APPENDIX C3:

AGRICULTURAL IMPACT ASSESSMENT

Supplementary report

AGRICULTURAL IMPACT ASSESSMENT FOR uMWP-1 Raw Water

Compiled by:

INDEX

April 2018

1 BACKGROUND

The Final EIA Reports (Raw Water and Potable Water) were submitted to the Department of Environmental Affairs (DEA) on 10 November 2016. A letter (dated 13 February 2017) was received from DEA which rejected the Final EIA Report for uMWP-1 Raw Water and requested additional information.

In response, the following additional alternatives were identified for the proposed uMWP-1 Raw Water components:

- Two additional tunnel routes (Option B and Option C) were identified, and
- The previous route for the realignment of the R617, as assessed as part of the EIA, was discarded due to its encroachment into the Impendle Nature Reserve. Four new route options (Option 1A, Option 1B, Option 2 and Option 3) were identified for the deviation of the R617.

This document serves as a supplement agricultural specialist report that was compiled and attached to the Final EIA Report for uMWP-1 Raw Water. It provides an assessment of the abovementioned additional alternatives.

The routes are as follows:

- The original route, indicated as Route A is shown in pink;
- Route B deviates at the spoils vent tunnel of route A;
- Route C will has a vent tunnel about a kilometre to the south.

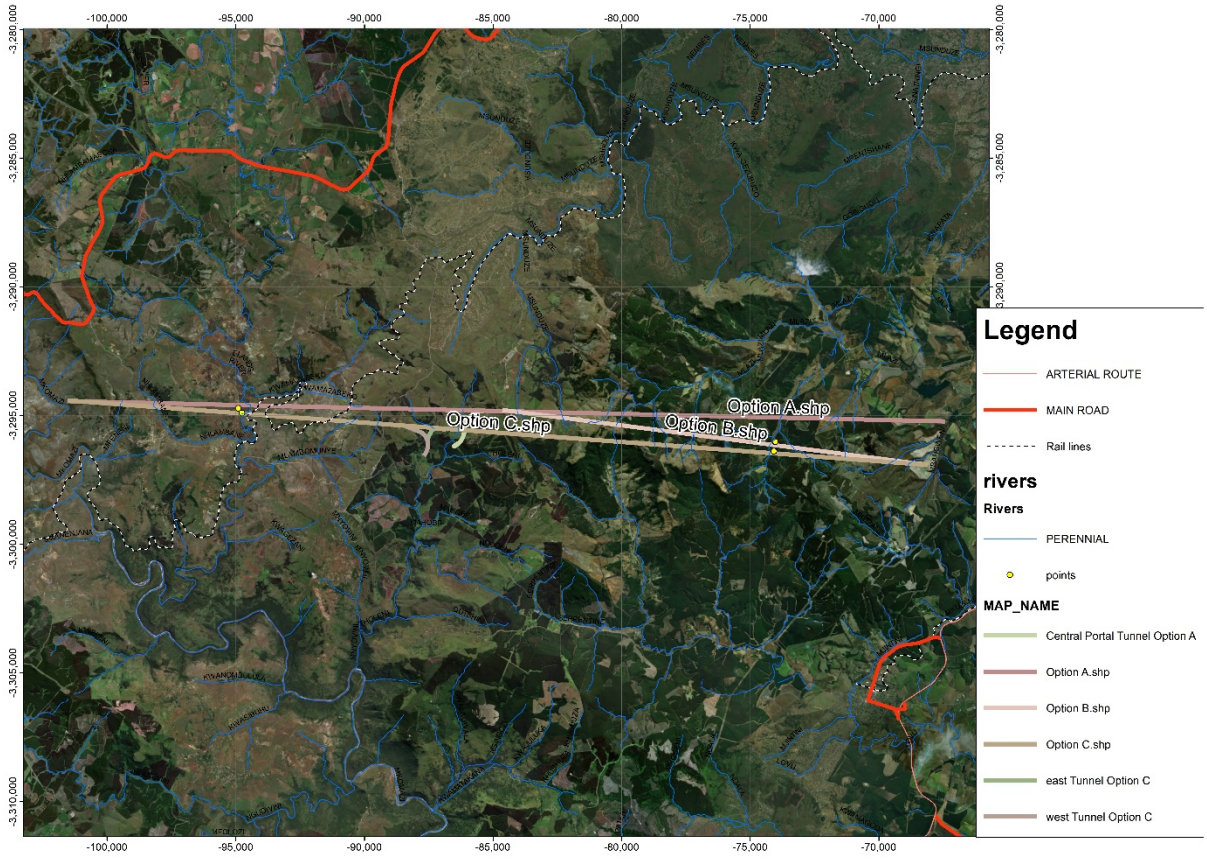

Figure 1. Alignment of Routes

2 TUNNEL ROUTES

2.1 Alternative portal tunnel routes

Options B and C were identified as additional tunnel routes that had to be assessed.

