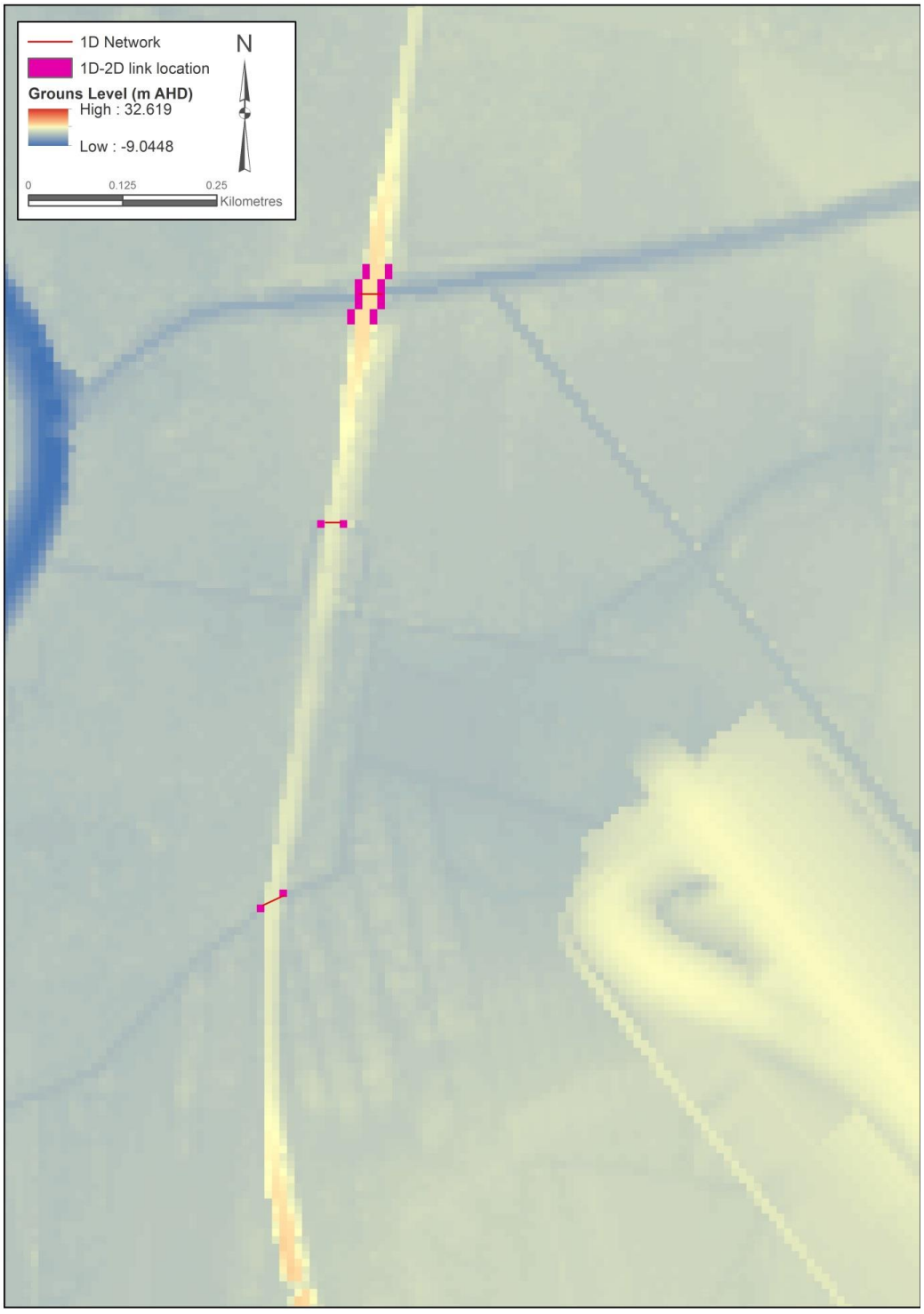
Figure 3 Model topography at the north west end of the runway, showing the tie in of the northern perimeter drain



3.0 Model Results

3.1 David Low Way

TMR is responsible for David Low Way, which is located near the existing runway. The potential increased flood levels near David Low Way near the northern end of the runway were of particular interest to TMR.

A comparison of the peak modelled flood level and road level indicate that the road is approximately 0.5 m higher than the peak flood level ,and therefore unlikely to experience any measurable impact from the small increase in flood level. The water and road levels are:

- 100 y ARI peak water level (post development): 2.94 m AHD
- Road level (based on 2004 LiDAR): 3.50 m AHD

3.2 Bli Bli Rd Bridge over Maroochy River

TMR is responsible for the Bli Bli Rd bridge over the Maroochy River, and potential changes to peak water levels and duration of inundation were of interest to TMR. Figure 5 to Figure 16 show hydrographs for the modelled events, and show water levels and flow rates. As can be seen, there is negligible change to the hydrography at this location.

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Figure 4 **David Low Way showing potential afflux in the 100 y ARI event, and measurement locations**

