CivilWalker
CONSULTING ENGINEERS

Ref: 188-002-007L

26 August 2021

Development Assessment
Douglas Shire Council
64 – 66 Front Street
Mossman Qld 4873
via email: neil.beck@douglas.qld.gov.au

Attention: Mr Neil Beck

Port Pacific Developments
111 – 119 Port Douglas Road, Port Douglas – Civil and Electrical Works
OP 2021-4246/1 Response to Information Request

We refer to Council's information request dated 9 August 2021 (copy attached) for the abovementioned application and respond to each of the items below.

Stormwater Drainage

Item A

Please find attached flow width / depth calculations for road flow during the major event as requested. The following details are confirmed with regard to ponding depth / water spread:

At Low Point Between Lots 27 and 28

- The total Q100 flow at the sag point is 0.240m³/s
- The kerb invert level at the kerb return adjacent to Lot 28 where "tip over" occurs is 3.794m AHD
- The adjacent allotment level is 4.062m AHD, providing 268mm available depth
- Capacity of the half road flow at the "tip over" point (and down the road) is 0.699m³/s (refer attached calculation for Point A)
- Therefore, adequate capacity is available such that ponding water will not encroach into allotments at this low point.

At Low Point Between Lots 12 and 33

- The total Q100 flow at the sag point is 0.314m³/s
- The level at the driveway between Lots 12 and 33 where "tip over" occurs is 3.400m AHD
- The adjacent allotment level at Lot 12 is 3.520m AHD, providing 120mm available depth
- Capacity of the driveway cross section at the "tip over" point (and down the driveway) is 0.476m³/s (refer attached calculation for Point B)
- Therefore, adequate capacity is available such that ponding water will not encroach into allotments at this low point

Item B

Refer attached overland flow calculations for the driveway between Lots 9 and 12 as requested (as referred to be above for Point B). The calculations confirm that appropriate capacity is available for overland flow.

Item C

Pre- and post-development peak flow calculations were provided to Council as part of the information

request response to development application number MCU2020_3524/1. These calculations demonstrated that there is an estimated 0.315m³/s increase in run-off from the site as a result of development, which has resulted in provision of the detention basin. A copy of the correspondence is attached for your information.

Item D
Refer to attached drawing 188-002-C30 that provides the details requested.

Roads and Paths

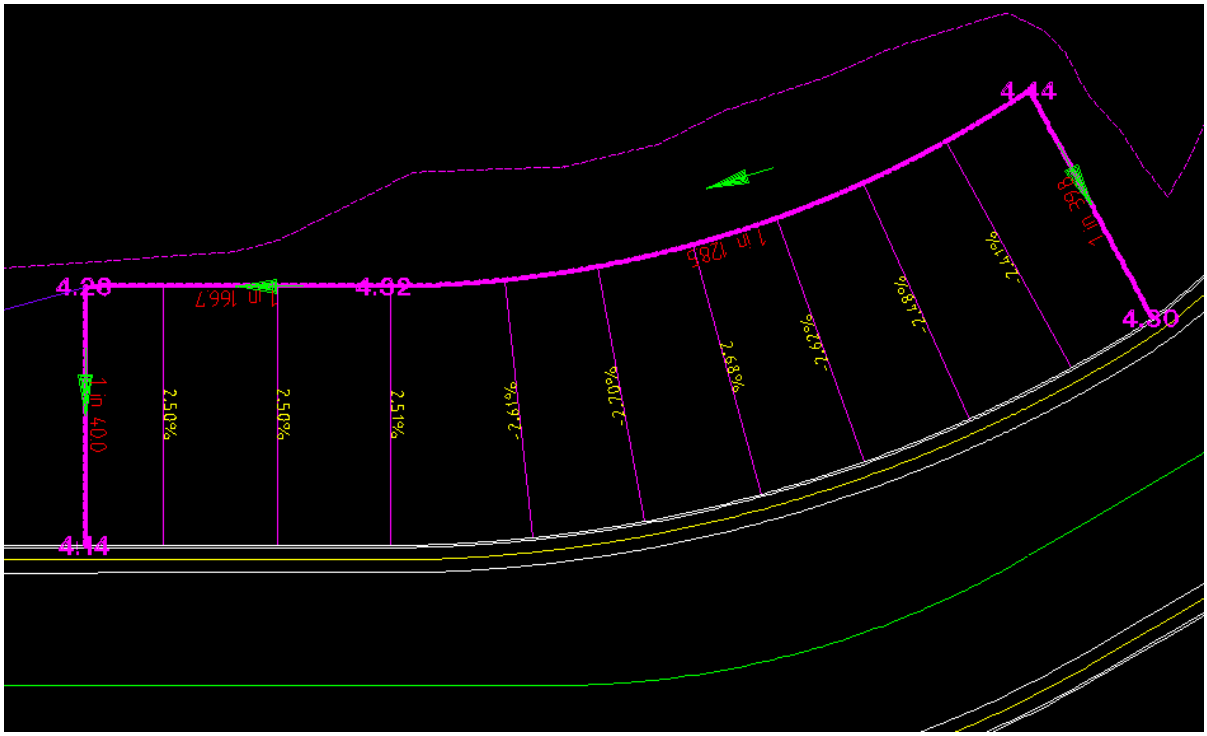
Item A
Access to Lot 10 is available either side of the sewer overflow chamber as documented in the operational works application however, we have elected to relocate the overflow chamber to the frontage of the detention basin as requested by Council. Access to Lot 10 is unrestricted.

Item B
Refer to drawing 188-002-SK10 that confirms the design service vehicle can negotiate through the development as requested.

Item C
The car park detail on drawing 188-002-C08 has been updated so that the park crossfall matches that of the 3% verge.

Item D
Reference is made to Item C above regarding crossfall / accessibility for the parallel car parks on the new road comply with the requirements of AS 2890.5 and AS/NZS 2890.6.

With regard to the 90-degree parking between approximate chainages 50 and 75 on the new road, an image is provided from the design software confirming the longitudinal fall (front to rear) on the car park area. The maximum grade is 2.68%. The fall along the adjacent road does not exceed 0.6%. We confirm that that this arrangement complies with the requirements of AS 2890.5 and AS/NZS 2890.6.



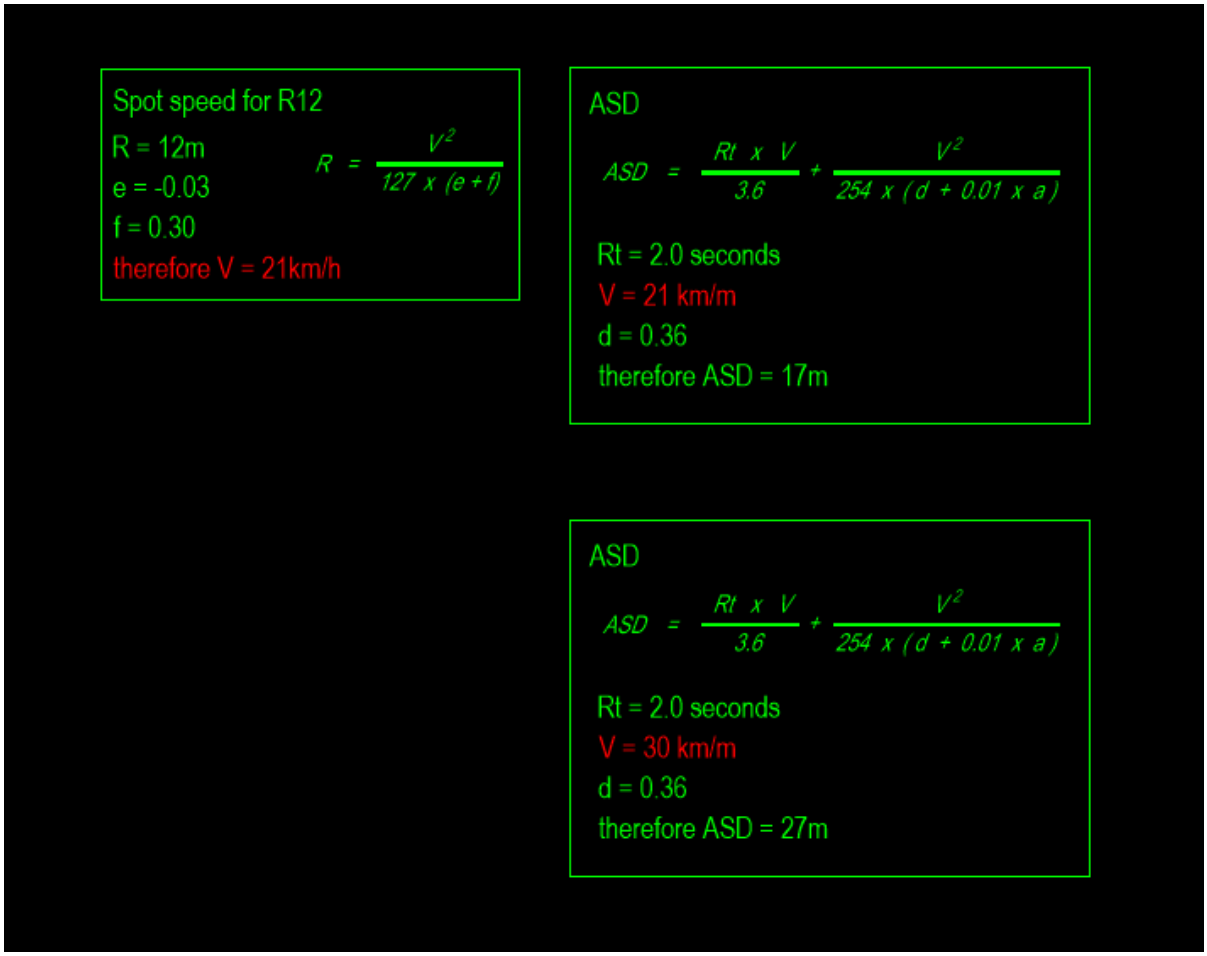
A single “all abilities” car park has been provided as shown on the updated drawings.

Item E

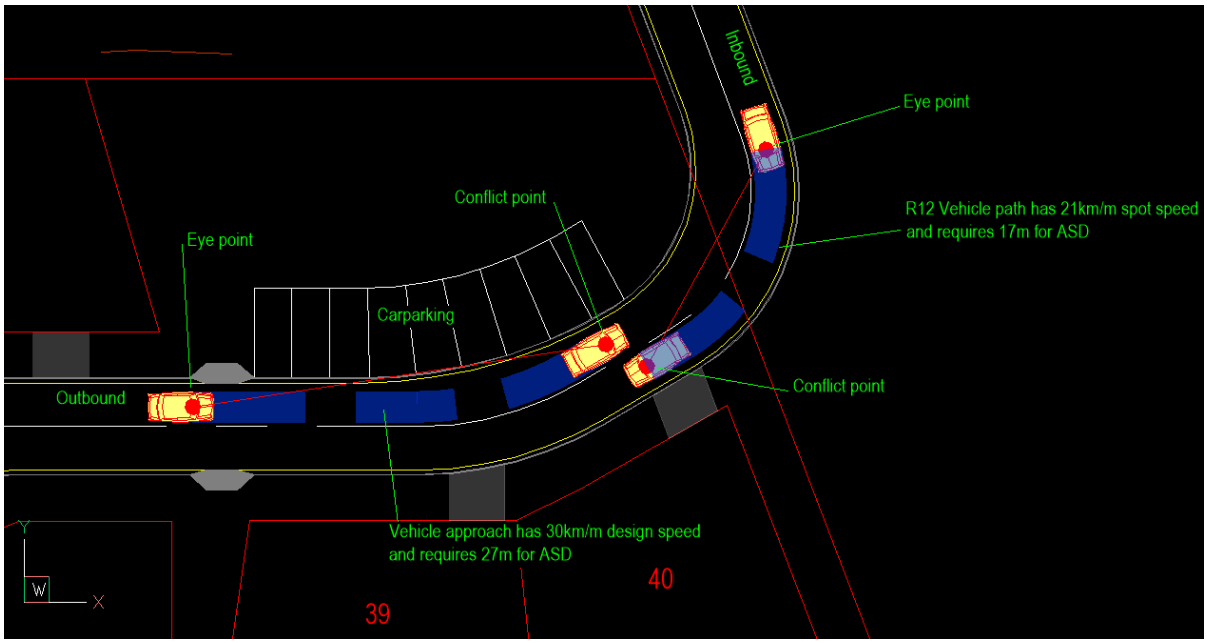
The drawings have been updated to increase the new external footpath width from 1.5m to 2.0m as requested. Pedestrian connectivity at the entry has also been provided.

Item F

Reference is made to the images below which demonstrate compliance with Austroads requirements for approach site distance (ASD). The first image provides calculation of the “spot” speed around the entrance curve at approximate chainage 40 (21km/h) for an entering vehicle. It also provides calculation for the associated ASD, being 17m. The second calculation provides ASD (being 27m) for a vehicle travelling at a speed of 30km/h at approximate chainage 80 as it travels to the development exit.



The second image provides a pictorial on vehicle positions relative to conflict points for the above calculations and demonstrates that the calculated ASDs are available.



Item G

Line marking has been included on each of the curves on the proposed new road and is detailed on drawing 188-002-C09. This includes line marking adjacent to the 90-degree parking as suggested.

Water Supply

Item A

Unfortunately, we don't think that connection at the proposed location is achievable. It will impact on the proposed central facilities infrastructure that Port Pacific propose to provide (layout shown on general arrangement drawings). We have updated the drawings to show a new connection to the existing 300mm main for Council consideration.

Item B

A Siemans Mag 8000 magflow meter has been specified at a location just inside the property boundary as required by Council. Documentation associated with the magflow meter has been attached for information.

Erosion and Sediment Control

Item A

We confirm that the detention basin at the northern western corner of the site will be constructed as part of the initial works to provide a sediment basin function for the site. The note on drawing 188-002-C28 "detention basin to be used as sediment basin during construction…" has been updated to require it be constructed in the initial stages of work.

Sewer

Item A

Details of the proposed pump station are attached.

With regard to odour control,

With regard to noise control, we note that the pumps will be submersible, housed in an underground Mullally unit with sealed access lids. We don't consider that additional noise control will be required.

Item B
The overflow chamber has been relocated to be outside of the Lot 10 frontage.

Item C
The note on drawing 188-002-C21 has been adjusted.

Item D
The duckbill check valve will be installed on the end of the overflow pipe, which will extend into the stormwater manhole to allow for the valve installation. Drawing 188-002-C21 has been updated to clarify this.

Item E
Pump details are attached.

Item F
The drawings have been updated to provide additional details for the sewer rising main connection.

We trust that the above satisfies Council's requirements however, if you have any queries, please contact me on 0427 515 177.

Yours faithfully
CivilWalker Consulting Engineers

Daryl Walker
Director | Principal Engineer
BE(Hons) ME DipPM RPEQ RPEng

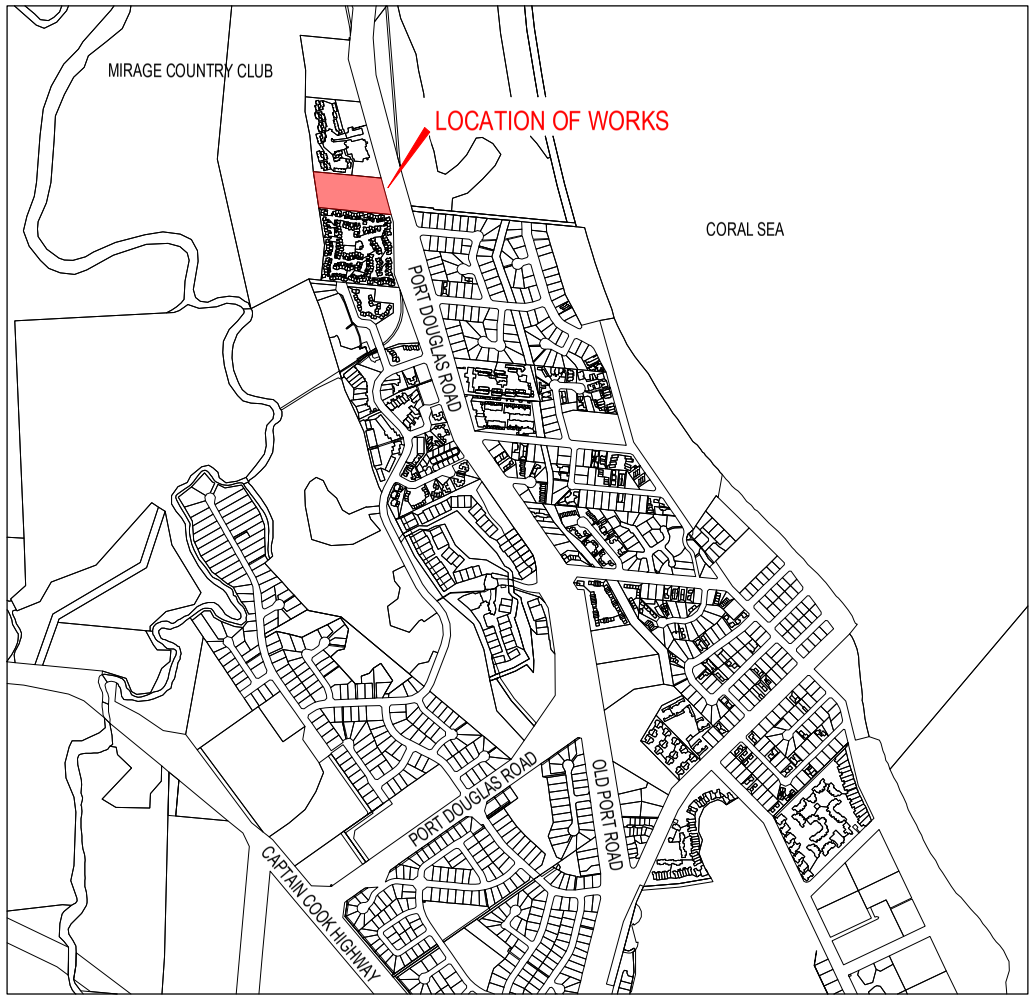
enc. Council Information Request
Supporting Documentation

cc. Mr Jim Noli – Port Pacific Developments

PORT PACIFIC DEVELOPMENTS

OVER 50s RESIDENTIAL DEVELOPMENT
CIVIL OPERATIONAL WORK

PROJECT No: 188-002



LOCALITY PLAN
N.T.S

DRAWING INDEX

DRAWING No.	DRAWING TITLE
188-002-C01	COVER SHEET, DRAWING INDEX & LOCALITY
188-002-C02	IMPORTANT NOTES
188-002-C03	GENERAL ARRANGEMENT - SHEET 1 OF 2
188-002-C04	GENERAL ARRANGEMENT - SHEET 2 OF 2
188-002-C05	EARTHWORKS - SHEET 1 OF 2
188-002-C06	EARTHWORKS - SHEET 2 OF 2
188-002-C07	TYPICAL SECTIONS & DETAILS - SHEET 1 OF 2
188-002-C08	TYPICAL SECTIONS & DETAILS - SHEET 2 OF 2
188-002-C09	INTERSECTION DETAILS
188-002-C10	ROAD A LONGITUDINAL SECTION - SHEET 1 OF 2
188-002-C11	ROAD A LONGITUDINAL SECTION - SHEET 2 OF 2
188-002-C12	ROAD A CROSS SECTIONS - SHEET 1 OF 2
188-002-C13	ROAD A CROSS SECTIONS - SHEET 2 OF 2
188-002-C14	STORMWATER DRAINAGE LAYOUT - SHEET 1 OF 2
188-002-C15	STORMWATER DRAINAGE LAYOUT - SHEET 2 OF 2
188-002-C16	STORMWATER DRAINAGE LONGITUDINAL SECTIONS
188-002-C17	SEWER RETICULATION - SHEET 1 OF 2
188-002-C18	SEWER RETICULATION - SHEET 2 OF 2
188-002-C19	SEWER LONGITUDNAL SECTIONS - SHEET 1 OF 2
188-002-C20	SEWER LONGITUDNAL SECTIONS - SHEET 2 OF 2
188-002-C21	SEWER PUMP STATION DETAILS
188-002-C22	WATER RETICULATION - SHEET 1 OF 2
188-002-C23	WATER RETICULATION - SHEET 2 OF 2
188-002-C24	TYPICAL SEWER & WATER SERVICE CONNECTIONS - SHEET 1 OF 2
188-002-C25	TYPICAL SEWER & WATER SERVICE CONNECTIONS - SHEET 2 OF 2
188-002-C26	MASTER SERVICES LAYOUT - SHEET 1 OF 2
188-002-C27	MASTER SERVICES LAYOUT - SHEET 2 OF 2
188-002-C28	EROSION & SEDIMENT CONTROL STRATEGY - SHEET 1 OF 2
188-002-C29	EROSION & SEDIMENT CONTROL STRATEGY - SHEET 2 OF 2
188-002-C30	DETENTION BASIN DETAILS

FNQROC STANDARD DRAWINGS

DRAWING No.	DRAWING TITLE
S1000 - S1110	ROADWORKS AND DRAINAGE
S2000 - S2025	WATER
S3000 - S3015	SEWER

INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA STANDARD DRAWINGS

DRAWING No.	DRAWING TITLE
D-0040	SEDIMENT CONTROL DEVICES - SEDIMENT FENCE, ENTRY/EXIT SEDIMENT TRAP
D-0041	SEDIMENT CONTROL DEVICES - KERB AND FIELD INLETS, CHECK DAMS & STRAW BALE BANKS

INGAL CIVIL PRODUCTS DRAWINGS

DRAWING No.	DRAWING TITLE
CAB-STD-49	COMPONENT DETAILS
CAB-STD-71	AASHTO G4 W-BEAM ASSEMBLY

REVISIONS

NO.	DATE	DESCRIPTION	DESIGN	APPROVED
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		

CLIENT: PORT PACIFIC DEVELOPMENTS

SCALE

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21	RPEQ: 19806		

OVER 50s RESIDENTIAL DEVELOPMENT

COVER SHEET, DRAWING INDEX & LOCALITY

DRAWING NO. 188-002-C01

REVISION C

FNQROC REGIONAL DEVELOPMENT MANUAL

1. CONSTRUCTION AND INSTALLATION OF ALL WORKS AS DETAILED ON THESE DRAWINGS SHALL BE IN ACCORDANCE WITH THE PROCEDURES, SPECIFICATIONS AND REFERENCED STANDARD DRAWINGS CONTAINED IN THE CURRENT ISSUE OF THE FNQROC DEVELOPMENT MANUAL UNLESS NOTED OTHERWISE.

COMPLIANCE WITH ASSESSMENT MANAGER CONDITIONS

1. CONSTRUCTION OF THE WORKS DETAILED ON THESE DRAWINGS SHALL NOT COMMENCE UNTIL AN OPERATIONAL WORKS PERMIT HAS BEEN ISSUED BY COUNCIL AND THE REQUIRED PRE-START MEETING HAS BEEN HELD.
2. THE CONTRACTOR SHALL COMPLY WITH ALL RELEVANT CONDITIONS SET OUT IN THE COUNCIL DECISION NOTICE FOR OPERATIONAL WORKS.

SURVEY & EXISTING SERVICES

1. LEVEL DATUM & ORIGIN OF LEVELS IS AS NOMINATED ON BRAZIER MOTTI SURVEY DRAWING "34807/001/A.
2. THE EXISTING SERVICES SHOWN ON THESE DRAWINGS ARE DERIVED FROM SURFACE SURVEY AS DETAILED ON BRAZIER MOTTI SURVEY DRAWING 34807/001/A. THEY MAY NOT REPRESENT ALL OF THE SERVICES SHOWN ON THOSE DRAWINGS, OR ALL OF THE EXISTING SERVICES PRESENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE SURVEY AND SUBSEQUENTLY LOCATING ALL EXISTING SERVICES PRIOR TO ANY WORKS COMMENCING. ONCE THE LINE AND LEVEL OF EXISTING UNDERGROUND SERVICES HAS BEEN CONFIRMED BY THE CONTRACTOR, THE ENGINEER SHALL BE NOTIFIED OF ANY POTENTIAL CLASHES WITH THE DESIGN PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. ALL DAMAGE TO EXISTING SERVICES SHALL BE MADE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT AND THE RELEVANT AUTHORITY AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL NOTIFY THE RELEVANT AUTHORITY IMMEDIATELY IF ANY DAMAGE OCCURS.

VEGETATION REMOVAL

1. THE EXTENT OF VEGETATION TO BE REMOVED SHALL ONLY BE THAT AS REQUIRED TO UNDERTAKE THE WORKS.
2. THE CONTRACTOR SHALL ATTEND SITE AND MARK THE EXTENT OF BATTERS & VEGETATION REMOVAL PRIOR TO THE PRE-START MEETING SO THAT COUNCIL OFFICERS VIEW THE EXTENT OF VEGETATION TO BE REMOVED PRIOR TO WORKS COMMENCING.

EARTHWORKS NOTES

1. IN ACCORDANCE WITH THE LAND PROTECTION (PEST AND STOCK ROUTE MANAGEMENT) ACT 2002, SOIL OR ANY MATTER CONTAINING REPRODUCTIVE PEST PLANT MATERIAL MUST NOT BE REMOVED FROM THE SITE. THE CONTRACTOR'S ENVIRONMENTAL MANAGEMENT PLAN MUST IDENTIFY APPROPRIATE MEASURES TO BE PUT IN PLACE TO ENSURE THAT SOIL AND OTHER ORGANIC MATERIALS ARE NOT INADVERTENTLY TRANSPORTED TO OTHER LOCATIONS. THE CONTRACTOR SHALL CONTACT COUNCIL'S PEST MANAGEMENT UNIT TO OBTAIN ADVICE WITH REGARD TO DEVELOPING THIS COMPONENT OF THE ENVIRONMENTAL MANAGEMENT PLAN. SOIL (OR OTHER MATTER) CONTAMINATED WITH WEED SEED OR ORGANIC MATERIAL SHOULD NOT BE USED IN LANDSCAPING. A VEHICLE WASH DOWN AND INSPECTION AREA MUST BE PROVIDED FOR ALL MACHINERY / PLANT ENTERING AND LEAVING THE SITE DURING CONSTRUCTION TO REDUCE THE SPREAD OF INVASIVE WEED SPECIES.
2. STRIP AND REMOVE EXISTING TOPSOIL, SOIL CONTAINING SIGNIFICANT AMOUNTS OF ORGANIC MATERIALS AND ALSO ANY DELETERIOUS SOFT WET OR HIGHLY COMPRESSIVE MATERIALS, MATERIALS CONTAMINATED THROUGH PAST SITE USAGE WHICH MAY CONTAIN TOXIC SUBSTANCES OR SOLUBLE COMPOUNDS HARMFUL TO GROUND WATER, MATERIALS CONTAINING SUBSTANCES THAT CAN BE DISSOLVED OR LEACHED OUT IN THE PRESENCE OF MOISTURE (EG GYPSUM) OR WHICH UNDERGO VOLUME CHANGE OR LOSS OF STRENGTH WHEN DISTURBED AND EXPOSED TO MOISTURE (EG. SOME SHALES AND SANDSTONES), SILTS OR MATERIALS THAT HAVE THE DELETERIOUS PROPERTIES OF SILT, AND MATERIAL THAT CONTAINS WOOD, METAL, PLASTIC, BOULDERS OR OTHER DELETERIOUS MATERIAL.
3. REMOVE ALL FISSURED MATERIALS.
4. CLEAR THE SURFACE OF ANY LOOSE ROCK AND SOIL.
5. THE EXISTING SURFACE SHALL THEN BE COMPACTED TO A MINIMUM STD DENSITY RATIO OF 95% SRDD AND MOISTURE TESTED TO A RANGE OF -2% (DRY) TO +2% (WET) OF OPTIMUM MOISTURE CONTENT USING A STEEL DRUM OR PAD FOOT ROLLER.
6. ANY SOFT SPOTS SHALL BOUGHT TO THE ATTENTION OF THE ENGINEER FOR INSTRUCTION ON HOW TO PROCEED.
7. **NO FILLING OR PAVEMENT CONSTRUCTION OPERATION IS TO BE UNDERTAKEN UNTIL THE ENGINEER HAS PROVIDED AUTHORISATION TO DO SO.**
8. ANY REQUIRED IMPORTED FILL MATERIAL SHALL BE IN ACCORDANCE WITH THE BELOW REQUIREMENTS AND SHALL BE APPROVED BY THE ENGINEER PRIOR TO FILLING OPERATIONS COMMENCING:

AS METRIC SIEVE	% PASSING BY WEIGHT
75mm	100
2.36mm	25 - 70
75um	0 - 30

   MINIATURE ABRASION LOSS PASSING 2.36mm 0 - 15
   LINEAR SHRINKAGE PASSING 4.25um 0 - 8
   MATERIAL RETAINED ON 2.36mm SIEVE SHALL CONSIST OF SOUND STONE SOAKED CBR 15 AT 95% SRDD COMPACTION
9. ANY REQUIRED FILLING SHALL BE UNDERTAKEN BY PLACING APPROVED MATERIAL IN UNIFORM HORIZONTAL LAYERS NOT EXCEEDING 200mm LOOSE THICKNESS AND COMPACTED TO ACHIEVE A DRY DENSITY RATIO OF AT LEAST 95% SRDD. THE MOISTURE CONTENT OF FILL MATERIALS SHALL BE MAINTAINED AT -2% (DRY) TO +2% (WET) OF OPTIMUM MOISTURE CONTENT DURING AND AFTER COMPACTION.
10. THE FOLLOWING TESTING / INSPECTION REQUIREMENTS SHALL BE COMPLIED WITH:
    - INSPECTION PRIOR TO FILLING OPERATIONS COMMENCING TO CONFIRM UNSUITABLE MATERIAL HAS BEEN REMOVED
    - COMPACTION TEST RESULTS FOR PREPARED EXISTING SURFACE (PRIOR TO FILLING) AT 1 TEST / 2,500m² AREA WITH A MINIMUM NUMBER OF 3 TESTS.
    - FILL MATERIAL QUALITY CERTIFICATE FROM A NATA APPROVED LABORATORY TO CONFIRM ANY IMPORTED FILL MATERIAL IS IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.
    - COMPACTION TEST RESULTS FOR FILL OPERATIONS AT 1 TEST / 2,500m2 AREA FOR EACH 200mm LAYER WITH A MINIMUM OF 3 TESTS PER LAYER.
11. TRANSPORTATION OF FILL OR SPOIL TO AND FROM THE SITE MUST NOT OCCUR WITHIN:
    - PEAK TRAFFIC TIMES; OR
    - BEFORE 7am OR AFTER 6pm MONDAY TO FRIDAY; OR
    - BEFORE 7am OR AFTER 1pm SATURDAYS; OR
    - ON SUNDAYS OR PUBLIC HOLIDAYS.

ROAD WORK

1. KERB PROFILES SHALL BE IN ACCORDANCE WITH FNQROC STD DRG S1000.
2. ALL KERB SET-OUT DETAILS AT INTERSECTIONS ARE TO THE LIP OF KERB AND CHANNEL OR FACE OF KERB AS APPLICABLE TO THE KERB TYPE.
3. CONCRETE HARD STAND PARKING SHALL BE CONSTRUCTED IN ACCORDANCE WITH FNQROC STANDARD DRAWING S1015.
4. ALL TRAFFIC SIGNS AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE DEPARTMENT OF TRANSPORT & MAIN ROADS "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD)
5. ALL REGULATORY, WARNING AND HAZARD SIGNS SHALL BE SIZE "A" UNLESS NOTED OTHERWISE.

CONCRETE DRIVEWAY

1. DRIVEWAY CONSTRUCTION METHODOLOGY SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE FNQROC REGIONAL DEVELOPMENT MANUAL STANDARD SPECIFICATIONS.
2. THE CONTRACTOR IS REMINDED OF THE REQUIREMENT FOR HOLD POINT AND WITNESS POINT INSPECTIONS AS REQURIED BY THE RELEVANT SPECIFICATION. THE ENGINEER SHALL BE CONTACTED FOR PROOF ROLL AND PRE-POUR INSPECTIONS WITH 48 HOURS NOTICE.
3. THE CONTRACTOR IS REMINDED OF THE REQUIREMENT FOR MATERIAL AND COMPACTION TESTING REQUIREMENTS AS REQUIRED BY THE STANDARD SPECIFICATION.

STORMWATER DRAINAGE

1. PRIOR TO COMMENCMENT OF PIPE WORK, THE CONTRACTOR SHALL CONFIRM THE INVERT LEVEL OF DOWNSTREAM DRAINAGE TO ENSURE THAT THE STORMWATER SYSTEM CAN ADEQUATELY OUTLET / DRAIN. CONTACT THE ENGINEER IF THERE ARE ANY DISCREPANCIES.
2. FOR STANDARD STORMWATER DRAINAGE DETAILS, REFER FNQROC STANDARD DRAWINGS S1045 - S1100, INCLUSIVE.
3. SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FNQROC STANDARD SPECIFICATION S2.21 AND THE PROJECT DRAWING DETAIL. WHERE INFORMATION IS NOTE PROVIDED ON THE PROJECT DRAWING DETAIL, REFERENCE SHALL BE MADE TO FNQROC STANDARD DRAWING S1095.
4. SUBSURFACE DRAIN FLUSHING POINTS AND OUTLETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FNQROC STANDARD DRAWING S1095.
5. ALL STORMWATER DRAINAGE PIPES ARE SHALL BE CLASS 2 FLUSH JOINTED REINFORCED CONCRETE PIPES OR BLACK MAX AS DETAILED ON THE DRAWINGS.
6. CCTV INSPECTIONS SHALL BE UNDERTAKEN ON ALL NEW STORMWATER PIPES WITH REPORTING PROVIDED IN ACCORDANCE WITH FNQROC REQUIREMENTS.

SEWER

1. ALL SEWER PIPES SHALL BE 150mm DIAMETER uPVC CLASS SN8 UNLESS NOTED OTHERWISE.
2. ALL WORKS SHALL BE IN ACCORDANCE WITH FNQROC STANDARD SPECIFICATION S6, UNLESS NOTED OTHERWISE.
3. FOR DETAILS OF SEWER MANHOLES REFER FNQROC STANDARD DRAWING S3000.
4. FOR DETAILS OF PROPERTY CONNECTION BRANCHES REFER FNQROC STANDARD DRAWING S3005.
5. FOR DETAILS OF SEWER MAIN TRENCH BEDDING REFER FNQROC STANDARD DRAWING S3015.
6. FOR INTERNAL SEWER SERVICE DETAILS, REFER DRAWINGS C17 - C20 AND C24 - C25 .
7. CONNECTION OF NEW SEWER MAIN TO EXISTING MANHOLE SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF FNQROC / COUNCIL.. CONNECTION TO MANHOLE TO BE MADE WITH SAND-SOCKETED PIPES (TO BE CONFIRMED WITH DOUGLAS SHIRE COUNCIL PRIOR TO CONNECTION).
8. ALL PROPERTY CONNECTION BRANCHES SHALL BE BROUGHT TO WITHIN A MAXIMUM OF 300mm OF THE FINISHED SURFACE LEVEL AND A GLUED CAP INSTALLED. THE RISER MUST BE CONNECTED TO A MARKER PEG WITH PLASTIC COATED WIRE. THE MARKER PEG SHALL BE OF HARDWOOD MATERIAL, PROTRUDING 20mm ABOVE THE FINISHED GROUND LEVEL AND INSTALLED IMMEDIATELY ADJACENT TO THE RISER.
9. ANY VERTICAL DROPS SHALL BE CONSTRUCTED USING FIBREGLASS HEAVY DUTY DEEP SEWER DROPS.
10. PROVIDE "OMNI" MARKER BALLS TO SEWER RISING MAIN ON NON-STANDARD ALIGNMENT AND INSTALL IN ACCORDANCE WITH MANUFACTURER'S SPECIFICACTION. MARKERS ARE TO BE INSTALLED AT ALL HORIZONTAL CHANGES OF DIRECTION AND INTERVALS NOT GREATER THAN 50m ALONG THE PIPE LINE. MARKER LOCATIONS SHALL BE SHOWN ON THE AS-CONSTRUCTED DRAWINGS.
11. CCTV INSPECTION AND REPORT IS TO BE PREPARED FOR ALL NEW SEWER MAINS IN ACCORDANCE WITH FNQROC / COUNCIL REQUIREMENTS.

WATER

1. ALL WATER WORKS TO BE IN ACCORDANCE WITH FNQROC STANDARD SPECIFICATION S5, UNLESS NOTED OTHERWISE.
2. FOR DETAILS OF WATER MAIN TRENCH BEDDING REFER FNQROC STANDARD DRAWING S2016. BEDDING TO BE TYPE 1 UNLESS NOTED OTHERWISE.
3. PROVIDE THRUST BLOCKS IN ACCORDANCE WITH FNQROC REQUIREMENTS.
4. FOR INTERNAL WATER SERVICE DETAILS, REFER DRAWINGS C22 - C25.
5. PROVIDE A COMPRESSIBLE LAYER BETWEEN ALL EXISTING / PROPOSED HYDRANT OR VALVE SURROUNDS WITHIN AREAS OF CONCRETE.
6. CONNECTION OF NEW WATER MAIN SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF DOUGLAS SHIRE COUNCIL. CONTRACTOR TO LIAISE WITH COUNCIL & ORGANISE FOR CONNECTION.

EROSION SEDIMENT CONTROL STRATEGY

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT AND PRESERVE THE NATURAL ENVIRONMENT AND SHALL AVOID ENVIRONMENTAL POLLUTION IN ACCORDANCE WITH THE ENVIRONMENTAL PROTECTION ACT.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INCORPORATION OF APPROPRIATE CONTROL AND MANAGEMENT MEASURES CONFORMING TO THE REQUIREMENTS OF THE ACT AND THE RELEVANT AUTHORITIES.
3. THE CONTRACTOR SHALL INSTALL ALL DEVICES/MEASURES NECESSARY TO COMPLY WITH THE PROVISIONS OF THE FNQROC DEVELOPMENT MANUAL, THE ENVIRONMENTAL PROTECTION ACT AND COUNCIL REQUIREMENTS.
4. ANY SOIL STOCKPILES SHALL BE PROTECTED AGAINST WIND EROSION BY COVERING AND AGAINST STORMWATER RUNOFF BY SILT FENCES AT THE DOWNHILL SLOPES. STOCKPILE LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR AND EROSION/CONTROL MEASURES IMPLEMENTED & MAINTAINED FOR THE LIFE OF THE STOCKPILE.
5. SEQUENCING OF CONTROL MEASURES:
   - 5.1. INSTALL STABLE POINT OF ENTRY
   - 5.2. INSTALL SILT FENCES / BUNDS
   - 5.3. PROTECT SOIL STOCKPILES
   - 5.4. CONSTRUCT TEMPORARY SEDIMENT BASINS
   - 5.5. INSTALL STORMWATER PIPES
   - 5.6. IMPLEMENT PROTECTION MEASURES TO STORMWATER PITS
   - 5.7. REVEGETATE BARE AREAS UPON COMPLETION OF EARTHWORK
6. CONTROL MEASURES SHALL BE INSPECTED AFTER EACH RAIN EVENT AND CLEANED / MAINTAINED AS REQUIRED.
7. RETURNS IN SILT FENCE SHALL BE AT 20m INTERVALS WHEN INSTALLED ALONG THE CONTOUR. SPACING TO DECREASE TO 5 - 10m INTERVAL DEPENDENT ON SLOPE IF INSTALLED AT AN ANGLE TO THE CONTOUR. THE CONTRACTOR SHALL SELECT A COMPLIANT SPACING AND MONITOR / CHANGE AS NECESSARY.
8. SILT FENCE RETURNS SHALL CONSIST OF EITHER A V-SHAPED SECTION EXTENDING A MINIMUM OF 1.5m UP THE SLOPE OR A SANDBAG / ROCK/AGGREGATE CHECK DAM HALF THE HEIGHT OF SILT FANCE A MINIMUM OF 1.5m UP THE SLOPE.
9. STORMWATER PITS SHALL HAVE PIT PROTECTION MEASURES AS DETAILED IN FNQROC.
10. THE FOLLOWING REVEGETATION MEASURES SHALL BE UNDERTAKEN IMMEDIATELY UPON COMPLETION OF EARTHWORK:
    - 10.1. CUT / FILL BATTERS STEEPER THAN 1 in 4 TO BE HYDROMULCHED
    - 10.2. A STRIP OF TURF TO BE LAID BEHIND ALL KERB LINES
11. ALL REVEGETATION / GRASS TO BE WATER AS REQUIRED TO MAINTAIN UNTIL GROWTH IS ESTABLISHED.
12. A SUITABLE DUST MANAGEMENT STRATEGY SHALL BE MAINTAINED TO MINIMISE DUST NUISANCE ON ADJACENT PROPERTIES. DETAILS OF THE DUST MANAGEMENT STRATEGY SHALL BE INCORPORATED INTO THE CONTRACTOR'S EROSION AND SEDIMENT CONTROL STRATEGY.
13. SEDIMENT BASIN
    - 13.1. INLET PROTECTION SHALL BE PROVIDED TO MINIMISE SCOUR AND EVENLY DISTRIBUTE FLOW THROUGHOUT THE BASIN.
    - 13.2. A MARKER PEG SHALL BE INSTALLED TO SHOW THE STORAGE DEPTH RESULTING FROM RAIN EVENTS.
    - 13.3. SEDIMENT SHALL BE REMOVED FROM THE BASIN WHEN 30% OF THE STORAGE DEPTH IS REACHED. SEDIMENT SHALL BE APPROPRIATELY DISPOSED OF.

