



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Background, Current Status and Future of Potsdam WWTW

13 September 2023

Making progress possible. **Together.**

Background & Current status at Potsdam WWTW

- Potsdam is an ageing WWTW, with various equipment and infrastructure requiring replacement.
- The plant has 2 treatment trains i.e. (1) 08 Plant and (2) 97 Plant.
- The last infrastructure upgrades that took place was in 2008.
- Equipment & Infrastructure failure occurs frequently leading to a decline in effluent compliance.
- Operations Management team has performed various interventions as mitigation measures to improve performance of various process stages which will lead to the overall effluent quality improvement at Potsdam WWTW.
- The new plant will employ modern membrane technology which will guarantee superior quality effluent.

Recent plant equipment / Infrastructure improvements

- 1. Inlet works:** 2 of 3 drum screens refurbished, 1 of 2 rake screens, 1 of 2 degritters paddle repaired and both cleaned, building roof replacement
- 2. PSTs:** 4 of 5 PSTs refurbished, currently busy with 5th PST, settled sewage sump wall recoated and settled sewage pumps serviced
- 3. Reactors:** 08 plant transformer replaced, 5 aerators refurbished, 4 mixers refurbished
- 4. SSTs:** 2 SSTs brides drive units refurbished, 08 splitter box overflow drain to reactor, all RAS pumps speed control optimised, 1 RAS pump replaced
- 5. Ponds:** cleaning and refurbishment scheduled, 08 bypass discharge pipe outlet moved and suction pipe collection chamber constructed to prevent pond solids capture and ensure better quality treated effluent
- 6. Reed beds ponds:** pond 1 and 2 valves installed, pond 1 capacity increased with embankment wall installation
- 7. Administration buildings:** Laboratory upgrade, additional office space for personnel
- 8. Plant Access control:** New access control building for Security and additional parking
- 9. Plant site fence:** Perimeter wall repaired and repainted
- 10. Plant management:** Plant and Assistant plant manager appointed August 2022, all staff classified (Class I to VI) by DWS in terms of Regulation 2834 (NWA 54 of 1956)

Final Effluent Quality Improvements

- Pre-Directive received on 3 March 2023
- In particular Point 8 which relates to improvement in FE, was addressed and is being monitored continuously.
- i.e. 8.1 of the said notice, “**To implement effective remedial action to improve the final effluent to comply with the limits prescribed on the above-mentioned Water Use Licence**”
- City provided feedback on the improvements with a letter dated 24 March 2023.
- The Department responded on 5 April 2023 to acknowledge the improvements and the efforts made by the City.
- Settling Tank Effluent (STE) quality improved with Process Changes and Mitigating measures implemented.
- STE of both 08 & 97 is bypassed with mobile pumps to prevent good STE from being affected by polluted ponds.

