



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

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REPORT TO SUBCOUNCIL 3

1. ITEM NUMBER : **03SUB 12/02/18**

2. SUBJECT

**PROPOSED INTERVENTIONS TO IMPROVE STORM WATER QUALITY IN THE
(NORTHERN) DIEP RIVER**

ONDERWERP

**VOORGESTELDE INGRYPINGS OM DIE KWALITEIT VAN STORMWATER IN DIE
(NOORDELIKE) DIEPRIVIER TE VERBETER**

ISIHLOKO

**ISIPHAKAMISO SAMANGENELELO ONGOKUPHUCULWA KOMGANGATHO
WAMANZI ESITSHI KUMMANTLA OMLAMBO I-DIEP RIVER**

3. PURPOSE

This report summarises issues affecting water quality in the (Northern) Diep River and makes recommendations and cost estimates for dealing with these issues

4. FOR DECISION BY

Area Based Oversight Committee – Area North

5. DISCUSSION

The (Northern) Diep River is the largest catchment basin in the City despite half of the catchment lying beyond the city boundary. The catchment extends from beyond Malmesbury to the Diep River mouth in Milnerton. It includes the Mosselbank river, which rises North of Durbanville, and the Table Bay Nature Reserve.

Ongoing water quality monitoring by the Catchment, Stormwater and River Management Branch (CSRM) has shown a long term deterioration of the water quality to levels which are alarming and causing public dissatisfaction.

It is important to note that Zoarvlei, the Diep River lagoon and nearby beaches are all important recreational areas for a broad cross section of local society and that they lie inside the Table Bay Nature Reserve.

The report titled "Improving the Quality of the Stormwater Discharging into the Diep River" by the ICE Group and the Freshwater Consulting Group was published in 2011. This report, the 2013 project on "Corporate Support to Improve Stormwater Quality", the "Diep Estuary Hydrology and Geohydrology Study" of 2017, the ongoing water quality monitoring and various other studies, observations and interactions have informed this report.

Current Situation

Diep River flow rates are generally low and the outflow from the Potsdam Waste Water Treatment Works (WWTW) makes up the majority of the flow especially in dry conditions such as those currently being experienced. This means that even the base-flow water quality is compromised. The quality of the Diep River water entering the boundary of the City of Cape Town is generally poor due to upstream extraction and polluting activities as well as diffuse and point sources of pollution.

Stormwater ponds and river floodplains are dry for most of the year and look habitable to the homeless. Encroachment on the floodplain as in Doombach and invasion of stormwater ponds as in Joe Slovo, means that the stormwater infrastructure cannot function optimally. People invading these spaces are not serviced and all their waste flows to the lowest point along the natural drainage system.

Du Noon and Joe Slovo are inhabited by many more people than the provided infrastructure was planned for. The result is that sanitation and waste collection services are inadequate and sewerage, grey water and garbage all find their way into the stormwater system. People try to dispose of unwanted items down toilets and manholes which causes blockages which spill over into the stormwater system. All surface runoff from inadequately serviced areas should be considered sewerage.

Industrial developments such as Killarney Gardens, Montague Gardens and Paarden Island also drain into the Diep River. The pollution from these areas is generally in the form of litter and solid waste and isolated spills or dumping of pollutants. It is suspected that heavy metals found in sediments may emanate from these sources. Part of Montague Gardens and the remaining horse stables along Koeberg Road drain to the Theo Marais Canal and from there into the Diep River.

In addition to sewerage from sewer blockages and overflows, sewer pump stations are positioned along the Diep River can fail for various reasons. These pump stations often have no spare pumps, backup power or overflow sumps. In addition, data on breakdowns and spills are not shared across the City. Similarly, regular data on discharge volumes and quality are not forthcoming from the Potsdam Waste Water Treatment Works (WWTW).

The suburbs of Table View, Blaauwberg, Parklands, Sunningdale and Rivergate have been growing at exponential rates over the last few decades. While the stormwater infrastructure in these areas has been thoughtfully designed, the budgets and training for maintaining these facilities has not grown at an equal pace. These areas mostly drain into Rietvlei via the Bayside canal.

Elevated nutrient levels in the river lead to rapid growth of vegetation, especially aliens which reduce hydraulic capacity of the river, elevate flood risk and have to be laboriously removed.