In addition, a tunnel corridor for the routes were to be evaluated. Since the tunnels are underground, the only impact that the routes will gave is where they, or the associated infrastructure surfaces. The actual routes will therefore not have an impact. The focus will therefore be only on the vents, the portal tunnels and the spoils.

The routes are as follows:

- Route B deviates at the spoils vent tunnel of Route A and will therefore essentially be similar;
- Route C will has a portal tunnel about a kilometre to the south.

The impact is as follows:

- The portal tunnel is underground with only the exit that will have an impact. Seeing that both will exit in forested areas, the impact will be similar;
- There is no preference as regards to the agricultural impact between the two options;
- The only difference is in the road that links the exit of the tunnel to the spoils storing positions.
- The vents both is on grazing land. The is no preference from an agricultural perspective

Conclusions

1) Positioning of the vents will not in impact on agriculture;
2) Option A/B: the distance between the exit and the spoils site is about 500m. Depending on the alignment, about 200m by 20m wide will be in plantations that will be lost (0,2 hectares);
3) Option C: the connecting roads will not traverse any plantations. It will be across grazing land;
4) Option C, is therefore the preferred route.

2.2 Alternative of spoil areas

There are potentially three spoils storing areas. The first is for Route Options A and B, and two for Route Option C (refer to Figure 2).