Pond Bypass into UV/FE channel



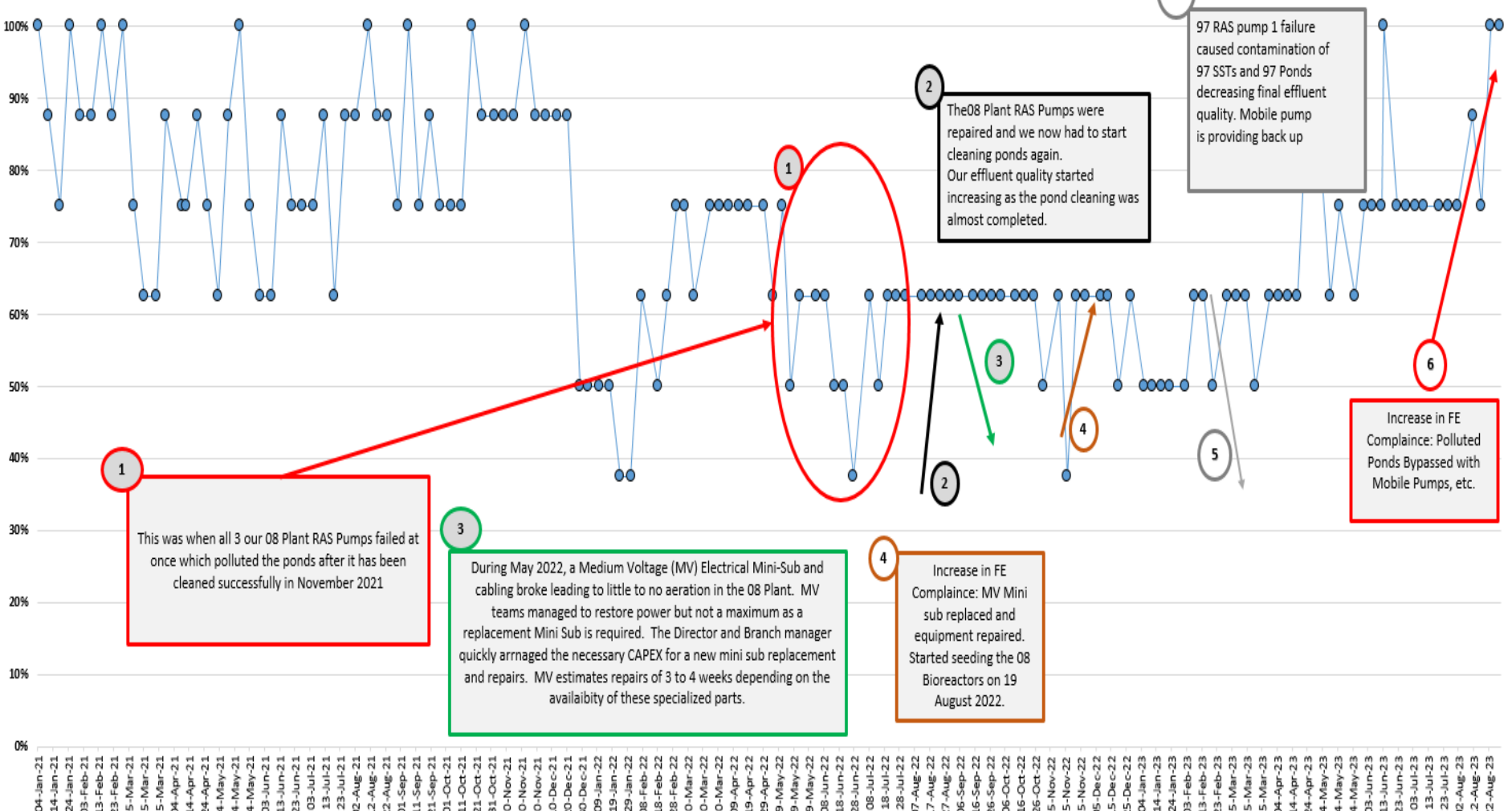
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Pond Bypass into UV/FE channel



Effluent compliance and holistic effect of unforeseen/unplanned equipment breakdowns affect overall effluent quality.

Potsdam WWTW: % Weekly Effluent Compliance



1 This was when all 3 our O8 Plant RAS Pumps failed at once which polluted the ponds after it has been cleaned successfully in November 2021

3 During May 2022, a Medium Voltage (MV) Electrical Mini-Sub and cabling broke leading to little to no aeration in the O8 Plant. MV teams managed to restore power but not a maximum as a replacement Mini Sub is required. The Director and Branch manager quickly arranged the necessary CAPEX for a new mini sub replacement and repairs. MV estimates repairs of 3 to 4 weeks depending on the availability of these specialized parts.

4 Increase in FE Compliance: MV Mini sub replaced and equipment repaired. Started seeding the O8 Bioreactors on 19 August 2022.

2 The O8 Plant RAS Pumps were repaired and we now had to start cleaning ponds again. Our effluent quality started increasing as the pond cleaning was almost completed.

5 97 RAS pump 1 failure caused contamination of 97 SSTs and 97 Ponds decreasing final effluent quality. Mobile pump is providing back up

6 Increase in FE Compliance: Polluted Ponds Bypassed with Mobile Pumps, etc.

Current and Future Plans

- There are planned Capital upgrades for Potsdam WWTW which will increase the capacity of the works as well as replace and refurbish old infrastructure and equipment.
- Continue to optimize plant operations to produce the best possible effluent quality considering the plant is ageing and that the upgrade is set to commence in latter half of 2023.
- Continue stakeholder engagement – DWS, DEADP and World Bank, etc.



