

06 December 2021

Peter Berry & Associates
By Email: civileng@berryconsulting.com.au

Dear Sir/Madam,

Thank you for the detailed design submission for proposed works at Kingston Coast Estate Stage 5 - Ocean Grove - PS805404N.

This email is issued to you in your position as the agent and representative of the Developer of the above referenced development.

Please note that all terms in capital letters have the meaning as set out in the Developer Deed.

The submitted Design complies with the requirements set out in the Service Requirements and Costing Schedule.

Please note that the submission to, the receipt and consideration of, or approval or verification of an application, or endorsement of the Design or inspection of any stage of the Design by BW, does not amount to BW consenting to, ratifying or otherwise accepting liability in respect of the Design or construction of the Works.

Should you require any further assistance you can contact Barwon Water by simply responding to this email or contacting the responsible officer Ben Nicholson on 1300 656 007.

Thank you,

Barwon Water



LOCALITY PLAN



NOT TO SCALE
MELWAYS: 484H7

SURVEY MARKS AND LOCATIONS		LEVELS
↑	Ex PSM 21 BELLARINE - (SMES)	49.578
↑	Ex PSM 141 BELLARINE - (SMES)	43.840
△	TBM 'A' Rivet in Roundabout - Oakdean Boulevard	30.734
△	TBM 'B' Star Picket - West of Lot 563	31.884
△	TBM 'C' Star Picket - Lot 536	30.546
△	TBM 'D' Rivet in Path - Front of Lot 122	28.376

WARNING

BEWARE OF UNDERGROUND SERVICES
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.



ISSUED FOR
CONSTRUCTION

WORKS SHALL NOT COMMENCE UNTIL PLANS ARE SIGNED AND ACCEPTED BY BARWON WATER

ACCEPTED by Barwon Water
DESIGN COORDINATOR - INFRASTRUCTURE DELIVERY



DATE: 06/12/2021

General Notes:

- Only contractors accredited by Barwon Water to 1S and 2S shall be eligible to construct these works.
- Only products approved and catalogued by the Water Agency shall be used. Barwon Water adopts the approved products catalogue developed by City West Water, with some limitations and exceptions defined in Barwon Water Supplementary Product Catalogue.
- Works must be to constructed according to the MRWA edition of the WSAA Sewerage code of Australia WSA 02-2014-3.1 and Barwon Water's Supplement to this code.
- The design consultant is responsible for the design and coordination of the works. Any problem arising during construction shall be directed to the consultant.
- Barwon Water is to be notified 5 clear days prior to the commencement of works by the Consulting Engineer.

Survey, Set Out and Asset Recording

- For all survey and asset recording requirements please refer to Barwon Water's - Survey Manual for Land Development.
- All contours and levels are in metres to the Australian height datum (A.H.D).
- All asset recording must be completed to MGA94.
- Chainages shown on detail plans are discontinuous at maintenance structures.
- Chainages shown on long section sheets are continuous.
- Coordinates are to sewer line intersection point unless otherwise shown.
- Before commencement of work, the contractor must complete a level check between all TBM's to verify level values.
- TBM's and control points are to be maintained and protected at all times during construction.
- Should any marks be disturbed, the contractor will immediately notify the consultant to arrange re-instatement at the contractors expense.

Property Connections

- Number of lots to be sewerred: 59 lots.
- All property connections to be DN100 unless otherwise indicated.
- Properties requiring boundary traps are indicated in the detailed plans. The remainder do not require boundary traps.
- Branch tie distance shown on detail plan are from approved subdivision survey pegs. Branch ties for future lots are shown as a chainage. (Ch) Distance is from the downstream sewer structure.
- Invert level of the property connection point is shown opposite the branch position.
- Where a Spur Branch connects to a shaft, both property connections are considered to be shaft connections

Earthworks and Retaining Walls:

- In areas subject to earthworks, construction of sewers shall not commence until earthworks has been completed unless written approval has been given by the Water Authority.

Embedment

- Embedment shall be Type A (refer MRWA-S-202) unless otherwise specified on the long section.

Backfill

- Selection and compaction of trench backfill material shall be in accordance with Version 1 of the MRWA Specification No 04-03, as well as with Local road authority requirements.
- Refer to Long Section drawings for backfill requirements.
- As per Barwon Water supplement section 7.1, all types of maintenance structures are to be backfilled with 3% stabilised sand.

Schedule 8: Drawing Schedule

Drawing No.	Sheet No.	Title	Rev
1503E/5-S1	1	Notes, Schedules & Locality Plan	B
1503E/5-S2	2	Detailed Plan	B
1503E/5-S3	3	Detailed Plan	B
1503E/5-S4	4	Longitudinal Sections	B
1503E/5-S5	5	Longitudinal Sections	B
1503E/5-S6	6	Longitudinal Sections	B
1503E/5-S7	7	Gas Check Manhole Detail	B

Compaction Testing

- Test results shall be provided to the superintendent prior to practical completion / acceptance of works.
- The contractor is required to undertake all testing of fill compaction in accordance with Version 1 of the MRWA Backfill Specification 04-03.

Work on Live Sewers:

- All works on live sewers must be carried out by a water company accredited contractor.
- All existing sewers must be plugged to stop gas emissions prior to any connections being made to these sewers.
- To enable connections to live assets or any work on live assets, the contractor shall submit the appropriate forms to the superintendent at least 3 working days prior to any works on live sewers.
- The contractor is not permitted to break into an existing live pipeline, enter a live sewer or remove the cover to a live maintenance structure unless authorised by the Water Agency.

Safety:

- Prior to commencement of works on site, the contractor must ensure that all matters relating to the Occupational Health and Safety Act 2004 and Occupational Health and Safety regulations 2017, have been and will be complied with.

Testing:

- The contractor is to give a minimum of three (3) days notice to the superintendent and Water Agency prior to the testing being undertaken. Testing is to be in accordance with Barwon Waters Quality commissioning standard.

Environmental Management Plan:

- On commencement of construction works the contractor must comply with the recommendations of the EPA publication "construction techniques for sediment pollution control" (publication no 275 1991).
- All trees and vegetation are to be protected unless otherwise indicated for removal. The extent of any vegetation removal shall be confirmed on site with the superintendent and local council prior to commencement, and in accordance with any planning permits. Any removal shall be documented.
- All areas containing creek vegetation, trees and revegetated areas near the construction zone are to be fenced off during the works with secure and highly visible material such as para-webbing fencing.
- Ensure all machinery, equipment and/or footwear entering the site is weed and pathogen free.

Special

- An Activity Method Statement (AMS) is required to be submitted and approved by Barwon Water prior to works commencing.

Schedule 6: Gas Checks, Boundary Traps and Syphons

Structure Type	Boundary Trap	Gas Check	Syphons
Quantity	0	1	0

Schedule 5: Maintenance Holes (If Smartstream products are used then a Landing is included)

Maintenance Hole ID	MH Shaft Type (GRP/PP (Plastic) / Concrete)	MH Top Type (Conical/Flat)	Cover Class	Internal Diameter (mm)	Min. Wall Thickness (mm)	Depth to Invert (mm)	Drops	Ladder (L) Step Irons (S) Landing (Ld)	Corrosion Protection (Coating / PE or PVC Lining)	Shaft Re-inforcement	Comments (Offsets / Details)
MH 1	PE	Conical	D	1020	15	3840	-	L	None	-	-
MH 2	PE	Conical	D	1020	15	3960	1 x DN225	L	None	-	-
MH 3	PE	Conical	D	1020	15	3450	-	L	None	-	GAS CHECK MH
MH 4	PE	Conical	D	1020	15	3390	-	L	None	-	GAS CHECK MH
MH 5	PE	Conical	D	1020	15	3430	1 x DN150, 1 x DN100	L	None	-	-
MH 6	PE	Conical	B	1020	15	2730	1 x DN100	L	None	-	-
MH 7	PE	Conical	B	1020	15	3580	2 x DN100	L	None	-	-
MH 8	PE	Conical	B	1020	15	2490	1 x DN100	L	None	-	-
MH 9	PE	Conical	B	1020	15	2340	-	L	None	-	-
MH 10	PE	Conical	B	1020	15	2340	1 x DN100	L	None	-	-