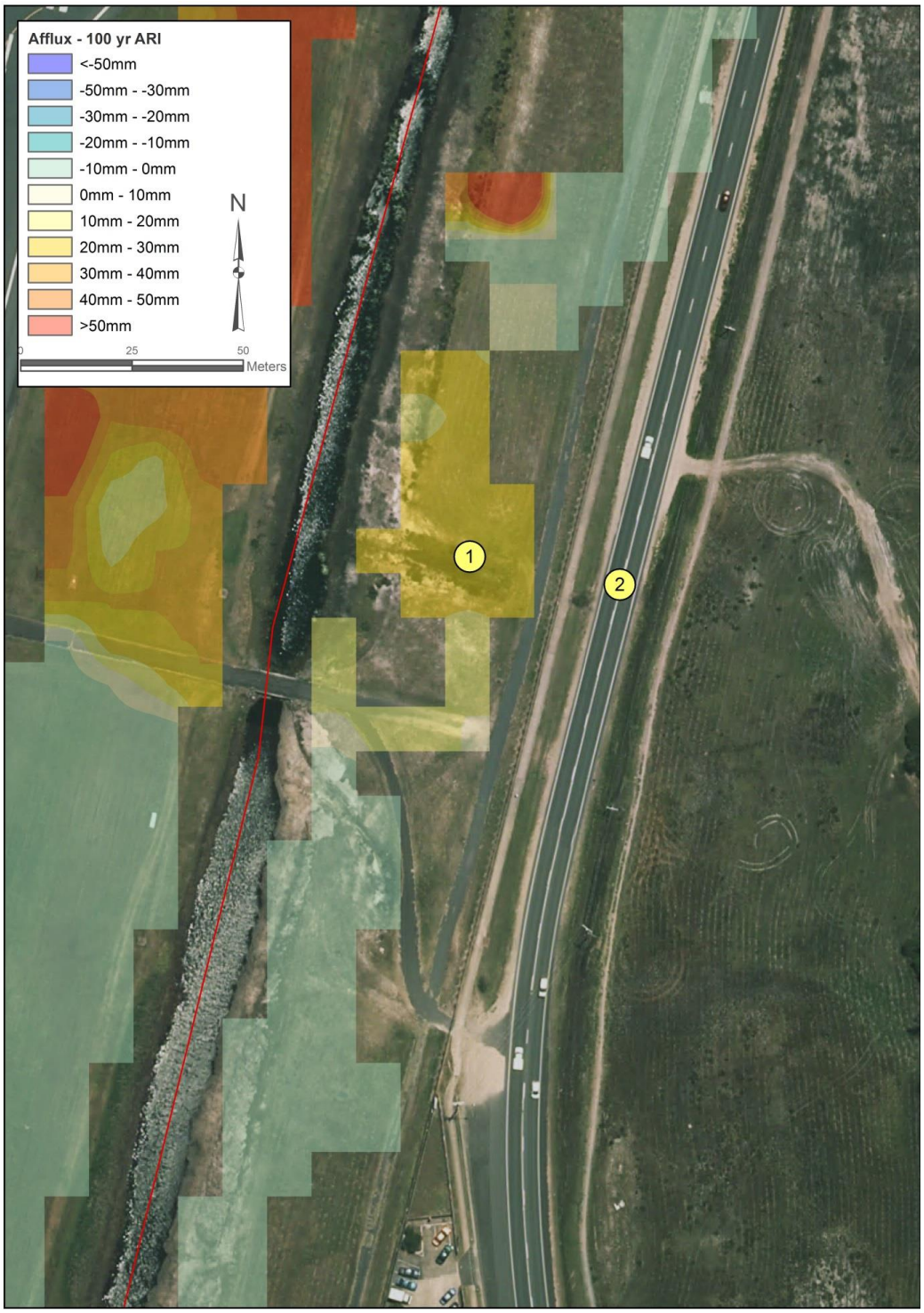
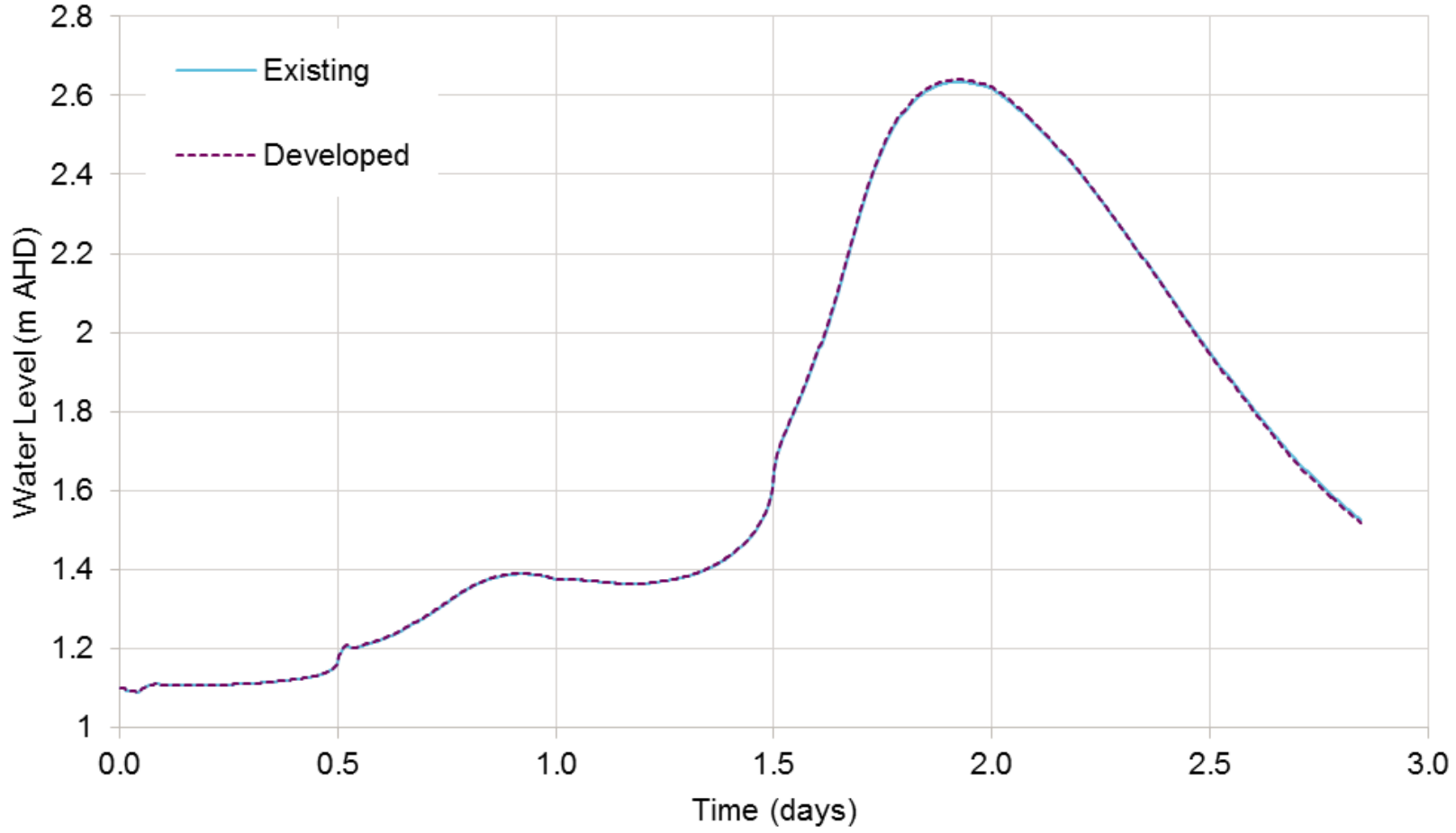


Figure 5 **Hydrograph showing water levels for existing and developed case for 100 y ARI event**



