

APPENDIX C5:

SOCIAL IMPACT ASSESSMENT

**UMKHOMAZI WATER PROJECT PHASE 1 – REALIGNMENT OF
TUNNEL ROUTE OPTIONS AND PROVINCIAL ROAD R617 WITHIN
CORRIDORS**

ADDENDUM TO THE SOCIAL IMPACT ASSESSMENT

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Prepared for:

Nemai Consulting
P.O. Box 1673
Sunninghill
2157

Prepared by:

Dr Neville Bews & Associates
P.O. Box 145412
Bracken Gardens
1452

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1. Introduction

The current water resources of the Integrated Mgeni Water Supply System (WSS) in KwaZulu-Natal (KZN) are insufficient to meet the long-term water requirements of the system. The uMkhomazi Water Project Phase 1 (uMWP-1) proposes the transfer of water from the undeveloped uMkhomazi River to the existing Mgeni system. This transfer scheme is deemed to be the most viable option to provide a large volume of water to fulfil the long-term water requirements of the Mgeni system.

The uMWP-1 consists of both Raw Water and Potable Water components which are being undertaken by the Department of Water and Sanitation (DWS) and Umgeni Water, respectively. Nema Consulting was appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) for both components of the uMWP-1.

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, as well as a tunnel corridor; 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, as well as a road corridor.

This document serves as an Addendum to the social impact 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.

2. Assumptions and Limitations

1. The study prepared by Knight Piésold (Pty) Ltd South Africa forms an important part of this addendum, and accordingly the work undertaken by Knight Piésold is accepted as being of a high integrity and standard.
2. The descriptions of the R617 alternatives as provided by Knight Piésold (Pty) Ltd South Africa were used in compiling this addendum.

3. Information was drawn from other specialist studies which are assumed to be accurate at the time of writing.
4. No site visit was undertaken and information in this regard was provided by Nema Consulting who had undertaken several site visits to the area during which they had engaged with the relevant governmental and traditional authorities in the area.

3. Scope

To provide feedback based on the initial social impact assessment undertaken for the uMWP-1 Raw Water Project in respect of the following new options:

- Two additional tunnel routes, Option B and Option C within a tunnel corridor.
- Four new route options, Option 1A, Option 1B, Option 2 and Option 3 within a road corridor identified for the deviation of the R617.

4. Site and Project Description

4.1. Tunnel Corridor with Additional Tunnel Routes

As described in the Social Impact Assessment Report the first ± 21 km of the tunnel falls under traditional authority administration and is on state land. At the western end of the tunnel the land use includes grazing, subsistence farming and housing. Dwellings are concentrated along roads and the tunnel traverses the villages of Ncwadi and Magadini. This disruption remains as the additional tunnel options are within a narrow corridor in the same area with the tunnel being located underground. Consequently, apart from the conveyance infrastructure associated with the tunnel such as portals, adits, vent shafts and spoil sites, surface infrastructure will be somewhat limited and, to some degree, can be located in such a manner as to limit the social impacts on the surface.

4.2. Realignment of Provincial Road R617

The R617 is a KZN provincial road stretching between Howick in the northeast and Kokstad in the southwest. The section of road under consideration commences at approximately latitude 29°43'50.51"S and longitude 29°55'20.72"E in the northeast continuing in a south-westerly direction to approximately latitude 29°45'19.15"S and longitude 29°52'13.13"E in the west. In the north the road corridor runs along the southern border of the Impendle Nature Reserve and in the south is situated northeast of the village of Mkhohlwa. The village of Mdayane falls within the identified corridor while the villages of Nkumba, Mkhohlwa and Machabasini are on the southern outskirts of the corridor.

Option 1 is approximately about 6.430 km long and is located south of the existing R617. Starting on the eastern side, Option 1 peels away from the existing R617 east and south of the existing shop (Lundys Hill Supply Store) where after it crosses the uMkhomazi River (future Smithfield

Dam) approximately 170m south of the existing old Deepdale Bridge (built 1896). From here the alignment follows the existing D1212 for about 2 km. At this point **Option 1B** separates from Option 1A and heads in a north-westerly direction towards the Mdayane Village. After passing the southern part of Mdayane Village, the road makes an about turn and heads in a south-westerly direction where it re-joins the existing D1212 / R617 intersection en-route to Hlanganai. **Option 1A** continues to follow the existing D1212 alignment until it reaches the D1212 / R617 intersection.

Option 2 is the route furthest to the north, slotting in below the Impendle Nature Reserve and is the longest route at 8,250 km long. The challenge on this route is the mountainous terrain. The uMkhomazi River will be crossed with a medium-sized, yet substantial bridge to the north of the existing bridge on the R617. The alignment traverses over a mountain/hill and down again, crossing a stream before re-joining the existing R617. An additional smaller bridge will be required to cross the stream. A bridge to accommodate pedestrians and cattle will be required near the old Deepdale Bridge on the D1212 in order for school children and cattle to cross the dam basin.