The studies mentioned above also made the following general observations:

1. Low estuarine salinity mainly due to the inflows from the Potsdam WWTW
2. Phosphorous and nitrogen concentrations well above targets
3. High levels of ammonium nitrogen downstream of informal settlements
4. High variability in bacteriological pollution showing the influence of periodic spillages
5. Worrying concentrations of heavy metals in sediments

Proposed Interventions

The following interventions are proposed to improve the water quality in the Diep River and estuary:

1. Du Noon/Doornbach – Stormwater diversion to sewer by means of a diversion structure, separator and a 3.6km gravity main to Potsdam WWTW. Reblocking of Doornbach must comply with the City's stormwater impacts policy.
2. Joe Slovo/Phoenix - Stormwater diversion to sewer by means of a diversion structure, separator. – **Currently under construction.** Settling pond, litter trap and treatment wetland.
3. Erica Road Outfall – Litter trap and treatment wetland.
4. Killarney Gardens Industrial Area - Stormwater diversions to sewer by means of diversion structures, separators and connection to the proposed Du Noon/Doornbach gravity main.
5. Theo Marais Canal – Treatment wetland and low flow diversion to WWTW
6. Paarden Island – Milner and Vrystaat Roads, oil, litter and sediment traps.

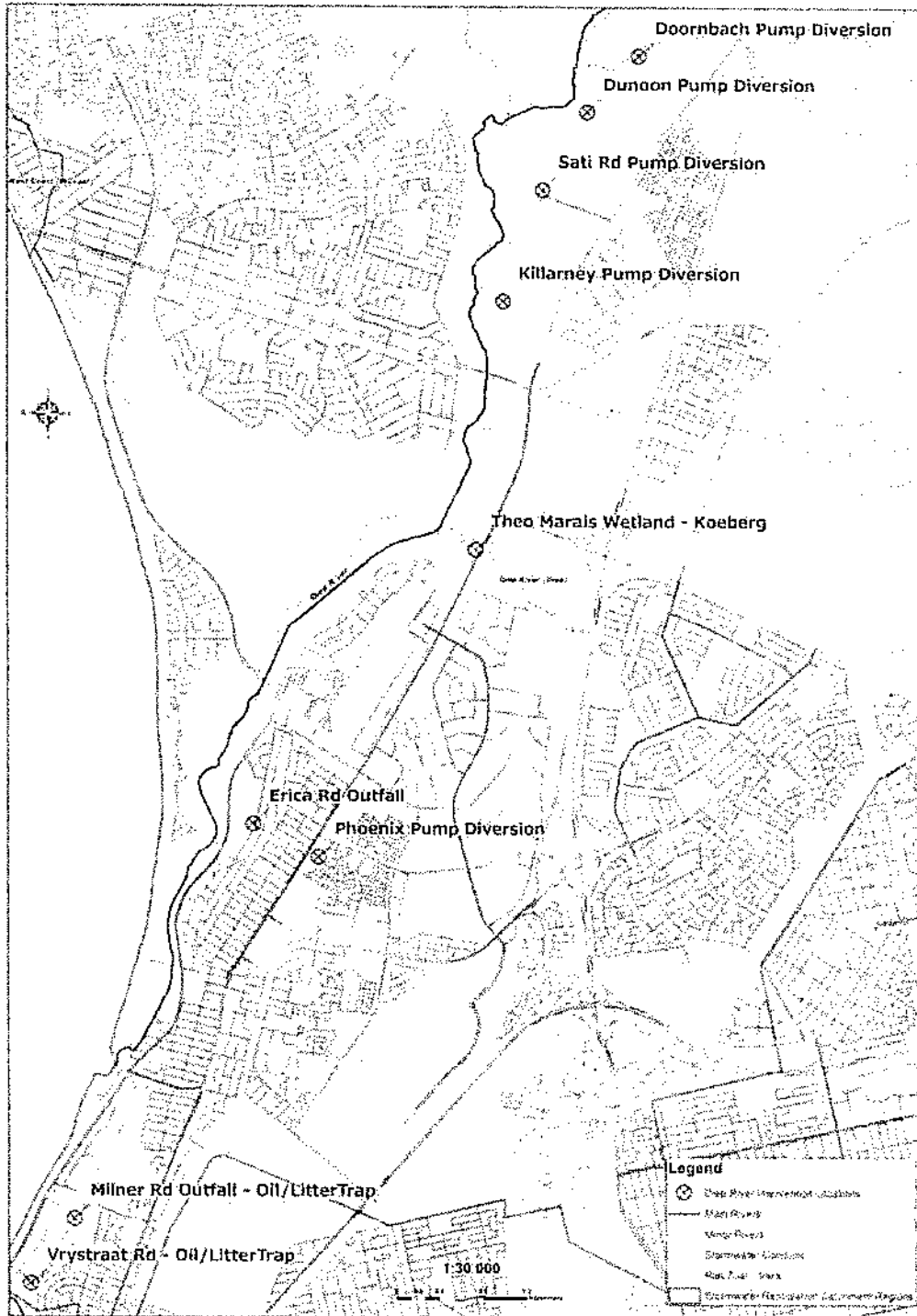


Figure 1. – Locations of Proposed Interventions

The estimated capital costs of these proposals are as follows:

	Area	Intervention	Estimated Cost 2018 (R)	
1	Doornbach/Du Noon	Diversion, separator	2 250 000	
		Diversion, separator	2 250 000	
		Sewer line to WWTW	4 850 000	
		Design Fees	750 000	
		Sub Total	10 100 000	
2	Joe Slovo	Diversion	Under Construction	
		Litter trap, treatment pond	7 500 000	
		Design Fees	600 000	
		Sub Total	8 100 000	
3	Erica Road Outfall	Litter Trap and Treatment pond	9 000 000	
		Design Fees	720 000	
		Sub Total	9 720 000	
4	Killarney Gardens			
		South	Diversion, separator	2 250 000
		Sati Road	Diversion, separator	1 760 000
			Design Fees	350 000
		Sub Total	4 360 000	
5	Theo Marais Canal	Treatment Wetland	22 500 000	
