

Appendix D4

Noise Specialist Study

PROPOSED EXPANSION OF TRANSNET'S EXISTING MANGANESE ORE EXPORT RAILWAY LINE AND ASSOCIATED INFRASTRUCTURE, NORTHERN AND EASTERN CAPE

NOISE AND VIBRATION SCOPING

1.1 INTRODUCTION

In 2009 an environmental authorisation was granted for the upgrade of the railway infrastructure between Hotazel and the Port of Ngqura, in order to increase the current Manganese transport capacity of 5.5 Million tons per annum (Mtpa) to 12 Mtpa.

Based on the anticipated increased demand of manganese ore, the mining industry has indicated the need for an increased export capacity of 16 Mtpa. As such, changes to the original development proposal necessitate an additional environmental assessment.

An additional noise and vibration assessment is also necessary for 10 rail loops in the Northern Cape and four in the Eastern Cape, as well as the new compilation yard at Mamathwane, situated approximately 22km south of Hotazel in the Northern Cape (see Table 1).

Table 1: Infrastructure to be updated

Northern Cape	
Witloop	New loop
Mamatwane	New compilation yard
Wincanton	Loop extension
Sishen	Loop extension
Glosam	Loop extension
Postmasburg	Loop extension
Tsantsabane	Loop extension
Trewil	Loop extension
Ulco	Loop extension
Gong Gong	Loop extension
Fieldsview	Loop extension
Eastern Cape	
Drennan	Loop extension
Thorngrove	Loop extension
Cookhouse-Golden Valley	Loop extension
Ripon-Kommadagga	Loop extension

1.2 IDENTIFIED ISSUES AND POTENTIAL MITIGATION MEASURES

Noise

The introduction and extension of the passing loops may change the noise impacts around the railway line, since braking can change the tonal character of the generated noise. In addition, during stopping or accelerating, impulsive shunting noise can be generated by the wagons jolting each other. At the passing loops, the idling locomotives may also increase the local noise levels for extended periods.

The significance of the above-mentioned impacts would be dependent on the time of day, the number and duration of events, the distance between the loops and the nearest receivers, as well as the individual sensitivities of the receptors.

Potential mitigation measures that would need further investigation are:

- Reduction of train speeds;
- Rolling noise reduction at source via rail dumpers;
- Low profile noise barriers located close to track;
- Noise barriers;
- Noise mitigation measures at the receiver, such as noise insulation and provision of ventilation, in order to be able to keep windows closed.

Vibration

Railway vibration is generated due to the moving loads and elastic deformation, as well as due to dynamic forces at the wheel-rail interface. Significantly higher vibration levels can occur due to wheel surface and rail irregularities. The vibration propagates via the sleepers and rail mounts into the ground via the track support structure. It then propagates through the ground and may sometimes affect the structural integrity of buildings or other structures, as well as be felt as tactile vibration by the occupants of buildings.

Mitigation of low frequency vibration is not easy to be achieved and is expected to involve the main dynamic system, which is the ground and as such very costly. However, trenches and 'wave-impeding blocks' (WIBs) have proven to provide a change in the modal propagation regime and offer vibration reduction at the low frequencies.

The identified noise sources and the receptors per loop, as well as the potential noise and vibration issues, which will be assessed in the detailed EIA phase, are outlined in the following table.

NORTHERN CAPE			
Loop Extensions	Existing Sources	Identified Receptors	Possible Issues
Witloop	Vehicles on the R380, train traffic on the existing line.	Temporary office structures and farmhouse west of the line.	Noise impacts on the farmhouse and offices.
Wincanton	Vehicles on the R380, train traffic on the existing line.	Only unoccupied houses in close proximity to the loop.	No significant impacts are anticipated.
Sishen	Vehicles on the R325, train traffic on the existing line.	Two farmhouses and a community on the western side of the line. Sishen community is not anticipated to be impacted.	Noise impacts on the farmhouses and community west of the line.
Glosam	Sparse vehicles on local road to Glosam and train traffic on the existing line.	Glosam community and isolated farmhouses west of	Noise impacts on the Glosam community and farmhouses.

NORTHERN CAPE			
Loop Extensions	Existing Sources	Identified Receptors	Possible Issues
		the line.	
Tsantsabane	Sparse vehicles on local gravel road to Postmasburg and train traffic on the existing line.	Small community south of the existing line.	Noise impacts on the existing community.
Postmasburg	Vehicles on the R385, train traffic on the existing line and loops, industrial area south east of the line.	Newtown and Boitshoko are the closest communities to the existing line and loops.	Noise impacts on the above-mentioned communities and vibration impacts on the Newtown houses closest to the line.
Trewil	Train traffic on the existing line and Trewil pump station.	One house south of the line.	Noise impacts on the house close to the line and vibration impacts on the house and pump station.
Ulco	Train traffic on the existing line and existing loop operations.	No receptors were identified, only abandoned houses.	No noise and vibration issues are anticipated.
Gong Gong	Vehicles on the R31, train traffic on the existing line.	The Gong Gong community is situated on the southern side of the line.	Noise impacts on the Gong Gong community due to the cumulative noise from vehicular traffic and train operations.
Fieldsview	Train traffic on the existing line.	No sensitive receptors in close proximity to the loop.	No noise and vibration issues are anticipated.
Mamatwane Yard	Manganese processing plant north of the loop, vehicles on the R380 and the access road to the plant, train traffic on the existing line.	Houses immediately east of the loop.	Noise and vibration impacts on the existing houses close to the line.

EASTERN CAPE			
Loop Extensions	Existing Sources	Identified Receptors	Possible Issues
Drennan	Train traffic on the existing line and sparse vehicle traffic on the R390.	Existing building structures close to the Drennan Station and farmhouses at Blauwkrantz, 700m north of the line.	Noise and vibration impacts on the existing structures close to the line and noise impacts on the farmhouses.

EASTERN CAPE			
Loop Extensions	Existing Sources	Identified Receptors	Possible Issues
Thorngrove	Train traffic on the existing line and sparse vehicles on the road from the N10 to Thorngrove.	Existing building structures close to the Thorngrove Station. Several dwellings are situated north-east of the loop, as well as commercial buildings and warehouses east and south-east of the loop.	Vibration impact on the existing structures close to the Thorngrove Station and noise impacts on the dwellings and commercial installations east and south-east of the loop.
Cookhouse-Golden Valley	Vehicles on the N10, local traffic, human activities, train traffic on the existing line and operations on the existing Cookhouse loop.	The loop is within the Cookhouse community and several structures and dwellings are in very close proximity. The Bongweni community is situated approximately 700 m to the west of the loop. In addition, the Fish River Primary School and the Cookhouse Primary School are also situated close to the railway loop. Along the Golden Valley loop there are also isolated dwellings and structures in close proximity to the line.	Noise and vibration impacts on the various dwellings and structures within Cookhouse. Potential noise impacts on the Bongweni community. Along the Golden Valley loop, noise and vibration impacts are anticipated, since there are several dwellings and structures in close proximity to the railway line.
Ripon-Kommadagga	Vehicles on the N10, train traffic on the existing line.	Several building structures are situated close to the Ripon and Kommadagga loop. In addition, farmhouses are located north of the line between 300m and 800m from the loop.	Noise and vibration impacts on the dwellings and structures close to the loop and noise impacts on the local farmhouses north of the line.