Sheffield Manor
Sheffield Beach
4420

September 2018

Department of Water and Sanitation

Southern Life Building
10th Floor
88 Joe Slovo Street
Durban
4000
Tel: 031 336 2748
Email: mMoonsamycC@dws.gov.za

Attention: Ms C. Moonsamy

DWS RISK ASSESSMENT MATRIX APPLIED TO THE PROPOSED DEVELOPMENT OF THE HELMSLEY AGRICULTURAL ESTATE, PORTION 177 (OF 161) OF THE FARM COMPENSATION NO. 868, KWAZULU NATAL

The Risk Assessment Matrix as required in terms of GA 509 gazetted on the 26th of August 2016 has been completed by Louise Zdanow (SACNASP Reg. no. 114072). Please refer to signature at the bottom of this letter for contact details.

Summary of proposed activities.

The proposed Helmsley Agricultural Estate (hereafter referred to as the project footprint) will be developed on 20ha of Helmsley Farm (Portion177 of 161 of the Farm Compensation No 868 FU). The general study area includes all areas within 500m of the project footprint. The study area is located to the west of the N2 and R102 in the Umhlali/Driefontein area, within the KwaDukuza Municipality, KwaZulu Natal.

The proposed development will comprise of 32 special single residential units, and 93 intermediate density housing residential units, with one access gatehouse situated at the entrance to the farm off the District Road D176. The associated infrastructure required to support the proposed residential development includes:

- Road upgrades and internal road network;
- Water – there is no municipal supply in the area, the proposed development will make use of groundwater resources from DWAF registered and licenced boreholes. Water from the boreholes will be pumped to the 300kl reservoir, a water treatment facility (for disinfection and infiltration) and will be reticulation to the proposed units;
- Sewage – there is no sewer treatment or bulk reticulation service in the proximity of the project footprint. It is proposed that an onsite sewage treatment and disposal facility is developed. Sewage will be treated by way of a package treatment plant which will supplement water supply for crop irrigation;
- Electricity – construction of an electrical substation adjacent to the sewage package plant is proposed. The internal power supply would consist of an 11kV underground cable network following the roadway;
- Stormwater management systems; and
- Solid waste management – all solid waste will be collected and disposed of at a registered solid waste disposal site by Dolphin Coast Waste Management at the cost of the Home Owners Association.

An Environmental Authorisation (EIA/6421) has been granted for the proposed development activities (2008, amended 2017). Special conditions included within the Record of Decision (RoD) specify that all agricultural crops must be removed from wetland areas[1] and planted outside the 20m buffer from the edge of the temporary wetland areas; that no development, including infrastructure, may occur within 20m from the edge of the delineated temporary wetlands; and that delineated wetland areas must be managed for conservation as part of the residential estates open space system. Watercourses within the general surroundings of the project footprint (watercourses 1-9) will also be rehabilitated as part of the proposed development related activities (confirmed by personnel communication with Mr K. Wiggishoff, 2017). This will result in the significant improvement of the biodiversity and health of the features and will add to conservation of freshwater habitat within the region.

[1] Assumed that reference to wetlands within the RoD also includes rivers and riparian areas.

Figure 1: Project footprint (indicated in red) and study area (indicated in green) in relation to surrounding areas (Google Earth Pro, 2017).