Schedule 1: New Pipe

Pipe Size	Pipe Type	Length (m)	Pipe Class	Standard
DN100	UPVC-DWV	33.5	SN10	WSA PS 230
DN150	UPVC-DWV	622.5	SN8	WSA PS 230
DN 225	UPVC-DWV	20.7	SN8	WSA PS 230
DN 300	UPVC-DWV	204.2	SN8	WSA PS 230

Schedule 2: Property Connections

Connection Type	Type 1a	Type 1b	Type 2	Type 4a	Type 4b	Type S	Type 4S	Type B	Type 4B	Jump Up Flexible Couplings, ie: "F"
Quantities	1	2	35	-	18	7	-	5	4	-

Schedule 3: Service Offsets (m) and Locations:

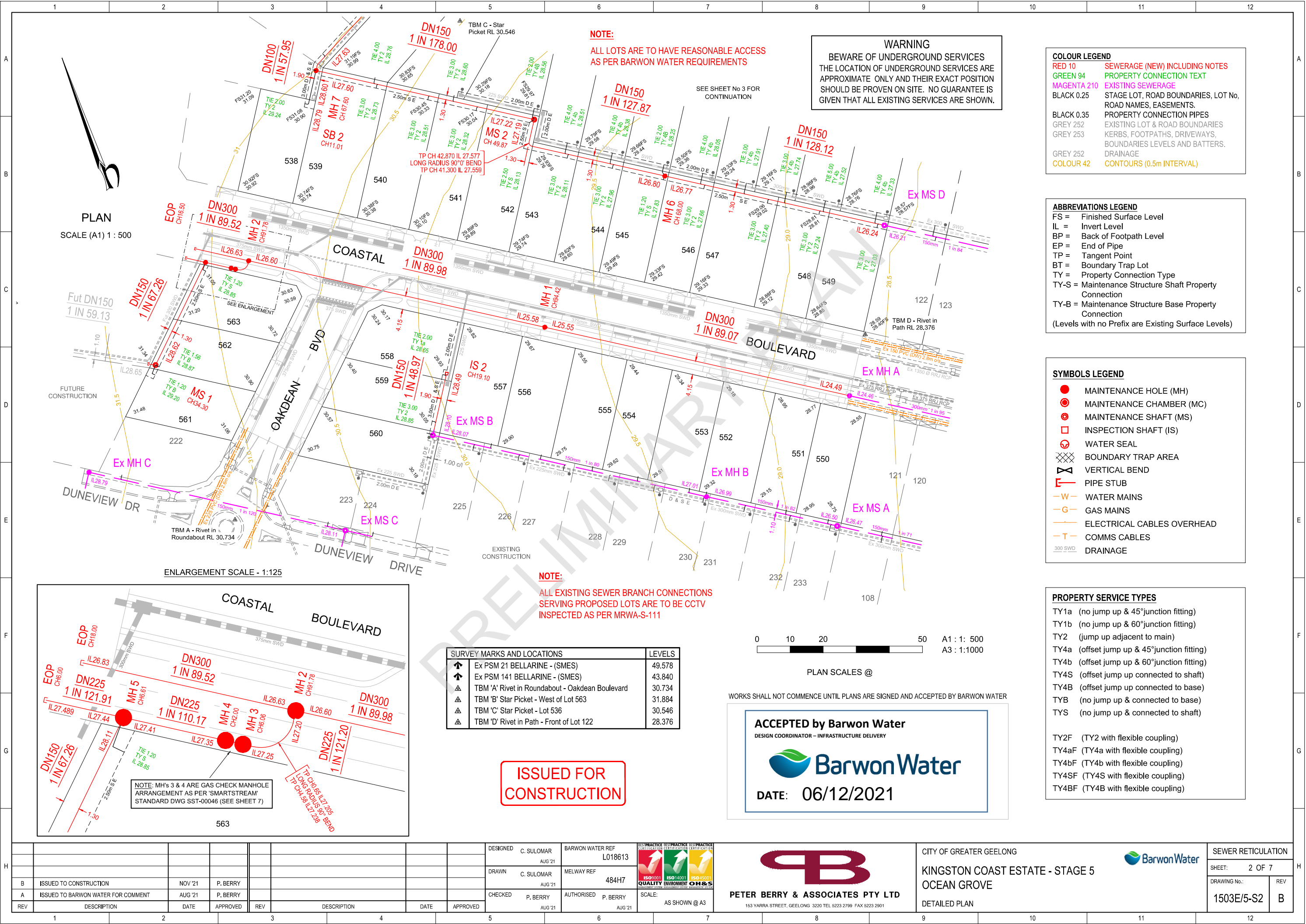
Street	Gas	Water	Comms	Elec.
Coastal Boulevard	N 2.10	N 2.70	S 1.90	S 2.60
Oakdean Boulevard	W 2.10	W 2.70	E 1.90	E 2.50
Ripview Drive	N 2.10	N 2.70	S 1.90	S 2.50
Wattleside Drive	N 2.10	N 2.70	S 1.90	S 2.50
Gumdrop Drive	W 2.10	W 2.70	E 1.90	E 2.50

Schedule 4: Maintenance Structures (other than Maintenance Holes)

Inspection Shafts (IS), Maintenance Shafts (MS) and Maintenance Chambers (MC):

Maintenance Structure ID	Type - (IS/MS/MC)	Cover Class	Depth to Invert (mm)	Shaft Connections	Comments/ References (Offsets/Details)
MS 1	MS	B	2710	-	-
MS 2	MS	B	2790	1 x DN100 HC	-
MS 3	MS	D	2720	-	-
MS 4	MS	B	2910	1 x DN100 HC	-
MS 5	MS	B	2270	3 x DN100 HC	-
IS 1	IS	B	1830	1 x DN100 HC	-
IS 2	IS	B	1450	-	-

DESIGNED C. SULOMAR AUG '21		BARWON WATER REF L018613		DRAWN C. SULOMAR AUG '21		MELWAY REF 484H7		CHECKED P. BERRY AUG '21		AUTHORISED P. BERRY AUG '21		SCALE: AS SHOWN @ A3		CITY OF GREATER GEELONG		KINGSTON COAST ESTATE - STAGE 5		OCEAN GROVE		NOTES, SCHEDULES & LOCALITY PLAN		SHEET: 1 OF 7		DRAWING No.: 1503E/5-S1		REV B	
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COLOUR LEGEND	
RED 10	SEWERAGE (NEW) INCLUDING NOTES
GREEN 94	PROPERTY CONNECTION TEXT
MAGENTA 210	EXISTING SEWERAGE
BLACK 0.25	STAGE LOT, ROAD BOUNDARIES, LOT No, ROAD NAMES, EASEMENTS.
BLACK 0.35	PROPERTY CONNECTION PIPES
GREY 252	EXISTING LOT & ROAD BOUNDARIES
GREY 253	KERBS, FOOTPATHS, DRIVEWAYS, BOUNDARIES LEVELS AND BATTERS.
GREY 252	DRAINAGE
COLOUR 42	CONTOURS (0.5m INTERVAL)

ABBREVIATIONS LEGEND	
FS =	Finished Surface Level
IL =	Invert Level
BP =	Back of Footpath Level
EP =	End of Pipe
TP =	Tangent Point
BT =	Boundary Trap Lot
TY =	Property Connection Type
TY-S =	Maintenance Structure Shaft Property Connection
TY-B =	Maintenance Structure Base Property Connection
(Levels with no Prefix are Existing Surface Levels)	

SYMBOLS LEGEND	
	MAINTENANCE HOLE (MH)
	MAINTENANCE CHAMBER (MC)
	MAINTENANCE SHAFT (MS)
	INSPECTION SHAFT (IS)
	WATER SEAL
	BOUNDARY TRAP AREA
	VERTICAL BEND
	PIPE STUB
	WATER MAINS
	GAS MAINS
	ELECTRICAL CABLES OVERHEAD
	COMMS CABLES
	DRAINAGE

