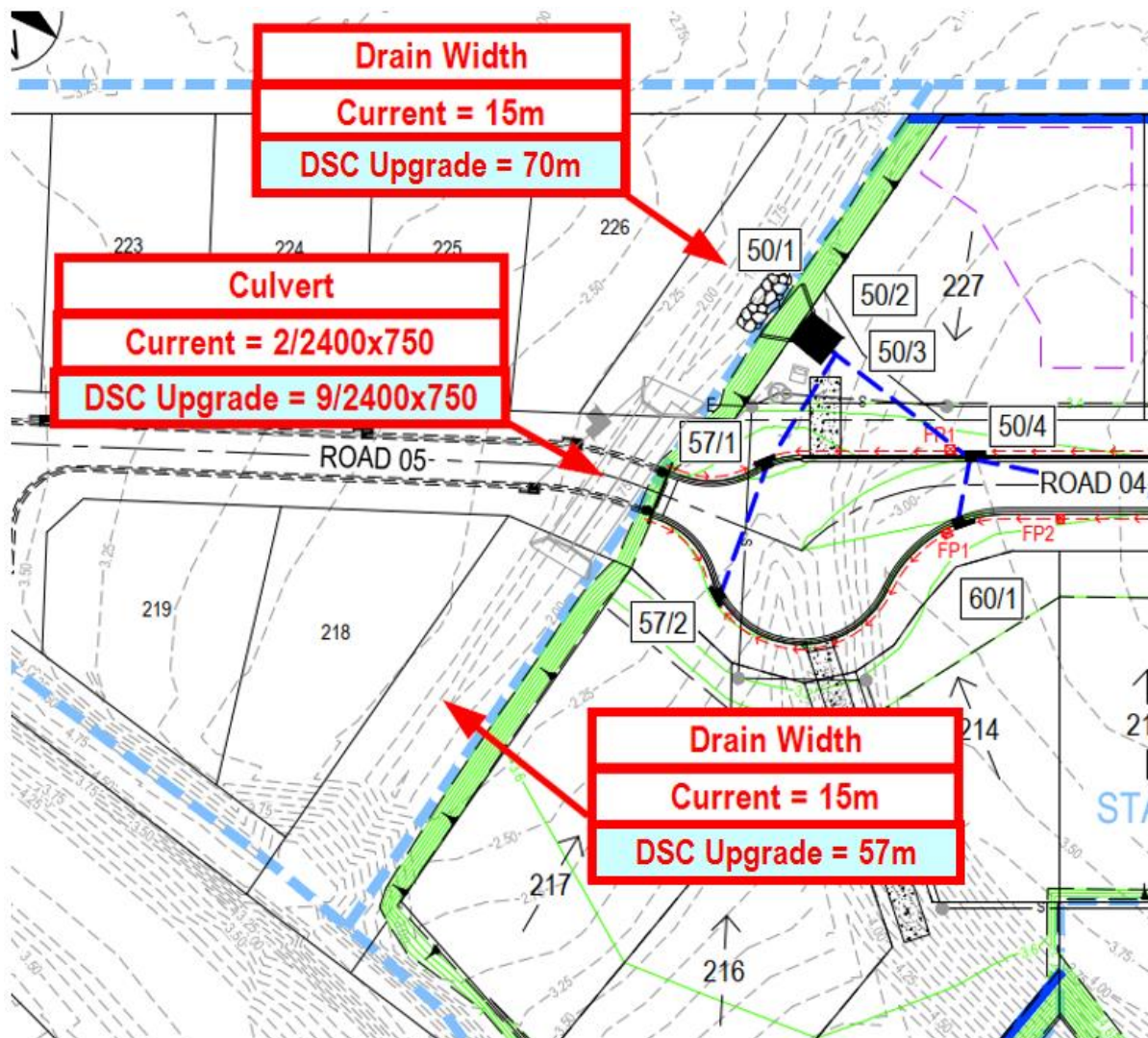


Please refer below Jacobs response to DSC Information Requested dated 1/07/19.