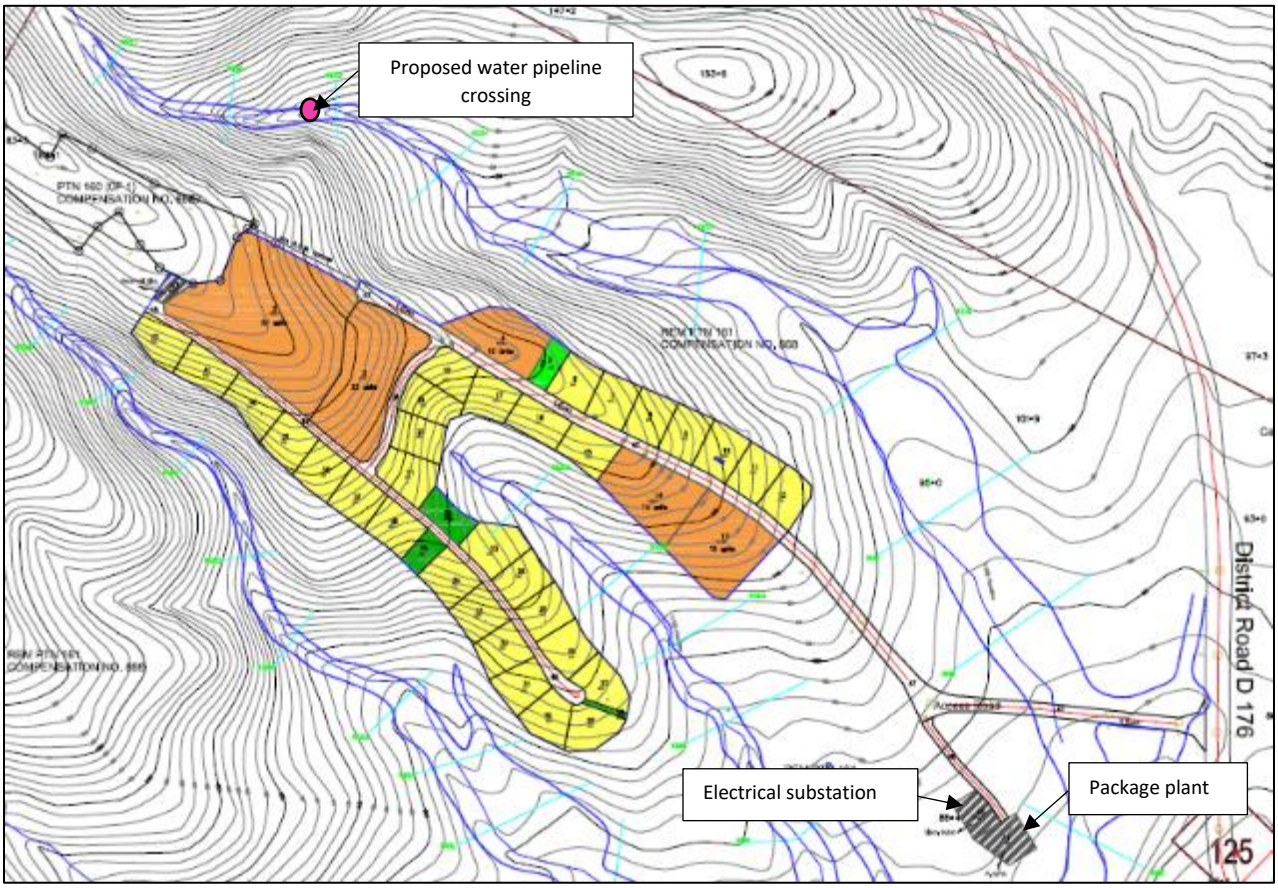

Figure 2: Project footprint layout (yellow – special single residential units, orange – intermediate residential units, green – Conservation, lime green – private open space and blue – 1:100 year floodlines).

Brief Synopsis of Freshwater Assessment undertaken by EnviroSwift KZN (Pty) Ltd dated June 2017.

Summary of background Information:

The study area is located within the Indian Ocean Coastal Belt Biome and Bioregion (Mucina and Rutherford, 2006), within the North Eastern Coastal Belt Ecoregion, and within the U30D quaternary catchment area.

The study area is indicated as 'available' by the Freshwater Systematic Conservation Plan for KZN (KZN FSCP, 2007). Areas indicated as 'available' are untransformed biodiversity areas which have no specific conservation priority. The study area was not indicated as a Critical Biodiversity Area (CBA) or as an Ecological Support Area (ESA) by either the KZN Terrestrial Systematic Conservation Plan (TSCP) (Ezemvelo KZN Wildlife, 2010) or the more recent KZN Biodiversity Spatial Planning (Ezemvelo KZN Wildlife, 2016). The majority of the study area is indicated as 100% transformed by the KZN TSCP. Areas located within the western and eastern portions of the study area are indicated as Biodiversity Areas by the TSCP, however, these areas are located outside of the project footprint boundary.

Recent vector data obtained from the Surveyor General in 2015 indicates numerous hydrological lines within the study area. An artificial channelled valley bottom wetland is also indicated on the southern boundary of the study area by the NFEPA database, however, no wetlands are indicated within the project footprint boundary itself[2].

According to the vegetation type map for KZN, the study area is located within the KwaZulu Natal Coastal Belt Grassland vegetation type which is indicated as Critically Endangered within the region (Shaw and Escott, 2011).

Summary of Freshwater Specialist Assessment Results

Numerous watercourses were encountered within 500m of the project footprint, however, only ten watercourses are located directly adjacent to, downslope of, or within the project footprint boundary, and are therefore likely to be impacted upon as a result of the proposed development related activities. These watercourses include a perennial stream (watercourse 1), an intermittent stream (watercourse 2), two seasonal streams (watercourse 3 and 7a), three seep wetlands (watercourse 4, 5 and 6) and three channelled valley bottom wetlands (watercourse 7b, 8 and 9) (refer to figure below).