REVISIONS

NO.	DATE	DESCRIPTION	DESIGN	APPROVED
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		

CLIENT: PORT PACIFIC DEVELOPMENTS

SCALE

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CHECKED
CW	CW
DESIGNED	CHECKED
DJW	DJW

APPROVED: ORIGINAL CERTIFIED BY D.J.WALKER

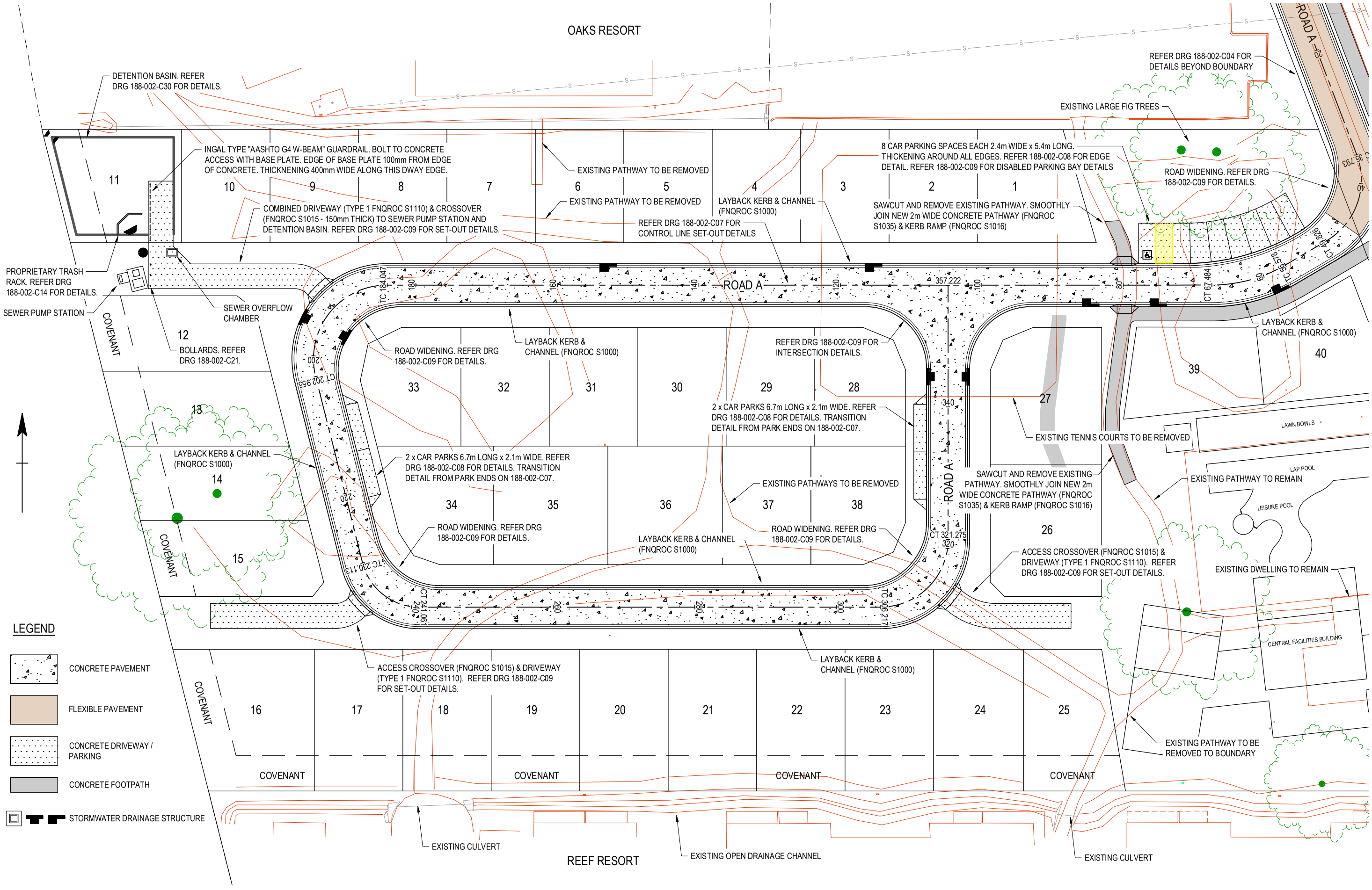
DATE: 08.07.21 RPEQ: 19806

OVER 50s RESIDENTIAL DEVELOPMENT

IMPORTANT NOTES

DRAWING NO. 188-002-C02

REVISION C



REVISIONS				
NO.	DATE	DESCRIPTION	DESIGN	APPROVED
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 0 5 10 15 A1
1:500 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21	RPEQ: 19806		

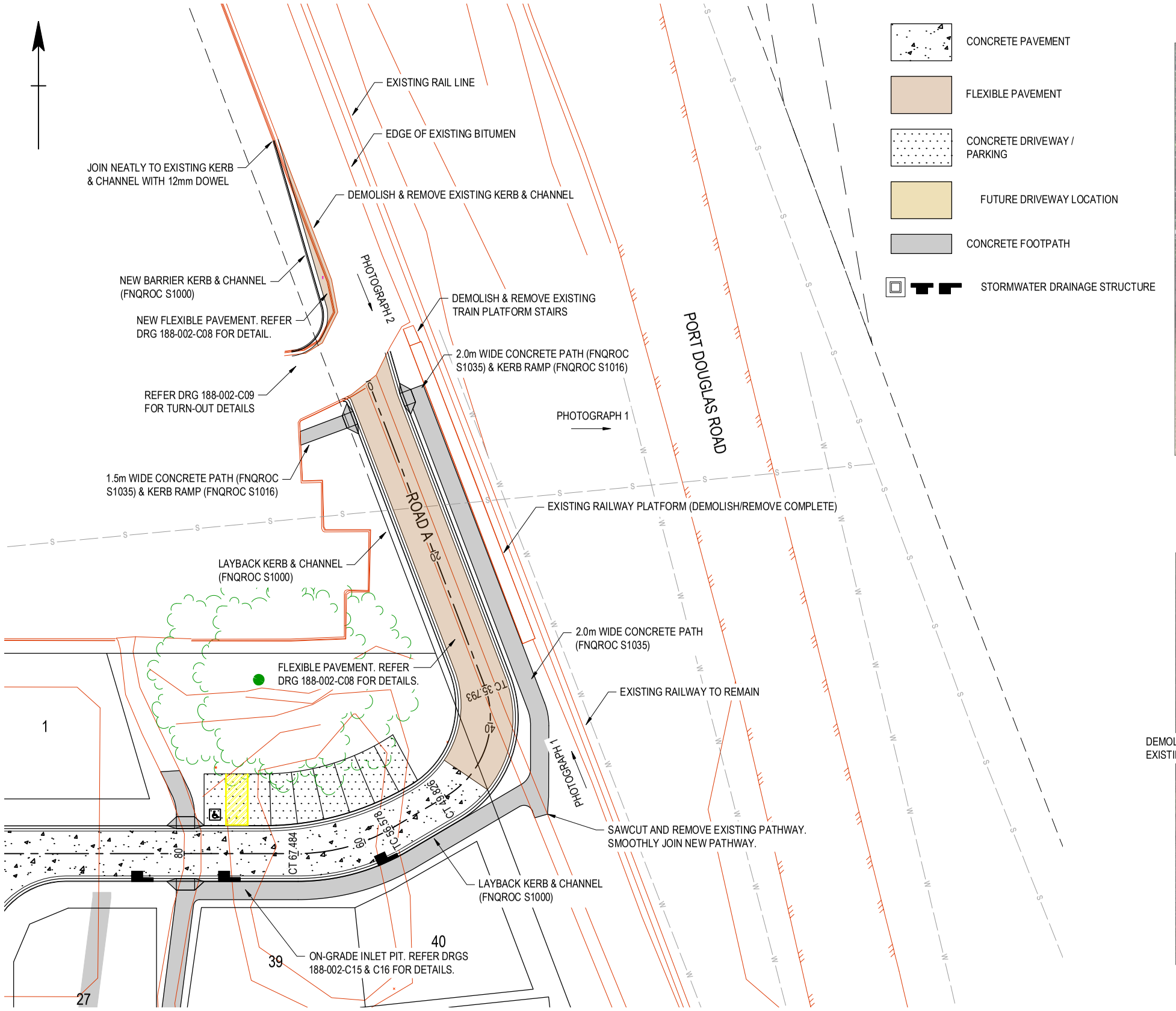
OVER 50s RESIDENTIAL DEVELOPMENT

GENERAL ARRANGEMENT

SHEET 1 OF 2

DRAWING NO. 188-002-C03

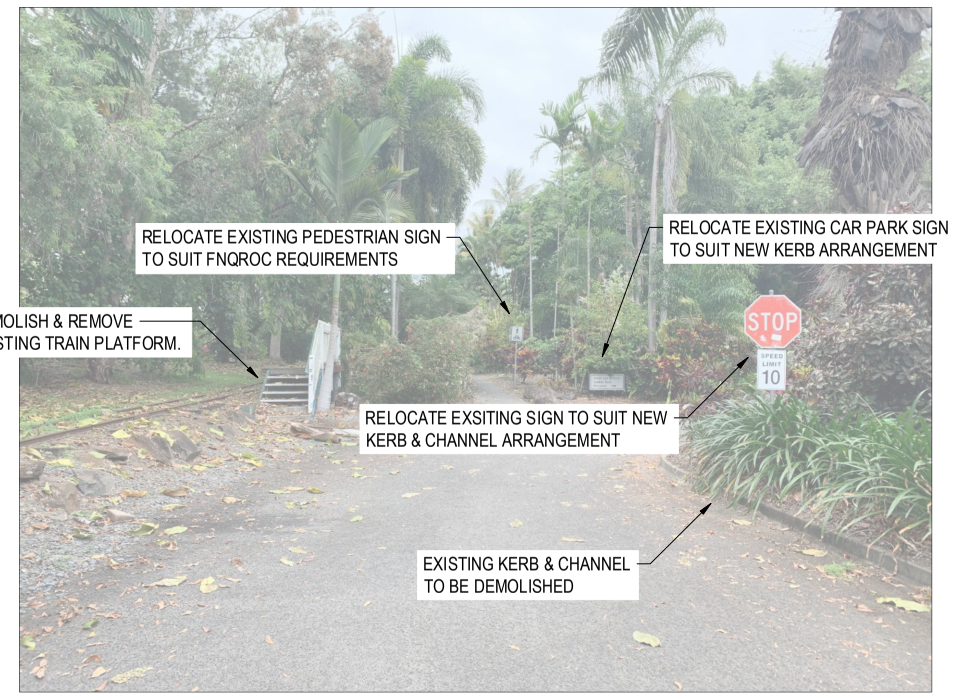
REVISION C



LEGEND

- CONCRETE PAVEMENT
- FLEXIBLE PAVEMENT
- CONCRETE DRIVEWAY / PARKING
- FUTURE DRIVEWAY LOCATION
- CONCRETE FOOTPATH
- STORMWATER DRAINAGE STRUCTURE

PHOTOGRAPH 1
N.T.S



PHOTOGRAPH 2
N.T.S

REVISIONS	NO.	DATE	DESCRIPTION	DESIGN	APPROVED
	C	26.08.21	RFI ISSUE	CW	DJW
	B	08.07.21	OPW ISSUE	CW	DJW
	A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 / 1:500 — 0 5 10 15 — A1 / A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW

APPROVED
ORIGINAL CERTIFIED BY D.J.WALKER
DATE: 08.07.21 RPEQ: 19806

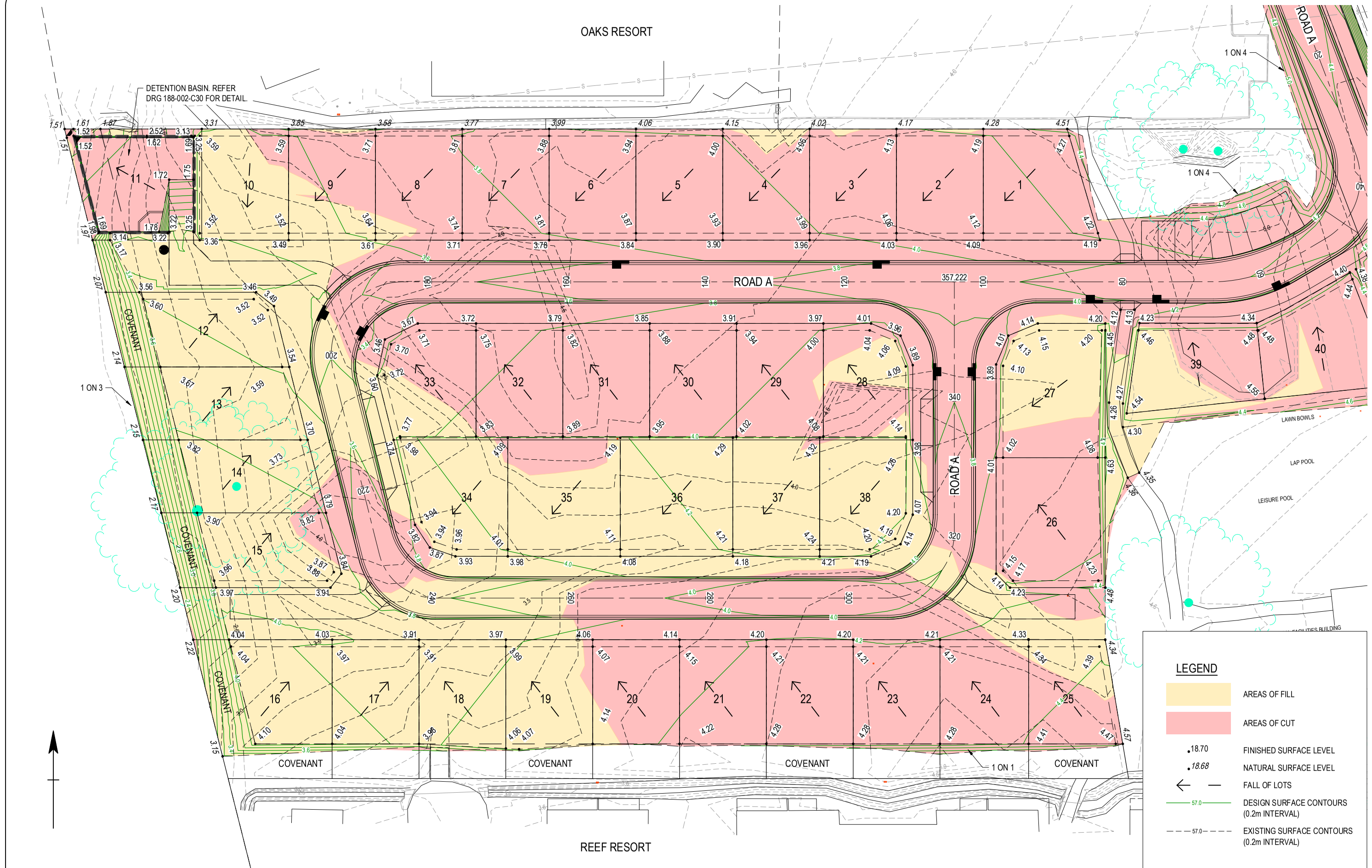
OVER 50s RESIDENTIAL DEVELOPMENT

GENERAL ARRANGEMENT

SHEET 2 OF 2

DRAWING NO. 188-002-C04

REVISION C



REVISIONS	NO.	DATE	DESCRIPTION	DESIGN	APPROVED
	C	26.08.21	RFI ISSUE	CW	DJW
	B	08.07.21	OPW ISSUE	CW	DJW
	A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 0 5 10 15 A1
1:500 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21	RPEQ: 19806		

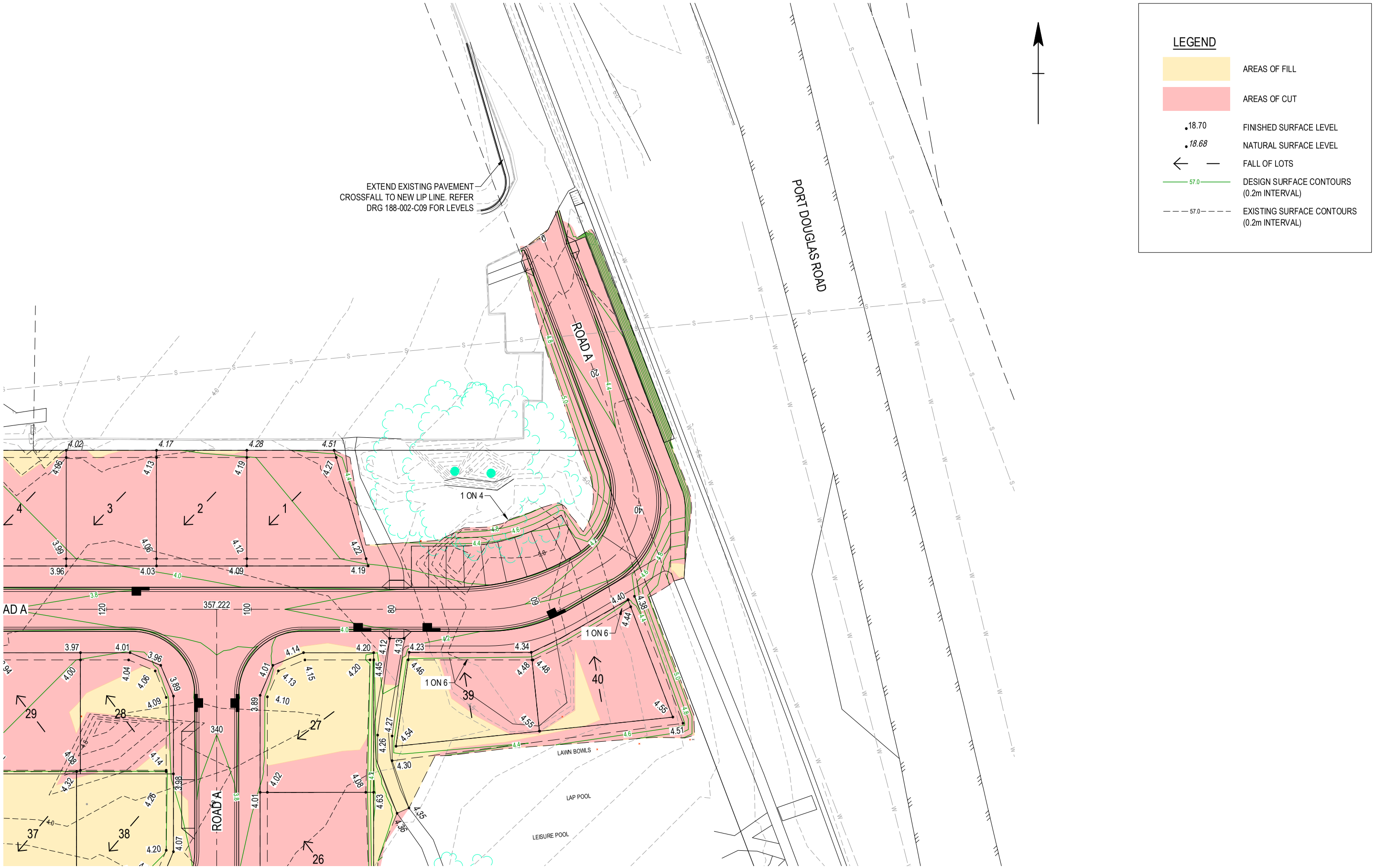
OVER 50s RESIDENTIAL DEVELOPMENT

EARTHWORKS

SHEET 1 OF 2

DRAWING NO. 188-002-C05

REVISION C



REVISIONS	NO.	DATE	DESCRIPTION	DESIGN	APPROVED
	C	26.08.21	RFI ISSUE	CW	DJW
	B	08.07.21	OPW ISSUE	CW	DJW
	A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 0 5 10 15 A1
1:500 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21	RPEQ: 19806		

OVER 50s RESIDENTIAL DEVELOPMENT

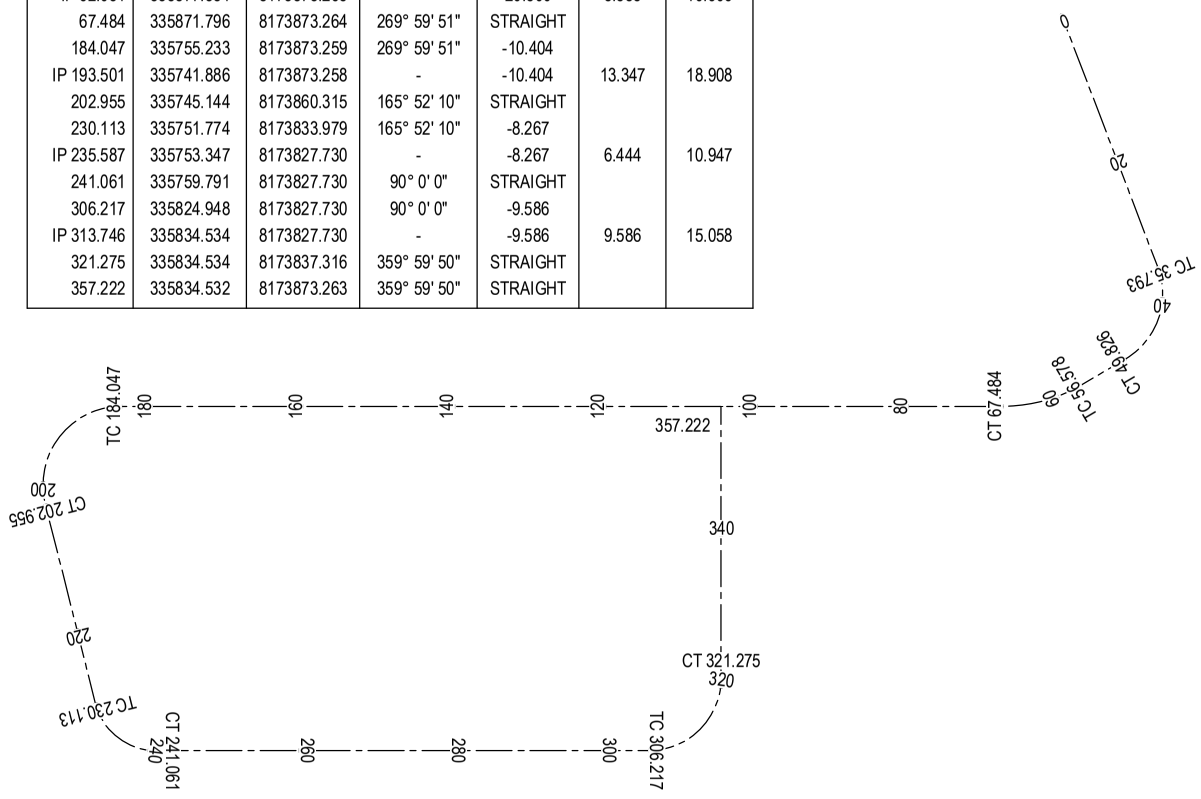
EARTHWORKS

SHEET 2 OF 2

DRAWING NO. 188-002-C06

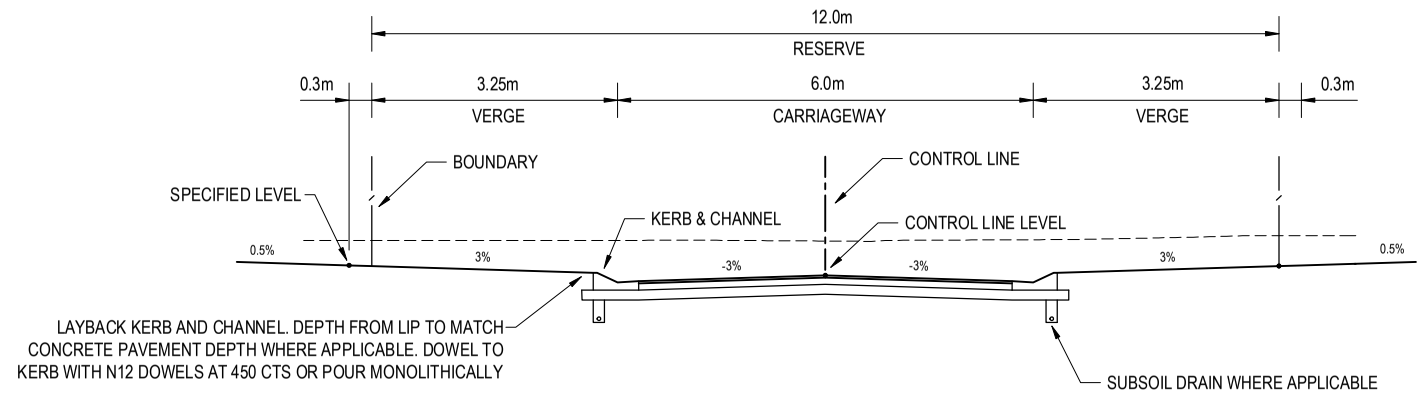
REVISION C

CHAINAGE	COORDINATES		BEARING	RADIUS OF	TANGENT	ARC
	EASTING	NORTHING	DEG MIN SEC	CURVATURE	LENGTH	LENGTH
0.000	335879.521	8173925.147	159° 6' 40"	STRAIGHT		
35.793	335892.283	8173891.707	159° 6' 40"	10.000		
IP 42.810	335895.296	8173883.811	-	10.000	8.451	14.033
49.826	335888.013	8173879.523	239° 30' 56"	STRAIGHT		
56.578	335882.195	8173876.098	239° 30' 56"	20.500		
IP 62.031	335877.381	8173873.265	-	20.500	5.585	10.906
67.484	335871.796	8173873.264	269° 59' 51"	STRAIGHT		
184.047	335755.233	8173873.259	269° 59' 51"	-10.404		
IP 193.501	335741.886	8173873.258	-	-10.404	13.347	18.908
202.955	335745.144	8173860.315	165° 52' 10"	STRAIGHT		
230.113	335751.774	8173833.979	165° 52' 10"	-8.267		
IP 235.587	335753.347	8173827.730	-	-8.267	6.444	10.947
241.061	335759.791	8173827.730	90° 0' 0"	STRAIGHT		
306.217	335824.948	8173827.730	90° 0' 0"	-9.586		
IP 313.746	335834.534	8173827.730	-	-9.586	9.586	15.058
321.275	335834.534	8173837.316	359° 59' 50"	STRAIGHT		
357.222	335834.532	8173873.263	359° 59' 50"	STRAIGHT		

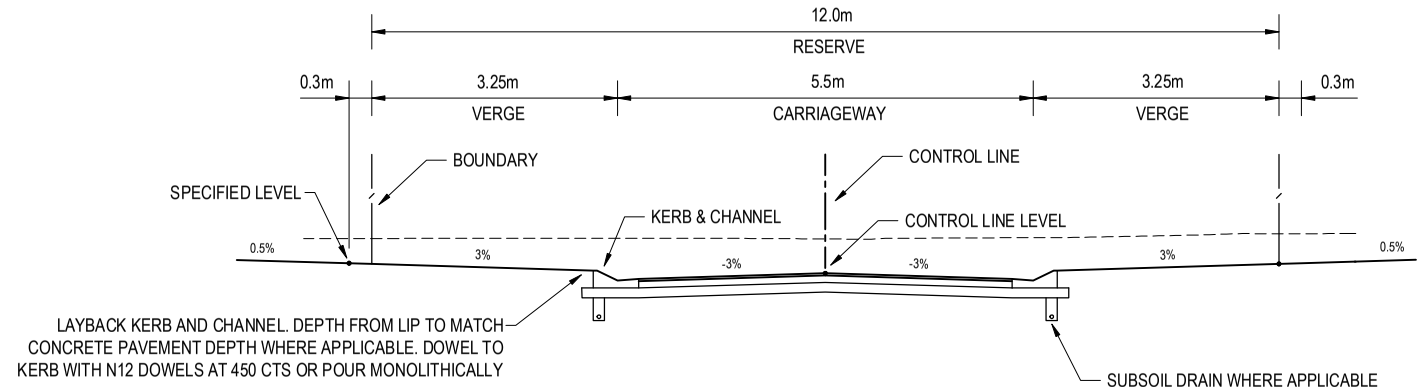


ROAD A CONTROL LINE SETOUT DETAILS

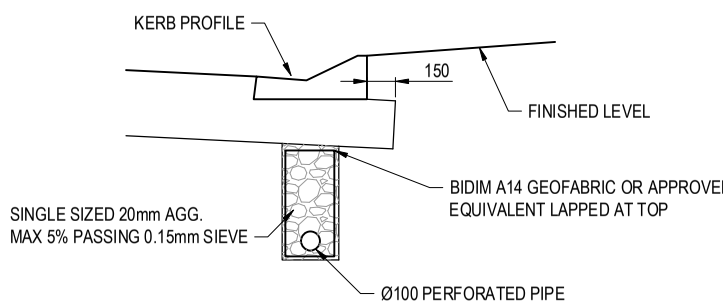
CAR PARK DETAIL - PARALLEL TO ROAD
N.T.S.



ROAD A - TYPICAL SECTION
CH 0 - 60.000
N.T.S



ROAD A - TYPICAL SECTION
CH 70.000 - END
N.T.S



SUB SURFACE DRAINAGE DETAIL
N.T.S.
NOTE: NOT REQUIRED IF SAND SUBGRADE.
ENGINEER TO MAKE DECISION DURING CONSTRUCTION

REVISIONS					
NO.	DATE	DESCRIPTION	DESIGN	APPROVED
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		

CLIENT
PORT PACIFIC DEVELOPMENTS

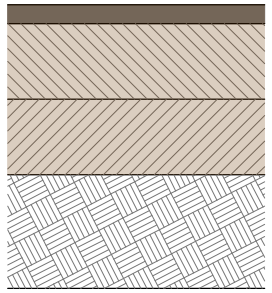
SCALE
1:250 1:500 0 5 10 15 A1 A3
ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN CW	CHECKED CW
DESIGNED DJW	CHECKED DJW
APPROVED ORIGINAL CERTIFIED BY D.J.WALKER	
DATE: 08.07.21	RPEQ: 19806

OVER 50s RESIDENTIAL DEVELOPMENT
TYPICAL SECTIONS & DETAILS
SHEET 1 OF 2

DRAWING NO. 188-002-C07
REVISION C



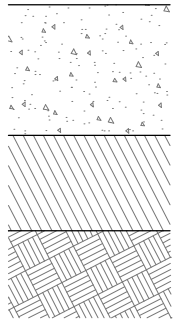
30mm DG10 DENSE GRADED ASPHALT

100mm TYPE 2.2 SUBBASE (CBR60) COMPACTED TO MIN DENSITY RATIO OF 100% SRDD

100mm TYPE 2.3 SUBBASE (CBR45) COMPACTED TO MIN DENSITY RATIO OF 100% SRDD

SUBGRADE (4-DAY SOAKED CBR 7%) COMPACTED TO 98% SRDD

FLEXIBLE PAVEMENT



150mm N32 CONCRETE WITH SL82 MESH PLACED CENTRALLY. MAX AGG SIZE 20mm. SLUMP 80mm.

1 LAYER 0.2umm VISQUEEN PLASTIC

100mm TYPE 2.4 SUBBASE COMPACTED TO MIN DENSITY RATIO OF 100% SRDD

SUBGRADE (ASSUMED 4-DAY SOAKED CBR 7%) COMPACTED TO 98% SRDD

CONCRETE PAVEMENT

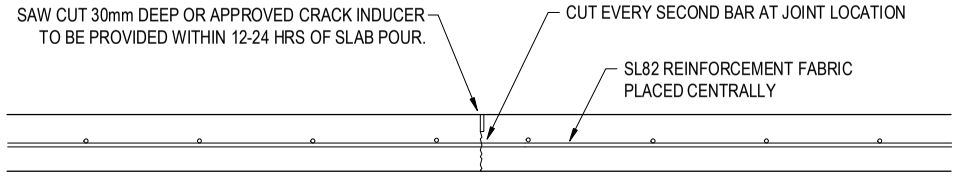
N.T.S

CONCRETE TO HAVE BLACK COLOUR ADDITIVE ADDED

PAVEMENT DETAILS

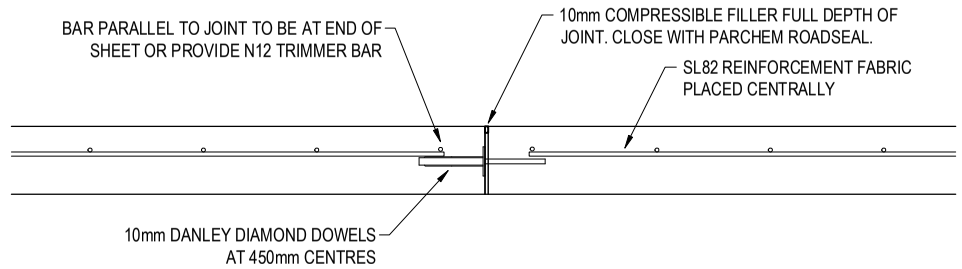
N.T.S

NOTE
PROVISIONAL PAVEMENT DESIGN IS BASED ON AN ASSUMED SUBGRADE SOAKED CBR OF 10. THE CONTRACTOR IS TO CONFIRM SUBGRADE CBR DURING CONSTRUCTION AND THE PAVEMENT DESIGN MAY BE AMENDED ACCORDINGLY. SUBBASE LAYER MAY NOT BE REQUIRED IF SAND SUBGRADE PRESENT. ENGINEER TO CONFIRM DURING CONSTRUCTION.



CONTRACTION JOINT DETAIL (CJ)

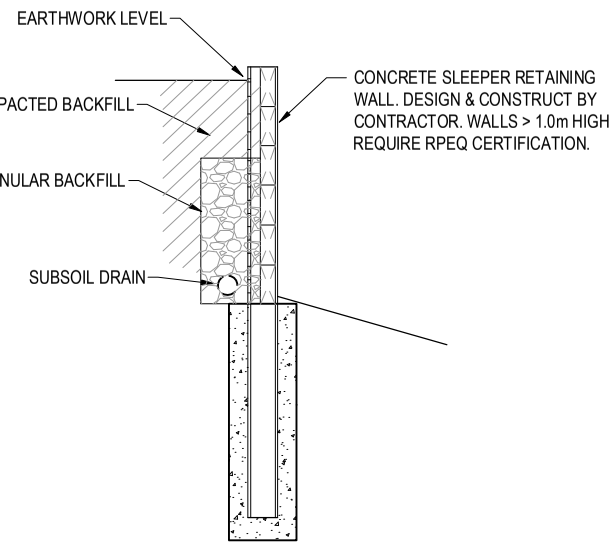
N.T.S.



EXPANSION JOINT DETAIL (EJ)

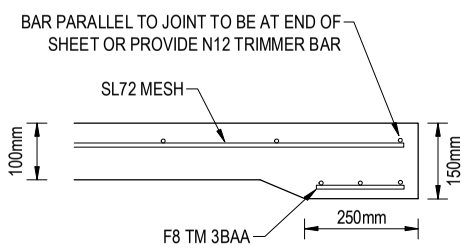
N.T.S.

INSTALL DANLEY DOWELS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. THESE ARE AVAILABLE FROM www.danley.com.au/upload/modules/document_loader/Danley_Diamond_Dowel_Datasheet_2016.pdf



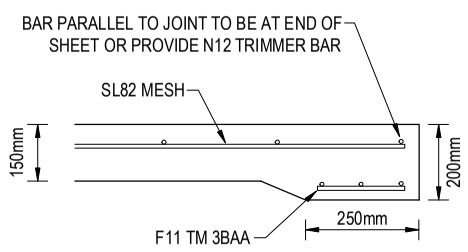
TYPICAL SLEEPER RETAINING WALL DETAIL

N.T.S.



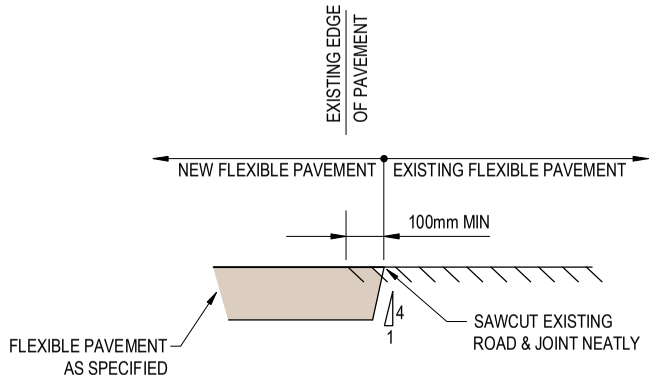
EDGE THICKENING - CAR PARK

N.T.S



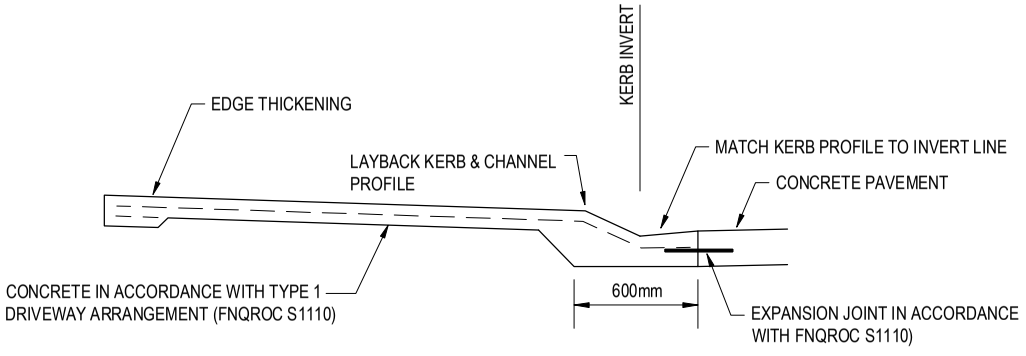
EDGE THICKENING - ROAD

N.T.S



JOINT TO EXISTING PAVEMENT

N.T.S.



