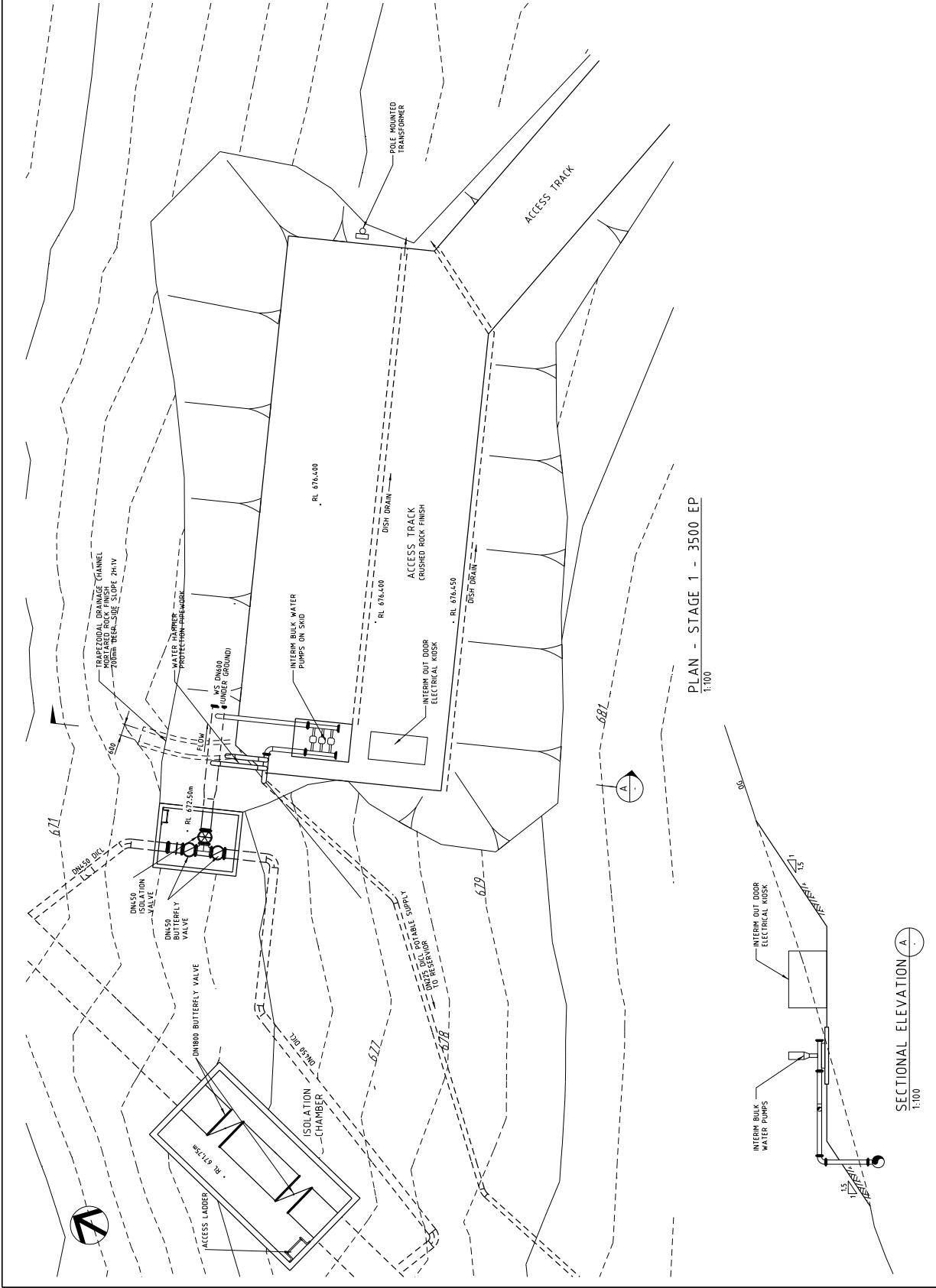


- NOTES**
- 180mm WATERMAIN CONNECTION ARRANGEMENT TO BE CONFIRMED WITH WATER SUPPLIER DURING FURTHER INVESTIGATION AND AGREEMENT DURING DETAILED DESIGN.
 - AT DN800 CONNECTION POINTS RIG = 688m AHD.
 - CONFIRMATION OF LOCATION AND DEPTH OF EXISTING DN800-900S IS REQUIRED SHOWN ON ACTEW DRAINAGE ZONE MAP.
 - ISOLATION CHAMBER 1 AND 2 AT APPROXIMATE LEVELS SHOWN ON ACTEW DRAINAGE ZONE MAP TAKEN FROM ACTEW DRG. WDCCP-0006.
 - RISING MAIN ARRANGEMENT WITHIN EASEMENT TO BE CONFIRMED WITH ACTEW.
 - BULK WATER PUMPING STATION YARD CAN BE ACCOMMODATE 7.5m RIGID TRUCK TURNING RADIUS.
 - GEOTECHNICAL INVESTIGATION IS REQUIRED DURING DETAILED DESIGN.
 - EASEMENT BOUNDARY TO BE CONFIRMED DURING DETAILED DESIGN.
 - NETWORK STAGE 1 UPGRADE TO 3500 EP.
 - WS DUCT WELDED STEEL DUCTILE IRON CEMENT LINED.



