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# Water Use License Application for the Upgrade of the Great Brak WWTW.

## BACKGROUND INFORMATION DOCUMENT



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## 1 BACKGROUND

The Great Brak River WWTW is currently designed for an average dry weather flow (ADWF) of 1MI/d and is currently operated overloaded at around 1.4MI/d ADWF. With the significant growth experienced in the study area, further expansion of the plant to a 4MI/d plant is necessary. The existing treatment process consists of an inlet works (preliminary treatment) with a capacity of 270l/s or 8MI/d; an activated sludge reactor with one aeration basin of 2.1MI with a treatment capacity of 1MI/d; a secondary settling tank (SST) of 18m diameter with a treatment capacity of 2MI/d; six maturation ponds with a total volume of 26.7MI and two sludge lagoons operated on a duty/standby mode. The proposed upgrades will consist of:

- Expansion/upgrading of the reactor basin to allow for a 4MI/d capacity and a new process design;
- Construction of a new 3.15MI aerobic basin; conversion of the existing 2.1MI aerobic basin to an anoxic basin;
- Conversion of the existing aerobic process to new Modified Ludzack-Ettinger (MLE) (aerobic/anoxic) process;
- Construction of new (second) 18m diameter 2MI/d SST; and
- Upgrading (refurbishment) of existing (first) SST and upgrading of return-activated-sludge (RAS) pump station.

In addition, numerous general upgrades, refurbishment and maintenance works will be conducted. Final treated effluent will be utilized for irrigation by downstream landowners.

### 1.1 Study Site

The Great Brak WWTW is located to the west of the town of Great Brak, north of the N2 highway on Portion 1 of Farm 320 and Portion 40 of Farm 129 in quaternary catchment K10F (Figure 1). The properties fall within level 22.02 of the Southern Coastal Belt ecoregion, which is characterised by moderately undulating plains of moderate relief with altitude ranging from 0 to 500 m above mean sea level. Mean annual precipitation for the catchment area is relatively high (502 mm), and occurs year-round, with peaks in late winter and early spring (August to October). There are no natural watercourses associated with the WWTW and treated effluent flows from the WWTW into a dam on RE/331. Treated wastewater will be used for irrigation on four properties (see Figure 2):

- 2 MI/day on Farm 331; and
- 2 MI/day split across Portion 2 of Farm Rheeboekfontein 140 and Portions 3 and 33 of Farm Klipheuvel 143.