PROPERTY SERVICE TYPES	
TY1a	(no jump up & 45° junction fitting)
TY1b	(no jump up & 60° junction fitting)
TY2	(jump up adjacent to main)
TY4a	(offset jump up & 45° junction fitting)
TY4b	(offset jump up & 60° junction fitting)
TY4S	(offset jump up connected to shaft)
TY4B	(offset jump up connected to base)
TYB	(no jump up & connected to base)
TY5	(no jump up & connected to shaft)
TY2F	(TY2 with flexible coupling)
TY4aF	(TY4a with flexible coupling)
TY4bF	(TY4b with flexible coupling)
TY4SF	(TY4S with flexible coupling)
TY4BF	(TY4B with flexible coupling)

NOTE:
ALL LOTS ARE TO HAVE REASONABLE ACCESS
AS PER BARWON WATER REQUIREMENTS

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NOTE:
ALL EXISTING SEWER BRANCH CONNECTIONS
SERVING PROPOSED LOTS ARE TO BE CCTV
INSPECTED AS PER MRWA-S-111

SURVEY MARKS AND LOCATIONS		LEVELS
	Ex PSM 21 BELLARINE - (SMES)	49.578
	Ex PSM 141 BELLARINE - (SMES)	43.840
	TBM 'A' Rivet in Roundabout - Oakdean Boulevard	30.734
	TBM 'B' Star Picket - West of Lot 563	31.884
	TBM 'C' Star Picket - Lot 536	30.546
	TBM 'D' Rivet in Path - Front of Lot 122	28.376

ISSUED FOR
CONSTRUCTION

ACCEPTED by Barwon Water
DESIGN COORDINATOR - INFRASTRUCTURE DELIVERY

DATE: 06/12/2021

DESIGNED C. SULOMAR AUG '21		BARWON WATER REF L018613		DESIGN PRACTICE BEST PRACTICE CERTIFICATION CERTIFICATION CERTIFICATION		CITY OF GREATER GEELONG		SEWER RETICULATION	
DRAWN C. SULOMAR AUG '21		MELWAY REF 484H7		ISO 9001 ISO 14001 ISO 45001 QUALITY ENVIRONMENT OHS&S		KINGSTON COAST ESTATE - STAGE 5		SHEET: 2 OF 7	
CHECKED P. BERRY AUG '21		AUTHORISED P. BERRY AUG '21		SCALE: AS SHOWN @ A3		OCEAN GROVE		DRAWING No.: 1503E/5-S2	
REV		DESCRIPTION		DATE		APPROVED		REV	
B		ISSUED TO CONSTRUCTION		NOV '21		P. BERRY		B	
A		ISSUED TO BARWON WATER FOR COMMENT		AUG '21		P. BERRY		B	

EMBEDMENT & BACKFILL DETAILS:

- Embedment shall be Type A unless stated otherwise.
- Backfill is to be Type F and installed as per Figure 1

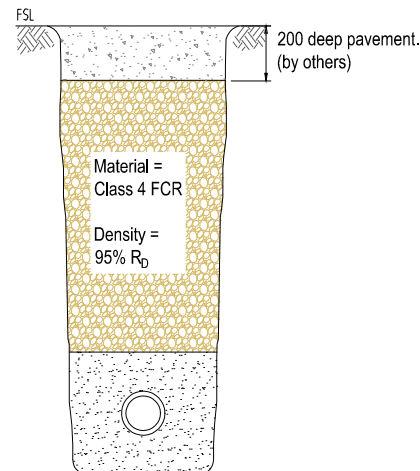


Figure 1: Type F Backfill

- Type R is to be installed as per Figure 2.
Type R backfill is to be used under all road pavement.

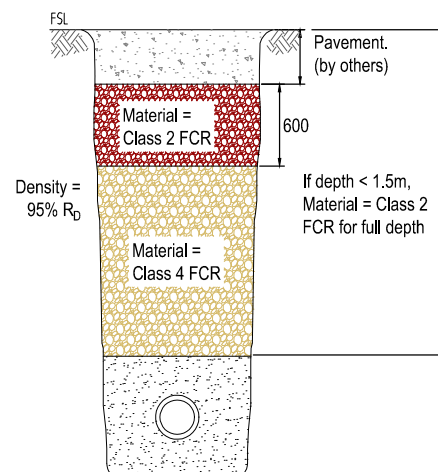
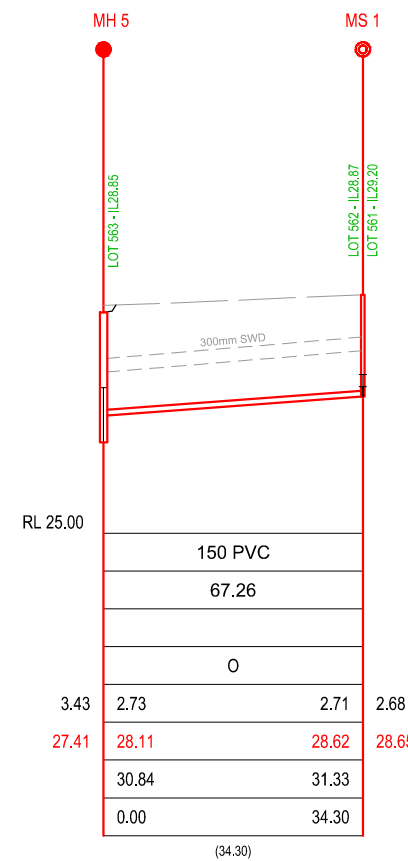
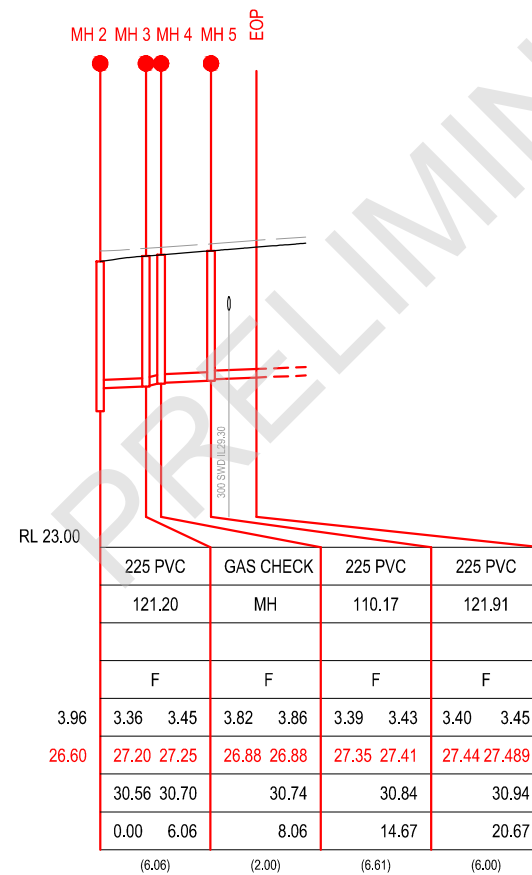
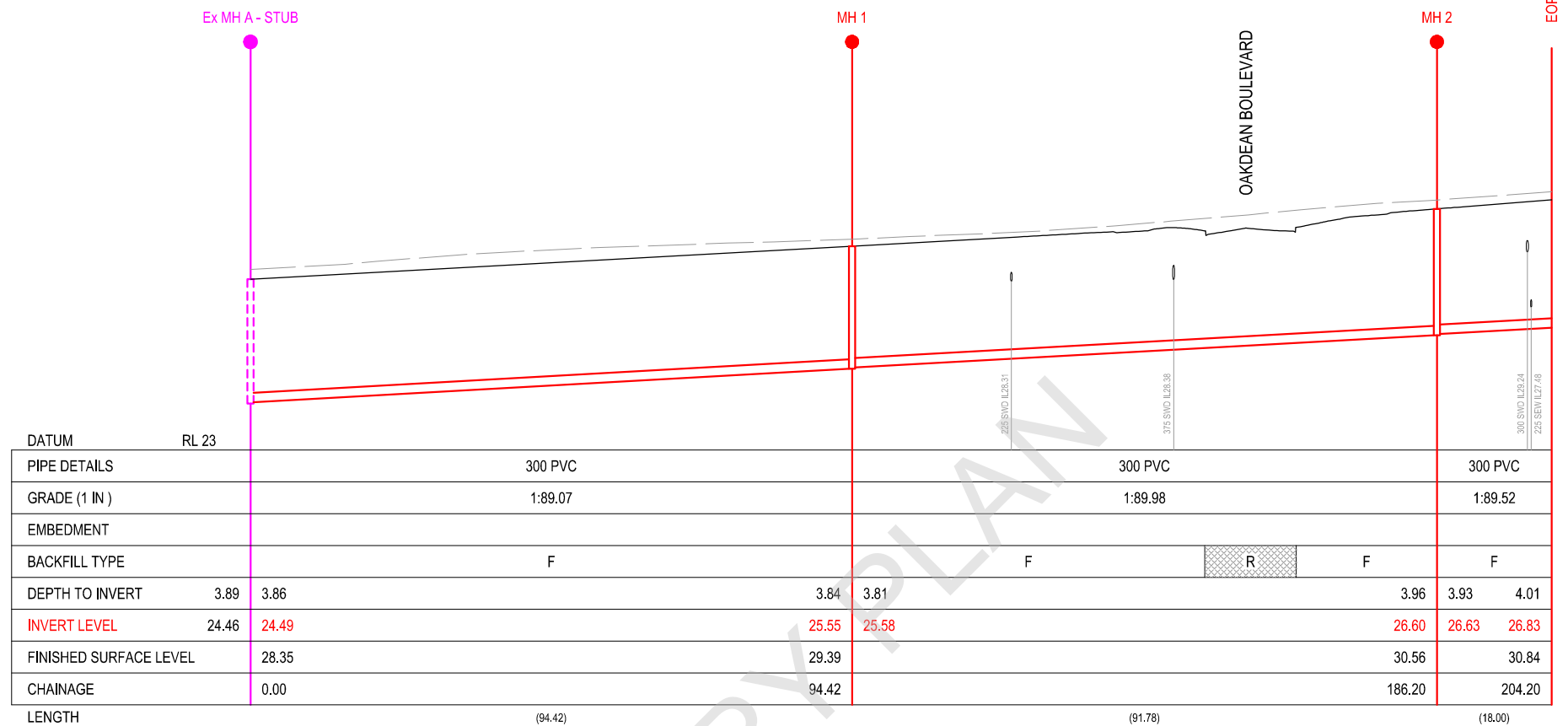
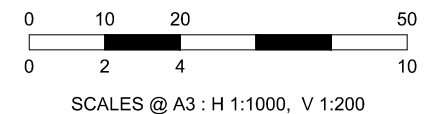


