



1 November 2011

Mr Keith Dedden
Coal & Allied
GPO Box 391 Brisbane QLD 4001

Our ref: 21/16058/1845
Your ref:

Dear Mr Dedden

Lower Hunter Lands Project Minmi Sports Field Flooding

Following your recent meeting with the Department of Planning & Infrastructure (DoPI), in which the frequency of flooding in the area allocated for sports fields in Minmi East was discussed, we have undertaken further simulations. For ease of reference, the sports fields are noted as the western fields adjacent to the existing Minmi Village and the northern fields, on the opposite side of the creek north of the existing Minmi Village, and adjacent to the northern boundary of the Coal and Allied land holding.

1 Existing Flood Levels

For the Water Sensitive Urban Design, Flooding and Stormwater Management Report prepared for the Concept Plan flood levels, velocities, flood extents and flood hazard were determined using the 2-Dimensional TUFLOW hydraulic model. Simulations were undertaken for the 100-year ARI and PMF flood events. The TUFLOW model compilation was undertaken using 2 m contour data for the site, derived from high resolution aerial photography, and was considered appropriate for the "Concept Planning Stages" of the study.

On your request, we have now also simulated the 5 and 20-year ARI event using this original TUFLOW hydraulic model to provide an approximation of flooding during more frequent events. The results, attached for the area of the sports fields at Minmi East, show the following:

- In a 5-year ARI event the existing topography at the proposed location of the western fields would likely be partially inundated to a depth of 0.2m to 0.4m, while existing topography at the proposed location of the northern fields would be inundated to 1.4 to 2.2 m;
- In a 20-year ARI event the existing topography at the proposed location of the western fields would likely be partially inundated to a depth of 0.2m to 0.6m, while existing topography at the proposed location of the northern fields would be inundated to 2.0 to 2.5 m;
- The nature of flooding is very rapid, and the duration of inundation is expected to last from approximately a few hours to half a day; and
- The existing topography at the proposed site of the western fields is lower than the existing Minmi Village and the depth of inundation is small under the existing flooding scenario. The northern fields are located in an area where the flood plain opens up to Hexham Swamp and the fields only occupy a small portion of this floodplain.



2 Future Development

Any future development of the proposed sports fields would likely require some amount of levelling and/or filling. These works would need to be designed and constructed to not detrimentally result in increased flood risk and/or flood levels off site. It may be the requirement to raise the fields above the 20-year ARI event, to provide immunity to frequent flooding events.

While it would be important to simulate any filling scenarios in the flood model during future stages of the development it is estimated on the basis of current data that:

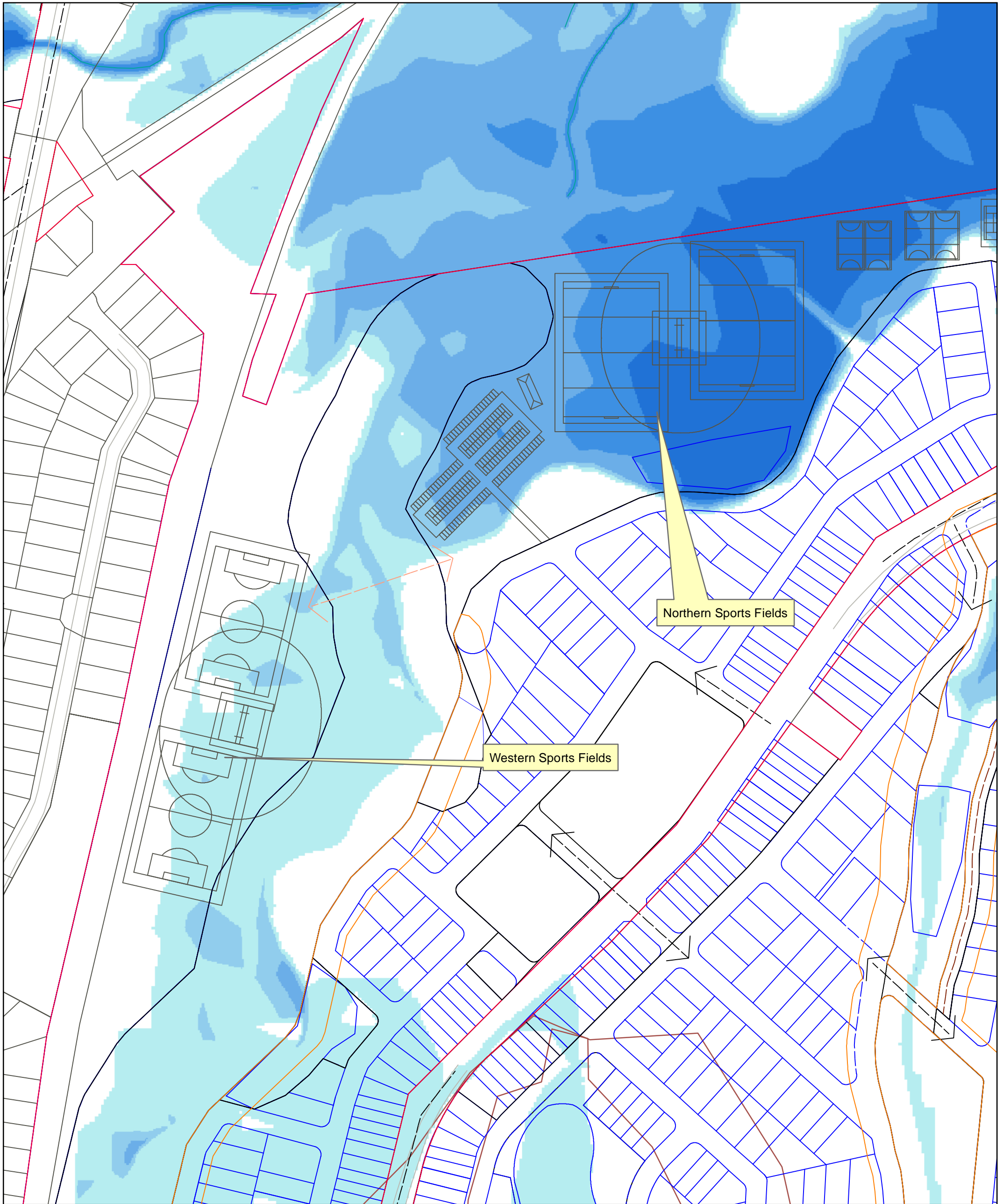
- Filling of the fields up to the 20-year ARI level would have less off site impact, since the fields would be inundated in events greater, including the 100-year event which is traditionally used in planning;
- Off-site impacts for the western fields are likely to be small since the existing village is located at a higher elevation and the depth of inundation is small under the existing flooding scenario;
- Off-site impacts for the northern fields are likely to be small since the fields are located in an area where the flood plain opens up to Hexham Swamp and the fields only occupy a small portion of the floodplain.

While the impacts of the future sports fields developments have been estimated at this early planning stage of the development, it will be important to more accurately simulate these impacts in future stages of the development. At these ensuing stages of development, concept designs of the development topography and associated facilities would be better defined, which would allow better definition of flood impacts in the local areas.

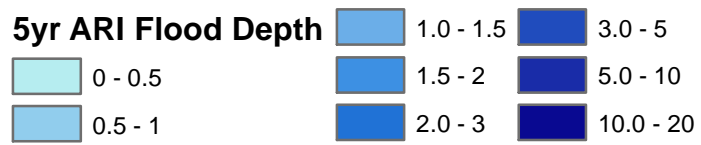
Yours faithfully
GHD Pty Ltd

A handwritten signature in black ink, appearing to read 'Rainer Berg', with a long horizontal stroke extending to the right.

