

Atlantis Haul Road

Terrestrial and Aquatic Sensitivity Assessment

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1 Introduction

The proposed refurbishment of Basin 6 at Atlantis Water Resource Management Scheme (AWRMS) will result in quantities of soil / sand, and it has been proposed that this material will be transported by truck to the nearby Apollo Brick yard, where it will be used. A new haul road has been put forward, to avoid excessive travel between Basin 6 and Apollo Brick. The road would be approximately 8m wide, and an earth berm would be constructed on the upslope side, in order to divert surface water (stormwater from Atlantis, and seepage water from the ponds at the Wesfleur WWTW) away from the road, and towards the Donkergat River.

The proposed new haul road – only one possible option was assessed - traverses mostly transformed terrestrial habitats and anthropogenic (artificial) wetlands and watercourses, which have been created through seepage from unlined water treatment / storage ponds and stormwater discharge.

2 Sensitivity assessment

The haul road route was walked by both the botanical and aquatic specialist, on the 17th January 2024 (summer). An overall sensitivity rating was assigned to the route and surrounds (up to roughly 15m on either side of the proposed route), based on the overall condition of the affected ecosystem, taking into account:

- Severity of transformation;
- Presence of sensitive or diverse plant communities, and
- Provision of ecological functions.

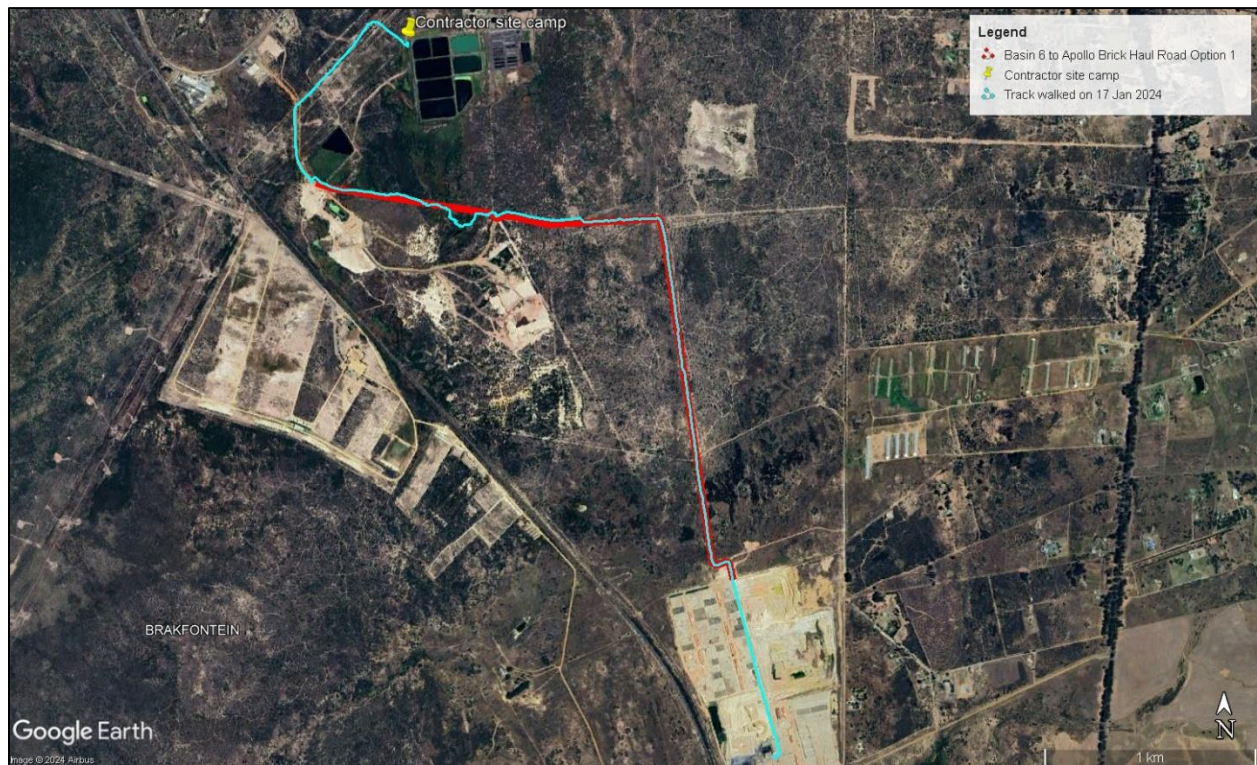


Figure 2.1 Haul road route option (red line - only one option was assessed) and track walked on 17th January 2024 (blue line).

3 Terrestrial sensitivity



Figure 3.1 Waypoints relevant to the survey of botanical sensitivity of the haul road route.

3.1 Medium sensitivity area

The main area of concern from a terrestrial point of view is highlighted in red in Figure 3.2, and is located between waypoint 013 and 016. This area supports semi-intact Atlantis Sand Fynbos – a critically endangered vegetation type (Figure 3.3). This area should be avoided by adjusting the road alignment south of this section. The habitat may support bulb species but due to summer dormancy this cannot be verified without a spring survey.

