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Attention: Vince Hardy

Dear Vince

**RE: FLOOD IMPACT OF PROPOSED DEVELOPMENT AT CORNER OF CASTLEREAGH ROAD AND WILCHARDS ROAD**

BMT WBM was requested by Penrith Lakes Development Corporation (PLDC) to provide a letter report detailing the flood impact associated with a proposed landform at the corner of Castlereagh Road and Wilchards Road.

## Background

The site is situated in the most northern peripheral allotment of the Penrith Lakes Development area (PLDA). The PLDA is located to the north of Penrith CBD, adjacent to the eastern bank of the Nepean River. The PLDA covers a total area of some 19 km<sup>2</sup> and is bounded by the Nepean River to the west and south, Smith Road in the north and the Castlereagh escarpment to the east.

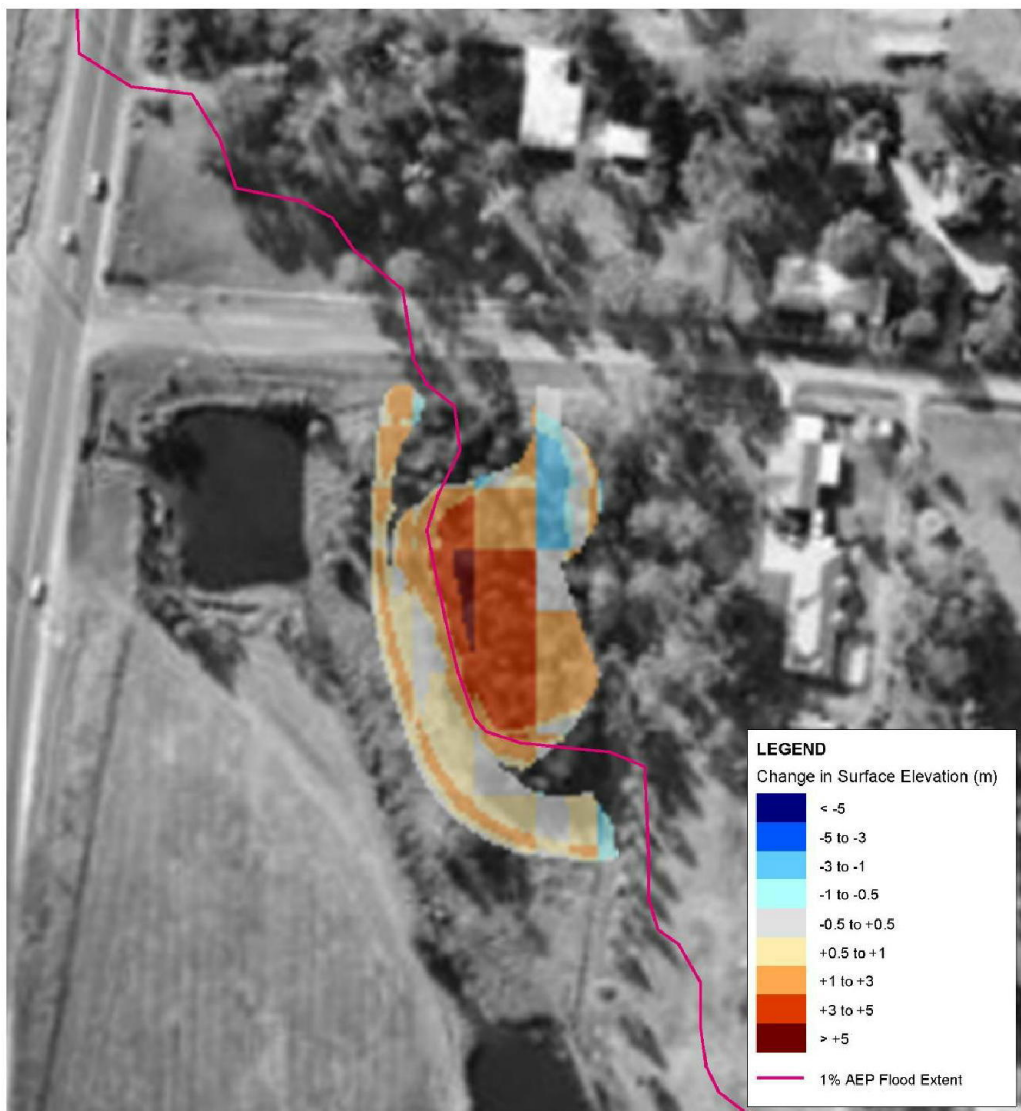
On behalf of PLDC, BMT WBM have previously developed a TUFLOW hydraulic model of the PLDA. The TUFLOW model was developed using primarily the same data sets which were used to develop earlier SOBEK and RMA models covering the PLDA.