Figure 2: Type R Backfill

**ISSUED FOR
CONSTRUCTION**



COLOUR LEGEND	
RED 10	SEWERAGE (NEW) INCLUDING NOTES
GREEN 94	PROPERTY CONNECTION TEXT
BLACK 0.35	FINISHED SURFACE, PROPERTY CONNECTION PIPES
MAGENTA 210	EXISTING SEWERAGE
GREY 252	DRAINAGE, CUT/FILL (EARTHWORKS)



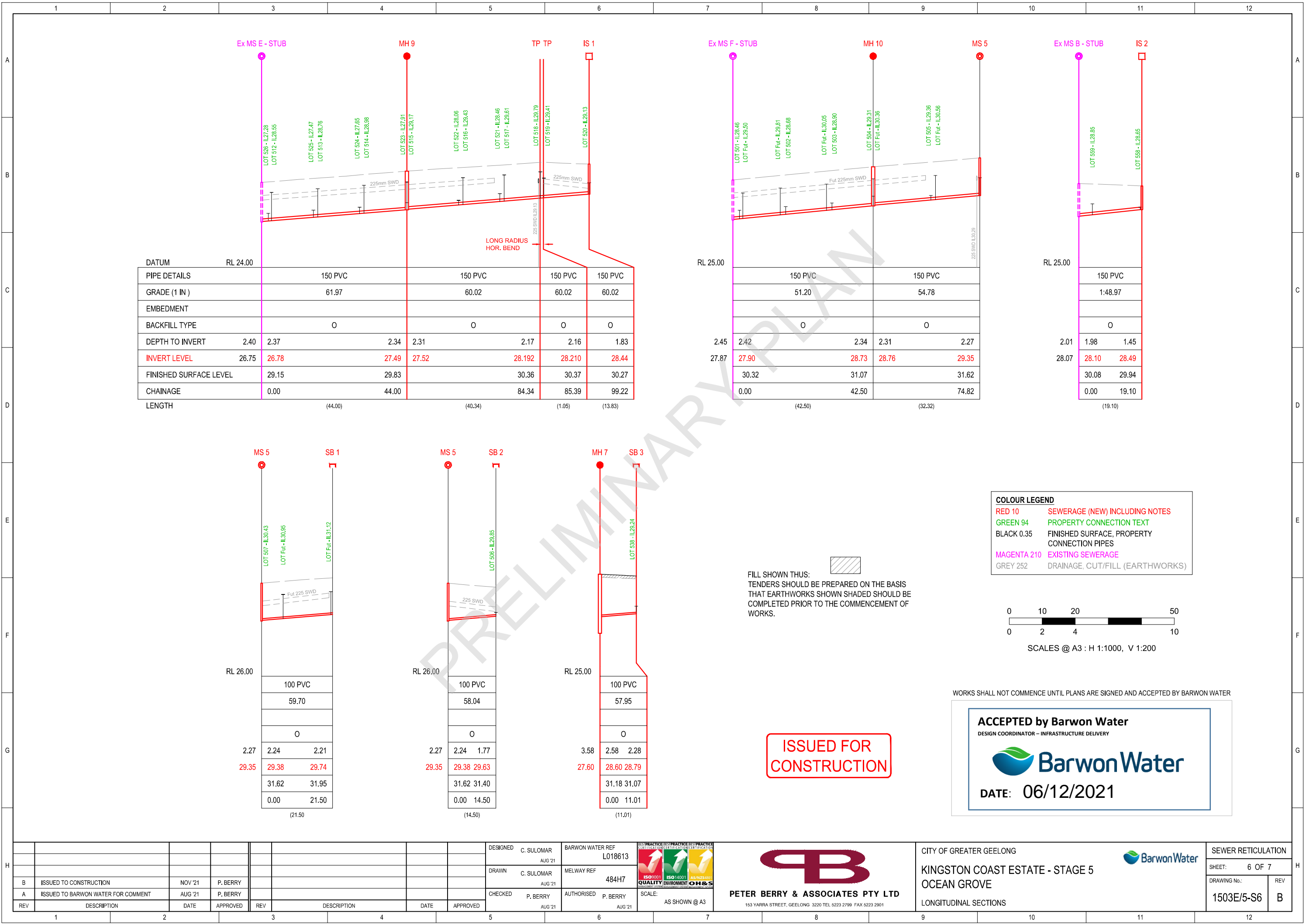
WORKS SHALL NOT COMMENCE UNTIL PLANS ARE SIGNED AND ACCEPTED BY BARWON WATER

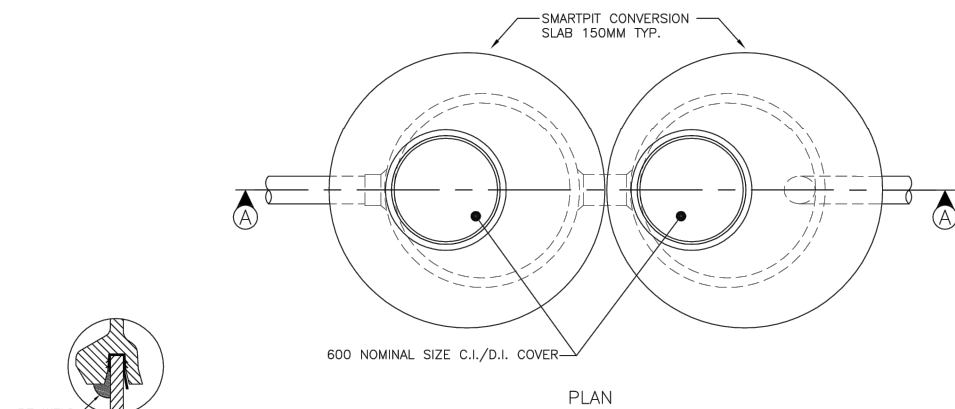
ACCEPTED by Barwon Water
DESIGN COORDINATOR - INFRASTRUCTURE DELIVERY