Species: *Agathosma imbricata*, *Cliffortia polygonifolia*, *Metalasia densa*, *Passerina corymbosa*, *Phyllica cephalantha*, *Anthospermum aethiopicum*, *Salvia africana*, *Searsia laevigata* var. *villosa*, *Thamnochortus* sp. and *Trichocephalus stipularis*.



Figure 3.2 Area to be avoided between waypoints 013 and 016, shown on a Google Earth image.



Figure 3.3 Semi-intact Atlantis Sand Fynbos, located between waypoint 013 (33°36'56.21"S; 18°28'52.59"E) and 016 (33°36'56.53"S; 18°28'55.55"E). The road alignment should be adjusted to run along the cleared road visible on the right-hand side (south). The vegetation should be demarcated and should not be disturbed during the construction and operational phases.

3.2 Low sensitivity areas

The low sensitivity habitat occurs from waypoint 006 (33°36'54.62"S; 18°28'42.91"E) to 013 (33°36'56.21"S; 18°28'52.59"E). This section supports degraded to highly degraded habitat, supporting a mix of grasses and scattered indigenous shrubs with medium density infestation of Port Jackson willow (*Acacia saligna*) (Figure 3.4). No mitigation is required since the affected habitats are too degraded to warrant the expense and effort of rehabilitation.

Species (* = invasive): **Acacia saligna*, *Aspalathus hispida*, *Asparagus capensis*, *Cliffortia polygonifolia*, *Conicosia pugioniformis*, *Ehrharta calycina*, *Helichrysum cf. revolutum*, *Lycium afrum*, *Osteospermum incanum*, *Pelargonium capitatum*, *Searsia lucida*, *Searsia glauca*, *Searsia laevigata* var. *laevigata* and *Searsia laevigata* var. *villosa*.



Figure 3.4 Degraded to highly degraded areas dominated by *Ehrharta calycina*, with occasional indigenous shrubs and tall Port Jackson willow. This section is located between waypoint 006 and 013.

3.3 Very low sensitivity areas

The section of haul road route from waypoint 001 to 003 has patches of terrestrial habitat that occur within an artificial wetland dominated by recently cleared *Phragmites australis* (Figure 3.5). The cleared areas have been colonized by weedy species such as *Cynodon dactylon*, *Datura stramonium*, *Pennisetum clandestinum* and *Raphanus raphanistrum*. Recently created artificial

stormwater channels are also weed dominated. Dominant species include *Persicaria cf. lapathifolia* on the channel margins, and *Lemna sp.* and filamentous green algae on open water.



Figure 3.5 Recently cleared section at waypoint 002 showing emerging *Phragmites australis*.