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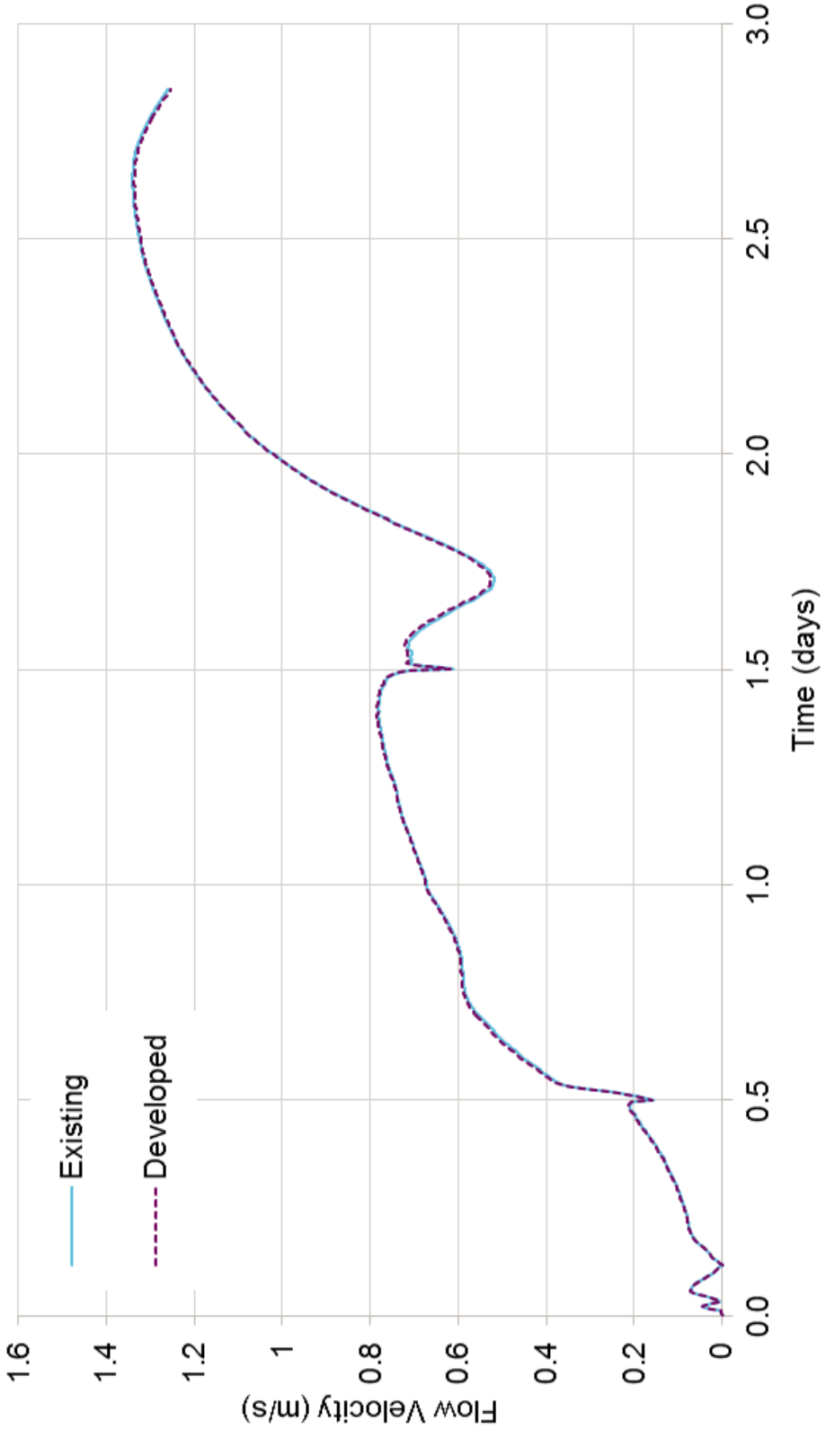

Figure 6 **Hydrograph showing flow rate for existing and developed case for 100 y ARI event**

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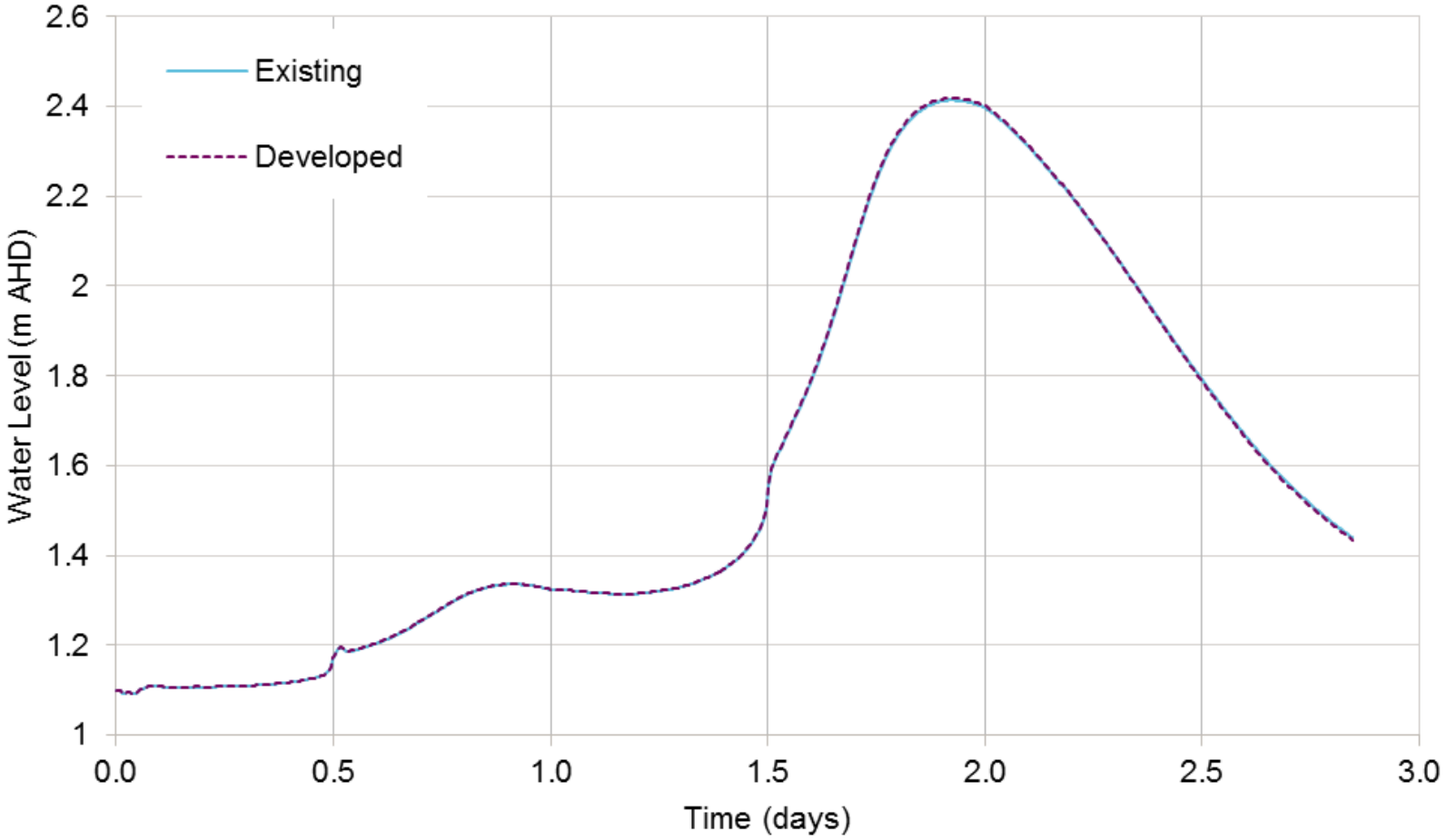
Figure 7 **Hydrograph showing water levels for existing and developed case for 50 y ARI event**