The remaining watercourses are located either upslope of the project footprint, within a separate catchment area to the project footprint or more than 100m away from the project footprint, and are therefore not considered to be at risk of impact.

[2] It should be noted that the NFEPA Map is not spatially accurate to 1:10 000 or less (i.e. it is not a fine-scale or accurate map of the freshwater features in South Africa). A field survey was therefore required in order to confirm the presence or absence of wetland features.

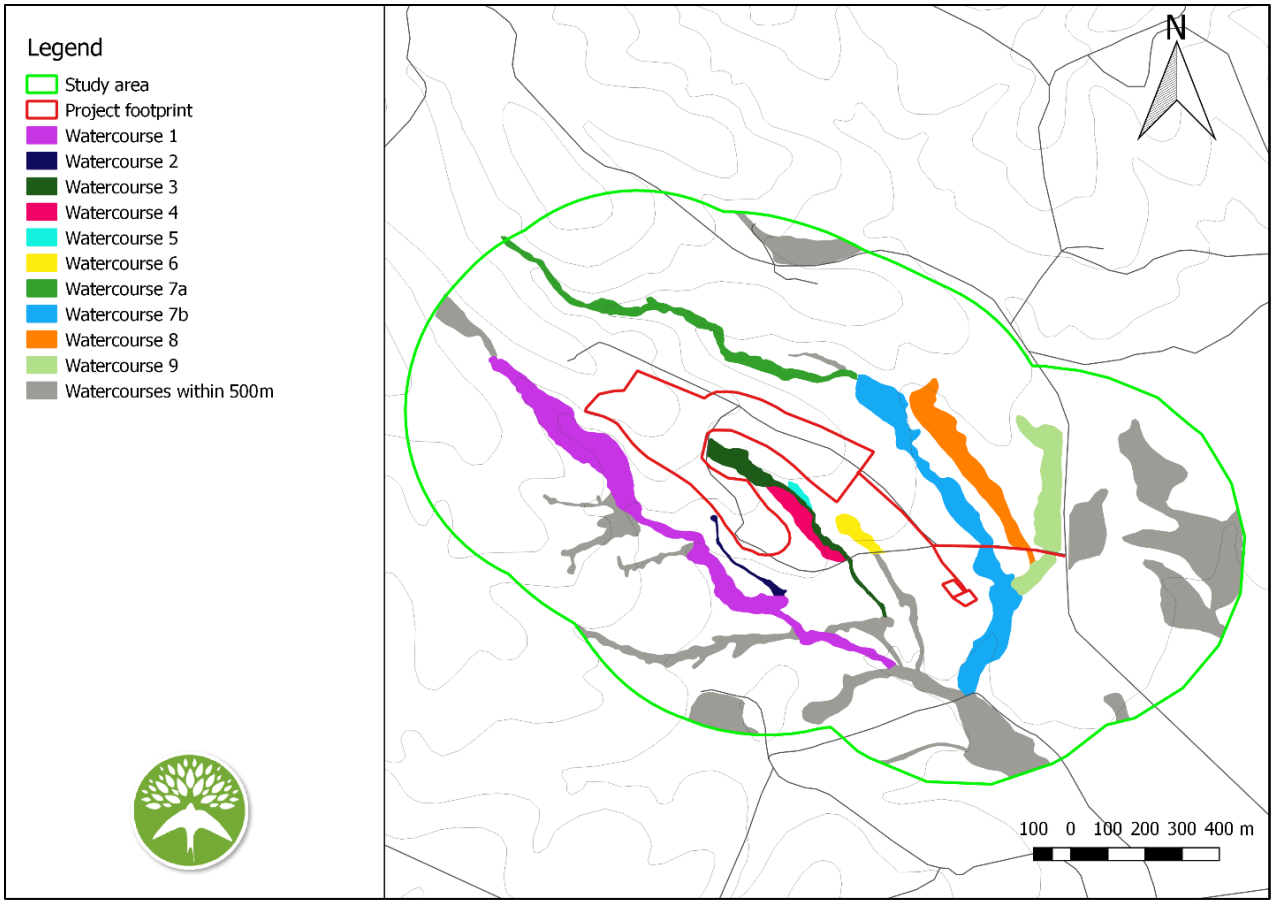

Figure 3: Watercourses associated with the study area and project footprint.

A summary of the results of the various assessments undertaken for each of the watercourses is provided in the table to follow.