Option 3 is approximately about 7,750 km long and aims to follow the existing R617 as far as possible. The uMkhomazi River will be crossed via a medium-sized yet substantial bridge to the north of the existing bridge on the R617. The alignment then hugs the contours whilst staying fairly parallel with the existing R617, but on higher ground in order to stay clear of the 1:100 year floodline and purchase line. As per Option 2, a small stream is crossed before re-joining the existing R617. An additional smaller bridge will be required to cross the stream. A bridge to accommodate pedestrians and cattle will be required near the old Deepdale Bridge on the D1212 in order for school children and cattle to cross the dam basin.

5. Social Considerations

Considering the social issues in relation to;

1. The tunnel corridor with additional tunnel routes and associated conveyance infrastructure and
2. The realignment of the provincial road R617.

There are no obvious fatal flaws identified at a social level. It is most likely that the associated social impacts will be similar to those identified in the original social impact assessment undertaken for the project and that the mitigation measures as suggested in that document will apply to all suggested technical adjustments. There are, however, certain issues that need to be noted.

The fact that the intention is to seek authorisation for the corridors rather than to set the alignments for the tunnel and R617 should allow for the optimisation of the routes during the detailed design phase. This should assist in reducing the social impacts associated with the project. However, to gain maximum benefit from this initiative would require a process of public engagement to ensure that affected parties have meaningful input in respect of the final alignments and positioning of infrastructure.

As the tunnel remains largely submerged it is unlikely that it will have any significant social impact as daily living activities can continue, largely undisrupted, on the surface. Any areas of impact will be associated with the conveyance infrastructure, in particular with regard to the tunnel portals, adits and spoil sites. The vent shafts should have limited impact and should be easily repositioned to mitigate any specific impact they may have.

However, in respect of the entrance to the west and east tunnel, Adit 2 Option C, it has been noted that there are agricultural activities within some 400 meters of the tunnel opening as illustrated in **Figure 1**.

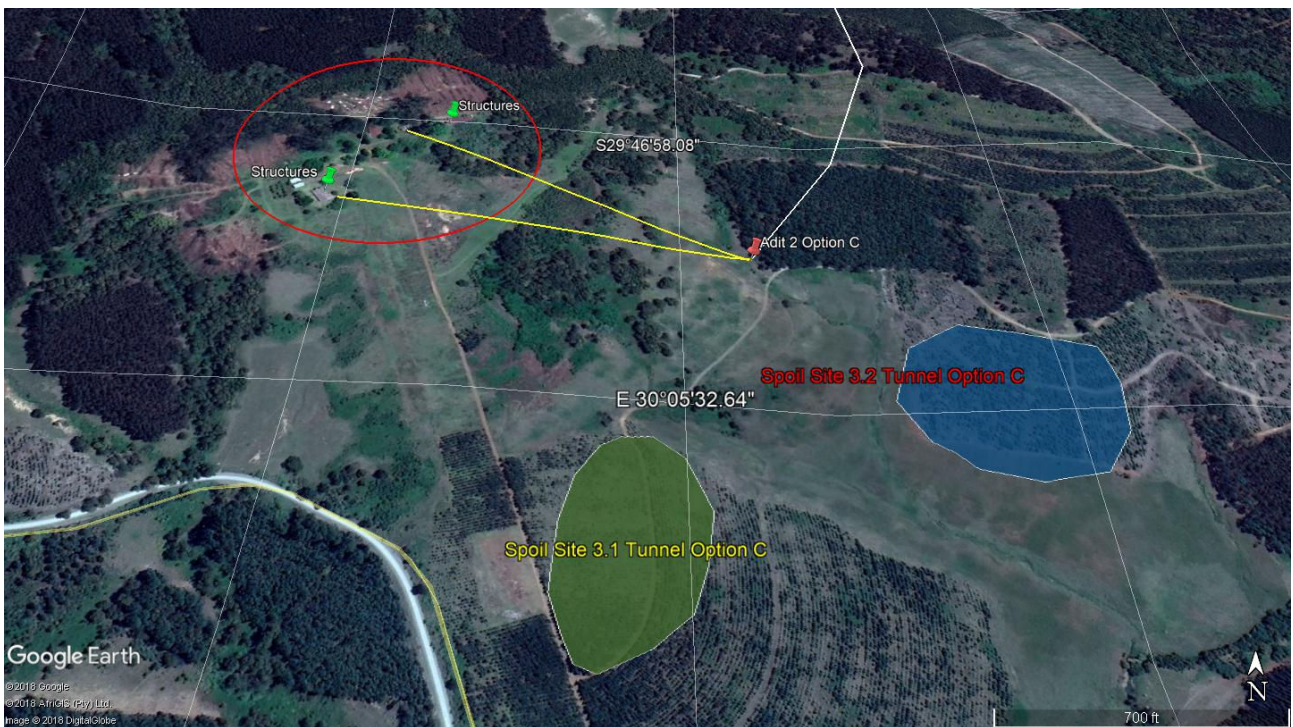


Figure 1: Agricultural activities in the vicinity of Adit 2 Option C

With the agricultural and tunnel construction activities being in relatively close proximity, some 400 meters apart, this may result in the two workforces coming into contact with each other and/or people other than construction workers coming on to the construction site. In this regard it is important to ensure that persons coming into contact with the construction site, as well as in contact with activities surrounding the construction site, are protected against hazards to their health and safety. In particular it would be important to ensure that:

- Construction workers are housed off site;
- Deliveries of heavy equipment to site are undertaken in a manner that minimises the hazards associated with these deliveries;
- The construction site is secured with adequate signage, see signage example in **Figure 2**, to prevent people and animals from wondering onto the site;
- The construction site is constantly monitored and any unsafe activities or conditions are swiftly rectified;
- The site needs to be adequately lit;

- All vehicles and plant needs to be properly maintained;
- Precautions need to be put in place to prevent or control exposure to hazardous substances and/or noise and dust pollution.
- It will be important in finalising the preferred option to closely consult with all affected parties.



Figure 2: Example of signage

Pertaining to the spoil sites, no compelling social preference emerges, save to support the findings of the agricultural specialist in order of preference and for the reasons presented in that report.

1. Spoil Tunnel Option A / B (loss of 4,9 hectares grazing on low potential soils)
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 high value forestry enterprise would result in significant loss)

In respect of the realignment of the provincial road R617 it is important, on a social basis, to consider sensitive areas such as residential settlements associated with access to commercial and business facilities, schools, clinics, transport, crops and grazing areas. In this regard the preferred social option to emerge is Option 1B in support of the finding of Knight Piésold and based on the following:

- Being the least disruptive to communities in respect of access to the R617 and public transport.
- In some cases potentially providing better access to some communities.
- On a technical basis Option 1B adheres best to design standards and best practice philosophies. This is important on a social basis as it will reduce the risk of crashes and personal injury and death to road users. AECOM's Traffic Impact Assessment undertaken in 2015 had indicated an average daily traffic count ranging between $\pm 7\ 800$ vehicles close to Howick to $\pm 2\ 000$ vehicles close to Smithfield dam of which between 400 and 600 were classified as truck traffic.
- On a financial basis Option 1B carries the lowest cost and, although it is recognised by Knight Piésold that “... *recommending a particular option based purely on price would not be sensible*”, the fact that it is the least expensive option, considered together with the other benefits listed above, will also have a positive social implication. This is based on the

premise that if all else is equal the financial saving is likely to convert to a social benefit, albeit limited in this instance.

- The agricultural specialist points out that although Option 1A and 1B are located on communal grazing land this land is eroded with little grazing value the loss of which will not affect agriculture.

If, however, Option 1B is selected there will be a need to provide access to areas north of the uMkhomazi River that will be cut off. In this respect it would be the socially preferred option that consideration is given to constructing the required bridge/s in such a manner that vehicular, pedestrian and animal traffic are distinctly separated with the best option being a separate bridge for vehicular traffic to that of pedestrian and animal traffic.

The realignment of the R617 will result in the separation of existing communities as illustrated in **Figure 3**, which may require the relocation of certain dwellings and structures. In this regard it is important that the affected area is surveyed and that the affected people are consulted along with the host community in which these people will be placed. Towards this end a Relocation Action Plan (RAP) will need to be developed which has already been alluded to in the original SIA report in respect of the inundation of the Smithfield Dam Basin.

With moving the R617, which carries a relatively high traffic volume, through what is currently a quiet rural setting it would be important to undertake a traffic awareness and safety programme amongst affected communities, well prior to the opening of the road. It would also be important to ensure that such a programme is implemented in schools within the affected area and that the programme continues after the opening of the road.



Figure 3: Example of divided communities

A further consideration, dependent on technical feasibility with regard to adherence to design standards, best practice philosophies and land availability, is to consider adjusting the road alignment in an effort to avoid dividing communities such as that illustrated in **Figure 3**.

6. Conclusion and Recommendations

Considering the available information, it is my considered opinion that the social impact of realigning the tunnel options are likely to be limited and can, to a lesser or greater degree, be successfully mitigated.

With regard to the realignment of the R617, and in particular considering the reports generated by Knight Piésold, dated February 2018, and the Agricultural Specialist, date April 2018, Option 1B emerges as the preferred social option. What is important on a social level is that the mitigation measures, as outlined above, be implemented in an effort to limit the impacts associated with this realignment.

Apart from the mitigation measure discussed above, the mitigation measures as outlined in the original social impact assessment will in essence apply in the case of both the tunnel and road deviations as discussed above.

7. Bibliography

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