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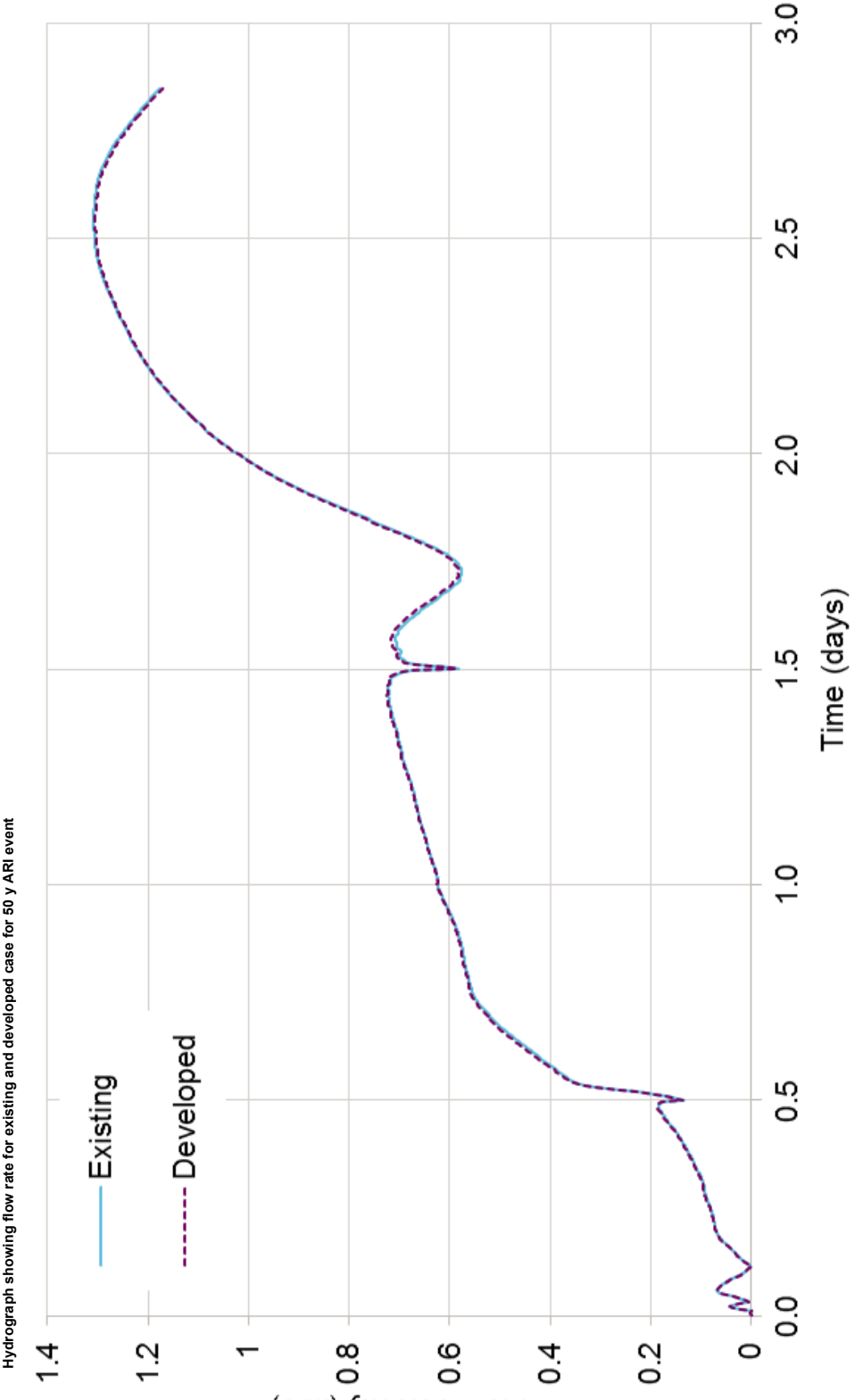

Figure 8 Hydrograph showing flow rate for existing and developed case for 50 y ARI event

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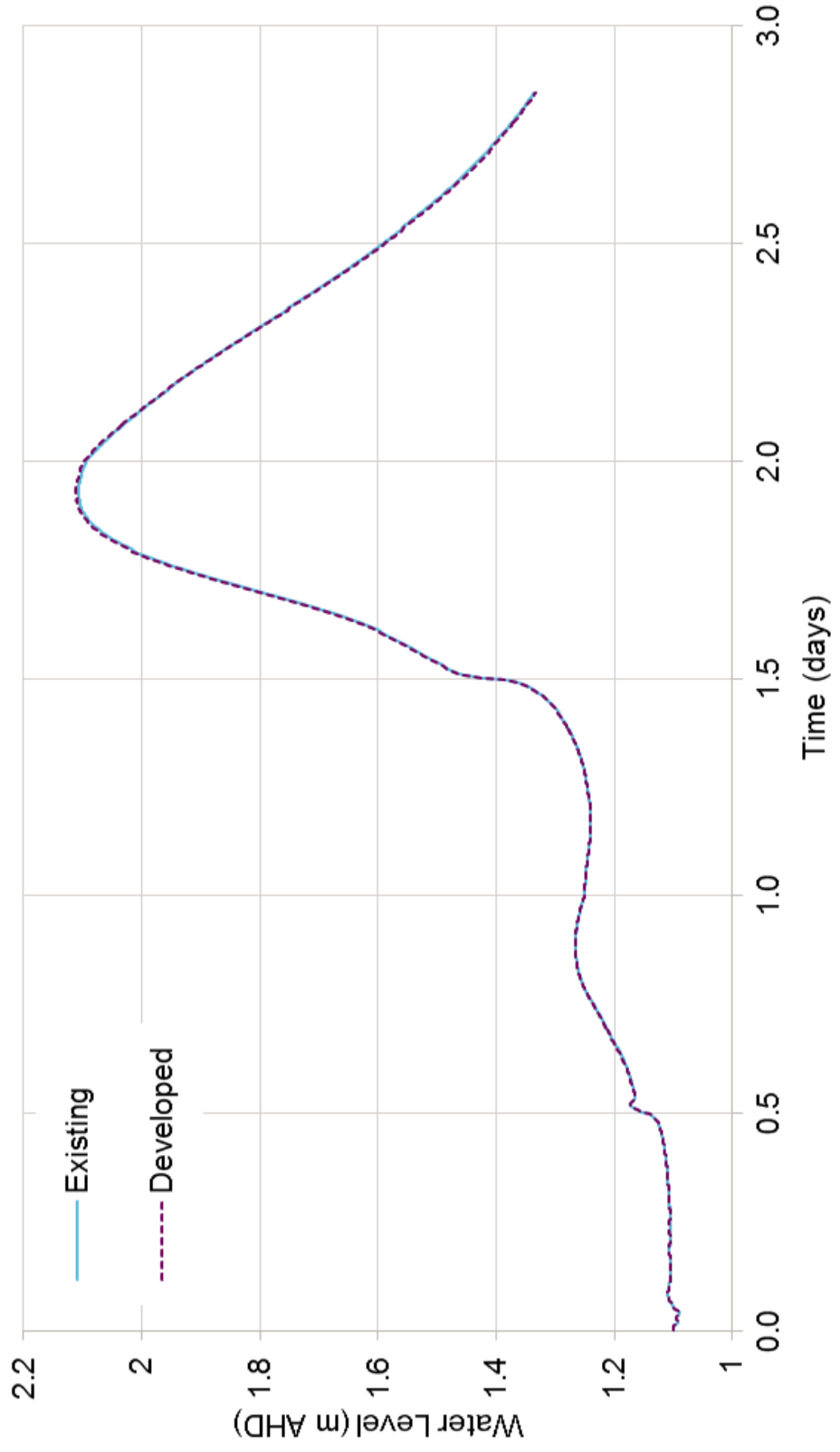