This section of the proposed road alignment from waypoint 016 to the Apollo Brick Factory is highly degraded to transformed, and also considered to be of very low sensitivity from a terrestrial perspective. The habitat is dominated by alien grasses with the occasional indigenous shrub and some patches of sour fig *Carpobrotus edulis*. A clump of the indigenous shrub *Euclea racemosa* was found at waypoint 019 (33°36'56.76"S; 18°29'24.42"E) (Figure 3.7). This clump of about 3 individuals should be avoided.

Species (* exotic): *Aspalathus hispidum*, *Bulbine annua*, *Carpobrotus edulis*, *Helichrusum niveum*, *Putterlickia pyracantha* and **Verbesina encelioides*.



Figure 3.6 This *Euclea racemosa* clump located at waypoint 019 (33°36'56.76"S; 18°29'24.42"E) should be avoided.



Figure 3.7 Transformed section extending from waypoint 021 southwards towards the Apollo Brick Road and brick factory.

4 Aquatic sensitivity

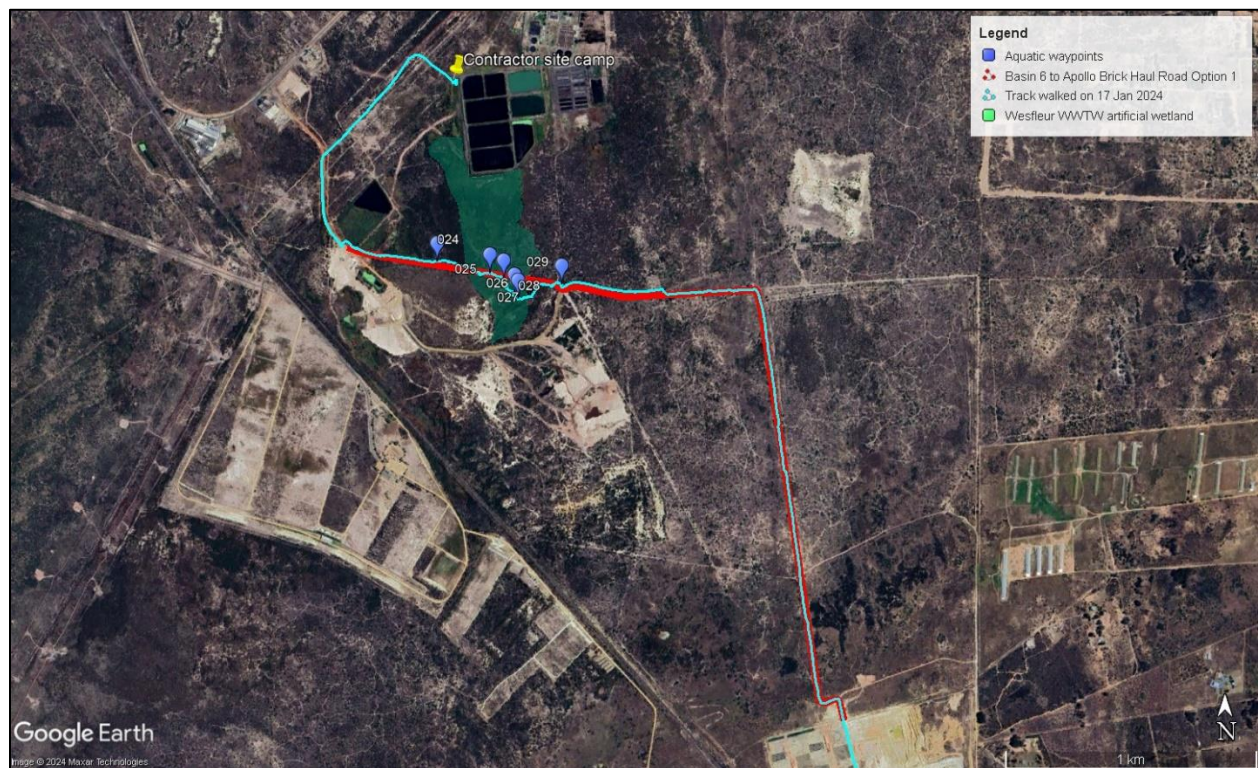


Figure 4.1 Aquatic sensitivity waypoints relevant to the text.