CAR PARK DETAIL - CH 50 TO 70

N.T.S

REVISIONS	NO.	DATE	DESCRIPTION	DESIGN	APPROVED
	C	26.08.21	RFI ISSUE	CW	DJW
	B	08.07.21	OPW ISSUE	CW	DJW
	A	05.03.21	INITIAL ISSUE		

CLIENT
PORT PACIFIC DEVELOPMENTS

SCALE
1:250 0 5 10 15 A1
1:500 A3
ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21	RPEQ: 19806		

OVER 50s RESIDENTIAL DEVELOPMENT

TYPICAL SECTIONS & DETAILS
SHEET 2 OF 2

DRAWING NO. 188-002-C08

REVISION C

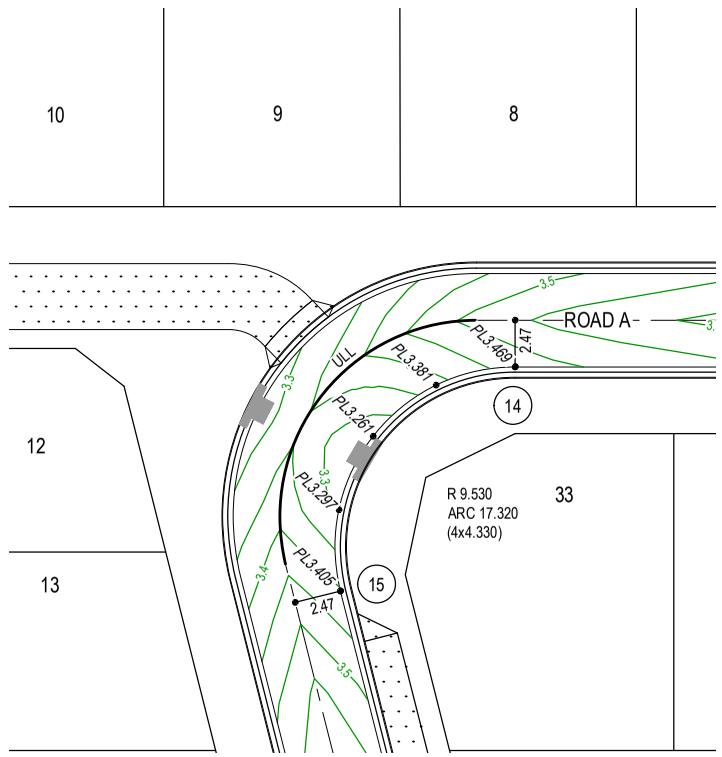
LEGEND

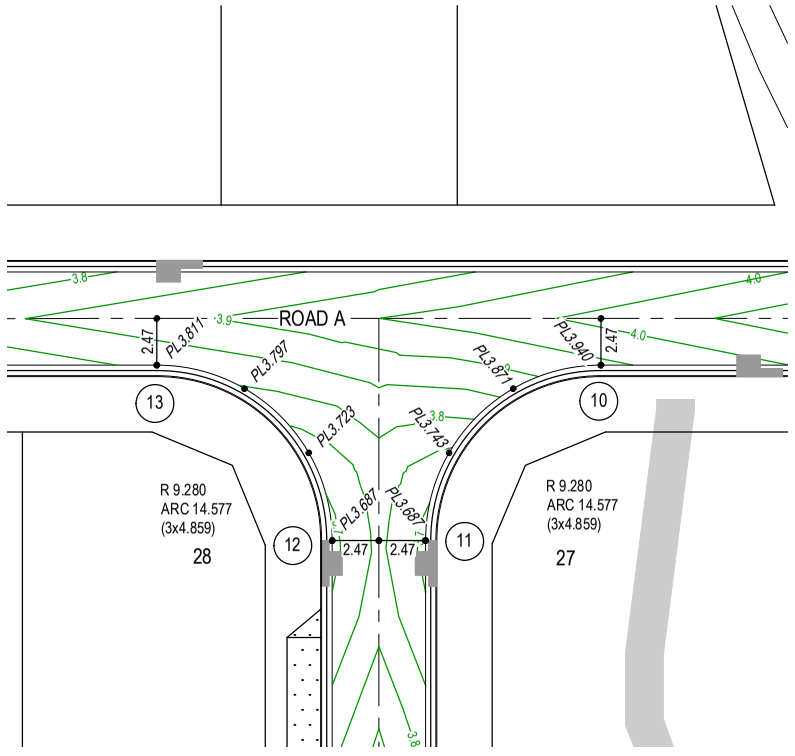
• *PL44.956*	PAVEMENT LEVEL AT KERB LIP
• (#)	SETOUT POINT
◉	TANGENT POINT
LKC	LAYBACK KERB & CHANNEL (UNLESS NOTED OTHERWISE)

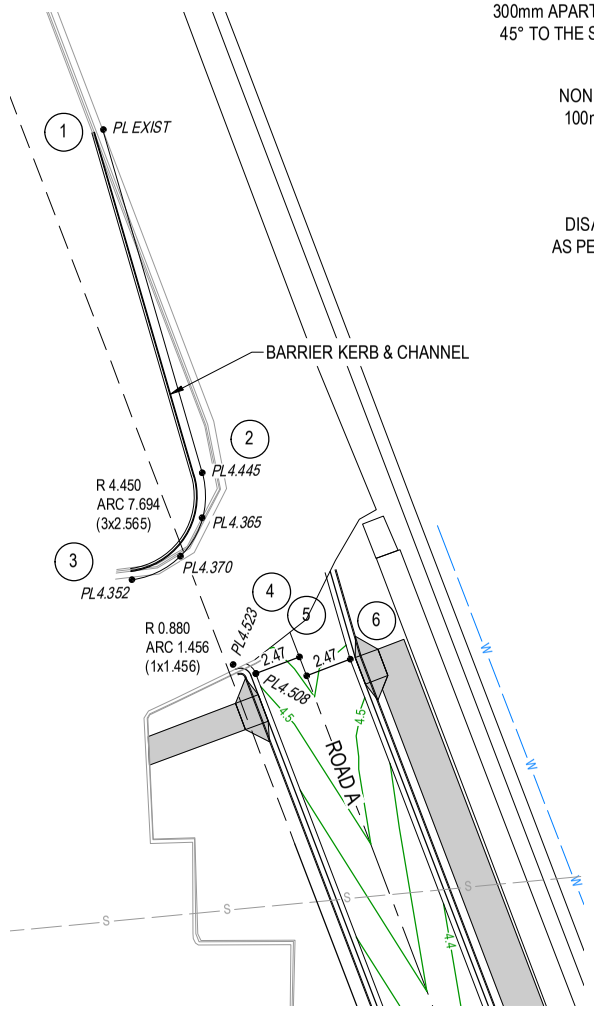
NOTE: MODEL TO BE PROVIDED TO CONSTRUCTION CONTRACTOR, THEREFORE NO COORDINATES DOCUMENTED ON DRAWING

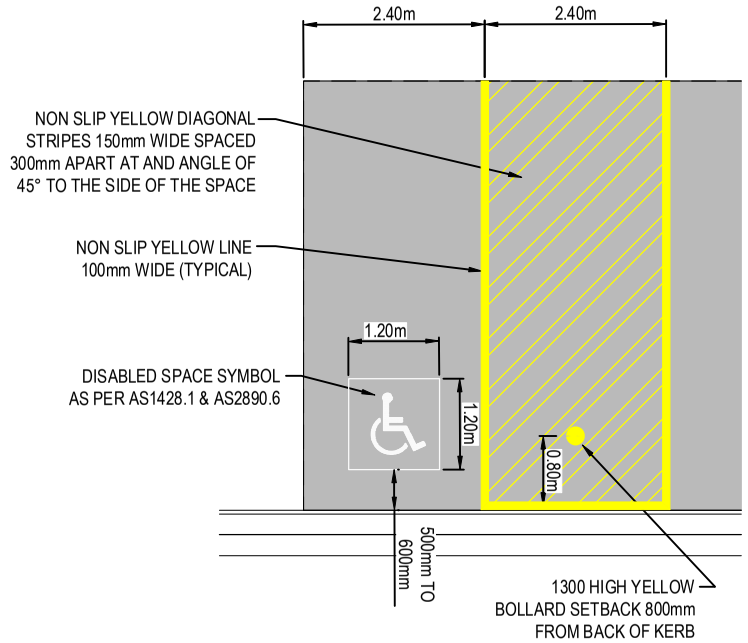
LEGEND FOR PAVEMENT MARKING

UNBROKEN LANE LINE — ULL — 80mm





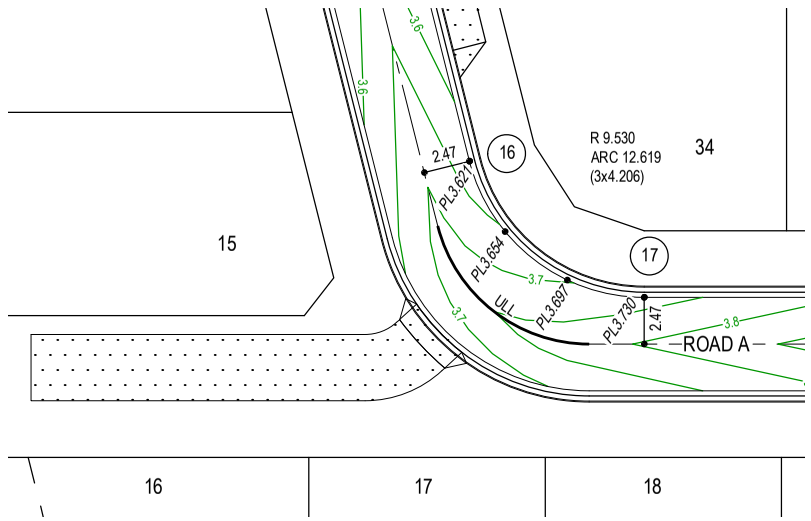


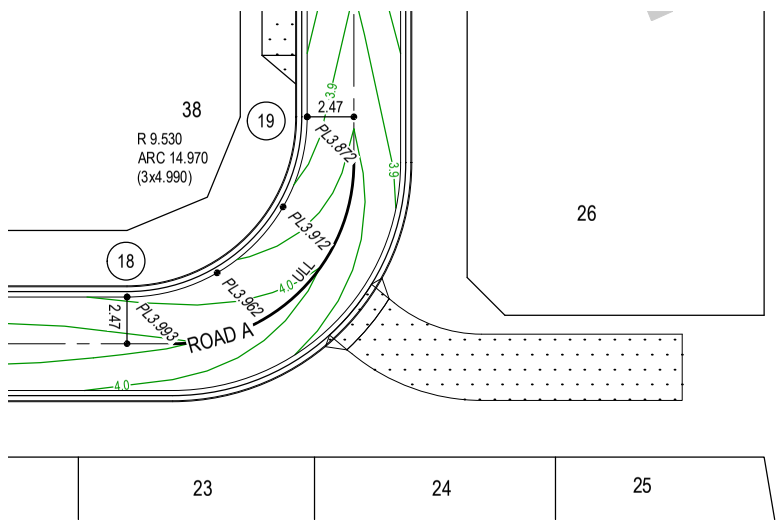


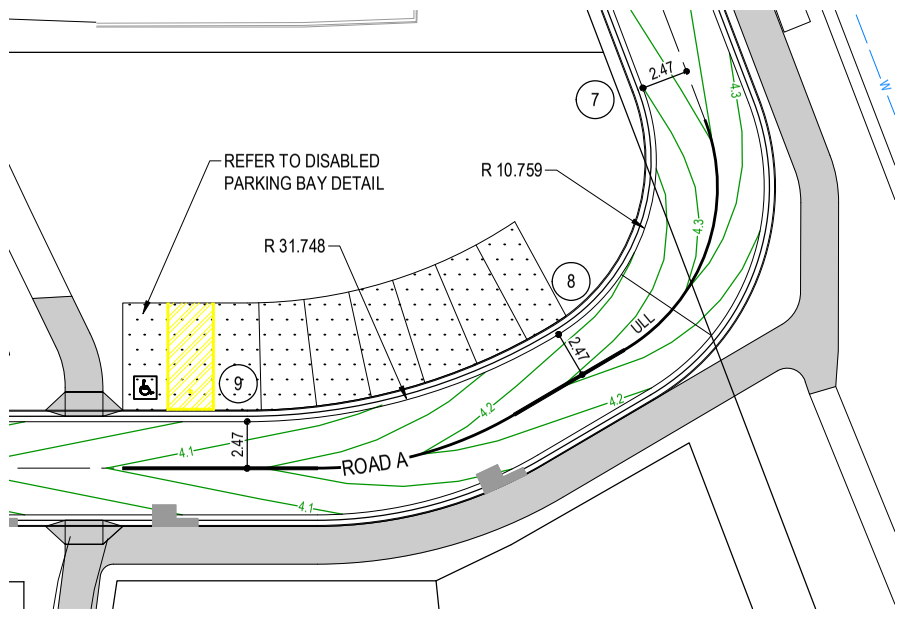
TYPICAL DISABLED PARKING BAY DETAIL

N.T.S.

DIMENSION FROM END OF CAR PARK LINE TO FACE OF WHEEL STOP THAT CAR TYRE TOUCHES







REVISIONS					
C	26.08.21	RFI ISSUE		CW	DJW
B	08.07.21	OPW ISSUE		CW	DJW
A	05.03.21	INITIAL ISSUE			
NO.	DATE	DESCRIPTION		DESIGN	APPROVED

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:200 0 2 4 6 8 10 12 A1
1:400 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

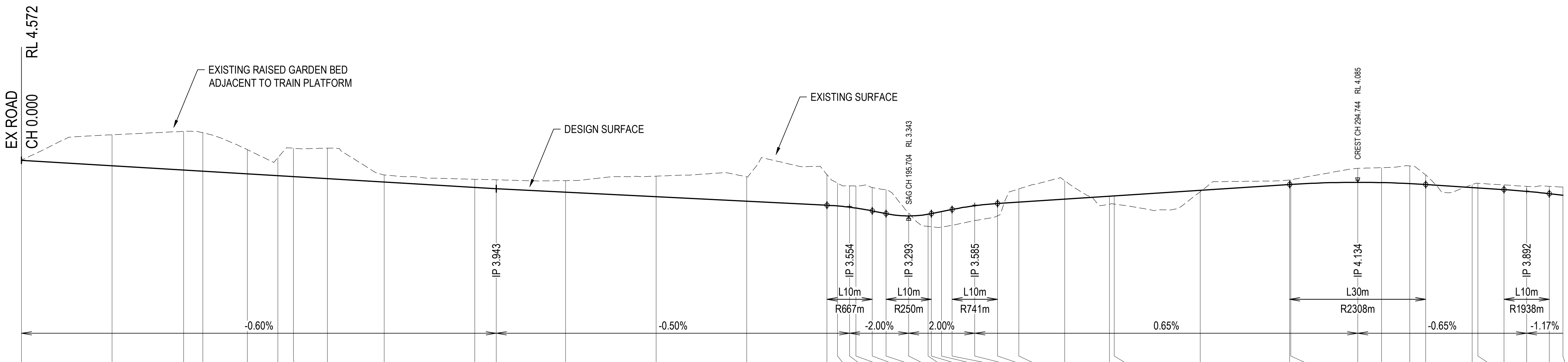
DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21	RPEQ: 19806		

OVER 50s RESIDENTIAL DEVELOPMENT

INTERSECTION DETAILS

DRAWING NO. 188-002-C09

REVISION C



VERTICAL CURVE

VERTICAL GRADE

DATUM RL 0.0

CHAINAGE	CUT - FILL +	DESIGN SURFACE LEVEL	EXISTING SURFACE LEVEL
0.000	-0.000	4.572	4.572
20.000	-0.683	4.452	5.135
35.793	-0.853	4.357	5.211
40.000	-0.853	4.332	5.185
49.826	-0.534	4.273	4.807
56.578	-0.397	4.233	4.630
60.000	-0.624	4.212	4.836
67.484	-0.673	4.167	4.840
80.000	-0.156	4.092	4.248
100.000	-0.181	3.972	4.153
104.748	-0.197	3.943	4.140
120.000	-0.255	3.867	4.123
140.000	-0.454	3.767	4.221
160.000	-0.540	3.667	4.207
177.680	-0.677	3.579	4.256
180.000	-0.505	3.563	4.068
182.680	-0.471	3.535	4.006
184.047	-0.488	3.517	4.004
187.680	-0.514	3.454	3.968
190.704	-0.527	3.393	3.920
195.704	-0.056	3.343	3.399
200.000	0.271	3.380	3.110
200.704	0.292	3.393	3.101
202.955	0.343	3.438	3.096
205.290	0.350	3.485	3.136
210.290	0.327	3.568	3.242
215.290	0.272	3.618	3.345
220.000	-0.292	3.648	3.940
230.113	-0.407	3.714	4.121
240.000	0.179	3.778	3.599
241.061	0.180	3.785	3.605
260.000	0.030	3.908	3.878
279.744	-0.101	4.037	4.138
280.000	-0.104	4.038	4.142
294.744	-0.308	4.085	4.393
300.000	-0.329	4.079	4.409
306.217	-0.390	4.057	4.447
309.744	-0.213	4.037	4.250
320.000	-0.067	3.970	4.037
321.275	-0.102	3.962	4.064
327.000	-0.103	3.924	4.027
332.000	-0.110	3.885	3.995
337.000	-0.162	3.834	3.995
340.000	-0.182	3.799	3.981

HORIZONTAL DATA: R10m (35.793–49.826); R20.5m (56.578–67.484); R-10.4m (182.680–200.704); R-8.27m (230.113–241.061); R-9.59m (309.744–321.275)

REVISIONS				
NO.	DATE	DESCRIPTION	DESIGN	APPROVED
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:500 / 1:1000 — 0 5 10 20 30 — HORIZONTAL — A1 / A3

1:50 / 1:100 — 0 0.5 10 2 3 — VERTICAL — A1 / A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN CW | CHECKED CW

DESIGNED DJW | CHECKED DJW

APPROVED

ORIGINAL CERTIFIED BY D.J.WALKER

DATE: 08.07.21 RPEQ: 19806

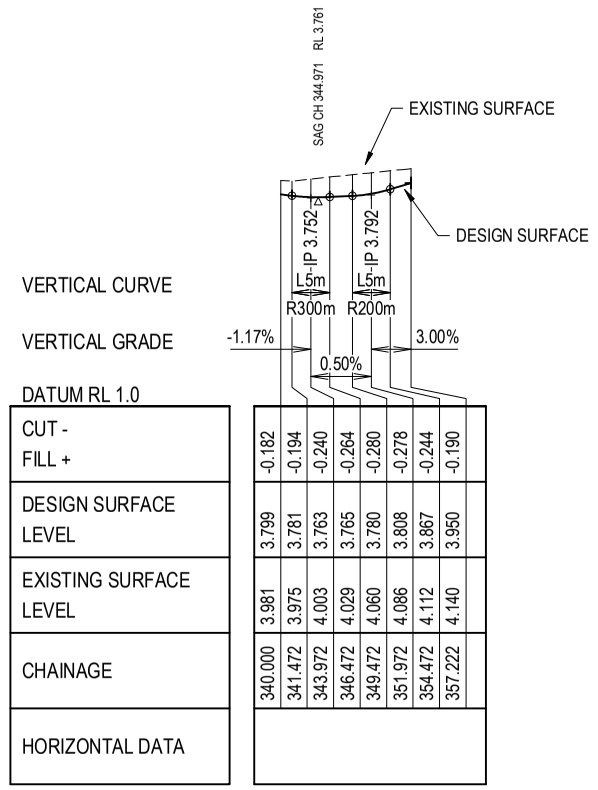
OVER 50s RESIDENTIAL DEVELOPMENT

ROAD LONGITUDINAL SECTIONS

SHEET 1 OF 2

DRAWING NO. 188-002-C10

REVISION C



VERTICAL CURVE									
VERTICAL GRADE									
DATUM RL 1.0									
CUT - FILL +	-0.182	-0.194	-0.240	-0.264	-0.280	-0.278	-0.244	-0.190	
DESIGN SURFACE LEVEL	3.799	3.781	3.763	3.765	3.780	3.808	3.867	3.950	
EXISTING SURFACE LEVEL	3.981	3.975	4.003	4.029	4.060	4.086	4.112	4.140	
CHAINAGE	340.000	341.472	343.972	346.472	349.472	351.972	354.472	357.222	
HORIZONTAL DATA									

REVISIONS					
C	26.08.21	RFI ISSUE	CW	DJW	
B	08.07.21	OPW ISSUE	CW	DJW	
A	05.03.21	INITIAL ISSUE			
NO.	DATE	DESCRIPTION	DESIGN	APPROVED	

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:500 0 5 10 20 30 A1
1:1000 A3
HORIZONTAL

1:50 0 0.5 1 2 3 A1
1:100 A3
VERTICAL

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
	DATE: 08.07.21	RPEQ: 19806	

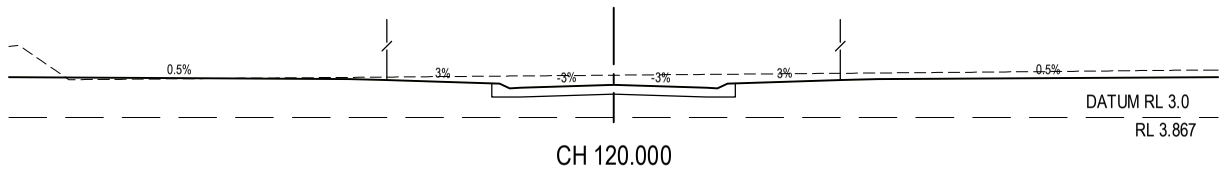
OVER 50s RESIDENTIAL DEVELOPMENT

ROAD LONGITUDINAL SECTIONS

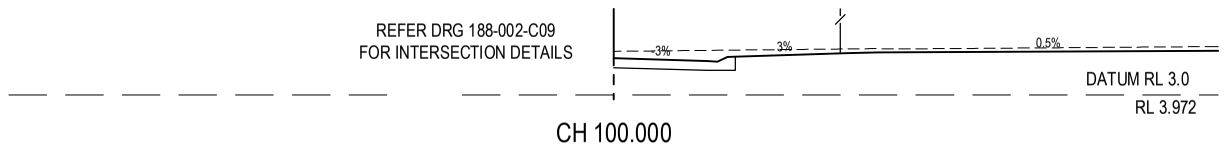
SHEET 2 OF 2

DRAWING NO. 188-002-C11

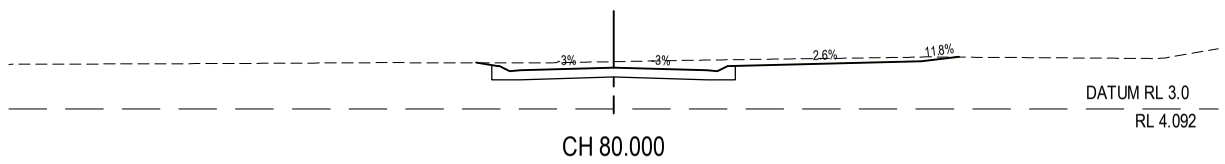
REVISION C



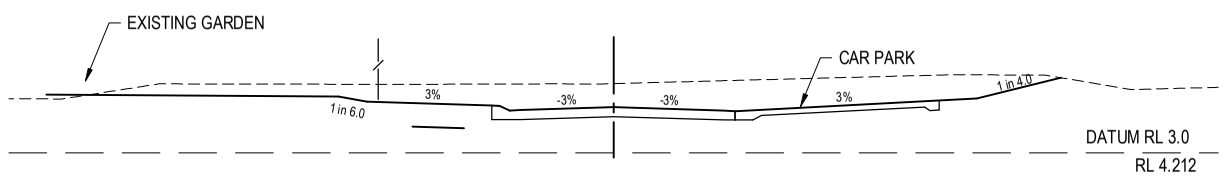
CH 120.000



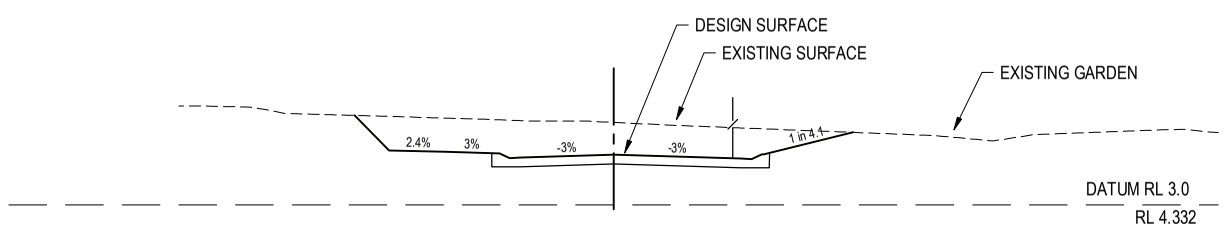
CH 100.000



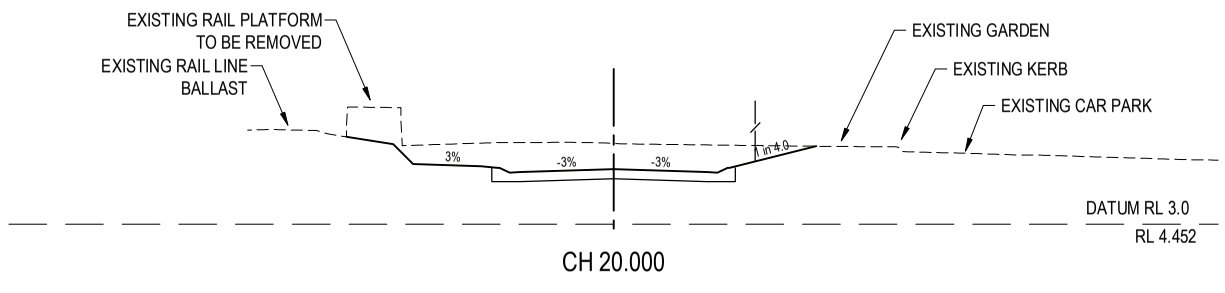
CH 80.000



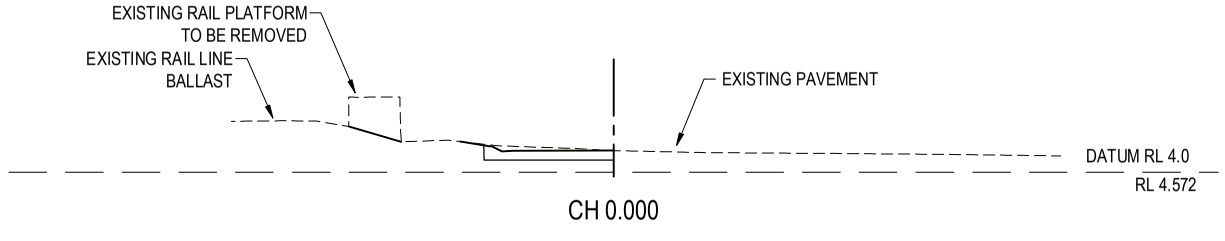
CH 60.000



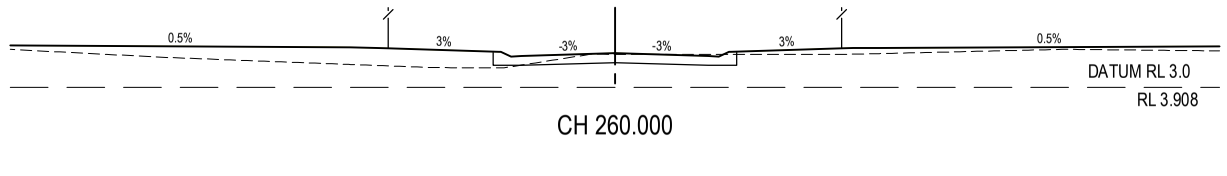
CH 40.000



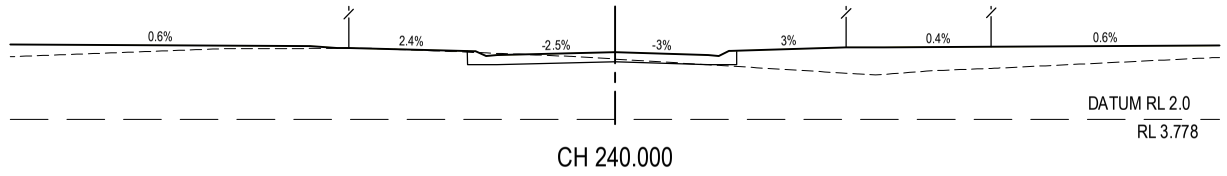
CH 20.000



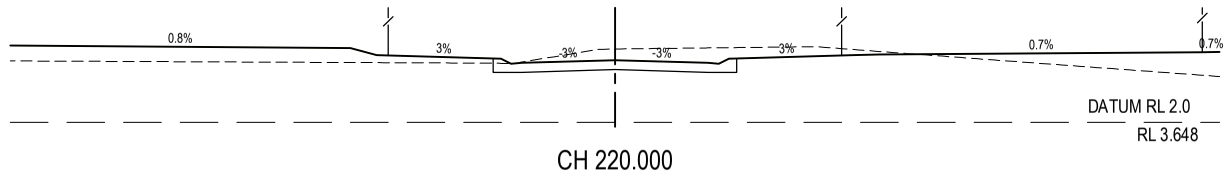
CH 0.000



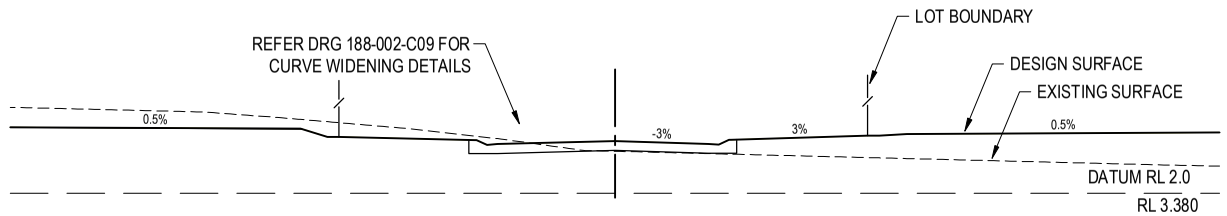
CH 260.000



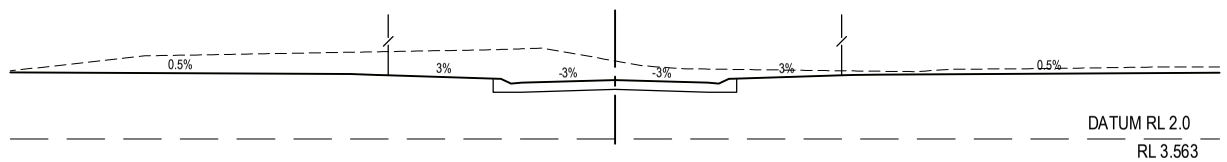
CH 240.000



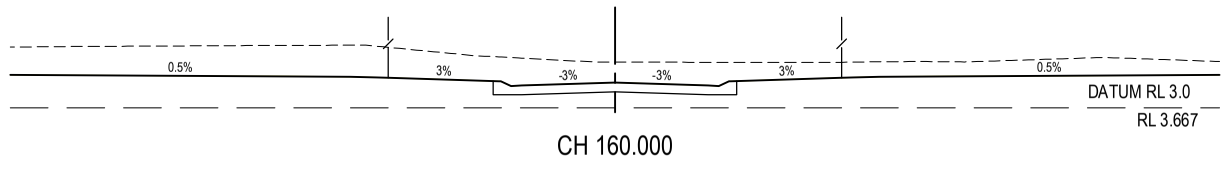
CH 220.000



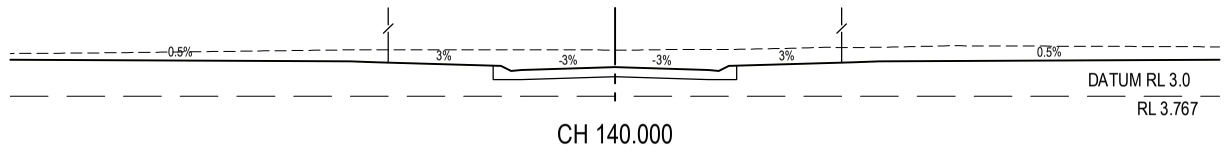
CH 200.000



CH 180.000



CH 160.000



CH 140.000

REVISIONS	NO.	DATE	DESCRIPTION	DESIGN	APPROVED
	C	26.08.21	RFI ISSUE	CW	DJW
	B	08.07.21	OPW ISSUE	CW	DJW
	A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:500 0 5 10 20 30 A1
1:1000 A3
HORIZONTAL

1:50 0 0.5 1 0 2 3 A1
1:100 A3
VERTICAL

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED			

ORIGINAL CERTIFIED BY D.J.WALKER

DATE: 08.07.21 RPEQ: 19806

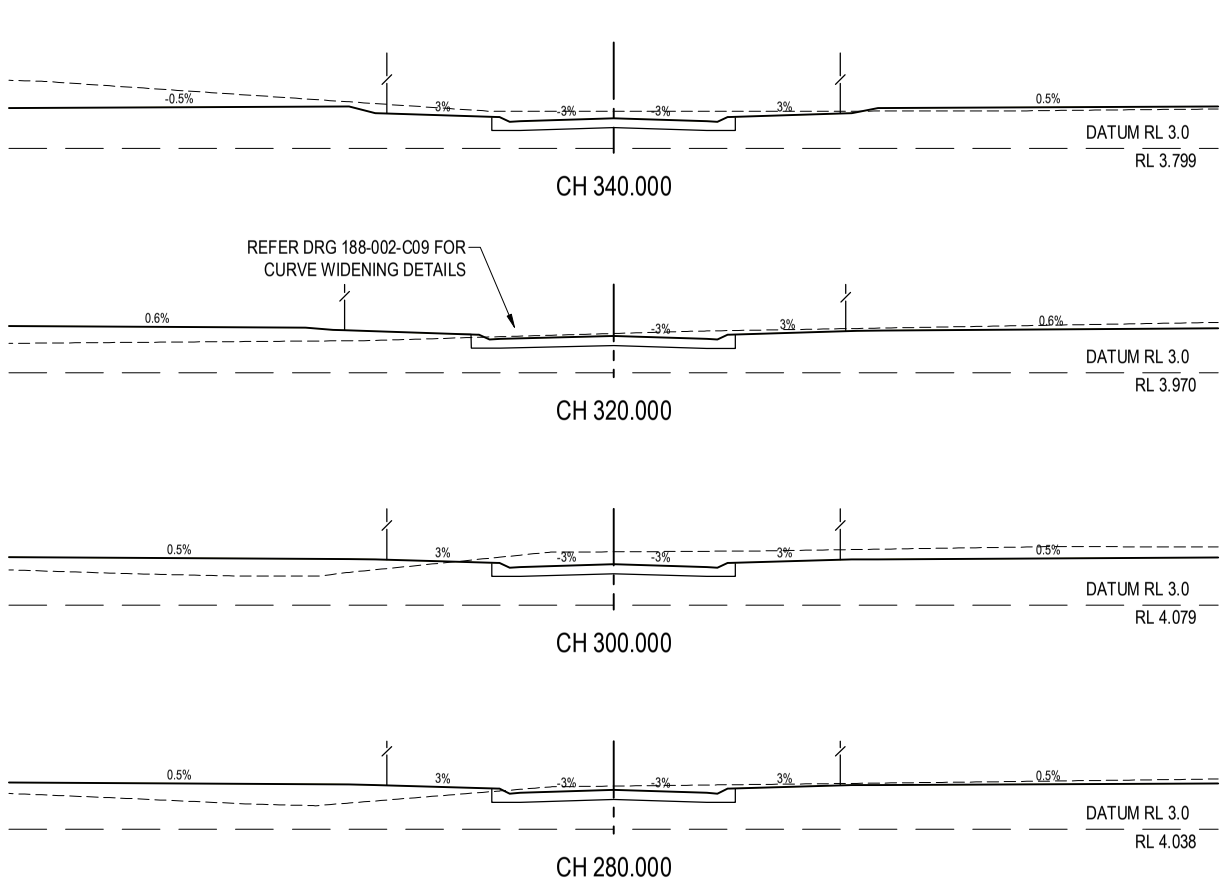
OVER 50s RESIDENTIAL DEVELOPMENT

ROAD A CROSS SECTIONS

SHEET 1 OF 2

DRAWING NO. 188-002-C12

REVISION C



REVISIONS	NO.	DATE	DESCRIPTION	DESIGN	APPROVED
	C	26.08.21	RFI ISSUE	CW	DJW
	B	08.07.21	OPW ISSUE	CW	DJW
	A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:500 0 5 10 20 30 A1
1:1000 A3
HORIZONTAL

1:50 0 0.5 1.0 2 3 A1
1:100 A3
VERTICAL

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CHECKED
CW	CW
DESIGNED	CHECKED
DJW	DJW

APPROVED
ORIGINAL CERTIFIED BY D.J.WALKER
DATE: 08.07.21 RPEQ: 19806

OVER 50s RESIDENTIAL DEVELOPMENT

ROAD A CROSS SECTIONS
SHEET 2 OF 2

DRAWING NO. 188-002-C13

REVISION C

OAKS RESORT

250mm DIA PVC DRAINAGE PIPE
LENGTH = 1.5m GRADE = 0.7%
US IL = 1.520m AHD DS IL = 1.510m AHD

ECOSOL ETR67 TRASH RACK
TREATMENT FLOW = 0.208m³/s
TREATMENT CAPACITY = 0.282m³/s

ALL KERB INLET PITS DETAILED SO LINTEL IN LINE WITH BACK OF KERB. REFER DETAIL ON DRG 188-002-C15.

ROAD A

COVENANT

REEF RESORT

CENTRAL FACILITIES BUILDING

LEGEND

2/1	LINE NUMBER / STRUCTURE No.
	STORMWATER DRAINAGE PIPE & MANHOLE
	SUBSURFACE DRAINAGE
	PROPOSED SEWER
	KERB INLET PIT
	HEADWALL
	FALL OF LOTS
57.0	DESIGN SURFACE CONTOURS (0.2m INTERVAL)
FP1	FLUSHING POINT IN PIT
FP2	FLUSHING POINT IN LINE
FP3	FLUSHING POINT HEAD

REVISIONS					
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		
NO.	DATE	DESCRIPTION	DESIGN	APPROVED

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 1:500 0 5 10 15 A1 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21		RPEQ: 19806	

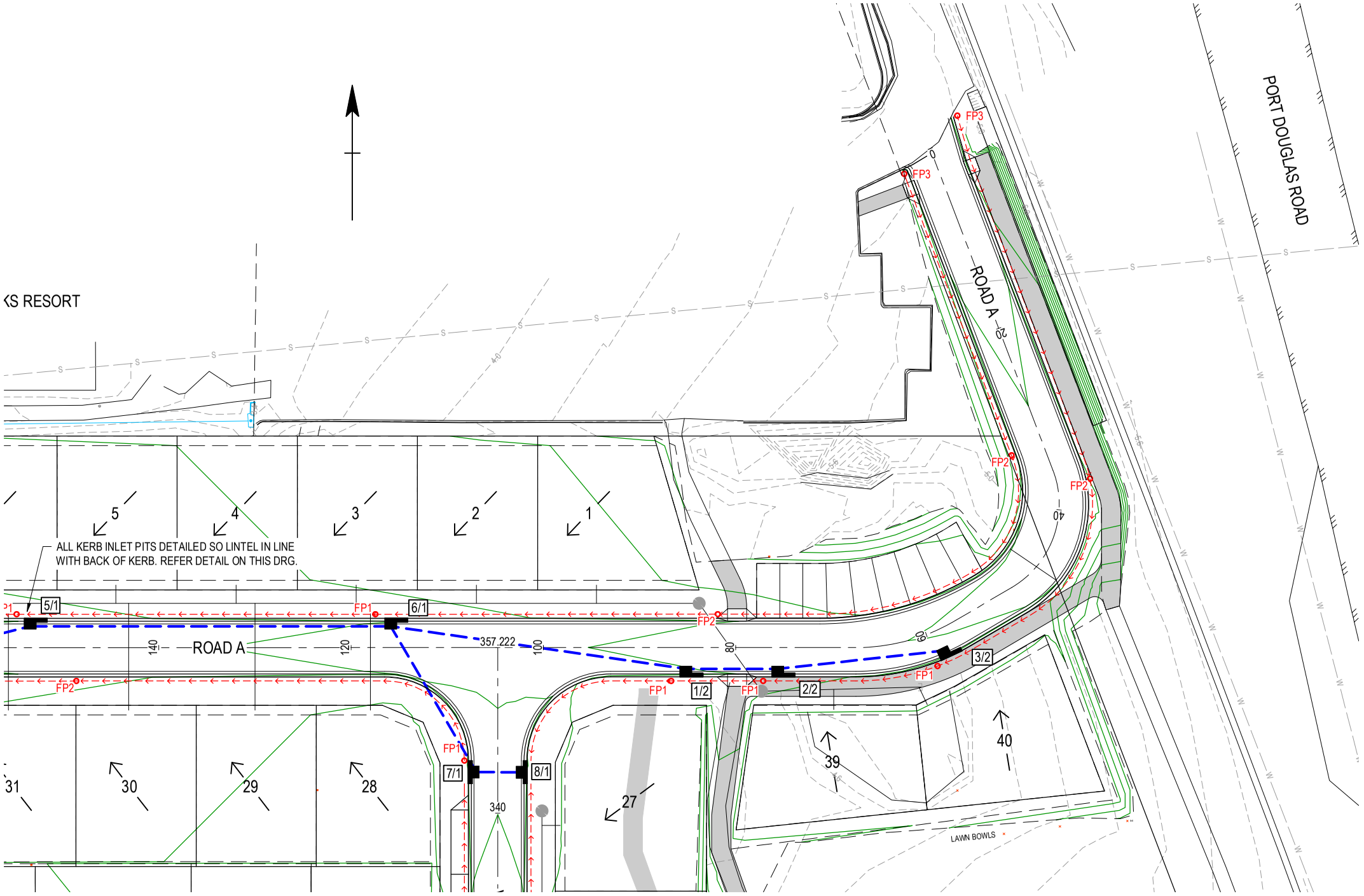
OVER 50s RESIDENTIAL DEVELOPMENT

STORMWATER DRAINAGE LAYOUT

SHEET 1 OF 2

DRAWING NO. 188-002-C14

REVISION C

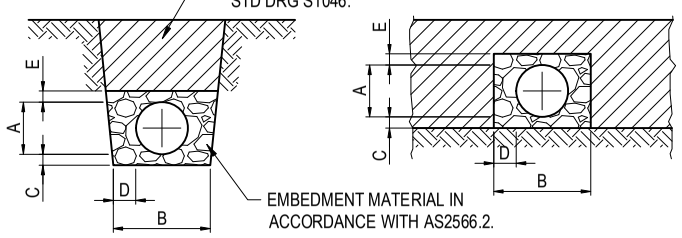


LEGEND

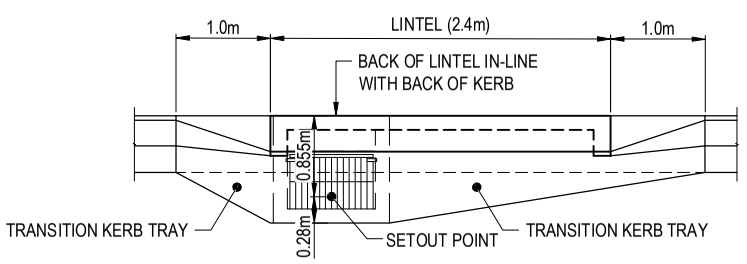
2/1	LINE NUMBER / STRUCTURE No.
	STORMWATER DRAINAGE PIPE & MANHOLE
	SUBSURFACE DRAINAGE
	PROPOSED SEWER
	KERB INLET PIT
	HEADWALL
	FALL OF LOTS
57.0	DESIGN SURFACE CONTOURS (0.2m INTERVAL)
FP1	FLUSHING POINT IN PIT
FP2	FLUSHING POINT IN LINE
FP3	FLUSHING POINT HEAD

BLACKMAX PIPE BEDDING DIMENSIONS

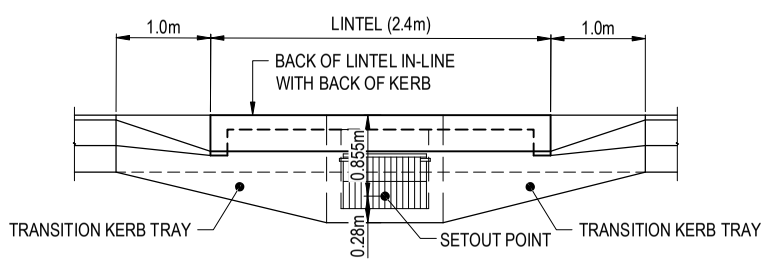
DN	DIMENSIONS (mm)				
	A	B	C	D	E
225	259	560	100	150	150
300	344	645	100	150	150
375	428	830	100	200	150
450	514	915	100	200	150
525	600	1200	150	300	150
600	682	1285	150	300	150



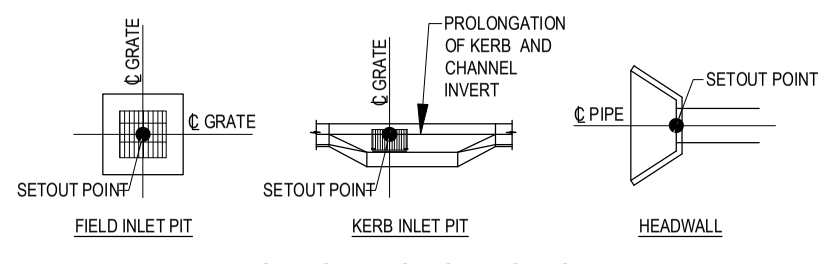
BLACKMAX PIPE BEDDING DETAILS
N.T.S.



ON-GRADE KERB INLET PIT TO INTERNAL ROAD
N.T.S.



SAG KERB INLET PIT TO INTERNAL ROAD
N.T.S.



STRUCTURE SETOUT POINTS
N.T.S.