The TUFLOW model represents the Water Management Plan WMP 2012 scheme with some subsequent modifications to site design configuration, as outlined in the Penrith Lakes Scheme Summary Flood Impact Report (BMT WBM, 2015). This model configuration has been adopted as the baseline condition to assess the impacts of the proposed landform on peak 1% AEP flood levels. Based on the baseline model configuration, the 1% AEP peak flood level in the vicinity of the proposed landform is 20.8 m AHD. This level is ~0.2 m above the Nepean River RUBICON flood model, as defined in Penrith City Council's Flood Level Enquiry letter for the development site (Ref. ECM7003542).

As stated in the State Environmental Planning Policy (SEPP) (Penrith Lakes Scheme) Amendment 2017, the flood planning level (FPL) for the Penrith Lakes Scheme is defined as the 1% AEP flood level plus one metre of freeboard. Based on the TUFLOW 1% AEP peak flood level of 20.8 m AHD, the FPL for the site is 21.8 m AHD.

## Proposed Development Flood Impacts

BMT WBM was provided with the proposed landform, as detailed in 6\_20150907\_JWP\_West Wilchard 2yr plan dtm.dwg. This landform was not previously included in the TUFLOW model. As such, to assess the impact of the proposed earthworks, the proposed landform was incorporated into the TUFLOW model to enable comparison to the baseline flood condition. The change in surface elevation between the baseline and post-landform condition is shown in Figure 1. The proposed landform generally comprises an increase in surface elevation across the site.



**Figure 1 Change in Surface Elevation**

The relative impact of the proposed development on baseline flood levels is presented in Figure 2 and Figure 3, which shows the change in peak flood level for the 1% AEP design event from baseline conditions to post-landform conditions. It is evident that the proposed landform has negligible impact on 1% AEP peak flood levels. The negligible impact can be attributed to a combination of the landform being located on the fringe of the 1% AEP flood extent, and the portion of available 1% AEP flood storage volume removed by the proposed landform being negligible when compared to the available storage across the wider Penrith Lakes system (as shown in Figure 3).

As previously stated, the FPL for the site, based on the TUFLOW 1% AEP peak flood level, is 21.8 m AHD. As the finished landform has a top of pad level of ~22.65 m AHD, any development to be constructed on the proposed landform will sit above the required FPL.

We trust the above provides a suitable description of the existing flood behaviour at the site and the impact of the proposed landform. Please feel free to contact the undersigned to discuss further as required.

