

26 February 2018

Chief Engineer: Water Services Planning

City of Ekurhuleni

P O Box 215

BOKSBURG

1460

Attention: Mr. Mthokozisi Mlotshwa

Dear Sir,

PROPOSED NEW INDUSTRIAL DEVELOPMENT ON THE REMAINDER OF PORTION 1 OF THE FARM MODDERFONTEIN 76 IR (NEW MODDER X6) - BENONI: ASSESSMENT OF IMPACT ON WATER SUPPLY SYSTEM AND REQUIRED WORKS

As requested by WSP on behalf of their client, Iswelisha Town Planners, we have investigated the capacity of the water supply system to supply the proposed development located on the abovementioned property and comment as follows:

1. EXTENT OF DEVELOPMENT

As indicated in the information provided to us, the proposed development will comprise of the following land use distribution:

LAND USE	RESTRICTIONS	TOTAL SITE AREA (ha)
INDUSTRIAL	FAR = 0.8 COV = 0.6 HGT = 2.0	2.6696
PUBLIC ROADS	-	0.7630
TOTAL	-	3.4326

This study was based on the minimum required residual pressure of 24 m from the municipal system. Please note that, should any part of the proposed development ultimately have more than two storeys, private boosting to the higher storeys might be required if excess pressure is not available from the municipal system.

The location and layout of existing water supply services in the vicinity of the site are indicated on Figure A included herewith. The future water distribution zones of the area under discussion are indicated on Figure B. We confirm that the site is located within the urban development boundary, but was indicated to be a public open space in the 2010/2011 Metropolitan Spatial Development Framework (MSDF). We also confirm that provision was not made for the proposed development in the Benoni water master plan. Therefore, the master plan will be updated accordingly.

2. WATER SYSTEM

2.1 Water demand:

The total water demand for the proposed development is estimated as follows:

LAND USE	UNIT	QTY	UNIT DEMAND (kl/day)	TOTAL (kl/day)
INDUSTRIAL	ha	2.6696	17	45.4
SUB-TOTAL				45.4 kl/day
PLUS UAW (15% OF TOTAL AADD)				8.0 kl/day
TOTAL AVERAGE DEMAND (AADD)				53.4 kl/day
PEAK DEMAND (excl. fire flow)			PF= 3.3	2.0 l/s
FIRE FLOW PER HYDRANT (x4) – (Moderate risk 1)				25.0 l/s

2.2 Existing Water Services, Proposed Connection Point and Proposed Upgrading

Water distribution zone (see Figure B)

The proposed development falls within the New Modder/Rynsoord direct zone. This zone is currently being supplied directly by the Rand Water system via meters RW0052 and RW5596. The New Modder/Rynsoord direct zone is currently supplied as follows:

- Rand Water connection RW0052 supplies the network directly via a 200Ø main pipe in Modder B Road
- Rand Water connection RW5596 supplies the network directly via a 110Ø main pipe in Johan Street.

Apart from the inclusion of other anticipated future developments, effectively enlarging the water distribution zone, no changes in water distribution zone boundaries are foreseen between the current- and the future demand scenario that will affect the proposed development.

Reservoir capacities

No existing or future planned water reservoirs will be affected by the proposed development.

Water tower capacities

No existing or future planned water towers will be affected by the proposed development.

Pump station capacities

No existing pump stations are affected by the development. Should the development ultimately have more than two storeys, however, private on-site boosting might be required if excess pressure is not available from the municipal system.

The hydraulic analysis was done based on an estimated operating pressure of between 30 - 40 m at the two affected Rand Water meters and indicated that the development can be incorporated into the existing system without the requirement of additional on-site boosting.

We recommend that a survey on the Rand Water system to confirm the current operating pressures by performing a pressure logging survey on RW meters RW0052 and RW5596. Should the results differ from our estimated operating pressures of 30 – 40 m, GLS will re-analyze the water supply system and comment on additional upgrading if required.

Bulk pipe capacities:

Existing bulk pipes:

With the inclusion of the proposed development, none of the affected main feeder lines will have an increase in flow velocity to above 2.0 m/s - the maximum allowable flow velocity according to the City of Ekurhuleni's (CoE's) modeling guidelines. We can therefore confirm that no upgrading to any existing affected bulk pipes will be required for the development to proceed.

Future planned bulk pipes:

No future planned bulk pipes are affected by or required for the development to proceed.

Required works, connection to the existing system and residual network pressures

The proposed connection point to the existing system is to the existing 75Ø pipe in Rolina Street at point A, as indicated on Figure A. Before the development can proceed, the following upgrades will have to be implemented (see Figure A):

- Construct approximately 310 m of new 110Ø water pipe from the existing 75Ø pipe on the corner of Rolina Street and Main Reef Road up to New Modder X6.

With the above connection in place, the inclusion of the additional demand from the proposed development will not result in any of the affected main feeder pipes or network pipes experiencing an increase in flow velocity beyond the maximum flow velocity of 2.0 m/s nor will it result in other more critical sections of the water supply network experiencing decreases in residual pressures below the minimum of 24 m head.

SCENARIO	PRESSURE (M)	CRITERIA
Peak flow	50	24 m minimum
Fire flow	15*	15 m minimum
Static	65	90 m maximum

Note: The required fire flow of 100 l/s cannot be supplied in the interim or ultimate scenario with a maximum flow of 13 l/s at 15 m for both scenarios. On-site storage is therefore recommended.*

3. DEVELOPER CONTRIBUTIONS TO CONSTRUCTION OF INFRASTRUCTURE

GLS hereby confirms that any contributions of the developer to the required construction of infrastructure and/or the upgrading of the existing infrastructure, whether it be in the form of a cash contribution, or in the form of constructing sections of new infrastructure, is a matter to be discussed and agreed upon between the developer and the City of Ekurhuleni.

4. SUMMARY RECOMMENDATIONS

In summary we comment as follows:

- The proposed development falls within the New Modder/Rynsoord direct zone. This zone is currently being supplied directly by the Rand Water system via meters RW0052 and RW5596 in Modder B Road. The New Modder/Rynsoord direct zone is currently supplied as follows:
 - Rand Water connection RW0052 supplies the network directly via a 200Ø main pipe in Modder B Road
 - Rand Water connection RW5596 supplies the network directly via a 110Ø main pipe in Johan Street.
- No upgrading to any reservoirs, water towers, pump stations or bulk pipes are required
- No future planned bulk pipes are required or affected
- Before the development can proceed, the following upgrades will have to be implemented (see Figure A):
 - Construct approximately 310 m of new 110Ø water pipe from the existing 75Ø pipe on the corner of Rolina Street and Main Reef Road up to New Modder X6.
- The proposed connection point to the existing system is to the abovementioned existing 75Ø pipe in Rolina Street at point A, as indicated on Figure A.

We trust you will find the above sufficient in terms of your request. Should you have any further queries, please do not hesitate to contact us. The contact person regarding the above is Dian Pretorius.

Yours sincerely,
GLS CONSULTING



Per: JL (LOUIS) STRIJDOM