		Low flow Diversion	1 760 000	
		Design Fees	1 950 000	
		Sub Total	26 210 000	
6	Paarden Eiland			
		Milner Road	Oil, Litter and sediment trap	1 000 000
		Vrystaat Road	Oil, Litter and sediment trap	1 000 000
			Design Fee	160 000
		Sub Total	2 160 000	
		Total	60 650 000	

6. RECOMMENDATIONS

It is recommended that funds be made available to proceed with design and construction of the interventions proposed above to improve the water quality in the (Northern) Diep River.

It should be noted that current allocations are not sufficient for optimal operation and maintenance of the proposed interventions

AANBEVELING

Daar word aanbeveel dat fondse beskikbaar gestel word om voort te gaan met die ontwerp en konstruksie van die ingrypings hierbo voorgestel om die waterkwaliteit in die (noordelike) Diepriver te verbeter.

Daar moet kennis geneem word dat huidige toewysings nie genoegsaam is vir optimale bedryf en instandhouding van die voorgestelde ingrypings nie.


IZINDULULO


Kundululwe ukuba makufumaneka izimali ukuze kuqhutyekwe noyilo nokumiselwa kwamangenelelo aphakanyiswe ngentla apha, ukuba kuphuculwe umgangatho wamanzi eseMantla omlambo i-Diep River.

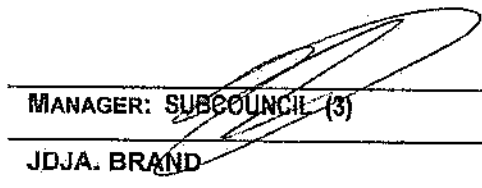
Kufuneka kuqwalaselwe ukuba izabelo zakalaoku nje azonelanga ukuba kuqhutywe umsebenzi ngokugqibeleleyo nononotshelo lweziphakamiso zamangenelelo.

FOR FURTHER DETAILS CONTACT :

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DIRECTORATE	<i>Water & Sanitation</i>
FILE REF NO	


MANAGER: _____ **Comment:** _____
 NAME **C FREHSE**
 DATE **08/02/2018**


DIRECTOR _____ **Comment:** _____
 NAME **P FLOWER** *Recommendation*
 DATE _____ *supportal*



MANAGER: SUBCOUNCIL (3)

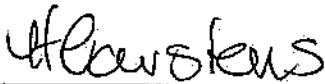
JDJA. BRAND

TEL NO (021)444-4862

DATE 13/2/2018.

COMMENT:

1. Herewith confirm that the relevant delegation is quoted in item.
2. The recommendation is/are subject to Subcouncil decision.
3. Author of report was notified that item is on agenda and in terms of delegation 1(5) requested to attend the Subcouncil meeting.



SUBCOUNCIL CHAIRPERSON

COUNCILLOR HELEN CARSTENS

TEL NO (021) 444-4865

DATE 13/2/2018

COMMENT:

