Application for Planning Approval

Land Use Planning and Approvals Act 1993

APPLICATION NO.

DA2024/173

LOCATION OF AFFECTED AREA

28 CROOKED BILLET DRIVE, BRIDGEWATER

DESCRIPTION OF DEVELOPMENT PROPOSAL

PAVEMENT AND STORMWATER MANAGEMENT UPGRADE & NEW UNDERGROUND STORAGE TANK

A COPY OF THE DEVELOPMENT APPLICATION MAY BE VIEWED AT www.brighton.tas.gov.au AND AT THE COUNCIL OFFICES, 1 TIVOLI ROAD, OLD BEACH, BETWEEN 8:15 A.M. AND 4:45 P.M, MONDAY TO FRIDAY OR VIA THE QR CODE BELOW. ANY PERSON MAY MAKE WRITTEN REPRESENTATIONS IN ACCORDANCE WITH S.57(5) OF THE LAND USE PLANNING AND APPROVALS ACT 1993 CONCERNING THIS APPLICATION UNTIL 4:45 P.M. ON **08/09/2025**. ADDRESSED TO THE CHIEF EXECUTIVE OFFICER AT 1 TIVOLI ROAD, OLD BEACH, 7017 OR BY EMAIL AT development@brighton.tas.gov.au. REPRESENTATIONS SHOULD INCLUDE A DAYTIME TELEPHONE NUMBER TO ALLOW COUNCIL OFFICERS TO DISCUSS, IF NECESSARY, ANY MATTERS RAISED.

JAMES DRYBURGH
Chief Executive Officer

SCAN ME

Brighton
going places

DRAWING REGISTER / ISSUE

CIVIL ENGINEERING DRAWINGS

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SURVEYORS, ENGINEERS & PLANNERS

CLIENT :	**DDM CIVIL**			**DATE OF ISSUE & NO. OF COPIES**
DESCRIPTION :	**SUPAGAS - 28 CROOKED BILLET DRIVE**			27/06/2026
PDA PROJECT NO :	**54479HC**	**COUNCIL NO :**	**DA 2024/00173**	
		TASWATER NO :		
DISTRIBUTION :	**COMPANY :**		**CONTACT :**	
CLIENT	DDM CIVIL		Vincent O'Brien	X
CLIENT				
COUNCIL	BrightonCouncil		Jo Blackwell	
TASWATER	Taswater			
ARCHITECT				
STRUCTURAL ENGINEER	Integral Engineers		Stephen Cole	
CIVIL ENGINEER	PDA Surveyors, Engineers & Planners		Mark Westerberg / Steve Chaffey	
ELECTRICAL ENGINEER				
QUANTITY SURVEYOR				
BUILDING CONTRACTOR				
Registered Land Surveyor	PDA Surveyors, Engineers & Planners		Hugh Clement	

SIZE	PDA DRAWING NUMBER	DESCRIPTION	Precontract - A to Y (Alphabetic) Start Contract - 0 (Issued for construction) Contract - 1 to 100 (Numeric) Post Contract - Z (Drawing of record) Electronic copy - e	REVISION
A3	54479HC 001	COVER SHEET	e	P2
A3	54479HC 101	GENERAL NOTES	e	P2
A3	54479HC 102	SITE PLAN 1	e	P2
A3	54479HC 103	SITE PLAN 2	e	P2
A3	54479HC 104	STORMWATER LONG SECTION 1	e	P2
A3	54479HC 105	STORMWATER LONG SECTION 2	e	P2
A3	54479HC 106	SOIL AND WATER MANAGEMENT PLAN	e	P2
A3	54479HC 120	VEHICLE TURNING PATHS	e	P2
A1	LAP-3562 01	GENERAL ARRANGEMENT	e	2
A1	LAP-3562 02	LIFTING LUG, STIFFENER RING & H.D. DETAILS	e	0
A1	LAP-3562 03	TURRET & NOZZLE DETAILS, SHT 1	e	3
A1	LAP-3562 04	TURRET & NOZZLE DETAILS, SHT 2	e	2
A1	LAP-3562 05	LADDER DETAILS	e	1
A1	LAP-3562 06	NAMEPLATE DETAILS	e	0
			e	

RECEIVED BY .....

COMPANY .....

DATE .....

DRAWING LIST	
DRAWING NUMBER	**DRAWING TITLE**
001	COVER SHEET
002	GENERAL NOTES
100	OVERALL SITE PLAN
200	SITE PLAN 1
201	SITE PLAN 2
400	STORMWATER LONG SECTION 1
401	STORMWATER LONG SECTION 2
900	SOIL AND WATER MANAGEMENT PLAN
1000	VEHICLE TURNING PATHS
LAP-3562-01	GENERAL ARRANGEMENT
LAP-3562-02	LIFTING LUG, STIFFENER RING & H.D. DETAILS
LAP-3562-03	TURRET & NOZZLE DETAILS, SHT 1
LAP-3562-04	TURRET & NOZZLE DETAILS, SHT 2
LAP-3562-05	LADDER DETAILS
LAP-3562-06	NAMEPLATE DETAILS

DRAFTING CHECK

CHANGES REQUIRED: YES____ NO____
APPLIES TO ALL DRG'S IN SET: YES____ NO____
NAME (PRINT): _____
SIGNATURE: _____
DATE: _____

DESIGN CHECK

CHANGES REQUIRED: YES____ NO____
APPLIES TO ALL DRG'S IN SET: YES____ NO____
NAME (PRINT): _____
SIGNATURE: _____
DATE: _____

XXXXX COUNCIL SUBMISSIONS - XXXXX/XXXXXX-X

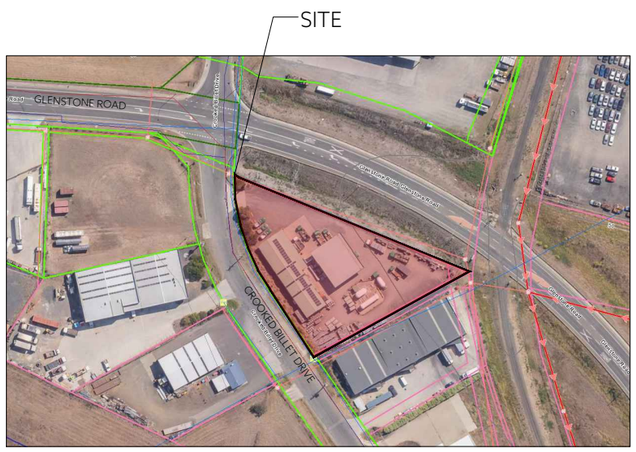
REV	DATE ISSUED	DESCRIPTION
P1	XX/XX/XX	-

TASWATER SUBMISSIONS - TWXXXXXX/XXXX-XXX

REV	DATE ISSUED	DESCRIPTION
P1	XX/XX/XX	-

DDM CIVIL - SUPAGAS
28 CROOKED BILLET DRIVE, BRIDGEWATER
PAVEMENT LEVELS AND DRAINAGE

BEFORE YOU DIG www.byda.com.au
Zero Damage - Zero Harm



LOCALITY MAP

PROJECT STATUS

REV	DATE ISSUED	DRAWN BY	AMENDED BY	CHECKED BY	CLIENT SUBMISSION	COUNCIL SUBMISSION	TASWATER SUBMISSION
P1	27/06/2025	SC	-	MW	27/06/2025	-	-

REV	AMENDMENTS	DRAWN	DATE	APPR.
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DRAWING STATUS: FOR PLANNING APPROVAL
COORDINATE/ DATUM: PLANAR
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DESIGNED: SC | REVIEWED: MW
DRAWN: SC | REVIEWED: MW
JOB MANAGER: MARK WESTERBERG
ISSUED DATE: 27/06/2025

CLIENT: DDM CIVIL - SUPAGAS
PROJECT DESCRIPTION: PAVEMENT LEVELS AND DRAINAGE
ADDRESS: 28 CROOKED BILLET DRIVE, BRIGHTON
DRAWING TITLE: COVER SHEET
.

PDA SURVEYORS, ENGINEERS & PLANNERS
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Also at: Kingston, Launceston & Burnie
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	1: NTS		(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
54479HC	C	001	P2

DATE/TIME: Friday, 27 June 2025 1:51:48 PM PLOTTED: STEVE CHAFFEY FILE LOCATION: S:\54479HC - DDM CIVIL - SUPA GAS, BRIDGEWATER\4-ENG\1-CAD\54479HC ENG.DWG

GENERAL NOTES:

1. NO ATTEMPT HAS BEEN MADE TO LOCATE ALL SERVICES. ONLY THOSE SERVICES CONSPICUOUS DURING FIELD SURVEYS ARE SHOWN. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY(S) SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF FURTHER UNDERGROUND SERVICE AND DETAILED LOCATIONS OF ALL SERVICES.

2. ALL DIMENSIONS AND LOT SIZES SUBJECT TO FINAL SURVEY.

3. REFER IPWEA - LGAT SPECIFICATIONS, TASMANIAN STANDARD DRAWINGS ISSUED - 03 DECEMBER 2020

   TSD-G01.v3 - TRENCH REINSTATEMENT FLEXIBLE PAVEMENTS
   TSD-G02.v3 - URBAN ROADS - TYPICAL SERVICE LOCATIONS
   TSD-R01.v3 - RURAL ROADS UNSEALED
   TSD-R02.v3 - RURAL ROADS SEALED
   TSD-R03.v3 - RURAL ROADS - TYPICAL DRIVEWAY ACCESS
   TSD-R04.v3 - RURAL ROADS - TYPICAL DRIVEWAY PROFILE
   TSD-R05.v3 - TRUCK ACCESS TO RURAL PROPERTIES 'TYPE A'
   TSD-R06.v3 - URBAN ROADS - TYPICAL SECTIONS & PAVEMENT WIDTHS
   TSD-R09.v3 - URBAN ROADS - DRIVEWAYS
   TSD-R11.v3 - URBAN ROADS - FOOTPATHS
   TSD-R12.v3 - SUB SOIL DRAINS - CONSTRUCTION DETAILS
   TSD-R13.v3 - SUBSOIL DRAINS PIT CONNECTION - TYPE FD
   TSD-R14.v3 - CONCRETE KERBS & CHANNELS DIMENSIONS
   TSD-R15.v3 - CONCRETE KERBS & CHANNELS CONSTRUCTION DETAILS
   TSD-R16.v3 - CONCRETE KERBS & CHANNELS VEHICULAR CROSSINGS
   TSD-R18.v3 - CONCRETE KERBS & CHANNELS ACCESS RAMPS
   TSD-R26.v3 - DELINEATORS
   TSD-R28.v3 - W-BEAM - INSTALLATION DETAILS
   TSD-SW01.v3 - PIPE INSTALLATION ANCHOR BLOCKS
   TSD-SW02.v3 - MANHOLES - 100-600 DIA. PIPES - GENERAL ARRANGEMENTS
   TSD-SW03.v3 - MANHOLES - 100-600 DIA. PIPES - BENCHING DETAILS
   TSD-SW09.v3 - SIDE ENTRY PITS - 'TYPE 3'
   TSD-SW11.v3 - SIDE ENTRY PITS - KERB TRANSITIONS
   TSD-SW15.v3 - STORMWATER - 'GP'
   TSD-SW17.v3 - OUTLET HEADWALLS 300 - 600 DIA PIPES
   TSD-SW25.v3 - STORMWATER PROPERTY CONNECTIONS TO MAINS
   TSD-SW26.v3 - SADDLE CONNECTION TO STORMWATER DRAIN
   TSD-SW27.v3 - REPAIRS/ NEW CONNECTION TO STORMWATER DRAIN
   TSD-SW28.v3 - GUIDELINES FOR SEDIMENT CONTROL
   TSD-RF04.v3 - NATURE STRIP DETAILS

4. CONSTRUCTION TO COMPLY WITH WSAA SEWERAGE CODE OF AUSTRALIA (MELBOURNE RETAIL WATER AGENCIES EDITION) - WSA 02-2014-3.1 v3 AND TASWATER SUPPLEMENT TO THE CODE.

5. ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH THE TASMANIAN SUBDIVISION GUIDELINES (VERSION 1.0 , DATED OCTOBER 2013) UNLESS OTHERWISE NOTED.

6. ALL CONNECTIONS TO EXISTING SEWER AND WATER MAINS TO BE CARRIED OUT BY TASWATER OR APPROVED CONTRACTOR AT DEVELOPER'S COST UNLESS APPROVED OTHERWISE.

SURVEY NOTES:

1.	DATUM:	GDA 2020 & AHD
2.	PLANAR OR GRID:	PLANAR
3.	SITE CONTROL:	SPM 8324
4.	SURVEYED BY:	PDA SURVEYORS
5.	ACCURACY OF SURVEY:	0.02m
6.	ACCURACY/STATUS OF EXISTING & FUTURE PROPERTY BOUNDARIES:	0.02m

ROADS & STORMWATER NOTES:

1. ALL STORMWATER LOT CONNECTIONS TO BE DN150 UNLESS OTHERWISE NOTED.
2. ALL STORMWATER LINES DN300 PVC-U SN8 OR EQUIVALENT UNLESS NOTED OTHERWISE.
3. ALL PRIVATE STORMWATER LINES TO BE INSTALLED TO AS3500.3
4. ALL FOOTPATHS TO BE N25 CONCRETE 100mm THICK, SL72 CENTRAL, 100 x 20 FCR BASE.
5. 2 x 65 DIA WEEPHOLES TO BE PLACED IN ALL STORMWATER SIDE ENTRY PITS AND MANHOLES WITH NO SUBSOIL DRAIN CONNECTIONS.
6. ALL STORMWATER BRANCHES TO TERMINATE AT PROPERTY BOUNDARIES WITH AN INSPECTION OPENING RAISED TO SURFACE WITH AN APPROVED COVER 1m INSIDE PROPERTY BOUNDARY.
7. ALL LOT CONNECTIONS TO BE CONSTRUCTED IN THE POSITION SHOWN UNLESS APPROVED BY THE SUPERINTENDENT.
8. FINAL POSITION AND WIDTH OF ALL DRAINAGE EASEMENTS IS TO BE DETERMINED FOLLOWING CONSTRUCTION.
9. EXTENT OF ROADWORKS SHOWN SHADED.
10. ALL FILL AREAS TO BE PLACED AND COMPACTED PRIOR TO TRENCH EXCAVATION.
11. PROVIDE TRAFFICABLE LIDS TO CONNECTIONS IN TRAFFICABLE AREAS INCLUDING DRIVEWAYS.
12. ALL DRIVEWAYS TO HAVE MAXIMUM GRADE 20% OUTSIDE LOT BOUNDARIES AND 25% INSIDE LOT BOUNDARIES AND CONSTRUCTED AS PER TSD-R09 V3.
13. PROVIDE MINIMUM 150mm CLEARANCE FROM TOP OF ROD EYES TO SURFACE COVER LID.

STORMWATER LONG SECTION NOTES:

1. ALL EXCAVATION OVER 1.5m IN DEPTH MUST BE CARRIED OUT IN ACCORDANCE WITH WORKPLACE SAFETY STANDARDS CODE OF PRACTICE FOR EXCAVATION WORK.
2. COMPACTED FCR BACKFILL UNDER ROADS & DRIVEWAYS.
3. ALL ANCHOR BLOCKS (CONCRETE BULKHEADS) ARE TO BE KEYED INTO UNDISTURBED, COMPETENT MATERIAL TO ENSURE THE MIGRATION OF BEDDING AND BACKFILL MATERIAL IS REDUCED AND THE INTEGRITY OF THE PIPE IS MAINTAINED.
4. TRENCHES >10% ARE TO HAVE CONTINUOUS DRAINAGE PATH INSTALLED TO ENSURE WATER THAT HAS MIGRATED INTO THE TRENCH IS CARRIED TO THE RETICULATED SYSTEM. REFER TSD-SW01.
5. ALL FILL TO BE PLACED & COMPACTED PRIOR TO TRENCH EXCAVATION.
6. FILL IN EXCESS OF 300mm DEPTH TO BE COMPACTED TO 95% STANDARD DENSITY (AS 1289E4.01) IN 150mm MAX LAYERS.
7. PROVIDE MINIMUM 150mm CLEARANCE FROM TOP OF ROD EYES TO SURFACE COVER LID.

NATURE STRIP NOTES:

1. APPLY 100mm THICK 20mm SCREENED LOAM TO NATURE STRIP & APPLY GRASS SEED AS PER TSD-RF04-v3.
2. NATURE STRIPS TO BE WATERED & MAINTAINED INCLUDING WEED REMOVAL & MOWING THROUGHOUT THE MAINTENANCE PERIOD.
3. FOR FILL BATTERS, BENCH AS SHOWN AND PLACE APPROVED FILL IN 300mm LAYERS COMPACTED TO 95% MAX DRY DENSITY. FILL TO BE PLACED & COMPACTED PRIOR TO TRENCH EXCAVATION.
4. MATERIAL TO BE PLACED AND COMPACTED UNIFORMLY IN LAYERS ACROSS THE EMBANKMENT NO GREATER THAN 300mm TO ACHIEVE 95% MDD. FOR FILL BATTERS, BENCH AS SHOWN.

ENGINEERED FILL NOTES:

1. FILL MATERIAL FOR NEW ROAD AND FILL EMBANKMENTS MUST NOT CONTAIN ORGANIC OR OTHER MATERIALS THAT DECOMPOSE OR OTHERWISE LEAD TO LONG TERM SETTLEMENT AND TO BE APPROVED BY SUPERINTENDENT BEFORE USE.
2. MATERIAL TO BE PLACED AND COMPACTED UNIFORMLY IN LAYERS UNDER NEW ROAD NO GREATER THAN 150mm TO ACHIEVE 98% MDD AND ACROSS ROAD EMBANKMENT NO GREATER THAN 300mm TO ACHIEVE 95% MDD. FOR FILL BATTERS, BENCH AS SHOWN.
3. ROAD EMBANKMENT TO BE FULLY CONSTRUCTED PRIOR TO TRENCHING FOR WATER AND SEWER SERVICES.
4. FILL TO BE PLACED & COMPACTED PRIOR TO TRENCH EXCAVATION.
5. SITE FILLING THAT EXCEEDS A DEPTH OF 300mm MUST BE PLACED IN ACCORDANCE WITH THE AS3798 GUIDELINES FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS 1996. UPON COMPLETION OF THE WORKS THE CONTRACTORS GEOTECHNICAL ENGINEER MUST CONFIRM IN WRITING THAT THE WORKS HAVE BEEN CARRIED OUT IN ACCORDANCE WITH AS3798.

SWMP NOTES:

1. REFER BEST PRACTICE EROSION & SEDIMENT CONTROL BOOKLET 2022 - "EROSION AND SEDIMENT CONTROL". AVAILABLE AT www.derwentestuary.org.au/publications
2. AREAS OF GROUND DISTURBANCE ARE SHOWN. WORKS TO BE CONFINED TO WITHIN THESE AREAS. CLEARING FOR WORKS TO BE LIMITED TO WITHIN 5 METRES FROM THE EDGE OF ANY ESSENTIAL CONSTRUCTION ACTIVITY. (REFER PAGES 34 & 35: MINIMISE SOIL DISTURBANCE).
3. ALL EXCAVATION IS TO COMPLY WITH " BEST PRACTICE EROSION & SEDIMENT CONTROL BOOKLET 2022 - "EROSION AND SEDIMENT CONTROL'." AVAILABLE AT www.derwentestuary.org.au/publications
4. EXCAVATION TO BE CARRIED OUT OVER A MINIMUM TIME PERIOD. TOP SOIL TO BE STOCKPILED SEPARATELY AND SPREAD OVER BACKFILLED AREAS. SOIL TO BE STOCKPILED IN A NARROW CORRIDOR ON THE UPSTREAM SIDE OF ALL EXCAVATION. TEMPORARY CATCH DRAINS TO BE CONSTRUCTED ON THE UPSTREAM SIDE OF STOCKPILES AND EXCAVATED AREAS, DIRECTING RUNOFF TO EXISTING STORMWATER SYSTEM. (REFER PAGE 47: PROTECT STOCKPILES AND SERVICE TRENCHES).
5. SEDIMENT FENCES & FIBRE ROLLS TO BE USED ON THE DOWNSTREAM SIDE OF ALL STOCKPILES AND TO EXTENTS SHOWN ON THIS DRAWING. PREVENT ENTRY OF SILT TO EXISTING STORMWATER INLETS AND WATER COURSES DURING CONSTRUCTION. (REFER PAGE 67: SEDIMENT FENCES).
6. EVERY EFFORT TO BE MADE TO MINIMIZE SPREADING SEDIMENT ON TO SEALED AREAS WHEN VEHICLES LEAVE THE SITE, INCLUDING THE WASHING DOWN OF TYRES. (REFER PAGE 59: WHEEL WASH OR RUMBLE GRID).
7. NO TOPSOIL SHALL BE REMOVED FROM LAND OUTSIDE THE AREAS OF GROUND DISTURBANCE SHOWN.
8. ALL AREAS OF GROUND DISTURBANCE TO BE RE-VEGETATED
9. ALL STOCKPILES TO BE POSITIONED CLEAR OF WATER COURSES AND TO ENSURE THAT NO SILT RUNOFF CAN ENTER WATER COURSES.
10. DURING WINDY CONDITIONS AND/OR HOT WEATHER, WET DOWN EXPOSED SOIL SLIGHTLY & REGULARLY TO PREVENT DUST NUISANCE. (REFER PAGE 53: CONTROL DUST AND LITTER).
11. PRIOR TO PRACTICAL COMPLETION OF EACH APPROVED CONSTRUCTION STAGE, ALL DISTRIBUTED SURFACES ON THE SITE, EXCEPT THE AREAS SET ASIDE FOR ROADWAYS & FOOTPATHS, MUST BE DRESSED TO A MINIMUM OF 50mm WITH:
    - APPROVED LOCAL STOCKPILED TOPSOIL
    - APPROVED WEED FREE IMPORTED TOPSOIL
    - RE-VEGETATED WITH LOCAL PLANTS & GRASSES AND STABILISED.

WEED MANAGEMENT NOTES:

1. ALL AREAS WITHIN COMPLETED STAGES WHERE TOPSOIL HAS BEEN SPREAD SHOULD BE MONITORED FOR SERRATED TUSSOCK AND TREATED AS REQUIRED.
2. EQUIPMENT MOVEMENT SHOULD BE RESTRICTED TO THE DEVELOPMENT FOOTPRINT. NOTE: TRACKED EQUIPMENT MOVING ACROSS WEED INFESTED COUNCIL LAND HAS HIGH RISK OF PICKING UP WEED SEED AND/OR SPREADING TO COUNCIL LAND.
3. CONTINUE TO ENSURE WASH DOWN LEDGER IS SUBMITTED TO COUNCIL TO DEMONSTRATE WHEN EQUIPMENT IS CLEANED PRIOR TO MOVING OFF SITE.
4. SEDIMENT TRAP SHOULD BE MONITORED FOR EMERGING WEEDS AND SEDIMENT DEEP BURIED AT END OF EACH STAGE PARTICULARLY IF EQUIPMENT HAS BEEN MOVED OFF SITE AND WASH DOWN WILL NOT BE USED IN MID TO LONG TERM.
5. TRUCKS AND EQUIPMENT SHOULD BE CLEAN PRIOR TO COMING TO SITE IF THEY ARE TO LEAVE THE HARDENED SURFACE WHILE ON SITE. ANY VEHICLES/EQUIPMENT THAT LEAVE FORMED ROADS MUST BE CLEANED PRIOR TO LEAVING THE SITE AND A RECORD KEPT IN THE WASH DOWN LEDGER. HYGIENE MEASURES PRIOR TO LEAVING & ENTERING THE SITE TO COMPLY WITH THE TASMANIAN WASHDOWN GUIDELINES FOR WEED & DISEASE CONTROL.
6. THE WASH DOWN LEDGER DOCUMENTING LICENCE PLATE NUMBERS OF ALL VEHICLES, TRUCKS AND EQUIPMENT SHOULD BE SUBMITTED TO COUNCIL TWICE PER YEAR (AS A MINIMUM) TO DEMONSTRATE WHEN EQUIPMENT IS CLEANED/LEAVING THE SITE. WASH DOWN LEDGER MUST BE REGULARLY SUBMITTED TO COUNCIL.
7. CONFINE DISTURBANCE OF TOPSOIL AND EARTHWORK TO A MINIMUM CORRIDOR.
8. STRIP ROAD CORRIDORS FIRST, THEN CONFINE MOVEMENTS OF WORKS VEHICLES TO THE FUTURE ROAD CORRIDORS, WHERE POSSIBLE.
9. ESTABLISH A STABILISED ENTRANCE AND WASHDOWN AREA JUST INSIDE THE WORKS BOUNDARY, IN ACCORDANCE WITH DRAWING.
10. ALL VEHICLES LEAVING THE SITE TO BE CLEANED AND WASHED DOWN PRIOR TO EXIT.
11. PRIVATE VEHICLES SHOULD NOT BE PARKED WITHIN THE SITE.
12. STOCKPILE AREAS TO BE PLACED CLOSE TO THE SITE ENTRANCE WHERE POSSIBLE.
13. WARNING SIGNAGE IS TO BE PLACED AT THE VEHICLE WASHDOWN BAY STATING THE NEED FOR ALL VEHICLES TO WASHDOWN PRIOR TO LEAVING THE SITE.
14. ANY IMPORTED FILL MATERIALS MUST BE SOURCED FROM QUARRIES ABLE TO PROVIDE DOCUMENTATION AS TO THE WEEDS PRESENT ON THE SOURCE SITE IN ORDER TO MINIMISE THE INTRODUCTION OF NEW WEEDS AND PATHOGENS TO THE AREA.

STANDARDS:

1. REFER TO AS3500.1 FOR PRIVATE WATER PLUMBING
2. REFER TO AS3500.2 FOR PRIVATE SEWER PLUMBING
3. REFER TO AS3500.3 FOR PRIVATE STORMWATER DRAINAGE PLUMBING

REV	AMENDMENTS	DRAWN	DATE	APPR.
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DRAWING STATUS: FOR PLANNING APPROVAL

COORDINATE/ DATUM: PLANAR

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DESIGNED:	SC	REVIEWED:	MW
DRAWN:	SC	REVIEWED:	MW
JOB MANAGER:	MARK WESTERBERG		
ISSUED DATE:	27/06/2025		

CLIENT: DDM CIVIL - SUPAGAS
PROJECT DESCRIPTION: PAVEMENT LEVELS AND DRAINAGE
ADDRESS: 28 CROOKED BILLET DRIVE, BRIGHTON
DRAWING TITLE: GENERAL NOTES
.

PDA
SURVEYORS, ENGINEERS & PLANNERS
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Also at: Kingston, Launceston & Burnie
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	1: NTS		(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
54479HC	C	002	P2

REV	AMENDMENTS	DRAWN	DATE	APPR.
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JOB MANAGER:	MARK WESTERBERG		
ISSUED DATE:	27/06/2025		

CLIENT:

PROJECT DESCRIPTION: DDM CIVIL - SUPAGAS
PAVEMENT LEVELS AND DRAINAGE
28 CROOKED BILLET DRIVE, BRIGHTON

ADDRESS:

DRAWING TITLE: OVERALL SITE PLAN
.

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REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	1: 500		(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
54479HC	C	100	P2

DATE/TIME: Friday, 27 June 2025 1:51:50 PM PLOTTED: STEVE CHAFFEY FILE LOCATION: S:\54479HC - DDM CIVIL - SUPA GAS, BRIDGEWATER\4-ENG\1-CAD\54479HC ENG.DWG

N

LEGEND:

- NEW STORMWATER
- S — NEW SEWER
- W — NEW WATER
- (E)SW — EX. STORMWATER
- (E)S — EX. SEWER
- (E)W — EX. WATER
- V — A — OVERHEAD ELECTRICAL
- / — / — EX. FENCE
- SRM — EX.SEWER RISING MAIN
- GAS — GAS — EX. GAS MAIN
- T — EX. TELSTRA
- NEW CONCRETE PAVEMENT

NOTE: ALL NEW AND EXISTING STORMWATER PITS TO BE FITTED WITH 200 MICRON MESH SCREENS FOR GROSS POLLUTANT TRAPPING.

PROPERTY BOUNDARY

(E)S

DN225 PP SN8 RRJ

SW1/7
600GP
CLASS D

SW1/8
600GP
CLASS D

SW1/6
600GP
CLASS D

SW1/5
600GP
CLASS D

INSTALL "ACO POWERDRAIN S300K" 300 WIDE CLASS D DRAINAGE GRATE WITH 0.5% INVERT SLOPE.

7,980 EXS.

2.800

5.400

EXISTING CONCRETE APRON

5 x EXISTING PARKING BAYS

NEW CONCRETE PAVEMENT, REFER TO STRUCTURAL DRAWINGS FOR DETAILS

EXISTING ROOF OUTLINE

EXISTING DECK OUTLINE

EXISTING CONCRETE PAVEMENT

EXISTING BUILDING OUTINE

EXISTING BUILDING OUTINE

EXISTING LPG TANKS TO BE REMOVED

EXS. 600GP TO REMAIN

51.61 EXS

51.93 EXS

51.94 EXS

51.97 EXS

51.90

5000L

PROVIDE 5000L TANK TO COLLECT ROOF WATER, USE 35mm ORIFICE OUTLET AND CONNECT INTO EXS. SW SYSTEM AND CONNECT OVERFLOW TO EXISTING PIPE SYSTEM

4000L

PROVIDE 4000L TANK TO COLLECT ROOF WATER, USE 35mm ORIFICE OUTLET AND CONNECT INTO EXS. SW SYSTEM AND CONNECT OVERFLOW TO EXISTING PIPE SYSTEM

REV	AMENDMENTS	DRAWN	DATE	APPR.
-	----	--	--/--/----	--
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-	----	--	--/--/----	--
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DRAWING STATUS: FOR PLANNING APPROVAL

COORDINATE/ DATUM: PLANAR

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DESIGNED:	REVIEWED:
SC	MW
DRAWN:	REVIEWED:
SC	MW

JOB MANAGER: MARK WESTERBERG

ISSUED DATE: 27/06/2025

CLIENT:

PROJECT DESCRIPTION: DDM CIVIL - SUPAGAS
PAVEMENT LEVELS AND DRAINAGE

ADDRESS: 28 CROOKED BILLET DRIVE, BRIGHTON

DRAWING TITLE: SITE PLAN 1
.

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www.pda.com.au
Also at: Kingston, Launceston & Burnie
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	1: 200		(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
54479HC	C	200	P2

DATE/TIME: Friday, 27 June 2025 1:51:50 PM PLOTTED: STEVE CHAFFEY FILE LOCATION: S:\54479HC - DDM CIVIL - SUPA GAS, BRIDGEWATER\4-ENG\1-CAD\54479HC ENG.DWG

N

LEGEND:

- NEW STORMWATER
- S — NEW SEWER
- W — NEW WATER
- (E)SW — EX. STORMWATER
- (E)S — EX. SEWER
- (E)W — EX. WATER
- V — Λ — OVERHEAD ELECTRICAL
- / — / — EX. FENCE
- SRM — EX.SEWER RISING MAIN
- GAS — GAS — EX. GAS MAIN
- T — EX. TELSTRA
- NEW CONCRETE PAVEMENT

NOTE: ALL NEW AND EXISTING STORMWATER PITS TO BE FITTED WITH 200 MICRON MESH SCREENS FOR GROSS POLLUTANT TRAPPING.

PROPERTY BOUNDARY

PROPOSED LPG UNDERGROUND VESSEL

(E)S

(E)SW

(E)W

SW1/1 NEW HEADWALL

EXISTING SW DISCHARGE POINT

DN225 PP SN8 RRJ

NEW DISCHARGE PIPE IN SAME LOCATION AS CURRENT PIPE BUT AT DIFFERENT LEVELS

SW1/3-1/2 SW TREATMENT UNIT TO REMOVE 90%GP, 80%SS, 45%Ph & 45%N
USE OCEAN PROTECT JELLYFISH OR ATLAN EQUIVALENT

SW1/4
DN1050 MH
CLASS D LID

LOCATE EXISTING SW JUNCTION AND PROVIDE MH OVER

PROPERTY BOUNDARY

51.78

51.61 EXS

EXS. 600GP TO REMAIN

SW1/5
600GP
CLASS D
51.69

-1.0%

-1.0%

-1.6%

-2.5%

-2.0%

NEW CONCRETE PAVEMENT, REFER TO STRUCTURAL DRAWINGS FOR DETAILS

EXISTING DECK OUTLINE

EXISTING LPG TANKS TO BE REMOVED

51.93 EXS

51.85

51.97 EXS

EXISTING BUILDING OUTINE

-	----	--	--/--/----	--	DRAWING STATUS: FOR PLANNING APPROVAL	DESIGNED: SC	REVIEWED: MW
-	----	--	--/--/----	--	COORDINATE/ DATUM: PLANAR	DRAWN: SC	REVIEWED: MW
-	----	--	--/--/----	--		JOB MANAGER: MARK WESTERBERG	
-	----	--	--/--/----	--		ISSUED DATE: 27/06/2025	
-	----	--	--/--/----	--			
REV	AMENDMENTS	DRAWN	DATE	APPR.	THIS SHEET MAY BE PRINTED USING COLOUR AND MAY BE INCOMPLETE IF COPIED		

CLIENT:
PROJECT DESCRIPTION: DDM CIVIL - SUPAGAS
PAVEMENT LEVELS AND DRAINAGE
ADDRESS: 28 CROOKED BILLET DRIVE, BRIGHTON
DRAWING TITLE: SITE PLAN 2
.

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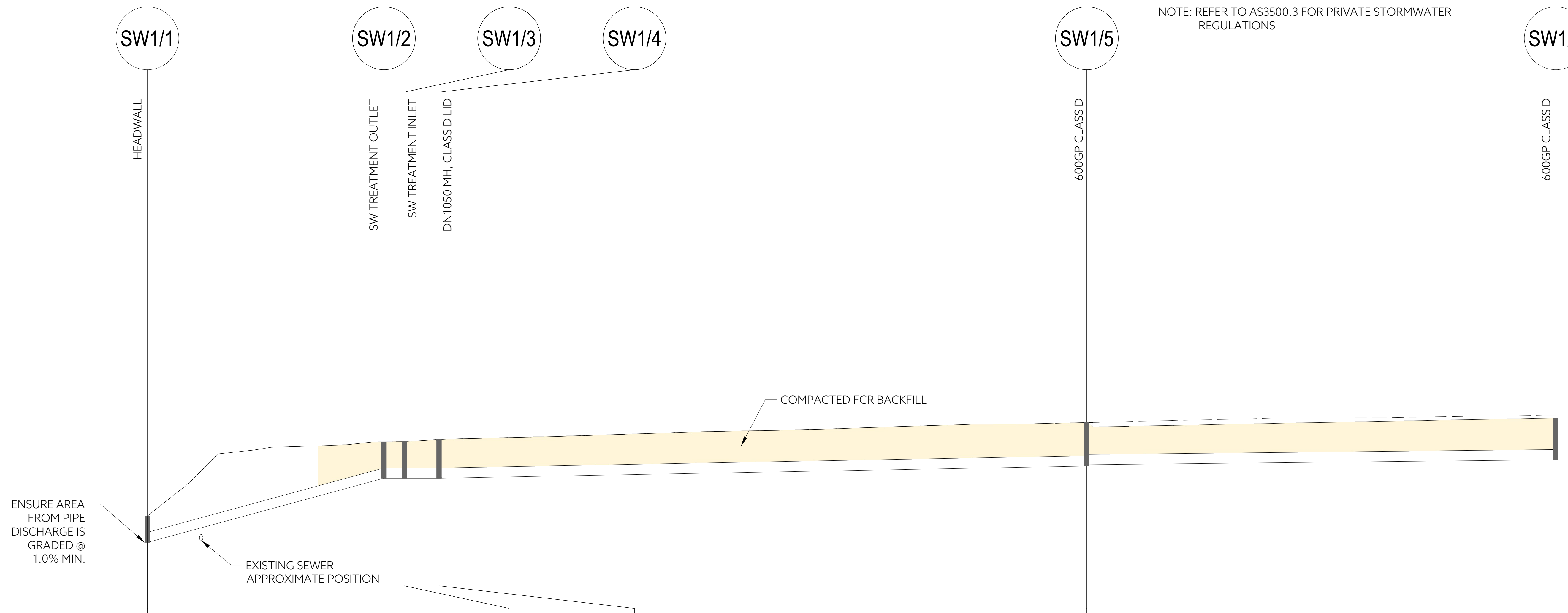
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	1: 200		(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
54479HC	C	201	P2

DATE/TIME: Friday, 27 June 2025 1:51:51 PM PLOTTED: STEVE CHAFFEY FILE LOCATION: S:\54479HC - DDM CIVIL - SUPA GAS, BRIDGEWATER\4-ENG\1-CAD\54479HC ENG.DWG

NOTE: REFER TO AS3500.3 FOR PRIVATE STORMWATER REGULATIONS



Segment	PIPE DETAILS	GRADE	Length
SW1/1 – SW1/2	DN225 PP SN8	13.60%	10.538
SW1/2 – SW1/3	DN225 PP SN8	0.00%	0.909
SW1/3 – SW1/4	DN225 PP SN8	0.00%	1.550
SW1/4 – SW1/5	DN225 PP SN8	0.94%	28.867
SW1/5 – SW1/6	DN225 PP SN8	0.53%	20.890

DATUM RL 46.0

	SW1/1	SW1/2	SW1/3	SW1/4	SW1/5	SW1/6
COVER	0.360	0.579	0.588	0.635	0.741 / 0.711	0.704
DEPTH TO INVERT	0.586	0.805	0.814	0.861	0.967 / 0.937	0.930
INVERT LEVEL	49.117	50.550	50.550	50.550	50.820 / 50.850	50.960
FINISHED SURFACE	49.703	51.355	51.364	51.411	51.787	51.890
EXISTING SURFACE	49.703	51.355	51.364	51.411	51.787	51.954
CHAINAGE	0.000	10.538	11.447	12.997	41.864	62.754

LONG SECTION - LINE SW1

SCALE: HORIZ 1:200 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
-	----	--	--/--/----	--
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DRAWING STATUS: FOR PLANNING APPROVAL

COORDINATE/ DATUM: PLANAR

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DESIGNED: SC | REVIEWED: MW
DRAWN: SC | REVIEWED: MW
JOB MANAGER: MARK WESTERBERG
ISSUED DATE: 27/06/2025

CLIENT: DDM CIVIL - SUPAGAS
PROJECT DESCRIPTION: PAVEMENT LEVELS AND DRAINAGE
ADDRESS: 28 CROOKED BILLET DRIVE, BRIGHTON
DRAWING TITLE: STORMWATER LONG SECTIONS 1
.

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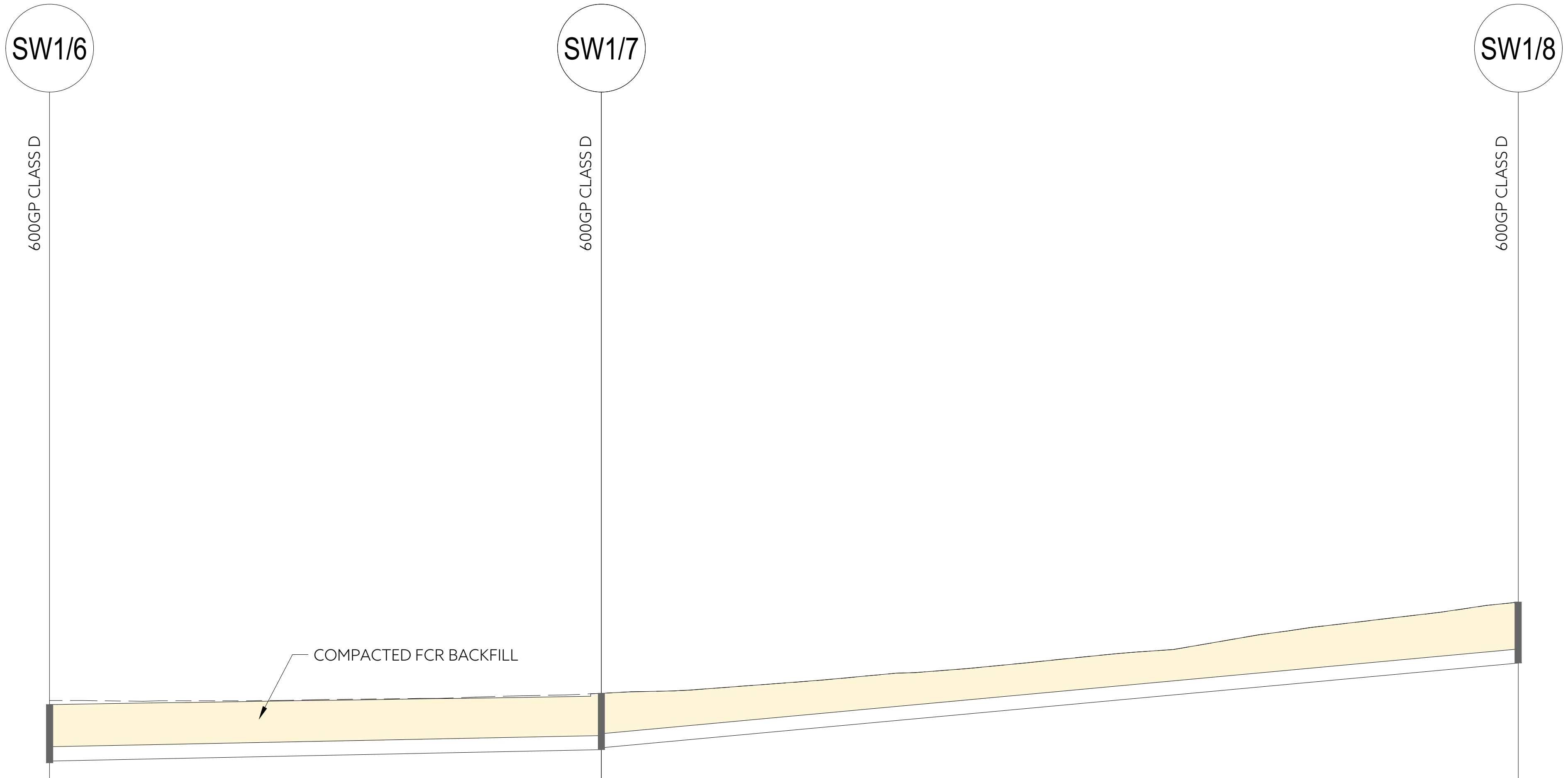
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE	PAPER
------	1: 200	(A3)

JOB NUMBER	DISCIPLINE	SHEET	REVISION
54479HC	C	400	P2

DATE/TIME: Friday, 27 June 2025 1:51:51 PM PLOTTED: STEVE CHAFFEY FILE LOCATION: S:\54479HC - DDM CIVIL - SUPA GAS, BRIDGEWATER\4-ENG\1-CAD\54479HC ENG.DWG

NOTE: REFER TO AS3500.3 FOR PRIVATE STORMWATER REGULATIONS



	SW1/6	SW1/7		SW1/8
PIPE DETAILS	DN225 PP SN8		DN225 PP SN8	
GRADE	1.02%		4.62%	
DATUM RL 48.0				
COVER	0.674	0.674	0.644	0.749
DEPTH TO INVERT	0.900	0.900	0.870	0.975
INVERT LEVEL	50.990	51.170	51.200	52.550
FINISHED SURFACE	51.890	52.070		53.525
EXISTING SURFACE	51.954	52.070		53.525
CHAINAGE	62.754	80.344		109.577
	17.590		29.233	

LONG SECTION - LINE SW1

SCALE: HORIZ 1:200 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
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DRAWING STATUS: FOR PLANNING APPROVAL

COORDINATE/ DATUM: PLANAR

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DESIGNED: SC	REVIEWED: MW
DRAWN: SC	REVIEWED: MW
JOB MANAGER: MARK WESTERBERG	
ISSUED DATE: 27/06/2025	

CLIENT: DDM CIVIL - SUPAGAS
PROJECT DESCRIPTION: PAVEMENT LEVELS AND DRAINAGE
ADDRESS: 28 CROOKED BILLET DRIVE, BRIGHTON
DRAWING TITLE: STORMWATER LONG SECTIONS 2
.

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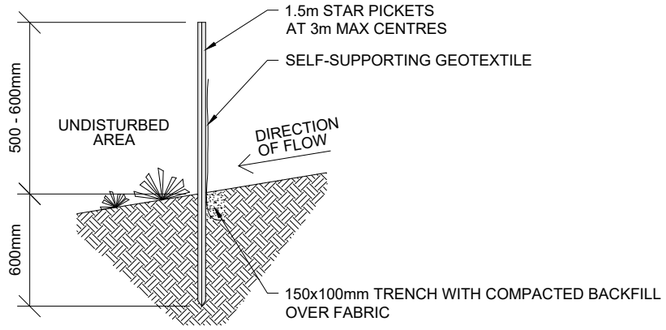
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	1: 200		(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
54479HC	C	401	P2

DATE/TIME: Friday, 27 June 2025 1:51:51 PM PLOTTED: STEVE CHAFFEY FILE LOCATION: S:\54479HC - DDM CIVIL - SUPA GAS, BRIDGEWATER\4-ENG\1-CAD\54479HC ENG.DWG

LEGEND:

- AREAS OF GROUND DISTURBANCE
- SEDIMENT FENCE
- PROPOSED STOCKPILE AREA



SEDIMENT FENCE DETAIL

NOT TO SCALE

ENSURE MUD AND DIRT IS CLEANED OF EXISTING ROAD AT END OF EACH WORKING DAY.
PLACE FILTER SOCKS AT DOWNSTREAM SW PIT ENTRIES

-	----	--	--/--/----	--	
-	----	--	--/--/----	--	
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REV	AMENDMENTS	DRAWN	DATE	APPR.	

DRAWING STATUS: FOR PLANNING APPROVAL

COORDINATE/ DATUM: PLANAR

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DESIGNED: SC	REVIEWED: MW
DRAWN: SC	REVIEWED: MW
JOB MANAGER: MARK WESTERBERG	
ISSUED DATE: 27/06/2025	

CLIENT:

PROJECT DESCRIPTION: DDM CIVIL - SUPAGAS

ADDRESS: PAVEMENT LEVELS AND DRAINAGE
28 CROOKED BILLET DRIVE, BRIGHTON

DRAWING TITLE: SOIL AND WATER MANAGEMENT PLAN
.

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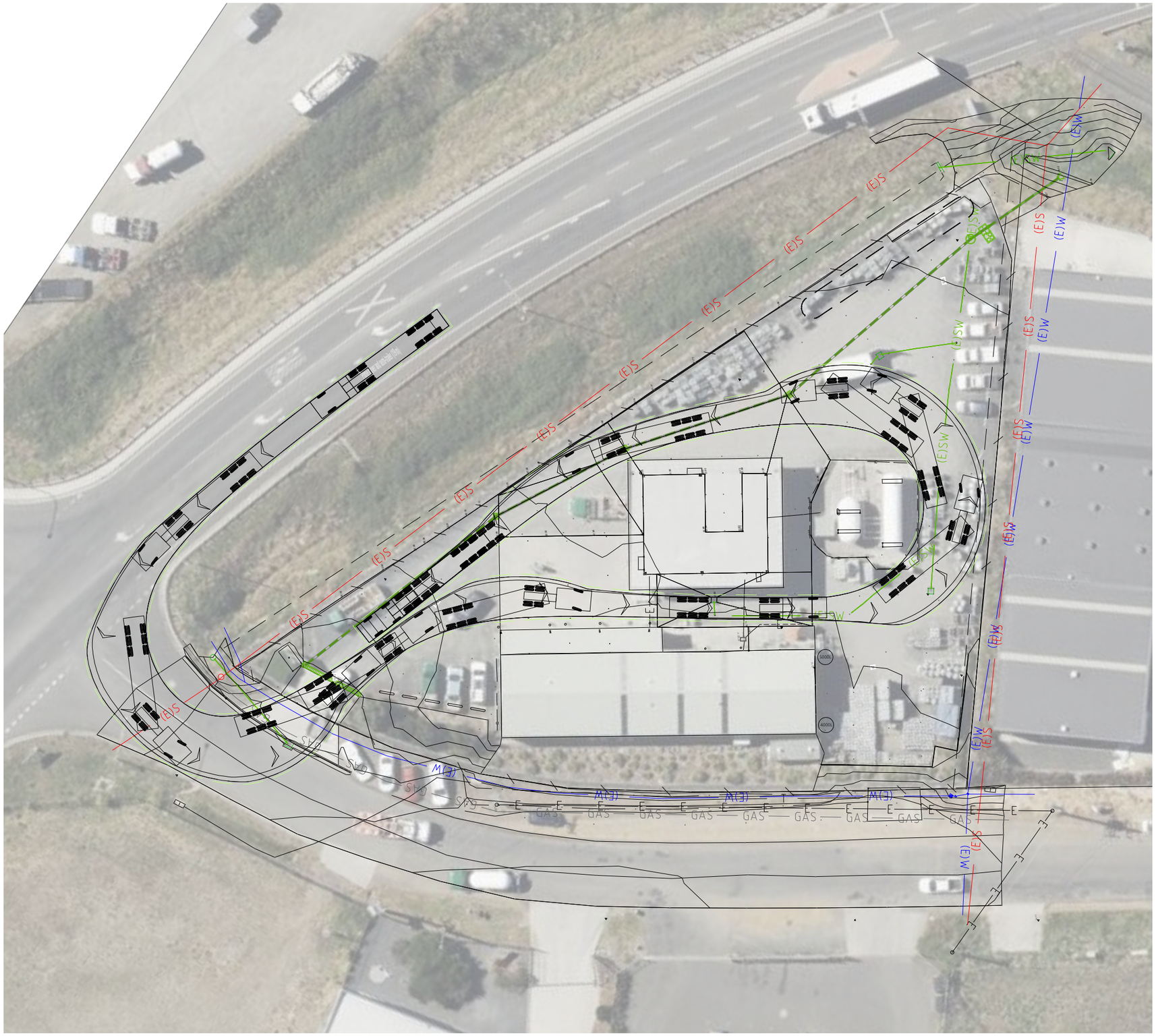
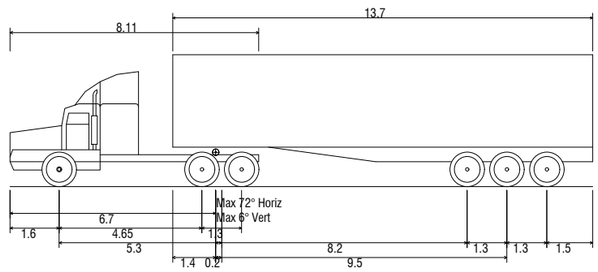
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	1: 500		(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
54479HC	C	900	P2

DATE/TIME: Friday, 27 June 2025 1:51:52 PM PLOTTED: STEVE CHAFFEY FILE LOCATION: S:\54479HC - DDM CIVIL - SUPA GAS, BRIDGEWATER\4-ENG\1-CAD\54479HC ENG.DWG





Prime mover and semi-trailer (19 m)

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

DESIGN VEHICLE PROFILE

REV	AMENDMENTS	DRAWN	DATE	APPR.
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DRAWING STATUS: FOR PLANNING APPROVAL

COORDINATE/ DATUM: PLANAR

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DESIGNED:	SC	REVIEWED:	MW
DRAWN:	SC	REVIEWED:	MW
JOB MANAGER:	MARK WESTERBERG		
ISSUED DATE:	27/06/2025		

CLIENT:
PROJECT DESCRIPTION: DDM CIVIL - SUPAGAS
PAVEMENT LEVELS AND DRAINAGE
ADDRESS: 28 CROOKED BILLET DRIVE, BRIGHTON
DRAWING TITLE: VEHICLE TURNING PATHS
.

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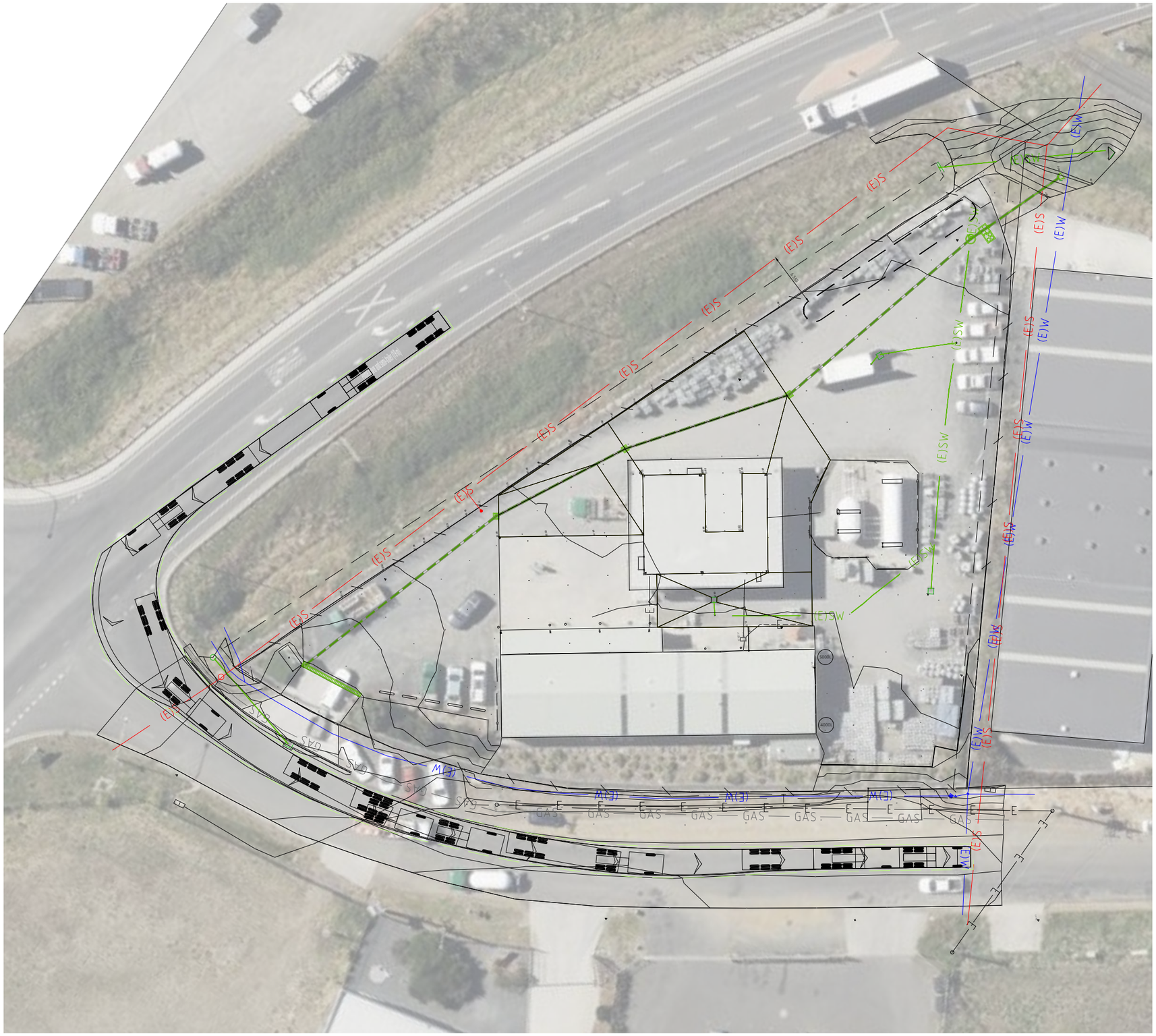
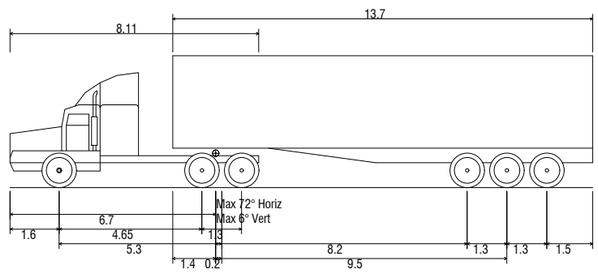
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	1: 500		(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
54479HC	C	1000	P2

DATE/TIME: Friday, 27 June 2025 1:51:53 PM PLOTTED: STEVE CHAFFEY FILE LOCATION: S:\54479HC - DDM CIVIL - SUPA GAS, BRIDGEWATER\4-ENG\1-CAD\54479HC ENG.DWG





Prime mover and semi-trailer (19 m)

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

DESIGN VEHICLE PROFILE

REV	AMENDMENTS	DRAWN	DATE	APPR.
-	----	--	--/--/----	--
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DRAWING STATUS: FOR PLANNING APPROVAL

COORDINATE/ DATUM: PLANAR

DESIGNED:	SC	REVIEWED:	MW
DRAWN:	SC	REVIEWED:	MW
JOB MANAGER:	MARK WESTERBERG		
ISSUED DATE:	30/07/2025		

CLIENT:
PROJECT DESCRIPTION: DDM CIVIL - SUPAGAS PAVEMENT LEVELS AND DRAINAGE
ADDRESS: 28 CROOKED BILLET DRIVE, BRIGHTON
DRAWING TITLE: VEHICLE TURNING PATHS-2
.

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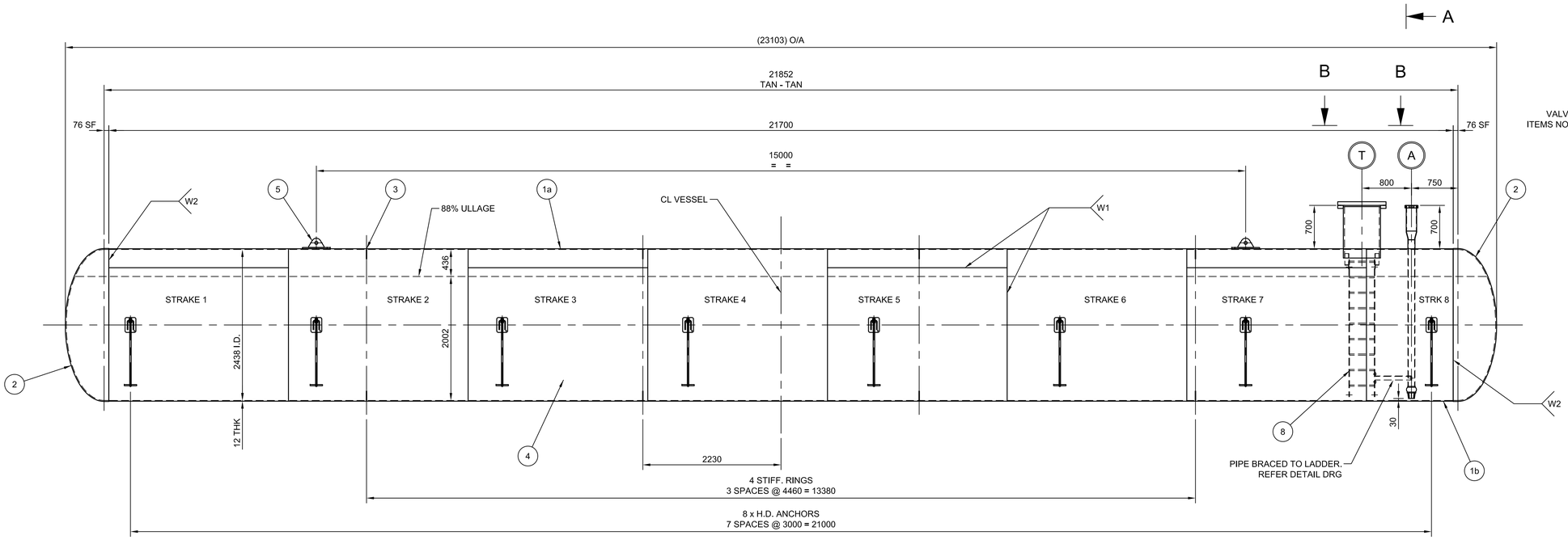
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	1: 500		(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
54479HC	C	1001	P4

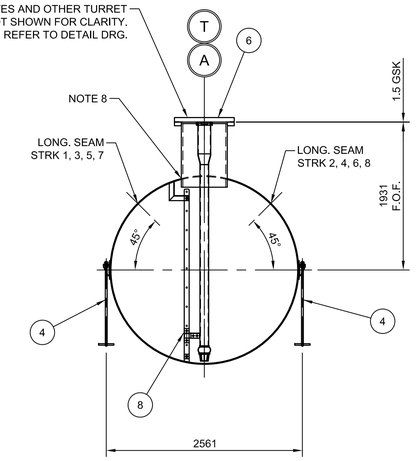
DATE/TIME: Thursday, 31 July 2025 9:07:58 AM PLOTTED: STEVE CHAFFEY FILE LOCATION: S:\54479HC - DDM CIVIL - SUPA GAS, BRIDGEWATER\4-ENG\1-CAD\54479HC ENG.DWG

NOZZLE DATA		
TAG	SIZE	SERVICE
A	DN80	LIQUID WITHDRAWAL
B	DN50	PRESSURE RELIEF
C	DN50	BYPASS RETURN
D	DN50	DRAIN
E	DN80	LIQUID WITHDRAWAL
F	60 I.D.	LEVEL TRANSMITTER
G	DN80	LIQUID FILL
H	DN50	VAPOUR
I	DN8	ULLAGE
T	560 ID	TURRET

DESIGN DATA		
DESIGNED & BUILT TO		AS1210 CLASS 1H
CONTENTS		LPG
DESIGN PRESSURE	INTERNAL	1550 kPa.g
	EXTERNAL	NIL
DESIGN TEMP (°C)		0°C TO 50°C
S.G. OF CONTENTS		0.55 MAX.
MASS	FABRICATED	19,000 kg
	HYDRO.	124,965 kg
P.W.H.T.		NIL
N.D.T		100%
JOINT EFFICIENCY		100 % CIRC. & LONG.
HYDRO. TEST PRESSURE		2220 kPa.g
CORR. ALLOW		1.5mm (EXTERNAL)
CAPACITY	WATER	105,800 L
	PRODUCT 88% FILL	93,104 L
SURFACE AREA		182.5 m²



ELEVATION
SCALE 1:40



SECTION A
SCALE 1:40

REFERENCE DOCS / DRGS:

LAP-3562-00	DESIGN REPORT
LAP-3562-02	LIFTING LUG, STIFFENER RING & H.D. DETAILS
LAP-3562-03	TURRET & NOZZLE DETAILS, SHT 1
LAP-3562-04	TURRET & NOZZLE DETAILS, SHT 2
LAP-3562-05	LADDER DETAILS
LAP-3562-06	NAMEPLATE DETAILS

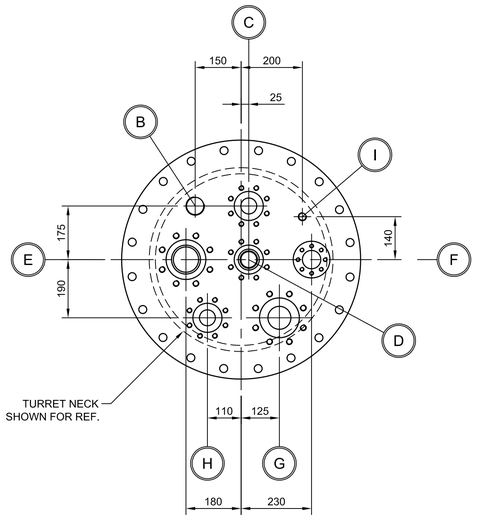
GENERAL NOTES:

1. FLANGE BOLT HOLES TO STRADDLE NATURAL CENTERLINES UNO.
2. ALL CIRC. AND LONG. WELDS TO BE FULL PENETRATION BUTT WELDS.
3. REMOVE ALL SHARP EDGES & SPLATTER.
4. ALL REINF. PADS TO BE DRILLED WITH Ø3 TELL-TALE HOLES AT THE LOWEST POINT. SILICONE SEAL HOLES PRIOR TO PAINTING.
5. ALL FLANGE FACES TO BE PROTECTED DURING FABRICATION AND TRANSIT.
6. STANDARDS
   - 6.1. WELDING QUALIFICATIONS PER AS3992.
   - 6.2. DESIGN & FABRICATE PER AS1210 & AS4458.
   - 6.3. EXAMINATION & TESTING PER AS4037.
7. VESSEL HAS BEEN DESIGNED FOR INSTALLATION AS AN UNDERGROUND STORAGE VESSEL:
   - 7.1. VESSEL SHALL BE SITED ON AN APPROPRIATELY DESIGNED BED TO ENSURE NEGLIGIBLE SETTLEMENT ACROSS FULL LENGTH OF VESSEL.
   - 7.2. HOLD DOWN LUG AND CONCRETE ANCHOR REFER TO DRG LAP-3562-02. CONCRETE EMBEDMENT TO BE CONFIRMED BY OTHERS.
   - 7.3. VESSEL SHALL BE BACK FILLED TO A HEIGHT NOT GREATER THAN 650MM ABOVE TOP DEAD CENTRE OF VESSEL.
   - 7.4. 500MM MIN. COVER REQUIRED ABOVE TOP DEAD CENTRE OF VESSEL TO PREVENT UPLIFT IF HD ANCHOR RODS ARE CORRODED (1.5MM CORROSION ALLOWANCE). NO MIN. COVER REQ'D IF ANCHOR ROD AS BUILT CONDITION. (2)
   - 7.5. VESSEL SHALL BE PROTECTED BY AN APPROPRIATELY DESIGNED CATHODIC PROTECTION SYSTEM.
   - 7.6. ALL PIPE TO BE SCH40 MIN. IF WELDED OR SCH80 IF THREADED
8. 100% U.T. + 100% M.P.I. OF THE TURRET-TO-SHELL NOZZLE WELD AT STRAKES 7 AND 8

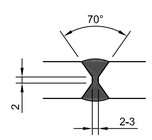
FINISH & STORAGE:

TANK TO BE ABRASIVE BLASTED TO AS1627 CLASS 2.5 AND PAINTED FOR UNDERGROUND SERVICE WITH 2 COATS OF JOTUN BALLOXY (OR EQUIVALENT) TO 300 MICRONS DF. SPARK TESTING PER AS3894.1 OVER WHOLE SURFACE OF VESSEL IS REQUIRED.

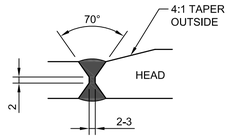
TANK TO BE FREE OF MOISTURE, LOOSE SCALE, GRIT OR OIL. PURGE TANK WITH NITROGEN, PRESSURIZE AND SEAL AT A REMAINING PRESSURE OF 0.2 BAR AND PREPARE FOR TRANSPORTATION.



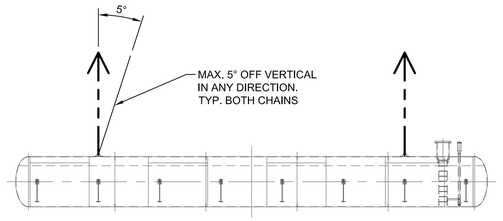
VIEW B
TURRET COVER NOZZLES
SCALE 1:10



WELD W1
TYP. CIRC & LONG WELD
SUB-ARC BOTH SIDES
SCALE 1:4



WELD W2
SHELL-HEAD WELD
SUB-ARC BOTH SIDES
SCALE 1:4



LIFTING DIAGRAM
MAX. LIFTED MASS = 20,000 kg
SCALE 1:150

ITEM	DESCRIPTION	QTY	DIMENSIONS	MATERIAL	COMMENTS
9	NOZZLE A	1	SEE DRG LAP-3562-04		
8	LADDER ASS'Y	1	SEE DRG LAP-3562-05		
7	NAMEPLATE	1	SEE DRG LAP-3562-06		
6	TURRET ASS'Y	1	SEE DRG LAP-3562-03		
5	LIFTING LUG	2	SEE DRG LAP-3562-02		
4	H.D. LUG	1	SEE DRG LAP-3562-02		
3	STIFFENER RING	4	SEE DRG LAP-3562-02		
2	HEAD	2	2:1 S.E. - 2438 I.D. x 16 NOM. THK. (14.4mm M.A.F.) x 76 S.F.	AS1548-PT460NR	-
1b	SHELL	1	2438 I.D. x 12 THK. x 1400 LG.	AS1548-PT460NR	-
1a	SHELL	7	2438 I.D. x 12 THK. x 2900 LG.	AS1548-PT460NR	-

REV	DETAILS	DRN	CHK	APP	DATE
2	GENERAL NOTE 7.4 ADDED	TOD	QG	QG	20/04/2017
1	NOZZLE F MOVED 20mm, NOTE 8, NOZ A BRACE	TOD	QG	QG	8/02/2017
0	ISSUED FOR CONSTRUCTION	TOD	QG	QG	1/02/2017

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GENERAL ARRANGEMENT

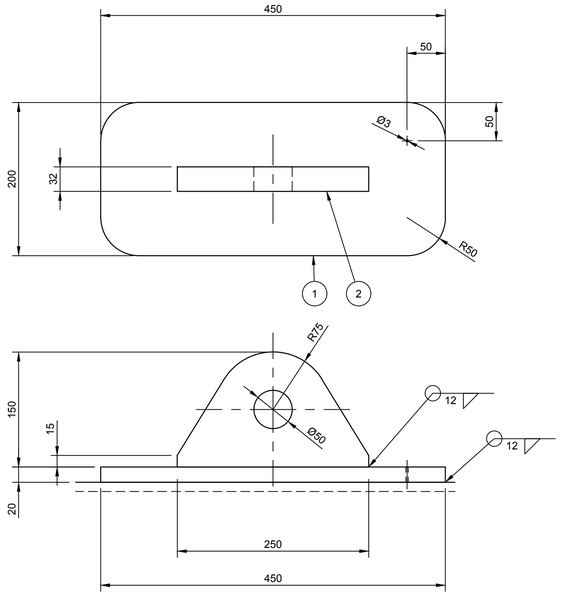
SUPAGAS

LPG UNDERGROUND VESSEL

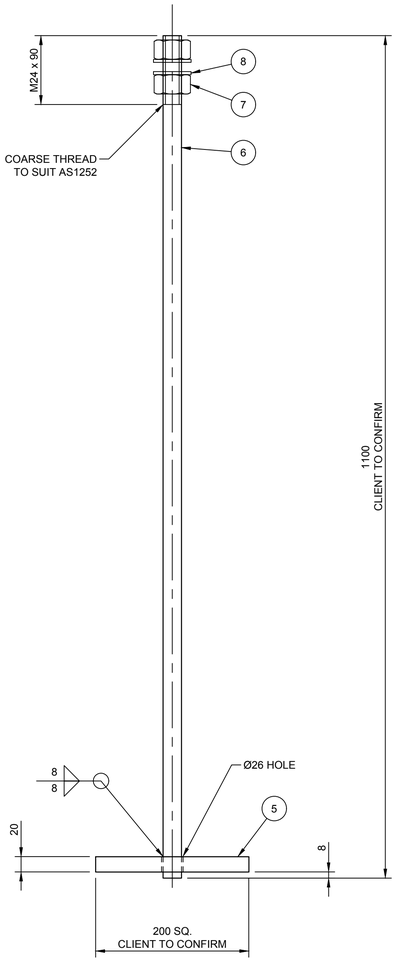
T-001

A1	CAD DRAWING - DO NOT ALTER MANUALLY DIMENSIONS SHOWN IN MILLIMETERS DO NOT SCALE	FEC JOB No. 160519	CAD FILE No: LAP-3562	
SCALE 1:40 UNO	DRN T. O'DEMPSEY	RPEQ 12913 Q. GRYL	LAP DRG No: LAP-3562-01	REV 2

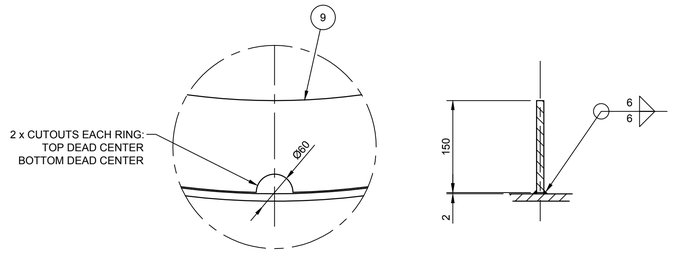
20/04/2017 2:37:55 PM



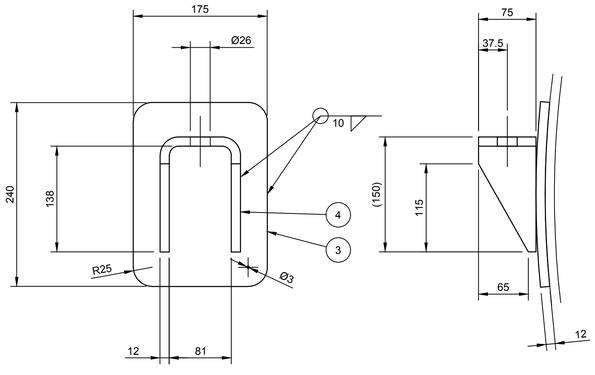
LIFTING LUG
2 REQ'D
SCALE 1:4



H.D. ROD / ANCHOR
16 REQ'D
SCALE 1:4



TYP STIFFENER RING
SCALE 1:5



H.D. LUG
16 REQ'D
SCALE 1:4

ITEM	DESCRIPTION	QTY	DIMENSIONS	MATERIAL	COMMENTS
9	STIFF. RING	4	12 PL, 2434 O.D. x 2134 I.D.	AS1548-PT460NR	
8	WASHER	32	M24 FLAT WASHER	AS1252	ZINC. PL.
7	NUT	32	M24 HEX NUT Gr 8.8	AS1252	ZINC. PL.
6	ROD	16	Ø24 RD BAR	AS3679.1-300	
5	ANCHOR PLATE	16	20 PL, 200 x 200	AS3678-250	
4	H.D. LUG	16	12 PL, 366 x 75 (FLAT PATTERN)	AS1548-PT460NR	
3	REINF. PAD	16	12 PL, 240 x 175	AS1548-PT460NR	ROLL TO VESSEL O.D.
2	LIFTING LUG	2	32 PL, 250 x 150	AS3678-250	
1	REINF. PAD	2	20 PL, 450 x 200	AS1548-PT460NR or AS3678-250	ROLL TO VESSEL O.D.

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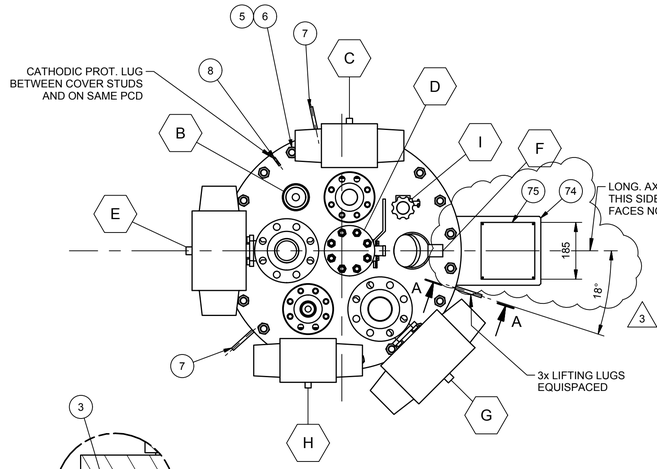
LIFTING LUG, STIFFENER RING & H.D. DETAILS
SUPAGAS
LPG UNDERGROUND VESSEL
T-001

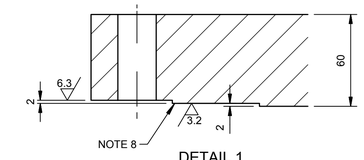
REV	DETAILS	DRN	CHK	APP	DATE
0	ISSUED FOR CONSTRUCTION	TOD	QG	QG	1/02/2017

A1 | CAD DRAWING - DO NOT ALTER MANUALLY
DIMENSIONS SHOWN IN MILLIMETERS
DO NOT SCALE | FEC JOB No. 160519 | CAD FILE No: LAP-3562

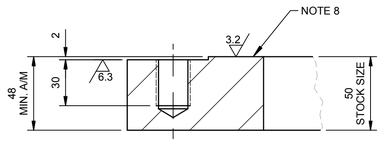
SCALE AS SHOWN | DRN T. O'DEMPSEY | RPEQ 12913 Q. GRYL | LAP DRG No: LAP-3562-02 | REV 0

1/02/2017 8:29:11 AM

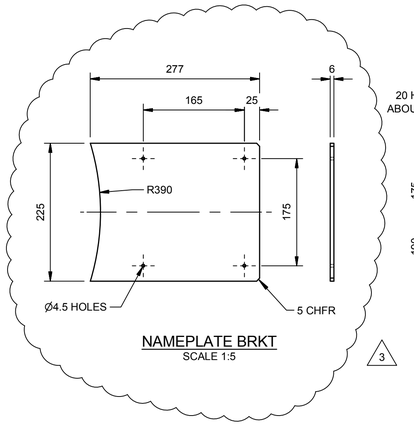




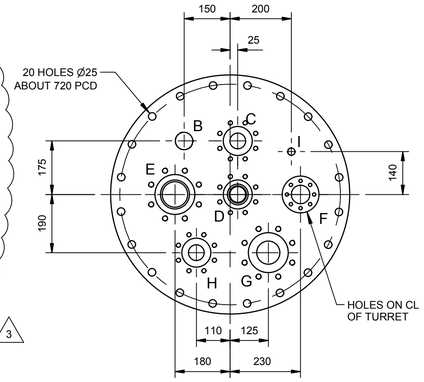
DETAIL 1
SHOWN IN SECTION
SCALE 1:2

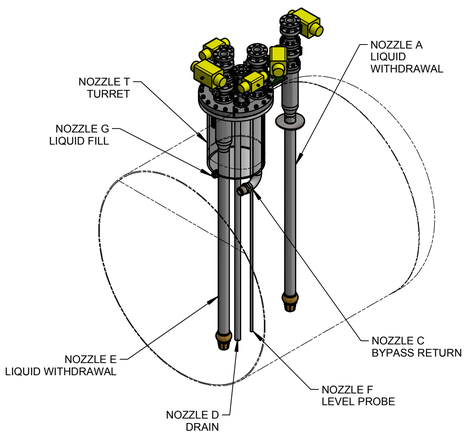


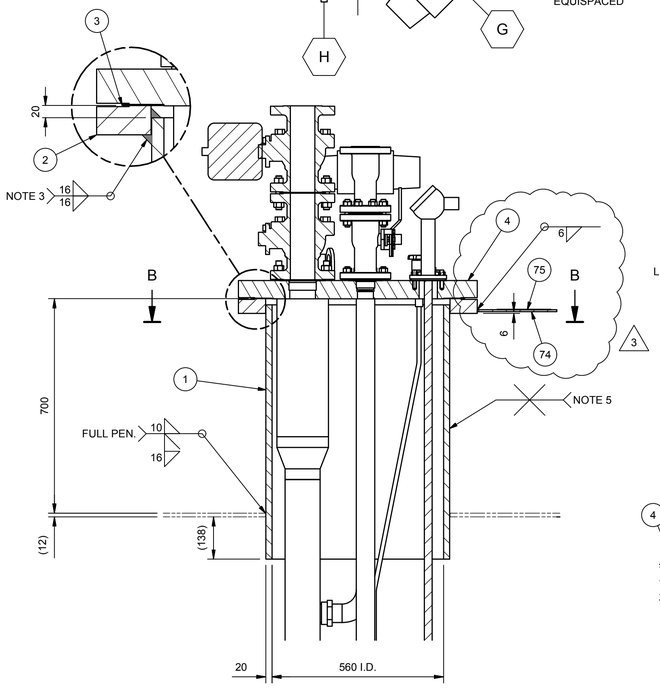
DETAIL 2
SCALE 1:2



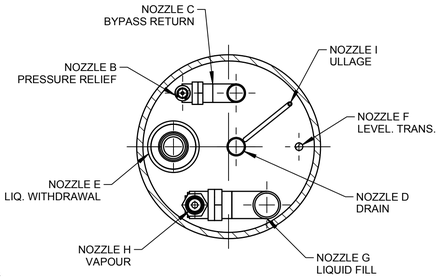
NAMEPLATE BRKT
SCALE 1:5



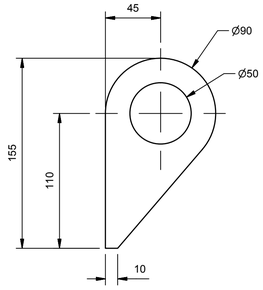




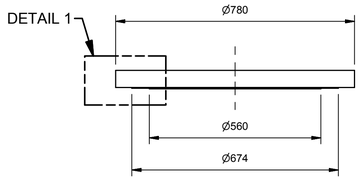
NOZZLE T
COVER BOLTING NOT SHOWN. FOR INDIVIDUAL TURRET NOZZLES AND ASSOCIATED PIPEWORK, REFER DETAILS SHT 2.
SCALE 1:10



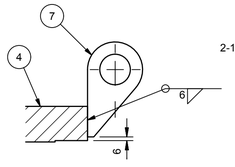
SECTION B
SCALE 1:10



LIFTING LUG
SCALE 1:2.5

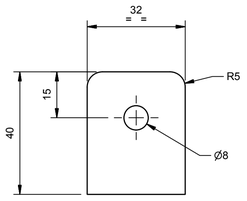


TURRET COVER
FOR INDIVIDUAL NOZZLE DETAILS, REFER SHT 2
SCALE 1:10

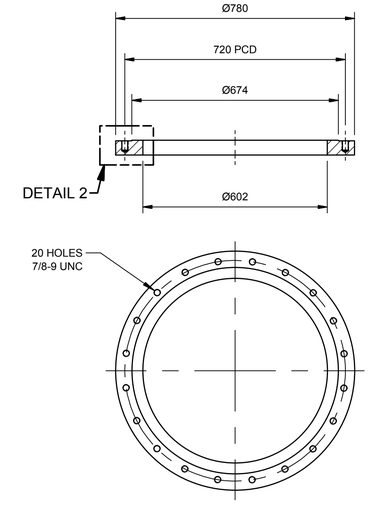


NOZZLE B
SCALE 1:4

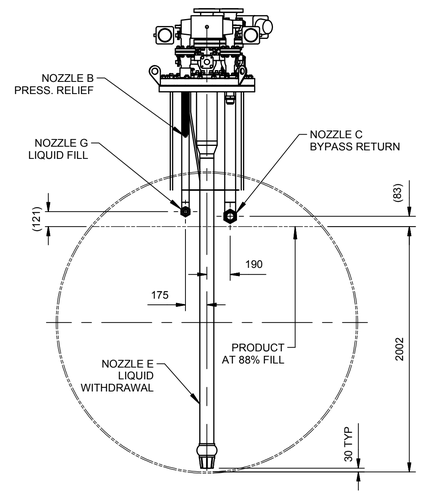
SECTION A
SCALE 1:5



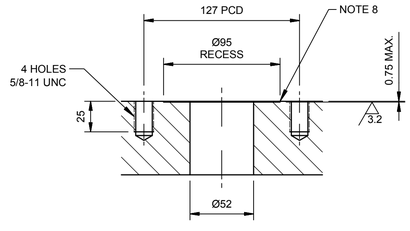
CATHODIC PROT. LUG
SCALE 1:1



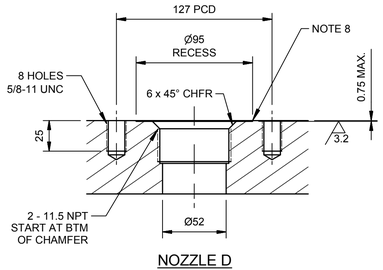
TURRET FLANGE
SEE NOTE 1
SCALE 1:10



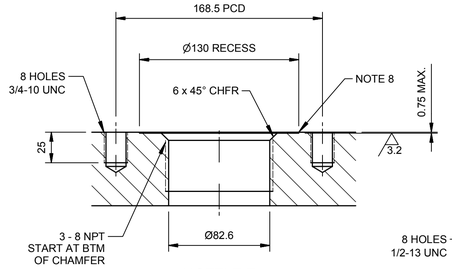
SECTION THRU VESSEL INSTALLED TURRET
SCALE 1:25



NOZZLE C
SCALE 1:2.5



NOZZLE D
SCALE 1:2.5



NOZZLE E
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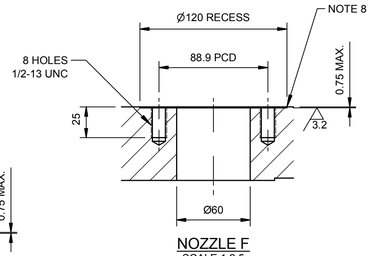
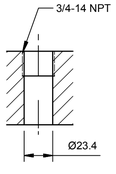
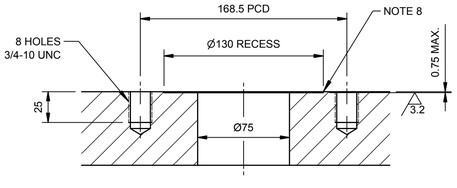


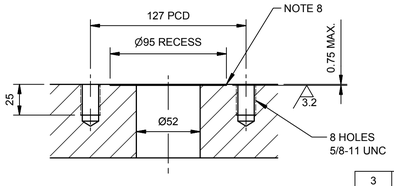
NOZZLE F
SCALE 1:2.5



NOZZLE I
SCALE 1:2.5



NOZZLE G
SCALE 1:2.5



NOZZLE H
SCALE 1:2.5

NOTES:
1. FLANGE TO BE MACHINED AND DRILLED AFTER WELDING TO NECK. MACHINE TO MINIMUM DEPTH REQUIRED TO CLEAN UP FLANGE FACE
2. (note deleted)
3. FLANGE / NECK WELD SHALL BE 100% MAGNETIC PARTICLE TESTED
4. ALL GASKETS FACES SHALL BE PROTECTED DURING PAINTING
5. NECK CLOSING SEAM SHALL BE FULL PENETRATION, DOUBLE VEE BUTT WELD AND 100% ULTRASONIC & MAGNETIC PARTICLE INSPECTION. (100% RADIOGRAPHIC INSPECTION ACCEPTABLE ALTERNATIVE)
6. FINISH: REFER TO DRG LAP-3562-01
7. STUDS AND NUTS TO BE ZINCE ELECTRO PLATED
8. ALL MACHINED GASKET SURFACES TO BE GRAMOPHONE FINISH

ITEM	QTY	DESCRIPTION	STOCK	LG	SPEC
3	75	1	NAMEPLATE	SEE DRG LAP-3562-06		
	74	1	NAMEPLATE BRKT	PLATE, 6 x 225 W	277	AS/NZS 3678-250
	8	1	CATHODIC PROT. LUG	PLATE, 6 x 32 W	40	AS/NZS 3678-250
	7	3	LIFTING LUG	PLATE, 10 x 90 W	155	AS/NZS 3678-250
	6	20	HEX NUT	7/8" UNC		ASTM A194 Gr 2H
	5	20	STUD BOLT	7/8" UNC x 125 LG		ASTM A193 Gr B7
	4	1	TURRET COVER	60 PL, Ø780		AS1548-PT460NR
	3	1	GASKET	1.5mm THK x 697 OD x 602 ID		CNAF
	2	1	TURRET FLANGE	50 PL, 780 OD x 602 ID		AS1548-PT460NR
	1	1	TURRET NECK	PLATE, 20 x 830 W (FLAT PATTERN)	1811	AS1548-PT460NR

REV	DETAILS	DRN	CHK	APP	DATE
3	NAMEPLATE & BRACKET ADDED	TOD	QG	QG	1/3/2017
2	REMOVED HOLD ON CATH. PROT. LUG	TOD	QG	QG	24/2/2017
1	NOZZLE F DETAIL CONFIRMED	TOD	QG	QG	8/2/2017
0	ISSUED FOR CONSTRUCTION	TOD	QG	QG	1/2/2017

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TURRET & NOZZLE DETAILS, SHT 1

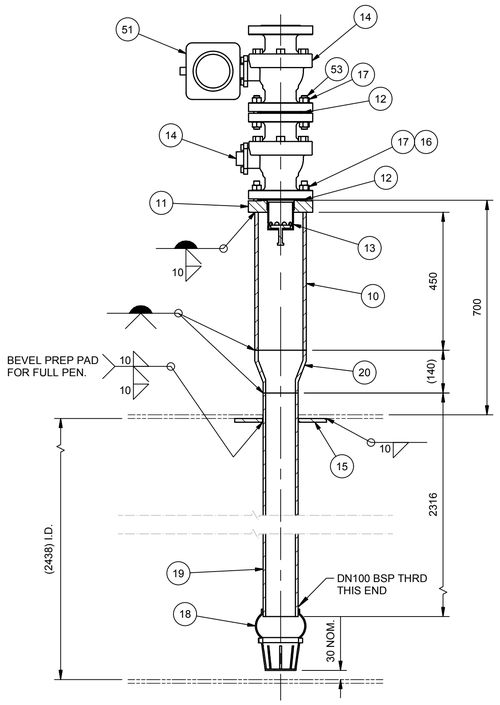
SUPAGAS

LPG UNDERGROUND VESSEL

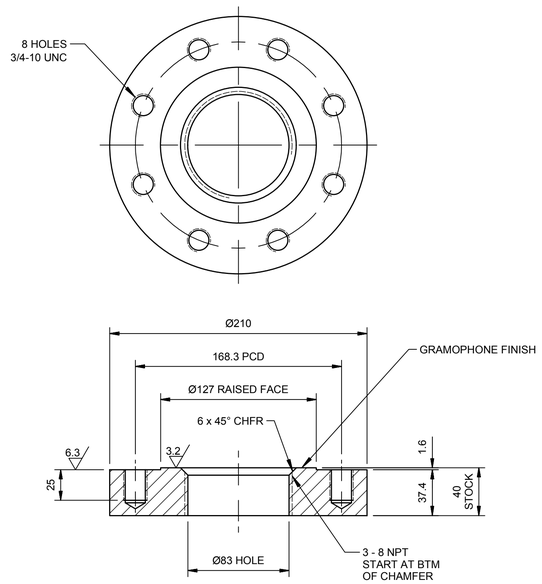
T-001

A1	CAD DRAWING - DO NOT ALTER MANUALLY DIMENSIONS SHOWN IN MILLIMETERS DO NOT SCALE	FEC JOB No. 160519	CAD FILE No LAP-3562-03

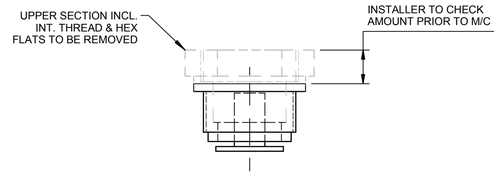
SCALE	DRN	RPEQ	LAP DRG No	REV
AS SHOWN	T. O'DEMPSEY	12913 Q. GRYL	LAP-3562-03 SHT 1 of 1	3



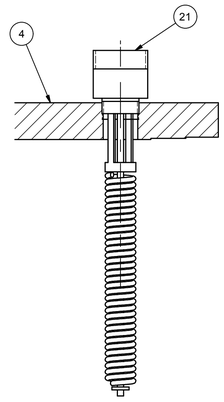
NOZZLE A
LIQUID WITHDRAWAL
SCALE 1:10



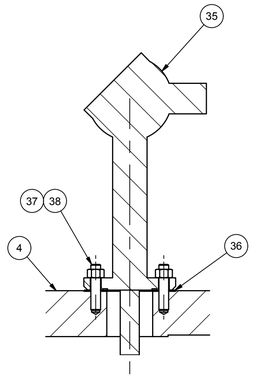
FLANGE, NOZZLE A
SCALE 1:2.5



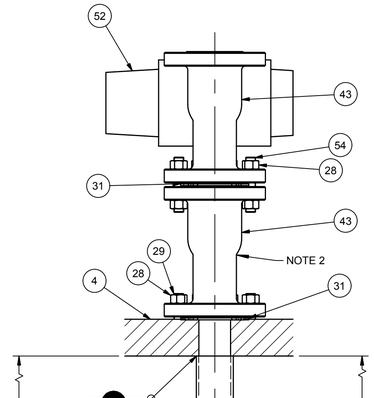
MOD'S FOR EXC. FLOW VALVE A3292C
SCALE 1:2



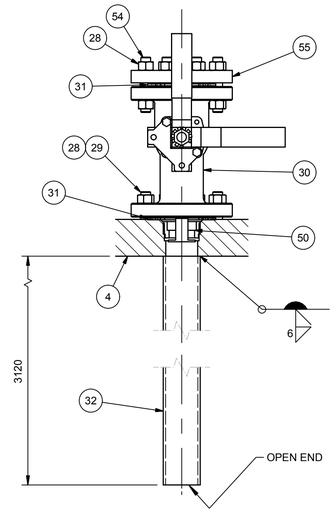
NOZZLE B
PRESSURE RELIEF
SCALE 1:5



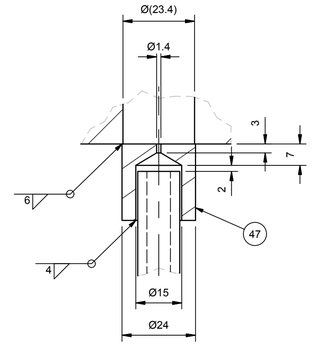
NOZZLE F
LEVEL TRANSMITTER
SCALE 1:4



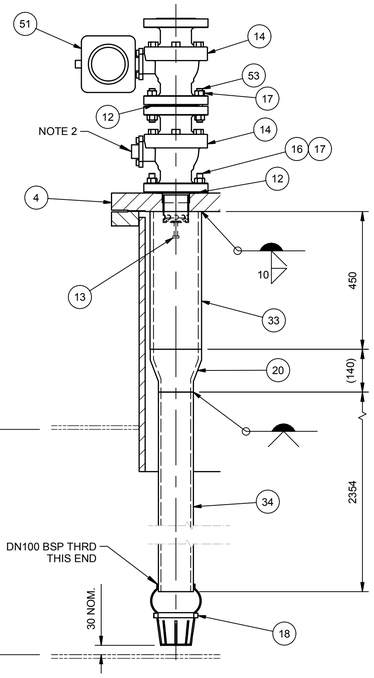
NOZZLE C
BYPASS RETURN
SCALE 1:5



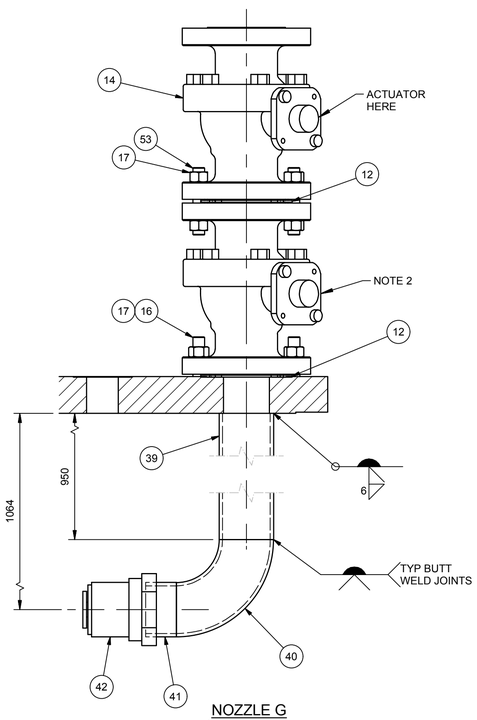
NOZZLE D
DRAIN
SCALE 1:5



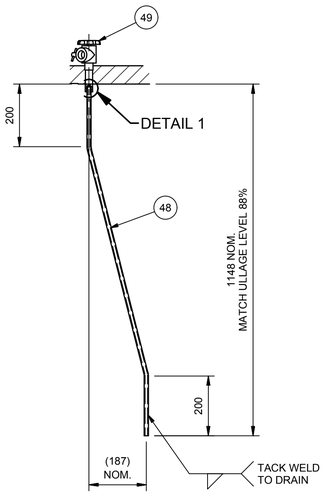
DETAIL 1
SCALE 1:1



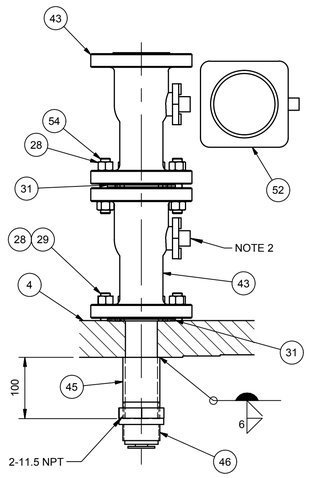
NOZZLE E
LIQUID WITHDRAWAL
SCALE 1:10



NOZZLE G
LIQUID FILL
SCALE 1:5



NOZZLE I
FIXED ULLAGE
SCALE 1:10



NOZZLE H
VAPOUR
SCALE 1:5

ITEM	QTY	DESCRIPTION	STOCK	LG	SPEC
55	1	FLANGE, BLIND	DN50 CL300 BL RF FLG, ASME B16.5		ASTM A105
54	24	STUD BOLT	5/8" UNC x 90 LG		ASTM A193 Gr B7
53	24	STUD BOLT	3/4" UNC x 110 LG		ASTM A193 Gr B7
52	2	PNEUM. ACTUATOR	TO SUIT DN50 MARS BALL VALVE		
51	3	PNEUM. ACTUATOR	TO SUIT DN80 MARS BALL VALVE		
50	1	EXCESS FLOW VALVE, MODIFIED	REGO A3292C, 2" NPT (SEE DETAIL)		BRASS
49	1	ANGLE VALVE	REGO A2805C		
48	1	ULLAGE PIPE	DN8 SCH80 SMLS PIPE ASME B16.10	1152	ASTM A106-B
47	1	ULLAGE SOCKET	Ø24 RD. BAR (SEE DETAIL)	25	AS/NZS 3679.1-300
46	1	EXCESS FLOW VALVE	REGO A3292C, 2" NPT		CADMIUM / SS
45	1	PIPE	DN50 SCH 40, SMLS ASME B36.10M	100	ASTM A106 Gr.B
43	4	BALL VALVE	DN50 CL300 RF FLG, 2 PC, FULL PORT		MARS SERIES 90D
42	1	CHECK VALVE	REGO A3196, 3" NPT		CADMIUM / SS
41	1	PIPE	DN80 SCH 40, SMLS ASME B36.10M	50	ASTM A106 Gr.B
40	1	ELBOW, LR	DN80 SCH40, 90°, ASME B16.9		ASTM A234-WPB
39	1	PIPE	DN80 SCH 40, SMLS ASME B36.10M	950	ASTM A106 Gr.B
38	8	STUD BOLT	1/2" UNC x 60 LG		ASTM A193 Gr B7
37	8	HEX NUT	1/2" UNC		ASTM A194 Gr 2H
36	1	GASKET	TO SUIT BINTECH BI2000 FLANGE		
35	1	LEVEL SENSOR	BINTECH BI2000		
34	1	PIPE	DN100 SCH 80, SMLS ASME B36.10M	2354	ASTM A106 Gr.B
33	1	PIPE	DN150 SCH 80, SMLS ASME B36.10M	450	ASTM A106 Gr.B
32	1	PIPE	DN50 SCH 40, SMLS ASME B36.10M	3120	ASTM A106 Gr.B
31	6	GASKET	DN50 SPIRAL WD, CL300, 316SS RINGS		ASME B16.20
30	1	BALL VALVE, MANUAL	DN50 CL300 RF FLG, 2 PC, FULL PORT		MARS SERIES 90D
29	24	STUD BOLT	5/8" UNC x 70 LG		ASTM A193 Gr B7
28	72	HEX NUT	5/8" UNC		ASTM A194 Gr 2H
27	1	CHECK VALVE	REGO A3186, 2" NPT		CADMIUM / SS
26	1	PIPE	DN50 SCH 40, SMLS ASME B36.10M	50	ASTM A106 Gr.B
25	1	ELBOW, LR	DN50 SCH40, 90°, ASME B16.9		ASTM A234-WPB
24	1	PIPE	DN50 SCH 40, SMLS ASME B36.10M	950	ASTM A106 Gr.B
21	1	PSV	FISHER H284 – 225 psi 2" NPT		BRASS / SS
20	2	REDUCER, CONC	DN150 x DN100 SCH80, ASME B16.9		ASTM A234-WPB
19	1	PIPE	DN100 SCH 80, SMLS ASME B36.10M	2316	ASTM A106 Gr.B
18	2	FOOT VALVE	DN100 BAKER'S VBF 94, BSP THRD		BRASS
17	72	HEX NUT	3/4" UNC		ASTM A194 Gr 2H
16	24	STUD BOLT	3/4" UNC x 90 LG		ASTM A193 Gr B7
15	1	REINF. PAD	PLATE, 12 x 300 O.D. x 117 I.D.		AS1548-PT460NR
14	6	BALL VALVE	DN80 CL300 RF FLG, 2 PC, FULL PORT		MARS SERIES 90D
13	2	EXCESS FLOW VALVE	REGO A3500V6		CADMIUM / SS
12	6	GASKET	DN80 SPIRAL WD, CL300, 316SS RINGS		ASME B16.20
11	1	FLANGE, NOZZLE A	40 PL, Ø210		AS1548-PT460NR
10	1	PIPE	DN150 SCH 80, SMLS ASME B36.10M	450	ASTM A106 Gr.B

NOTES:
1. FOR ORIENTATION OF PIPEWORK, B.O.M. ITEMS NOT LISTED ON THIS DRG AND TURRET COVER MACHINING DETAILS, REFER TO DRG LAP-3562-03
2. HANDLES FOR MANUAL VALVES AT NOZZLES C, E, G & H NOT SHOWN THIS DRG BUT SHALL BE INSTALLED WITH HANDLES CUT SHORT

REV	DETAILS	DRN	CHK	APP	DATE
2	REVISED PER MARK-UPS	TOD	QG	QG	15/2/2017
1	DETAIL FOR NOZZLE F CONFIRMED	TOD	QG	QG	8/2/2017
0	ISSUED FOR CONSTRUCTION	TOD	QG	QG	1/2/2017

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ACN 002 241 590

TURRET & NOZZLE DETAILS, SHT 2

SUPAGAS

LPG UNDERGROUND VESSEL

T-001

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SCALE	DRN	RPEQ	LAP DRG No	REV
AS SHOWN	T. O'DEMPSEY	12913 Q. GRYL	LAP-3562-04 SHT 1 of 1	2

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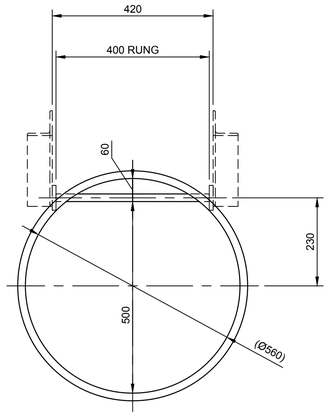
2. REMOVE ALL SHARP EDGES AND WELD SPLATTER



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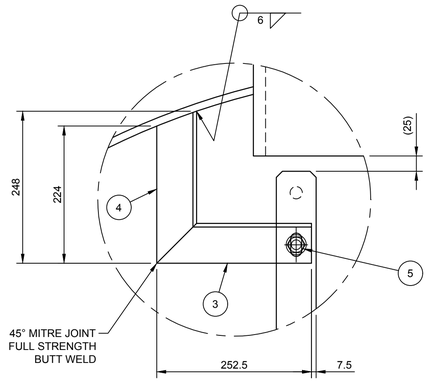

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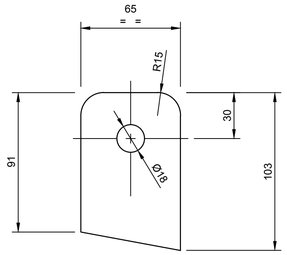

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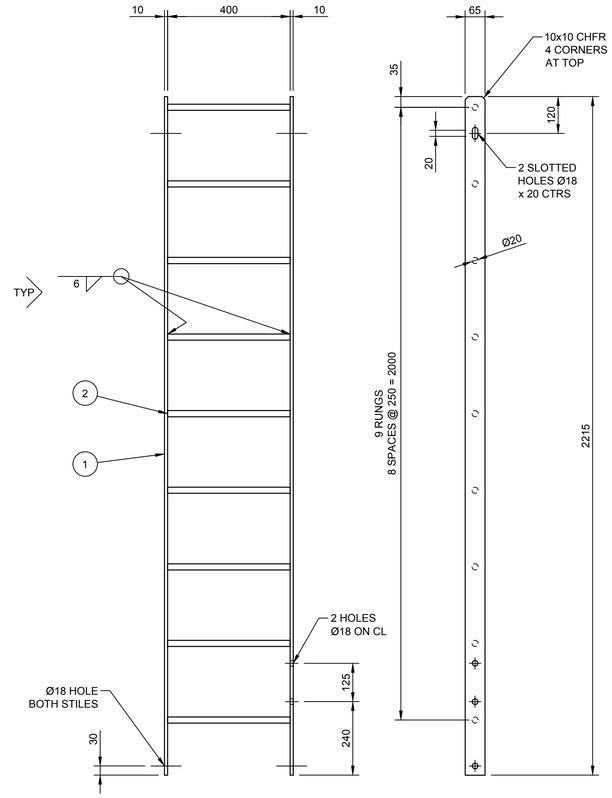

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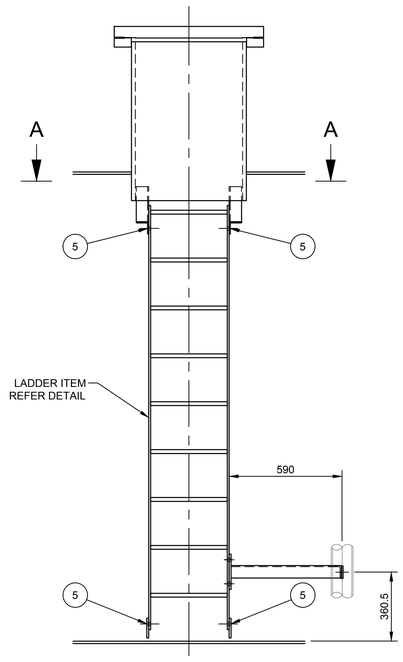

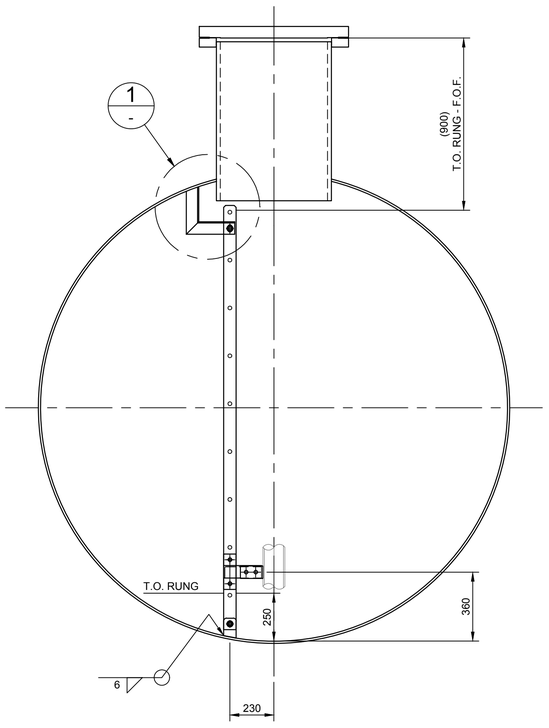

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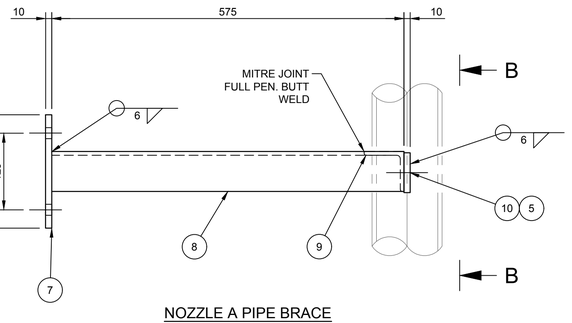

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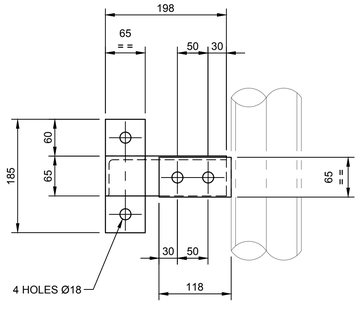

VIEW B
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ITEM	DESCRIPTION	QTY	DIMENSIONS	MATERIAL	COMMENTS
10	CLEAT	1	65 x 10 FL, 118 LG	AS3679.1-300	
9	BRACE	1	65 x 6 EA, 198 LG	AS3679.1-300	
8	BRACE	1	65 x 6 EA, 575 LG	AS3679.1-300	
7	BOLT PL.	1	65 x 10 FL, 185 LG	AS3679.1-300	
6	CLEAT	2	65 x 10 FL, 103 LG	AS3679.1-300	
5	BOLT / NUT	8	M16 x 45 LG Gr 4.6 BOLT C/W WASHER & NUT	AS1111 / AS1112	
4	BRACKET	2	65 x 6 EA, 248 LG	AS3679.1-300	
3	BRACKET	2	65 x 6 EA, 250 LG	AS3679.1-300	
2	RUNG	9	Ø20 RD BAR, 400 LG	AS3679.1-300	
1	STILE	2	65 x 10 FL BAR, 2258 LG	AS3679.1-300	

REV	DETAILS	DRN	CHK	APP	DATE
1	NOZZLE A PIPE BRACE ADDITIONS	TOD	QG	QG	8/02/2017
0	ISSUED FOR CONSTRUCTION	TOD	QG	QG	1/02/2017

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LADDER DETAILS
SUPAGAS
LPG UNDERGROUND VESSEL
T-001

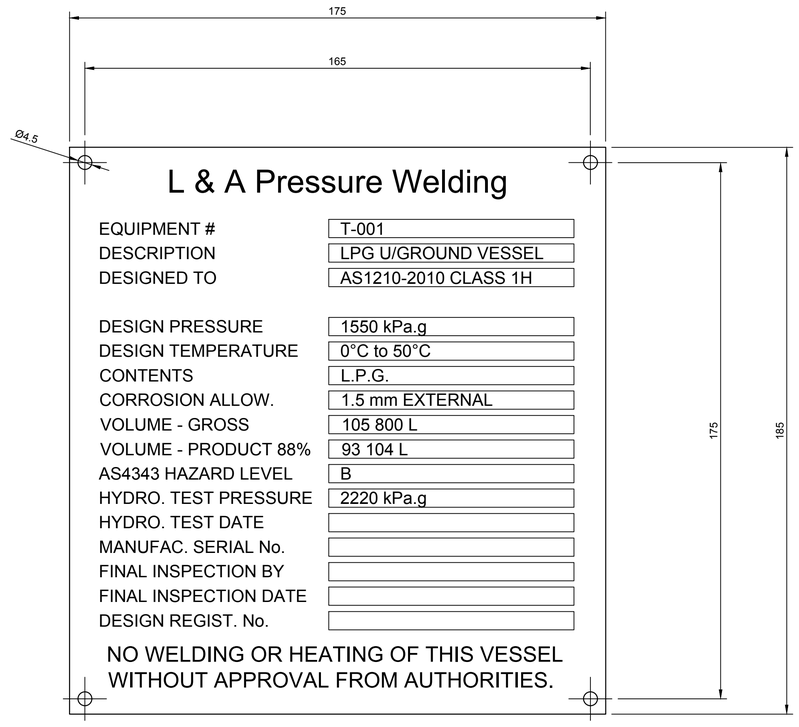
A1	CAD DRAWING - DO NOT ALTER MANUALLY DIMENSIONS SHOWN IN MILLIMETERS DO NOT SCALE	FEC JOB No. 160519	CAD FILE No: LAP-3562

SCALE	DRN	RPEQ	LAP DRG No:	REV
AS SHOWN	T. O'DEMPSEY	12913 Q. GRYL	LAP-3562-05	1

8/02/2017 7:31:19 AM

NOTES:

1. ALL LETTERING SHALL BE PERMANENT E.G. ENGRAVED & BLACK-INKED OR EMBOSSED (OR EQUIVALENT), MINIMUM 3mm HIGH
2. FOR NAMEPLATE MOUNTING BRACKET REFER TO DRG LAP-3562-03



L & A Pressure Welding

EQUIPMENT #	T-001
DESCRIPTION	LPG U/GROUND VESSEL
DESIGNED TO	AS1210-2010 CLASS 1H
DESIGN PRESSURE	1550 kPa.g
DESIGN TEMPERATURE	0°C to 50°C
CONTENTS	L.P.G.
CORROSION ALLOW.	1.5 mm EXTERNAL
VOLUME - GROSS	105 800 L
VOLUME - PRODUCT 88%	93 104 L
AS4343 HAZARD LEVEL	B
HYDRO. TEST PRESSURE	2220 kPa.g
HYDRO. TEST DATE	
MANUFAC. SERIAL No.	
FINAL INSPECTION BY	
FINAL INSPECTION DATE	
DESIGN REGIST. No.	

NO WELDING OR HEATING OF THIS VESSEL WITHOUT APPROVAL FROM AUTHORITIES.

ITEM	DESCRIPTION	QTY	DIMENSIONS	MATERIAL	COMMENTS
1	NAMEPLATE	1	1.6mm SHT, 175 x 185	ASTM A240-316	

L & A PRESSURE WELDING PTY LTD
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ACN 002 241 590

NAMEPLATE DETAILS
SUPAGAS
LPG UNDERGROUND VESSEL
T-001

REV	DETAILS	DRN	CHK	APP	DATE
0	ISSUED FOR CONSTRUCTION	TOD	QG	QG	1/02/2017

A1	CAD DRAWING - DO NOT ALTER MANUALLY DIMENSIONS SHOWN IN MILLIMETERS DO NOT SCALE	FEC JOB No. 160519	CAD FILE No: LAP-3562	
SCALE 1:1 UNO	DRN T. O'DEMPSEY	RPEQ 12913 Q. GRYL	LAP DRG No: LAP-3562-06	REV 0

1/02/2017 8:31:36 AM

PDA
SURVEYORS, ENGINEERS & PLANNERS

28 Crooked Billet Drive, Bridgewater

Stormwater Management Report – Rev 0

54479HC | June 2025

Table of Contents

List of Figures

List of Tables

PDA Contributors

Contribution	Name	Date
Author	Eliecer Camargo	2025/06/30
Review 1	Rod Parsons	2025/06/30
Review 2	Mark Westerberg	2025/06/30

Revision History

Revision	Description	Date
0	First Issue	2025/06/30

Abbreviations

AEP	Annual Exceedance Probability
ARI	Annual Recurrence Interval
ARR	Australian Rainfall and Runoff
BOM	Bureau of Meteorology
CC	Climate Change
DSG	Department of State Growth
IFD	Intensity – Duration - Frequency
IL-CL	Initial Loss – Continuing Loss
OSD	On-site Detention
SW	Stormwater

1 Project Overview

This report has been prepared by PDA Surveyors, Engineers & Planners to support the stormwater system design for the proposed development at 28 Crooked Billet Drive, Bridgewater. This report presents the stormwater management strategy for the proposed works, including assessment of pre- and post-development conditions, and outlines the proposed on-site detention measures designed to meet the relevant requirements.

