

1091-03-B

John Carleton
Executive Projects Manager
Moree Plains Shire Council
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7 December 2017

**Subject: High level review of the flood impacts of the proposed
Inland Rail at Moree**

Dear John,

1 OVERVIEW

GHD on behalf of the Australian Rail Track Corporation (ARTC) have prepared an Environmental Impact Statement (EIS) on the Narrabri to North Star Inland Rail Project (the Project). As requested, outlined below is a high-level review of the flooding aspects of the Project undertaken to identify issues requiring further investigation. In particular, this review provides comments on the following sections of the EIS:

- Volume 1 Chapter 15 - Hydrology and Flooding
- Volume 5 Technical Report 6 - Hydrology and Flooding Assessment

2 SUMMARY OF PROJECT WITHIN THE MOREE PLAINS SHIRE COUNCIL

The key features of the project within the Moree Plains Shire Council (MPSC) area involve:

- upgrading the track, track formation, and culverts within the existing rail corridor;
- realigning the track where required within the existing rail corridor to conform with required platform clearances for Inland Rail trains;
- providing new crossing loops within the existing rail corridor at Waterloo Creek, Tycannah Creek and Coolleearlie;
- providing a new section of rail line to the north of the Gwydir River about 1.6 kilometres long to bypass the existing hairpin curve ('the Camurra bypass');
- replacing the existing rail bridges over the Mehi River and Gwydir River; and
- providing a new road bridge over the existing rail corridor at Jones Avenue in Moree ('the Jones Avenue overbridge')

3 PRELIMINARY FLOOD ASSESSMENT

With respect to flood impacts, the following key features are of note:

- The rail level across Little Bumble Creek at Gurley will remain the same but the culvert capacity will be increased. The flood impact of the rail is expected to be lower at Gurley as a result.
- The rail will be lifted across Tycannah Creek (and its distributary channels) and the culvert capacities will be changed. Increased flooding is predicted upstream of the Tycannah Creek bridge. More detailed modelling is required at this location during detailed design to assess flood impacts to existing agricultural assets.
- The Halls Creek culvert capacity will be substantially increased and the rail height will be marginally increased. No significant change in flooding is expected at Halls Creek.
- The Mehi River bridge will be replaced. No details have been provided on its replacement.
- Between the Gwydir River and Mehi River;
 - the rail level across the floodplain will not change;
 - the culvert capacity will be increased by a factor of 4;
 - the increased culvert capacity has lowered 10% AEP flood levels upstream of the rail such that the rail is generally not overtopped by this event; and
 - the increased culvert capacity has altered the distribution of flow such that 1% AEP peak flood levels have increased at various locations across the floodplain. Peak 1% AEP flood levels are reportedly up to 0.1 m higher in the urban areas of Moree and an additional 23 properties are inundated (potentially above floor level).
- The Gwydir River bridge will be replaced. No details have been provided on its replacement.
- The Camurra bypass rail realignment will marginally raise the rail level. The change will increase peak flood levels upstream of the rail and could potentially change the distribution of flow northward into the Marshall Ponds Creek system. The change could potentially increase the frequency of flooding of Back Pally Road. This road is currently impassable for the 20% AEP event. Therefore, the increased flooding may not be of significant concern.

4 ISSUES REQUIRING FURTHER INVESTIGATION

The review finds that significantly more information is required with respect to the changes proposed to the culverts across the Gwydir floodplain. The impact of up to 0.1 m within Moree urban areas for the 1% AEP event is of concern.

The ARTC consultants are using the latest models. However, they have not assessed (or reported on) the full range of design events, nor have they provided flood impact maps for these events to determine where and who would be impacted. The ARTC consultants have not used the surveyed floor level data of the impacted properties so their property impacts are approximate at best. This data is available so a proper flood damage assessment should be undertaken.

It must be noted that ANY change to the rail across the floodplain will impact on flood levels in and around Moree. Although unstated, it appears that the objective

of ARTC is to provide 10% AEP immunity for the rail at this location and to minimise the flood impacts as much as possible. However, these impacts have not been properly reported or quantified to make a judgement as to whether the impacts would be acceptable to the community.

It is recommended that the ARTC consultants (or WRM on behalf of MPSC) undertake a comprehensive flood assessment of the impact of the rail across the Gwydir floodplain in the same manner that was undertaken to assess the levee option in the Floodplain Risk management study. This will include an assessment of the full range of flood events, preparing flood impact maps and flood damage modelling to fully evaluate the property impacts.

In addition to this, further modelling of Tycannah Creek will be required to address localised flooding impacts during the detailed design phase.

I trust that the above advice addresses your queries. Please do not hesitate to contact me if you have any queries.

For and on behalf of
WRM Water & Environment Pty Ltd

A handwritten signature in black ink, appearing to read 'GRoads', with a long horizontal flourish extending to the right.

Greg Roads
Director