PROJECT: GOOGONG INTEGRATED WATER CYCLE
SITE: BULK WATER PUMPING STATION GENERAL SITE LAYOUT COMMONWEALTH SITE NETWORK STAGE 1 - 3500 EP
SCALE: 1:100
DRAWING NO: A10814.02-SK601
REV. C

CLIENT: GOOGONG INTEGRATED WATER CYCLE

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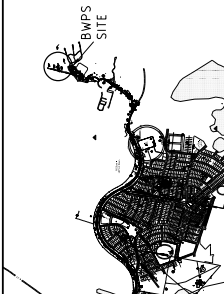
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DESIGN CHECK	-	-	-
DESIGN CHECK	-	-	-
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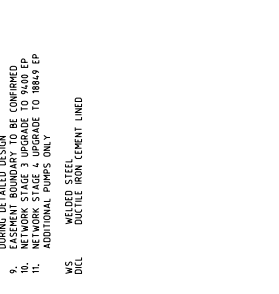
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C	26.07.10	ISSUED FOR REVIEW	PP	26.07.10					
B	23.08.10	ISSUED FOR REVIEW	PP	23.08.10					
A	07.12.09	ISSUED FOR INFORMATION	AM	07.12.09					
REV.	DATE	DESCRIPTION	INITIAL	DATE	APPROVED	DESCRIPTION	INITIAL	DATE	APPROVED



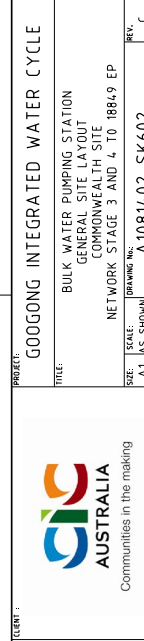
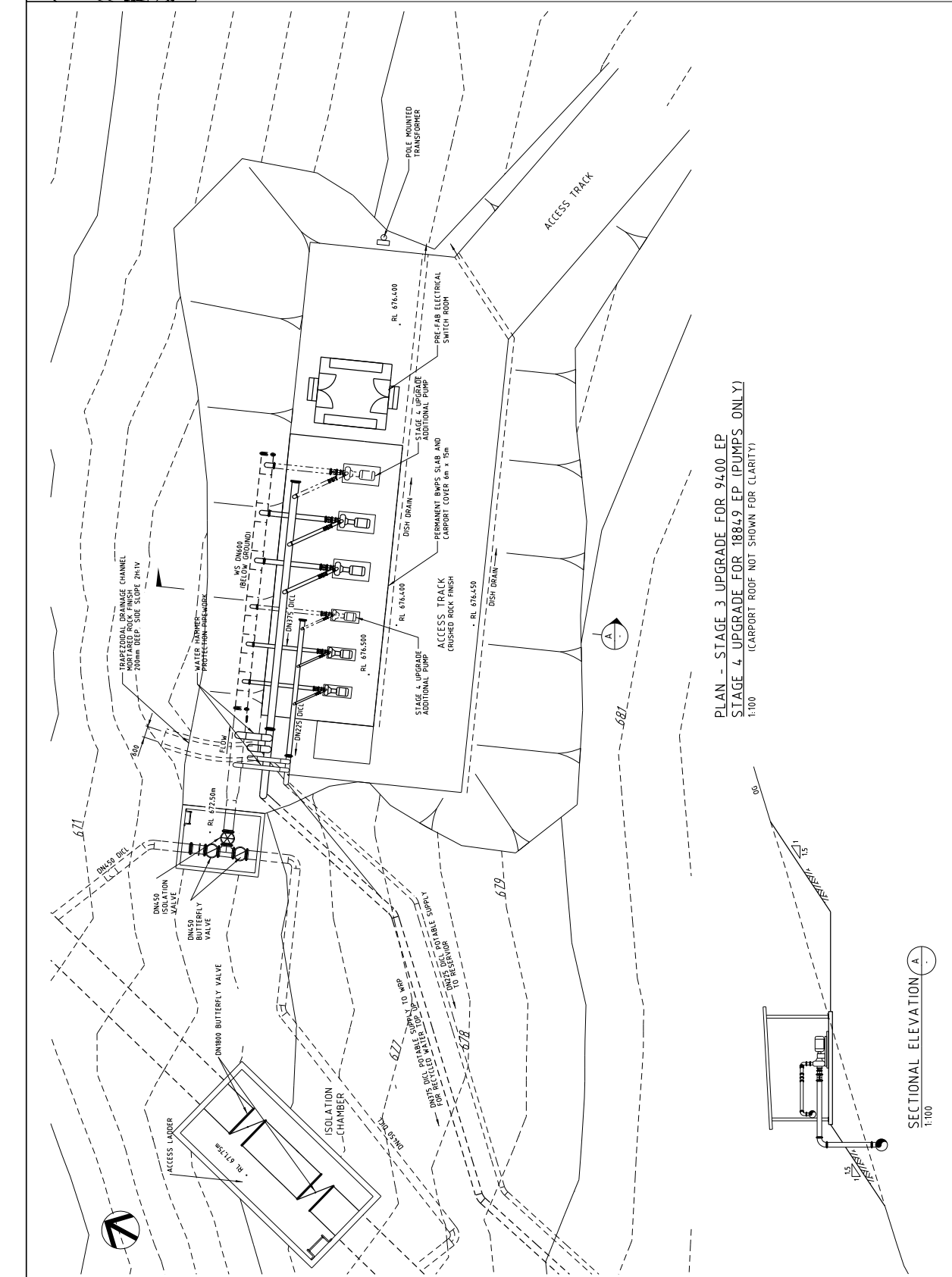


- NOTES**
1. BULK WATER PUMPING STATION, APPROXIMATE LOCATION AND PROVISIONS SUBJECT TO FURTHER INVESTIGATION AND AGREEMENT DURING DETAILED DESIGN.
 2. OPERATING HGL = 680m AND AT DNB00 CONNECTION POINTS.
 3. CONFIRMATION OF LOCATION AND DEPTH OF DRAIN W/CS-0006 IS REQUIRED SHOWN ON ACTEW ISOLATION CHAMBER AND 2 AT APPROXIMATE LOCATION TO BE DETERMINED THROUGH TRENCH FROM ACTEW DRG. W/CS-0006.
 4. RISE MAIN ARRANGEMENT WITHIN EASEMENT TO ACCOMMODATE 17.5m RIGID TRUCK TURNING DURING DETAILED DESIGN.
 5. EASEMENT BOUNDARY TO BE CONFIRMED DURING DETAILED DESIGN.
 6. NETWORK STAGE 4 UPGRADE TO 1884.9 EP.
 7. ADDITIONAL PUMPS ONLY.
 8. WELDED STEEL DUCTILE IRON ELEMENT LINED.



SCALE 1:100

PRELIMINARY
NOT FOR CONSTRUCTION



PROJECT: GOOGONG INTEGRATED WATER CYCLE
CLIENT: BULK WATER PUMPING STATION
 GENERAL SITE LAYOUT
 COMMONWEALTH SITE
 NETWORK STAGE 3 AND 4 TO 1884.9 EP
SCALE: A1 AS SHOWN
DRAWING NO.: A10814.02-SK602
REV.: C

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C	200710	ISSUED FOR REVIEW	PP	200710					
B	210610	ISSUED FOR REVIEW	PP	210610					
A	071209	ISSUED FOR INFORMATION	AM	071209	BP	071209			

GOOGONG INTEGRATED WATER CYCLE
CLIENT: BULK WATER PUMPING STATION
 GENERAL SITE LAYOUT
 COMMONWEALTH SITE
 NETWORK STAGE 3 AND 4 TO 1884.9 EP
SCALE: A1 AS SHOWN
DRAWING NO.: A10814.02-SK602
REV.: C

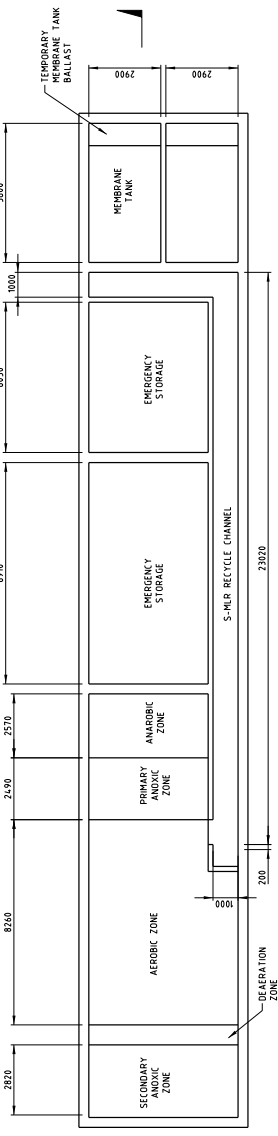
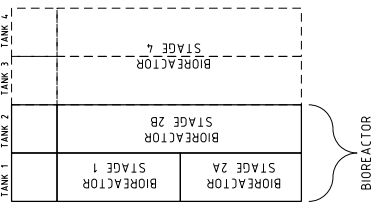
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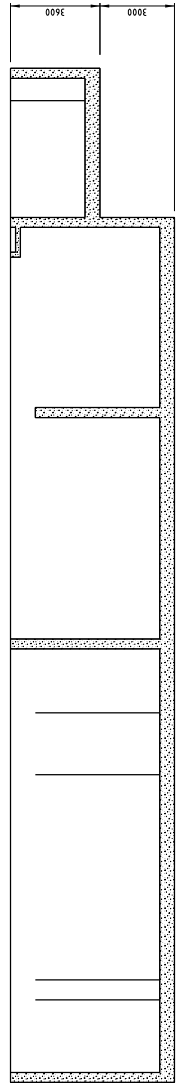
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3	DESIGN CHECK	
4	DESIGN CHECK	

KEY PLAN
SCALE: NTS

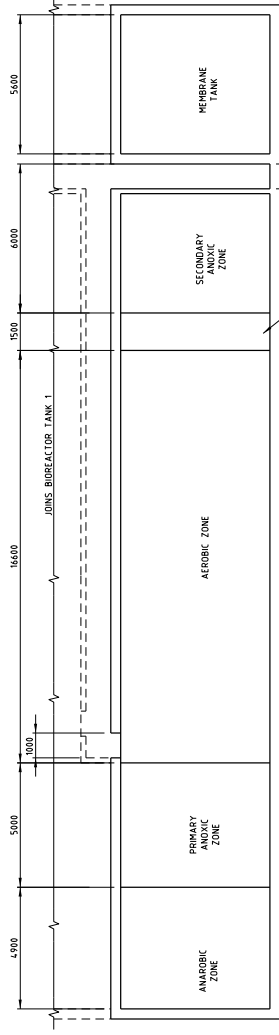


PLAN
1:100

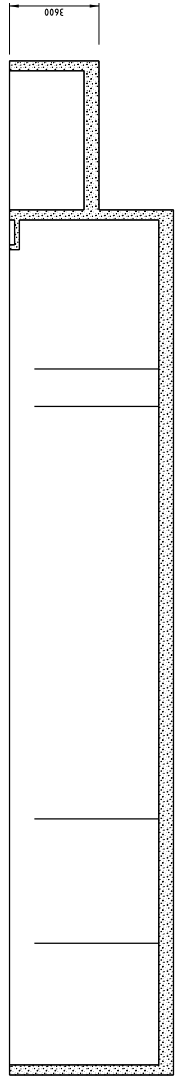


SECTION B
1:100

BIOREACTOR STAGE 2A (2350EP)



PLAN
1:100

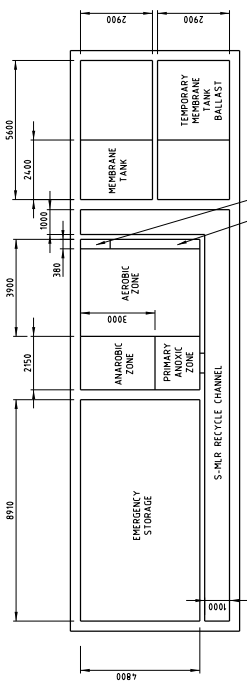


SECTION C
1:100

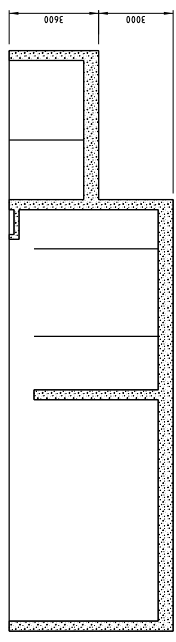
BIOREACTOR STAGE 2B (4700EP)

NOTES

- STAGE 1
 1. BIOREACTOR TO TREAT 180ML/A (1000EP)
 2. EMERGENCY STORAGE FOR FOUL WATER
 3. EMERGENCY STORAGE FOR FOUL WATER
- STAGE 2A
 4. BIOREACTOR TO TREAT 120ML/A (600EP)
 5. EMERGENCY STORAGE FOR FOUL WATER
 6. EMERGENCY STORAGE FOR FOUL WATER
- STAGE 2B
 7. COMPLETE BIOREACTOR CONSTRUCTED TANK 2I TO TREAT 120ML/A (600EP)
 8. 5-MLR RECYCLE CHANNEL (COMMON TO TANK 1)
- STAGE 3
 9. BIOREACTOR FOR TANK 1 REDESIGNED TO OPERATE AT FULL SCALE TOTAL PLANT CAPACITY 1000ML/A (9000EP)
 10. 5-MLR CHANNEL COMMON TO TANK 1 AND TANK 2
- STAGE 4
 11. BIOREACTOR TANK 3 AND TANK 4 CONSTRUCTED TO TREAT FULL CAPACITY 3400ML/A (1884EP)

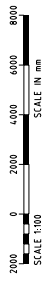


PLAN
1:100



SECTION A
1:100

BIOREACTOR STAGE 1 (1000EP)



PRELIMINARY
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PROJECT:	GOOGONG INTEGRATED WATER CYCLE
FILE:	WATER RECYCLING PLANT BIOREACTOR STAGING PLAN & ELEVATION
SCALE:	A1 AS SHOWN
DRAWING NO.:	A 10814.02-SK608
REV.:	A

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REVIEW	NAME	SIGNATURE	DATE
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DESIGN	-	-	-
DESIGN CHECK	-	-	-
PROJ. MGR.	-	-	-

APPROVED	DATE	DATE	DATE

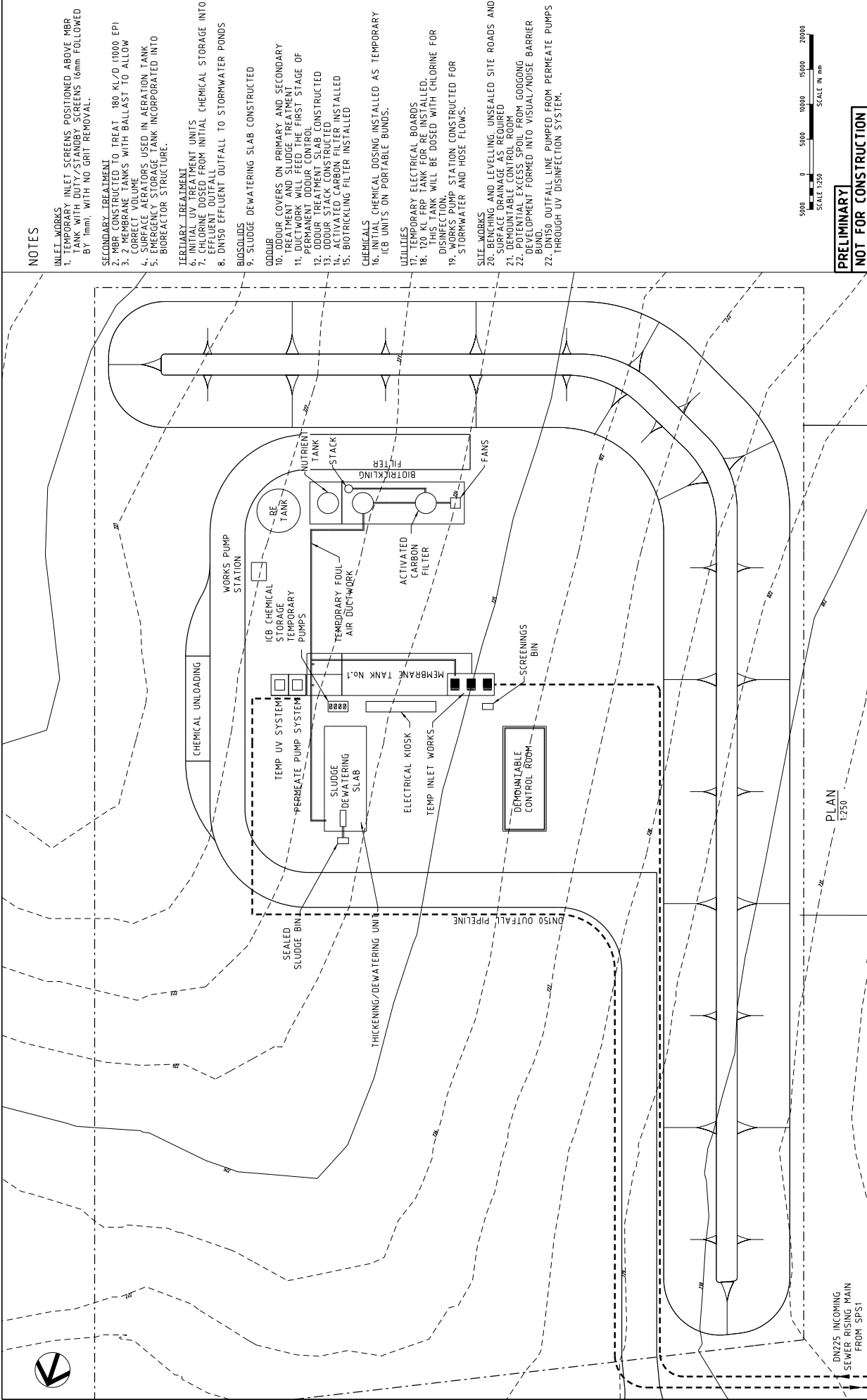
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APPROVED	DATE	DATE	DATE

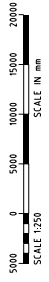
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APPROVED	DATE	DATE	DATE



NOTES

- INLET WORKS**
1. TEMPORARY INLET SCREENS POSITIONED ABOVE MBR TANK WITH DUTY/STANDBY SCREENS (6mm FOLLOWED BY 1mm), WITH NO GRIT REMOVAL.
- SECONDARY TREATMENT**
2. MBR CONSTRUCTED TO TREAT 180 KL/D (1000 EPI) CORRECT VOLUME
 3. 2 MEMBRANE TANKS WITH BALLAST TO ALLOW CORRECT VOLUME
 4. SURFACE AERATORS USED IN AERATION TANK BIOREACTOR STRUCTURE.
- TERTIARY TREATMENT**
6. INITIAL UV TREATMENT UNITS
 7. CHLORINE DOSED FROM INITIAL CHEMICAL STORAGE INTO EFFLUENT OUTFALL
 8. DN150 EFFLUENT OUTFALL TO STORMWATER PONDS
- BIOLOGICALS**
9. SLUDGE DEWATERING SLAB CONSTRUCTED
- ODOUR**
10. ODOUR COVERS ON PRIMARY AND SECONDARY TREATMENT AND SLUDGE TREATMENT
 11. PERMEATE PUMP SYSTEM
 12. ODOUR TREATMENT SLAB CONSTRUCTED
 13. ODOUR STACK CONSTRUCTED
 14. ACTIVATED CARBON FILTER INSTALLED
 15. BIOTRICKLING FILTER INSTALLED
- CHEMICALS**
16. CHEMICAL DOSING INSTALLED AS TEMPORARY ICB UNITS ON PORTABLE BUNDS.
- UTILITIES**
17. TEMPORARY ELECTRICAL BOARDS
 18. 120 KL FRP TANK FOR RE INSTALLED. THIS TANK WILL BE DOSED WITH CHLORINE FOR DISINFECTION
 19. WORKS PUMP STATION CONSTRUCTED FOR STORMWATER AND HOSE FLOWS.
- SITE WORKS**
20. BENCHING AND LEVELLING UNSEALED SITE ROADS AND SURFACE DRAINAGE AS REQUIRED
 21. DEVELOPMENT FORMED INTO VISUAL/NOISE BARRIER
 22. POTENTIAL EXCESS SPOIL FROM GOOGONG DEVELOPMENT FORMED INTO VISUAL/NOISE BARRIER BUND.
 22. DN150 OUTFALL LINE PUMPED FROM PERMEATE PUMPS THROUGH UV DISINFECTION SYSTEM.



**PRELIMINARY
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PROJECT: GOOGONG INTEGRATED WATER CYCLE
 TITLE: WATER RECYCLING PLANT GENERAL SITE LAYOUT PLAN
 STAGE 1 - 1000EP
 DRAWING NO: A10814.02-SK701
 REV. A



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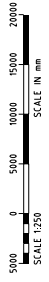
DN225 INCOMING SEWER RISING MAIN FROM SPS1