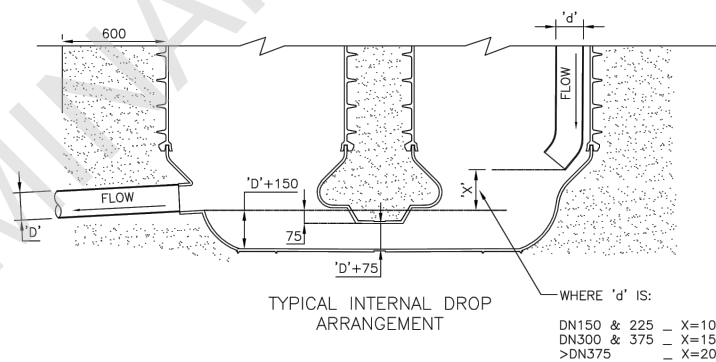
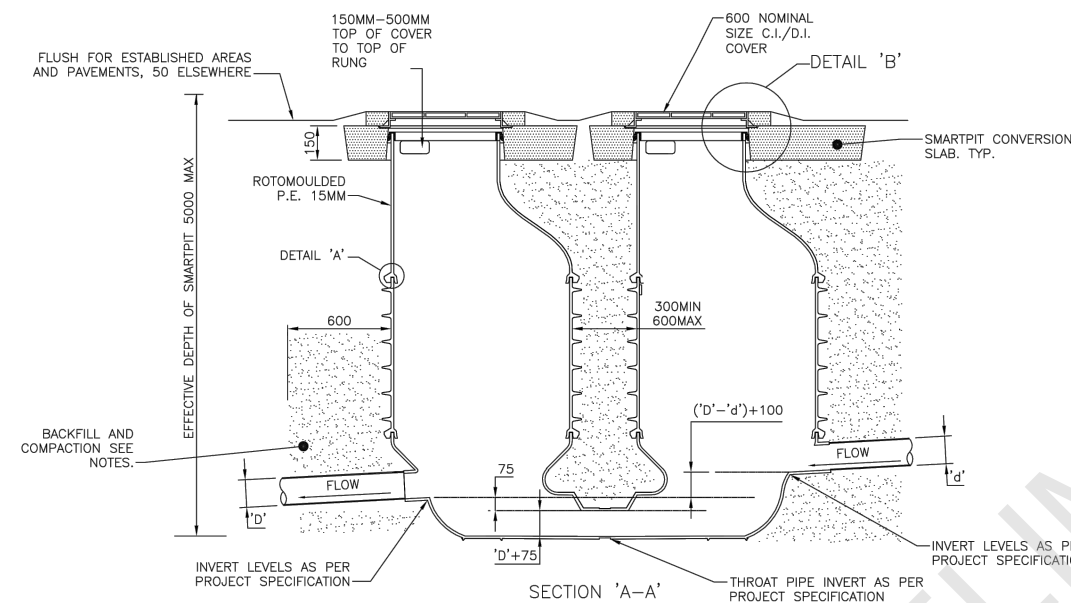
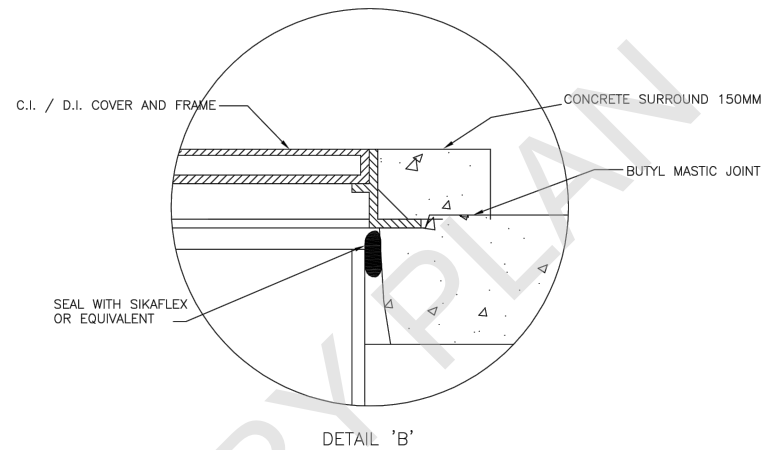
DATE: 06/12/2021

DESIGNED	C. SULOMAR	BARWON WATER REF	L018613	ISO 9001	ISO 14001	AS/NZS 4801	OH&S	SCALE:	AS SHOWN @ A3	PETER BERRY & ASSOCIATES PTY LTD	CITY OF GREATER GEELONG	Barwon Water	SEWER RETICULATION
DRAWN	C. SULOMAR	MELWAY REF	484H7	QUALITY	ENVIRONMENT	OH&S					KINGSTON COAST ESTATE - STAGE 5		SHEET: 4 OF 7
CHECKED	P. BERRY	AUTHORISED	P. BERRY								OCEAN GROVE		DRAWING No.: 1503E/5-S4
REV	DESCRIPTION	DATE	APPROVED	REV	DESCRIPTION	DATE	APPROVED				LONGITUDINAL SECTIONS		REV B





- GENERAL NOTES
1. ALL DIMENSIONS ARE IN MILLIMETERS U.O.N.
 2. WHERE PRACTICABLE LADDERS SHALL BE CLEAR OF ANY INLETS.
 3. CONCRETE SHALL BE GRADE N25.
 4. CONVERSION SLAB AND ADJUSTMENT SEGMENTS TO BE SUPPLIED BY SAME MANUFACTURER AS LINER SEGMENTS.
 5. CENTRE POINT OF ACCESS CHAMBER TO BE ON INTERSECTION POINT OF SEWERS.
 6. ONLY ACCESS CHAMBERS AND COMPONENTS APPROVED BY LOCAL AUTHORITY SHALL BE USED. THIS DRAWING IS AN EXAMPLE DRAWING. THE DETAILS OF SOME CHAMBERS MAY VARY FROM THOSE SHOWN IN THE DRAWING.
 7. PE WELDING TO BE CARRIED OUT BY ACCREDITED PERSONNEL ONLY (REFER TO MANUFACTURER FOR DETAILS).
 8. MANHOLE CAN BE ADJUSTED BY CUTTING CONVERSION TO REQUIRED HEIGHT USING STANDARD CUTTING EQUIPMENT.
 9. BASE, LINERS AND REDUCER COMPONENTS ROTOMOULDED FROM MDPE 15MM WALL THICKNESS.
 10. ACCESS CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
 11. BACKFILL AND COMPACTION IN ACCORDANCE WITH LOCAL AUTHORITY INSTRUCTIONS FOR DN150-DN600 GRAVITY SEWERS



ISSUED FOR
CONSTRUCTION

SMARTSTREAM TECHNOLOGY <small>This drawing is the property of SmartStream Technology and shall not be copied without permission.</small>				DO NOT SCALE FROM DRAWING SCALE: NOT TO SCALE	DRAWN BY: SF CHECKED BY: WC ALL DIMENSIONS ARE IN MILLIMETERS	DATE: 06-08-19 DATE: 06-08-19 DRAWING REF: SST-00046 SHEET: 1 OF 1 ISSUE: A	TYPE 1. SMARTPIT™ GAS-CHECK MANHOLE TYPICAL INSTALLATION ORIGINAL SHEET SIZE A3
REV	DESCRIPTION	DATE	APPROVED	REV	DESCRIPTION	DATE	APPROVED

NOT TO SCALE

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ACCEPTED by Barwon Water
DESIGN COORDINATOR – INFRASTRUCTURE DELIVERY

Barwon Water

DATE: 06/12/2021

DESIGNED C. SULOMAR AUG '21				BARWON WATER REF L018613				CITY OF GREATER GEELONG				SEWER RETICULATION			
DRAWN C. SULOMAR AUG '21				MELWAY REF 484H7				KINGSTON COAST ESTATE - STAGE 5				SHEET: 7 OF 7			
CHECKED P. BERRY AUG '21				AUTHORISED P. BERRY AUG '21				OCEAN GROVE				DRAWING No.: 1503E/5-S7			
REV				SCALE: AS SHOWN @ A3				LONGITUDINAL SECTIONS				REV B			



LOCALITY PLAN

NOT TO SCALE
MELWAYS: 484H7

DESIGN HEAD: 58 m
ZONE: RESIDENTIAL
TEST PRESSURE: 1000 kPa

Schedule 8: Drawing Schedule

Drawing No.	Sheet No.	Title	Rev
1503E/5 - W1	1	Notes, Schedules & Locality Plan	B
1503E/5 - W2	2	Detailed Plan	B
1503E/5 - W3	3	Detailed Plan	B
1503E/5 - W4	4	Construction Details	B



WARNING

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WARNING

BEWARE OF ASBESTOS
SOME UNDERGROUND SERVICES MAYBE CONSTRUCTED FROM ASBESTOS CONTAINING MATERIAL. CONTACT THE SUPERINTENDENT FOR INSTRUCTIONS ON HOW TO MANAGE ANY POTENTIAL ASBESTOS HAZARD.

FOR THE DURATION OF PROCLAIMED WATER RESTRICTIONS, THE CONTRACTOR SHALL CONFORM WITH THE RESTRICTIONS AND ANY OTHER WATER CONSERVATION REQUIREMENTS IMPOSED BY THE WATER AGENCY.

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CONSTRUCTION

General Notes

- Only contractors accredited by Barwon Water to 1W and 2W shall be eligible to construct these works.
- Barwon Water is to be notified 5 days prior to the commencement of works by the Consulting Engineer.
- Only products approved and catalogued by the Water Agency shall be used. Barwon Water adopts the approved products catalogue developed by City West Water, with some limitations and exceptions defined in Barwon Water Supplementary Product Catalogue.
- Works must be constructed according to WSA 03- 2011 MRWA edition in conjunction with the Barwon Water Supplement.
- DW and NDW assets shall only be constructed after deeper assets affecting the water mains have been constructed (eg: sewerage & drainage assets).
- This design is to be read in conjunction with road and drainage plans.
- The Contractor shall obtain a road opening permit for any works within the road reserve and comply with all requirements of the road owner.
- All services are to be located on site prior to any excavation.

Survey, Set Out and Asset Recording

- Temporary Bench Marks (TBM) for the set out of works to the Australian Height Datum (AHD) are provided in the design drawings.
- All contours and levels are in metres to AHD.
- All asset recording must be completed to MGA94.
- The Contractor is directly responsible for ensuring the project set out is consistent with the design. Should actual site conditions conflict in any way with that documented, the Contractor shall contact the Superintendent for clarification before proceeding.
- The Contractor is to engage a suitably qualified and experienced Surveyor to undertake asset recording of the work. For all survey and asset recording requirements please refer to Barwon Water's - Survey Manual for Land Development 2017.
- All specific pipe materials (eg: PVC-M) shall be indicated in the As Constructed information

Products and Materials

- For the Pipe Schedule, refer to Table 1.
- For the Pipe Material Schedule, refer to Table 2.

Appurtenances

- All valves and hydrants shall be marked according to drawings MRWA-W-300, MRWA-W-301 and BWA-SD-G021-RA.
- Valves surrounds, covers, and spindles be constructed in accordance with drawings MRWA-W-302 and Barwon Water Supplement Section 8.10.
- Hydrant surface arrangements shall be constructed in accordance with MRWA-W-303 and BW Supplement - Detail D.
- Flange and flange bolts shall be constructed in accordance with drawings MRWA-W-306A and MRWA-W-306B.

Water Main Alignment, Trenching & Cover

- Water Mains shall be aligned in accordance with the Table 5 - Services Offset and Location.
- All water mains shall pass over drains and sewers unless shown otherwise in the design drawings.
- The minimum offset from a property shall be 1.5 metres from any pipe up to and including DN 150mm where the pipe is located in a residential zoned court bowl head or rural zoned area. Standard offsets for all other areas are either 2.1 or 2.7 metres.

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ACCEPTED by Barwon Water
DESIGN COORDINATOR - INFRASTRUCTURE DELIVERY



DATE: 06/12/2021

Embedment

- Embedment shall be placed as per drawing BWA-SD-W001-R2.

Backfill

- All Water Mains under roadways to be backfilled with 20mm Class 2 crushed rock in 150mm layers, compacted to 100% (upper backfill) and 95% (lower backfill) in accordance with MRWA-W-201. All Water Mains under footpaths/vehicle crossings to be backfilled with 20mm Class 3 crushed rock and extended 500mm either side of future paving in 150mm layers compacted to 95% in accordance with MRWA-W-201.
- Compaction testing shall be undertaken in accordance with the MRWA Backfill Specifications.

Thrust Restraint

- For the Thrust Restraint, refer to Table 6.
- Construction of concrete thrust restraints as per drawings MRWA-W-204, 205A, 205B and 205C.
- Timber/Recycled plastic blocks as per drawings MRWA-W-204 and MRWA-W-206.

Property Services

- NDW property services shall always be located on the left of the DW property service as you look from the road to the front of the property.
- Property Services are to be constructed as per Barwon Water Supplement Drawings 70200-70203.

Connections (All types)

- Connections for Property Services shall only be installed on drinking and non drinking water mains up to and including DN225mm.
- Pre-tapped connectors are not permitted.
- Connections shall be located so as to provide at least 600mm spacing between tappings and from the end of pipe.
- All property service connections to new residential reticulation mains are to be completed using Barwon Water's Standard Drawing 70112.

Other Services

- To receive the most up to date information prior to construction, "Dial before you Dig" shall be undertaken to aid in the location of other services. Other services shall be carefully located prior to full excavation at the contractor's cost. Any clashes of proposed new works with other assets shall be reported to the Superintendent immediately for clarification.
- Clearances to other services shall be as per Section 5.4 of the Barwon Water supplement seen below in Table 7. These clearances shall apply to surface covers as well as underground assets.
- Vertical clearances from other services shall be as per Table 7.

Testing, Asset Acceptance and Live Connections

- All DW and/or NDW supply mains must be cleaned, swabbed, pressure tested, disinfected (where required) and water quality tested strictly in accordance with Barwon Water's "Water Quality Guidance for Commissioning Assets in Contact with Potable Water or Class A Recycled Water" document (dated 10.09.18).
- The Contractor must give Barwon Water's Senior Quality Auditor 3 clear working days notice in writing of the date and time of the proposed test.
- The Water Agency shall be notified in writing 10 working days in advance of connection to the live network being undertaken. The Shutdown Period can be of maximum 4 hours and must happen between 9am and 3pm.
- Valves connecting new assets to the Water Agency's live system shall not be operated by the Contractor.