1.1 Site Overview

The proposed works will be developed at 28 Crooked Billet Drive, Bridgewater, in the Bridgewater Industrial subdivision area, as shown in Figure 1. The site is currently occupied by Supagas, an industrial gas supplier. The land is zoned General Industrial.

The property has an approximate area of 3874 m^2 and is developed with two existing buildings, an office building and a shed, as well as a concrete slab area for general use, and a larger concrete pad where large gas tanks are placed. The remainder of the site consists predominantly of compacted gravel hardstand used for vehicle movements, gas storage, and general site access. Runoff from both roofed and hardstand areas is conveyed via stormwater pipes to an existing discharge point located at the north-eastern corner of the site, which drains to adjacent crown land.

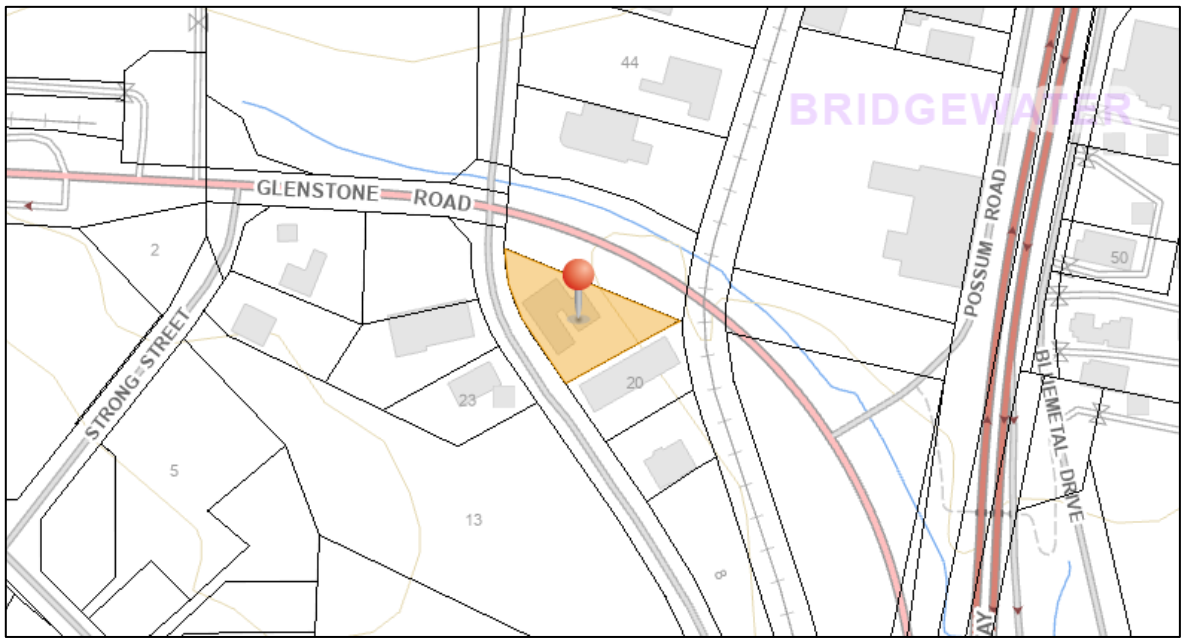


Figure 1 - Locality Plan

The proposed development involves the replacement of a section of existing gravel surface with a new concrete slab. This modification will result in an increase in impervious surface area, and as such, the Department of State Growth has outlined some requirements for stormwater discharge. These are discussed in Section 1.3.

The overall goal of this stormwater management plan is to propose a sustainable and effective stormwater system for this development. Following common practice, specific objectives include managing the surface runoff produced by new sealed surfaces, limiting flow to pre-development levels, and conveying them into approved discharge points.

1.2 Regulatory Framework

This stormwater system adheres to the Tasmanian Stormwater Policy Guidance and Standards for Development. In Tasmania, flow is managed through a major / minor storm approach. Design of stormwater systems are based on ARR 2019.

The minor drainage system maintains safety, manages nuisance, and minimises damage to property for frequent rainfall occurrences. Traditionally, Tasmanian Councils have set a range of minor network levels of service depending on the land use, as shown in Table 1. For this development, a 2% AEP level of service is considered applicable for the minor storm considering the site's industrial setting.

Table 1 - Minor system levels of service in Tasmania

ARI Minor - Residential	**AEP**	**ARI Minor - Rural & Residential >2ha**	**AEP**	**ARI – Minor - CBD**	**AEP**	**ARI Minor – Business, Commercial and Industrial**	**AEP**
1 in 5	20%	1 in 2	50%	1 in 50	2%	1 in 20	5%
1 in 10	10%	1 in 5	10%	1 in 20	5%	1 in 50 – Industrial	2%
1 in 20	5%	1 in 20	5%				

The major drainage system is primarily intended to mitigate risks associated with overland flows. The major system typically includes overland flow paths on roads and through open space. This system conveys additional runoff produced during larger, infrequent events which are potentially hazardous due to the velocity and depth of flows.

Levels of service of major systems are conventionally designed to convey the 1% AEP event, occasionally with consideration for an additional CC loading depending on conditions stated on the permit and the local government requirements.

1.3 Requirements for Stormwater Detention

The proposed development involves the replacement of a section of existing gravel surface with a new concrete slab. This modification will result in an increase in impervious surface area, and as such, the Department of State Growth has requested the following, via email, on the 1 October 2024:

- The proposed stormwater works should utilise any current point of discharge for the site (it is assumed that the existing DN150 discharges to the table drain) i.e. there should only be **one** point of discharge for the site.
- The stormwater discharge should not increase from pre-development levels, and therefore on-site stormwater detention may be required.

2 Stormwater Quantity Management

The stormwater system has been modelled in Drains and its design criteria and assumptions are discussed in the following sections.

2.1 Design Criteria

- The minor storm level of service is set for the 2% AEP (1 in 50 years);
- The major storm is set for the 1% AEP (1 in 100 years);
- Restrict runoff to pre-development levels for both 2% and 1% AEP events.

2.2 Hydrological Model

A full range of storm durations from 5 minutes to 2 hours was simulated using the Extended Rational Method (ERM) hydrological model. This method allows multiple storm simulations within the rational method framework. A different runoff coefficient has been assumed depending on the surface material (e.g., roof, concrete, and gravel). Table 2 shows the assumed runoff coefficients for the 10-year ARI storm (C10), along with the corresponding coefficients for the 1 in 50-year (C50) and 1 in 100-year storm (C100). The C10 coefficients are adjusted using frequency conversion factor (Fy) specific to each return period. These factors are shown in Table 3.

Table 2 – Runoff coefficients

Parameter	C10	C50	C100
Impervious Area C10 (roofed and concrete areas)	0.9	1.0	1.0
Gravel Area C10	0.5	0.58	0.6

Table 3 - Frequency Conversion Factor

ARI (years)	1 and <1	2	5	10	20	40	60	80	100
Fy	0.8	0.85	0.95	1.0	1.05	1.13	1.17	1.19	1.2

Other inputs considered for the SW network design include:

- The use of the 2016 IFD data from the BOM;
- Ten temporal patterns obtained from the ARR Data Hub for each duration;
- Median results for the ensemble of storms using the specified parameters will be obtained.

This approach aims to provide a comprehensive examination of the numerous possible rainfall scenarios. However, it is important to note that weather conditions may vary from those typically assumed and recommended by the ARR.

2.3 Pre-development Scenario

2.3.1 Sub-catchment delineation

The pre-development sub-catchments are defined depending on the different surface types within the catchment, namely gravel, and impervious (e.g., roof and concrete), as shown in Figure 2. In this figure, the yellow area represents concrete, the blue area represents roof areas, and the remaining is considered as gravel. A summary of these catchments is presented in Table 3.

Figure 2 – Pre-development catchments

Table 4 - Summary of Pre-development Sub-catchments

Sub-catchment	Area, m²
Roof	809
Gravel (to be concreted)	666
Gravel (to remain)	2049
Exist concrete	185
Gas Tanks	165
TOTAL	**3874**

2.3.2 Estimation of Pre-development Peak Discharge

A Drains model was developed to represent the pre-existing conditions and median flows were obtained. The estimated pre-development peak flows during the relevant storm events (i.e., 2% and 1% AEP events) are shown in Table 5. Reference is made to Annexure B, where results from the model are shown.

Table 5 - Pre-development peak flows

AEP	Peak flow (ℓ/s)
2%	65
1%	73

2.4 Proposed Stormwater System

The proposed stormwater management strategy has been designed to ensure post-development discharge rates remain below pre-development levels, in accordance with the requirements of the Department of State Growth (DSG). The strategy addresses the increase in impervious area resulting from the replacement of existing gravel surface with new concrete hardstand.

The runoff from the office building roof will be directed into two rainwater tanks – one with a capacity of 4000 L and the other 5000 L - installed adjacent to the building. The tanks will provide temporary storage of roof runoff and gradually release it at a controlled rate to compensate for the increased runoff generated by the additional concrete areas. This approach ensures that the total site discharge remains below pre-development conditions during storm events.

Runoff from the new concrete slab and other surface areas will be collected and conveyed via surface grading and drainage pits to a DN225 stormwater pipe. This pipe discharges to the existing outlet located along the northern boundary of the site, where runoff enters land managed by DSG. The proposed discharge has been designed to comply with DSG requirements, ensuring that post-development flows do not exceed pre-development conditions.

The combination of on-site detention via the rainwater tanks and the dedicated drainage infrastructure will ensure effective stormwater management for the site, mitigating any potential impacts on downstream properties or infrastructure.

Reference is made to Annexure A, where the proposed SW system is shown.

2.5 Post-development Scenario

2.5.1 Post-Development Sub-catchments

In the post-development scenario, the site layout largely remains consistent with the pre-development conditions. The change in the post-development condition is the replacement of a portion of the existing gravel surface with a new concrete slab. This modification increases the impervious area, resulting in an increase of volume and peak flow generated during storm events.

2.5.2 Estimation of Post-development Peak Discharge

Hydrologic modelling was undertaken to assess the resulting peak flows under the 1% and 2% AEP events. Results indicate a minor increase in runoff volume and peak discharge due to the change in the surface type. However, this increase is effectively attenuated by the inclusion of on-site detention measures described in Section 2.4. Results for peak flow under the 2% and 1% AEP storm events are shown in Table 6.

Table 6 - Post-development peak flows with OSD measures

AEP	Peak flow (ℓ/s)
2%	58
1%	70

3 Summary

An overview of the stormwater management plan for the proposed industrial development is provided in this section:

- The report supports the design of the stormwater system for the proposed works at 28 Crooked Billet Drive, Bridgewater;
- Pre-development flows are estimated as **73 ℓ/s** for the 1% AEP, and **65 ℓ/s** for the 2% AEP;
- The proposed stormwater system, consisting of 2 RWTs collecting stormwater from the office building roof, is designed to limit post-development peak flows to pre-development levels as requested by DSG;
- Post-development flows are successfully limited below pre-development levels. Please refer to Table 7 for a comparison between peak flows;

For further reference, please see concept plans (54479MW-ENG-REV P2, dated 27/06/2025) also submitted.

Table 7 - Comparison between pre-development and post-development flows

Discharge from subdivision	Pre-Development (ℓ/s)	Post-Development with OSD measures (ℓ/s)
2% AEP	65	58
1% AEP	73	70

4 Qualifications

This document is intended solely for the purpose of documenting the calculations followed for the design of the stormwater drainage system and should not be used for any other purpose without proper consultation. The results presented here reflect median outcomes based on various combinations of probable rainfall characteristics. These should not be understood as deterministic predictions of the stormwater system's performance, as they are influenced by both epistemic (arising from incomplete knowledge) and aleatory (arising from the inherent variability of natural systems) uncertainties associated with stormwater and hydrological models. It should be used by qualified professionals in conjunction with their professional judgement.

The calculations presented in this document are based on the data available at the time of writing. The design calculations were performed in accordance with the relevant design standards and guidelines applicable at the time of the writing. Future updates to these standards may require revisions to the design.

This document contains several assumptions regarding the site's condition, hydrological parameters, and projections for future climate scenarios (when required). These assumptions are detailed within the report and any deviation from these assumptions may affect the outcome of the design. The design is based on site-specific conditions understood from available information. This includes information and data provided by third parties. While this information is believed to be accurate, no warrant is given as to its completeness and or reliability.

It is important to acknowledge that many stormwater treatment assets, including GPTs, are subject to ongoing audits and field evaluations, which continue to enhance understanding of their actual performance in real-world conditions. As this knowledge evolves, previously unidentified limitations or inefficiencies in certain products may become apparent. While every effort has been made to specify systems aligned with current best practices, the performance of these assets ultimately depends on the product's engineering design, proper installation, effective operation, and regular maintenance—factors that lie beyond the scope of this design.

While every effort has been made to ensure the accuracy of the calculations and design, PDA and the authors assume no liability for any direct, indirect, or consequential damages resulting from the use of this document. The performance of the stormwater drainage system is subject to external factors such as extreme weather events, future land-use changes, and maintenance practices. These factors can significantly impact the effectiveness of the system.

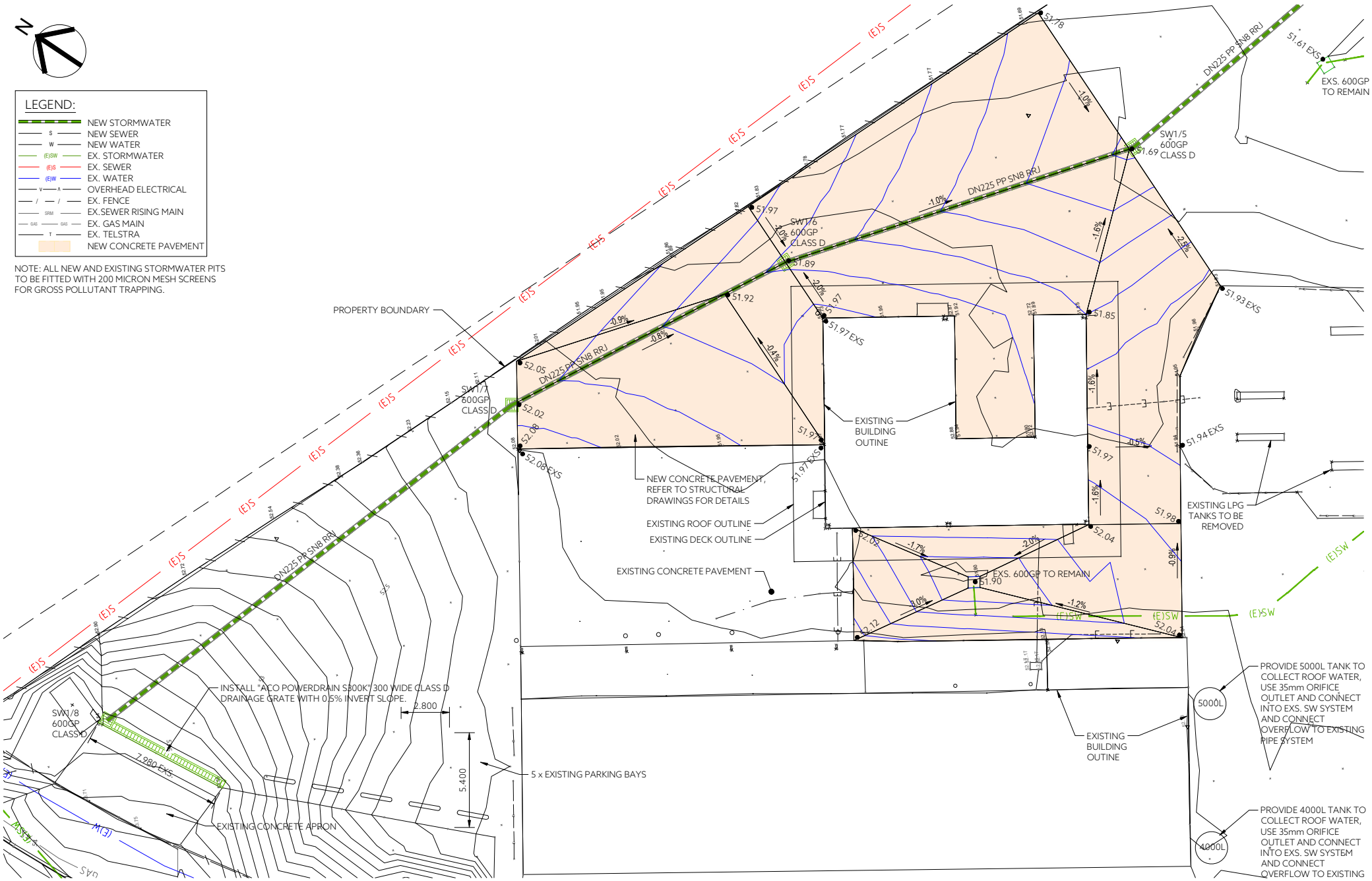
Annexures

ANNEXURE A – Proposed SW System

ANNEXURE B – Results from Drains model

ANNEXURE C - 2016 IFD Tables from BOM

ANNEXURE A – Proposed SW system



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DRAWING STATUS: FOR PLANNING APPROVAL
COORDINATE/ DATUM: PLANAR
THIS SHEET MAY BE PRINTED USING COLOUR AND MAY BE INCOMPLETE IF COPIED

	DESIGNED:	REVIEWED:
	SC	MW
	DRAWN:	REVIEWED:
	SC	MW
JOB MANAGER:	MARK WESTERBERG	
ISSUED DATE:	27/06/2025	

CLIENT:
PROJECT DESCRIPTION: DDM CIVIL - SUPAGAS
ADDRESS: PAVEMENT LEVELS AND DRAINAGE
DRAWING TITLE: 28 CROOKED BILLET DRIVE, BRIGHTON
SITE PLAN 1
.