Rainer Berg
Office Manager, Coffs Harbour
(02) 6650 5600



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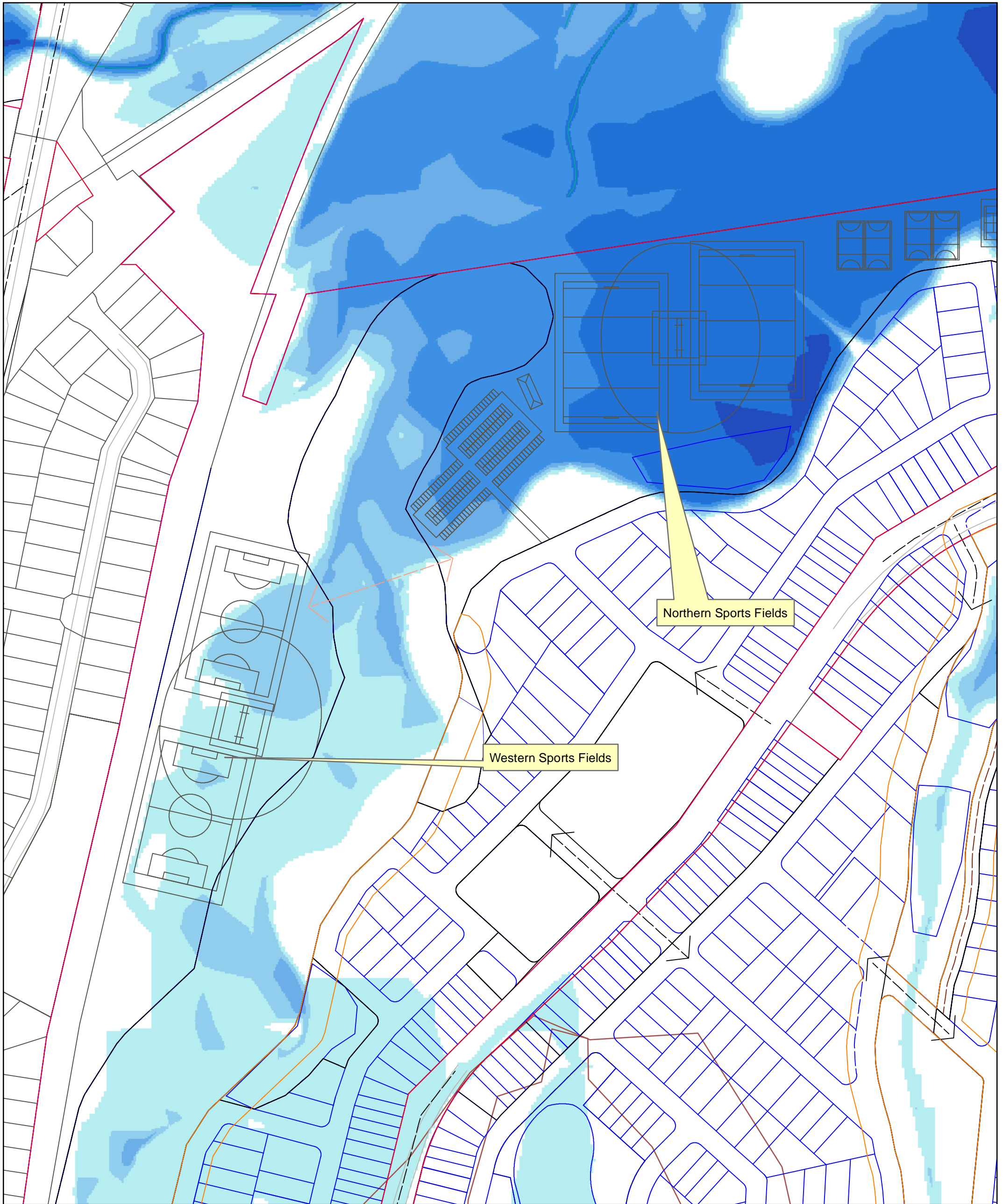


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 Kilometres (at A3)
 Map Projection: Transverse Mercator
 Horizontal Datum: Geocentric Datum of Australia 1994
 Grid: Map Grid of Australia, Zone 56



Lower Hunter Lands Project
 Flood Depths

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 Revision | A
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