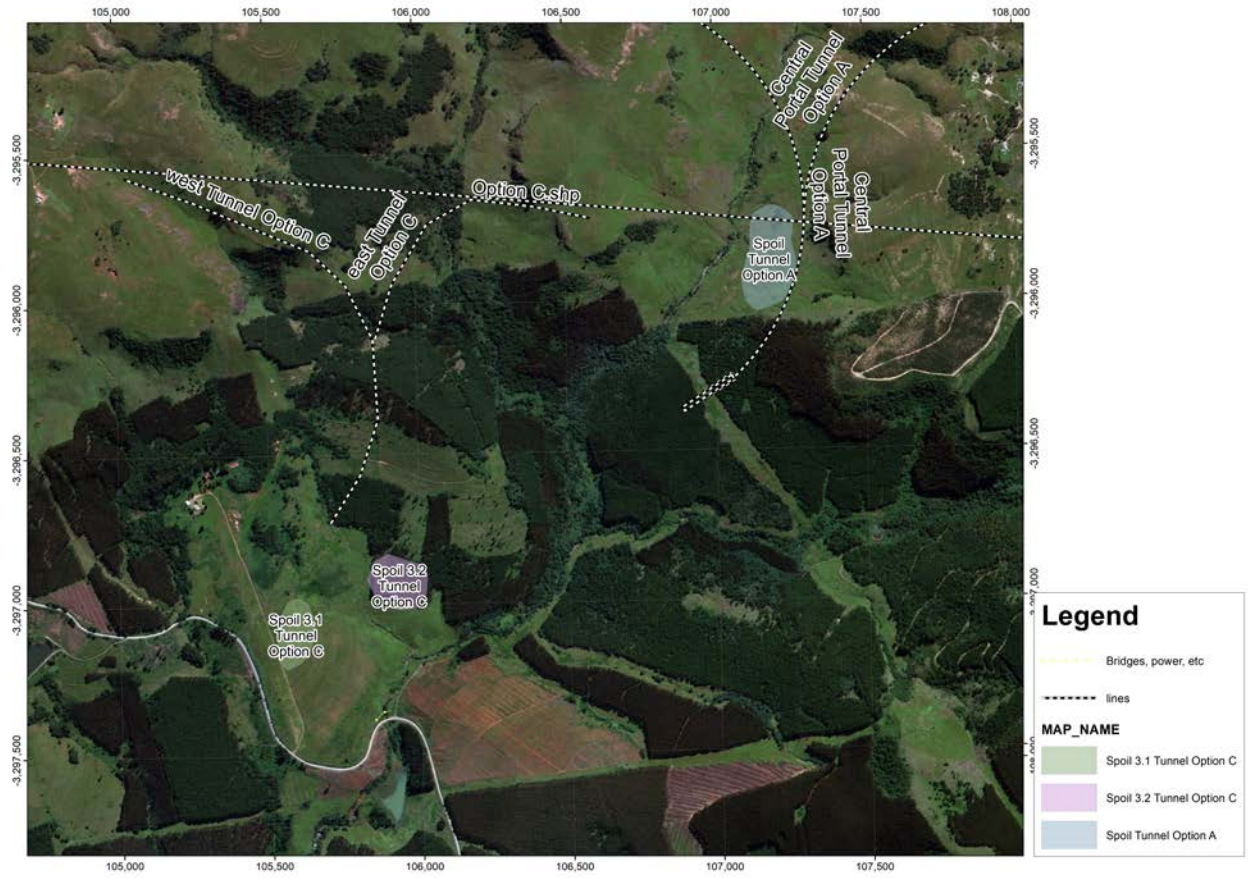

Figure 2. Spoils locations

Conclusions

Spoil Tunnel Option A/B:

- The spoil will be on grazing land and on low potential soils. It will affect approximately 4,9 hectares for grazing.

Spoil Tunnel Option C:

- Spoil 3.1: Consists of 2,3 hectares of cultivated land.
- Spoil 3.2: Consists of 2,8 hectares of plantations that will have to be removed. Forestry is a high value enterprise, and the loss is significantly higher than either cropping land and that of pastures.
- In order of preference, the options are as follows:

    1) Spoil Tunnel Option A / B (loss of 4,9 hectares grazing)
    2) Spoil 3.1 Tunnel Option C (loss of 2,3 hectares cultivated land)
    3) Spoil 3.2 Tunnel Option C (loss of 2,8 hectares plantations)

3 REALIGNMENT OF THE R617

The previous route for the realignment of the R617 was discarded due to its encroachment into the Impendle Nature Reserve. Four new route options were identified as alternatives.

- Options 1A and 1B is to the south of the river and is located mainly on communal grazing land.
- Option 2 traverses 728 metres of arable land and some old lands that are now derelict because of erosion. This route will lead to the loss of approximately 3,64 hectares of cultivated land. (assuming the road and servitude is 50 metres wide). The rest of the road is on grazing land but with a higher grazing capacity than that of Options 1A and 1B, which is on eroded land.
- Route Option 3 has 700 metres of arable land, the rest is grazing. The loss of high potential arable land will be 3,5 hectares. The land along this route is not eroded and therefore, also has a higher grazing capacity that Route Options 1A or 1B.