PDA
SURVEYORS, ENGINEERS & PLANNERS
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Hobart, Tasmania, 7000
PHONE: +61 03 6234 3217
EMAIL: pda.hbt@pda.com.au
www.pda.com.au
Also at: Kingston, Launceston & Burnie
REGISTRATION NUMBER: ----

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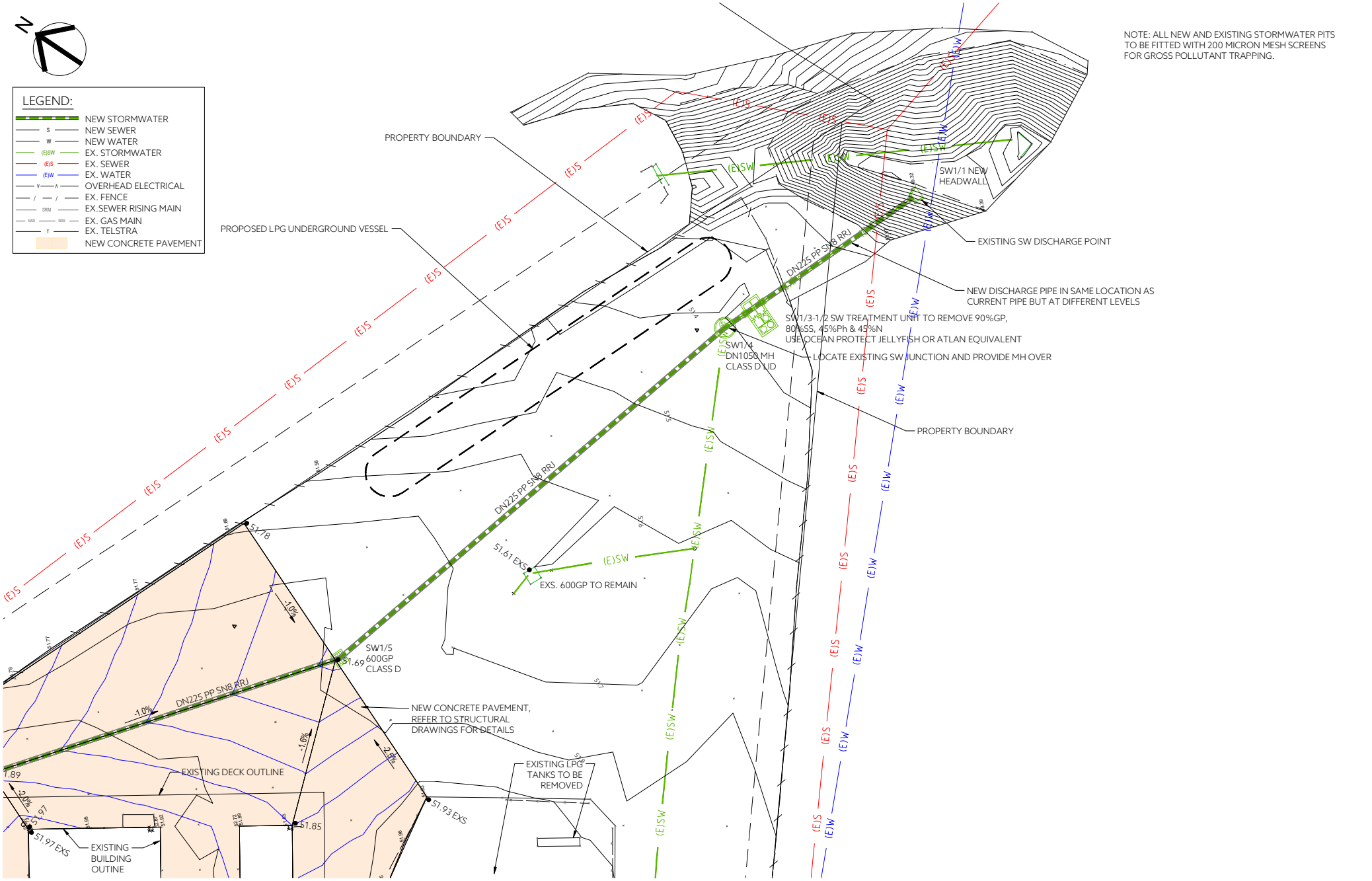

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DRAWN:	REVIEWED:
SC	MW

JOB MANAGER: MARK WESTERBERG

ISSUED DATE: 27/06/2025

CLIENT:

PROJECT DESCRIPTION: DDM CIVIL - SUPAGAS
PAVEMENT LEVELS AND DRAINAGE
28 CROOKED BILLET DRIVE, BRIGHTON

ADDRESS:

DRAWING TITLE: SITE PLAN 2
.

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Hobart, Tasmania, 7000
PHONE: +61 03 6234 3217
EMAIL: pda.hbt@pda.com.au
www.pda.com.au
Also at: Kingston, Launceston & Burnie
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54479HC	C 201 P2	

DATE/TIME: Friday, 27 June 2025 1:51:51 PM PLOTTED: STEVE CHAFFEY FILE LOCATION: S:\54479HC - DDM CIVIL - SUPA GAS, BRIDGEWATER\4-ENG\1-CAD\54479HC ENG.DWG

ANNEXURE B – Results from Drains Model

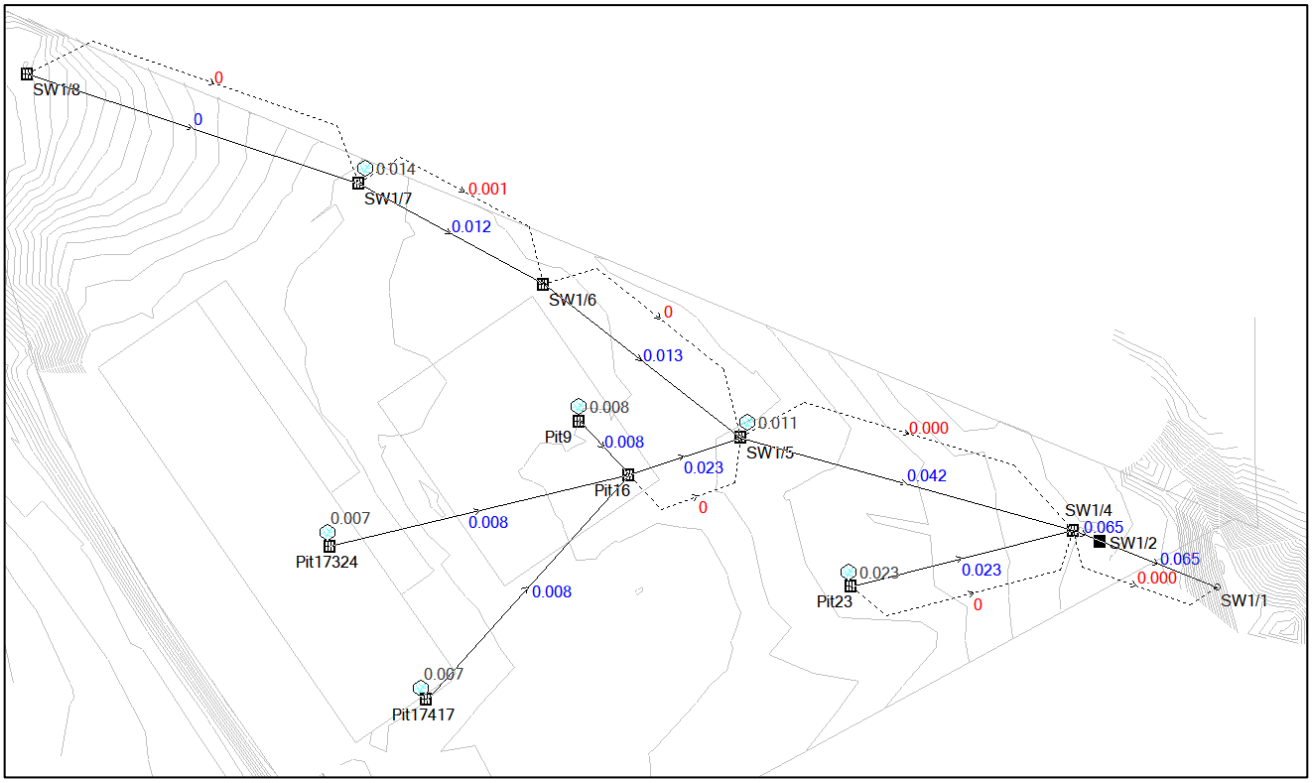

Figure C. 1 – Model results for 2% AEP Pre-development

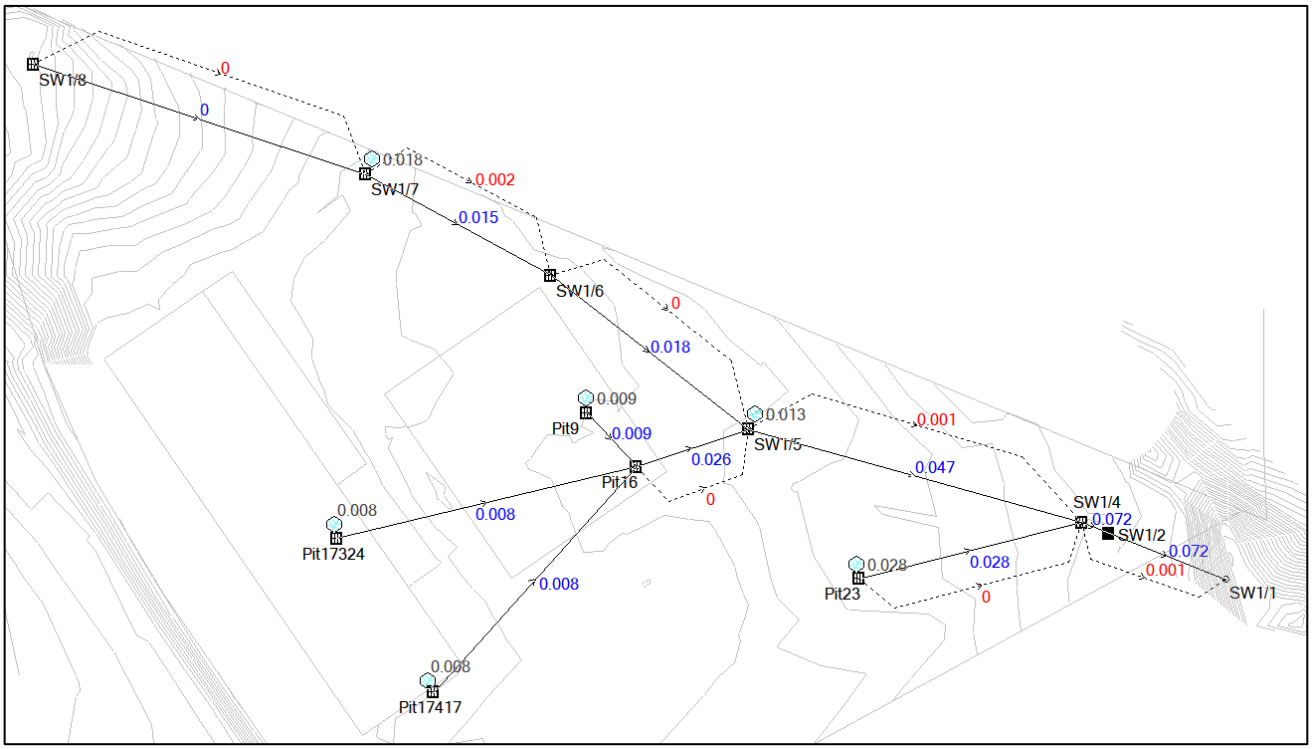

Figure C. 2 – Model results for 1% AEP Pre-development

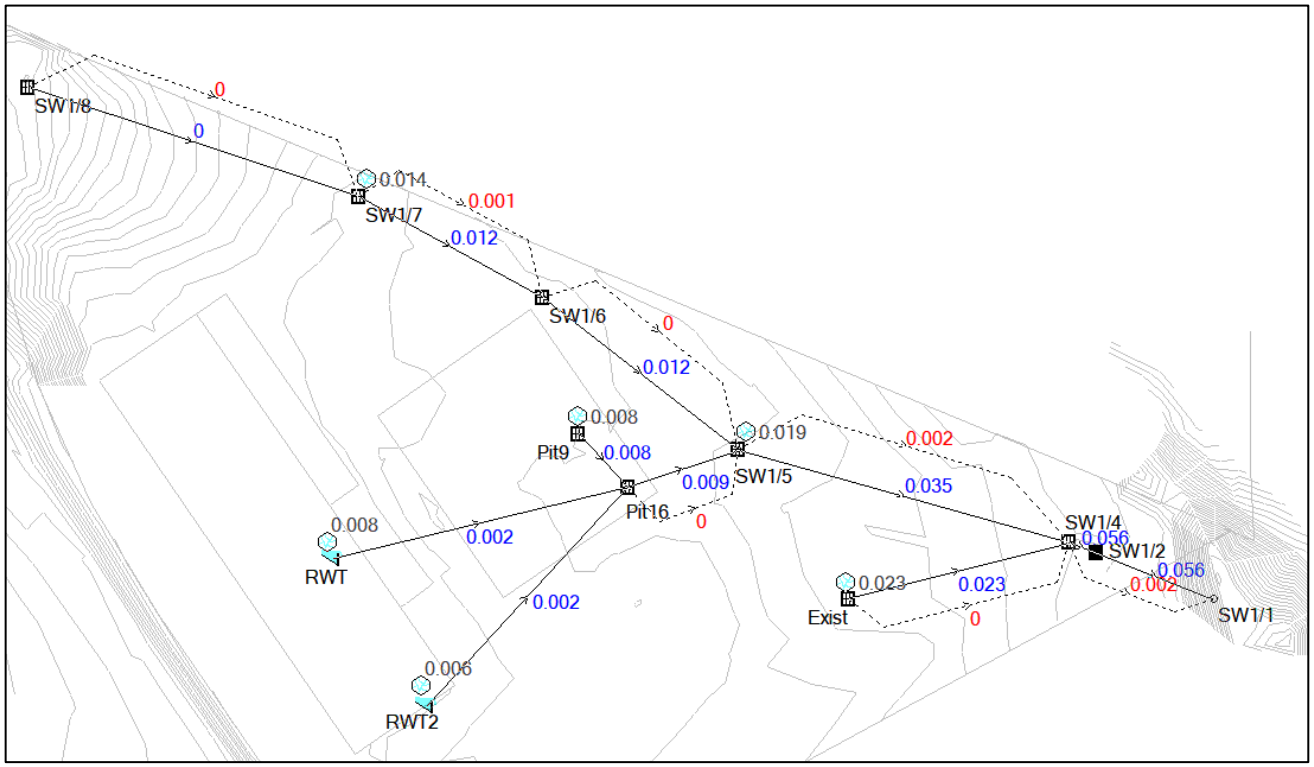

Figure C. 3 – Model results for 2% AEP Post-development

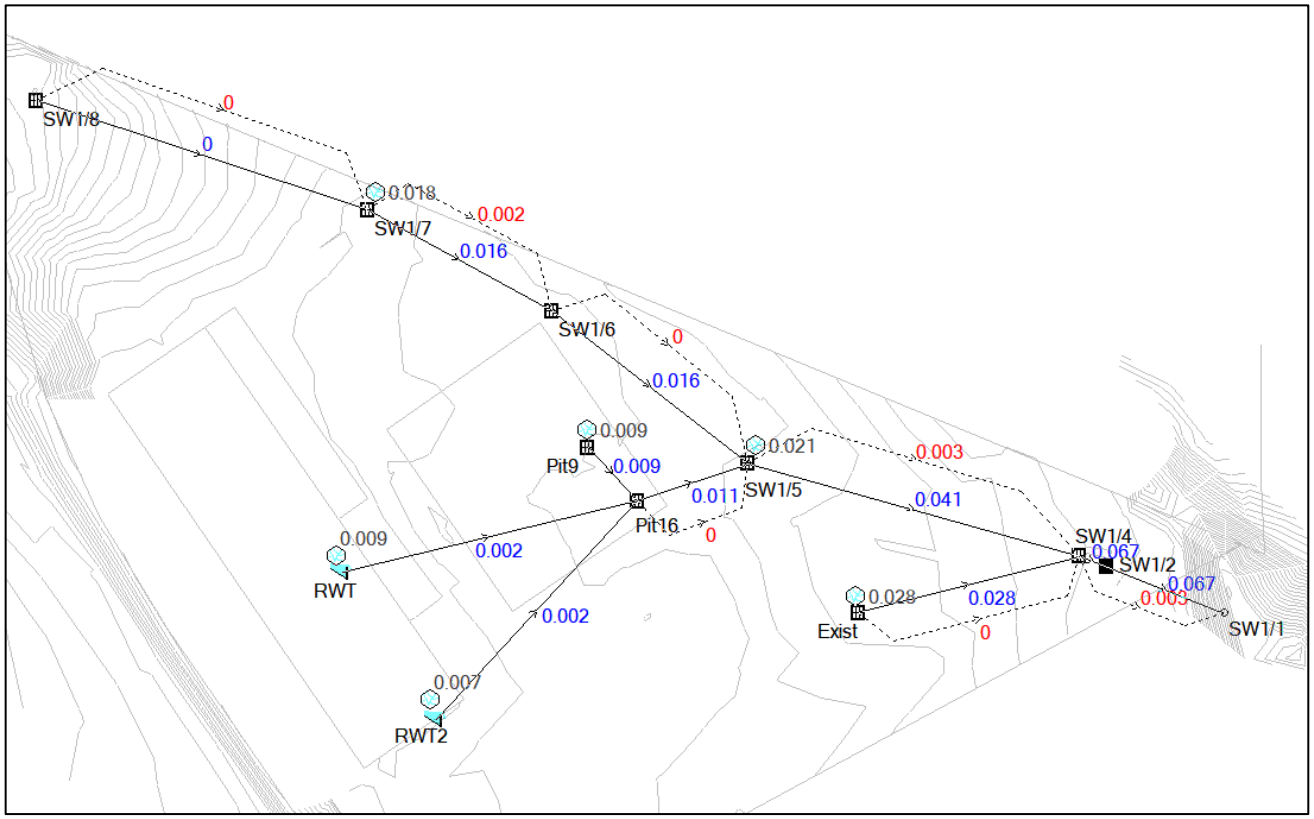

Figure C. 4 - Model results for 1% AEP Post-development

ANNEXURE C – 2016 IFD Table from BOM

Duration	*63.20%*	*50%*	*20%*	*10%*	*5%*	*2%*	*1%*
1 min	0.99	1.12	1.57	1.91	2.25	2.75	3.16
2 min	1.71	1.93	2.63	3.13	3.63	4.24	4.7
3 min	2.26	2.56	3.51	4.19	4.88	5.76	6.43
4 min	2.71	3.07	4.25	5.1	5.97	7.12	8.04
5 min	3.1	3.51	4.89	5.88	6.92	8.34	9.49
10 min	4.5	5.11	7.19	8.74	10.4	12.8	14.8
15 min	5.47	6.22	8.76	10.7	12.7	15.7	18.2
20 min	6.25	7.1	9.98	12.1	14.4	17.8	20.6
25 min	6.91	7.85	11	13.4	15.8	19.4	22.4
30 min	7.5	8.51	11.9	14.4	17	20.8	23.9
45 min	8.96	10.2	14.1	17	19.9	24.1	27.4
1 hour	10.2	11.5	15.9	19	22.2	26.6	30
1.5 hour	12.2	13.7	18.9	22.4	26	30.6	34.3
2 hour	13.8	15.6	21.3	25.2	29.1	34.1	37.9
3 hour	16.5	18.7	25.4	29.9	34.3	39.9	44.2
4.5 hour	19.7	22.3	30.4	35.7	40.7	47.3	52.3
6 hour	22.2	25.2	34.4	40.4	46.1	53.8	59.5
9 hour	26.2	29.8	40.9	48.2	55.1	64.6	71.9
12 hour	29.3	33.4	46	54.4	62.4	73.6	82.3
18 hour	33.8	38.6	53.6	63.8	73.7	87.8	98.9
24 hour	37	42.3	59.1	70.7	82.2	98.6	112
30 hour	39.5	45.2	63.3	76	88.7	107	121
36 hour	41.5	47.4	66.6	80.2	93.9	113	129
48 hour	44.4	50.7	71.4	86.3	102	123	140
72 hour	48.2	54.9	77.2	93.5	110	133	151
96 hour	50.7	57.6	80.6	97.3	115	138	156
120 hour	52.6	59.6	82.9	99.7	117	140	158
144 hour	54.2	61.4	84.7	101	118	140	159
168 hour	55.7	63	86.3	103	119	141	159

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