

INSTRUCTIONS FOR USE OF DEEMED TO COMPLY DRAWINGS FOR NETWORKS CDU & RCP's

THIS DRAWING MAY ONLY BE USED IN THE COURSE OF AND FOR THE PURPOSE OF CREATING SYDNEY WATER ASSETS. USE THIS DRAWING WITH CARE. YOU ARE RESPONSIBLE TO APPLY THE WORK SHOWN IN THIS DRAWING CORRECTLY IN THE CIRCUMSTANCES OF YOUR PROJECT. YOU MUST ENSURE THE WORK IS FIT FOR PURPOSE AND WILL PERFORM ITS INTENDED FUNCTION AS REQUIRED.

NETWORK CDU/RCP GENERIC INSTRUCTIONS:

1. PUMP SELECTION HAS BEEN SIMPLIFIED IN ORDER TO REDUCE COMPLICATION & RE-ITERATION OF ELECTRICAL TEMPLATE DRAWINGS & DTC DRAWINGS. THE UNITS ARE DESIGNED AS TRANSPORTABLE MODULAR UNITS WITH LIMITED SPACE FOR INSTALLATION, OPERATION AND MAINTENANCE. THE LAYOUT OF THE UNITS HAS BEEN ASSESSED USING HAZOP, FMECA & CHAIR 3 SAFETY IN DESIGN TOOLS IN ORDER TO PROPERLY ASSESS THE UNITS IN ACCORDANCE WITH THE SAFE DESIGN OF STRUCTURES CODE OF PRACTICE .
2. THE DRAWINGS ALONE DO NOT CONSTITUTE A COMPLETE DESIGN PACKAGE. THE SCOPE OF DTC DRAWINGS DOES NOT INCLUDE OTHER COMPONENTS INCLUDING, BUT NOT LIMITED TO POWER, CONTROL AND TELEMETRY SYSTEM, SITE INFRASTRUCTURE SUCH AS ACCESS, SECURITY, DRAINAGE, BUILDINGS ETC THAT MAY BE REQUIRED TO CONSTRUCT A COMPLETE RECHLORINATION SYSTEM.
3. THE USER IS REQUIRED TO SUPPLEMENT THE DTC DRAWINGS WITH A SITE SPECIFIC DESIGN CONSISTING OF:

i) SITE LAYOUT PLAN AND SECTIONS FULLY DESCRIBING LEVELS AND DETAILS OF PIPE ROUTES & MATERIALS (INCLUDING DOSING LINES, SITE WATER SUPPLY, UNIT DRAINAGE AND OVERFLOW PIPERUNIS), LEAK CONTAINMENT STRATEGY & DETECTION METHODOLOGY, SERVICE TIE IN LOCATIONS, PIPEWORK PENETRATIONS, PIT LOCATIONS AND ANY OTHER SITE SPECIFIC DETAIL NOT SPECIFICALLY INDICATED IN THE DTC DRAWING SET.

ii) COMPLETED PIPE AND VALVE SCHEDULES.

iii) COMPLETED DESIGN DRAWINGS FOR ALL CIVIL/STRUCTURAL ELEMENTS INCLUDING BUT NOT LIMITED TO;

(a) DESIGN OF ACCESS DRIVE CLEARLY INDICATING TURN AROUND PATH OF THE DESIGN VEHICLE FOR THE SITE. DESIGN VEHICLE TO BE CONFIRMED WITH CHEMICAL DOSING TEAM & CHEMICAL SUPPLIER.

(b) DESIGN OF DELIVERY BUND COMPLYING WITH THE REQUIREMENTS STATED IN THE CHEMICAL DOSING UNIT SPECIFICATION ACP0002.

(c) SITE DRAINAGE DESIGN

(d) ANCILLARY DESIGN ELEMENTS INCLUDING FOOTPATHS, RETAINING WALLS AS REQUIRED, BOLLARD INSTALLATION, FENCE INSTALLATION OR REPLACEMENT.

iv) ADDITIONAL DETAILS AS NECESSARY TO ENSURE THE DESIGN IS FIT FOR PURPOSE.

v) THE USER SHOULD NOTE THAT THE USE OF STANDARD DESIGN COMPONENTS MAY INTRODUCE UNINTENDED SAFETY RISKS FOR THEIR APPLICATION. THE USER SHALL ADDRESS SAFETY RISKS THROUGH SITE SPECIFIC SAFETY IN DESIGN ASSESSMENT INCLUDING CHAIR 2 / 3 FOR SITE SPECIFIC INSTALLATIONS.

4. DRAWINGS DTC-7003 AND DTC-7004 ARE PROVIDED AS GENERIC LAYOUTS TO GUIDE SITE SPECIFIC APPLICATION. THEY ARE NOT FOR CONSTRUCTION AND SHALL NOT BE REFERRED TO AS SUCH.

5. COMPONENTS NOMINATED IN THE SITE SPECIFIC DESIGN SHALL BE BASED ON CONSIDERATIONS OF LIMITATIONS NOMINATED IN THE DTC DRAWINGS AND THE FOLLOWING INFORMATION AS A MINIMUM.

i) HYDRAULIC LIMITATIONS CAUSED BY SITE SPECIFIC PIPE ROUTES AND ELEVATIONS.

ii) LOW HEAD CONDITIONS POTENTIALLY RESULTING IN PUMP CURVE RUN OFF.

iii) EXISTING AND PROPOSED GROUND LEVELS AND SURFACE PROFILE AT SPECIFIC SITE.

iv) HYDRAULIC REQUIREMENTS AND CHARACTERISTICS OF VENDOR SPECIFIC EQUIPMENT, EG. DOSING QUILLS OR NOZZLES.

v) SITE SPECIFIC GEOTECHNICAL INFORMATION.

vi) VARIATIONS IN DOSING POINT PRESSURES.

vii) VARIATIONS IN POTABLE WATER SUPPLY PRESSURES (EG. DURING BUSHFIRE) AND RISKS OF SCOURING IN THE CASE OF DIRECT POTABLE WATER SUPPLE.

6. CONTAINMENT STRATEGY NEEDS TO BE ADDRESSED FOR THE FULL LENGTH OF THE DOSING LINE INCLUDING PULL PITS AND DOSING PIT FOR REVIEW AND ACCEPTANCE PRIOR TO CONSTRUCTION.

7. ALL USE OF DTC DESIGNS SHALL BE REFERRED TO SYDNEY WATER FOR REVIEW AND ACCEPTANCE PRIOR TO CONSTRUCTION.

NETWORKS CHEMICAL DOSING UNIT (CDU), FERROUS/FERRIC CHLORIDE AND CALCIUM NITRATE:

1. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH SYDNEY WATER TECHNICAL SPECIFICATIONS AND SITE SPECIFIC SPECIFICATIONS.

2. THERE ARE TWO VARIANTS OF THE FERRIC / FERROUS CHLORIDE AND CALCIUM NITRATE DOSING PLANTS IN THE DTC DRAWINGS SET

(a) 13.5kL FERRIC / FERROUS CHLORIDE AND CALCIUM NITRATE DOSING PLANT

(b) 13.5kL + 13.5kL FERRIC / FERROUS CHLORIDE AND CALCIUM NITRATE DOSING PLANT

3. THE DTC DESIGN DOES NOT APPLY FOR DOSING SYSTEMS WHERE GRAVITY FEED IS USED FOR DOSING IN PLACE OF PUMPS.

4. THE PROCESS EQUIPMENT IN EACH OF THE FERRIC / FERROUS CHLORIDE DOSING PLANT VARIANTS ARE AS FOLLOWS:

FERRIC / FERROUS CHLORIDE AND CALCIUM NITRATE DOSING PLANT	DOSING PUMPS (b)	NO OF UNITS
13.5kL	GRUNDFOS DDA30-4	1 DUTY / 1 STANDBY
13.5kL + 13.5kL	GRUNDFOS DME60-10	2 DUTY / 2 STANDBY

(a) THE DME60-10 CORRESPONDS TO THE PUMP TEMPLATE ELECTRICAL DRAWINGS FOR CDU's AS INDICATED IN THE DRAWING LIST.

(b) FOR THE 27kL UNIT A DME375-10* CAN BE USED FOR HIGHER FLOW RATES. FOR THE 13.5kL CDU UNIT A DME60-10 CAN BE USED FOR HIGHER FLOW RATES.

(c) * THIS CONSTITUTES A DEVIATION FROM THE DTC DESIGN AND THE AMENDED DESIGN SHALL BE REFERRED TO SYDNEY WATER FOR REVIEW AND ACCEPTANCE PRIOR TO CONSTRUCTION, INCLUDING THE ELECTRICAL TEMPLATE DRAWINGS.

5. THE DESIGN IS BASED ON THE USE OF THE TWO VARIANTS OF MODULAR PRE-CAST FERRIC / FERROUS CHLORIDE DOSING PLANTS TO SUIT A VARIETY OF APPLICATIONS. THE DRAWINGS PROVIDE DEEMED TO COMPLY (DTC) SOLUTIONS FOR VARIOUS ELEMENTS OF A FERRIC / FERROUS CHLORIDE DOSING PLANT UNDER THE FOLLOWING LIMITATIONS:

	MAXIMUM FERRIC / FERROUS CHLORIDE AND CALCIUM NITRATE DOSING PLANT DAILY DOSING FLOW RATE (L/D) (a)	MAXIMUM INSTANTANEOUS DOSING FLOW RATE (L/h) ²	MAXIMUM HEAD OF PRESSURE MAIN (BAR)
FERRIC / FERROUS CHLORIDE AND CALCIUM NITRATE DOSING PLANT	DOSING PUMP: DDA30-4 / DME60-10	DOSING PUMP: DDA30-4 / DME60-10	DOSING PUMP: DDA30-4 / DME60-10
13.5kL	450	30	10
13.5kL + 13.5kL	900	60	10

(a) TOTAL DAILY DOSING RATE FROM ALL SIMULTANEOUSLY DOSING PUMPS TO ACHIEVE 30 DAY STORAGE TANK RETENTION TIME.

(b) DOSE RATE AT ONE DOSING POINT.

6. POTABLE WATER SERVICES CONNECTION TO FERRIC / FERROUS CHLORIDE AND CALCIUM NITRATE DOSING PLANT:

SERVICES	POTABLE WATER SUPPLY FOR SAFETY SHOWER	
INSTALLED WATER PUMPS	NONE	GRUNDFOS CM5-4
13.5kL	5.3 m³/h @ 25mH	5.3 m³/h @ 5mH
13.5kL + 13.5kL	5.3 m³/h @ 25mH	5.3 m³/h @ 5mH

(a) REQUIREMENTS FOR FLOW RATES AND PRESSURE ARE WHEN MEASURED AT THE TERMINATION POINT LOCATIONS.

(b) FOR THE PURPOSES OF THE DTC DESIGN, IT IS ASSUMED THAT POTABLE WATER SUPPLY IS AVAILABLE AND SUITABLE FOR DILUTION WATER USE. WHERE THERE IS INSUFFICIENT PRESSURE FOR SITE SPECIFIC CONDITIONS, THE USER SHALL NOMINATE A SUITABLE PUMPED SYSTEM FOR SYDNEY WATER APPROVAL.

(c) SIZE OF THE WATER SUPPLY LINE TO THE CDU IS THE RESPONSIBILITY OF THE CONTRACTOR. IT IS ASSUMED THAT SWC WILL SPECIFY THE UNIT SIZE TO BE PROVIDED. THE CONTRACTOR IS RESPONSIBLE FOR SPECIFYING IF BOOSTER PUMPS ARE REQUIRED.

NETWORKS CHEMICAL DOSING UNIT (CDU), MAGNESIUM HYDROXIDE DOSING PLANT:

1. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH SYDNEY WATER TECHNICAL SPECIFICATIONS AND SITE SPECIFIC SPECIFICATIONS.

2. THERE IS ONE VARIANT OF THE MAGNESIUM HYDROXIDE DOSING PLANT IN THE DTC DRAWINGS SET

(a) 5kL MAGNESIUM HYDROXIDE DOSING PLANT, CHEMICAL DOSING UNIT (CDU)

3. THE DTC DESIGN DOES NOT APPLY FOR DOSING SYSTEMS WHERE GRAVITY FEED IS USED FOR DOSING IN PLACE OF PUMPS.

4. THE PROCESS EQUIPMENT IN EACH OF THE MAGNESIUM HYDROXIDE DOSING PLANT VARIANT IS AS FOLLOWS:

MAGNESIUM HYDROXIDE DOSING PLANT	DOSING PUMPS (a)	NO OF UNITS	MIXER	DRIVE TYPE	MIXER SPEED (RPM)
5kL	BREDEL APEX 10	1 DUTY / 1 STANDBY	15kw TOP ENTRY TERALBA SS316	VSD	160

(a) THE BREDEL APEX 15 MAY BE USED IN PLACE OF THE BREDEL APEX 10 WHERE LARGER DOSING FLOW RATES ARE REQUIRED. THIS CONSTITUTES A DEVIATION FROM THE DTC DESIGN AND THE AMENDED DESIGN SHALL BE REFERRED TO SYDNEY WATER FOR REVIEW AND ACCEPTANCE PRIOR TO CONSTRUCTION.

5. THE DESIGN IS BASED ON THE USE OF THE ONE VARIANT OF MODULAR MAGNESIUM HYDROXIDE DOSING PLANTS TO SUIT A VARIETY OF APPLICATIONS. THE DRAWINGS PROVIDE DEEMED TO COMPLY (DTC) SOLUTIONS FOR A MAGNESIUM HYDROXIDE DOSING PLANT UNDER THE FOLLOWING LIMITATIONS:

	MAXIMUM MAGNESIUM HYDROXIDE DOSING PLANT DAILY DOSING FLOW RATE (L/D) (a)	MAXIMUM INSTANTANEOUS DOSING FLOW RATE (L/h) (b)	MAXIMUM PRESSURE AT DOSING POINT (kPa)
MAGNESIUM HYDROXIDE DOSING PLANT	DOSING PUMP: BREDEL APEX 10	DOSING PUMP: BREDEL APEX 10	DOSING PUMP: BREDEL APEX 10
5kL	166	280	800

(a) TOTAL DAILY DOSING RATE FROM BASED ON A 30 DAY STORAGE TANK RETENTION TIME.

(b) DOSING RATE AT ONE DOSING POINT.

6. POTABLE WATER SERVICES CONNECTION TO MAGNESIUM HYDROXIDE DOSING PLANT:

SERVICES (a)	POTABLE WATER SUPPLY FOR SAFETY SHOWER	
INSTALLED WATER PUMPS	NONE	GRUNDFOS CM5-4
5kL	5.3 m³/h @ 25mH	5.3 m³/h @ 5mH

(a) REQUIREMENTS FOR FLOW RATES AND PRESSURE ARE WHEN MEASURED AT THE TERMINATION POINT LOCATIONS.

(b) FOR THE PURPOSES OF THE DTC DESIGN, IT IS ASSUMED THAT POTABLE WATER SUPPLY IS AVAILABLE AND SUITABLE FOR POTABLE WATER USE. WHERE THERE IS INSUFFICIENT PRESSURE FOR SITE SPECIFIC CONDITIONS, THE USER SHALL NOMINATE A SUITABLE PUMPED SYSTEM FOR SYDNEY WATER APPROVAL.

NETWORKS RECHLORINATION PLANT (RCP), SODIUM HYPOCHLORITE:

1. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH SYDNEY WATER TECHNICAL SPECIFICATIONS AND SITE SPECIFIC SPECIFICATIONS.

2. THERE ARE THREE VARIANTS OF THE PRE-CAST RECHLORINATION PLANTS IN THE DTC DRAWINGS SET

(a) 3kL + 7kL RECHLORINATION PLANT

(b) 7kL + 13.5kL RECHLORINATION PLANT

(c) 13.5kL + 13.5kL RECHLORINATION PLANT

3. THE DTC DESIGN DOES NOT APPLY FOR DOSING SYSTEMS WHERE GRAVITY FEED IS USED FOR DOSING IN PLACE OF PUMPS.

4. THE PROCESS EQUIPMENT IN EACH OF THE RECHLORINATION PLANT VARIANTS ARE AS FOLLOWS:

RECHLORINATION PLANT	DOSING PUMPS (a)	NO OF UNITS	TRANSFER PUMPS	NO OF UNITS	DILUTION WATER PUMPS	NO OF UNITS
3kL + 7kL	GRUNDFOS DME60-10	1 DUTY / 1 STANDBY	IWAKI MX-F402	1 DUTY	LOWARA 4HMS5 OR GRUNDFOS CM5-4	1 DUTY / 1 STANDBY
7kL + 13.5kL	GRUNDFOS DME60-10	1 DUTY / 1 STANDBY	IWAKI MX-F402	1 DUTY	LOWARA 4HMS5 OR GRUNDFOS CM5-4	1 DUTY / 1 STANDBY
13.5kL + 13.5kL	GRUNDFOS DME60-10	2 DUTY / 2 STANDBY	IWAKI MX-F402	1 DUTY	LOWARA 4HMS5 OR GRUNDFOS CM5-4	1 DUTY / 1 STANDBY

(a) THE DME375-10 MAY BE USED IN PLACE OF THE DME60-10 WHERE LARGER DOSING FLOWRATES ARE REQUIRED. THIS CONSTITUTES A DEVIATION FROM THE DTC DESIGN AND THE AMENDED DESIGN SHALL BE REFERRED TO SYDNEY WATER FOR REVIEW AND ACCEPTANCE PRIOR TO CONSTRUCTION.

5. THE DESIGN IS BASED ON THE USE OF THE THREE VARIANTS OF MODULAR RECHLORINATION PLANTS TO SUIT A VARIETY OF APPLICATIONS. THE DRAWINGS PROVIDE DEEMED TO COMPLY (DTC) SOLUTIONS FOR VARIOUS ELEMENTS OF A RECHLORINATION PLANT UNDER THE FOLLOWING LIMITATIONS:

	MAXIMUM RECHLORINATION PLANT DAILY DOSING FLOW RATE (L/D) (a)	MAXIMUM INSTANTANEOUS DOSING FLOW RATE (L/h) (b)
RECHLORINATION PLANT	DOSING PUMP: DME60-10	DOSING PUMP: DME60-10
3kL + 7kL	700	60
7kL + 13.5kL	1350	60
13.5kL + 13.5kL	1350	60

(a) TOTAL DAILY DOSING RATE FROM ALL SIMULTANEOUSLY DOSING PUMPS TO ACHIEVE 10 DAY RETENTION TIME IN THE DOSING TANK WITH THE EXCEPTION OF THE 13.5kL + 13.5kL RCP, WHICH WILL HAVE A 5 DAY RETENTION TIME.

(b) DOSING RATE AT EACH DOSING POINT.

6. POTABLE WATER SERVICES CONNECTION TO RECHLORINATION PLANT:

SERVICES (a)	POTABLE WATER SUPPLY FOR DILUTION PUMPS (d)	POTABLE WATER SUPPLY FOR SAFETY SHOWER		
INSTALLED WATER PUMPS	LOWARA 4HMS-5	GRUNDFOS CM5-4	NONE	GRUNDFOS CM5-4
3kL + 7kL	6.6 m³/h @ 4.2mH	6.2 m³/h @ 8mH	5.3 m³/h @ 25mH	5.3 m³/h @ 5mH
7kL + 13.5kL	13.2 m³/h @ 4.2mH	12.4 m³/h @ 8mH	5.3 m³/h @ 25mH	5.3 m³/h @ 5mH
13.5kL + 13.5kL	13.2 m³/h @ 4.2mH	12.4 m³/h @ 8mH	5.3 m³/h @ 25mH	5.3 m³/h @ 5mH

(a) REQUIREMENTS FOR FLOW RATES AND PRESSURE ARE WHEN MEASURED AT THE TERMINATION POINT LOCATIONS.

(b) WHERE SITE POTABLE SUPPLY IS AVAILABLE AND SUITABLE FOR COMPLETE SUPPLY OF THE REQUIRED SERVICES, THE WATER PUMPS SHALL NOT BE REQUIRED FOR THE RECHLORINATION PLANT.

(c) WHERE SITE POTABLE SUPPLY IS AVAILABLE AND SUITABLE FOR PARTIAL SUPPLY OF THE REQUIRED SERVICES, THE USER SHALL ENSURE THAT A COMPETENT PERSON SHALL CARRY OUT THE NECESSARY DESIGN CHANGES AND AMENDMENTS TO THE DTC DESIGN AND DRAWINGS PRIOR TO CONSTRUCTION.

(d) NPSHr – NET PRESSURE SUCTION HEAD REQUIRED AT TERMINATION POINT.

7. HYDRAULIC LIMITATIONS:

PARAMATER	FLOW	RESIDUAL PRESSURE AT TERMINATION POINT			
		LOWARA 4HMS-5		GUNDFOS CM5-4	
UNITS	(m³/hr)	HEAD (mH)		HEAD (mH)	
HIGH FLOW CONDITION @ 110% BEP	5.2	>	4	>	9
LOW FLOW CONDITION @ 60% BEP	3	<	14	<	21

8. THE DOSING LINE SIZE IS TO BE CONFIRMED BY THE INSTALLATION CONTRACTOR AFTER HEADLOSS CALCULATIONS UNDERTAKEN & CHECKED AGAINST THE HYDRAULIC LIMITATIONS TABLE ABOVE. HEAD AND FLOW FIGURES PROVIDED ABOVE ARE BASED ON THE RELEVANT PUMP CURVES AT THE NOMINATED TERMINATION LOCATION(S). LOSSES WITHIN RCP ITSELF HAVE BEEN FACTORED INTO THE PROVIDED FIGURES.

9. THE CONTRACTOR SHALL ENSURE THAT THE SYSTEM HEADLOSS EXTERNAL TO THE RCP FALLS WITHIN THE NOMINATED MAXIMUM AND MINIMUM FLOW AND HEAD RANGE FOR THE SPECIFIC PUMPSET.

10. FOR FLOWS AND HEAD LOSS OUTSIDE THESE RESTRICTIONS A FULL SYSTEM CHECK IS REQUIRED TO BE UNDERTAKEN.

11. THROTTLING OF VALVES MAY BE REQUIRED ON THE POTABLE WATER LINES DURING COMMISSIONING. THIS IS A KNOWN LIMITATION OF THE SYSTEM AND SHOULD BE CONSIDERED DURING COMMISSIONING OF THE UNITS.

12. 60% OF THE TANK EFFECTIVE VOLUME IS THE BASIS FOR EACH BATCH OF NEAT CHEMICAL WITH MAKE UP WATER TAKING RE-ORDER LEVELS INTO CONSIDERATION IN ORDER TO MEET THE 40 MINUTE MAKE UP WATER FILL TIME. INITIAL FILL OF THE TANK WILL TAKE LONGER THEN SUBSEQUENT MAKE UP WATER TRANSFERS.

13. EACH PUMP UNIT SPECIFIED HAS A RATED MOTOR POWER OF 0.9kW. WHERE SITE LIMITS ARE BEYOND THIS TABLE AND LARGER PUMPS ARE REQUIRED THE POWER DRAW WILL ALSO INCREASE. THE ELECTRICAL DESIGN OF THE SYSTEM SHALL BE AMENDED TO SUIT.

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APPROVED

KEN WIGGINS
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ENGINEERING & ENVIRONMENTAL SERVICES

A	ORIGINAL ISSUE		KW	17/03/17	
LETTER	DETAILS OF AMENDMENT			APP'D	DATE

DEEMED TO COMPLY DRAWINGS

CHEMICAL DOSING & RECHLORINATION UNIT

INSTRUCTIONS AND NOTES

DTC
7001

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