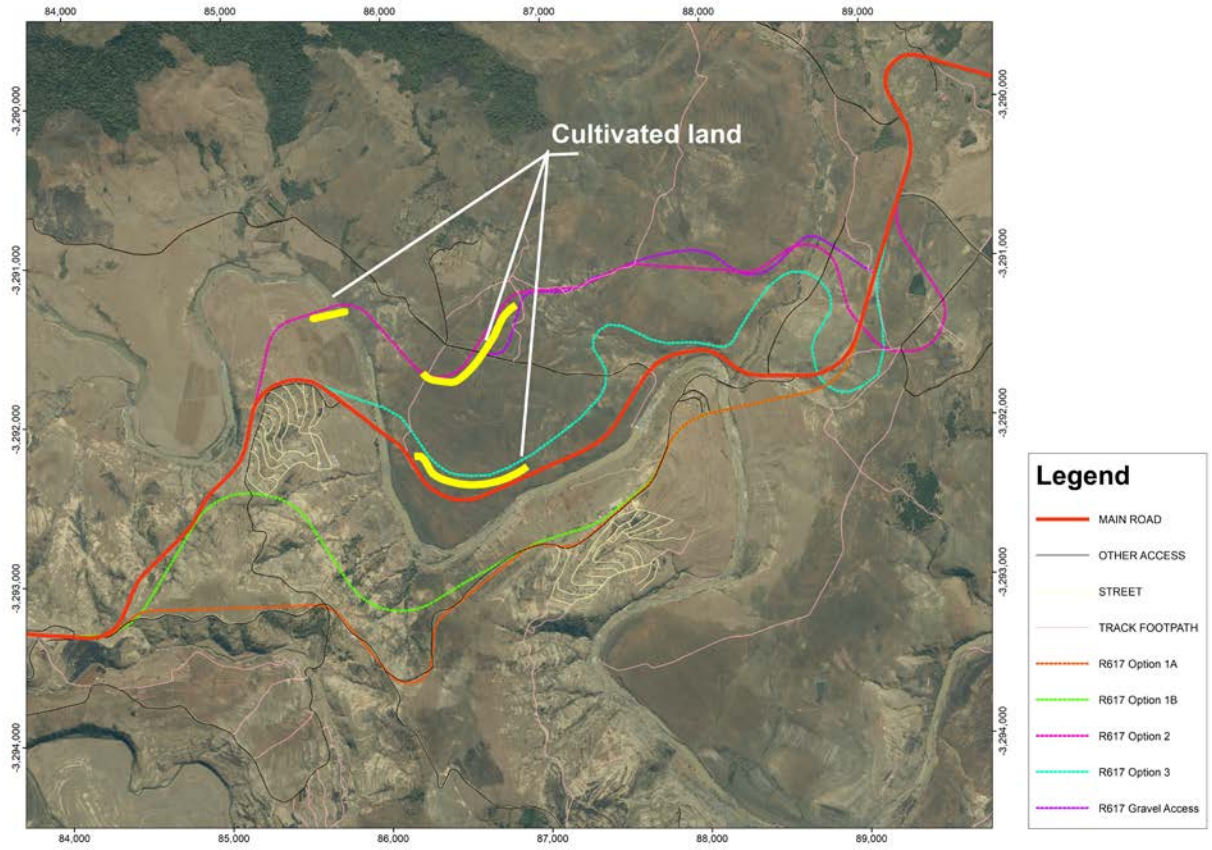

Figure 3. Road alignment options for R617

Conclusions

- Options 1A and 1B is on eroded land with little grazing value. Its loss will not affect agriculture;
- Option 2 will lead to a loss of 3,64 hectares of high potential land and some grazing land;
- Option 3 will lead a loss of 3,0 hectares of high potential arable land and further traverse grazing.

The preferred option is either 1A or 1B.

4 SUMMARY OF IMPACTS

Table 1. Impact assessment

	Potential impact	Proposed Management Objectives / Mitigation Measures	Extent	Magnitude	Duration	Probability	Significance	Area lost	Order of preference
1	**PORTAL TUNNEL OUTLET**								
	Loss of high potential arable land								
	Before mitigation	Loss of farming land / plantations							
	Option A/B	The road to the spoil will have to be cleared. No loss due to the tunnel itself	Local	Low	Permanent	Certain	0	0,2ha	2
	Option C	Not on high potential land					0	0	1
	Mitigation	Mitigation of loss of a resource is not possible. It will only impact other people if land is replaced. As far is the affected party is concerned, there are three options: 1) Purchase land to replace the loss. 2) Compensate the land used annually for the loss in income, and 3) negotiate a lump sum to compensate for the income							
2	**CONSTRUCTION OF LINK ROAD TO SPOILS LOCATION**								
2.1	**Loss of high potential arable land**								
	Before mitigation								
	Option A / B	No high potential land will be lost	Local	Low	Short term	Certain	0	0	1
	Option C (3.1)	2,3 hectares of high potential land will be lost	Local	Low	Short term	Certain	0	2,3ha	3
	Option C (3.2)	2,8 hectares of plantations will be lost	Local	Low	Short term	Certain	0	2,8ha	2
	After mitigation								
	Option 1	Keep the construction period as short as possible							
	Option 2	Keep the construction period as short as possible							

	Potential impact	Proposed Management Objectives / Mitigation Measures	Extent	Magnitude	Duration	Probability	Significance	Area lost	Order of preference
3	**REALIGNMENT OF THE R617**								
	Loss of high potential arable land								
	Before mitigation								
	Option 1A	No high potential land will be lost	Local	Low	Temporary	Certain	0	0	1
	Option 1B	No high potential land will be lost	Local	Low	Temporary	Certain	0	0	1
	Option 2	3,6 hectares of high potential land will be lost	Local	Low	Temporary	Certain	0	2,3ha	3
	Option 3	3,0 hectares of high potential land will be lost	Local	Low	Temporary	Certain	0	2,8ha	2
	Mitigation	Keep the construction period as short as possible and compensate the farmers for the potential income that can be derived from the loss of cultivated land as well as that for the grazing that will be lost for duration of construction.							

5 CONCLUSIONS

- **Tunnel route A / B is preferred**. The position of the spoil will determine the preference. Route A/B will only impact animal grazing. At a grazing capacity of 3ha/LSU, the land that will be lost will be sufficient for only one livestock unit. The alternative route's spoil positions are on arable land or plantations and is less desirable. It must be noted, however, that the impact even of Route C is relatively small.
- **Road realignment of R617: Route 1A is preferred**. Options 1A and 1B is on eroded land with little grazing value. Its loss will not affect agriculture; The position of A1 is preferred because it will follow the existing secondary road and as a result will cause the lease disruption. Both 1A and 1B is on land that is highly eroded and which should be remedied anyway.