4.1 Medium sensitivity area

In 2023, FCG undertook an assessment of wetlands around the Wesfluer WWTW, and mapped the outline of the artificial wetland south of the ponds. The wetland is shown as a green polygon in Figure 4.1. The wetland has formed over the last 40 years, since construction of the unlined maturation ponds at the WWTW in the 1980s (Frenzel, 2023). This area south of the ponds has been significantly invaded by invasive alien plants (IAPs), which have been cleared on at least one occasion. The southern portion of the wetland, and parts of the haul road have also been impacted by sand-mining, especially in the early 2000s. In summary, although a wetland is present, it has formed artificially, and has been substantially impacted by a number of activities. The wetland does perform some ecological functions including:

- Water retention in the soils;
- Provision of wetland habitat and biodiversity, for instance a diverse patch of indigenous obligate and facultative wetland plants was recorded at waypoint 005 (Figure 4.1 and Figure 4.2).



Figure 4.2 A diversity of wetland plants was recorded here (waypoint 028), including *Cyperus textilis*, *Elegia tectorum*, *Bolboschoenus maritimus* and *Ficinia nodosa*.

4.2 Very low sensitivity areas

The other aquatic feature affected by the haul road route is the recently constructed artificial stormwater channel, which crosses the route at aquatic waypoint 024 (Figure 4.1 and Figure 4.3). The margins of the channels support *Persicaria cf lapathifolia* (not indigenous, but considered naturalised to South Africa) on the channel margins, and *Lemna* sp. and filamentous green algae on open water. All of these species are tolerant of poor water quality, and are not considered sensitive. The channels do not supply natural or desired aquatic habitat, and are thus considered to be of very low sensitivity.

4.3 No sensitivity areas

The remainder of the haul road route has no aquatic sensitivity.



Figure 4.3 Artificial stormwater channel that crosses the haul road route at aquatic waypoint 024. Dominant species include *Persicaria* cf. *lapathifolia* on the channel margins, and *Lemna* sp. and filamentous green algae on open water.

5 Conclusions and mitigation

- The low, very low, and no sensitivity areas along the haul road route do not need to be avoided, with minimal mitigation required.
- Mitigation measures required for the entire haul road route include:
 - The construction and operational footprint of the haul road must be kept to the minimum required;
 - The road must follow existing tracks or roads, wherever possible;
 - The land surrounding the construction footprint is no-go for construction workers and machinery;
 - Toilets on site must be regularly serviced and litter picked up regularly;
 - Management of stormwater on and upslope of the road must not lead to the creation of concentrated flowpaths, which may cause erosion of the surrounding landscape
- The medium sensitivity terrestrial area must be avoided by adjusting the road alignment south of this section, and the patch of *Euclea racemosa* at waypoint 019.

- The area occupied by the wetland is considered to be of medium sensitivity, but the proposed haul road route currently avoids the diverse patch of wetland plants, so the current route is acceptable, with mitigation.
- Mitigation measures required within the areas of medium terrestrial or freshwater sensitivity include:
 - The edge of the construction footprint must be marked or fenced, in order to demarcate the surrounding landscape as no-go areas;
 - All construction machinery must be supplied with adequate drip trays and banded where necessary, to avoid pollution from oils and fuels;
 - Where stormwater is directed away from the road through the use of earth berms (as proposed), this water should not be concentrated into one or two pipes or culverts, which may lead to erosion, but should be discharged through numerous pipes on the downslope side of the road. Discharge points must be stabilised;
 - When the road is maintained, graded soil or sand may not be dumped into the medium sensitivity areas;