REVISIONS					
NO.	DATE	DESCRIPTION	DESIGN	APPROVED
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		

CLIENT: PORT PACIFIC DEVELOPMENTS

SCALE: 1:250 / 1:500 — 0 5 10 15 — A1 / A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21	RPEQ: 19806		

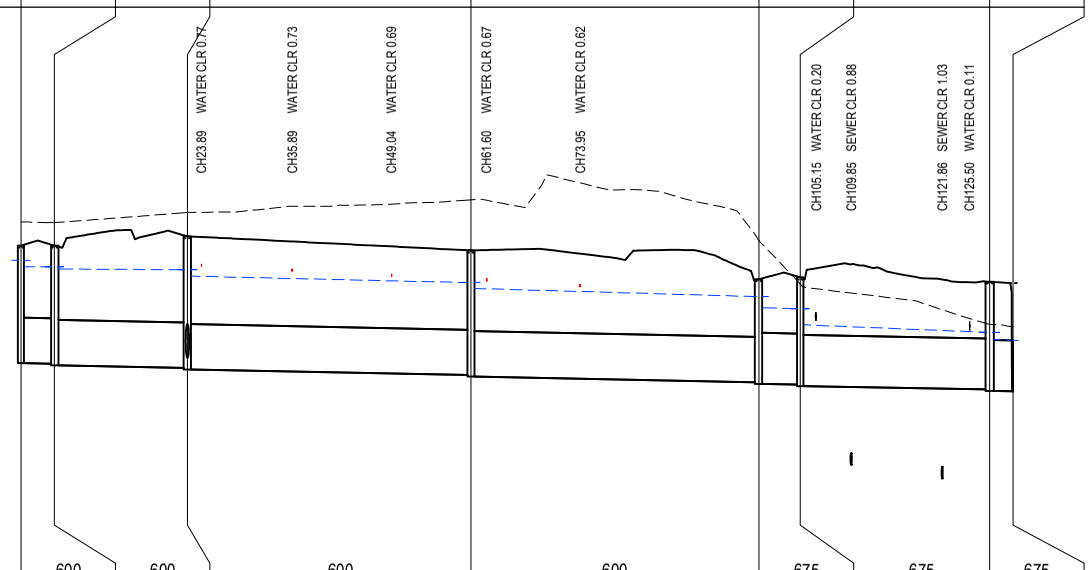
OVER 50s RESIDENTIAL DEVELOPMENT

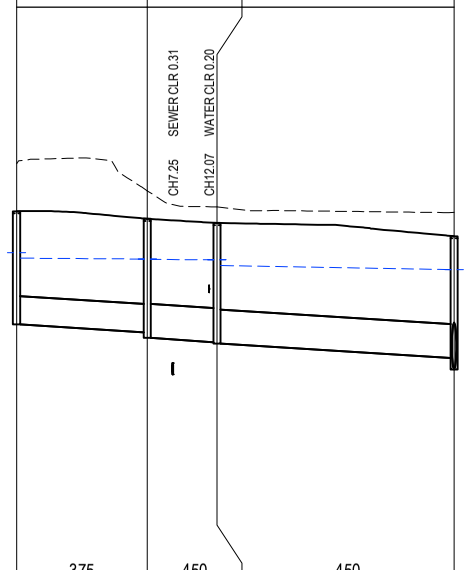
STORMWATER DRAINAGE LAYOUT

SHEET 2 OF 2

DRAWING NO. 188-002-C15

REVISION C





STRUCTURE NAME	8/1	7/1	6/1	5/1	4/1	3/1	2/1	1/1	3/2	2/2	1/2	6/1
STRUCTURE DESCRIPTION	SAG KERB INLET PIT; LINTEL TYPE S	SAG KERB INLET PIT; LINTEL TYPE S	ON-GRADE KERB INLET PIT; LINTEL TYPE S	ON-GRADE KERB INLET PIT; LINTEL TYPE S	SAG KERB INLET PIT; LINTEL TYPE S	SAG KERB INLET PIT; LINTEL TYPE S	MANHOLE	HEADWALL	ON-GRADE KERB INLET PIT; LINTEL TYPE S	ON-GRADE KERB INLET PIT; LINTEL TYPE S	ON-GRADE KERB INLET PIT; LINTEL TYPE S	ON-GRADE KERB INLET PIT; LINTEL TYPE S
PIPE SIZE (mm)	600	600	600	600	675	675	675		375	450	450	
PIPE CLASS	BlackMAX	BlackMAX	BlackMAX	BlackMAX	RCP (2)	RCP (2)	RCP (2)		BlackMAX	BlackMAX	BlackMAX	
PIPE GRADE (%)	0.20%	0.20%	0.20%	0.20%	0.18%	0.18%	0.18%		0.60%	0.61%	0.61%	
PIPE SLOPE (1 in X)	500.00	500.00	500.00	500.00	555.59	565.56	555.56		165.83	165.00	165.00	
FULL PIPE VELOCITY (m/s)	0.53	0.63	1.34	1.50	1.50	1.91	1.90		0.54	0.48	0.97	
PART FULL VELOCITY (m/s)	1.21	1.26	1.42	1.50	1.50	1.91	1.90		1.45	1.53	1.84	
DATUM RL	-3.0								-3.0			
H.G.L IN PIPE & W.S.E IN STRUCTURE	3.502 / 3.418	3.416 / 3.418	3.388 / 3.379	3.379 / 3.379	3.294 / 3.209	3.209 / 3.131	3.024 / 3.024	2.876 / 2.863	2.863 / 2.650	2.552 / 2.552	2.457 / 2.445	2.445
									3.605 / 3.532	3.520 / 3.520	3.515 / 3.511	3.511 / 3.434	3.379 / 3.379	3.294
PIPE FLOW (Cumecs)	0.150	0.178	0.380	0.424	0.538	0.682	0.679		0.060	0.076	0.154	
PIPE CAPACITY AT GRADE (Cumecs)	0.357	0.357	0.357	0.357	0.464	0.460	0.464		0.177	0.289	0.289	
DEPTH TO INVERT	1.554	1.563	1.583	1.741	1.761	1.649	1.669	1.364	1.384	1.420	1.439	1.425	1.445	-0.002	-0.002
									1.496	1.501	1.576	1.576	1.596	1.611	1.761
INVERT LEVEL OF DRAIN	2.144	2.135	2.115	2.080	2.060	1.985	1.965	1.889	1.869	1.859	1.839	1.795	1.776	1.770	1.770
									2.655	2.551	2.476	2.420	2.400	2.210	2.060
DESIGN SURFACE LEVEL	3.699	3.699	3.821	3.634	3.253	3.279	3.220	1.768	4.151	4.052	3.997	3.821
SETOUT COORDINATES	E 335836.753 N 8173860.303	E 335832.318 N 8173860.312	E 335823.406 N 8173875.477	E 335785.906 N 8173875.475	E 335748.925 N 8173866.192	E 335743.979 N 8173868.444	E 335720.741 N 8173877.857	E 335719.298 N 8173880.578	E 335880.867 N 8173872.940	E 335863.673 N 8173871.049	E 335854.466 N 8173871.049	E 335823.406 N 8173875.477
CHAINAGE	0.000	4.435 / 4.435	17.589 / 22.024	37.500 / 59.524	38.129 / 97.653	5.434 / 103.087	25.073 / 128.159	3.079 / 131.239	-13.401	17.298 / 3.898	9.207 / 13.104	31.374 / 44.478
LINE	1								2			

REVISIONS					
NO.	DATE	DESCRIPTION	DESIGN	APPROVED
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:500 0 5 10 20 30 A1
1:1000 A3
HORIZONTAL

1:50 0 0.5 1 2 3 A1
1:100 A3
VERTICAL

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

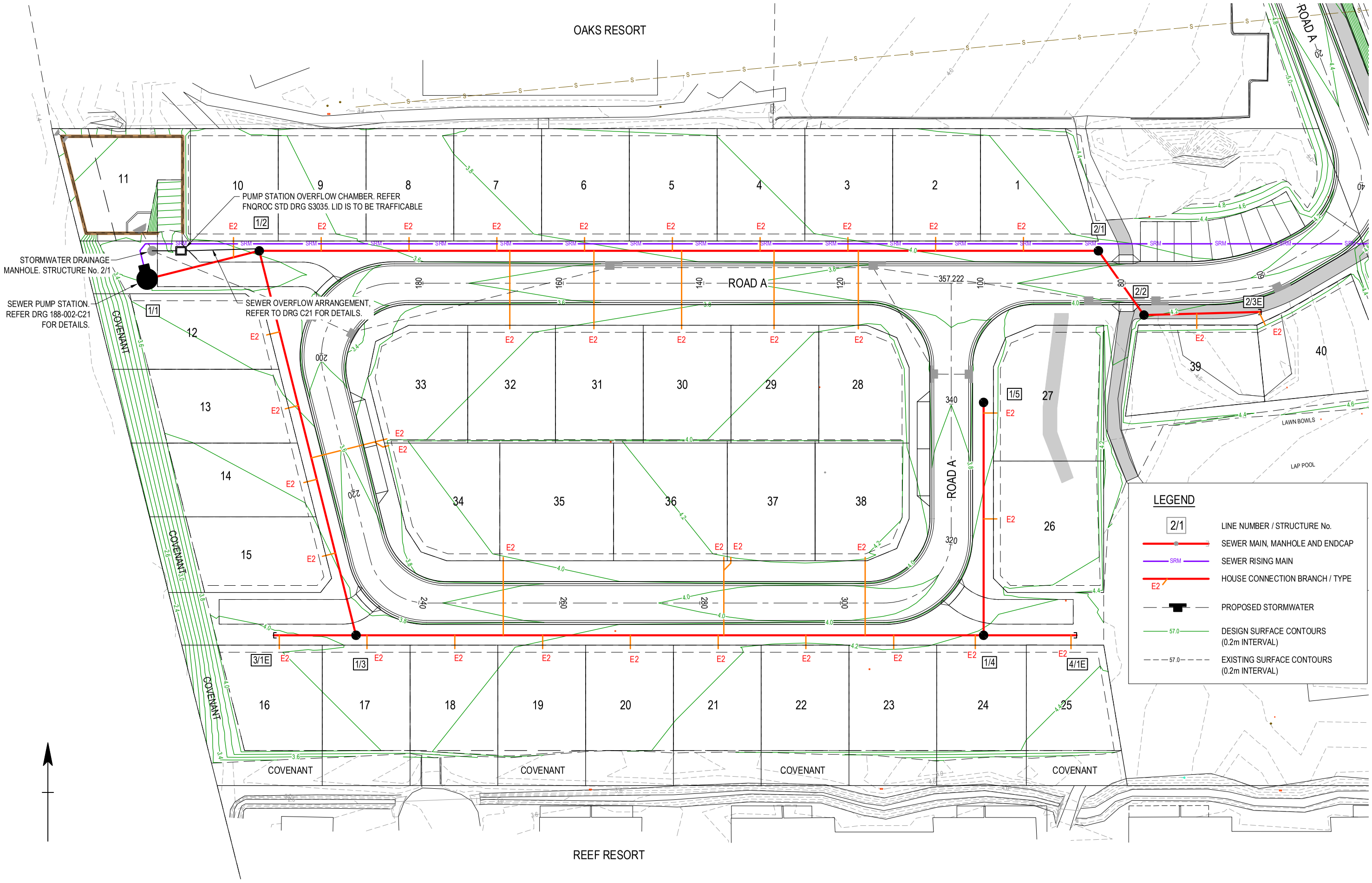
DRAWN CW | CHECKED CW
DESIGNED DJW | CHECKED DJW
APPROVED
ORIGINAL CERTIFIED BY D.J.WALKER
DATE: 08.07.21 RPEQ: 19806

OVER 50s RESIDENTIAL DEVELOPMENT

STORMWATER DRAINAGE LONGITUDINAL SECTIONS

DRAWING NO. 188-002-C16

REVISION C



REVISIONS					
C	26.08.21	RFI ISSUE			
B	08.07.21	OPW ISSUE	CW	DJW	
A	05.03.21	INITIAL ISSUE			
NO.	DATE	DESCRIPTION	DESIGN	APPROVED	

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 0 5 10 15 A1
1:500 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
	DATE: 08.07.21	RPEQ: 19806	

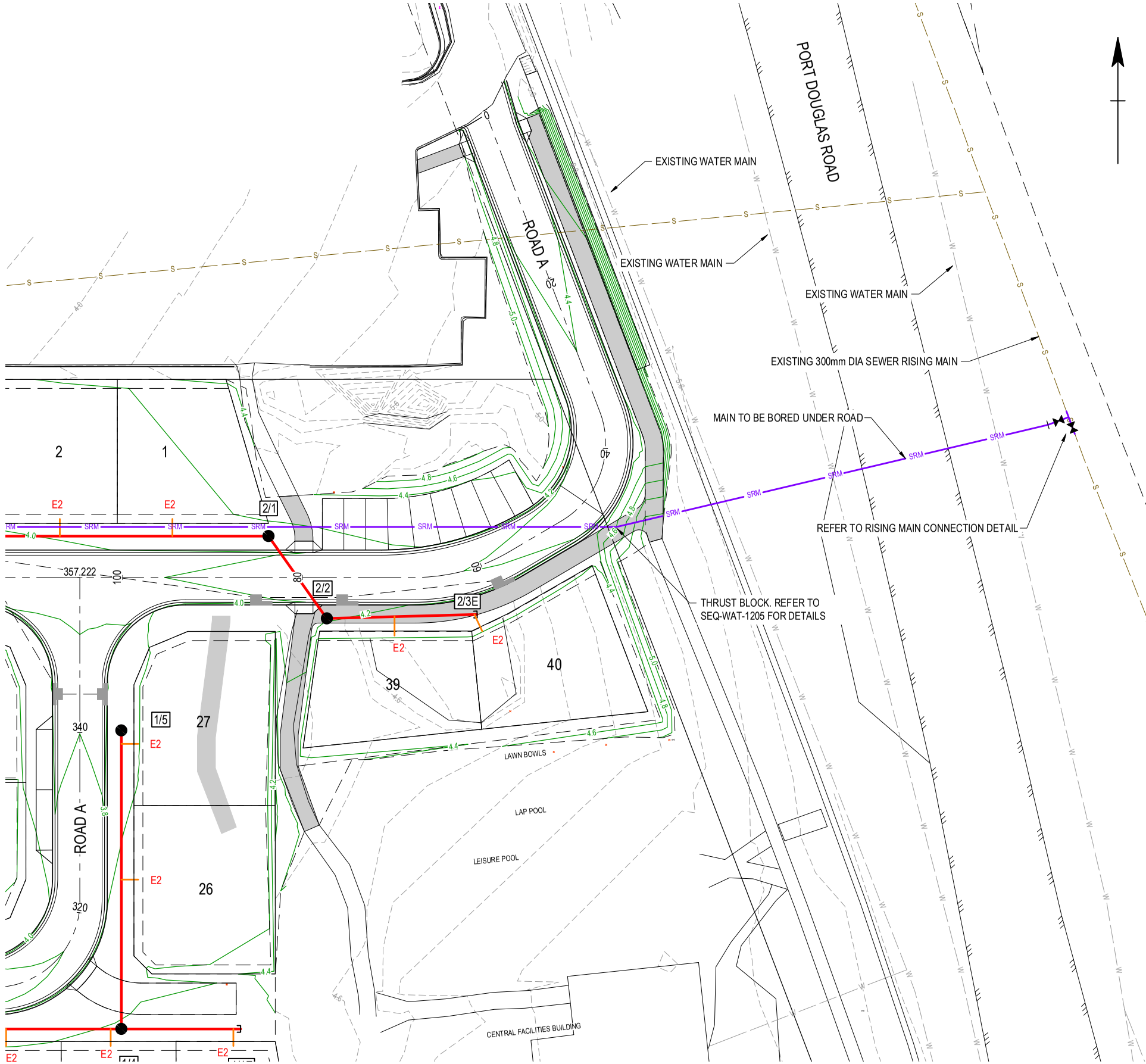
OVER 50s RESIDENTIAL DEVELOPMENT

SEWER RETICULATION

SHEET 1 OF 2

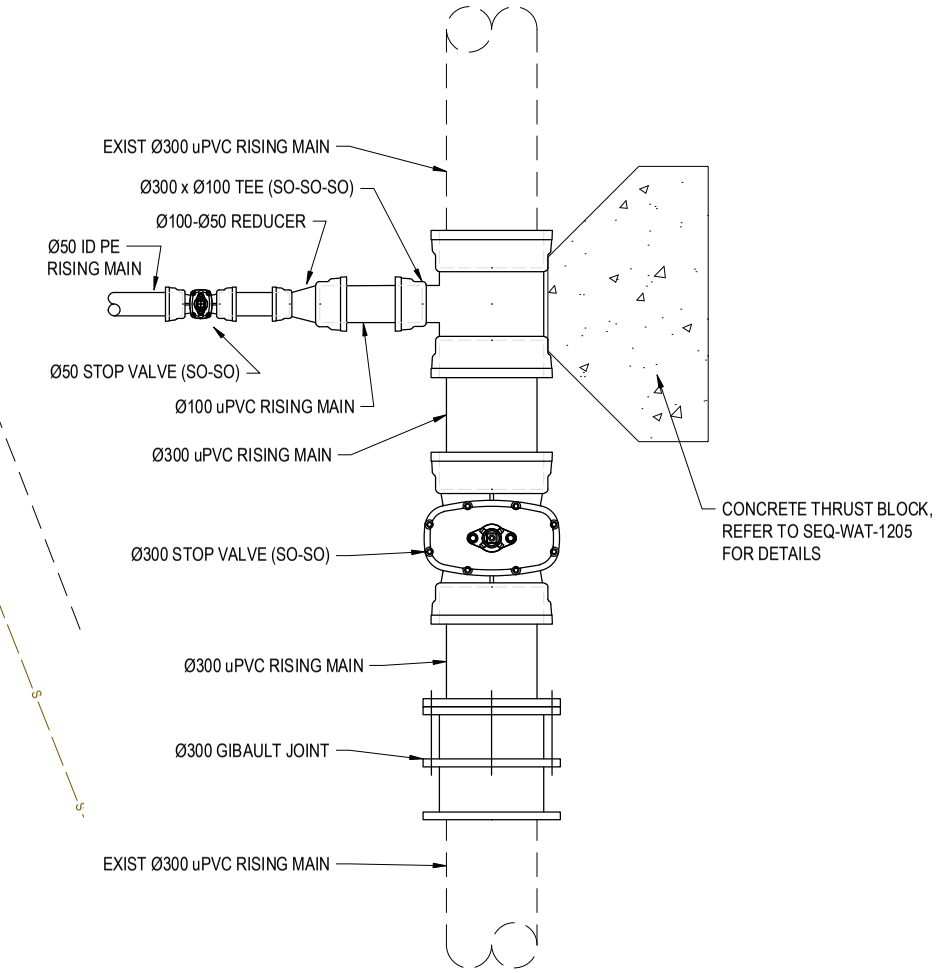
DRAWING NO. 188-002-C17

REVISION C



LEGEND

- 2/1 — LINE NUMBER / STRUCTURE No.
- SEWER MAIN, MANHOLE AND ENDCAP
- SRM — SEWER RISING MAIN
- E2 — HOUSE CONNECTION BRANCH / TYPE
- PROPOSED STORMWATER
- 57.0 — DESIGN SURFACE CONTOURS (0.2m INTERVAL)
- 57.0 — EXISTING SURFACE CONTOURS (0.2m INTERVAL)



RISING MAIN CONNECTION DETAIL

N.T.S.

REVISIONS	NO.	DATE	DESCRIPTION	DESIGN	APPROVED
	C	26.08.21	RFI ISSUE	CW	DJW
	B	08.07.21	OPW ISSUE	CW	DJW
	A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 1:500 0 5 10 15 A1 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21	RPEQ: 19806		

OVER 50s RESIDENTIAL DEVELOPMENT

SEWER RETICULATION

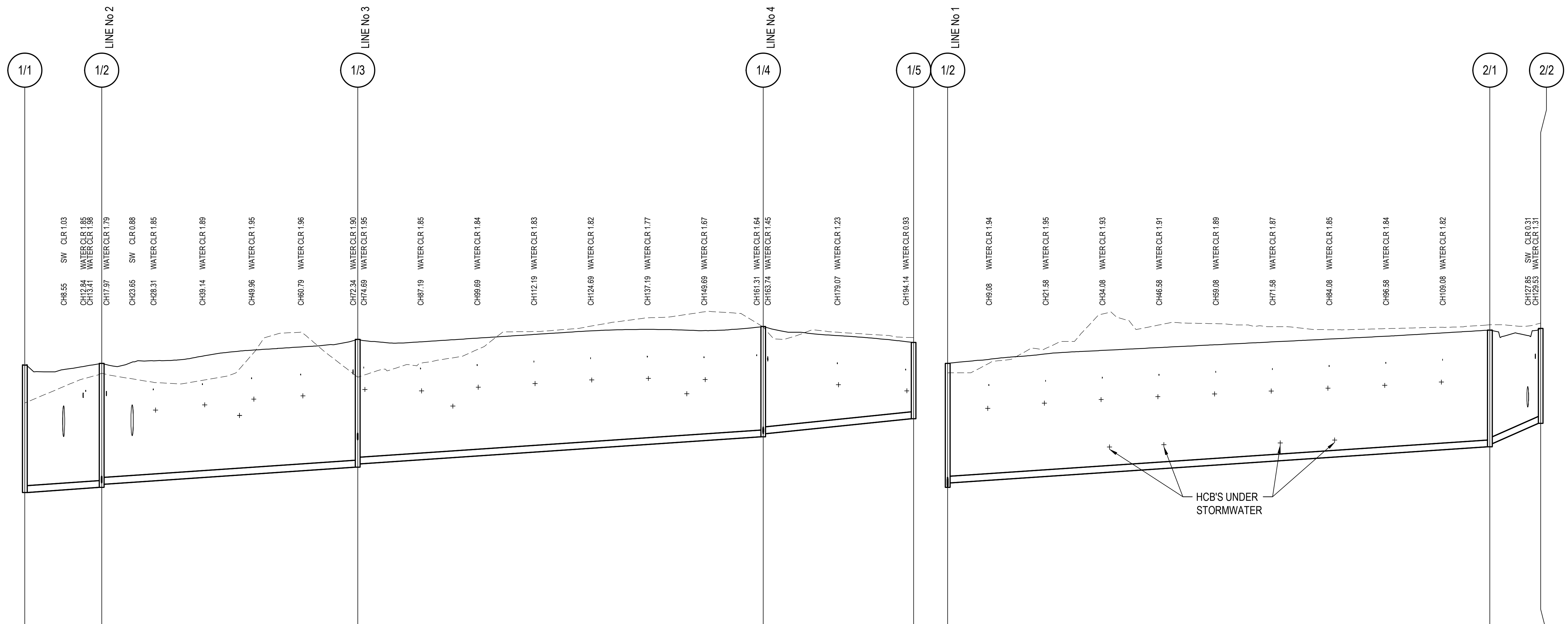
SHEET 2 OF 2

DRAWING NO. 188-002-C18

REVISION C

LEGEND

+ PROPERTY CONNECTION BRANCH



LINE 1

	1/1		1/2		1/3		1/4		1/5
GRADE (1 in "X")		150		150		150		100.0	
PIPE SIZE (mm)		150		150		150		150	
DATUM RL	-4.0								
DEPTH TO INVERT	2.81 / 2.81		2.73 / 2.66		2.81 / 2.74		2.43 / 2.36		1.68
INVERT LEVEL	0.574 / 0.574		0.686 / 0.756		1.133 / 1.203		1.799 / 1.869		2.200
DESIGN SURFACE LEVEL	3.38		3.42		3.95		4.23		3.88
EXISTING SURFACE LEVEL	2.54		3.20		3.11		4.22		3.98
SETOUT COORDINATES	E 335719.563 N 8173873.724		E 335735.984 N 8173877.858		E 335749.762 N 8173823.130		E 335839.135 N 8173823.130		E 335839.133 N 8173856.275
CHAINAGE	0.00	16.93	16.93	56.44	73.37	89.37	162.74	33.15	195.89

LINE 2

	1/2		2/1		2/2
GRADE (1 in "X")		150		25.0	
PIPE SIZE (mm)		150		150	
DATUM RL	-4.0				
DEPTH TO INVERT	2.73 / 2.64		2.57 / 2.50		2.09
INVERT LEVEL	0.686 / 0.783		1.580 / 1.650		2.098
DESIGN SURFACE LEVEL	3.42		4.15		4.19
EXISTING SURFACE LEVEL	3.20		4.27		4.31
SETOUT COORDINATES	E 335735.984 N 8173877.858		E 335855.486 N 8173877.864		E 335861.969 N 8173868.717
CHAINAGE	0.00	119.50	119.50	11.21	130.71

REVISIONS

NO.	DATE	DESCRIPTION	DESIGN	APPROVED
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		

CLIENT
PORT PACIFIC DEVELOPMENTS

SCALE
1:500 / 1:1000 — 0 5 10 20 30 — HORIZONTAL — A1 / A3
1:50 / 1:100 — 0 0.5 10 2 3 — VERTICAL — A1 / A3
ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

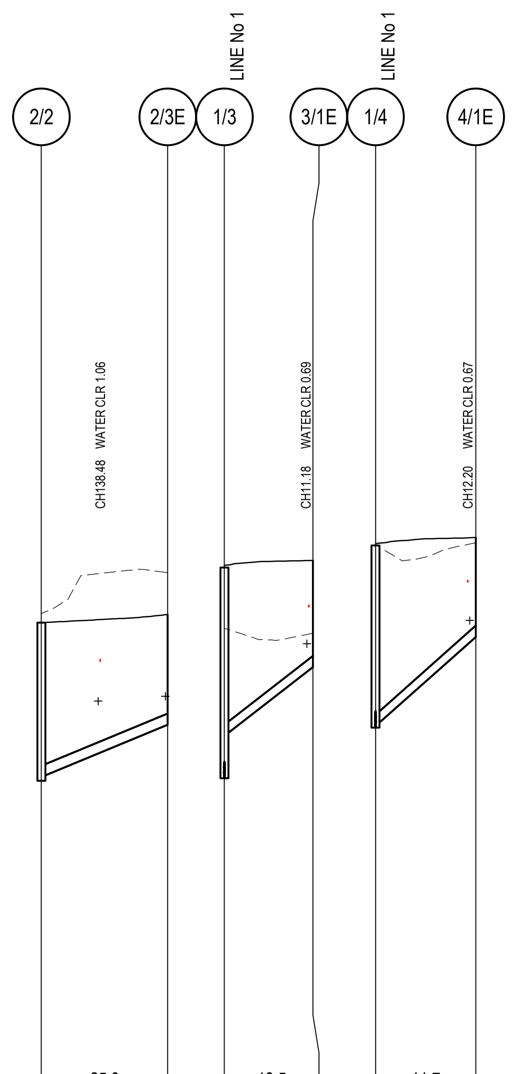
DRAWN CW CHECKED CW
DESIGNED DJW CHECKED DJW
APPROVED
ORIGINAL CERTIFIED BY D.J.WALKER
DATE:08.07.21 RPEQ: 19806

OVER 50s RESIDENTIAL DEVELOPMENT
SEWER LONGITUDINAL SECTIONS
SHEET 1 OF 2

DRAWING NO. 188-002-C19
REVISION C

LEGEND

\+ PROPERTY CONNECTION BRANCH



	LINE 2 (2/2)	LINE 2 (2/3E)	LINE 3 (1/3)	LINE 3 (3/1E)	LINE 4 (1/4)	LINE 4 (4/1E)
GRADE (1 in "X")	25.0		13.5		11.7	
PIPE SIZE (mm)	150		150		150	
DATUM RL	-3.0		-4.0		-4.0	
DEPTH TO INVERT	2.09 / 2.02	1.46	2.81 / 2.21	1.41	2.43 / 2.36	1.31
INVERT LEVEL	2.098 / 2.168	2.837	1.133 / 1.733	2.600	1.799 / 1.869	3.000
DESIGN SURFACE LEVEL	4.19	4.30	3.95	4.01	4.23	4.31
EXISTING SURFACE LEVEL	4.31	4.85	3.11	3.05	4.22	4.24
SETOUT COORDINATES	E 335861.969 N 8173868.717	E 335878.667 N 8173869.158	E 335749.762 N 8173823.130	E 335738.035 N 8173823.130	E 335839.135 N 8173823.130	E 335852.385 N 8173823.130
CHAINAGE	130.71 (16.70)	147.42	0.00 (11.73)	11.73	0.00 (13.25)	13.25

NO.	DATE	DESCRIPTION	DESIGN	APPROVED
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		

REVISIONS

CLIENT
PORT PACIFIC DEVELOPMENTS

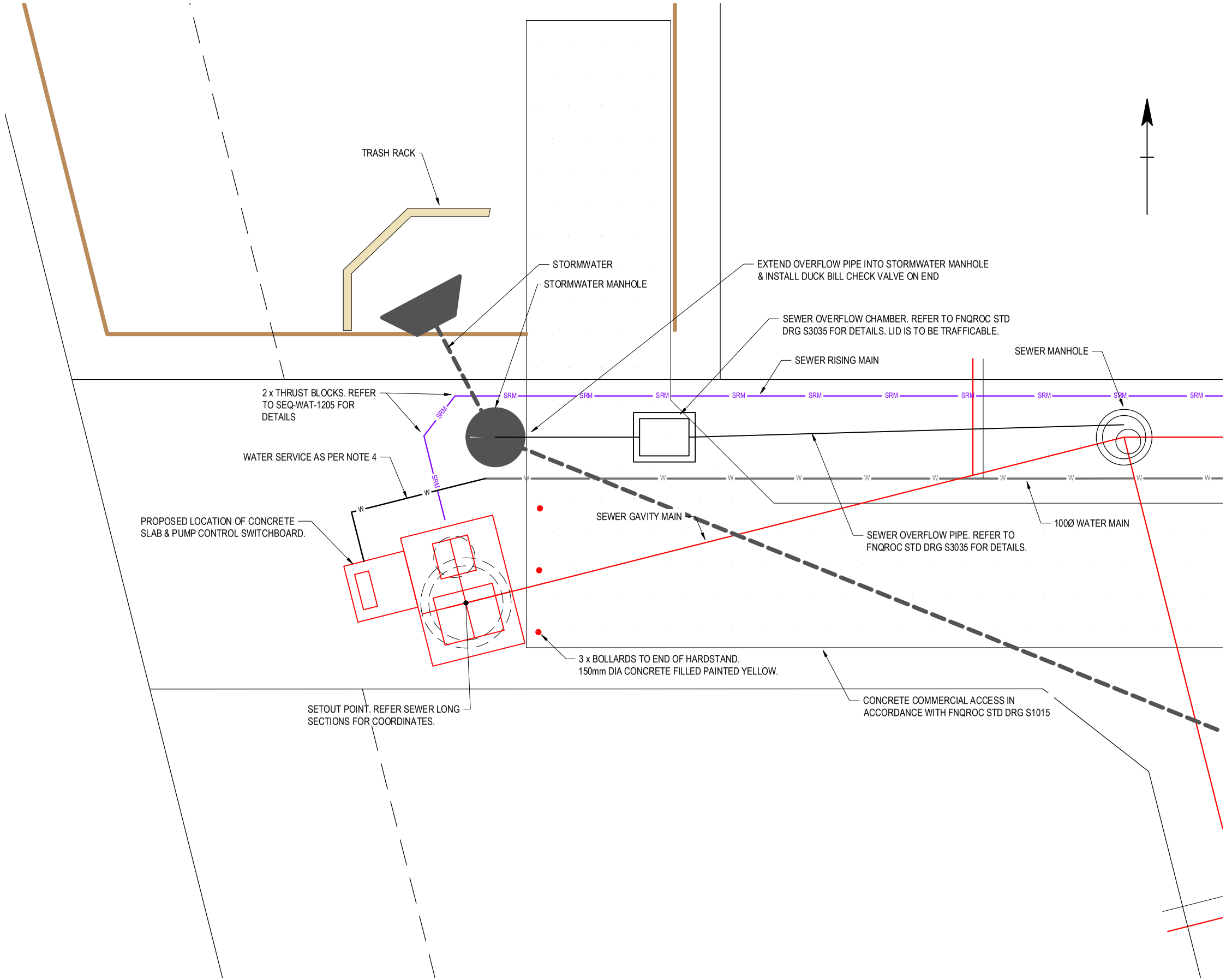
SCALE
1:500 1:1000 0 5 10 20 30 HORIZONTAL A1 A3
1:50 1:100 0 0.5 10 2 3 VERTICAL A1 A3
ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN CW CHECKED CW
DESIGNED DJW CHECKED DJW
APPROVED
ORIGINAL CERTIFIED BY D.J.WALKER
DATE: 08.07.21 RPEQ: 19806

OVER 50s RESIDENTIAL DEVELOPMENT
SEWER LONGITUDINAL SECTIONS
SHEET 2 OF 2

DRAWING NO. 188-002-C20
REVISION C



NOTES

1. CONTRACTOR TO PROVIDE MULLALY ENGINEERING (OR APPROVED EQUIVALENT) FRP PACKAGED PUMP STATION, COMPLETE WITH REINFORCED CONCRETE ROOF SLAB IN ACCORDANCE WITH FNQROC STD. DRG. S3025 AND THE SPECIFICATION. THE CONTRACTOR IS TO SUBMIT "MULLALY ENGINEERING" SHOP DRAWINGS AND BUOYANCY CALCULATIONS TO SUPERINTENDENT FOR APPROVAL PRIOR TO CONSTRUCTION. CONTRACTOR TO CONFIRM WITH PACKAGED PUMP STATION SUPPLIER THE MAXIMUM SLAB THICKNESS/WEIGHT THAT CAN BEAR ONTO PUMP STATION.
2. NO LADDER AND PLATFORM REQUIRED WITHIN NEW PUMP STATION - ACCESS TO BE UNDERTAKEN BY PERSONNEL TRAINED IN CONFINED SPACE TRAINING.
3. CONTRACTOR TO PROVIDE CONCRETE PLINTH FOR SWITCHBOARD IN ACCORDANCE WITH FNQROC STD DRG S3020. SUPERINTENDENT TO CONFIRM LOCATION.
4. CONTRACTOR TO PROVIDE 25mm WATER SERVICE COMPLETE (NO RPZD) AND 40mm LOCKABLE HOSECOCK ADJACENT THE PUMP STATION. REFER FNQROC STD DRG S2038 FOR STANDARD ARRANGEMENT. SUPERINTENDENT TO CONFIRM LOCATION.
5. PUMPS SHALL BE SIZED BY PROPRIETARY PUMP SYSTEM SUPPLIER.

PUMP STATION CONSTRUCTION LEVELS	
NOMINAL INTERNAL DIAMETER	BY MANUFACTURER
FINISHED SURFACE LEVEL	3.380m
FINISHED PUMP STATION LEVEL (A)	3.550m
SEWER INLET LEVEL (D)	0.574m
PUMP STATION IL (B)	BY MANUFACTURER
OUTLET IL (E)	BY MANUFACTURER

PUMP STATION CONTROL LEVELS	
PUMP STOP LEVEL	BY MANUFACTURER
DUTY PUMP START LEVEL	BY MANUFACTURER
STANDBY PUMP START LEVEL	BY MANUFACTURER
ALARM LEVEL	BY MANUFACTURER

REVISIONS

NO.	DATE	DESCRIPTION	DESIGN	APPROVED
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:50 0 0.5 1 2 3 A1
1:100 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21	RPEQ: 19806		

OVER 50s RESIDENTIAL DEVELOPMENT

SEWER PUMP STATION DETAILS

DRAWING NO. 188-002-C21

REVISION C

OAKS RESORT

ROAD A

ROAD A

ROAD A

COVENANT

COVENANT

COVENANT

COVENANT

COVENANT

COVENANT

11 10 9 8 7 6 5 4 3 2 1

12 13 14 15

33 32 31 30 29 28

34 35 36 37 38

27 26

39 40

16 17 18 19 20 21 22 23 24 25

SRM

CENTRAL FACILITIES BUILDING

REEF RESORT

LEGEND

- EXISTING WATER
- PROPOSED STORMWATER
- PROPOSED SEWER

REFER DRG 188-002-C23 FOR PIPE & FITTINGS LIST

REVISIONS	NO.	DATE	DESCRIPTION	DESIGN	APPROVED
	C	26.08.21	RFI ISSUE	CW	DJW
	B	08.07.21	OPW ISSUE	CW	DJW
	A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 1:500 0 5 10 15 A1 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN CW	CHECKED CW	OVER 50s RESIDENTIAL DEVELOPMENT
DESIGNED DJW	CHECKED DJW	WATER RETICULATION
APPROVED		SHEET 1 OF 2

ORIGINAL CERTIFIED BY D.J.WALKER

DATE: 08.07.21 RPEQ: 19806

DRAWING NO. 188-002-C22

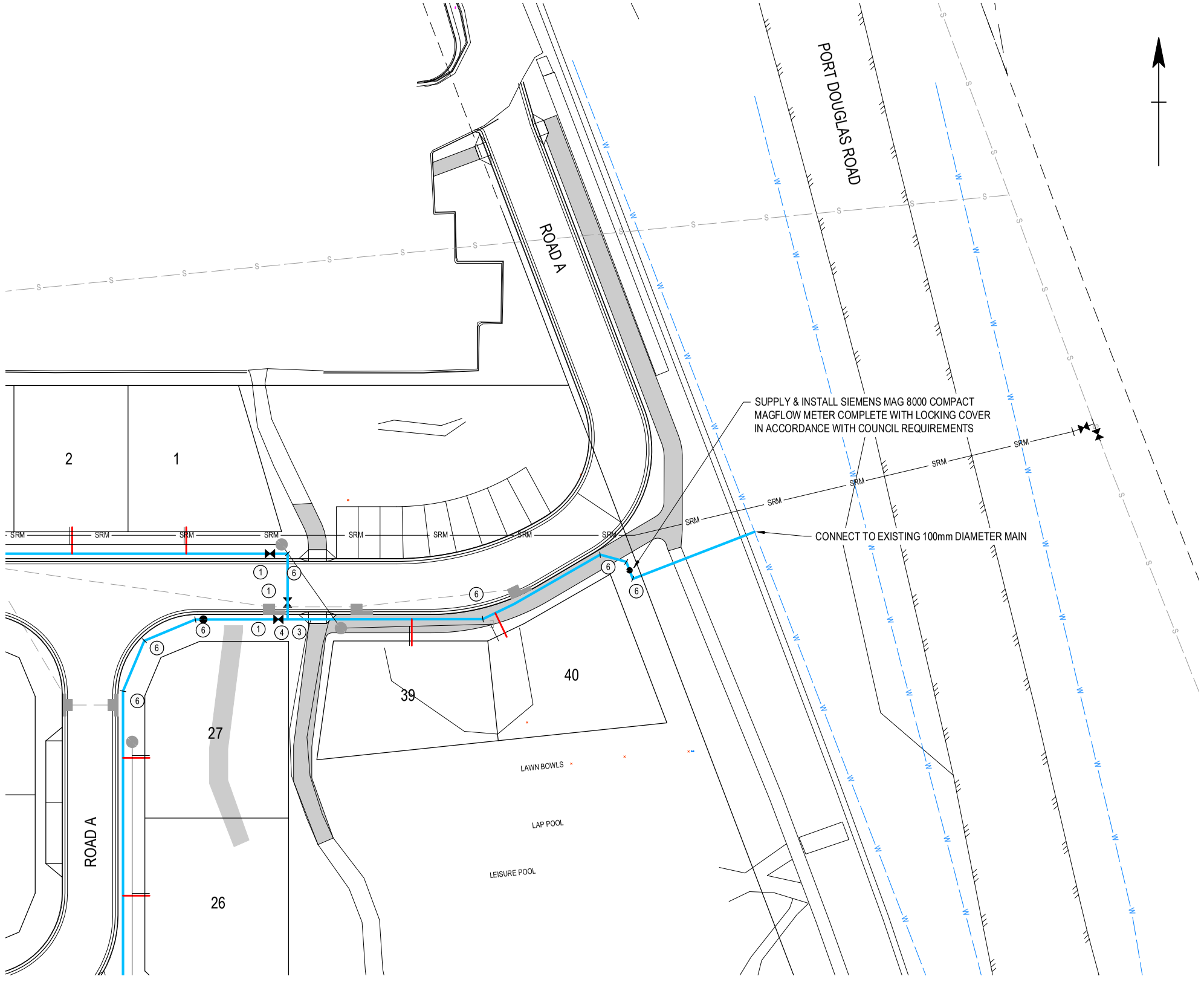
REVISION C

WATER SUPPLY PIPE AND FITTINGS LIST

REF.	CODE	DESCRIPTION
1		SLUICE VALVE CLASS `14' 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
8		DEAD END CAP WITH CONCRETE THRUST BLOCK
		SINGLE ALLOTMENT SERVICE (REFER DRGS C24/C25)
		DOUBLE ALLOTMENT SERVICE (REFER DRGS C24/C25)
		100Ø uPVC WATER MAIN CLASS '16' RUBBER RING JOINTED

LEGEND

- EXISTING WATER
- PROPOSED STORMWATER
- PROPOSED SEWER



REVISIONS	NO.	DATE	DESCRIPTION	DESIGN	APPROVED
	C	26.08.21	RFI ISSUE	CW	DJW
	B	08.07.21	OPW ISSUE	CW	DJW
	A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 0 5 10 15 A1
1:500 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21	RPEQ: 19806		