Yours Faithfully  
BMT WBM

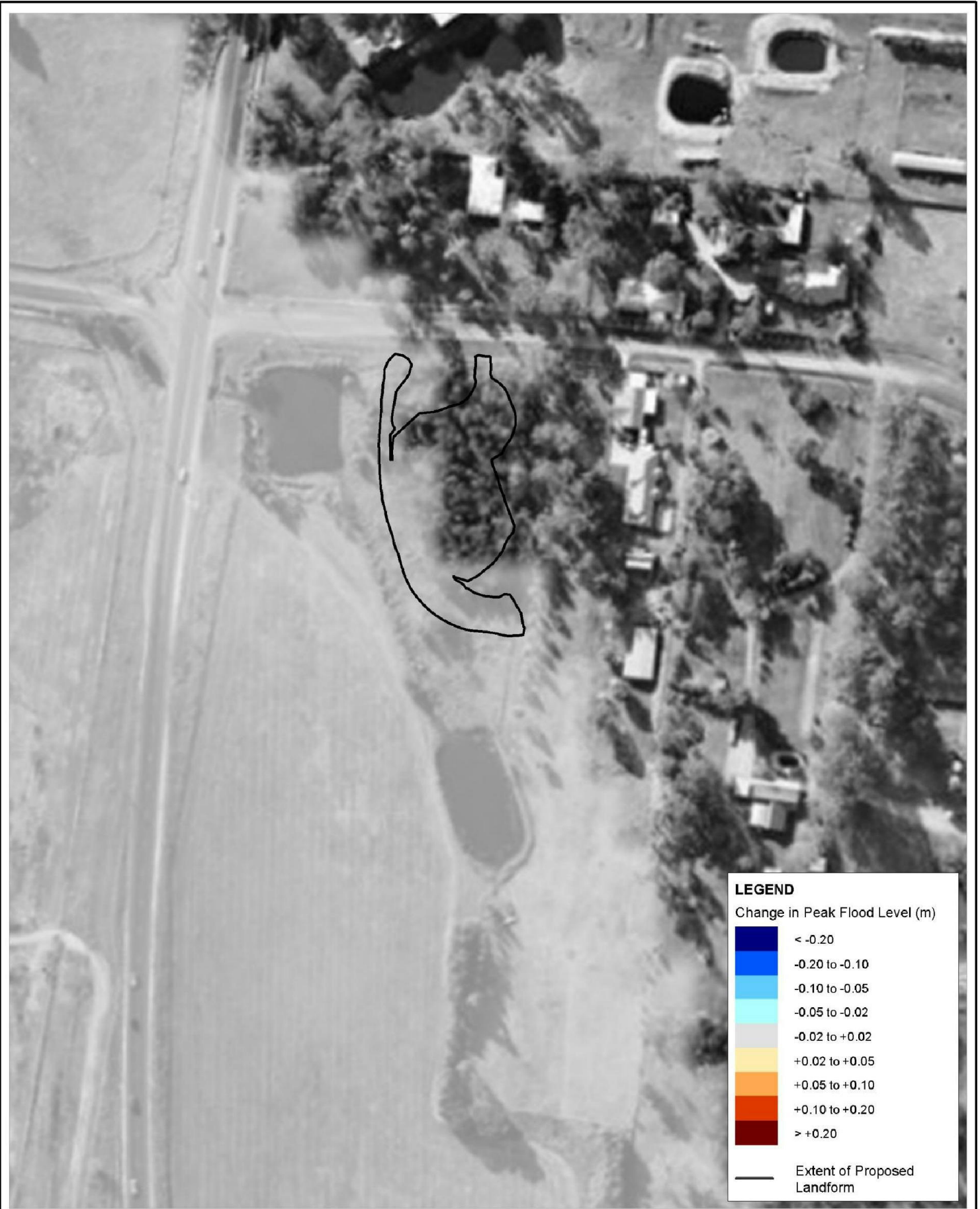


**Joshua Eggleton**  
Environmental Engineer

## References

BMT WBM (2015) *Penrith Lakes Scheme Summary Flood Impact Report*. Prepared for Penrith Lakes Development Corporation.