PLAN 1:250



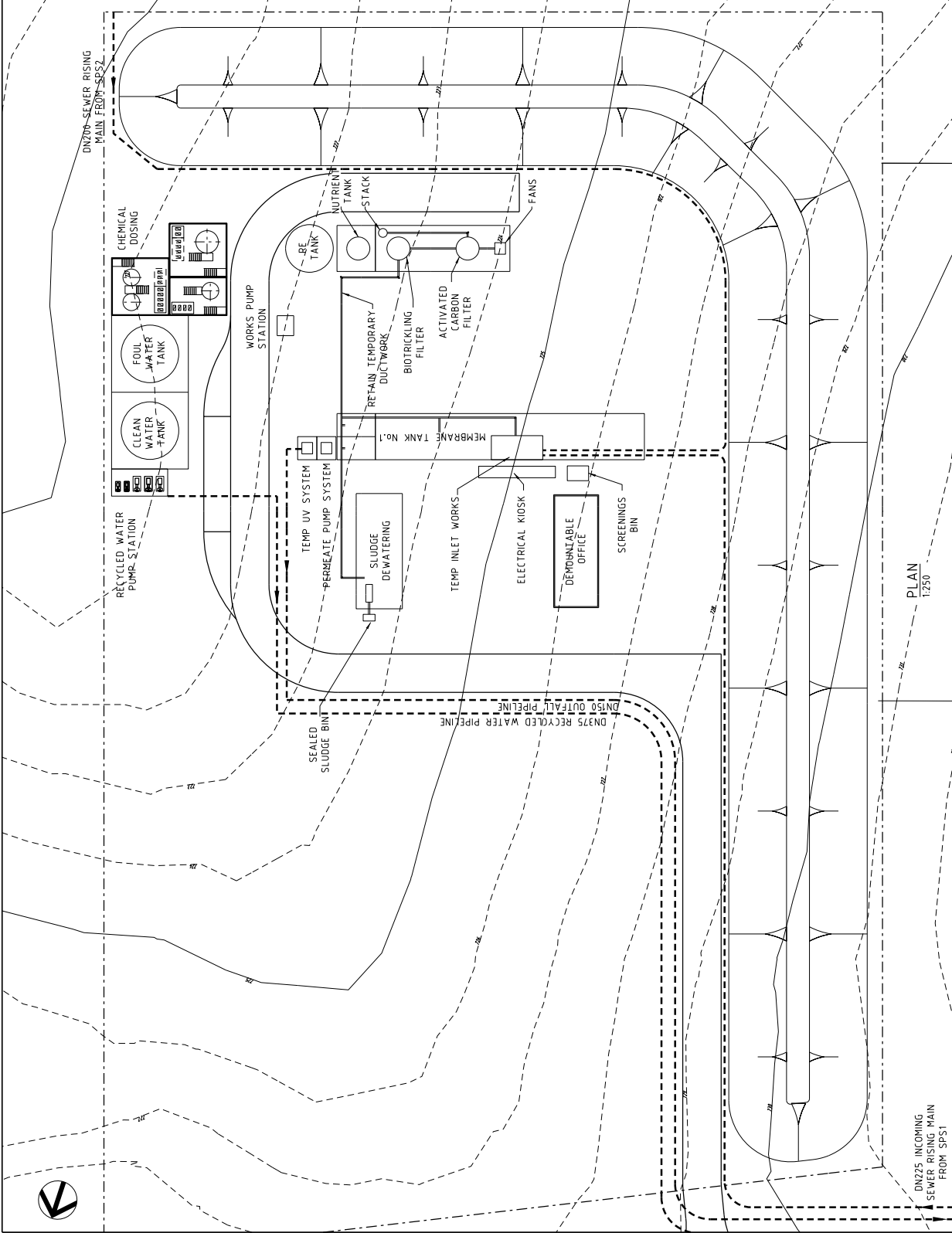
NOTES

1. TEMPORARY INLET WORKS RETAINED FROM STAGE 1
2. SECONDARY TREATMENT
3. EXTEND INITIAL BIOREACTOR TANK TO FULL LENGTH. INSTALL SECTIONS FOR 423 KL/D TREATMENT @250 EP.
4. MEMBRANE TANKS EXTENDED WITH SMALLER BALLAST.
5. SURFACE AERATORS USED IN AERATION TANK TERTIARY TREATMENT.
6. ADDITIONAL UV CAPACITY ADDED. ESTABLISH CHLORINE DOSING TO CWT FOR SECOND DISINFECTION STAGE IN RW PIPELINE.
7. EXTENSION OF ODOUR COVERS TO ACCOUNT FOR ODOUR.
8. MBR TANK EXTENSION
9. ADDITIONAL CHEMICAL DOSING FACILITIES ADDED TO MEET DEMAND. PERMANENT INSTALLATION CONSTRUCTED.
10. UTILITIES
11. CLEAR WATER TANK CONSTRUCTED
12. FOUL WATER TANK CONSTRUCTED
13. RECYCLED WATER PS SLAB AND PIPEWORK FROM CLEAR WATER TANK.
14. SITE WORKS
15. DN375 DISCHARGE LINE TO RW RESERVOIR



**PRELIMINARY
NOT FOR CONSTRUCTION**

PROJECT: GOOGONG INTEGRATED WATER CYCLE
 TITLE: WATER RECYCLING PLANT GENERAL SITE LAYOUT PLAN
 STAGE 2A - 2350 EP
 DRAWING NO: A10814.02-SK702



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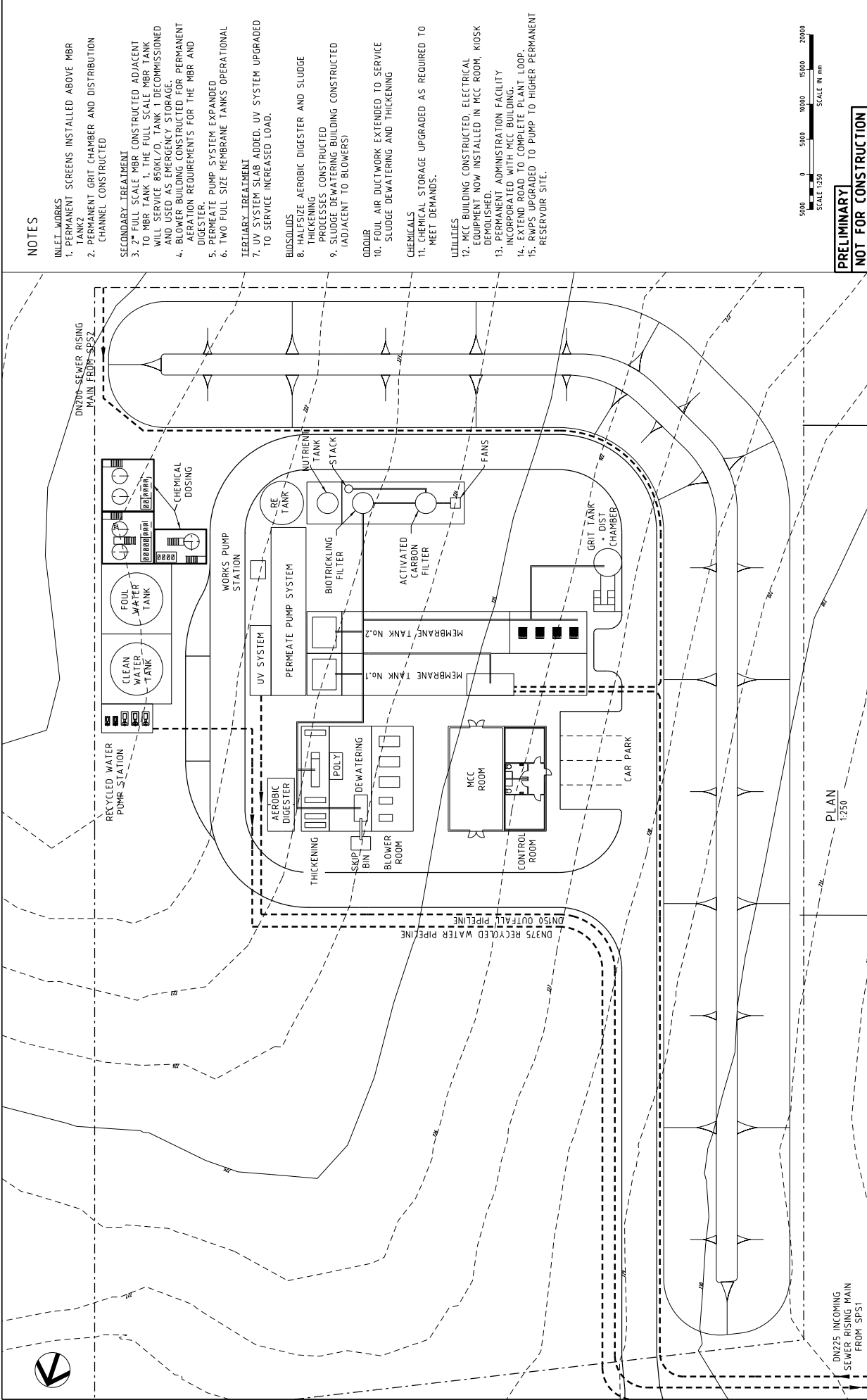
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CLIENT: GOOGONG INTEGRATED WATER CYCLE

COMMUNITIES IN THE MAKING



NOTES

INLET WORKS

- PERMANENT SCREENS INSTALLED ABOVE MBR TANK 2
- PERMANENT GRIT CHAMBER AND DISTRIBUTION CHANNEL CONSTRUCTED

SECONDARY TREATMENT

- 2" FULL SCALE MBR CONSTRUCTED ADJACENT TO MBR TANK 1. THE FULL SCALE MBR TANK WILL SERVICE 850KL/D. TANK 1 DECOMMISSIONED AND USED AS EMERGENCY STORAGE.
- BLOWER BUILDING CONSTRUCTED FOR PERMANENT AERATION REQUIREMENTS FOR THE MBR AND DIGESTER.
- PERMEATE PUMP SYSTEM EXPANDED
- TWO FULL SIZE MEMBRANE TANKS OPERATIONAL

TERTIARY TREATMENT

- UV SYSTEM SLAB ADDED. UV SYSTEM UPGRADED TO SERVICE INCREASED LOAD.