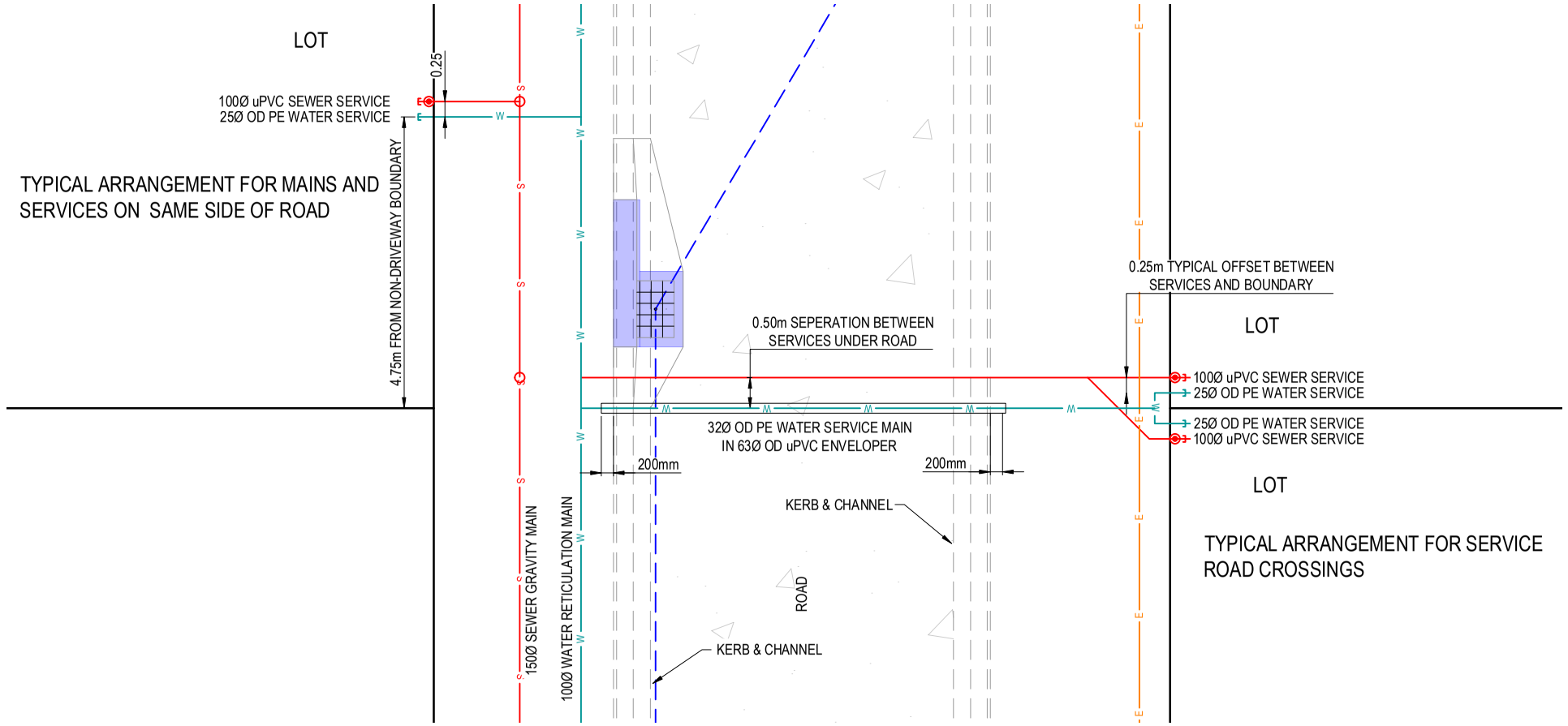
OVER 50s RESIDENTIAL DEVELOPMENT

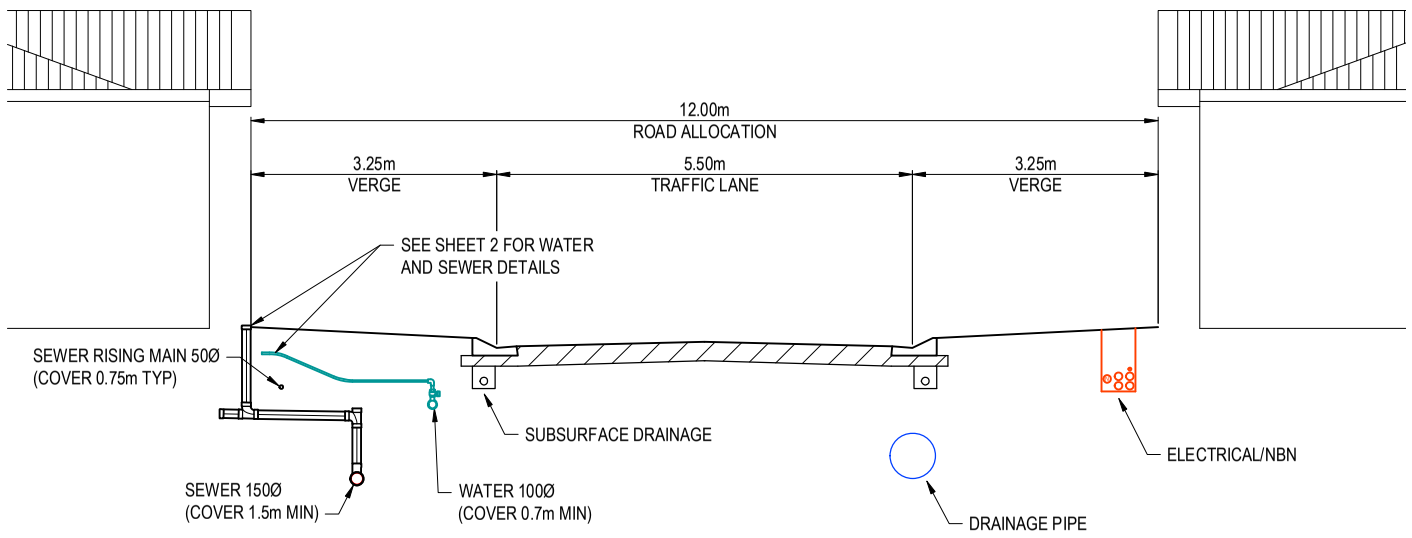
WATER RETICULATION

SHEET 2 OF 2

DRAWING NO. 188-002-C23

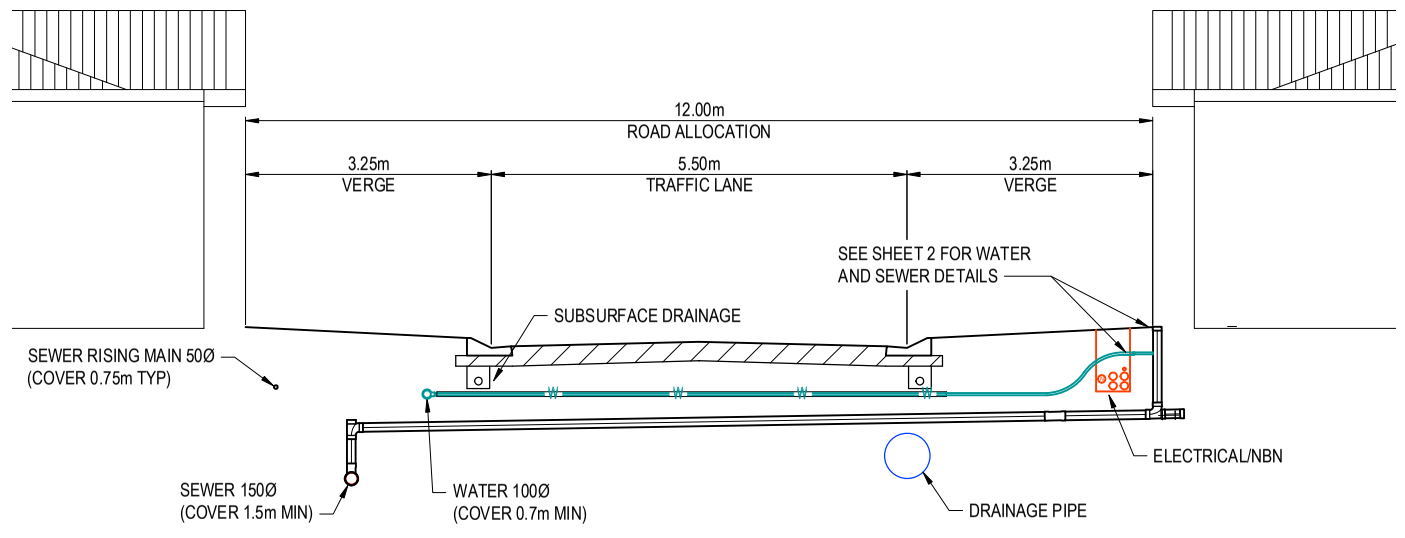
REVISION C





TYPICAL ROAD CROSS SECTION - NO SERVICES CROSSING

1:100



TYPICAL ROAD CROSS SECTION - SERVICES CROSSING

1:100

REVISIONS	NO.	DATE	DESCRIPTION	DESIGN	APPROVED
	C	26.08.21	RFI ISSUE	CW	DJW
	B	08.07.21	OPW ISSUE	CW	DJW
	A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 1:500 0 5 10 15 A1 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21	RPEQ: 19806		

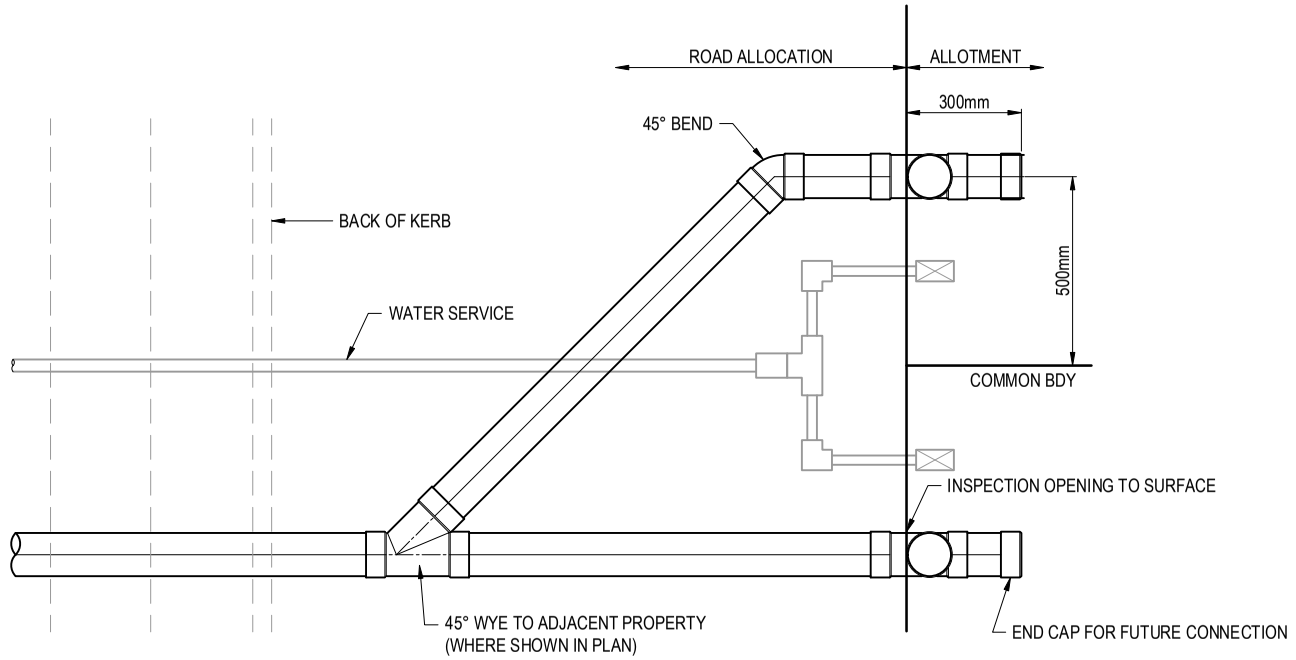
OVER 50s RESIDENTIAL DEVELOPMENT

TYPICAL SEWER & WATER SERVICE CONNECTIONS

SHEET 1 OF 2

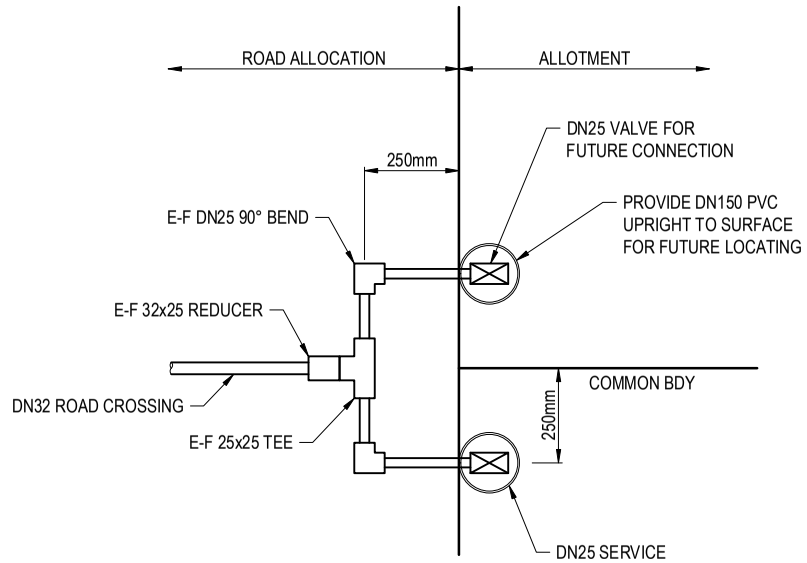
DRAWING NO. 188-002-C24

REVISION C



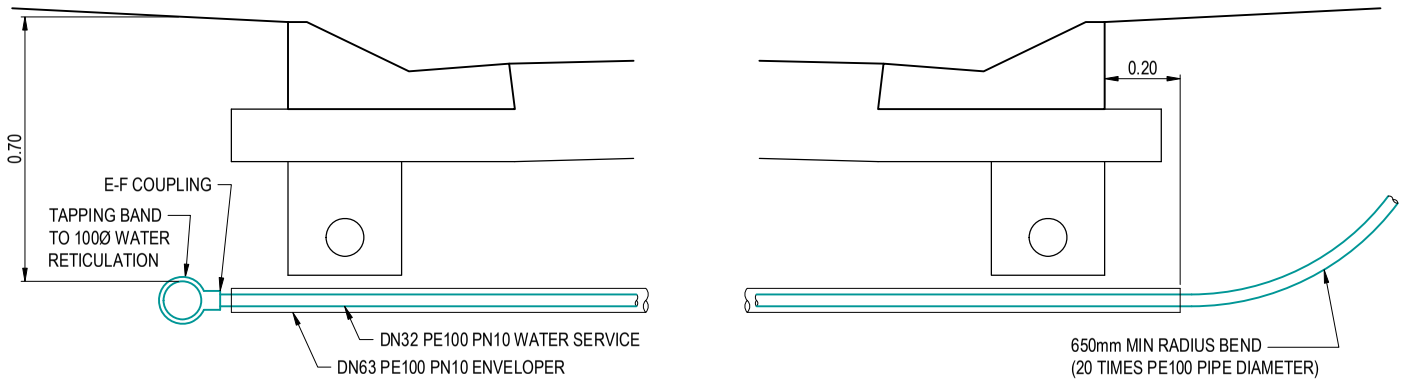
TYPICAL DUAL SEWER PROPERTY CONNECTION (SINGLE CONNECTION SIMILAR)

N.T.S.



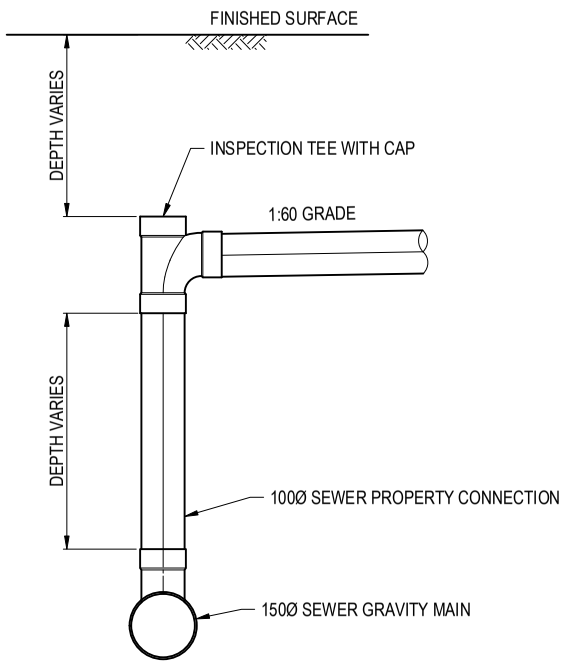
WATER SERVICE - TYPICAL PROPERTY CONNECTION

N.T.S.



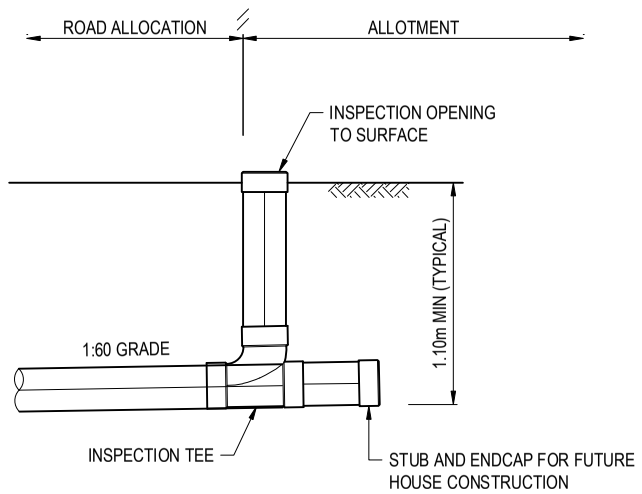
WATER SERVICE - TYPICAL MAIN CONNECTION & ROAD CROSSING

N.T.S.



SEWER HCB - TYPICAL DEEP CONNECTION TO GRAVITY SEWER MAINS

N.T.S.



SEWER HCB - TYPICAL PROPERTY CONNECTION

N.T.S.

NOTE:
REFER TO FNQROC STD DRG S3005 FOR PROPERTY CONNECTION DETAILS INCLUDING DETAILS FOR INSPECTION OPENINGS TO SURFACE

REVISIONS

NO.	DATE	DESCRIPTION	DESIGN	APPROVED
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

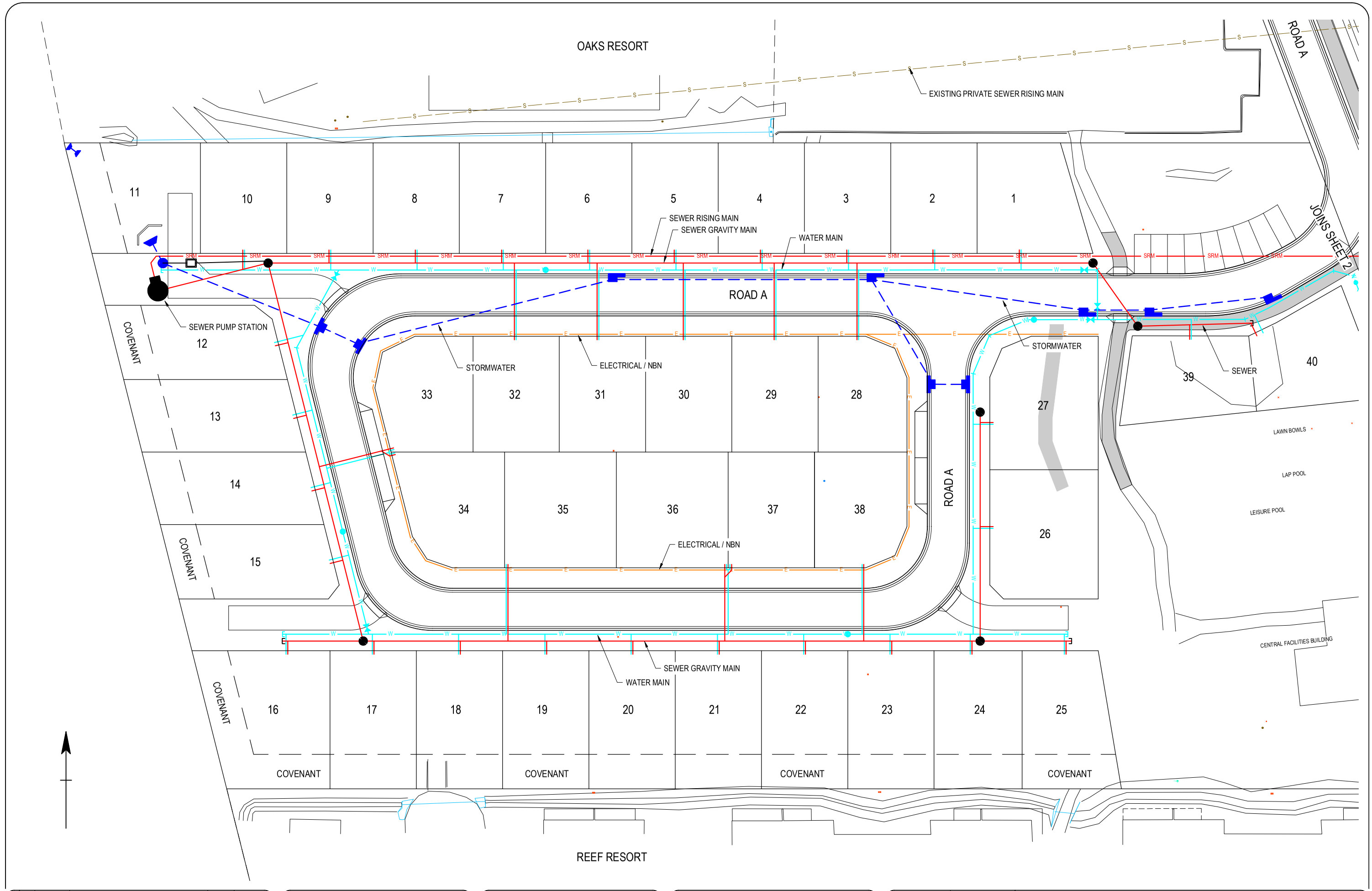
DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
	DATE: 08.07.21	RPEQ: 19806	

OVER 50s RESIDENTIAL DEVELOPMENT

TYPICAL SEWER & WATER SERVICE CONNECTIONS
SHEET 2 OF 2

DRAWING NO. 188-002-C25

REVISION C



REVISIONS	NO.	DATE	DESCRIPTION	DESIGN	APPROVED
	C	26.08.21	RFI ISSUE	CW	DJW
	B	08.07.21	OPW ISSUE	CW	DJW
	A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 0 5 10 15 A1
1:500 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21	RPEQ: 19806		

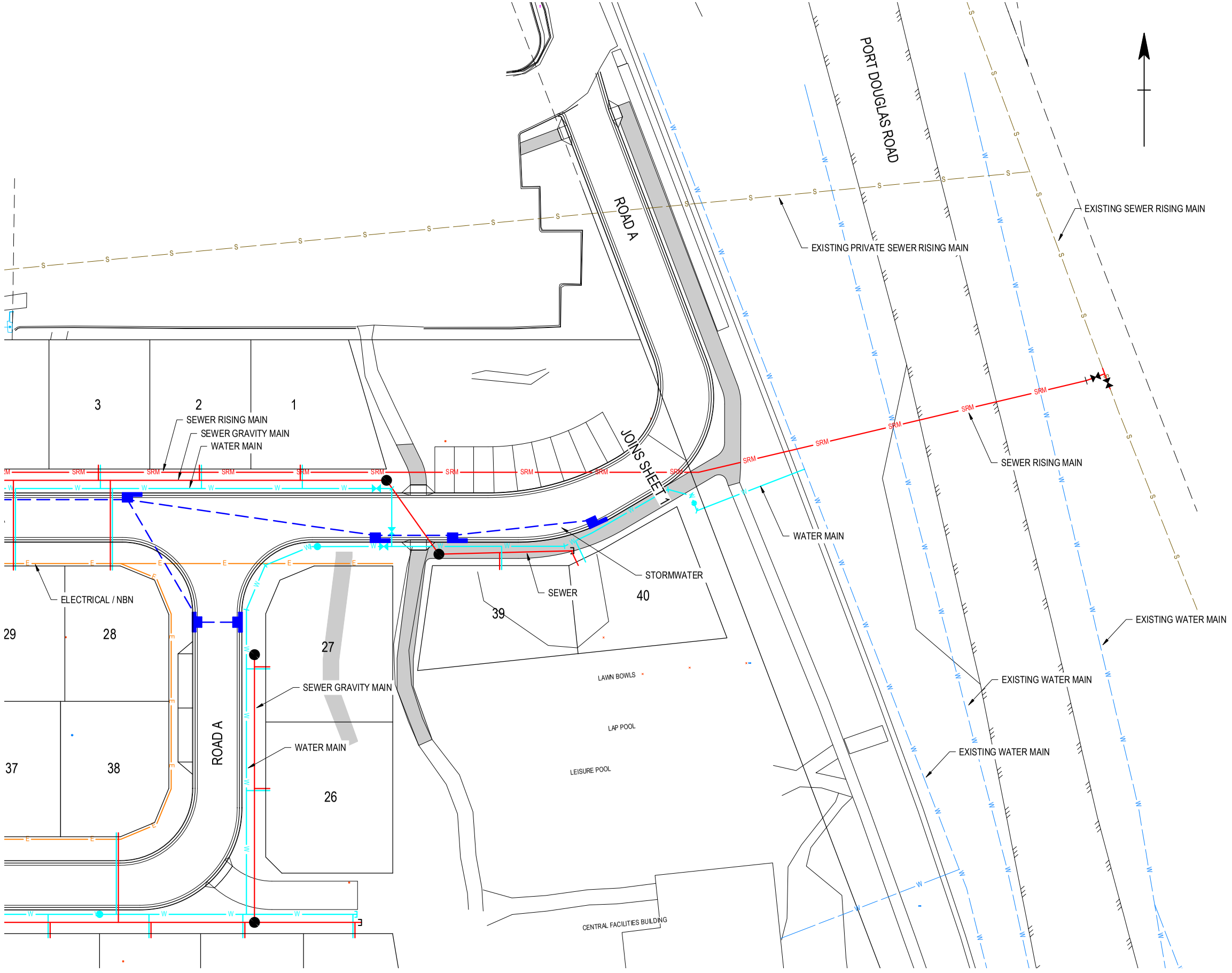
OVER 50s RESIDENTIAL DEVELOPMENT

MASTER SERVICES LAYOUT

SHEET 1 OF 2

DRAWING NO. 188-002-C26

REVISION C



REVISIONS	NO.	DATE	DESCRIPTION	DESIGN	APPROVED
	C	26.08.21	RFI ISSUE	CW	DJW
	B	08.07.21	OPW ISSUE	CW	DJW
	A	05.03.21	INITIAL ISSUE		

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 0 5 10 15 A1
1:500 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED	ORIGINAL CERTIFIED BY D.J.WALKER		
DATE: 08.07.21	RPEQ: 19806		

OVER 50s RESIDENTIAL DEVELOPMENT

MASTER SERVICES LAYOUT

SHEET 2 OF 2

DRAWING NO. 188-002-C27

REVISION C

OAKS RESORT

PROVIDE 1m WIDE 300mm HIGH SPILL WEIR

DETENTION BASIN TO BE USED AS SEDIMENT BASIN DURING CONSTRUCTION. BASIN TO BE CONSTRUCTED DURING INITIAL EARTHWORK OPERATIONS. BLOCK OUTLET PIPE UNTIL CONSTRUCTION COMPLETE.

INSTALL 1m WIDE SPILL WEIR TO LOW POINT IN SEDIMENT FENCE WITH SPLASH PAD BEHIND.

INSTALL 1m WIDE SPILL WEIR TO LOW POINT IN SEDIMENT FENCE WITH SPLASH PAD BEHIND.

ROAD A

ROAD A

ROAD A

BATTER FALLS TO ROAD

BATTER FALLS TO ROAD

JOINS SHEET 2

COVENANT

COVENANT

COVENANT

COVENANT

COVENANT

COVENANT

LAWN BOWLS

LAP POOL

LEISURE POOL

CENTRAL FACILITIES BUILDING

REEF RESORT

REVISIONS					
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		
NO.	DATE	DESCRIPTION	DESIGN	APPROVED

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 0 5 10 15 A1
1:500 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW

APPROVED

ORIGINAL CERTIFIED BY D.J.WALKER

DATE: 08.07.21 RPEQ: 19806

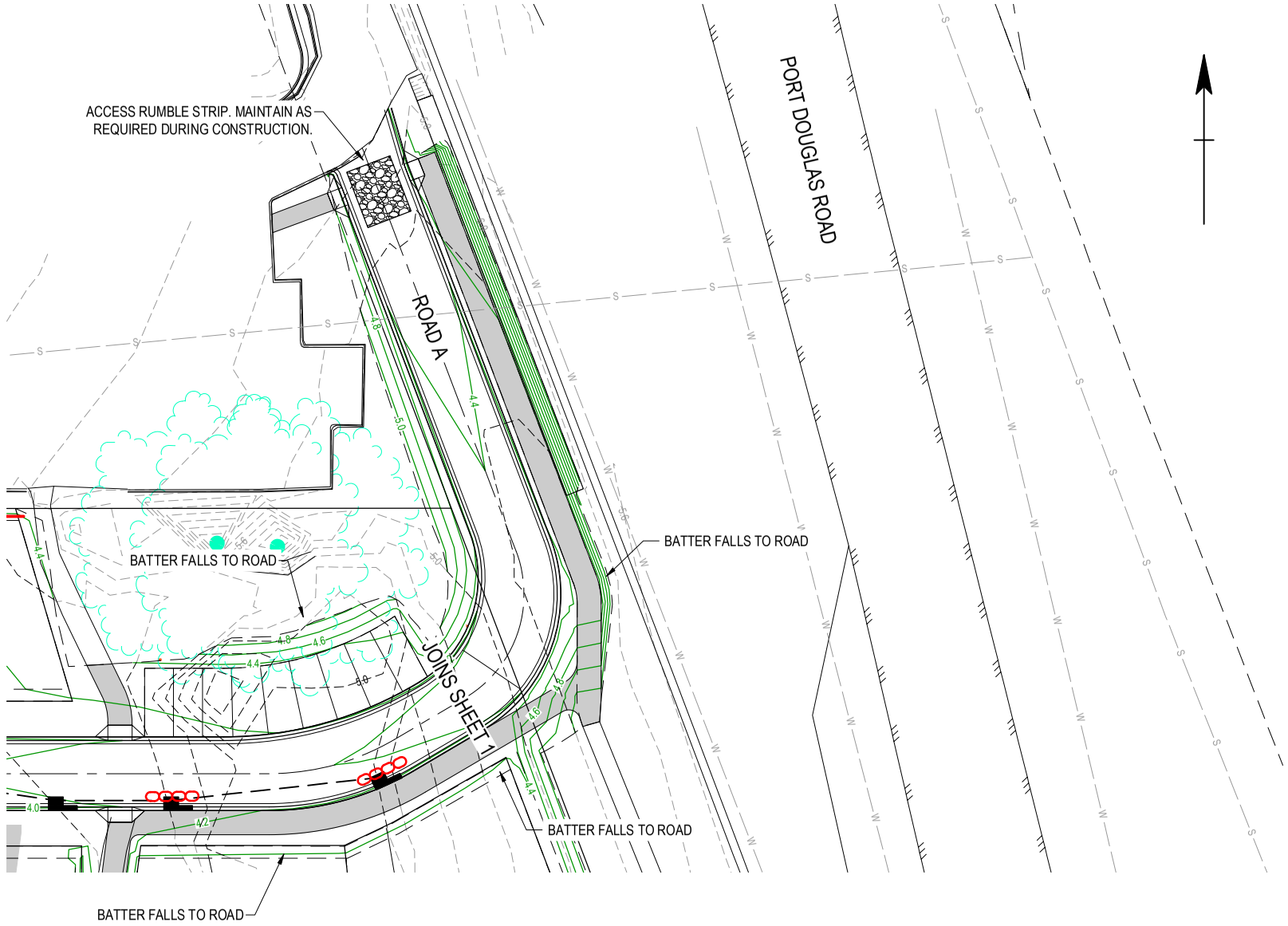
OVER 50s RESIDENTIAL DEVELOPMENT

EROSION & SEDIMENT CONTROL STRATEGY

SHEET 1 OF 2

DRAWING NO. 188-002-C28

REVISION C



LEGEND

PROPERTY BOUNDARY

SEDIMENT SOCK / SAND BAG CHECK DAM

REVISIONS					
C	26.08.21	RFI ISSUE	CW	DJW
B	08.07.21	OPW ISSUE	CW	DJW
A	05.03.21	INITIAL ISSUE		
NO.	DATE	DESCRIPTION	DESIGN	APPROVED

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 0 5 10 15 A1
1:500 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN CW CHECKED CW
DESIGNED DJW CHECKED DJW
APPROVED
ORIGINAL CERTIFIED BY D.J.WALKER
DATE: 08.07.21 RPEQ: 19806

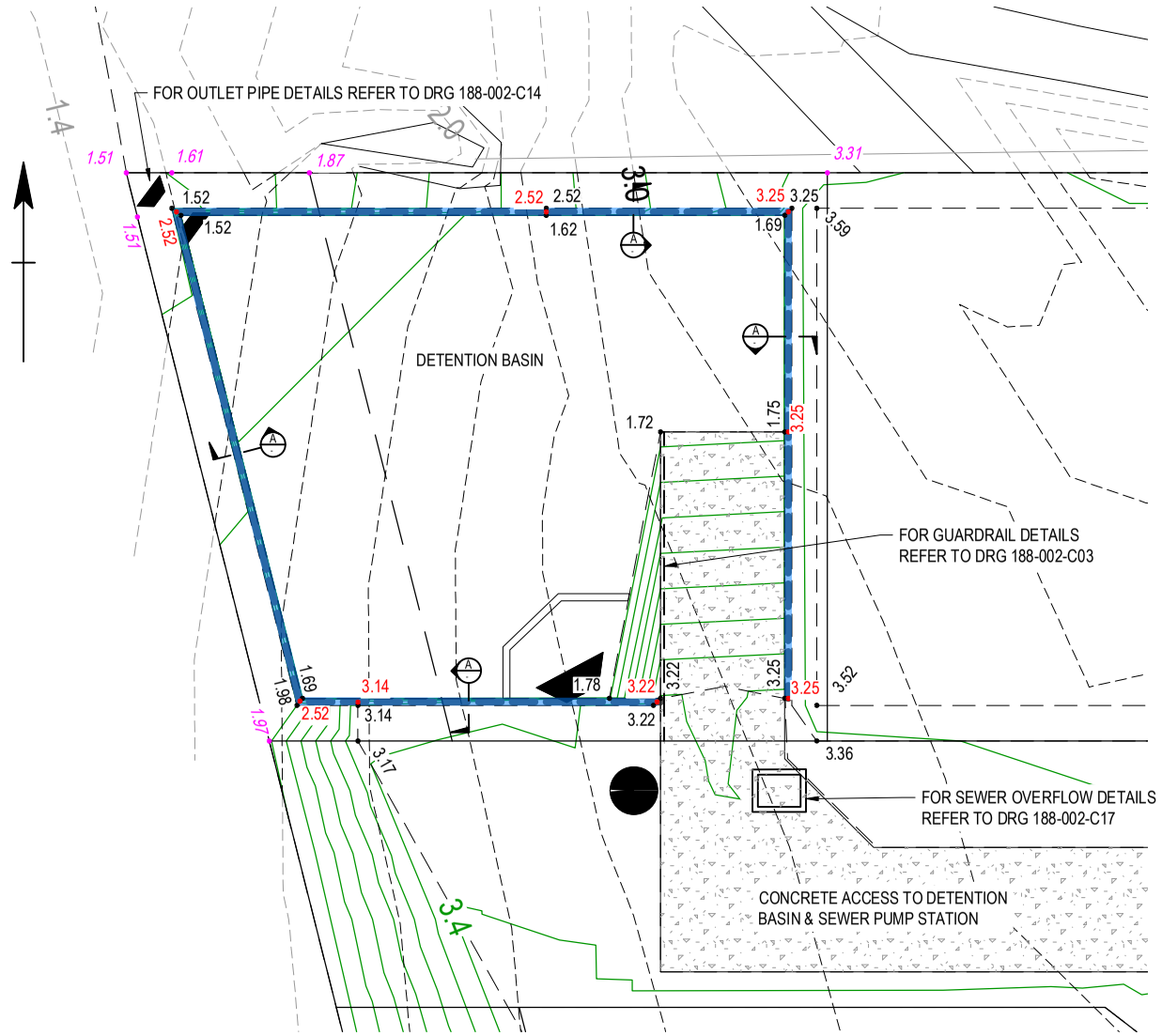
OVER 50s RESIDENTIAL DEVELOPMENT

EROSION & SEDIMENT CONTROL STRATEGY

SHEET 2 OF 2

DRAWING NO. 188-002-C29

REVISION C



DETENTION BASIN - PLAN

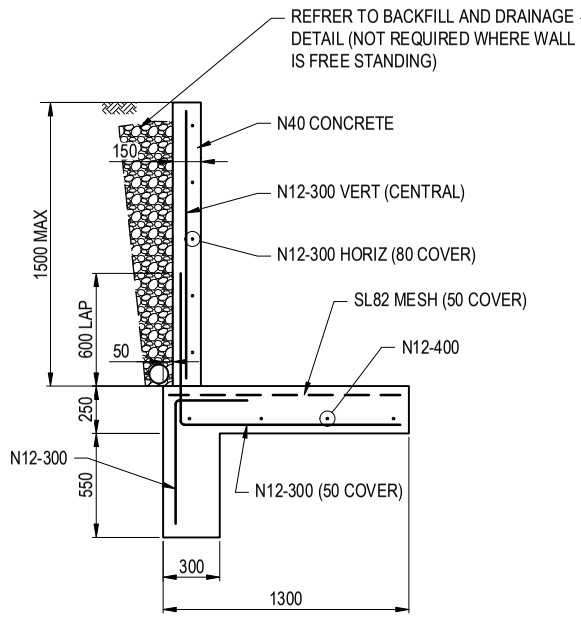
1:100

LEGEND

3.32	TOP OF WALL LEVEL
2.22	FINISHED SURFACE LEVEL
1.52	NATURAL SURFACE LEVEL
	CONCRETE RETAINING WALL
57.0	DESIGN SURFACE CONTOURS (0.2m INTERVAL)
57.0	EXISTING SURFACE CONTOURS (0.2m INTERVAL)

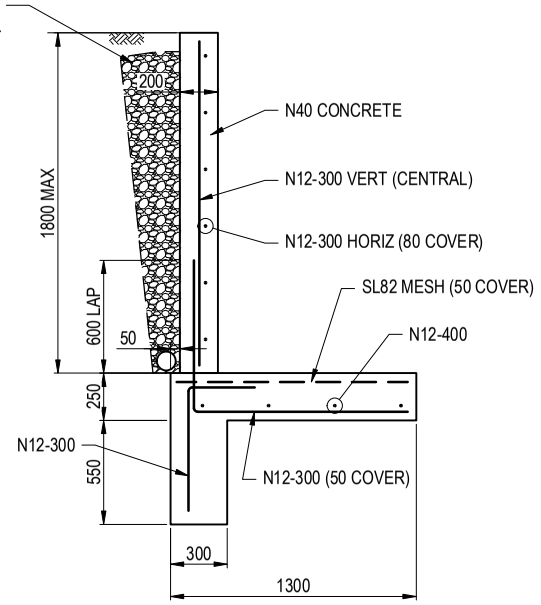
CONCRETE RETAINING WALL DETAIL & SPECIFICATION

1. CONCRETE f'c = 32MPa WITH 20mm MAX AGGREGATE & 80mm SLUMP IN ACCORDANCE WITH AS 1379 & AS 3600.
2. REINFORCEMENT SHALL BE GRADE N. MINIMUM 55mm COVER.
3. MINIMUM BEARING PRESSURE OF MATERIAL UNDER FOOTING 100kPa. TESTING TO BE UNDERTAKEN & RESULTS PROVIDED PRIOR TO COMMENCEMENT OF WORK.
4. SEAL INSIDE FACES OF WALL WITH APPROPRIATE TANKING.
5. RENDER AND/OR PAINT OUTSIDE FACE AS DIRECTED.



RETAINING WALL DETAIL (UPTO 1500mm HIGH)

N.T.S.

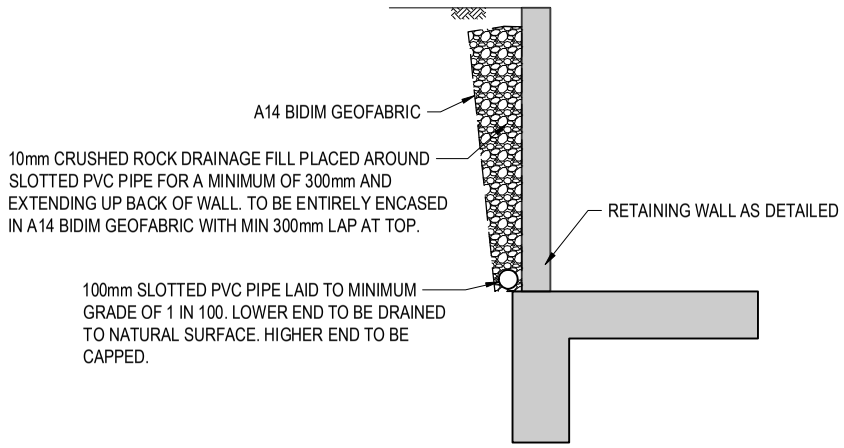


RETAINING WALL DETAIL (OVER 1500mm HIGH)

N.T.S.

SECTION A

N.T.S.



RETAINING WALL BACKFILL AND DRAINAGE DETAIL

N.T.S.