1. The calculations submitted with the OWA for Stage 5C&D demonstrate that:

- Q_{100} flows are detained on the western side of Bonnie Doon Rd without encroaching or overtopping Bonnie Doon Rd, ie, Bonnie Doon Road has Q_{100} immunity. QUDM requires a road of that classification to have at least Q_{50} immunity.
- The current drainage regime results in the Stage 5C&D development needing to cater for no more than $6.8\text{m}^3/\text{s}$ for the minor/major rainfall events.
- Overtopping of Bonnie Doon Rd occurs in a blocked culvert (severe) scenario only.
- Further overtopping of the 'railway bund' occurs in a blocked culvert (severe) scenario only. In this scenario the overland flow path is north west of the subject site. The low point in the 'railway bund' was noted within the calculations.

If Council was to upgrade both the Bonnie Doon Rd & Cane Rail culverts to remove any detention, and thus increase peak flows through the Stage 5 drain, then the drainage corridor would require widening of the order noted below:



2. Refer to the attached sketch showing existing and proposed drain invert levels which demonstrates that a free draining solution is achieved:

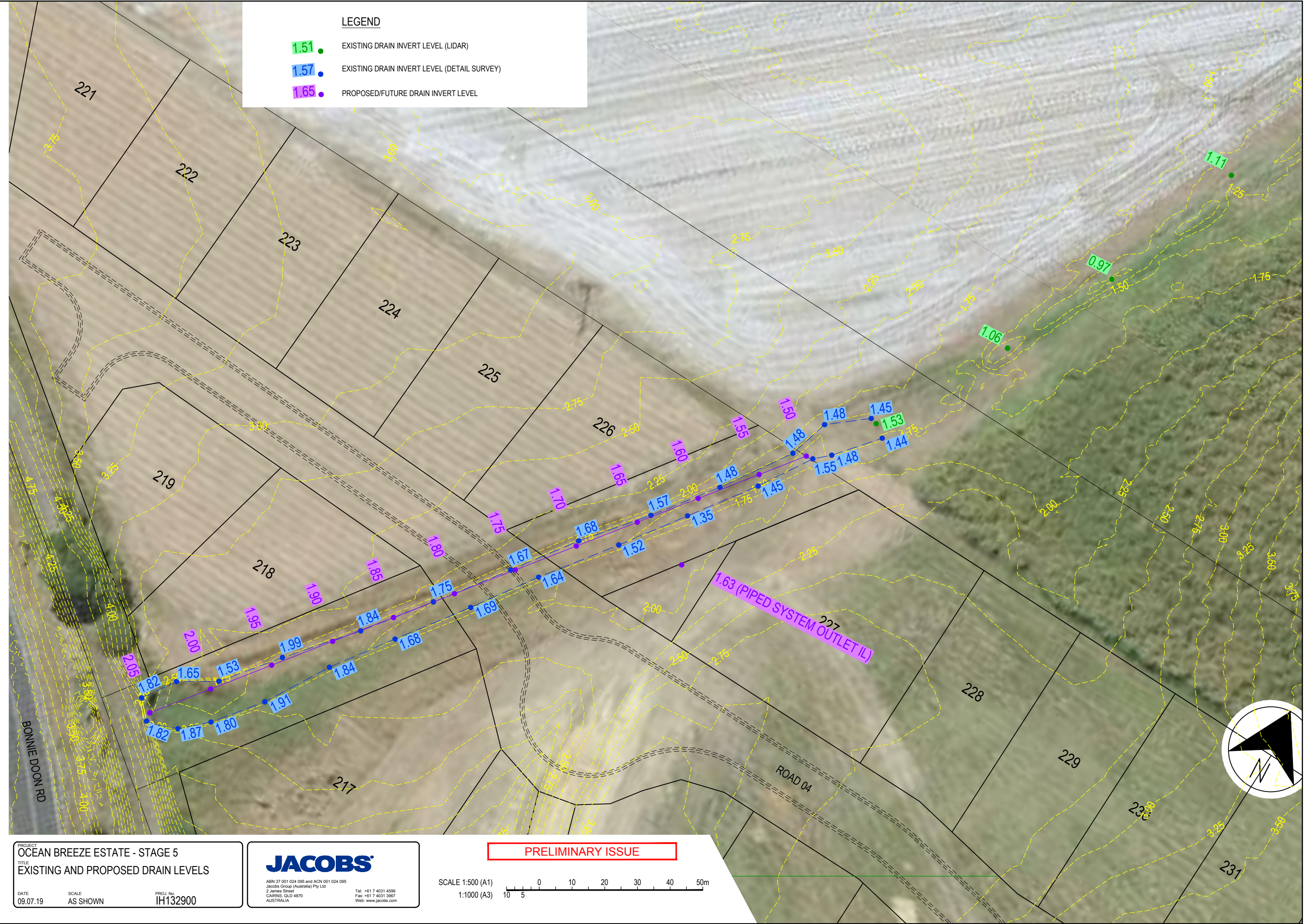
- The levels noted in green are from lidar survey.
- The levels noted in blue are from detailed survey.
- The longitudinal grade of the ultimate drain is 0.5% with levels noted in magenta.