ENSURE THRUST BLOCK IS A MINIMUM 2.0m
CLEAR OF PERPENDICULAR TRENCH
CROSSINGS INCLUDING PITS

Table 2: Pipe Material Schedule

Material	Reference
PVC - O	WSA-PS-209
PVC - M	WSA-PS-210
PE (RETIC & SUBMAINS)	WSA-PS-207
PE (PROPERTY SERVICES)	WSA-PS-215

Table 1: New Pipe Schedule

New Works			Drinking Main	Non-Drinking Main
Size (DN)	Type	Class	Length (m)	Length (m)
225	PVC-O or PVC-M	16	67.60	-
180	PE100	16	10.60	-
150	PVC-O or PVC-M	16	417.20	-
100	PVC-O or PVC-M	16	146.50	-
25	PE100	16	Property Connections	-

Table 3: Hydrants & Washout Schedule

Main Size	Fitting Type	Ownership	Location	Street	Location
225	HYDRANT	DW	INLINE	OAKDEAN BVD	Front of Lot 563
225	VALVE	DW	INLINE	OAKDEAN BVD	Front of Lot 563
150	HYDRANT	DW	INLINE	COASTAL BVD	Front of Lot 548
150	VALVE	DW	INLINE	COASTAL BVD	Front of Lot 538
150	HYDRANT	DW	INLINE	COASTAL BVD	Front of Lot 538
150	VALVE	DW	INLINE	COASTAL BVD	Front of Lot 538
150	WASHOUT	DW	END OF LINE	COASTAL BVD	End of Works
150	WASHOUT	DW	END OF LINE	RIPVIEW DRIVE	End of Works
150	VALVE	DW	INLINE	GUMDROP DRIVE	Front of Lot 511
150	HYDRANT	DW	INLINE	GUMDROP DRIVE	Front of Lot 511
150	WASHOUT	DW	END OF LINE	GUMDROP DRIVE	End of Works
150	VALVE	DW	INLINE	WATTLESIDE DRIVE	Front of Lot 506
150	HYDRANT	DW	INLINE	WATTLESIDE DRIVE	Front of Lot 506
100	VALVE	DW	INLINE	RIPVIEW DRIVE	Front of Lot 520
100	HYDRANT	DW	INLINE	RIPVIEW DRIVE	Front of Lot 520
100	VALVE	DW	INLINE	RIPVIEW DRIVE	Front of Lot 524

Table 4: Curve Pipe and Deflection Schedule

Location	Method	Offset/Radius (m)	Total Pipe Length	Pipe Lengths (m)
Ripview Drive (AA-AA)	8 x 6" SOC	78.52m Radius	42m	7 x 6m

Table 5: Service Offsets (m) and Locations:

Street	Gas		Water		Comms		Elec.	
Coastal Boulevard	N	2.10	N	2.70	S	1.90	S	2.60
Oakdean Boulevard	W	2.10	W	2.70	E	1.90	E	2.50
Ripview Drive	N	2.10	N	2.70	S	1.90	S	2.50
Wattleside Drive	N	2.10	N	2.70	S	1.90	S	2.50
Gumdrop Drive	W	2.10	W	2.70	E	1.90	E	2.50

Table 6: Thrust Restraint Schedule

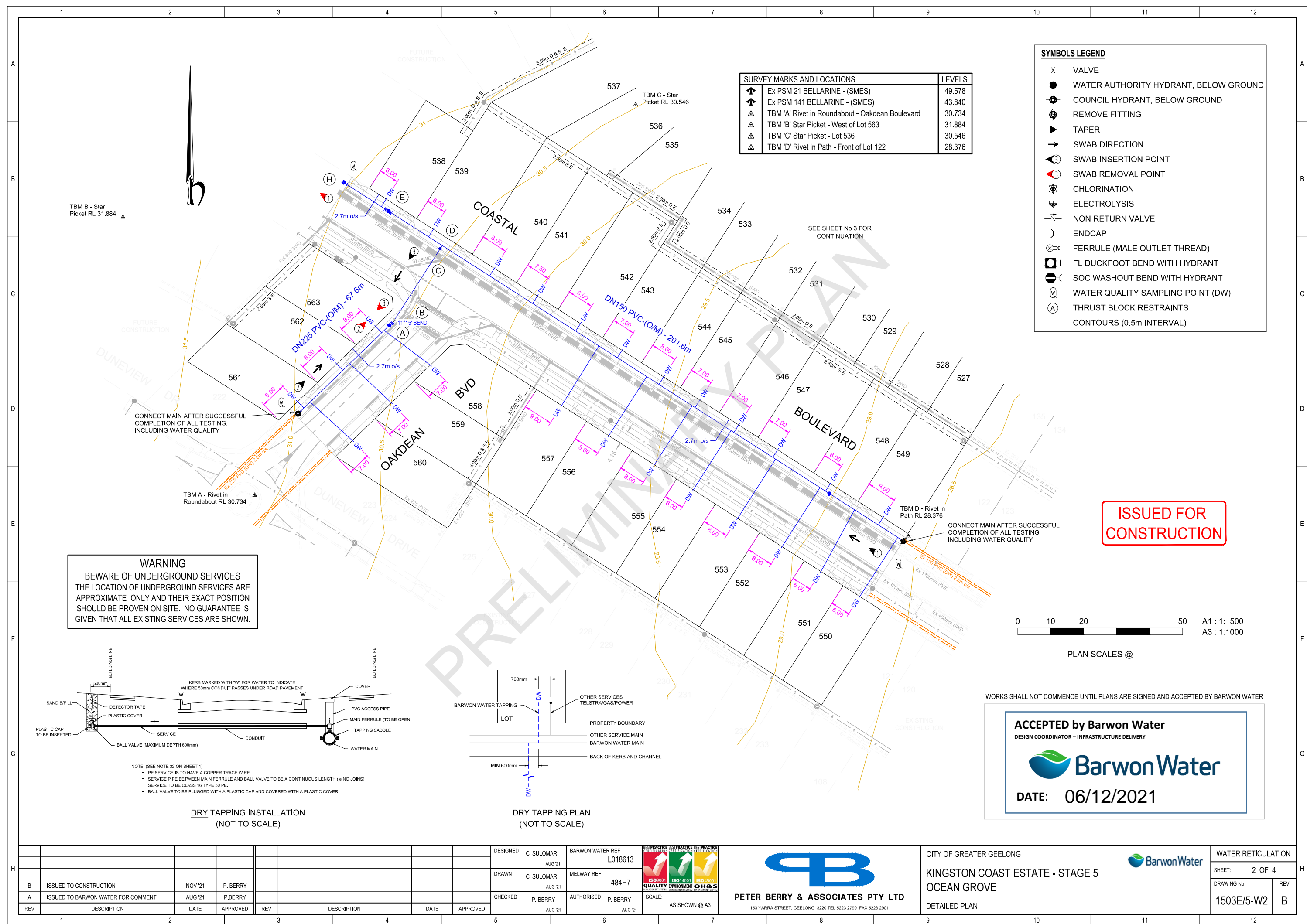
Location	Type	Thrust	AHBP (kPa) USED	Area (m2)	No. Locations
A	INLINE	DN225 VALVE	50	1.03	1
B	PLAIN	DN225 11"15" BEND	50	0.20	1
C	PLAIN	DN225 x DN150 TAPER	50	0.55	1
D	PLAIN	DN150 x DN150 TEE	50	0.48	2
E	INLINE	DN150 VALVE	50	0.48	2
F	INLINE	DN150 VALVE (PE)	50	1.14	1
G	PLAIN	DN150 22"30" BEND	50	0.19	1
H	INLINE	DN150 WASHOUT	50	0.48	3
I	INLINE	DN150 x DN100 TAPER	50	0.30	1
J	INLINE	DN100 VALVE	50	0.30	1

Table 7: Vertical Clearance

Existing or Proposed Service	Main Vertical Clearance (mm)	Existing or Proposed Service	Main Vertical Clearance (mm)
Water Mains ≤DN375	150	Electricity Conduits & Cables	225
Water Mains > DN375	500	Pits / Stormwater Drains ≤DN300	150
Gas Mains	150	Sewer - Gravity	500
Teleco Conduits & Cables	150	Sewer - Pressure & Vacuum	300

- Vertical clearance between water mains shall depend on the larger main diameter.
- Water mains shall cross over sewers and drains unless shown otherwise.
- Maintain additional clearance from High Voltage electrical cables to allow for a protective barrier and marking.