Figure 9 **Hydrograph showing water levels for existing and developed case for 20 y ARI event**

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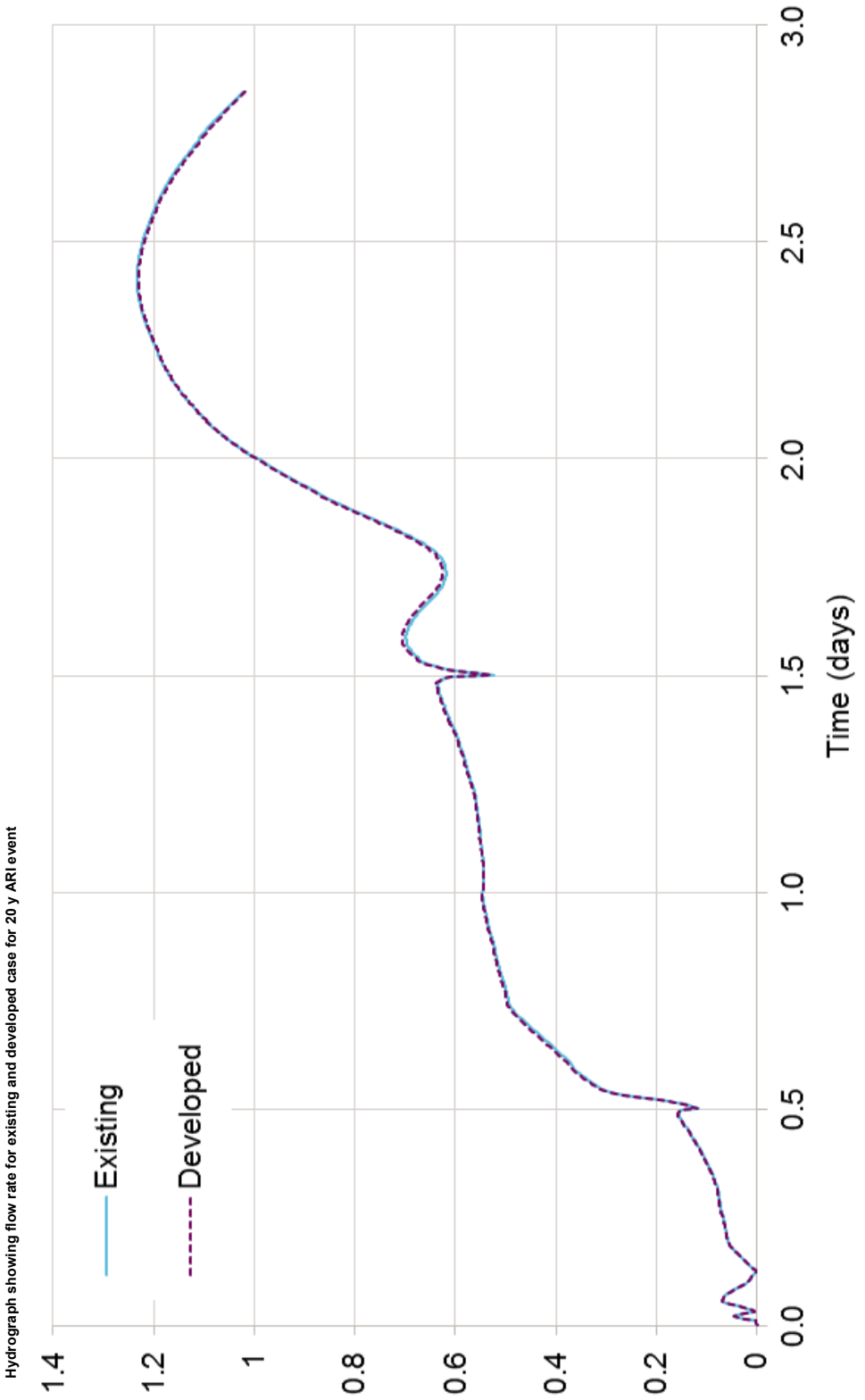

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Figure 10 Hydrograph showing flow rate for existing and developed case for 20 y ARI event

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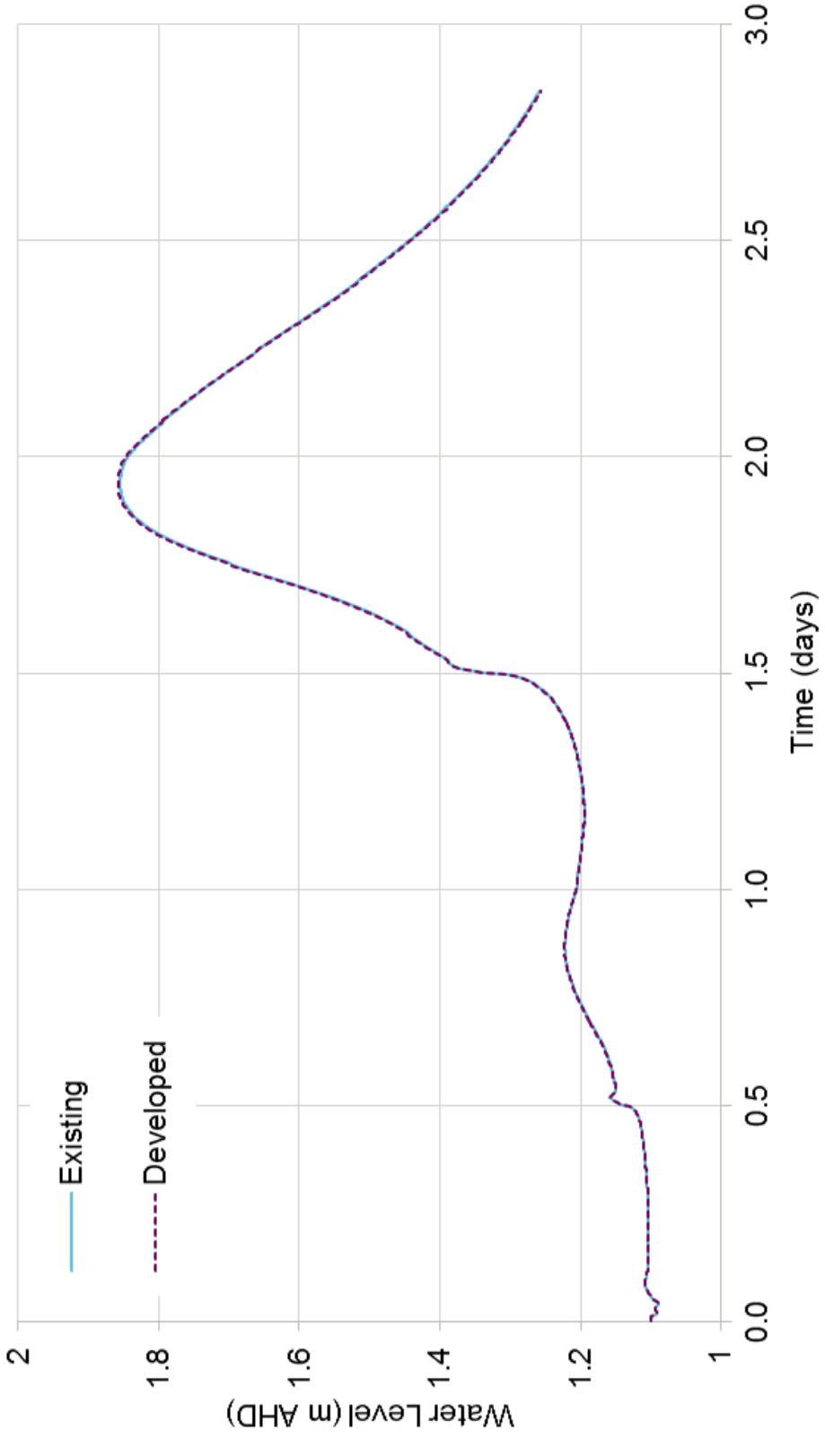