REVISIONS NO.	DATE	DESCRIPTION	DESIGN	APPROVED
A	26.08.21	INITIAL ISSUE		

CLIENT: PORT PACIFIC DEVELOPMENTS

SCALE: 1:100 / 1:200 — 0 1 2 3 4 5 6 — A1 / A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN CW	CHECKED CW		
DESIGNED DJW	CHECKED DJW		
APPROVED ORIGINAL CERTIFIED BY D.J.WALKER			
DATE: 26.08.21	RPEQ: 19806		

OVER 50s RESIDENTIAL DEVELOPMENT

DETENTION BASIN DETAILS

DRAWING NO. 188-002-C30

REVISION A

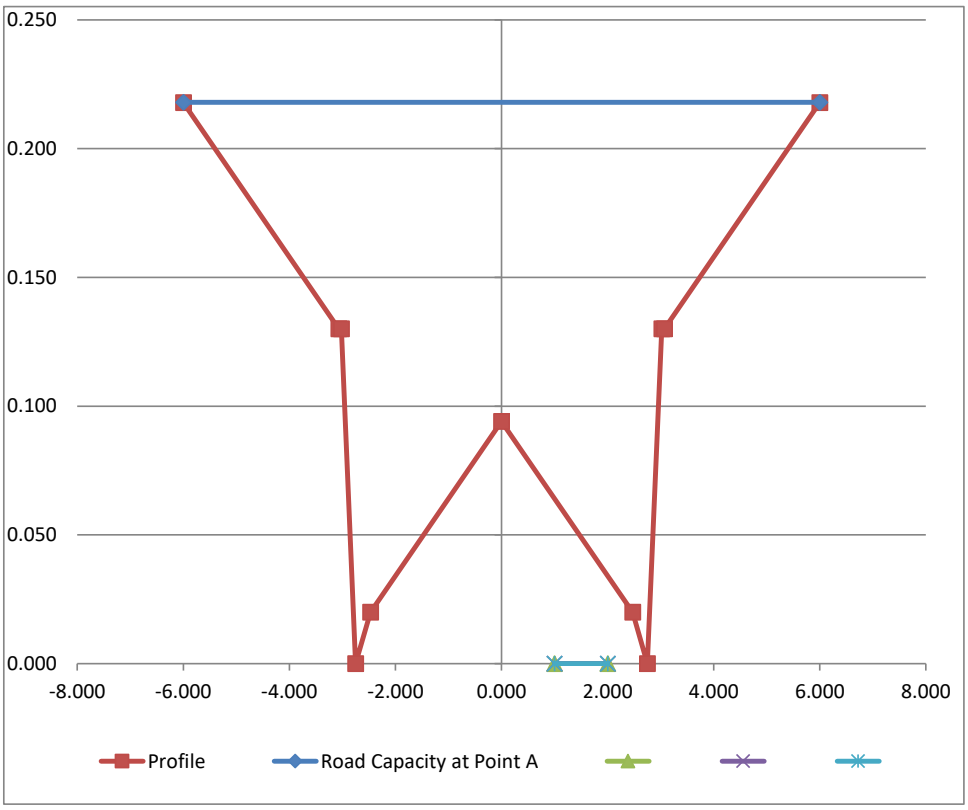
Project: OVER 50s RESIDENTIAL DEVELOPMENT

12D MODEL - DESIGN SHEET (QUDM) - Q100 EVENT

LOCATION		SUB-CATCHMENT RUNOFF					INLET DESIGN												DRAIN DESIGN													HEAD LOSSES								PART FULL		DESIGN LEVELS						
		Tc	I	A	CA	Qc	Qa									Qg	Qb		Tc	I	CA	Qrat	Q	L	S			Vf=Q/A	Qcap	Vcap	Vt		Vf²/2g	Ku	hu	Kw	hw	Sf	hf	dn	Vn							
STRUCTURE No.	DRAIN SECTION	SUB-CATCHMENT TIME OF CONC.	RAINFALL INTENSITY	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUB-CATCHMENT DISCHARGE	FLOW IN K&C (INC. BYPASS)	HALF ROAD CAPACITY	FLOW WIDTH	FLOW DEPTH	FLOW DxV	ROAD GRADE AT INLET	ROAD XFALL AT INLET	INLET TYPE	INLET CURVE	FLOW INTO INLET	BYPASS FLOW	BYPASS STRUCTURE No.	CRITICAL TIME OF CONC.	RAINFALL INTENSITY	TOTAL (C x A)	PEAK FLOW	PIPE FLOW	REACH LENGTH	PIPE GRADE	PIPE SIZE	PIPE CLASS	FULL PIPE VELOCITY	CAPACITY FLOW	CAPACITY VELOCITY	TRAVEL VELOCITY	CHART(S) USED	VELOCITY HEAD	U/S HEAD LOSS COEFFICIENT	U/S HEAD LOSS	W.S.E COEFFICIENT	CHANGE IN W.S.E	PIPE FRICTION SLOPE	PIPE FRICTION HEAD LOSS	NORMAL DEPTH	NORMAL DEPTH VEL.	PIPE U/S I.L	PIPE D/S I.L	PIPE U/S H.G.L	PIPE D/S H.G.L	W.S.E	GRATE LEVEL	STRUCTURE No.
		min	mm/h	ha	ha	L/s	L/s	L/s	m	m	m^2/s	%	%			L/s	L/s		min	mm/hr	ha	L/s	L/s	m	%	mm		m/s	L/s	m/s	m/s		m		m		m	%	m	m	m/s	m	m	m	m	m	m	
8/1	8/1 to 7/1	15.00	223	0.322	0.322	200	274	5		0.070		0.58	3.00	KIP-SAG-S	SAG S	5	269	7/1	15.00	223	0.322	200	5	4.435	0.20	600	Blac	0.02	357	1.26	2.00	G2	0.000	4.80	0.000		0.000	0.00	0.000	0.049	0.45	2.144	2.135	3.670	3.670	3.670	3.691	8/1
7/1	7/1 to 6/1	15.00	223	0.074	0.074	46	315	75		0.070		0.58	3.00	KIP-SAG-S	SAG S	75	240	4/1	15.04	223	0.396	246	80	17.589	0.20	600	Blac	0.28	357	1.26	2.00	G2/T4/T8	0.004	4.34	0.018		0.018	0.01	0.002	0.193	1.02	2.115	2.080	3.653	3.651	3.670	3.691	7/1
6/1	6/1 to 5/1	15.00	223	0.167	0.167	104	104	71	2.969	0.105	0.070	0.50	3.00	KIP-OG-S	1%	75	29	5/1	15.26	222	1.076	663	394	37.500	0.20	600	Blac	1.39	357	1.26	2.00	T1/T2	0.099	0.87	0.086		0.086	0.24	0.091	0.600	1.39	2.060	1.985	3.565	3.473	3.651	3.814	6/1
5/1	5/1 to 4/1	15.00	223	0.122	0.122	76	104	71	2.969	0.105	0.070	0.50	3.00	KIP-OG-S	1%	75	29	3/1	15.57	220	1.198	732	463	38.129	0.20	600	Blac	1.64	357	1.26	2.00	T1/T2	0.137	0.77	0.106		0.106	0.34	0.128	0.600	1.64	1.965	1.889	3.368	3.240	3.473	3.626	5/1
4/1	4/1 to 3/1	15.00	223	0.315	0.315	195	435	96		0.130		2.13	2.76	KIP-SAG-S	SAG S	96	339	3/1	15.81	219	1.510	917	548	5.434	0.18	675	RCP	1.53	464	1.30	2.00	T2/T4	0.120	0.99	0.118		0.118	0.25	0.014	0.675	1.53	1.869	1.859	3.121	3.108	3.240	3.248	4/1
3/1	3/1 to 2/1	15.00	223	0.357	0.357	222	590	276		0.130		0.88	3.08	KIP-SAG-S	SAG S	276	314	2/9	15.86	218	1.867	1132	818	25.073	0.18	675	RCP	2.29	460	1.28	2.00	T1/T2	0.267	1.39	0.369		0.369	0.56	0.140	0.675	2.29	1.839	1.795	2.738	2.598	3.108	3.269	3/1
2/1	2/1 to 1/1													MH					16.07	217	1.867	1126	812	3.079	0.18	675	RCP	2.27	464	1.30	2.00	T2/T4	0.262	0.52	0.136		0.136	0.55	0.017	0.675	2.27	1.776	1.770	2.462	2.445	2.598	3.197	2/1
1/1														HW																																2.445	3.200	1/1
3/2	3/2 to 2/2	15.00	223	0.217	0.217	135	135	73	2.983	0.113	0.084	0.64	3.03	KIP-OG-S	1%	92	43	2/2	15.00	223	0.217	135	92	17.298	0.60	375	Blac	0.83	177	1.60	2.00	G2	0.035	2.87	0.101		0.101	0.16	0.028	0.192	1.62	2.655	2.551	4.004	3.976	4.105	4.144	3/2
2/2	2/2 to 1/2	0.00	0	0.000	0.000	0	43	77	2.351	0.077	0.042	0.60	3.00	KIP-OG-S	1%	36	7	1/2	15.14	223	0.217	134	127	9.207	0.61	450	Blac	0.80	289	1.82	2.00	T1/T2	0.033	0.57	0.019		0.019	0.12	0.011	0.209	1.76	2.476	2.420	3.957	3.946	3.976	4.044	2/2
1/2	1/2 to 6/1	15.00	223	0.299	0.299	185	192	77	3.010	0.125	0.111	0.60	3.00	KIP-OG-S	1%	118	74	8/1	15.22	222	0.516	318	244	31.374	0.61	450	Blac	1.53	289	1.82	2.00	T1/T2	0.120	1.33	0.159		0.159	0.43	0.136	0.318	2.03	2.400	2.210	3.787	3.651	3.946	3.989	1/2

Section: Point A (Road Width = 5.5m / Road Crossfall = 3% / Verge Crossfall = 3% / Reserve Width = 12m)

Irregular Channel Details		
Offset (m)	Height (m)	Man (n)
-6.000	0.218	0.040
-3.070	0.130	0.013
-3.020	0.130	
-2.750	0.000	
-2.470	0.020	0.015
0.000	0.094	
2.470	0.020	0.013
2.750	0.000	
3.020	0.130	
3.070	0.130	0.040
6.000	0.218	



Description	Long Slope (%)	Flow Depth (m)	Flow (m^3/s)	Velocity (m/s)	dxV
Road Capacity at Point A	0.5	0.218	1.397	1.108	0.242

Project Description								
File name		Xsectn	Point B - Driveway	Method	Mannings Formula	Solve for	Channel Flow	

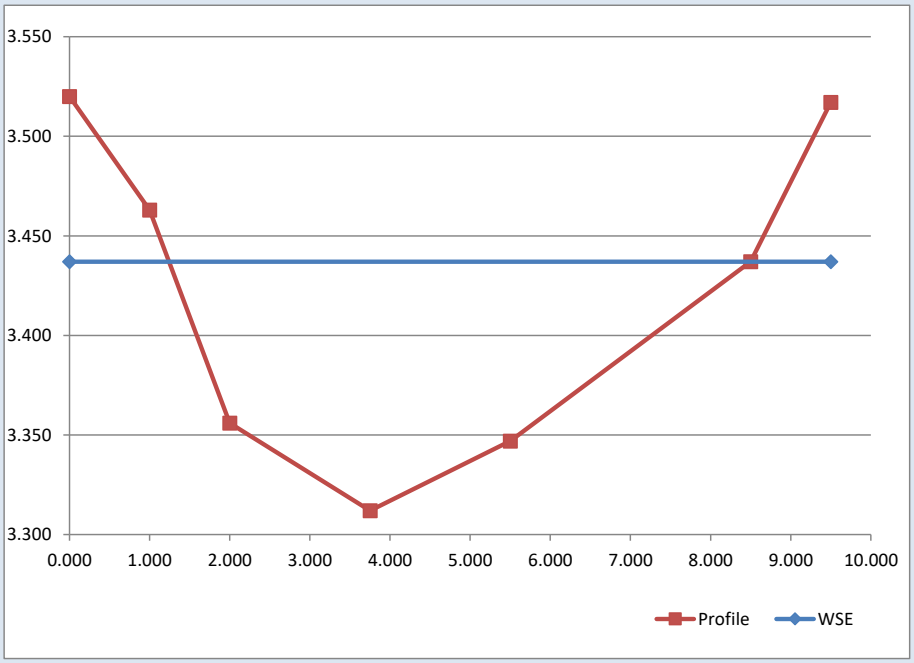
Irregular Channel Details

Xsectn	Offset	Height	Man N
	0.000	3.520	0.025
	1.000	3.463	
	2.000	3.356	0.013
	3.750	3.312	
	5.500	3.347	0.025
	8.500	3.437	
	9.500	3.517	

Input		
Depth	0.125	m
Slope	1	%

Results		
Hydraulic String	NAME=Point	
Flowrate	0.476	m3/s
Normal Depth	0.125	m
TWL	3.437	
Flow Area	0.534	m2
Wetted Perimeter	7.264	m
Top Width	7.257	m
Composite Mannings N	0.0197	
Critical Depth	0.128	m
Critical Slope	0.906	%
Velocity	0.892	m/s
Velocity Head	0.041	m
D*V Product	0.111	m2/s
Froude	1.049	
Is Sub Critical	FALSE	

Water Surface	
Chain	TWL
1.243	3.437
8.5	3.437



CivilWalker
CONSULTING ENGINEERS

Ref: 188-002-002L

23 October 2020

Development Assessment
Douglas Shire Council
64 – 66 Front Street
Mossman Qld 4879

Attention: Daniel Lamond

Port Pacific Developments
111 - 119 Port Douglas Road, Port Douglas
MCU 2020_3524/1

We refer to Council's information request for the abovementioned development dated 24 April 2020 and respond to Items 1, 2 and 3 as detailed below.

Item 1 - Drainage Study of Site

The below commentary relates to results of a drainage study undertaken for the site. The sub-sections with "Item 1" directly respond to each of the items identified (1a through 1h) within Council's information request.

Contributing Catchment Boundaries

Reference is made to drawing 188-002-SK10 which identifies the adopted existing contributing catchment characteristics from the exiting site in the pre-development scenario. We have conservatively allowed for the entire site area to contribute to the proposed outlet location. It is noted that a portion of the site on the northern boundary falls northward to The Oaks resort car park and a portion of the site on the southern boundary falls southward into the adjacent properties open drainage channel.

Drawing 188-002-SK11 identifies the site catchment changes due to the development, also identifying the additional section of road that will drain to the site.

100 Year ARI Event

The pre-development 100-year flood event was calculated adopting the rational method in accordance with the procedures nominated within Section 4 of the 4th Edition of QUDM (Queensland Urban Drainage Manual). Referencing drawing 188-002-SK10, the catchment contributing to the proposed outlet is 17,449m². Calculation of Q100 flow from the catchment is as follows:

- fraction impervious adopted at 0.18 (refer drawing 188-002-SK10 for details)
- 1 hour 10-year intensity for Port Douglas = 81.16mm/hr (refer FNQROC IFD Chart 18)
- C_{10} co-efficient of runoff = 0.74 (refer QUDM Table 4.5.3)
- Frequency factor = 1.20 (refer QUDM Table 4.5.2)
- Therefore, C_{100} = 1.20 x 0.74 = 0.89
- Time of Concentration = 26 minutes (based on overland flow at 3.6m fall over 235m; average grassed – Figure 2.4 QUDM), adopt 25 minutes.
- 25-minute 100-year intensity = 176.15mm/hr (refer FNQROC IFD Chart 18)
- Adopting the rational method in accordance with Section 4.3 of QUDM,

  $Q = 0.89 \times 176.15 \times 1.7449 / 360 = 0.760 m^3/s$

The post-development 100-year flood event was also calculated adopting the rational method in accordance with the procedures nominated within Section 4 of QUDM. Referencing drawing 188-002-SK11, the catchment contributing to the proposed outlet is 17,555m². Calculation of Q100 flow from the catchment is as follows:

- fraction impervious adopted at 0.67 (refer drawing 188-002-SK10 for details)
- 1 hour 10-year intensity for Port Douglas = 81.16mm/hr (refer FNQROC IFD Chart 18)
- C_{10} co-efficient of runoff = 0.84 (refer QUDM Table 4.5.3)
- Frequency factor = 1.20 (refer QUDM Table 4.5.2)
- Therefore, C_{100} = 1.20 x 0.84 = 1.00 (= 1.01, but cannot have more than 100% runoff)
- Time of Concentration = 15 minutes (adopting QUDM recommended standard inlet time for urban residential areas where average slope of catchment is up to 3%)
- 15-minute 100-year intensity = 220.51mm/hr (refer FNQROC IFD Chart 18)
- Adopting the rational method in accordance with Section 4.3 of QUDM,

  $Q = 1.00 \times 220.51 \times 1.7555 / 360 = 1.075m^3/s$

Based on the above calculations, there is a 0.315m³/s increase in run-off from the site as a result of the development.

The information request required that operation of the adjacent open drains needs to be considered in this point:

- There is an existing open drainage channel within the adjacent site to the south. The development will not impact on this drain. Existing site levels within the proposed covenant will remain as per existing with the balance of the allotments (Lots 16 to 25) grading to the proposed new road. This is discussed in more detail further in this commentary.
- There is an existing drainage line on the northern boundary (The Oaks) that outlets to the west. The allotments adjacent to this boundary (Lots 1 to 10) will fall toward the proposed new road. This will reduce flows within the neighbouring drainage line because the proposal will result in the existing portion of the site that currently drains toward The Oaks being diverted back into the site. This is discussed in more detail further in this commentary.
- There is an existing drainage channel located on the western boundary (existing Mirage Country Club). This drain currently receives the overland flow from the existing site. This arrangement will be maintained however, a detention device will be provided to reduce post-development flows to pre-development flows such that there is no actionable nuisance on the adjacent property. This is discussed in more detail further in this commentary.

<u>Primary and Secondary Flow Paths</u>

Primary and secondary flow paths for the 5, 10 and 100-year ARI events are all identical and are identified on drawing 188-002-SK11.

As requested by the information request, calculations for each of the 5, 10 and 100-year flood events are provided below. It is noted that the fraction impervious factor, C_{10} co-efficient of run-off and time of concentration remain unchanged from the calculations provided above and therefore the repeated documentation of these items has been excluded.

5-year ARI Event

- Frequency factor = 0.95 (refer QUDM Table 4.5.2)
- Therefore, C_5 = 0.95 x 0.85 = 0.81

- 15-minute 5-year intensity = 138.92mm/hr (refer FNQROC IFD Chart 18)
- Adopting the rational method in accordance with Section 4.3 of QUDM,

  Q = 0.81 x 138.92 x 1.7555 / 360 = 0.549m³/s

10-year ARI Event

- Frequency factor = 1.00 (refer QUDM Table 4.5.2)
- Therefore, C_5 = 1.00 x 0.85 = 0.85
- 15-minute 10-year intensity = 153.34mm/hr (refer FNQROC IFD Chart 18)
- Adopting the rational method in accordance with Section 4.3 of QUDM,

  Q = 0.85 x 153.34 x 1.7555 / 360 = 0.636m³/s

100-year ARI Event

Q = 1.075m³/s as per previous calculations

The information request requires that advice on flows discharging from the adjoining site (to the south) via its internal road system and open drain along the common boundary must be considered in providing a response to this item. As noted in the subsection above, the proposed development will not impact on this drain. Existing site levels within the proposed covenant will remain as per existing with the balance of the allotments (Lots 16 to 25) grading to the proposed new road. The proposed development will not result in any additional catchment being directed to the drain.

Drainage Easements

Drainage easements within the proposed development are not required. All proposed drainage flow paths, detention and water quality devices are located within common property areas. Drainage easements in adjoining properties are also not required because discharge is directed to a lawful point of discharge (refer later sub-section in this commentary).

Current Discharge Agreement

The information request requires confirmation of any existing discharge agreement with the downstream landowner(s) if no current easements exist at the proposed stormwater outlet point. The proposed stormwater outlet point is not subject to a landowner agreement or an easement, however this is not relevant because the outlet represents a lawful point of discharge (refer later section in this commentary).

Stormwater Detention

Consideration of post- and pre-development flows has been undertaken to assess requirements so that there is no increase in stormwater run-off from the site due to the proposed development. Reduction of post-development flows is proposed to be undertaken by introducing a detention basin within the development in the north-western corner.

Preliminary sizing of the volume required to limit peak discharge from the development to pre-development levels has been undertaken in accordance with QUDM by calculating the effective reduction in the site's "initial loss" capabilities. The initial sizing method has been adopted and is based on the assumption that the detention basin's storage volume effectively compensates for the decrease in initial loss component, while the basin's low-flow discharge system compensates for the decrease in the "continuing loss rate". QUDM considers that such an assumption is considered appropriate for the initial sizing of detention basins.

QUDM also notes that in the absence of a local government policy, it is recommended that the "pre-development condition" is taken as the site condition that existed 15 years prior to the proposed development. The reason for this is that if the land has existed in a specific condition for at least 15

years, then downstream lands and waterways have probably adjusted their function and use to the catchment condition. It is understood that the existing infrastructure on the site was present prior to 2005, with the building structure, pool, tennis court and pathways all present at that time. Reference is made to the **Figure 1** below which identifies these items within an aerial image downloaded from Queensland Globe dated 2004.

It is therefore considered reasonable to adopt the existing pre-development catchment condition as the pre-development condition for the purpose of detention calculations.

Figure 1 – Qld Globe Image from 2004

QUDM provides recommendations for values of initial loss to be used in the preliminary sizing of detention basins. Pre- and post-development initial loss potentials were determined from assessment of Table 5.6.1 of QUDM. The pool, tennis court and building structure were considered to be "impervious surfaces" and the remainder of the site to be "short grass". Therefore, an initial loss potential for the pre-development condition has been adopted by adopting appropriate values within Table 5.6.1 of QUDM as detailed below for a clay type soil:

$$\text{Initial Loss (Pre)} = \left[\frac{(1{,}945\text{m}^2 + 1{,}022\text{m}^2) \times 2\text{mm} \,] + (14{,}482\text{m}^2 \times 20\text{mm})}{17{,}449\text{m}^2} \right] = 16.9\text{mm}$$

The developed site will be of residential type land use which will be characterised by dwelling roofs, paved roads, footpaths, driveways and landscaped / lawn areas. A fraction impervious value of 0.75 has been selected from QUDM Table 4.5.1, which is typical for this type of development. There will also be a portion of additional catchment represented by the new entrance road external to the site (106m²) and the portion of existing open space, building and pool that will remain. These areas have been allocated fraction impervious values as identified on drawing 188-002-SK11 in accordance with QUDM. The initial loss has therefore been calculated as follows, adopting the same assumed soil type for the balance of area not considered "impervious" as for the pre-development scenario for consistency:

$$\text{Initial Loss (Post)} = \frac{[(1{,}022\text{m}^2 + 272\text{m}^2 + (14{,}016\text{m}^2 \times 0.75)] \times 2\text{mm}) + [(14{,}016\text{m}^2 \times 0.25) + 2{,}245\text{m}^2] \times 20\text{mm})}{17{,}555\text{m}^2}$$

$$= 7.9\text{mm}$$

The preliminary calculated detention storage volume for the development is therefore 158m³. With a 300mm freeboard applied to this storage volume, the detention basin volume would be represented by a depth of 953mm over the proposed detention basin area of 242m².

As is typical for this type of development, detailed design of the detention basin using an appropriate run-off routing model will be undertaken during the operational works phase.

Proposed Works and Impacts at Drainage Outlet

Works proposed at the drainage outlet are restricted to work within the subject site. There are no proposed works within adjacent properties.

Level Information

Reference is made to drawing 188-002-SK04, which provides preliminary design levels for the development. A preliminary road grading has also been prepared which is shown on drawings 188-002-SK07 and SK08.

On the southern boundary, levels will be maintained as existing including for the width of the proposed covenant area. The preliminary road grading has been designed such that a minimum of 0.5% fall from the covenant boundary to the road is achieved for each of the lots (Lots 16 to 25).

On the northern boundary, levels will be maintained as existing. As for the southern boundary, the preliminary road grading has been designed such that a minimum of 0.5% fall from across Lots 1 to 10 is achieved.

On the western boundary, levels will be maintained as existing. The covenant area and preliminary road grading have been designed such that a minimum of 0.5% fall is achieved across Lots 12 to 15 toward the road from the covenant boundary. The covenant area along the western boundary will be represented by a batter that varies in slope from 1 in 4.5 to 1 in 3.5.

The above has been designed whilst maintaining appropriate crossfall over the proposed road verge / pavement and a minimum road longitudinal grade of 0.5%.

Confirm Location of Stormwater Quality Improvement Device

Water quality interception devices are required to achieve removal of the following contaminants:

- 90% Gross Pollutants;
- 80% Total Suspended Solids;
- 60% Phosphorus; and
- 40% Nitrogen (value of Nitrogen reduction to be confirmed with Council during detailed design – typically 40% is difficult to achieve).

Devices to achieve removal of contaminants for the proposed development will include combination of a gross pollutant trap and a bio-retention basin (ie bio-retention elements added to the proposed detention basin). The gross pollutant trap will be a proprietary product that will remove the gross pollutant and suspended solids component of contaminants. The bio-retention component of the basin will remove the phosphorous and nitrogen contaminants. The bio-retention component typically involves specification of appropriate sands and plant species. A typical bio-retention basin is shown in Figures 2 and 3. Note that the cross-sectional detail shows an incorporated retaining wall. Detailed design will determine if a wall is necessary, however it is not expected to be required.

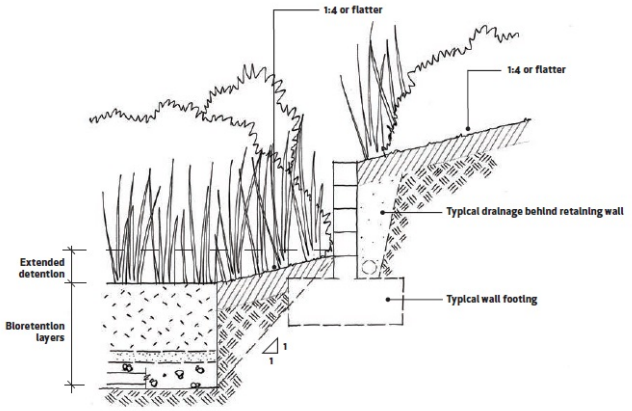


Figure 2 – Typical Bio-Retention Basin Detail incorporating a Retaining Wall

Figure 3 – Typical Bio-Retention Basin
(note this example is considerably larger than will be required for the subject development)

The gross pollutant trap will be installed in the north western corner of the site on the proposed driveway adjacent to the proposed detention basin. The driveway will facilitate access for maintenance of both devices.

Lawful Point of Discharge

Changes to stormwater overland flows that can give rise to issues with a "lawful point of discharge" can be characterised by diversion of stormwater, concentration of stormwater flows or changes in other flow characteristics. QUDM notes that a project involving stormwater drainage is likely to give rise to a number of these issues. QUDM notes:

- in some instances, it may be considered necessary to divert stormwater run-off from a given sub-catchment to a different point of discharge from which it would naturally flow. It further notes that in such instances, the outlet structure is likely to play an important role in dissipating energy, preventing scour, limiting sedimentation and controlling water quality.
- where surface flow is diverted or collected by drainage works and results in an increase in the flow at a particular point, the flow may be said to be concentrated at that location.
- Adverse impacts on other properties may also result from changes in peak discharge and/or frequency, duration, velocity, volume or quality of regular flows.

Section 3.9.1 of QUDM provides the criteria for determining if a lawful point if discharge exists. The first point in the test is as follows:

> *Will the proposed development alter the site's stormwater discharge characteristics in a manner that may substantially damage a third-party property?*

QUDM notes that if the above is achieved, then a lawful point of discharge is achieved.

It is noted within the Common Law principles identified in QUDM that a downstream owner is responsible for receiving overland stormwater drainage flows from an upstream property. Because the upstream property owner chooses to undertake development on its land, this does not absolve the downstream property owner's responsibility to receive stormwater. However, the upstream property owner is responsible for not discharging stormwater onto the downstream property owner's property after development such that it causes an actionable nuisance.

The following is noted regarding stormwater discharge from the proposed development:

- The proposed outlet of stormwater will be across the western property boundary where it will continue into the existing drain located adjacent to that boundary
- The proposed outlet of stormwater from the developed site will be such that the peak discharge and velocity is no greater at the outlet point than what currently exists at that point from the pre-developed site condition (detention basin will achieves this)
- The proposed outlet of stormwater from the developed site will meet statutory requirements with regard to water quality (bio-retention component of the detention basin and gross pollutant trap will achieve this)

In considering the first point test for a lawful point of discharge (noted above in italics), the proposed development will not alter the stormwater discharge characteristics in a manner that may substantially damage a third party property and therefore, it is considered that the outlet represents a lawful point of discharge.

Item 2 - Sewerage

The RFI notes the proposed connection into Council's system will need further discussion and agreement with Council. It further notes that the 300mm diameter main is understood to be a pressure main and Council would not propose connection into this main.

We confirm that the existing 300mm diameter sewer main is a pressure main.

We contacted Council on 30 September 2020 to discuss the proposed sewer connection point and received a return phone call from Mr Jason Wilke. Mr Wilke confirmed that the only Council sewer main in the vicinity of the development is the 300mm diameter sewer pressure main located on the eastern side of Port Douglas Road (the main that connection is proposed into). Mr Wilke also confirmed that he considered the proposed connection into the main would be acceptable because there was no other reasonable connection point to Council's existing system and that it was similar in nature to the existing connection from the adjacent Oaks resort site.

The proposed connection arrangement was discussed with Mr Wilke and it was agreed that this would be undertaken using a standard pressure main connection arrangement of a direct tee-connection with an isolation valve installed on the new incoming pressure main.

Item 3- Earthworks

Further Detail on Proposed Filling

Further detail has been provided on the filling at the western edge of the allotment (ie western boundary) as required by the information request. Reference is made to drawing 188-002-SK04 and the "Level Information" section above, which provide the required detail regarding batter profiles, cut / fill heights, interface with existing ground and allotment profiles.

The information request specifically requests that long term stability is considered for the batter profiles and that geotechnical advice should accompany the response. It is noted that the batter profiles range from 1 in 3.5 to 1 in 4.5 along the western boundary. FNQROC (Section D2.11 Part 8) requires that, on private land, batters should preferably be no steeper than 1 in 2 on allotments where those batters do not front a road (1 in 4 where batters do front a road). The 1 in 3.5 and 1 in 4.5 profiles meet this FNQROC requirement and therefore long-term stability is considered to have been appropriately considered. It is noted that FNQROC only requires geotechnical certification of batters that are steeper than 1 in 2 or higher than 1.5m (refer Section D2.11 Part 9). Therefore, specific geotechnical advice is this instance is not deemed warranted.

It is noted that all earthwork will be undertaken in accordance with FNQROC specifications and the requirements of AS3798 "Guidelines on Earthworks for Commercial and Residential Developments".

Filling of Lot 11

Lot 11 is no longer proposed to be delivered. It will be contributed to common property to accommodate the proposed detention basin.

Information on Existing and Proposed Levels Western Boundary

Provision of existing level information for 20m into the adjacent property on the western boundary to demonstrate filling will not create ponding nuisances and/or concentration of stormwater flows has been requested by Council. Figure 4 shows an image with LIDAR contours that have been downloaded from the ANZLIC Committee on Surveying and Mapping website (https://elevation.fsdf.org.au/). The contours demonstrate that the existing surface continues to fall away from the western site boundary. It is therefore considered the works will not cause ponding nuisances or concentration of stormwater flows.

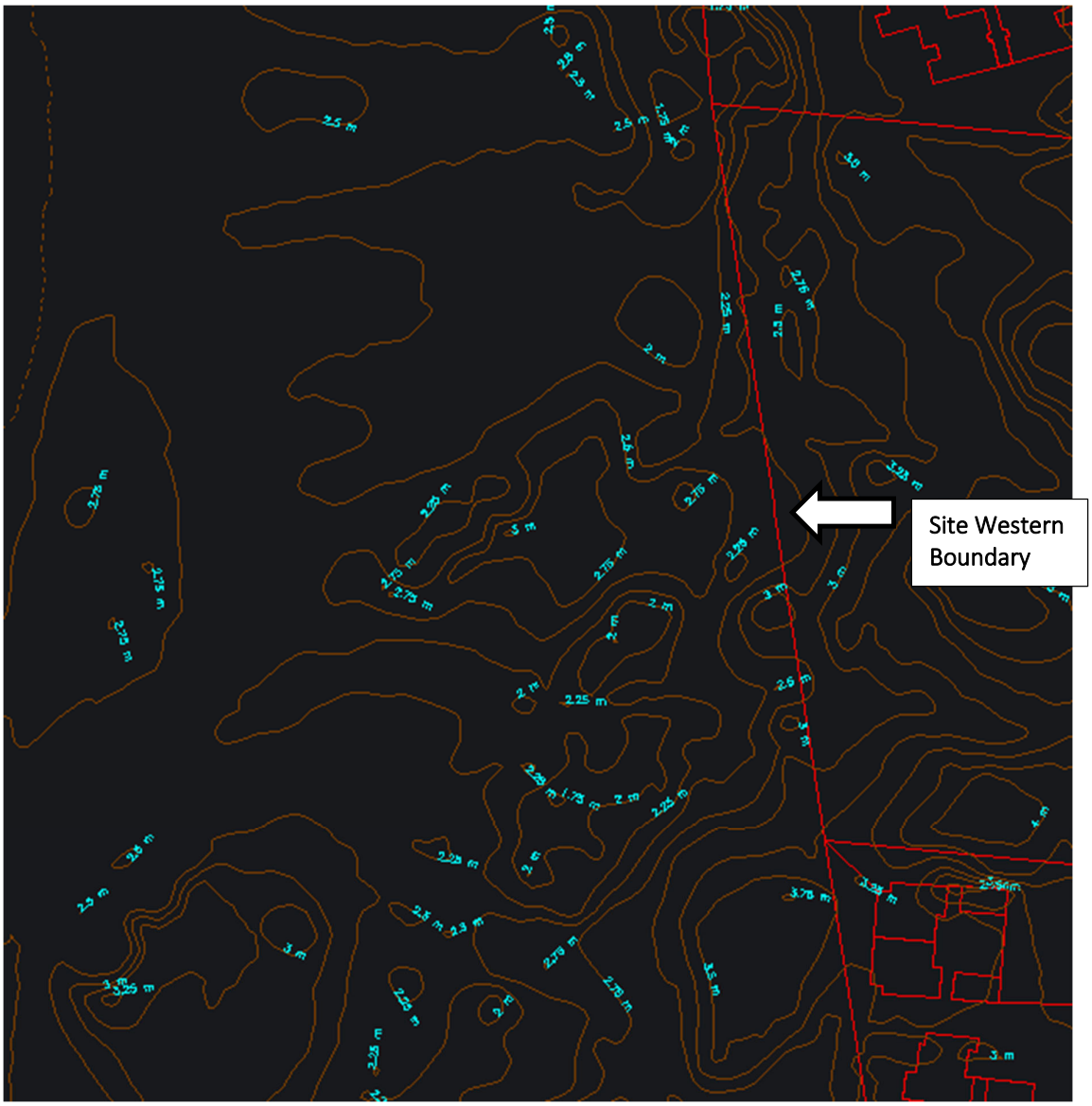
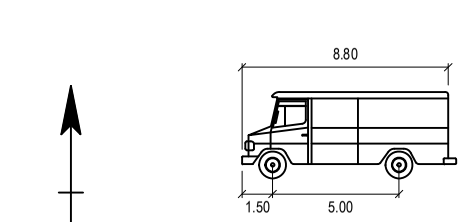


Figure 4 – LIDAR Contours Beyond Western Site Boundary

Yours faithfully
CivilWalker Consulting Engineers

Daryl Walker
BE(Hons) ME DipPM MIEAust RPEQ 19806 RPEng 1259
Director / Principal Engineer

Enc. Drawings 188-002-SK03, SK04, SK06 – SK08, SK10 and SK11



SERVICE VEHICLE

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

OAKS RESORT

ROAD A

ROAD A

SERVICE VEHICLE
AUSTROADS 2013 (a6)

4 357 222

10 9 8 7 6 5 4 3 2 1

12 13 14 15 COVENANT

33 32 31 30 29 28 34 35 36 37 38

27 26

39 40

LAWN BOWLS

LAP POOL

LEISURE POOL

CENTRAL FACILITIES BUILDING

16 17 18 19 20 21 22 23 24 25

COVENANT COVENANT COVENANT COVENANT COVENANT

REVISIONS				
			CW	DJW
A	25.08.21	INITIAL ISSUE		
NO.	DATE	DESCRIPTION	DESIGN	APPROVED

CLIENT

PORT PACIFIC DEVELOPMENTS

SCALE

1:250 0 5 10 15 A1
1:500 A3

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CivilWalker CONSULTING ENGINEERS

DRAWN	CW	CHECKED	CW
DESIGNED	DJW	CHECKED	DJW
APPROVED			
DATE:		RPEQ:	

PROPOSED DEVELOPMENT ON LOT 3 ON RP72991

SERVICE VEHICLE TURNPATH ANALYSIS

DRAWING NO. 188-002-SK10

REVISION A

SIEMENS

Ingenuity for life

Process Instrumentation

Battery-powered, reliable and cost efficient.

SITRANS F M MAG 8000 water meter for long-term accuracy.

siemens.com/mag8000

The water meter of choice for distribution, billing and irrigation.

The SITRANS F M MAG 8000 portfolio of battery-operated flowmeters combines world-class performance with a low cost of ownership, tailored to meet the needs of your specific water application. No mains power required.

The robust SITRANS F M MAG 8000 operates in even the most challenging environments with consistently high accuracy and virtually no maintenance — making it a highly cost-efficient water metering solution.

High-precision water metering – no compromises necessary

Engineered for maximum flexibility without sacrificing accuracy, the SITRANS F M MAG 8000 is the ideal flow solution for a wide range of water applications, including abstraction, distribution, revenue and bulk metering, and irrigation.

The MAG 8000 is available in both compact and remote versions with 0D inlet/outlet requirements, making it easy to install virtually anywhere – even underground or in flood-prone locations.

Its sturdy construction according to ISO 12944-2 is built to resist solids and other debris. And when powered by a highly efficient external lithium battery pack, the MAG 8000 can operate continually for up to 15 years in areas lacking mains power.

An integrated power management program calculates the amount of power remaining, and a configurable "low battery" alarm alerts you when replacement is necessary.

Reliable and robust, it also features:

- Remote transmitter option with factory-mounted cables and connectors
- No moving parts resulting in less wear and tear
- Bidirectional accuracy
- Unrestricted flow tube for minimal pressure loss even at high flow rates
- IP68 / NEMA 6P enclosure and cable with coating corrosivity category C4M, allowing for sensor burial and operation in harsh conditions

Abstraction and distribution
To ensure that consumers receive a consistent supply of drinkable water, the MAG 8000 monitors all stages of network water flow from production plants and trunk lines to local delivery systems with:

- High accuracy - 0.2% to 0.4% of flow rate
- Bidirectional flow capability - one solution for all applications
- Network load monitoring - reduces leakage and saves energy
- Early leakage detection - achieved with reliable and repeatable measurements of low flow at night

Irrigation
Where irrigation systems are used in crop production, the MAG 8000 keeps water wastage to a minimum and ensures that farmers get a fair deal with:

- No moving parts - not prone to wear and tear in the usual way
- IP68 / NEMA 6P enclosure - allows for installation in places where flooding can occur, or even complete underground burial
- Optional conduit adaptor - provides a clean, protected pathway for device cables to secure integrity in any conditions
- Battery power and easy connection to solar panels - ensures long-term performance in locations without reliable mains power

Bulk water and revenue
To ensure water bills are fair, and to reduce the need for verification, the MAG 8000 CT measures usage precisely and cost effectively with:

- Custody transfer approval - according to international revenue standards OIML 49 and MI-001
- No moving parts - minimal maintenance requirements optimize your cost of ownership
- 0D inlet/outlet - offers greater flexibility in meter installation

Intelligence at your fingertips.

The 3G/UMTS-based wireless communication module collects measurement data from meters anywhere in the world covered by the 3G/2G network. Alarms from the MAG 8000 are sent immediately to the customer once an alarm signal is detected by the module at a minimum sample interval of 1 minute.

Data flows better with Siemens

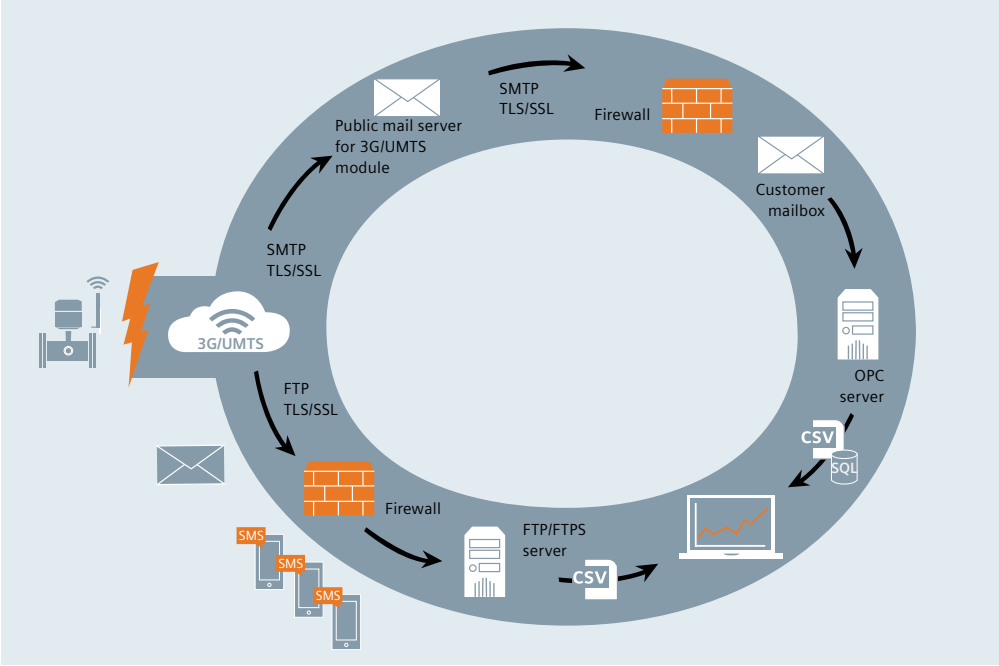
To enhance operational efficiency, improve billing accuracy and significantly reduce costs, the SITRANS F M MAG 8000 includes a built-in wireless automated meter reading (AMR) solution designed for use in Water Fixed Networks. Flow measurement data from any site can be accessed via a web browser and secure password protection.

The MAG 8000 also features a standard IrDA interface for configuration, data collection and documentation using SIMATIC Process Device Manager or Flow Tool software. For remote monitoring of water applications, a compact wireless communication module can be added to log all data from the meter and transmit it via FTP, email or SMS at customizable intervals throughout the day.

The MAG 8000 keeps you connected with:

- 2-channel analog input measurement for external ratiometric pressure transmitter, transmission together with flow measurement (2-in-1 solution)
- 4-20 mA alarm signal detection and real-time SMS alarm for tamper protection and flooding situations
- Real-time clock synchronization with internet NTP server, ensuring that all measurement data is accurately time-stamped
- Data transmission at customer-specified points in time, allowing for synchronization of information from multiple MAG 8000 devices
- Seamless communication via both the 2G and 3G networks

MAG 8000 3G communication allows for data transmission via numerous protocols including SMS, email via SMTP, email via SMTPS (TLS/SSL-based encryption), FTP, and FTPS (TLS/SSL-based encryption). This provides customers with the flexibility to receive data via email or text message as well to relay data directly to internet-capable monitoring and control systems anywhere in the world. The MAG 8000 also ensures the security of transmitted data to the levels required by individual customer standards.



With comprehensive data collection and logging options, advanced diagnostic functions and the capability for remote monitoring, the SITRANS F M MAG 8000 keeps you fully in control of your water application – whether you're on-site or on-the-go.

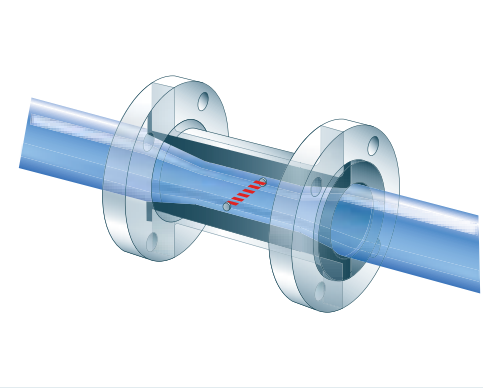
Once the MAG 8000 is installed, a wide range of smart features ensures reliable performance with minimal maintenance:

- An electrode resistance module measures the meter's contact with the media
- A product sizing program indicates whether the size of the meter selected is appropriate for the flow conditions on site
- A comprehensive data logging function records and stores consumption levels, alarms and operating conditions from the site
- Remote Qualification Certificate integrated into the 3G module enables offsite quality audits on devices anywhere in the world

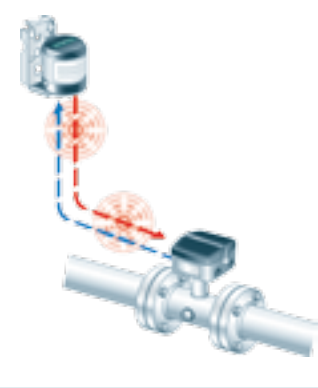
The free plug-in integrated into the SIMATIC PDM tool allows for on-site meter assessment and prints a Qualification Certificate for monitoring and auditing purposes.

Flow simulation
Integrated flow simulator verifies and adjusts the pulse output to any connected device or system, with configuration possible via the standard IrDA interface or the communication channel.

Improved low-flow performance
Siemens' conical flow tube design improves low-flow performance with negligible pressure drop across the meter for reduced energy loss.

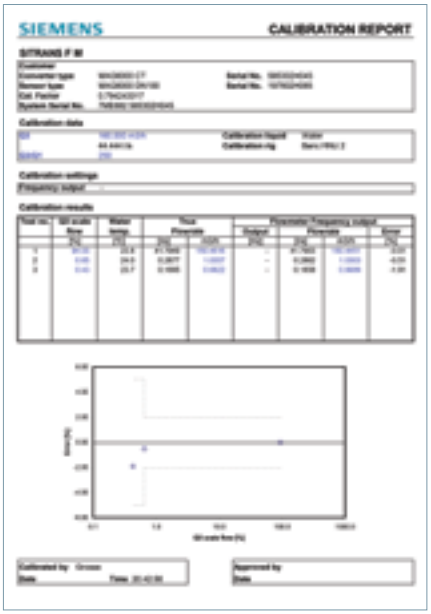


Insulation test
Built-in "cross-talk" test checks the entire signal chain of the system to ensure that the sensor flow signal is unaffected by external noise.