3. An additional 100 Ø crossing is provided to the western end of this stage. Refer to the revised drawings DRG-0519_B & DRG-0523_B.

4. An additional hydrant is provided as requested. Refer to the revised drawings DRG-0519_B & DRG-0523_B.

LEGEND

- 1.51 EXISTING DRAIN INVERT LEVEL (LIDAR)
- 1.57 EXISTING DRAIN INVERT LEVEL (DETAIL SURVEY)
- 1.65 PROPOSED/FUTURE DRAIN INVERT LEVEL



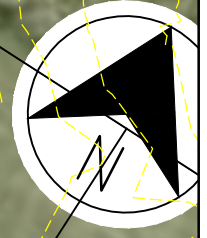
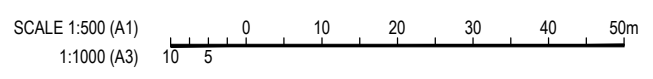
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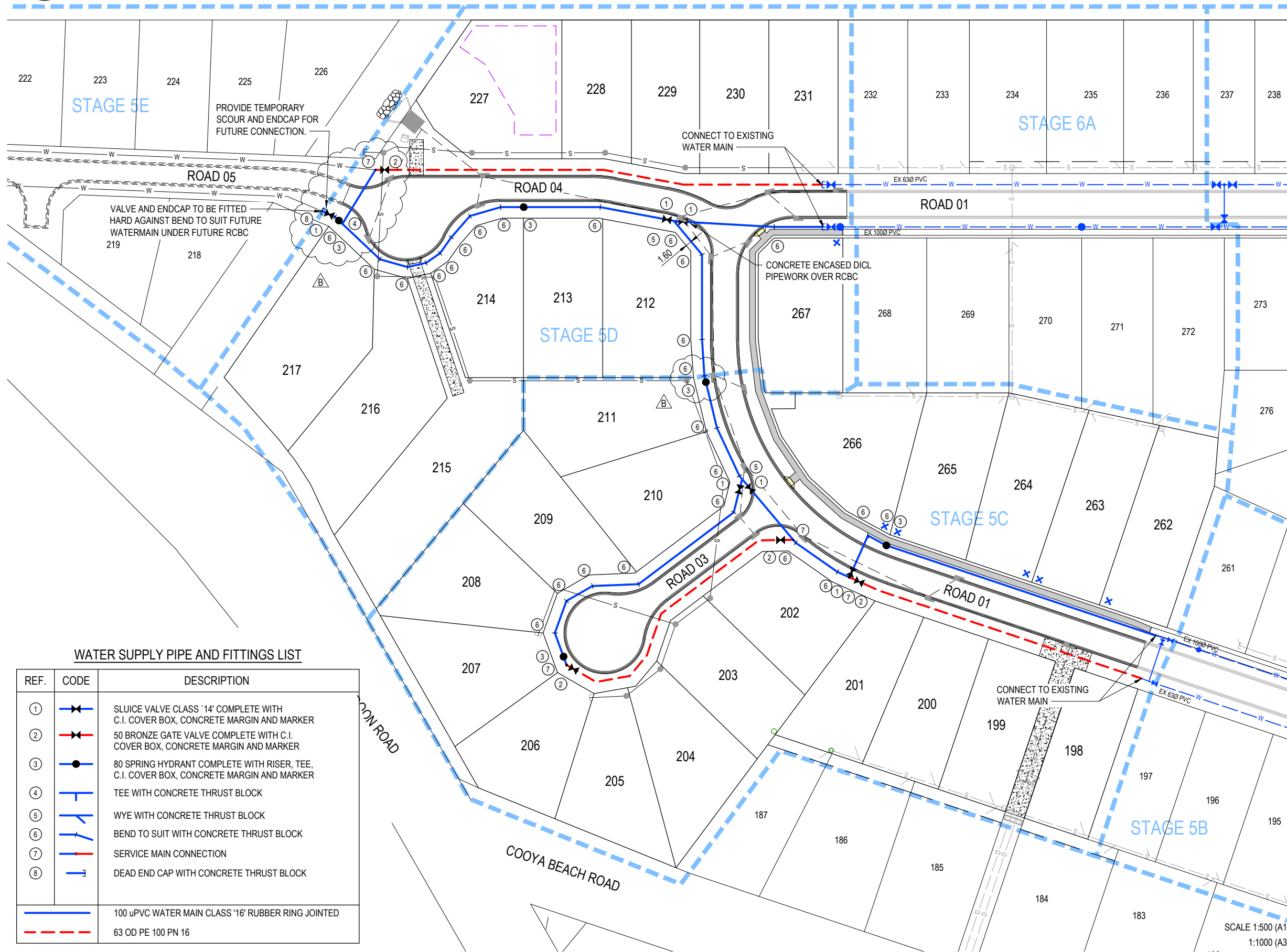
PROJECT
OCEAN BREEZE ESTATE - STAGE 5
 TITLE
EXISTING AND PROPOSED DRAIN LEVELS
 DATE 09.07.19 SCALE AS SHOWN PROJ. No. IH132900