Figure 11 **Hydrograph showing water levels for existing and developed case for 10 y ARI event**

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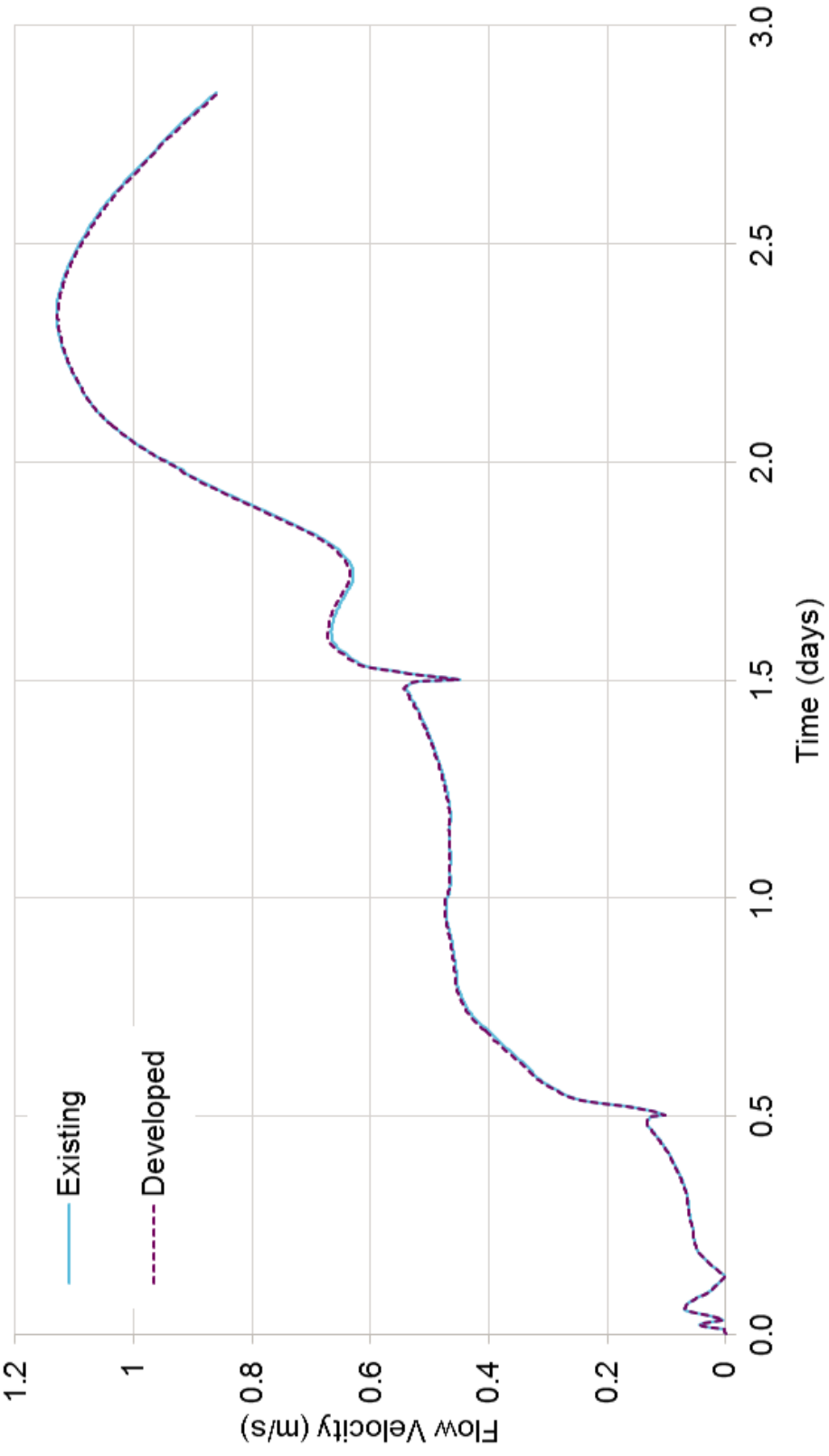

Figure 12 Hydrograph showing flow rate for existing and developed case for 10 y ARI event

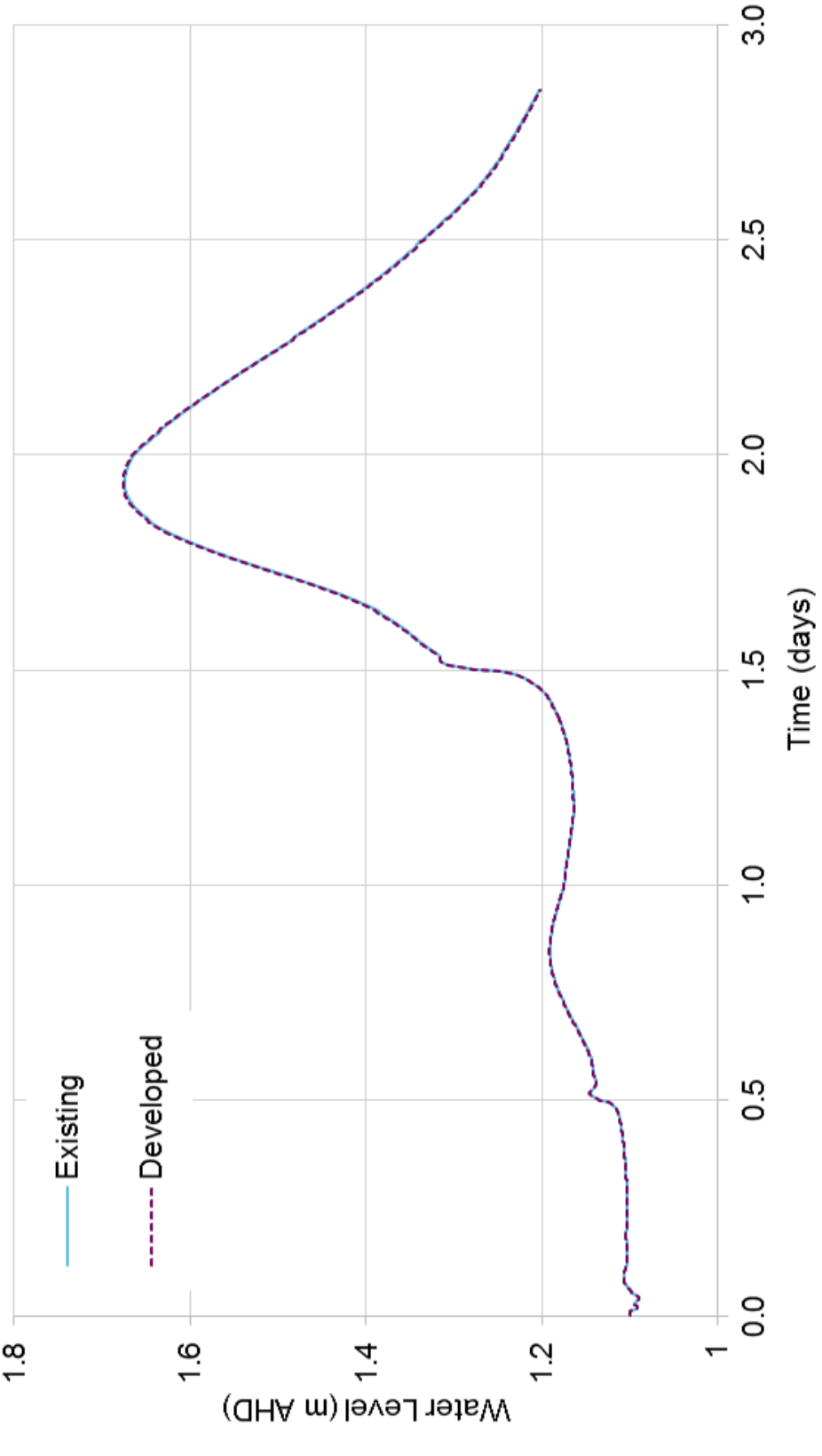

Figure 13 Hydrograph showing water levels for existing and developed case for 5 y ARI event

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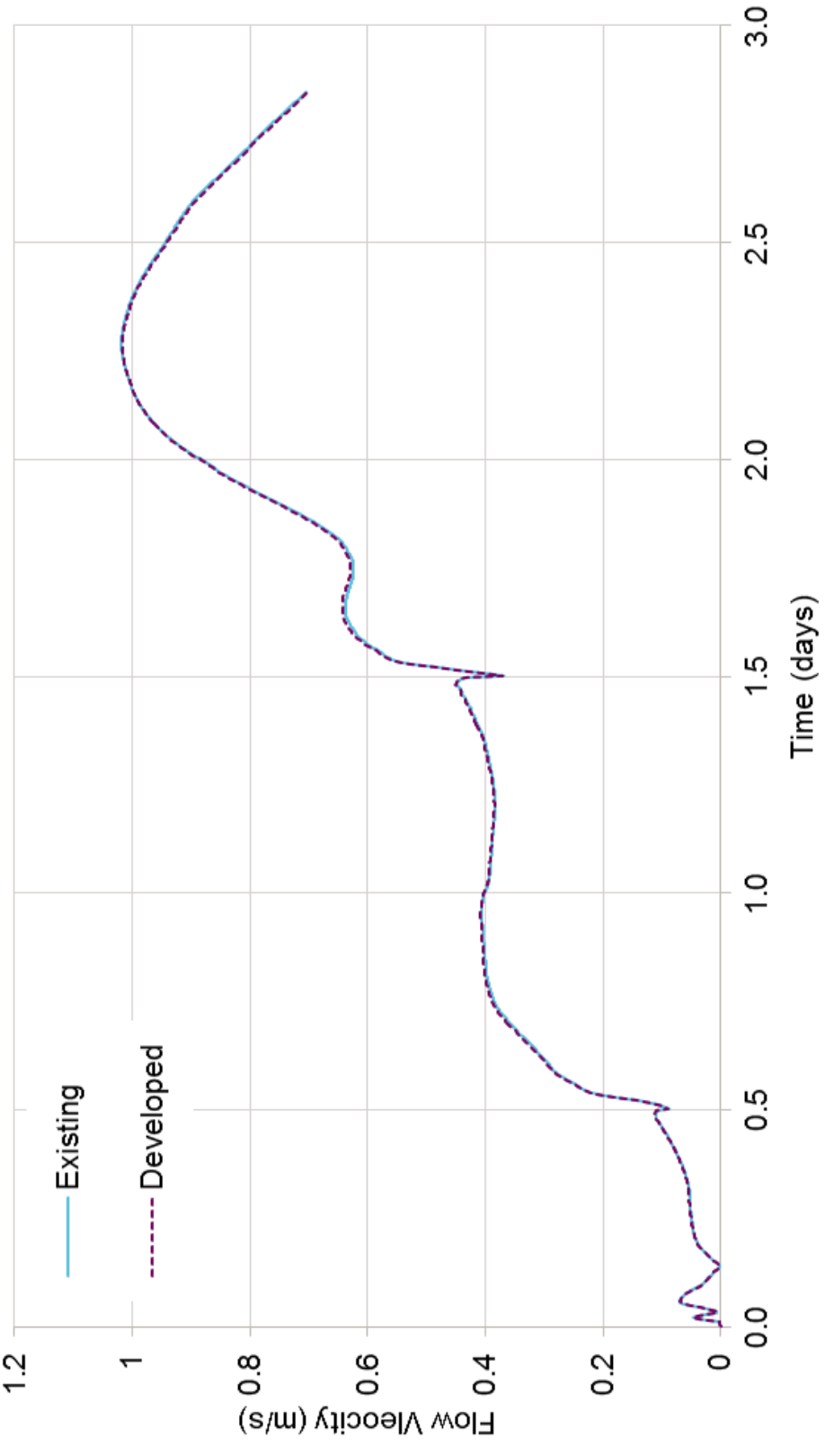

Figure 14 Hydrograph showing flow rate for existing and developed case for 5 y ARI event