Current Status of the CAPEX upgrades (>R5b)

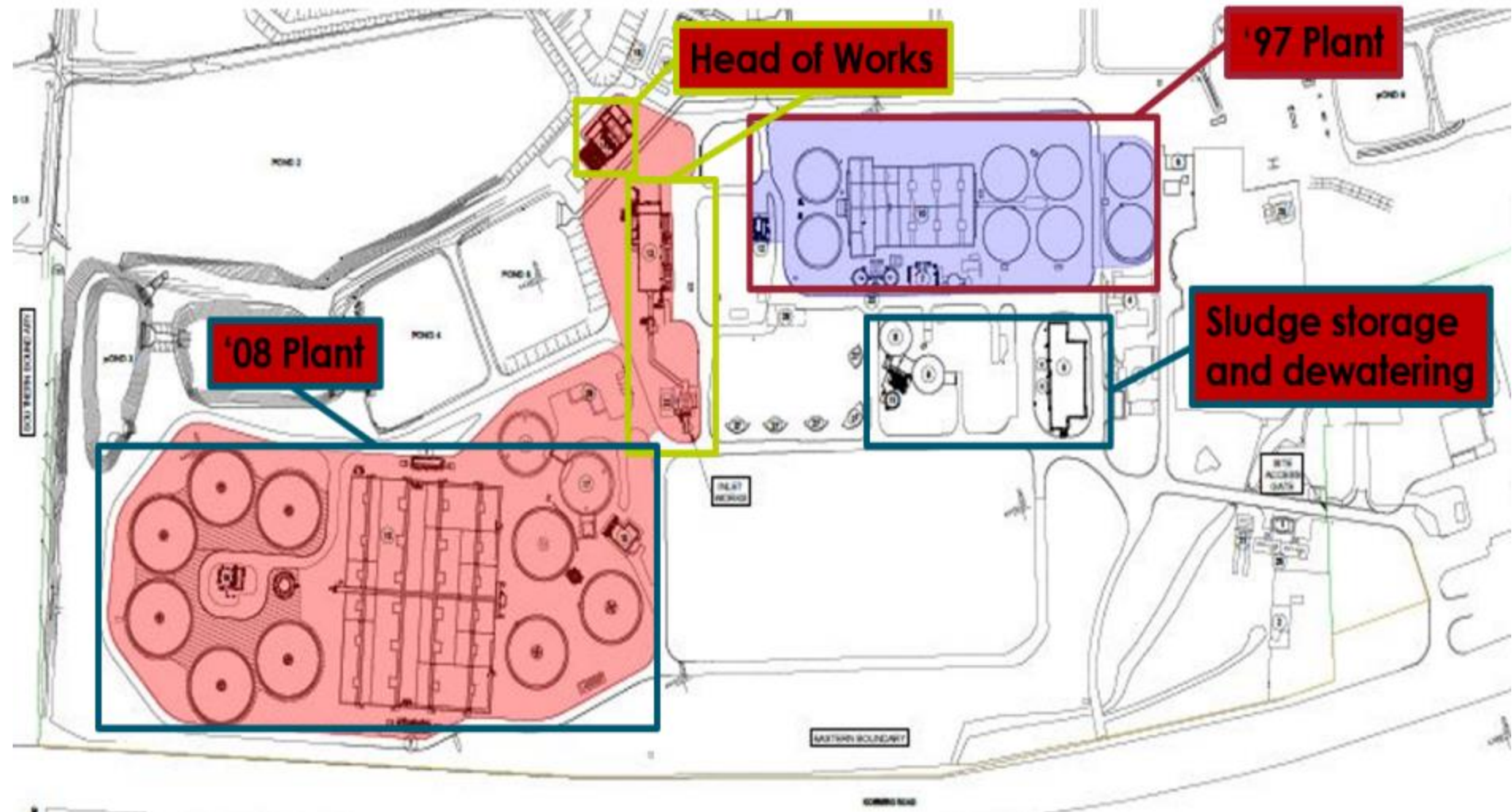
146Q/2021/22: Mechanical / Electrical Component

- Project commencement on 21 April 2023
- Site establishment completed
- Currently in design phase of the project. The following Sections of Work is currently under way:
 - Section A: Ultrafiltration Works: Design Phase to be completed toward the end of September 2023
 - Section C – Sub A: Dewatering: Design Phase completed. Contractor installation of Temporary Works (Mech/Elec) completed