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PRELIMINARY ISSUE





LEGEND

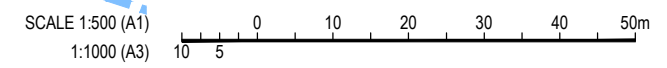
- STAGE BOUNDARY
- EASEMENT BOUNDARY
- x FUTURE WATER SERVICE LOCATION (REFER NOTE 5 ON DG-0002)
- PROPOSED STORMWATER
- PROPOSED SEWER
- w- EXISTING WATER
- BUILDING LOCATION ENVELOPE

NOTE

FOR NOTES REFER DRG-0502.

WATER SUPPLY PIPE AND FITTINGS LIST

REF.	CODE	DESCRIPTION
①		SLUICE VALVE CLASS '14' COMPLETE WITH C.I. COVER BOX, CONCRETE MARGIN AND MARKER
②		50 BRONZE GATE VALVE COMPLETE WITH C.I. COVER BOX, CONCRETE MARGIN AND MARKER
③		80 SPRING HYDRANT COMPLETE WITH RISER, TEE, C.I. COVER BOX, CONCRETE MARGIN AND MARKER
④		TEE WITH CONCRETE THRUST BLOCK
⑤		WYE WITH CONCRETE THRUST BLOCK
⑥		BEND TO SUIT WITH CONCRETE THRUST BLOCK
⑦		SERVICE MAIN CONNECTION
⑧		DEAD END CAP WITH CONCRETE THRUST BLOCK
		100 uPVC WATER MAIN CLASS '16' RUBBER RING JOINTED
		63 OD PE 100 PN 16



REV	DATE	DRAWN	REV'D	APP'D	REVISION	DRAWING NUMBER	REFERENCE DRAWING TITLE
B	10.07.19	PAM	RJB	RJC	100 DIA WATERMAIN CROSSING AND HYDRANT ADDED		
A	21.05.19	PAM	RJB	RJC	INITIAL ISSUE		