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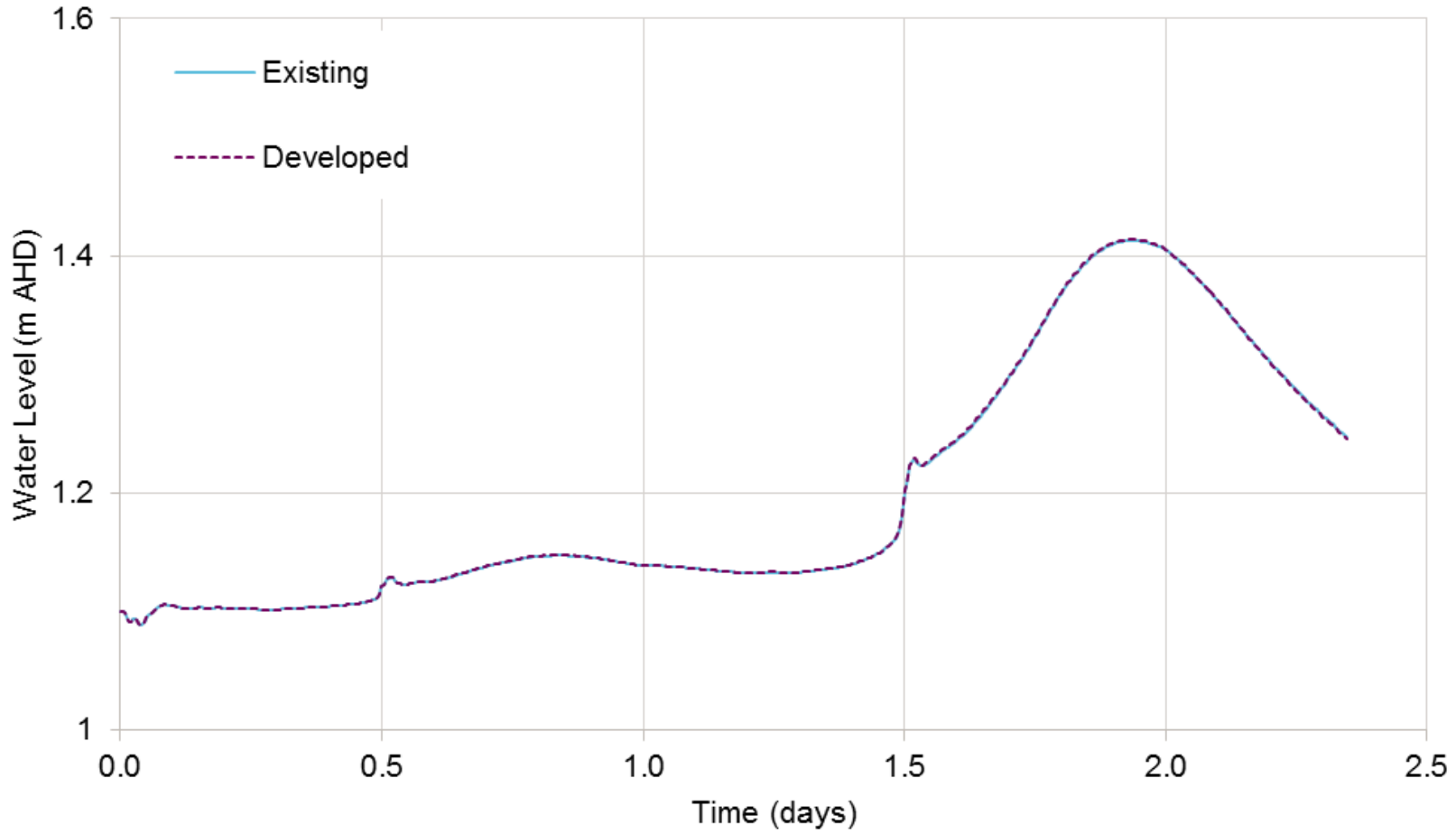
Figure 15 Hydrograph showing water levels for existing and developed case for 5 y ARI event



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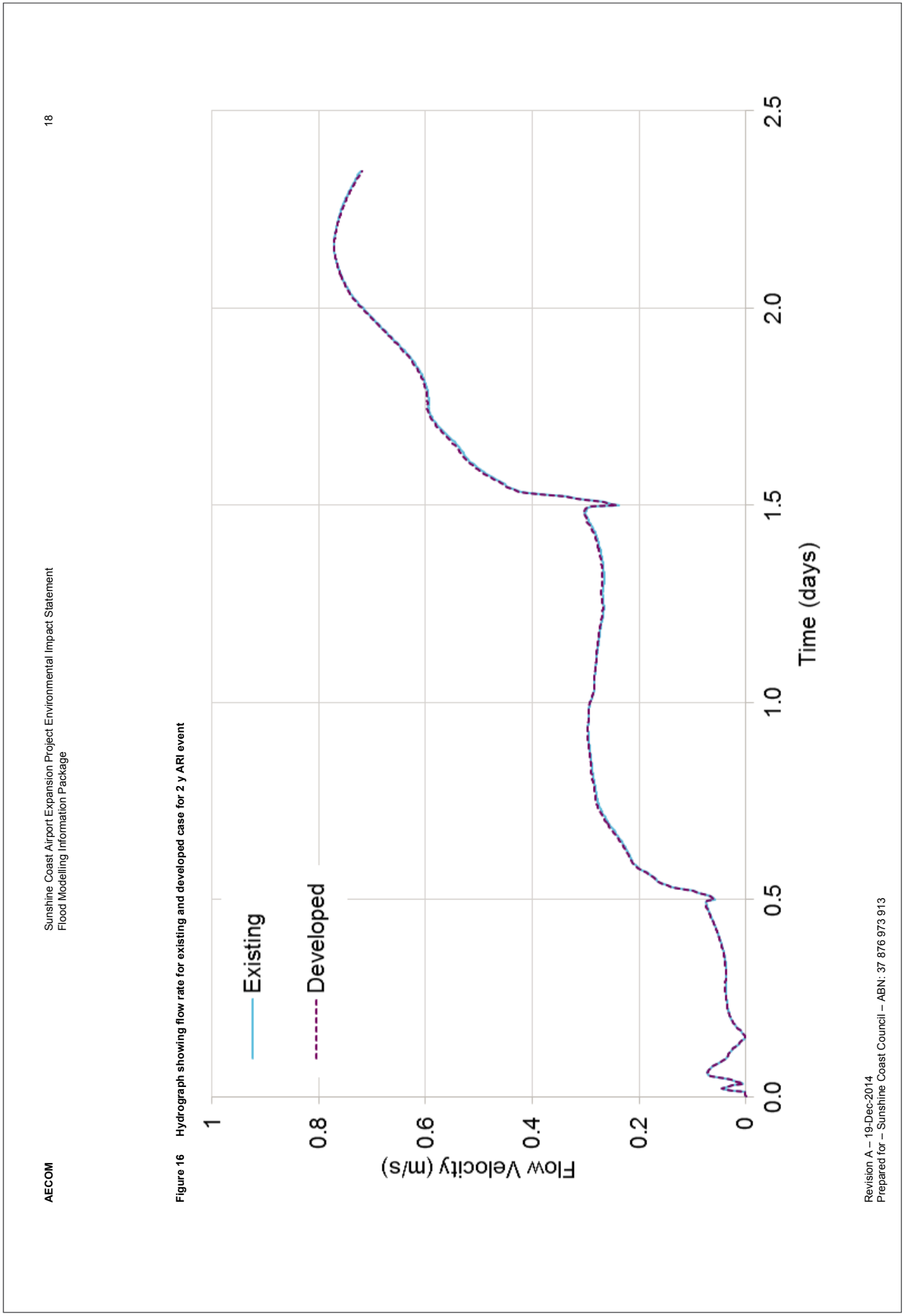

3.3 Mitigation Measures

Mitigation measures that were tested during the development of the drainage regime for the Project included:

- Several options for upgrading culverts along the eastern perimeter drain. This area was very sensitive to modifications of the drainage system, and changes to increases the capacity of the culverts typically caused greater than 10 mm increase in peak flood levels in areas south of the existing runway. Consequently, the proposal does not include any upgrades of culverts along the eastern perimeter drain.
- Options for upgrading and/or removing the western perimeter drain. The modelling indicated that changes (or removing) the western perimeter drain made little difference to the flood impacts of the proposal, as discussed in Section 2.1, it was decided to keep the drain in the Project description to maintain flexibility to include the drain should it be determined to be required during detailed design.