3.9 Geology and Soils

3.9.1 Erodability of Soils

3.9.1.1 Construction

The EIS identified the potential for erodable and/or acidic soils along the route. Soil erosion techniques utilised during the project are detailed in section 2.4. Soil stabilisation was addressed through covering both cut and fill batters with topsoil and seeding with a variety of sterile temporary and native grasses to encourage both short and long-term stability.

Following some poor performance in the establishment of initial cover crops, a number of soil tests were performed along the alignment. Lime was subsequently added to the hydro-seeding mix to address this issue, with significant improvements in plant performance in both short and longer terms over those areas which were not initially treated with lime.

Photograph 3.33 Progressive stabilisation of batters at the Yelgun Rest Area.

Photograph 3.34 The stabilised batters at the Yelgun Rest Area. The vegetation appears brown as a consequence of recent mowing.

Photograph 3.35 Stabilised wetland at southern end of Upgrade.

3.9.1.2 Operation

The landscape is largely stable due to the extensive efforts to establish ground cover species, notably grasses, and also trees. The landscape is considered to be as stable now, from an erosion perspective, as it was prior to the commencement of works.

3.9.2 Acid Sulphate Soils

Acid sulphate soils (ASS) were encountered at both Marshalls Creek and the Brunswick River, and, due to space constraints, required removal off-site with subsequent remediation. This material was generally cuttings from pre-boring for bridge piles, though there was also some ASS which was geotechnically unsuitable and needed to be replaced with more suitable construction material.

All ASS was transported to an ex-quarry on private land on Banana Road. The site allowed for the storage and treatment of material at a location where potential off-site impacts could be readily managed. Initially the soil was placed in small excavations where runoff was confined to the pit. As these were filled, runoff was directed to bunded areas with suitably-sized retention basins where runoff from the stockpiles could be tested prior to discharge.

There were no environmental incidents associated with the transport, storage, or treatment of ASS during the construction of the Upgrade.

3.9.3 Contaminated Land

The two contaminated sites were remediated as part of the construction process. The site of the original dip and former holding yards are all covered by the new embankment, in some cases up to 12 metres deep and capped by concrete road pavement. This remedial strategy inhibits contaminant dispersion via runoff and groundwater migration, by reducing surface erosion through controlling surface waters, and inhibiting surface water infiltration with the proposed surfacing.

The Ocean Shores service station site had the surrounding soil rehabilitated by “land-farming” and is now suitable for all purposes. This was a better strategy than excavation and disposal to landfill.

These practices were appropriate for the specific situations, and performed to the high standard required by DECC. The investigation and approval process for remediation can be lengthy and scheduling it early in the construction process would minimise potential delays to construction.

3.9.4 Landslip

The only area considered to have the potential for landslip was near the intersection of the service and STP Access Roads. Stabilisation work was carried out in accordance with the design recommended by SMEC - the project designers.

A minor slip recently occurred on the old highway, just south of Orana Road, and the RTA has undertaken repairs. This incident was not a result of the construction of the Upgrade.

Minor areas of instability are associated with the steep, but low, cut along the edge of the Brunswick Heads Nature Reserve south of Rajah Road. These are long-term issues and not a result of the recent works.