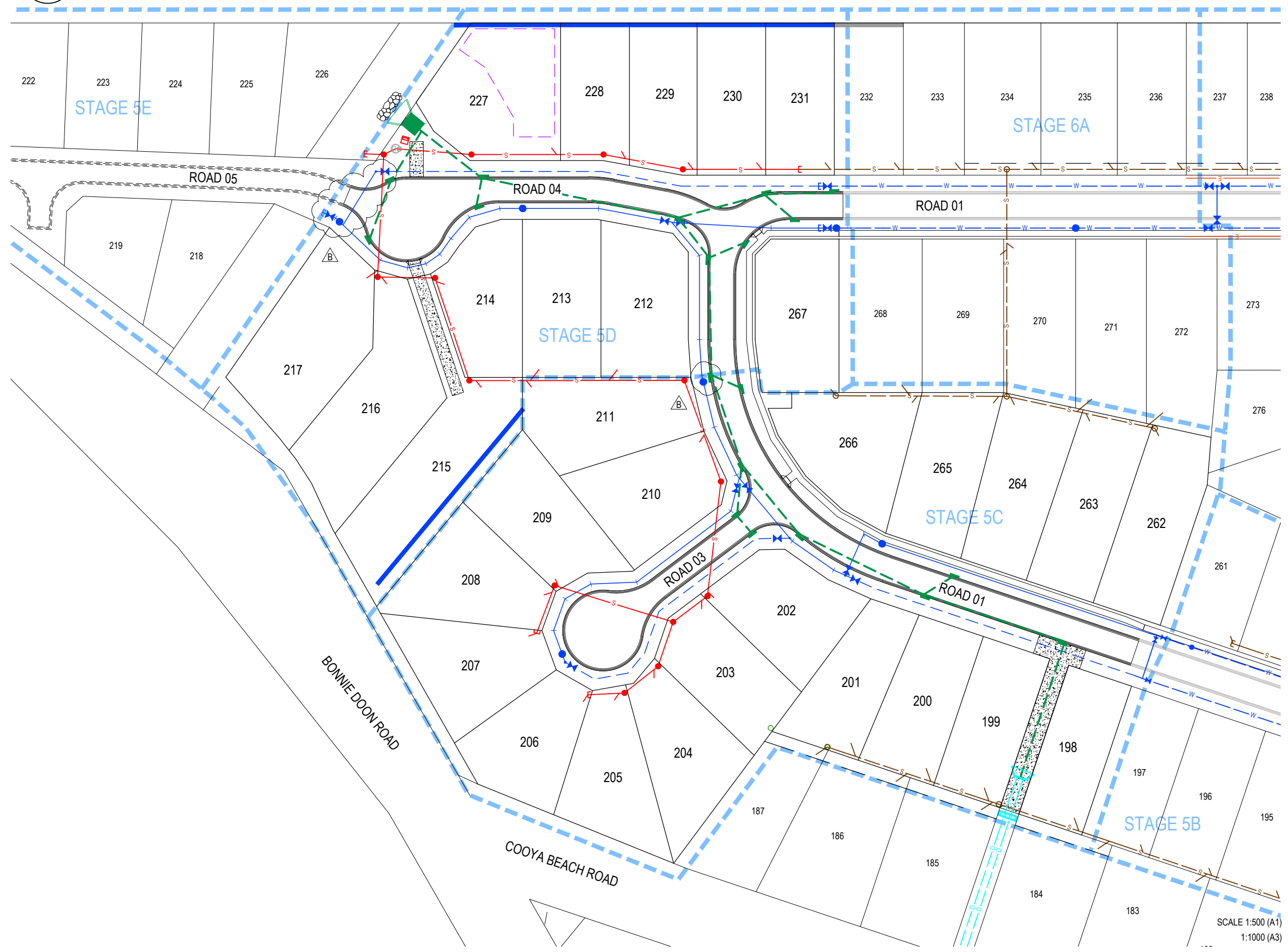
CLIENT JONPA PTY LTD		PROJECT OCEAN BREEZE ESTATE - COOYA BEACH - STAGES 5C & 5D	
DRAWN RC	DRAWING CHECK RJB	REVIEWED D.McEWAN	APPROVED
DESIGNED PAM	DESIGN REVIEW RJC	DATE 21.05.19	DATE 21.05.19

TITLE WATER RETICULATION		SCALE 1:500 (A1)	DRAWING No. IH132900-CI-DRG-0519	REV B
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LEGEND

- STAGE BOUNDARY
- PROPOSED STORMWATER DRAINAGE
- s- PROPOSED SEWER
- PROPOSED WATER MAIN
- E- PROPOSED ELECTRICAL
- W- EXISTING WATER
- EXISTING STORMWATER
- S- EXISTING SEWER
- BUILDING LOCATION ENVELOPE



SCALE 1:500 (A1)
 1:1000 (A3)
 0 10 20 30 40 50m

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REV	DATE	DRAWN	REVD	APPD	REVISION	DRAWING NUMBER	REFERENCE DRAWING TITLE
B	10.07.19	PAM	RJB	RJC	100 DIA WATERMAIN CROSSING AND HYDRANT ADDED		
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CLIENT JONPA PTY LTD		PROJECT OCEAN BREEZE ESTATE - COOYA BEACH - STAGES 5C & 5D	
DRAWN RC	DRAWING CHECK RJB	REVIEWED D.McEWAN	APPROVED [Signature]
DESIGNED PAM	DESIGN REVIEW RJC	DATE 21.05.19	DATE 21.05.19

TITLE MASTER SERVICES PLAN		SCALE 1:500 (A1)	DRAWING No. IH132900-CI-DRG-0523	REV B
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