Accredited calibration for more accurate water measurement.

Every Siemens water meter is calibrated in-house at facilities that are individually accredited in accordance with ISO / IEC 17025.



A calibration certificate is supplied with every water meter, and all calibration data is stored in the instrument.

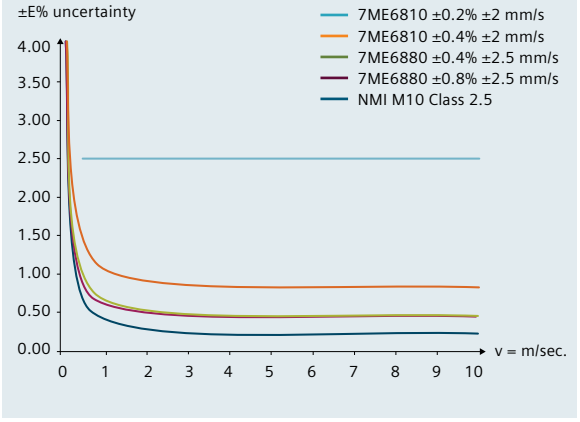
Flowmeter calibration is a vital step in ensuring consistently accurate measurement. All SITRANS F M electromagnetic meters are wet calibrated at Siemens flow facilities with traceable instruments referring directly to the physical unit of measurement according to the International System of Units (SI).

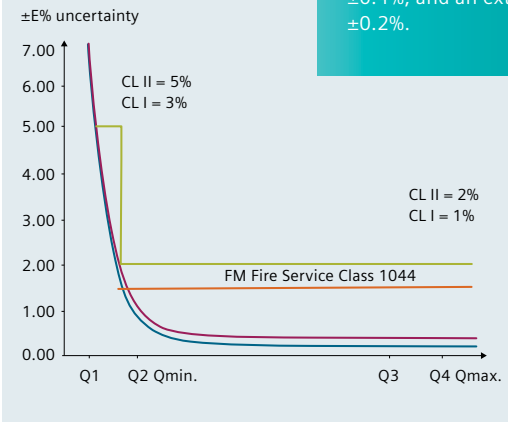
A certificate is supplied with every calibration to satisfy worldwide traceability standards, including NIST in the United States.

Siemens offers accredited calibrations assured to ISO/IEC 17025 in the flow range from 0.0001 to 10,000 m³/h.

Siemens Flow Instruments accredited laboratories are recognized by the International Laboratory Accreditation Corporation Mutual Recognition Arrangement (ILAC MRA), ensuring international acceptance of test results.

The maximum uncertainty of measurement following a standard calibration is ±0.4%, and an extended calibration ±0.2%.





A suitable meter for every water application.

	MAG 8000 Standard	MAG 8000 CT
Application	Abstraction and distribution networks	Bulk water and revenue
Transmitter type	Basic version Advanced version for advanced information and functionality	
Custody transfer version		Type-approved and verified according to OIML R 49 / MI-001
Sensor size DN	25 – 1200 mm / 1" – 48" with EPDM liner	50 – 600 mm / 2" – 24" with EPDM liner
Enclosure sensor and transmitter	IP68 / NEMA 6P, compact and remote with connectors and factory-mounted cable	
Display	Display with touch keypad	
Output	2 individual pulse outputs (forward, reverse and net volume)	
Communication	Integrated standard IrDA interface, wireless communication module, RS232 / RS485 with MODBUS RTU protocol, encoder interface module with sensus protocol	
Power supply	Internal 2 D-cell or external 4 D-cell battery pack 12 – 24 V AC/DC and 115 – 230 V AC with battery backup	
Certifications	Approved to the international water meter standard OIML R 49/MI-001 (EU), complying with the European CEN – EN 14154, ISO 4064 specifications and FM Fire Service Class 1044	
Transmitter features	Data logger with configurable log interval up to 26 months, time and date, data protection, application identifier, alarm handling, meter status, diagnostics, battery power management, insulation test Advanced version only (not valid for MAG 8000 I): Leakage detection, flow statistics and consumption profile, advanced diagnostics, self-check, meter utilization, tariff and settle date (revenue)	
Accuracy	±0.4% ±2 mm/s (DN 25 - 1200 / 1" – 48") ±0.2% ±2 mm/s (DN 50 - 300 / 2" – 12") NMI M 10 Class 2.5	OIML R 49 Class 1 and 2 MI-001 Class 2
Bi-directional measurement	Yes	
Drinking water approvals for sensor part	ACS (France), WRc (UK), DVGW (Germany), NSF/ANSI Standard 61 (USA), Belgaqua (Belgium), KIWA and WRAS BS 6920 Cold Water (UK)	
Process connections	EN 1092-1 (DIN 2501), ANSI 16.5 Class 150 lb , AS 4087, and AWWA C207	
Operating pressure	PN10/PN16/PN25/PN40	
Media temperature	0 – 70˚C / 32 – 158 ˚F	0.1 – 50˚C / 32 – 122˚F
Electrodes and earthing electrodes	Hastelloy C276	

The accuracy of each meter is determined by the calibration performed. MAG 8000 water meters are available with three types of calibration, each suited to different application requirements.

Calibration type	Applications	Accuracy	Water meter type
Standard	General water	0.4%	MAG 8000 Standard
Extended	High-performance	0.2%	MAG 8000 Standard
Bulk water / revenue	Custody transfer (CT) FM fire service	OIML R49 Class 1 / Class 2 OIML R49 Class 1044	MAG 8000 CT

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Germany

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Dispo 27900
WS10181.0
Printed in Germany

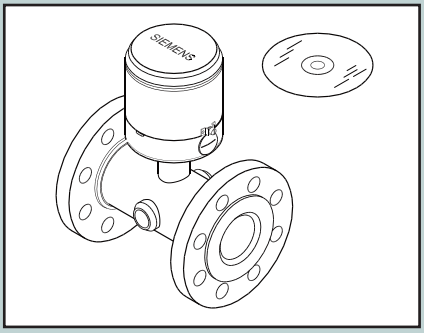
SITRANS FM MAG 8000 & MAG 8000 CT

Quick Start

(EN) **Electromagnetic flowmeter transmitter**
(DE) **Messumformer für magnetisch-induktive Durchflussmesser**
(FR) **Transmetteurs pour débitmètres magnéto-inductifs**
(ES) **Transmisor para los caudalímetros electromagnéticos**
(IT) **Misuratori di portata magnetici**

MAG 8000
MAG 8000 CT

(EN) **Items supplied**
(DE) **Lieferumfang**
(FR) **Pièces fournies**
(ES) **Ítems suministrados**
(IT) **Articoli forniti**



(EN) For more information see operating manual on enclosed DVD.
(DE) Für weitere Informationen siehe die Bedienungsanleitung auf beigefügter DVD.
(FR) Pour plus de details consulter le Manuel d'utilisation sur le DVD fourni.
(ES) Para más información ver el Manual de funcionamiento en el DVD.
(IT) Per ulteriori informazioni, vedere le istruzioni operative sul DVD in dotazione.

SITRANS F

SIEMENS

(EN) General Instructions

Before installing, including in hazardous areas, please refer to the operating instructions on the enclosed DVD for detailed safety regulations, information and specifications which must be observed when installing.

Changes can occur. Documentation and approvals can be found on the Internet at
www.siemens.com/flowdocumentation

⚠ Warning

Correct, reliable operation of the product requires proper transport, storage, positioning and assembly as well as careful operation and maintenance. Only qualified personnel should install or operate this instrument.

(DE) Allgemeine Hinweise

Vor Einbau, einschließlich in Ex-Bereichen, lesen Sie die Betriebsanleitung auf der beigefügten DVD. Sie enthält die beim Einbau zu beachtenden Sicherheitsvorschriften, Hinweise und technischen Daten.

Änderungen vorbehalten. Dokumentationen und Zulassungen finden Sie im Internet unter
www.siemens.com/flowdocumentation

⚠ Warnung

Der einwandfreie und sichere Betrieb des Produktes setzt sachgemäßen Transport, sachgemäße Lagerung, Aufstellung und Montage sowie sorgfältige Bedienung und Instandhaltung voraus. Inbetriebsetzung und Betrieb dieses Gerätes/ Systems dürfen nur von qualifiziertem Personal vorgenommen werden.

(FR) Instructions générales

Avant l'installation, y compris en zone dangereuse, veuillez consulter les consignes de sécurité, les informations et les spécifications dans les instructions de service correspondant, disponible sur le DVD fourni.

Des modifications pouvant être apportées, vous trouverez l'ensemble des documents et agréments mis à jours sur internet à l'adresse www.siemens.com/flowdocumentation.

⚠ Avertissement

Le fonctionnement fiable et sécuritaire du produit implique le respect des consignes de transport, de stockage, de montage et de mise en service ainsi qu'une utilisation et maintenance soigneuses. Seul le personnel qualifié doit installer ou utiliser l'instrument.

(ES) Instrucciones generales

Antes de instalar el aparato (incluso en entornos peligrosos), consultar las normas de seguridad, las especificaciones y los datos técnicos proporcionados en los instrucciones de servicio incluido en el DVD Sujeto a cambios sin previo aviso.

La documentación y las aprobaciones están disponibles en internet:
www.siemens.com/flowdocumentation.

⚠ Advertencia

El funcionamiento correcto y fiable del producto requiere un transporte, almacenamiento, colocación y montaje adecuados así como una utilización y mantenimiento cuidadosos. Este instrumento sólo debeser instalado y utilizado por personal calificado.

(IT) Istruzioni generali

Prima di procedere all'installazione, consultare il manuale sul CD-ROM in dotazione per i requisiti dettagliati in materia di sicurezza, le informazioni e le specifiche che devono essere rispettate durante l'installazione.

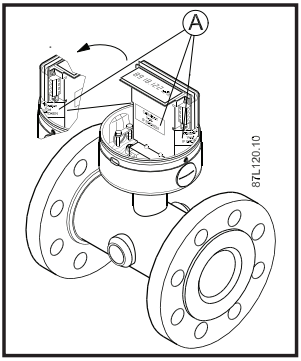
Possono verificarsi cambiamenti. Le ultime documentazioni e approvazioni sono disponibili sul sito internet
www.siemens.com/flowdocumentation

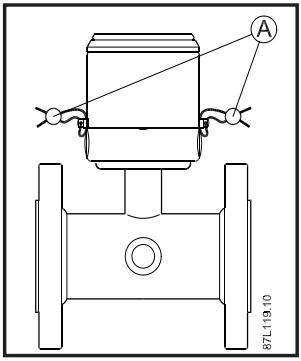
⚠ Avvertenza

Per garantire un funzionamento corretto e sicuro è indispensabile che il prodotto venga trasportato, immagazzinato, installato e montato correttamente e che venga utilizzato e sottoposto a manutenzione secondo le modalità previste. Solo il personale qualificato è autorizzato ad installare e utilizzare l'apparecchio.

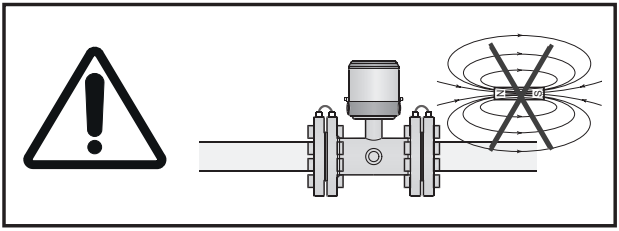
(EN) **Installation** (ES) **Instalación**
(DE) **Installation** (IT) **Installazione**
(FR) **Installation**

(EN) Custody transfer meter! Avoid breaking seals Ⓐ!
(DE) Garantie erlischt wenn Siegel Ⓐ beschädigt!
(FR) Préserver les scellés Ⓐ sous peine d'annulation de la garantie!
(ES) Medidor aprobado para transferencia de custodia: mantener intactos los sellos Ⓐ!
(IT) Misuratore approvato per il commercio! Evitare la rottura dei sigilli Ⓐ!

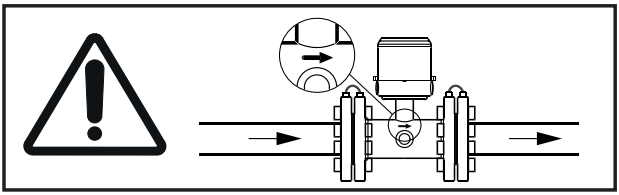




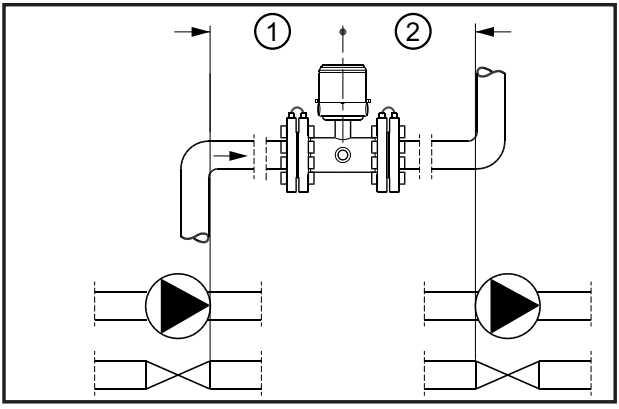
(EN) Keep away from magnetic sources
(DE) Von Magnetfeldern fernhalten
(FR) Tenir à l'écart des sources de champs magnétiques
(ES) Mantener alejado de fuentes magnéticas
(IT) Tenere lontano da sorgenti di campi magnetici



(EN) Flow direction
(DE) Fliessrichtung
(FR) Sens de déplacement du flux
(ES) Dirección de flujo
(IT) Direzione flusso

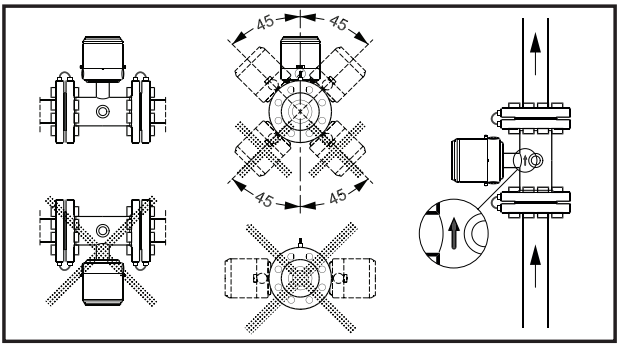


(EN) Inlet and outlet conditions
(DE) Einlass- und Auslassbedingungen
(FR) Conditions d'entrée et de sortie
(ES) Condiciones de entrada y salida
(IT) Condizioni di ingresso e uscita

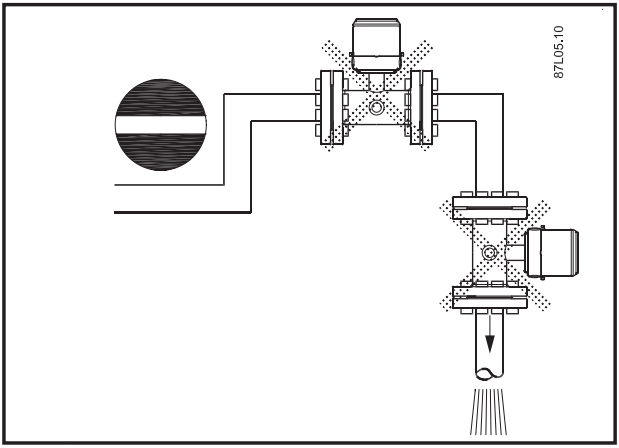


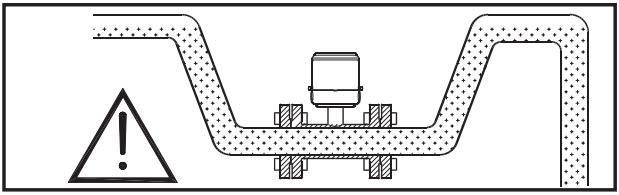
(EN) **Installation** (ES) **Instalación**
(DE) **Installation** (IT) **Installazione**
(FR) **Installation**

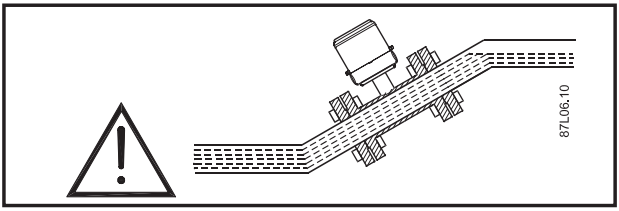
(EN) Horizontal and vertical pipes
(DE) Horizontale und vertikale Rohre
(FR) Conduites horizontales et verticales
(ES) Conductos horizontales y verticales
(IT) Tubi orizzontali e verticali



(EN) Positioning of sensor
(DE) Positionierung des Messaufnehmers
(FR) Positionnement du capteur
(ES) Posición del sensor
(IT) Posizionamento del sensore







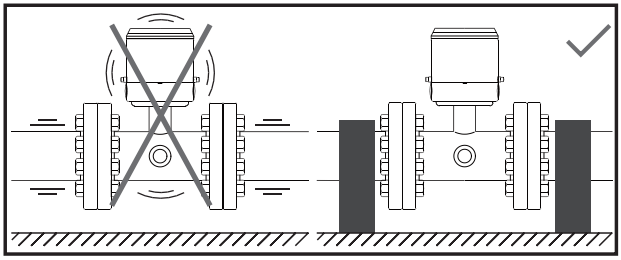
(EN) **Installation** (ES) **Instalación**
(DE) **Installation** (IT) **Installazione**
(FR) **Installation**

(EN) Maximum allowable torques
(DE) Maximal zulässige Drehmomente
(FR) Couples maximum autorisés
(ES) Pares máximos
(IT) Coppie di serraggio massime

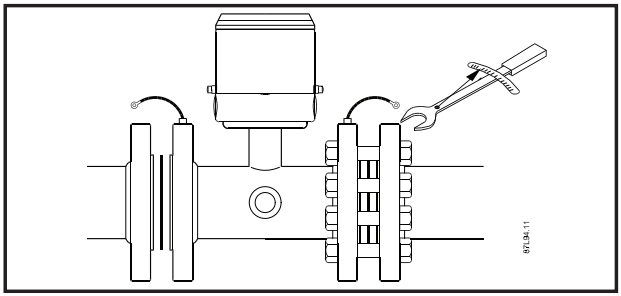
Nominal size		PN 10		PN 16		PN 40		Class 150		AWWA	
mm	inch	Nm	f/lbs	Nm	f/lbs	Nm	f/lbs	Nm	f/lbs	Nm	f/lbs
25	1"	N/A	N/A	N/A	N/A	10	7	7	5	N/A	N/A
40	1½"	N/A	N/A	N/A	N/A	16	12	9	7	N/A	N/A
50	2"	N/A	N/A	25	18	N/A	N/A	25	18	N/A	N/A
65	2½"	N/A	N/A	25	18	N/A	N/A	25	18	N/A	N/A
80	3"	N/A	N/A	25	18	N/A	N/A	34	25	N/A	N/A
100	4"	N/A	N/A	25	18	N/A	N/A	26	19	N/A	N/A
125	5"	N/A	N/A	29	21	N/A	N/A	42	31	N/A	N/A
150	6"	N/A	N/A	50	37	N/A	N/A	57	42	N/A	N/A
200	8"	50	37	50	37	N/A	N/A	88	65	N/A	N/A
250	10"	50	37	82	61	N/A	N/A	99	73	N/A	N/A
300	12"	57	42	111	82	N/A	N/A	132	97	N/A	N/A
350	14"	60	44	120	89	N/A	N/A	225	166	N/A	N/A
400	16"	88	65	170	125	N/A	N/A	210	155	N/A	N/A
450	18"	92	68	170	125	N/A	N/A	220	162	N/A	N/A
500	20"	103	76	230	170	N/A	N/A	200	148	N/A	N/A
600	24"	161	119	350	258	N/A	N/A	280	207	N/A	N/A
700	28"	200	148	304	224	N/A	N/A	N/A	N/A	200	148
750	30"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	240	177
800	32"	274	202	386	285	N/A	N/A	N/A	N/A	260	192
900	36"	288	213	408	301	N/A	N/A	N/A	N/A	240	177
1000	40"	382	282	546	403	N/A	N/A	N/A	N/A	280	207
1050	42"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	280	207
1100	44"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	290	214
1200	48"	395	292	731	539	N/A	N/A	N/A	N/A	310	229

(EN) **Installation** (ES) **Instalación**
(DE) **Installation** (IT) **Installazione**
(FR) **Installation**

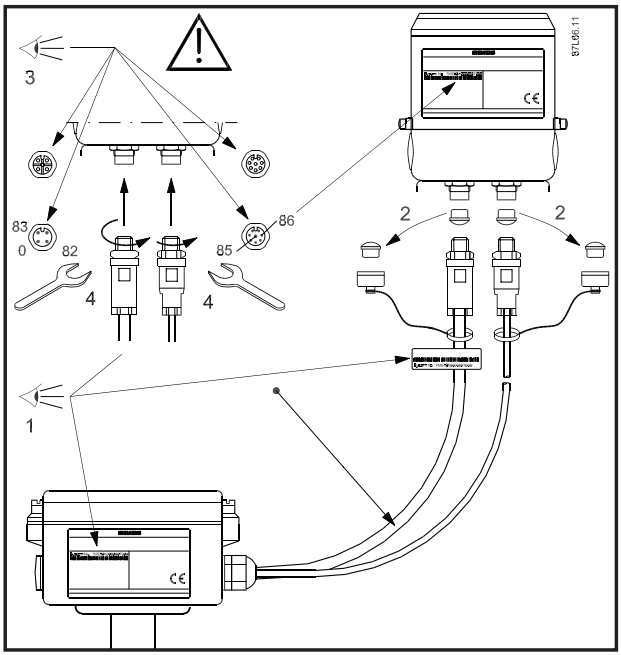
(EN) Avoid vibrations
(DE) Vibrationen vermeiden
(FR) Eviter les vibrations
(ES) Evitar vibraciones
(IT) Evitare vibrazioni



(EN) Installation of the gaskets
(DE) Installation der Dichtungen
(FR) Installation de joints d'étanchéité
(ES) Instalación de juntas de estanqueidad
(IT) Installazione delle guarnizioni

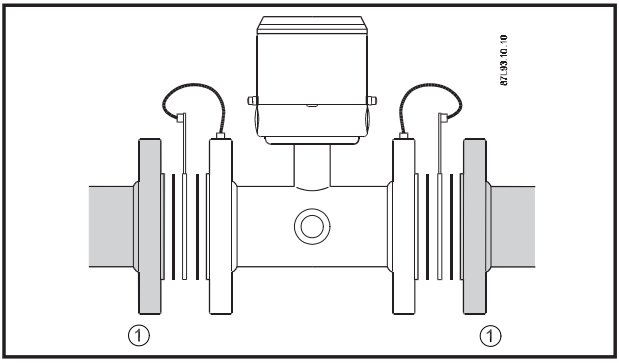


(EN) Remote installation
(DE) Getrennte Montage
(FR) Montage déporté
(ES) Montage séparé
(IT) Instalación remota

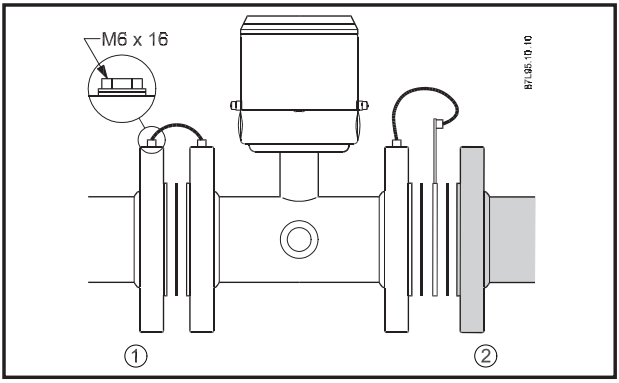


(EN) **Installation** (ES) **Instalación**
(DE) **Installation** (IT) **Installazione**
(FR) **Installation**

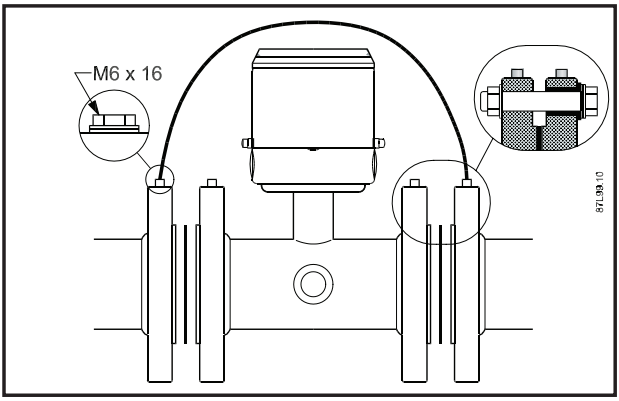
(EN) **Bonding and grounding** plastic pipelines
(DE) **Verbindung und Erdung** Kunststoffrohrleitungen
(FR) **Connexion et mise à la terre** Canalisations en matière plastique
(ES) **Unión y puesta a tierra** Tuberías de plástico
(IT) **Collegamento e messa a terra** di condotti di plastica



(EN) **Bonding and grounding** Combination of metal and plastic pipelines
(DE) **Verbindung und Erdung** Verbindung von Kunststoff und Metallrohren
(FR) **Connexion et mise à la terre** Connexion en matière plastique et en métal
(ES) **Unión y puesta a tierra** Tuberías que combinan metal y plástico
(IT) **Collegamento e messa a terra** Combinazione di condotti di metallo e plastica

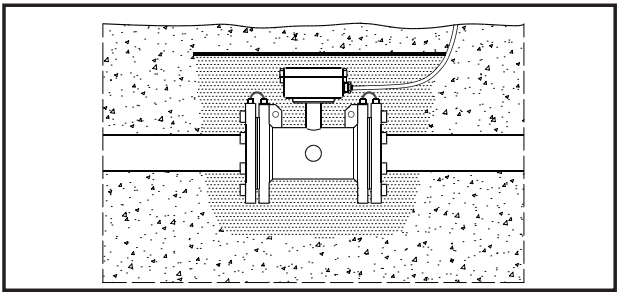


(EN) Cathodic protected piping
(DE) Kathodisch geschützte Rohrleitung
(FR) Canalisation avec protection cathodique
(ES) Tuberías con protección catódica
(IT) Tubazioni con protezione catodica

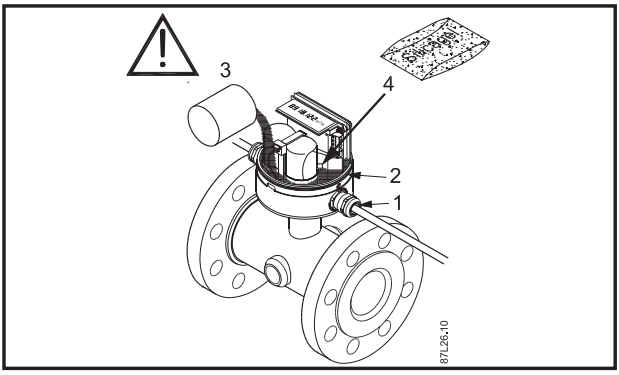


(EN) **Installation** (ES) **Instalación**
(DE) **Installation** (IT) **Installazione**
(FR) **Installation**

(EN) Suggestions for direct burial of remote sensor
(DE) Empfehlungen für die direkte Erdverlegung entfernter Messaufnehmer
(FR) Suggestions pour l'enfouissement direct du capteur à distance
(ES) Sugerencias para enterrar directamente el sensor remoto
(IT) Suggerimenti per il sotterramento diretto del sensore remoto



(EN) Secure IP 68 rating, for fitted cables
(DE) Sicherstellung der IP68-Schutzart bei der Kabelinstallation
(FR) Protection IP68 garantie pour câbles installés en usine
(ES) Protección IP68 garantizada para cables instalados en fábrica
(IT) Garantire la protezione IP 68, per i cavi installati



(EN) ⚠ **Warning**
The mains or line powered PUR cable (no shield) has to be mounted under the cable clamps.
All cable glands have to be sufficiently tightened to ensure the IP-rating.

(DE) ⚠ **Warnung**
Das ungeschirmte PUR-Kabel für die Stromversorgung (Netz oder extern) muss unter den Kabelschellen montiert werden. Alle Kabelverschraubungen müssen ausreichend angezogen werden, um die IP Schutzart zu gewährleisten.

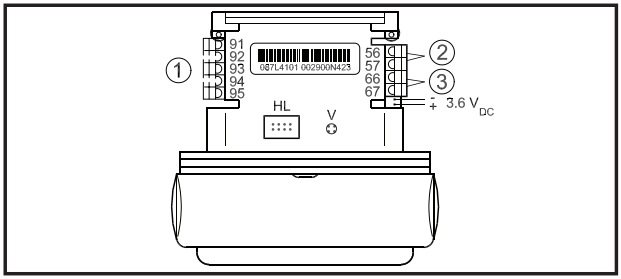
(FR) ⚠ **Avertissement**
Installer le câble PUR de l'alimentation (pas de blindage) sous les colliers de câbles. Assurer un serrage des presse-étoupes suffisant pour garantir l'indice de protection IP.

(ES) ⚠ **Advertencia**
Asegúrese de que el cable de la alimentación o el cable PUR (sin blindaje) queden montados debajo de los sujetadores de los cables. Asegure pares de torsión correctos (prensaestopas) para garantizar la protección IP.

(IT) ⚠ **Avvertenza**
Il cavo di alimentazione o il cavo alimentato da rete PUR (senza schermo) deve essere montato sotto i fissaggi cavo. Tutti i pressacavo devono essere sufficientemente stretti per garantire la protezione IP.

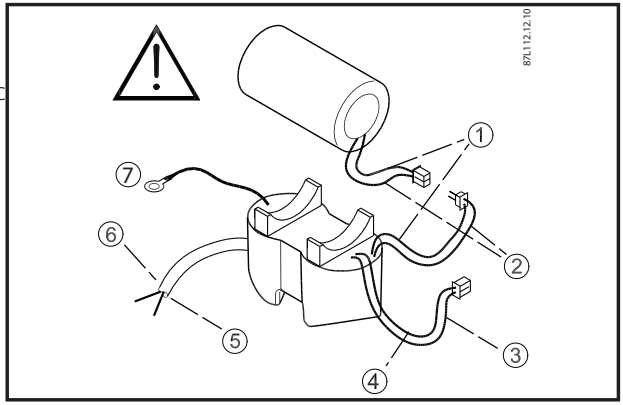
(EN) **Electrical Connection**
(DE) **Elektrischer Anschluss**
(FR) **Raccordement électrique**
(ES) **Conexiones eléctricas**
(IT) **Collegamenti elettrici**

(EN) Connection diagram for battery
(DE) Anschlussdiagramm für Batterie
(FR) Schéma de raccordement pour la batterie
(ES) Esquema de conexiones de la pila
(IT) Schema di collegamento per batteria



	①	②	③
(EN)	Module Interface (Option)	Output A	Output B
(DE)	Modulschnittstelle (Option)	Ausgang A	Ausgang B
(FR)	Interface module (option)	Sortie A	Sortie B
(ES)	Interfaz módulo (Opción)	Salida A	Salida B
(IT)	Interfaccia modulo	Uscita A	Uscita B

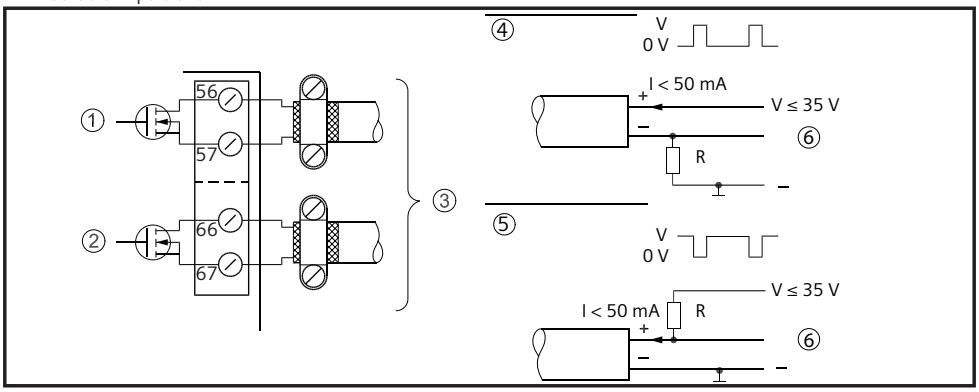
(EN) Connection diagram for 115/230 V AC (mains voltage) and 12-24 V AC/DC (low voltage)
(DE) Anschlussdiagramm für 115/230 V AC (Netzspannung) und 12-24 V AC/DC (Niederspannung) Stromversorgung
(FR) Schéma de raccordement pour l'alimentation 115/230 Vca (tension du secteur) ou 12-24 Vca/cc (basse tension)
(ES) Esquema de conexiones de la alimentación 115/230 VCA o 12-24 Vcc (baja tensión)
(IT) Schema di collegamento per 115/230 V AC (tensione di alimentazione) e alimentazione elettrica 12-24 V AC/DC (bassa tensione)



①	②	③	④	⑤	⑥	⑦
				N/-	L/+	⏚

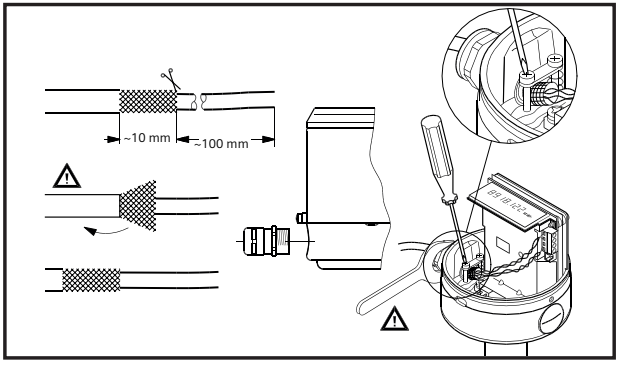
(EN) **Electrical Connection**
(DE) **Elektrischer Anschluss**
(FR) **Raccordement électrique**
(ES) **Conexiones eléctricas**
(IT) **Collegamenti elettrici**

(EN) Pulse output connection diagram
(DE) Anschlussdiagramm für Impulsausgang
(FR) Schéma de raccordement pour la sortie d'impulsions
(ES) Esquema de conexiones de la salida de impulsos
(IT) Schema di collegamento uscita impulsi



	①	②	③	④	⑤	⑥
(EN)	Output A	Output B	Passive output - no polarization - open drain	Positive pulse logic	Negative pulse logic	Signal
(DE)	Ausgang A	Ausgang B	Passiver Ausgang - keine Polarität - Open Drain	Positive Impuls-logik	Negative Impulslogik	Signal
(FR)	Sortie A	Sortie B	Sortie passive, pas de polarisation, drain ouvert	Logique d'im-pulsion positive	Logique d'im-pulsion négative	Signal
(ES)	Salida A	Salida B	Salida pasiva - sin polarización - drenaje abierto	Lógica positiva	Lógica negativa	Señal
(IT)	Uscita A	Uscita B	Uscita passiva - senza polarizzazione - scarico aperto	Logica positiva	Logica negativa	Segnale

(EN) Cable installation
(DE) Anschluss des Kabels
(FR) Installation du câble
(ES) Instalación del cable
(IT) Installazione cavi



(EN) **Commissioning and operation**
(DE) **Inbetriebnahme und Betrieb**
(FR) **Mise en service et fonctionnement**
(ES) **Puesta en marcha y funcionamiento**
(IT) **Messa in servizio e funzionamento**

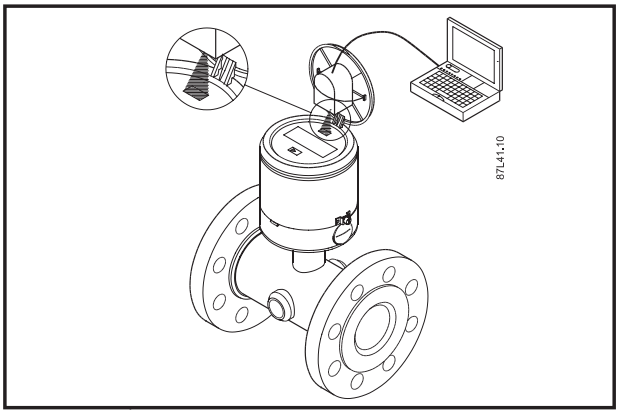
(EN) For detailed settings refer to the Operating Manual on the enclosed DVD.

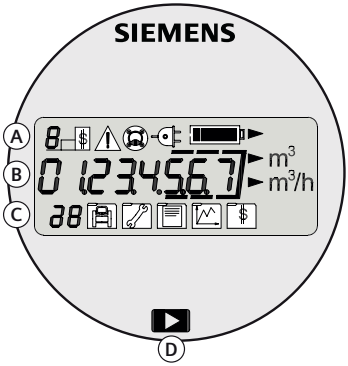
(DE) Detaillierte Angaben zu den Einstellungen finden Sie in der Betriebsanleitung auf der beigefügten DVD.

(FR) Pour plus de détails sur les réglages se reporter au Manuel d'utilisation sur le DVD fourni.

(ES) Para más detalles sobre los ajustes ver el Manual de funcionamiento en el DVD.

(IT) Per i dettagli consultare le istruzioni operative sul DVD i dotazione.