BIO-SOLIDS

- HALF-SIZE AEROBIC DIGESTER AND SLUDGE THICKENING PROCESSES CONSTRUCTED
- SLUDGE DEWATERING BUILDING CONSTRUCTED (ADJACENT TO BLOWERS)

ODOUR

- FOUL AIR DUCTWORK EXTENDED TO SERVICE SLUDGE DEWATERING AND THICKENING

CHEMICALS

- CHEMICAL STORAGE UPGRADED AS REQUIRED TO MEET DEMANDS.

UTILITIES

- MCC BUILDING CONSTRUCTED. ELECTRICAL EQUIPMENT NOW INSTALLED IN MCC ROOM, KIOSK DECOMMISSIONED.
- PERMANENT ADMINISTRATION FACILITY INCORPORATED WITH MBR BUILDING.
- REWORK TO COMPLETE PLANT LOOP.
- PUMPS UPGRADED TO PUMP TO HIGHER PERMANENT RESERVOIR SITE.



**PRELIMINARY
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PROJECT: GOOGONG INTEGRATED WATER CYCLE
 TITLE: WATER RECYCLING PLANT GENERAL SITE LAYOUT PLAN
 STAGE 2B - 4700 EP
 DRAWING NO: A10814.02-SK703
 SCALE: AS SHOWN
 REV. A



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PROJ MGR			

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DESCRIPTION	DATE	REV.

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REV.	DATE	DESCRIPTION

DN225 INCOMING SEWER RISING MAIN FROM SPS1

PLAN 1:250



NOTES

SECONDARY TREATMENT
 1. MBR TANK 1 RE-SEGMENTED AND COMMISSIONED TO OPERATE AT FULL SCALE. MAXIMUM SECONDARY TREATMENT CAPACITY 1700 KL/D (94.00 EP).

ODOUR

2. ODOUR COVERS AND DUCTWORK EXTENDED TO ACCOMMODATE NEW SECONDARY TREATMENT FACILITIES IN TANK 1.
3. 2" ACTIVATED CARBON FILTER ADDED
4. 2" BIOTRICKLING FILTER ADDED
5. MOVE STACK TO FINAL LOCATION.

CHEMICALS

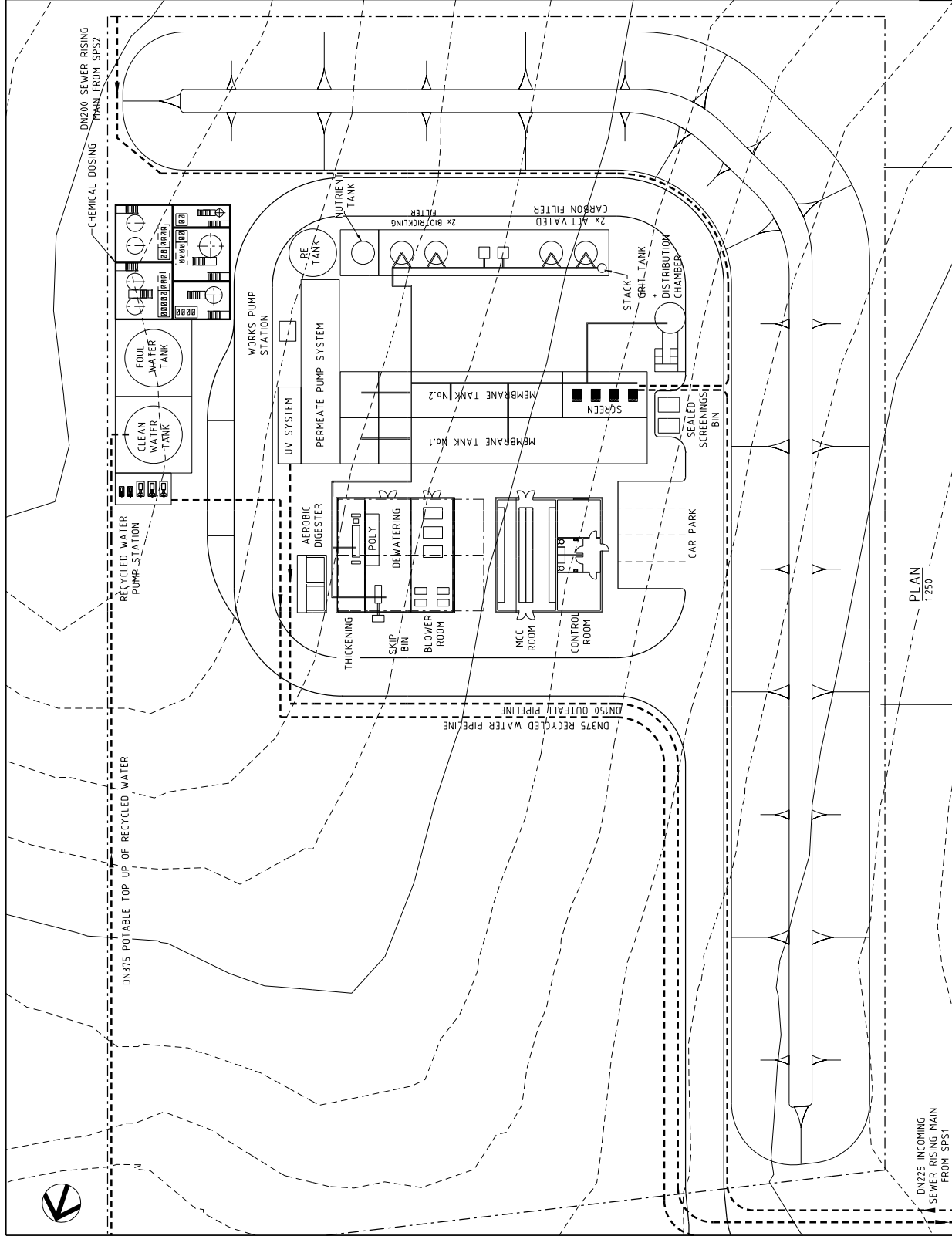
6. CHEMICAL DOSING EXPANDED TO ACCOMMODATE INCREASED LOAD.

TERTIARY TREATMENT

7. UV DISINFECTION EXPANDED

SITE SERVICES

8. RWPS CAPACITY EXPANDED



PLAN 1:2500

DN225 INCOMING SEWER RISING MAIN FROM SPS1

DN375 POTABLE WATER MAIN FROM SPS2

DN200 SEWER RISING MAIN FROM SPS2

CHEMICAL DOSING

SCALE 1:2500

SCALE IN mm

**PRELIMINARY
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PROJECT: GOOGONG INTEGRATED WATER CYCLE
 TITLE: WATER RECYCLING PLANT GENERAL SITE LAYOUT PLAN
 STAGE: 3 - 94.00 EP
 DRAWING NO: A10814.02-SK704
 REV. A



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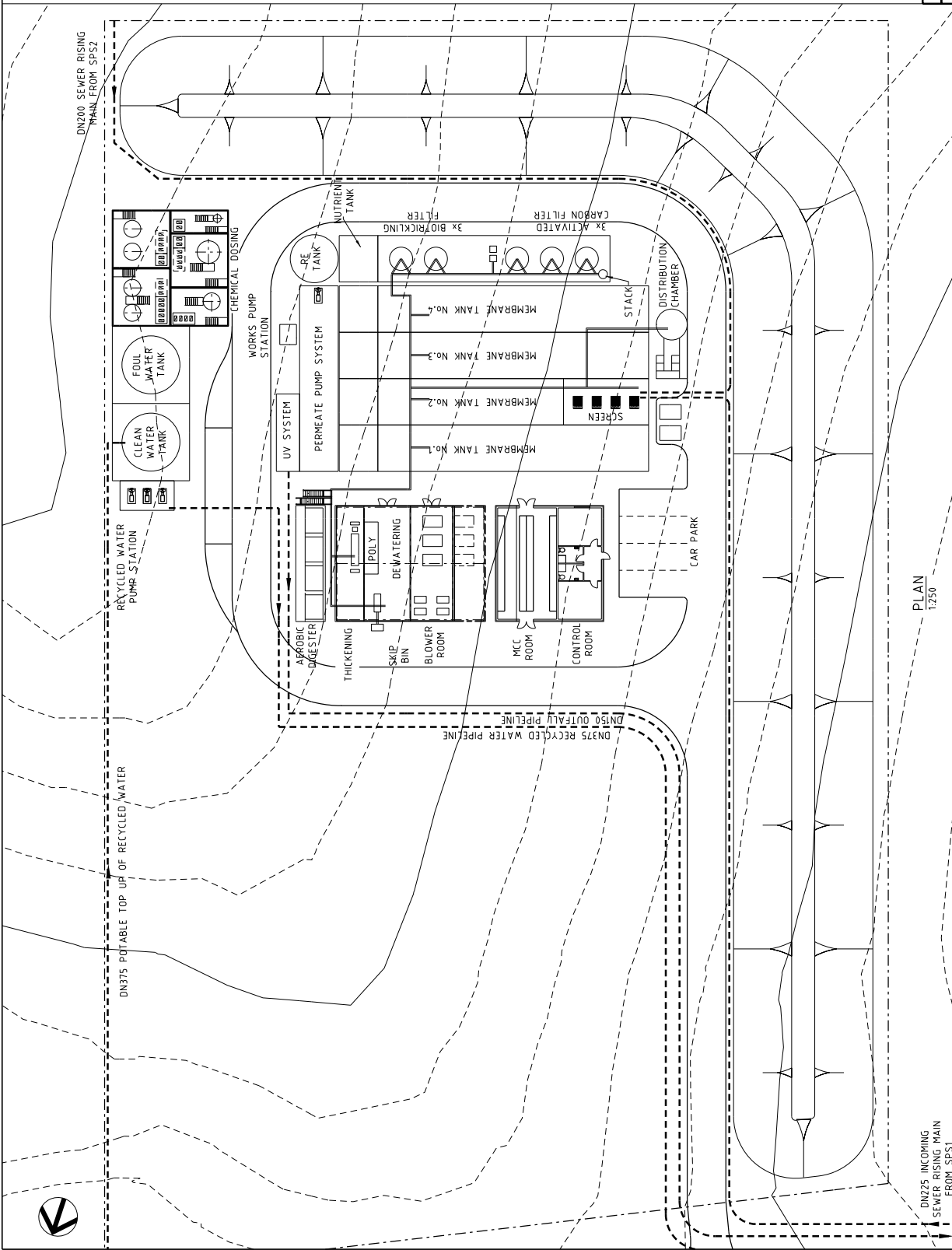
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REV.	DATE	DESCRIPTION	INITIAL	DATE	APPROVED
A	26/07/16	ISSUED FOR INFORMATION			

NOTES

- PRIMARY TREATMENT**
 1. CONSTRUCT 2nd GRIT VORTEX.
- SECONDARY TREATMENT**
 2. FOUR TANKS AND FULL SCALE SECONDARY TREATMENT 3400RL/D (1884.9 EPI).
 3. PERMEATE PUMP SYSTEM UPGRADED WITH FURTHER PUMPS TO ACCOUNT FOR ADDITIONAL FLOW.
 4. ANAEROBIC DIGESTER EXPANDED
 5. 3rd ACTIVATED CARBON FILTER INSTALLED
 6. CHEMICAL DOSING EXPANDED TO ACCOUNT FOR FULL FLOW
 7. RECYCLED WATER PUMP STATION UPGRADED



**PRELIMINARY
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PROJECT: GOOONG INTEGRATED WATER CYCLE
PRICE: WATER RECYCLING PLANT GENERAL SITE LAYOUT PLAN
STAGE: 4 - 1884.9 EP
DRAWING NO.: A10814.02-SK705
REV.: A



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REVIEW	NAME	SIGNATURE	DATE
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DESIGN			
DESIGN CHECK			
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PLAN 1:250