Table A: Summary of freshwater results

Watercourse	HGM Unit	Present Ecological State (PES)[3]	Ecosystem Services (wetlands only)[4]	Ecological Importance and Sensitivity (EIS)[5]	Recommended Ecological Category (REC)
Watercourse 1	Perennial stream	Category C (moderately modified)	N/A	High	Category C (moderately modified)
Watercourse 2	Intermittent stream	Category D (largely modified)	N/A	Low	Category C (moderately modified)
Watercourse 3	Seasonal stream	Category D (largely modified)	N/A	Moderate	Category C (moderately modified)
Watercourses 4, 5 and 6	Seep wetlands	Category E (seriously modified)	Increased importance in terms of Phosphate, Nitrate and Toxicant assimilation	Low	Category C or D (moderately or largely modified)
Watercourse 7a	Seasonal stream	Category C (moderately modified)	N/A	High	Category C (moderately modified)

[3] Kemper *et. al*. 1999 (rivers) and Macfarlane *et. al.* 2010 (wetlands)

[4] Kotze *et. al.* 2007

[5] Based on the approach adopted by the DWA as detailed in the document "Resource Directed Measures for Protection of Water Resources" (1999) (rivers), and based on the assessment tool developed by Rountree *et. al* (2014) (wetlands)

Watercourse 7b	Channelled valley bottom wetland	Category E (seriously modified)	Increased importance in terms of Phosphate, Nitrate and Toxicant assimilation and in terms of erosion control	Moderate	Category C or D (moderately or largely modified)
Watercourses 8 and 9	Channelled valley bottom wetlands	Category E (seriously modified)	Increased importance in terms of Phosphate, Nitrate and Toxicant assimilation and in terms of erosion control	Low	Category C or D (moderately or largely modified)

Risk Assessment

The approach is briefly summarised below with reference to the completed Risk Assessment Matrix. In addition, refer to the Record of Decision (2008, amended 2017), the Environmental Management Plan (IDM Environmental, 2012), the Stormwater Management Plan (BIGEN Africa, 2007), the Wetland Rehabilitation Plan (EnviroSwift KZN, 2018) and the Freshwater Specialist Report (EnviroSwift KZN, 2017) for the project.

Summary of the reasoning behind the most noteworthy ratings:

- All risks have been assessed assuming that all conditions, management measures and mitigation measures as stipulated within the Record of Decision, the Environmental Management Plan, the Stormwater Management Plan, the Wetland Rehabilitation Plan and the Freshwater Specialist Report will be implemented.
- An existing access road traversing watercourses 7b, 8 and 9 will be upgraded. The upgrade of the existing access road will include the ripping up of the existing gravel road (approximately 4m wide) and the construction of a new tarred road which will be approximately 10m wide. Watercourse crossings will be constructed from rectangular portal stormwater culverts laid on dump rock to allow water seepage below the road. The upgrade and widening of the road will result in the loss of approximately 235m^2 wetland habitat from watercourse 7b, approximately 188m^2 wetland habitat from watercourse 8 and approximately 206m^2 wetland habitat from watercourse 9. However, wetland habitat directly adjacent to the existing road has already been degraded as a result of the historical development of the gravel access road through the features and as a result of the historical and current cultivation of sugarcane within the features. This has reduced the PES of all three features to a Category E (Seriously modified). The loss of a limited area of already transformed wetland habitat is only considered to be slightly harmful and is not likely to impact on the PES and EIS of the features as a whole.
- A 75mm diameter uPVC Class 12 water pipeline connected to a borehole will traverse the upper reaches of watercourse 7a. However, where the pipeline traverses the watercourse it will be buried within a trench and measures will be implemented in order to ensure that surface and subsurface flow is maintained[6]. Furthermore, natural vegetation will be able to re-establish above the pipeline, and the pipeline will be strictly monitored and maintained in order to ensure the avoidance of leaks.
- The rehabilitation of watercourses will result in an overall positive impact on wetland and riparian habitat. However, positive impacts are not catered for in the risk assessment methodology and the risk has therefore been scored as low.
- It is the opinion of the specialist that it will be possible to decrease the significance of the remainder of the risks assessed with the implementation of specified conditions, management and mitigation measures.
- All development related activities will take place within the regulated area of watercourses (within 500m of wetlands) and are therefore legally governed.

[6] Where the pipeline traverses the watercourse it will be constructed on a geo-fabric rapped rock filled underdrain. This will allow for the free movement and/or drainage of the sub-soil ground water.

A MODERATE risk class was obtained for the loss of degraded wetland habitat associated with watercourses 7b, 8 and 9 during the construction phase. However, the remainder of the risks assessed calculated scores falling within a LOW risk class. Please refer to the Risk Assessment Matrix appended.

Please do not hesitate to contact me should there be any aspect of the Risk Assessment you would like to discuss.

Regards
Louise Zdanow
louise@enviroswift.co.za
0767255657