State Environmental Planning Policy (SEPP) (Penrith Lakes Scheme) Amendment 2017



Title:  
**1% AEP Change in Peak Flood Level**

Figure:  
**2**

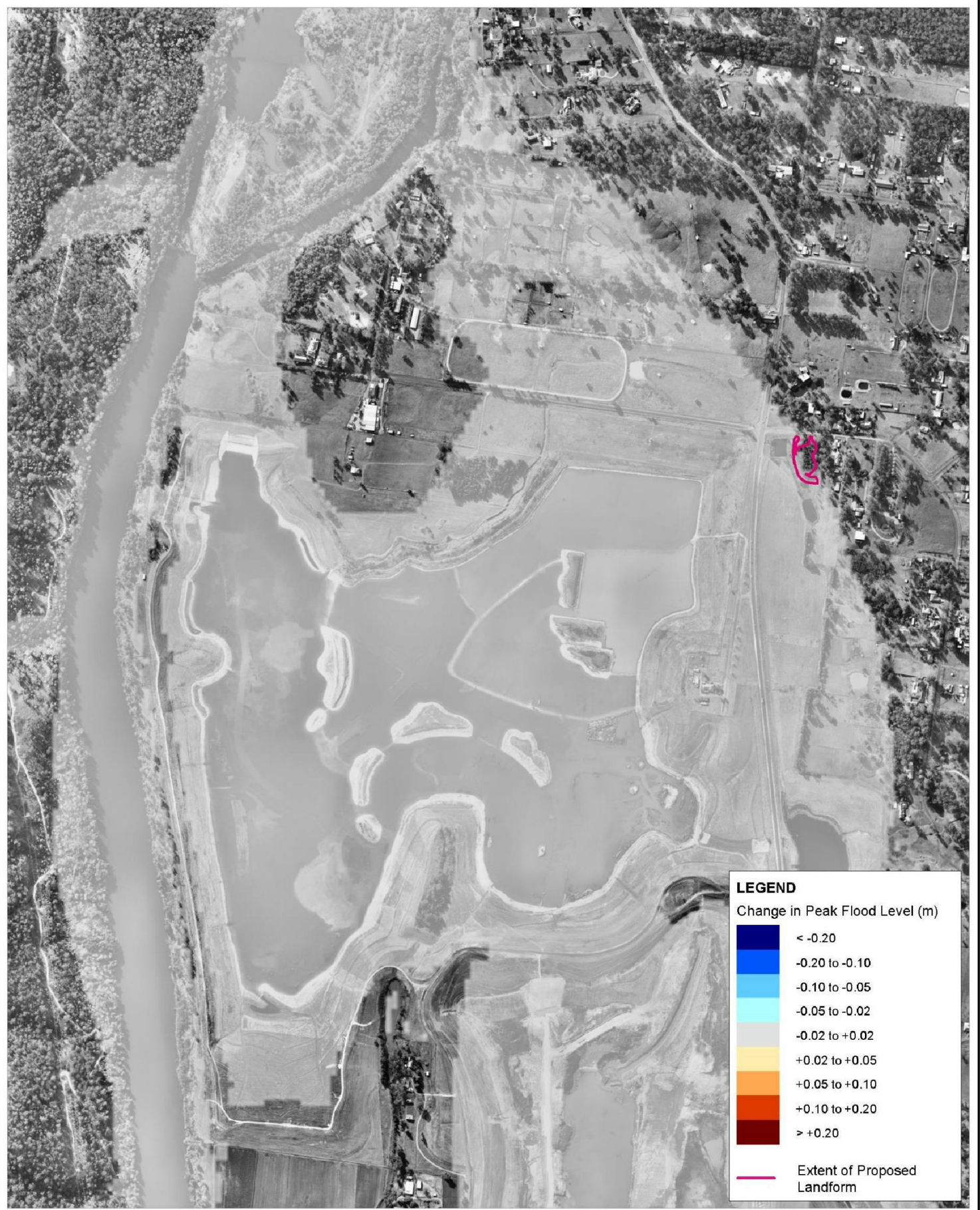
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







0 m      37.5 m      75 m  
Approx. Scale






**LEGEND**

Change in Peak Flood Level (m)

	< -0.20
	-0.20 to -0.10
	-0.10 to -0.05
	-0.05 to -0.02
	-0.02 to +0.02
	+0.02 to +0.05
	+0.05 to +0.10
	+0.10 to +0.20
	> +0.20

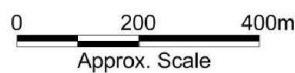
 Extent of Proposed Landform

Title:  
**1% AEP Change in Peak Flood Level**

Figure:  
**3**

Rev:  
**A**

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