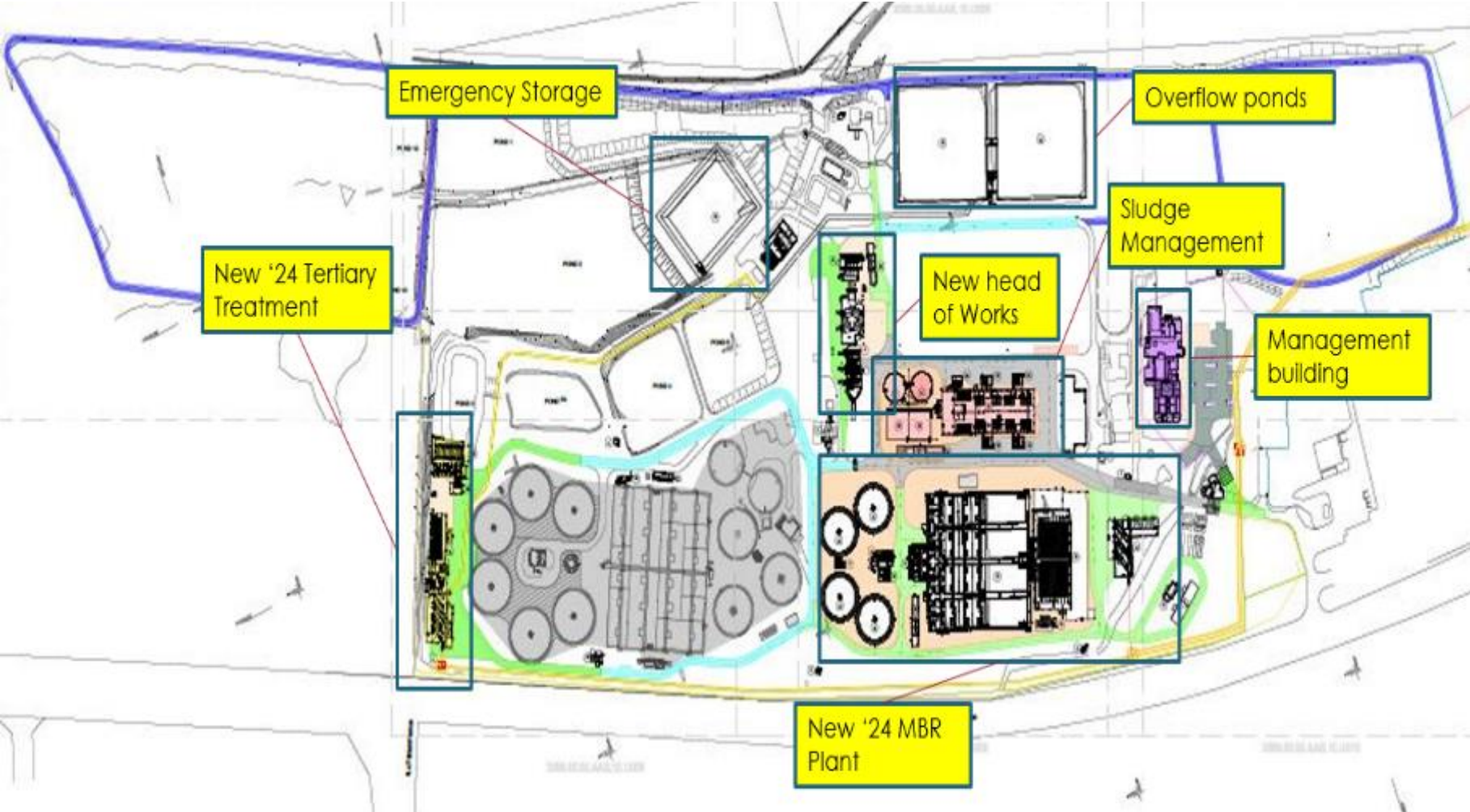
295Q/2021/22: Civil Project Component

- Project commencement on 21 April 2023
- Site Establishment completed
- Portion C, Subsection A: Temporary Works for the dewatering completed (Civil infrastructure and interconnection of existing sludge pipework) and has been commissioned
- Bypass of effluent pond 5,6 and 7 underway and construction of effluent interlink channel is 95% complete – to be commissioned 8 September 2023.
- Following commissioning of the temporary works, equipment and demolition has been completed

Current Layout of the Plant



Future Layout – After CAPEX upgrades





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Thank You

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