								DESIGNED C. SULOMAR AUG '21		BARWON WATER REF L018613				CITY OF GREATER GEELONG	KINGSTON COAST ESTATE - STAGE 5 OCEAN GROVE		WATER RETICULATION		
								DRAWN C. SULOMAR AUG '21		MELWAY REF 484H7							SHEET: 1 OF 4		
B ISSUED TO CONSTRUCTION		NOV '21		P.BERRY				CHECKED P. BERRY AUG '21		AUTHORISED P. BERRY AUG '21							SCALE: AS SHOWN @ A3		DRAWING No: 1503E/5-W1
A ISSUED TO BARWON WATER FOR COMMENT		AUG '21		P.BERRY															
REV	DESCRIPTION	DATE	APPROVED	REV	DESCRIPTION	DATE	APPROVED												



SURVEY MARKS AND LOCATIONS		LEVELS
▲	Ex PSM 21 BELLARINE - (SMES)	49.578
▲	Ex PSM 141 BELLARINE - (SMES)	43.840
▲	TBM 'A' Rivet in Roundabout - Oakdean Boulevard	30.734
▲	TBM 'B' Star Picket - West of Lot 563	31.884
▲	TBM 'C' Star Picket - Lot 536	30.546
▲	TBM 'D' Rivet in Path - Front of Lot 122	28.376

SYMBOLS LEGEND	
X	VALVE
●	WATER AUTHORITY HYDRANT, BELOW GROUND
⊙	COUNCIL HYDRANT, BELOW GROUND
⊖	REMOVE FITTING
▶	TAPER
→	SWAB DIRECTION
⊙③	SWAB INSERTION POINT
⊙③	SWAB REMOVAL POINT
☼	CHLORINATION
⚡	ELECTROLYSIS
↯	NON RETURN VALVE
)	ENDCAP
⊗	FERRULE (MALE OUTLET THREAD)
⊗H	FL DUCKFOOT BEND WITH HYDRANT
⊗C	SOC WASHOUT BEND WITH HYDRANT
Ⓢ	WATER QUALITY SAMPLING POINT (DW)
Ⓐ	THRUST BLOCK RESTRAINTS
CONTOURS (0.5m INTERVAL)	

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

ISSUED FOR CONSTRUCTION

0 10 20 50 A1 : 1: 500
A3 : 1:1000

PLAN SCALES @

WORKS SHALL NOT COMMENCE UNTIL PLANS ARE SIGNED AND ACCEPTED BY BARWON WATER

ACCEPTED by Barwon Water
DESIGN COORDINATOR - INFRASTRUCTURE DELIVERY

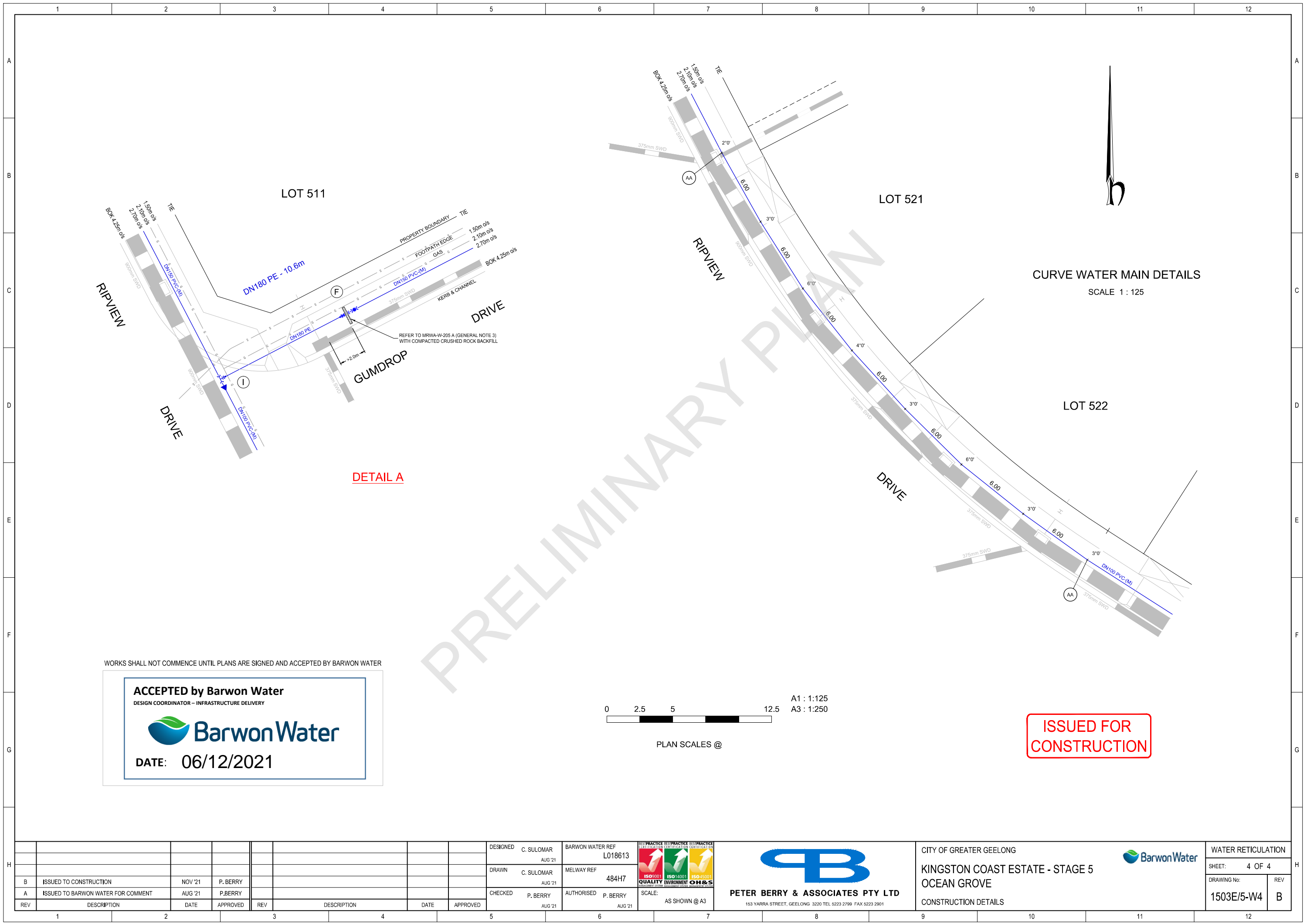


DATE: 06/12/2021

DRY TAPPING INSTALLATION
(NOT TO SCALE)

DRY TAPPING PLAN
(NOT TO SCALE)

				DESIGNED	C. SULOMAR	BARWON WATER REF	L018613			CITY OF GREATER GEELONG KINGSTON COAST ESTATE - STAGE 5 OCEAN GROVE DETAILED PLAN	WATER RETICULATION	
				DRAWN	C. SULOMAR	MELWAY REF	484H7				SHEET: 2 OF 4	
				CHECKED	P. BERRY	AUTHORISED	P. BERRY				DRAWING No:	REV
REV	DESCRIPTION	DATE	APPROVED	REV	DESCRIPTION	DATE	APPROVED	SCALE:	AS SHOWN @ A3	1503E/5-W2	B	
B	ISSUED TO CONSTRUCTION	NOV '21	P. BERRY									
A	ISSUED TO BARWON WATER FOR COMMENT	AUG '21	P. BERRY									

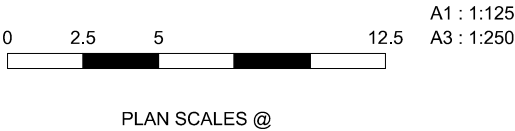


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ACCEPTED by Barwon Water
DESIGN COORDINATOR – INFRASTRUCTURE DELIVERY



DATE: 06/12/2021



								DESIGNED				C. SULOMAR		BARWON WATER REF						CITY OF GREATER GEELONG				WATER RETICULATION							
								DRAWN				C. SULOMAR		MELWAY REF						KINGSTON COAST ESTATE - STAGE 5				SHEET: 4 OF 4							
A				ISSUED TO CONSTRUCTION				NOV '21				P. BERRY		484H7		AUTHORISED				OCEAN GROVE				DRAWING No:		REV					
B				ISSUED TO BARWON WATER FOR COMMENT				AUG '21				P.BERRY				P. BERRY		SCALE:				CONSTRUCTION DETAILS				1503E/5-W4		B			
REV				DESCRIPTION				DATE				APPROVED		REV				DESCRIPTION				DATE				APPROVED					