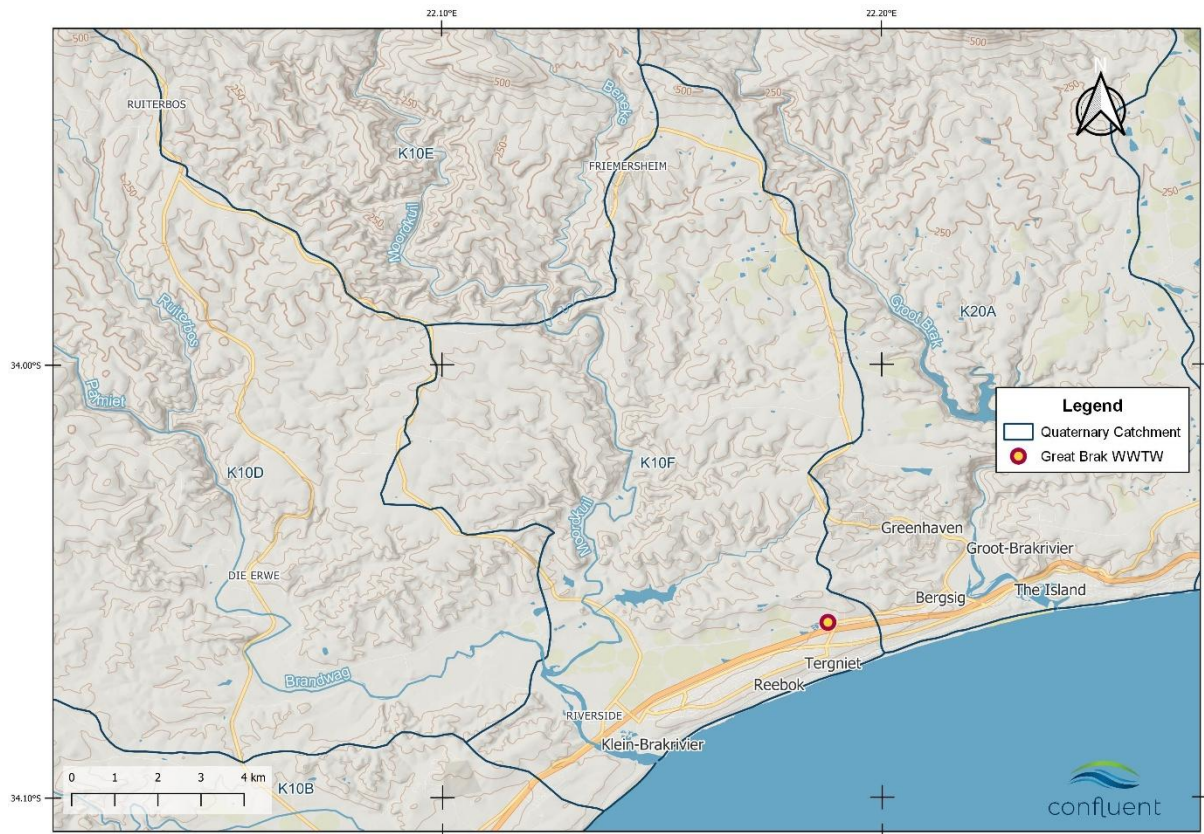


Figure 1: Map indicating location of Great Brak WWTW in quaternary catchment K10F.

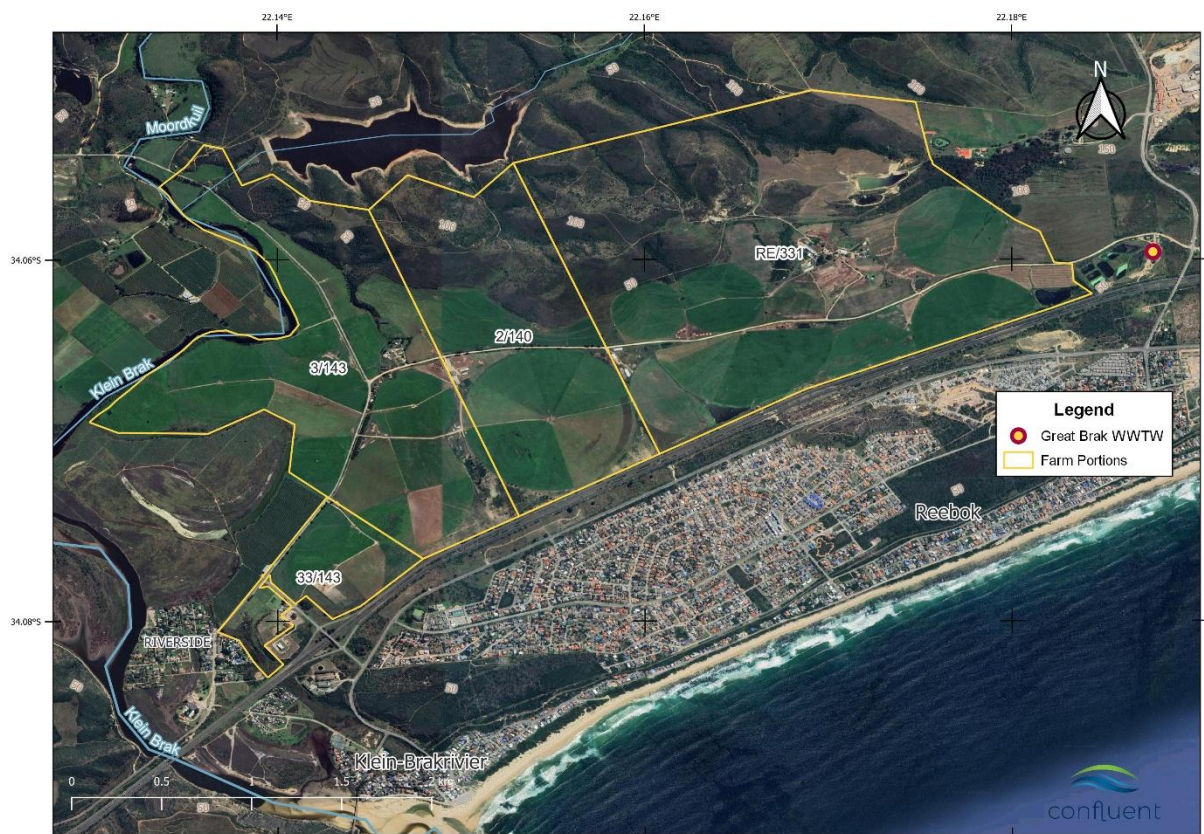


Figure 2. Map showing properties where irrigation with treated wastewater will take place.

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## 2 WATER USES

Based on the project layout and proposed plans, the following water uses have been identified and will form the subject of the WULA:

*Table 1: Water uses*

Description	Properties
<b>Section 21 (e)</b>	
Irrigation of wastewater (2 MI/day)	Remainder of Farm 331
Irrigation of wastewater (2 MI/day)	Portion 2 of Farm Rheebofsfontein 140 Portions 3 of Farm Klipheuvel 143 Portion 33 of Farm Klipheuvel 143
<b>Section 21 (g)</b>	
Storage of wastewater (2 sludge dams and 6 maturation ponds)	Portion 40 of Farm 129 Portion 1 of Farm 320

## 3 REPORTS AND OTHER TECHNICAL DOCUMENTS

*Table 2: Supplementary information*

Technical documents	Compiled by	Date compiled
Appendix 1 – Design Report	Element Consulting Engineers	February 2022