	Ⓐ	Ⓑ	Ⓒ	Ⓓ
(EN)	Status	Measured Value	Index number, menu symbols	Menu button
(DE)	Status	Messwert	Indexnummer, Menüsymbole	Menütaste
(FR)	Etat	Valeur mesurée	Numéro d'index, symbôles menu	Touche Menu
(ES)	Estado	Valor medido	Número de índice, símbolos de menú	Botón menú
(IT)	Stato	Valore misurato	Numero indice, simboli menù	Pulsante menù

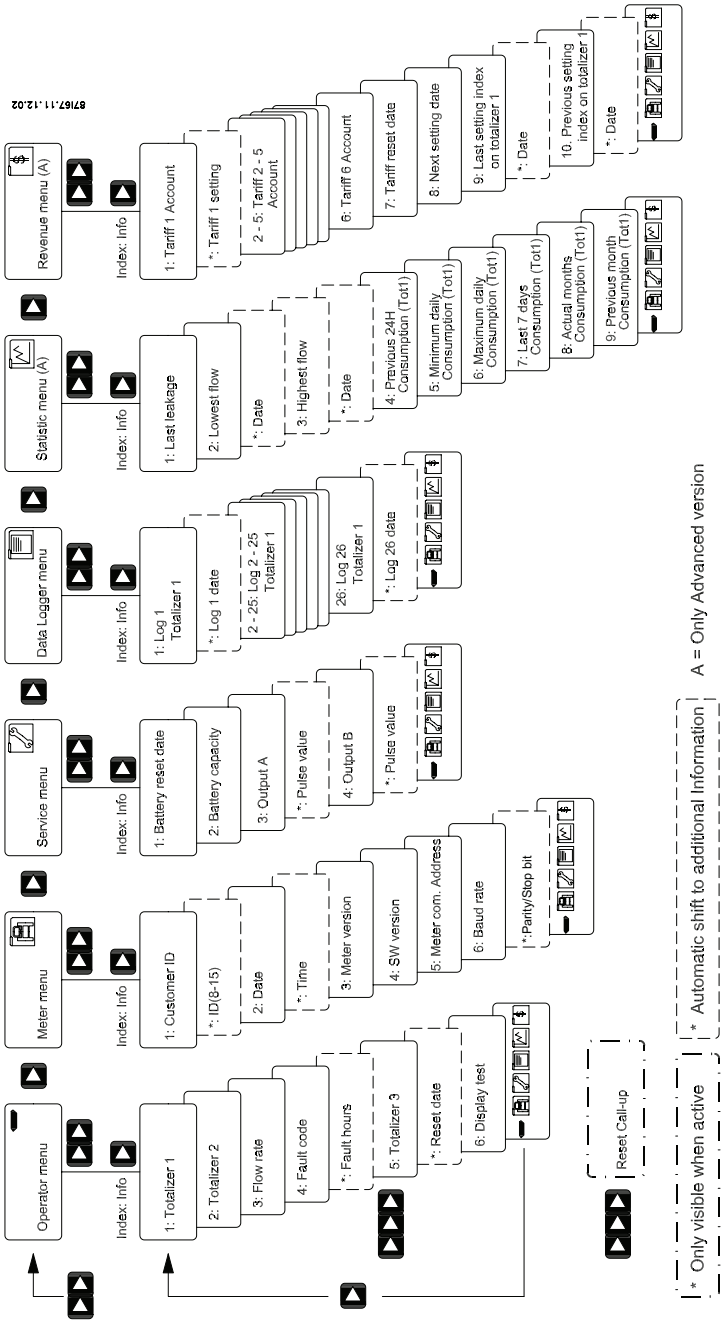
Ⓐ	(EN)	(DE)	(FR)	(ES)	(IT)
	Status	**Status**	**Etat**	**Estado**	**Stato**
	Current tariff account or reset indication	Aktueller Tarif oder Resetanzeige	Indication du tarif actuel ou de la réinitialisation	Indicación de tarifa actual o reiniciación	Attuale conto tariffario o indicazione ripristino
	Alarm active	Alarm aktiv	Alarme activée	Activación alarma	Allarme attivo
	Empty pipe mode active	Leerrohrmodus aktiv	Mode tuyau vide activé	Activación modo tubería vacía	Modalità tubo vuoto attiva
	Mains power supply	Stromnetz-anschluss	Branchement au secteur	Suministro eléctrico principal	Alimentazione elettrica
	Battery power supply and energy status	Batterie-versorgung und -ladezustand	Etat alimentation et énergie batterie	Estado alimentación y energía batería	Alimentazione batteria e stato energetico

(EN) **Commissioning and operation**
(DE) **Inbetriebnahme und Betrieb**
(FR) **Mise en service et fonctionnement**
(ES) **Puesta en marcha y funcionamiento**
(IT) **Messa in servizio e funzionamento**

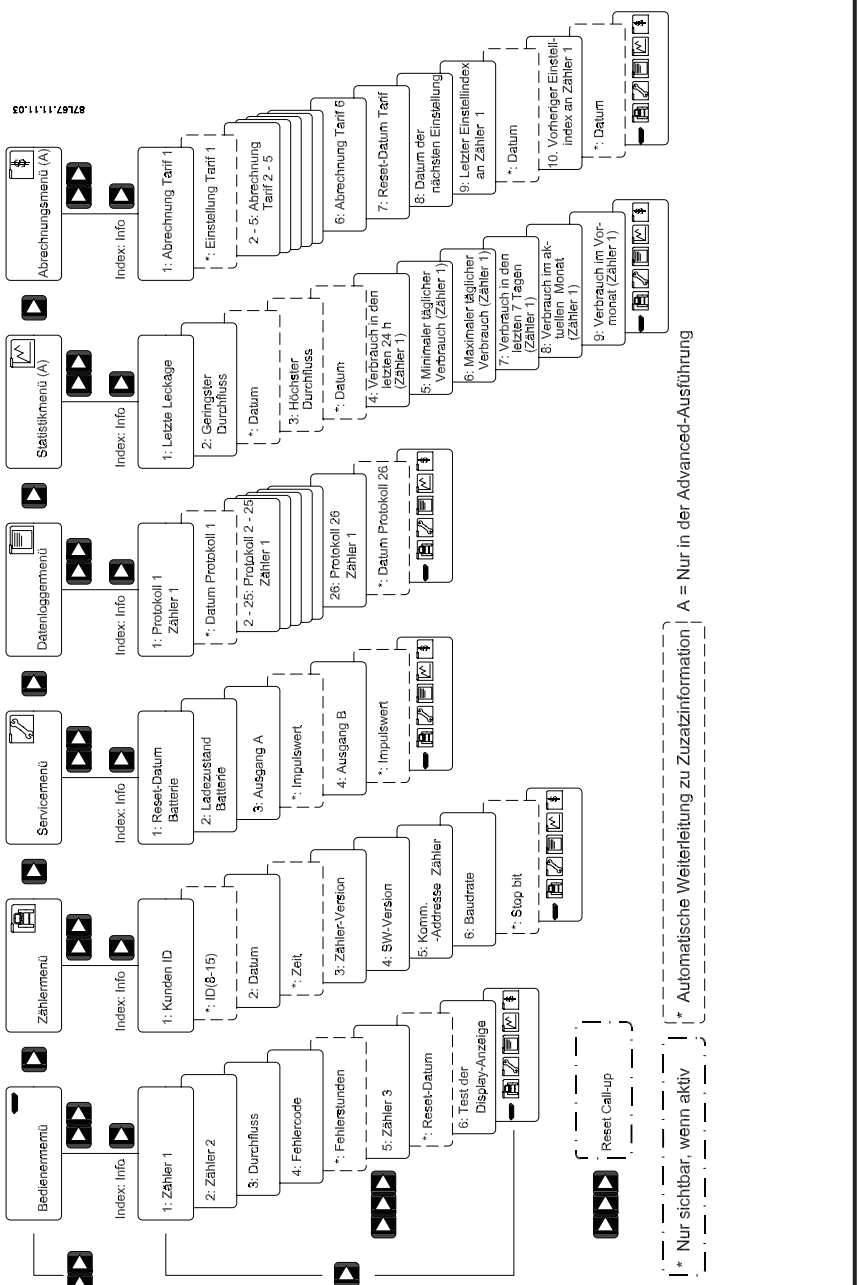
Ⓒ	(EN)	(DE)	(FR)	(ES)	(IT)
	Index number, menu symbols	**Indexnummer, Menüsymbole**	**Numéro d'index, symbôles menu**	**Número de índice, símbolos de menú**	**Numero indice, simboli menù**
38 A	Index for current menu or indication of acceptable value	Index für aktuelles Menü oder für akzeptierbaren Wert	Index menu actuel ou indication d'une valeur acceptable	Indice para el menú actual o indicación del valor aceptable	Indice per il menù attuale o indicazione di valore accettabile
—	Default operator-menu	Standard-Bedienermenü	Menu de l'opérateur affecter	Menú del operador por defecto	Menù operatore preimpostato
	Meter information menu	Zählerinformationsmenü	Menu Information du compteur	Menú de Información del contador	Menù informazione misuratore
	Service menu	Servicemenü	Menu maintenance	Menú de servicio técnico	Menù servizio
	Data logger menu	Datenprotokoll-Menü	Menu enregistreur de données	Menú del registrador de datos	Menù registratore dati
	Statistic menu	Statistikmenü	Menu statistiques	Menú de estadísticas	Menù statistica
	Tariff menu	Tarifmenü	Menu revenus/tarif	Menú de ingresos/ Tarifa	Menù tariffario

Ⓓ	(EN)	(DE)	(FR)	(ES)	(IT)
	Press ▶	**Drücken Sie ▶**	**Appuyer sur ▶**	**Pulsar ▶**	**Premere ▶**
< 2 sec.	Next index or menu	Nächster Index oder nächstes Menü	Index ou menu suiv-ants	Indice o menú siguiente	Indice o menù successivo
> 2 sec. < 5 sec.	Escape menu (menu symbol flashes)	Menü verlassen (Menüsymbol blinkt)	Menu Abandon (le symbôle du menu clignote)	Menú ESC (símbolo menú parpadea)	Menù per terminare (simbolo menù lampeggia)
> 5 sec.	Reset information or accept the function (index symbol flashes)	Information rücksetzen oder Funktion akzeptieren oder (Index-Symbol blinkt)	Valider ou effacer la donnée ou la fonction (le symbôle d'index clignote)	Reinicializar datos o aceptar función (símbolo menú parpadea)	Ripristino informazione o accettare funzione (simbolo indice lampeggia)
r	Reset possible	Rücksetzen möglich	Réinitialisation possible	Reiniciación posible	Ripristino possibile
r	Reset accepted	Rücksetzen akzeptiert	Réinitialisation validée	Reiniciación aceptada	Ripristino accettato
A	Value/information acceptable	Wert/Information ist akzeptierbar	Valeur/donnée acceptable	Valor/dato aceptable	Valore/informazione accettabili
A	Change accepted	Änderung akzeptiert	Modification validée	Modificación aceptada	Modifica accettata

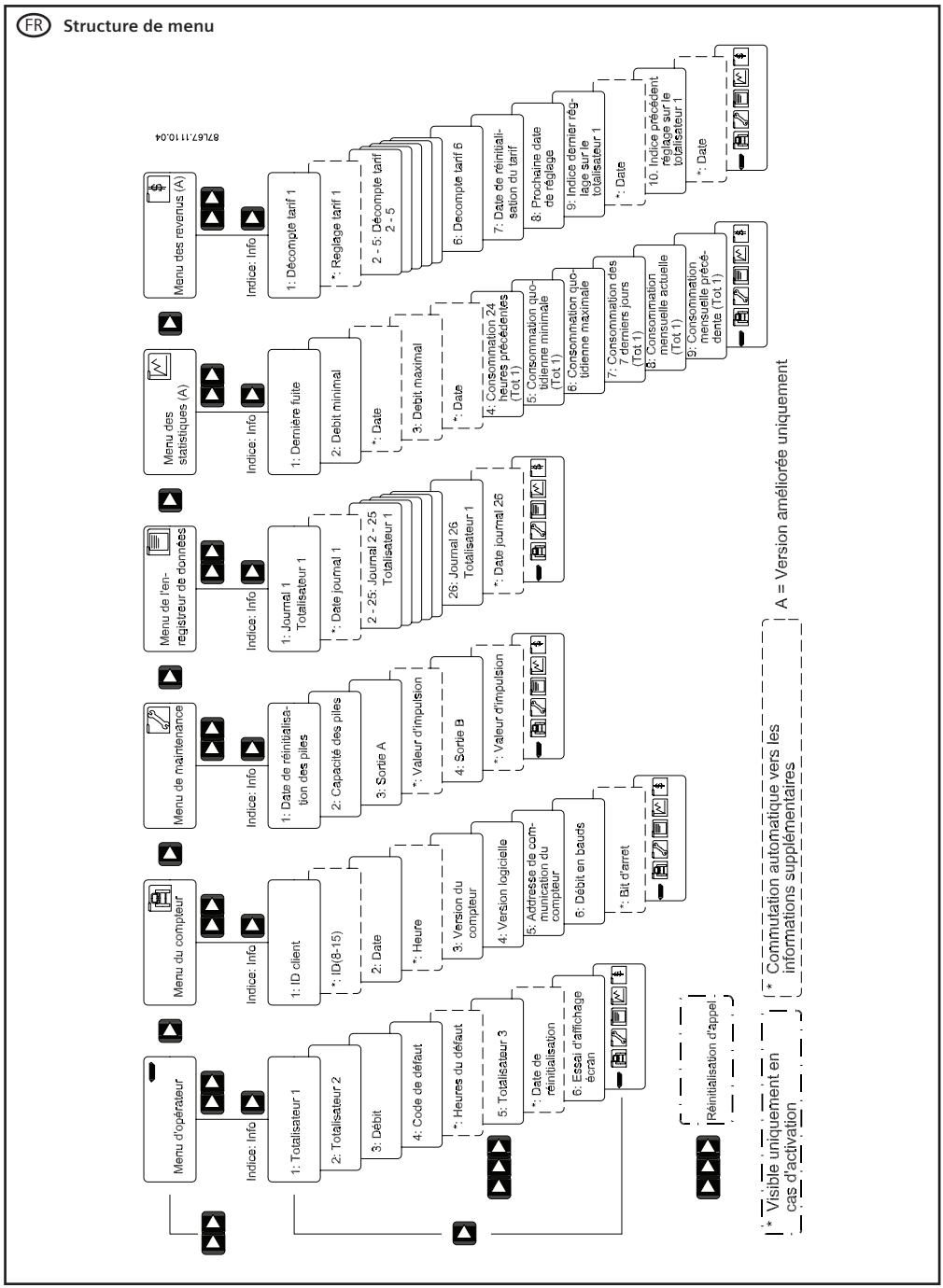
EN **Menu structure**



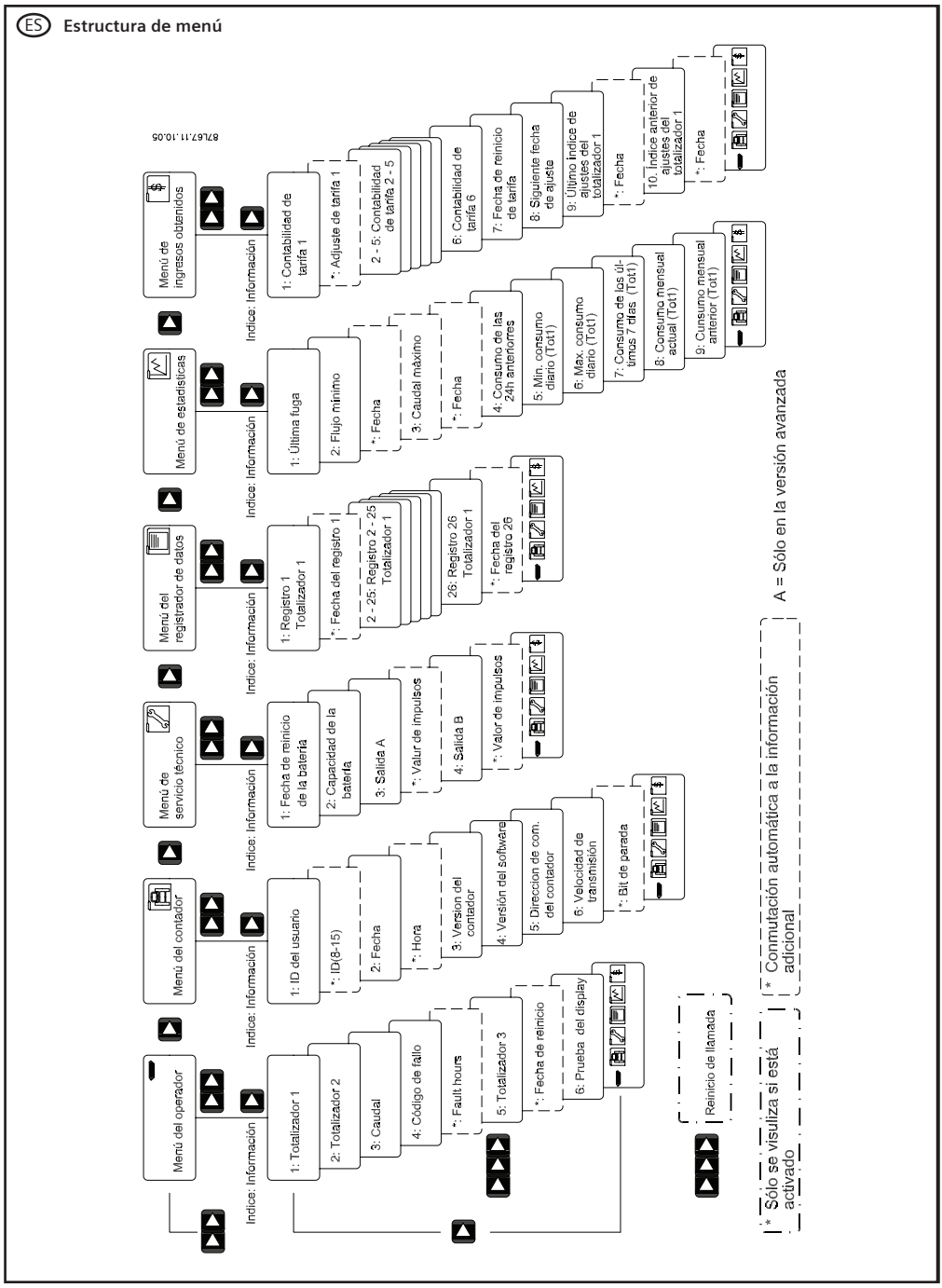
DE **Menüstruktur**



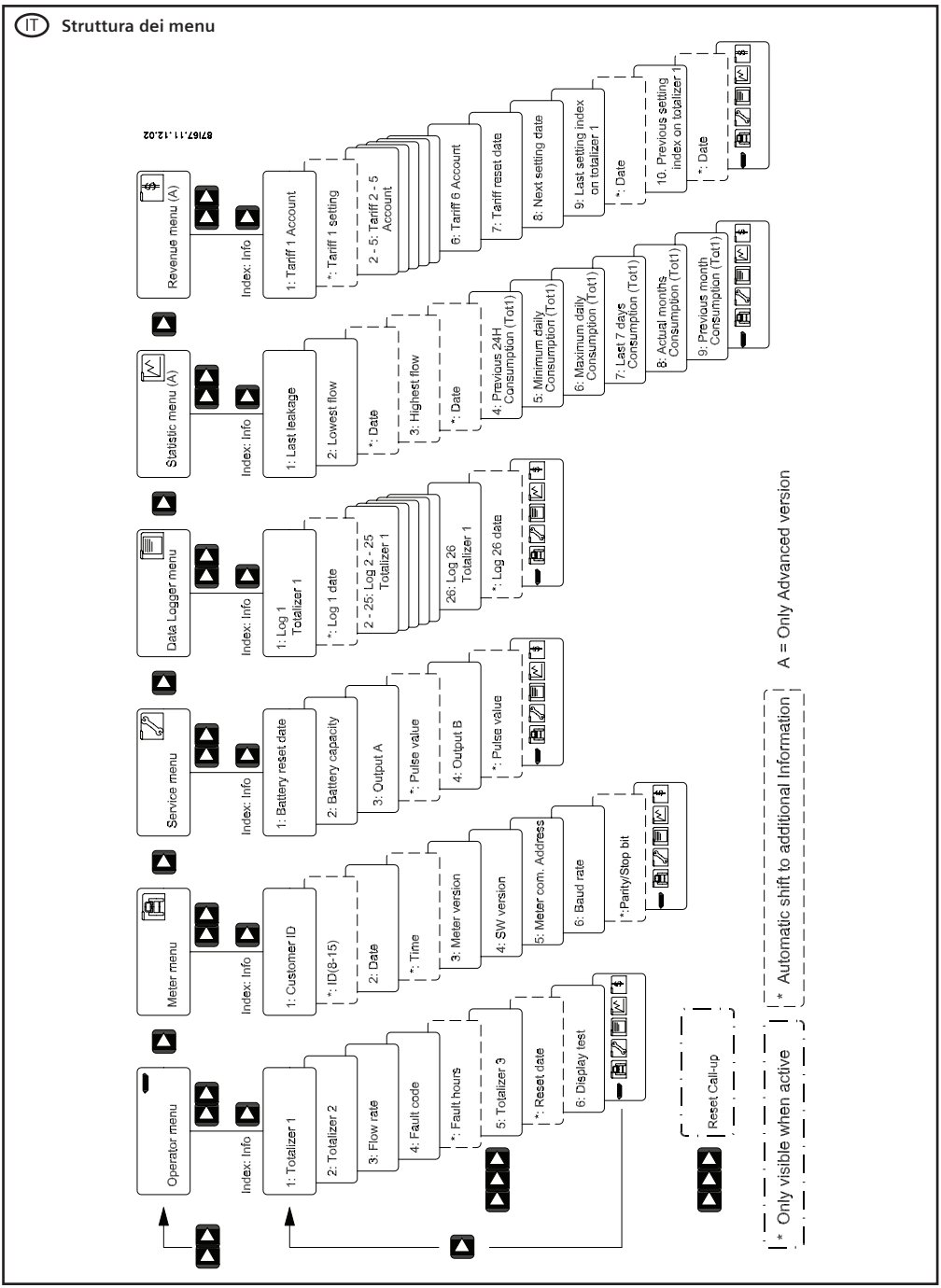
FR **Structure de menu**



(ES) **Estructura de menú**



IT **Struttura dei menu**



Siemens AG
76187 Karlsruhe
GERMANY
www.siemens.com/flowdocumentation

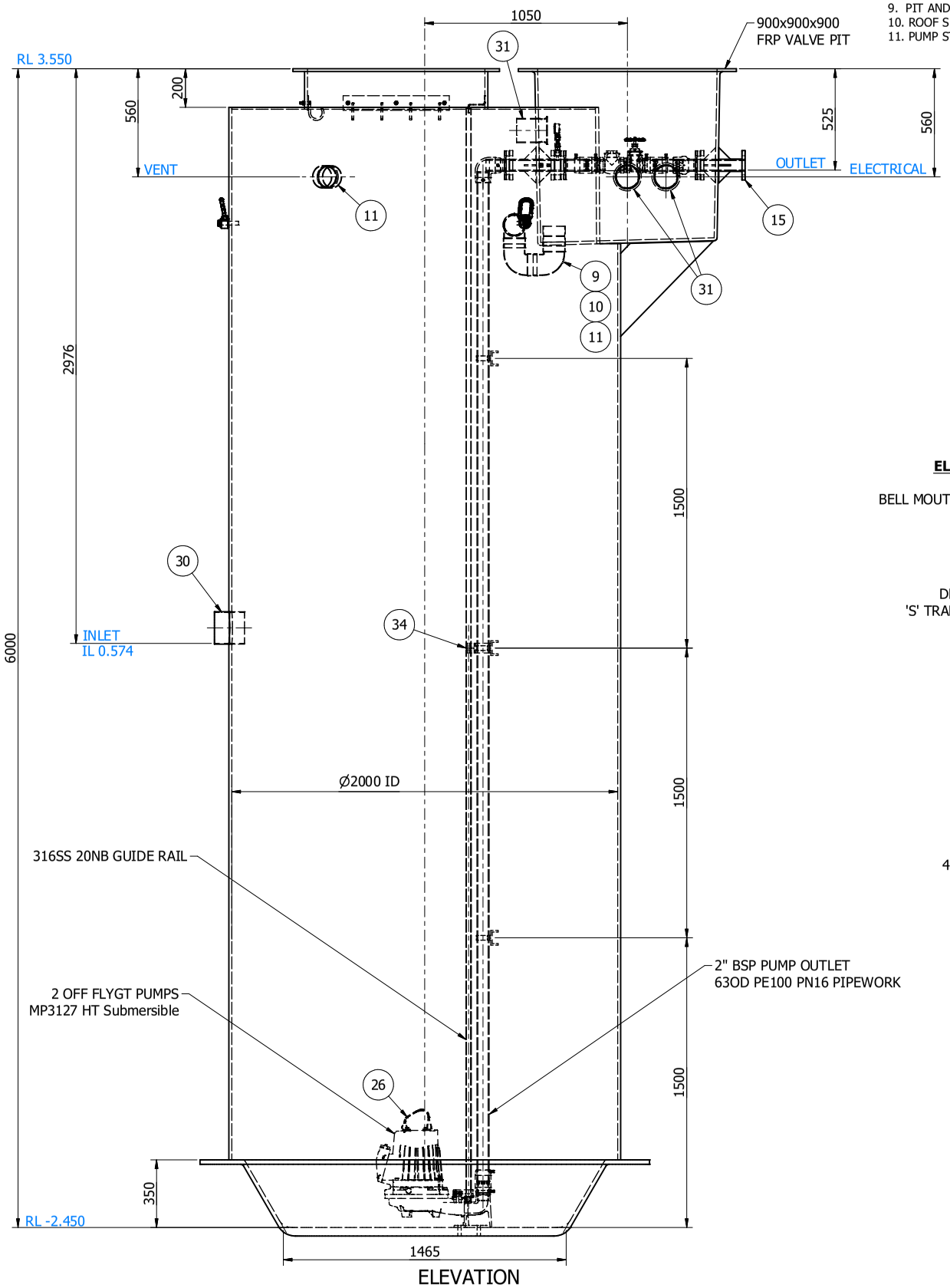
A5E01222842-AB

PARTS LIST			PARTS LIST		
ITEM	DESCRIPTION	SIZE	ITEM	DESCRIPTION	SIZE
9	PVC PIPING	110mm PVC 90 BEND MF	26	ASSEMBLY	FLYGT MP 3127 HT,LT 5391100 2inch DISCHARGE
10	FROG FLAP	110mm PVC FLAP	28	HATCH	AUSTRAL TSP9090 HATCH 750x810 CO
11	COUPLING	DN100 DWV COUPLING	29	FLANGE	PRESSURE TEST POINT
13	COUPLING	VICTAULIC 905 TYPE COUPLING	30	COUPLING	DN150 DWV COUPLING
15	FLANGE	DN50 TBL'D' FRP NOZZLE	31	SPIGOT	DN100 ELECTRICAL SPIGOT
16	GATE VALVE	50NB GATE VALVE	34	PIPE SUPPORT	CENTRE GUIDE RAIL SUPPORT
17	CHECK VALVE	DN50 BRONZE CHECK VALVE (SCREW)	36	HATCH	AUSTRAL TSP1290 HATCH 1050x810 CO

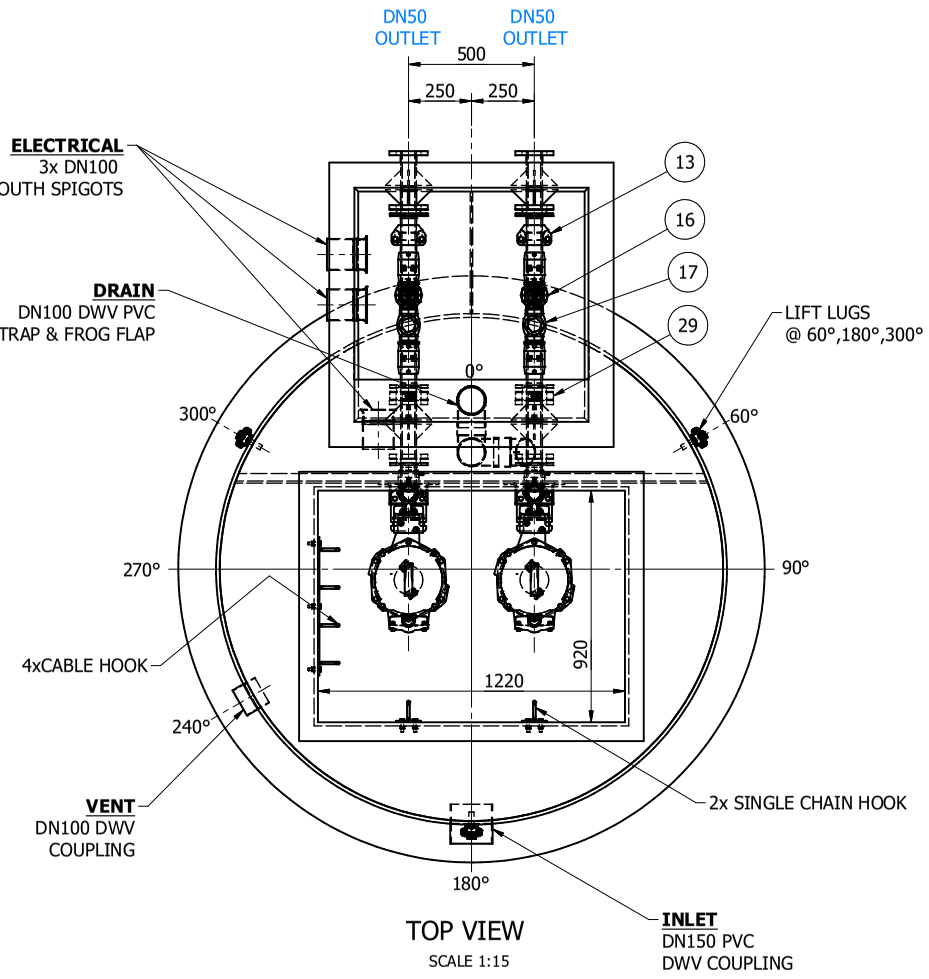
NOTES:
1. COMBO WELL TO BE MANUFACTURED IN ACCORDANCE WITH MULLALY SPECIFICATION - MESPEC01.
2. COMBO WELL TO BE INSTALLED IN ACCORDANCE WITH MULLALY INSTALLATION INSTRUCTIONS.
3. CONCRETE BALLAST CALCULATIONS PROVIDED TO INSTALLER.
4. FLANGE DRILLINGS TO AS4087 PN16.
5. IN THE COMBO WELL, ALL BOLTS TO BE GRADE 316 STAINLESS STEEL AND ALL NUTS AND WASHERS TO BE GRADE 304 STAINLESS STEEL.
6. VALVES TO BE BSP, METAL SEATED, BRONZE AND CLOCKWISE CLOSING WITH HANDWHEEL.
7. NON-RETURN VALVES (REFLUX VALVES) TO BE BSP, RESILIENT SEATED, AND BRONZE.
8. ALL METALWORK TO WET WELL EXCEPT LIDS TO BE STAINLESS STEEL. ALL METALWORK TO VALVE PIT EXCEPT LIDS TO BE STAINLESS STEEL. BACKING RINGS REQUIRED TO ALL PE FLANGES.
9. PIT AND WET WELL COVERS TO BE AUSTRAL HATCH COVER.
10. ROOF SLAB DESIGN BY OTHERS.
11. PUMP STATION APPROX. MASS=1800kg W/OUT PUMPS AND COVERS

CONSTRUCTION APPROVAL

CUSTOMER SIGN _____ DATE _____



ELEVATION
SCALE 1:15



TOP VIEW
SCALE 1:15

REV.	DESCRIPTION	BY/DATE	CHK/DATE		REFERENCE DRAWINGS
B	IL OF VENT AND ELECTRICAL CONDUITS CHANGED	MG 08.06.2021	JM 08.06.2021		
A	FIRST ISSUE	MG 08.06.2021	JM 08.06.2021		

513 TOMAGO ROAD
TOMAGO 2322
PHONE - 02 4964 8270
FAX - 02 4964 8522
TANKSOLUTIONS.COM.AU

TANK SOLUTIONS
FUEL · CHEMICALS · WATER

ENGINEERING STATUS
- ☐ FOR INFORMATION
- ■ FOR APPROVAL
- ☐ RELEASED FOR CONSTR.
- ☐ AS BUILT

SCALE U.N.O.
A1
841 x 597

TITLE
PPS
Mossman Over50s
ME 200 x 600 SEWAGE COMBO PUMP STATION
GENERAL ARRANGEMENT

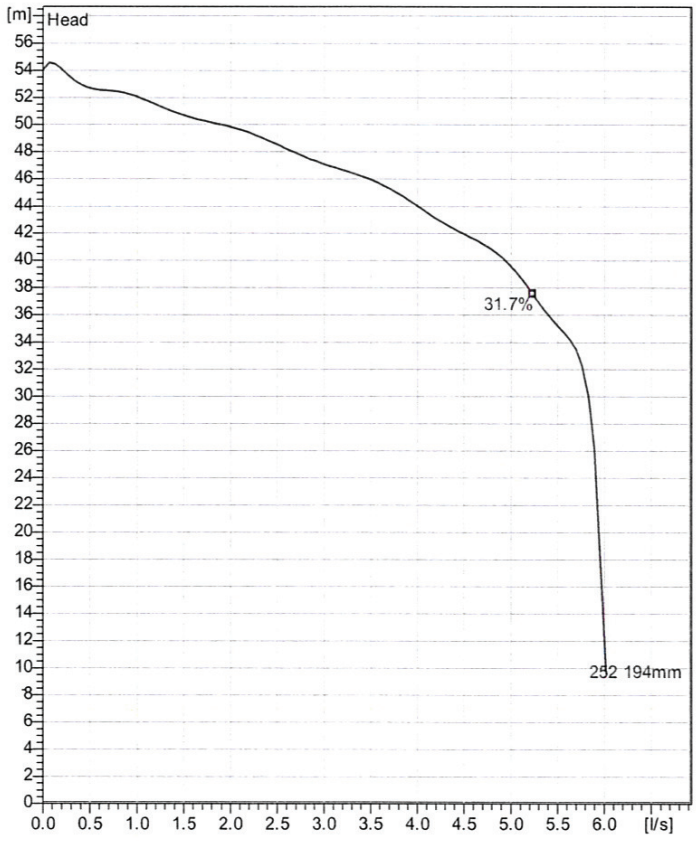
TANK No. N01263
DRAWING No. PSC-2009-006
SHEET No. 1 of 1
REVISION B

xylem
Let's Solve Water

MP 3127 HT 3~ 252

Technical specification

FLYGT

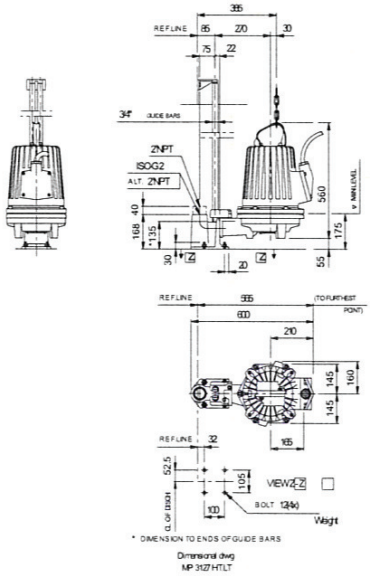


Curve according to: ISO 9906

Note: Picture might not correspond to the current configuration.

General
Semi-open multi-channel impellers with integral grinder cutter in single volute casing for liquids containing solids and fibres.

Installation: P - Semi permanent, Wet



Impeller

Impeller material	Grey cast iron
Outlet width	50 mm
Inlet diameter	80 mm
Impeller diameter	194 mm
Number of blades	6

Motor

Motor #	M3127.170 21-11-2AL-W 7.4KW
Stator variant	40
Frequency	50 Hz
Rated voltage	400 V
Number of poles	2
Phases	3~
Rated power	7.4 kW
Rated current	15 A
Starting current	137 A
Rated speed	2920 1/min
Power factor	
1/1 Load	0.84
3/4 Load	0.79
1/2 Load	0.69
Efficiency	
1/1 Load	84.5 %
3/4 Load	84.0 %
1/2 Load	81.0 %

Configuration

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Performance curve

Pump

Outlet width	50 mm
Inlet diameter	80 mm
Impeller diameter	194 mm
Number of blades	6

Motor

Motor #	M3127.170 21-11-2AL-W 7.4KW
Stator variant	40
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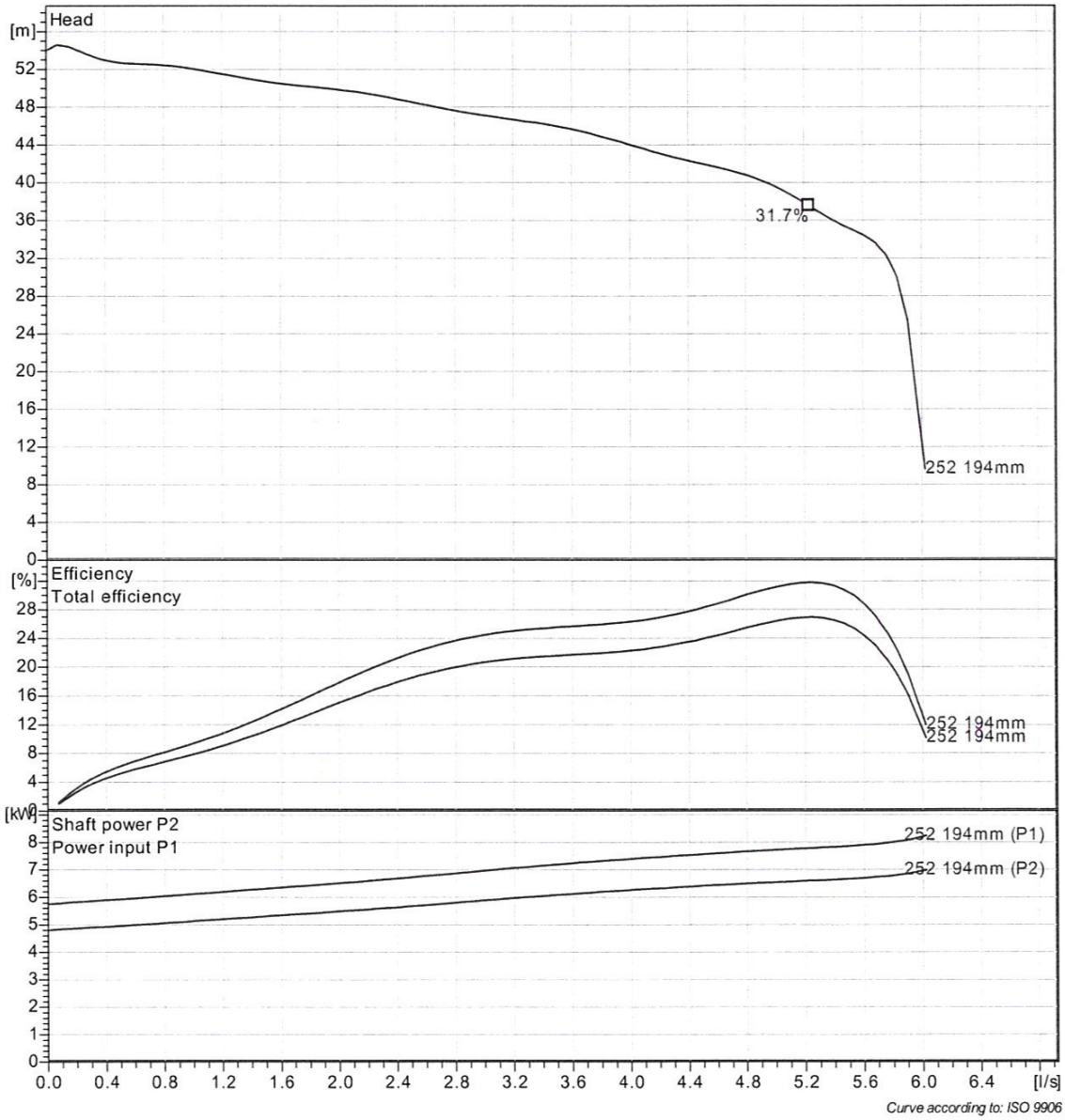

Curve according to: ISO 9906

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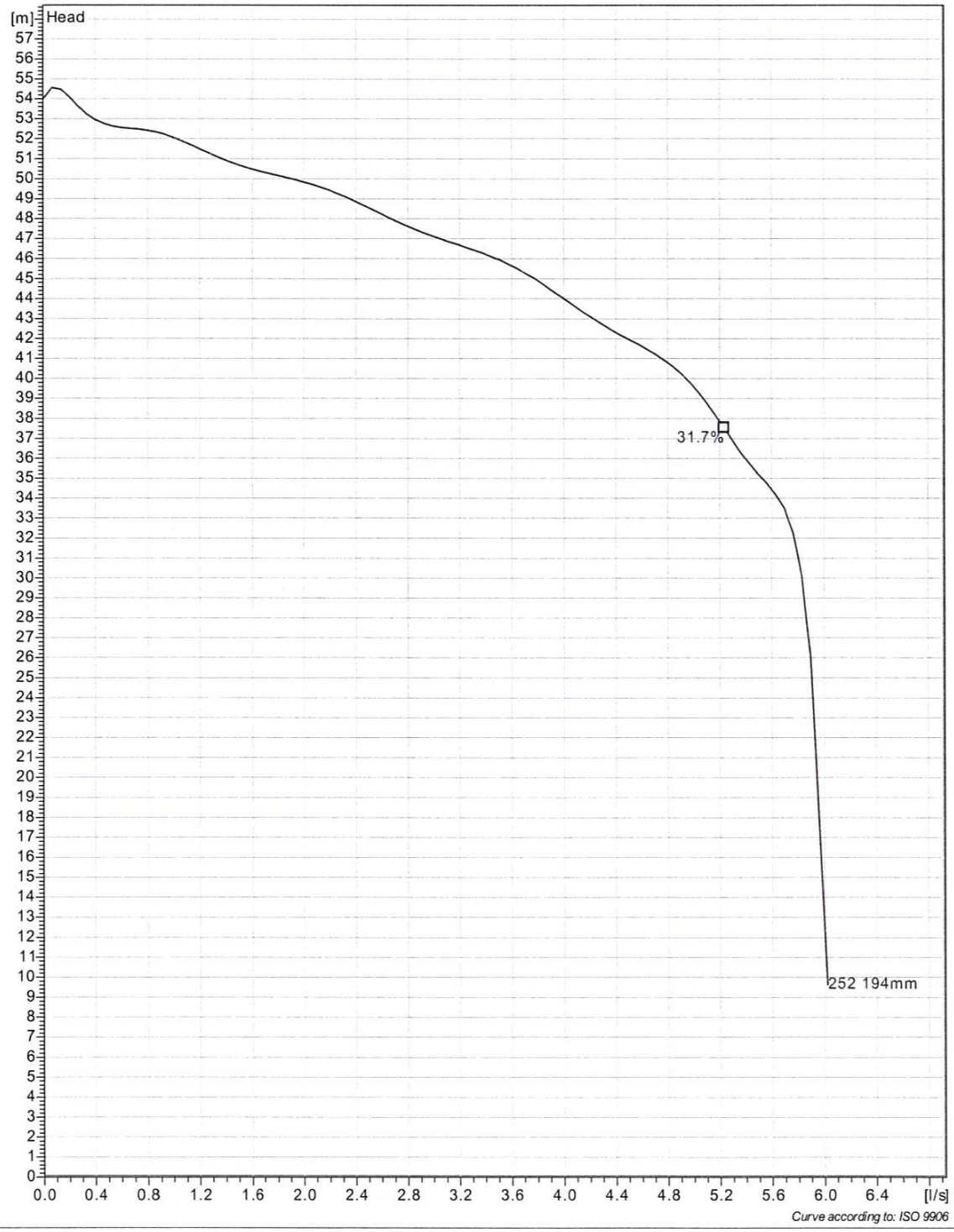
Duty Analysis



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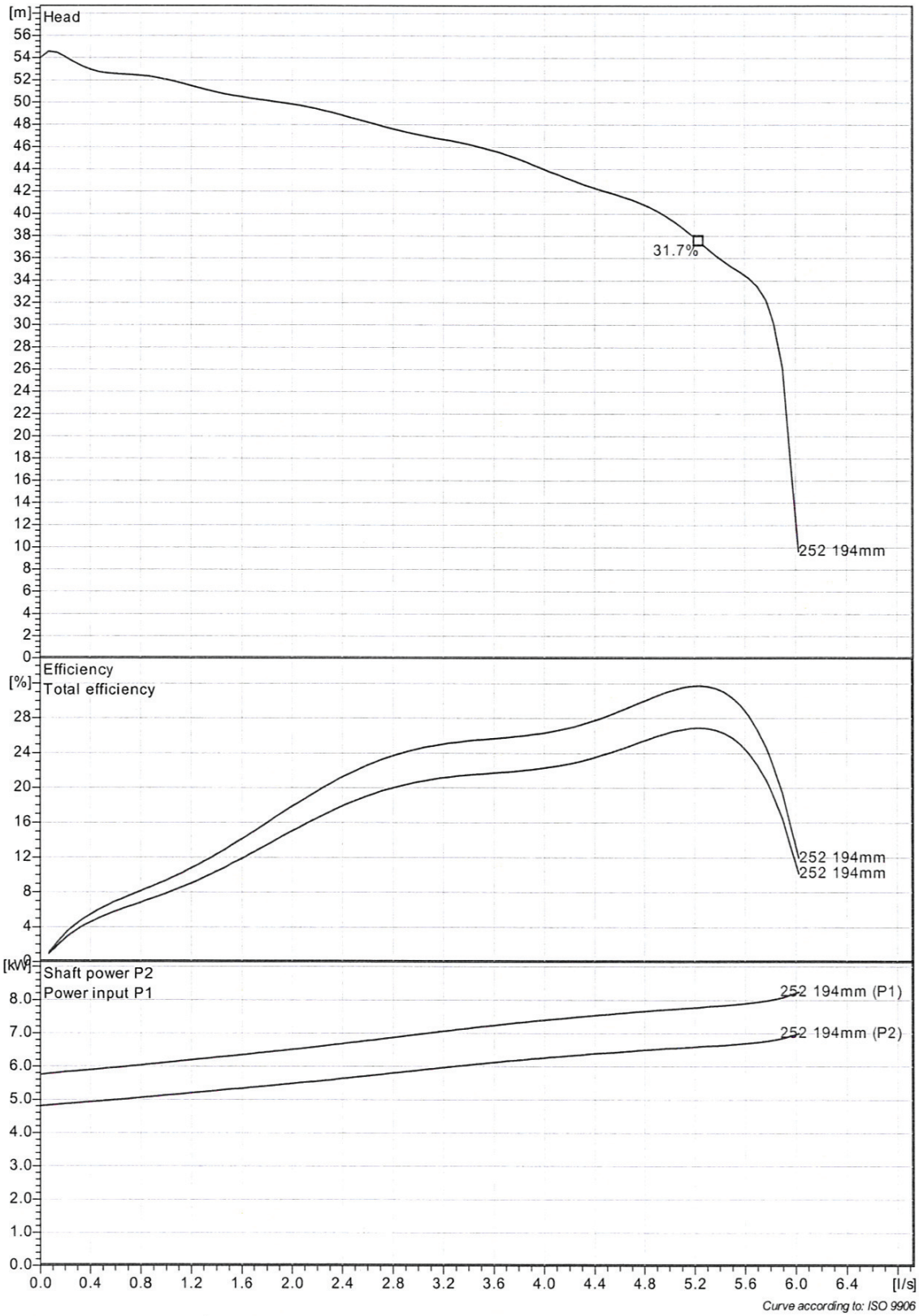
VFD Curve



Curve according to: ISO 9906

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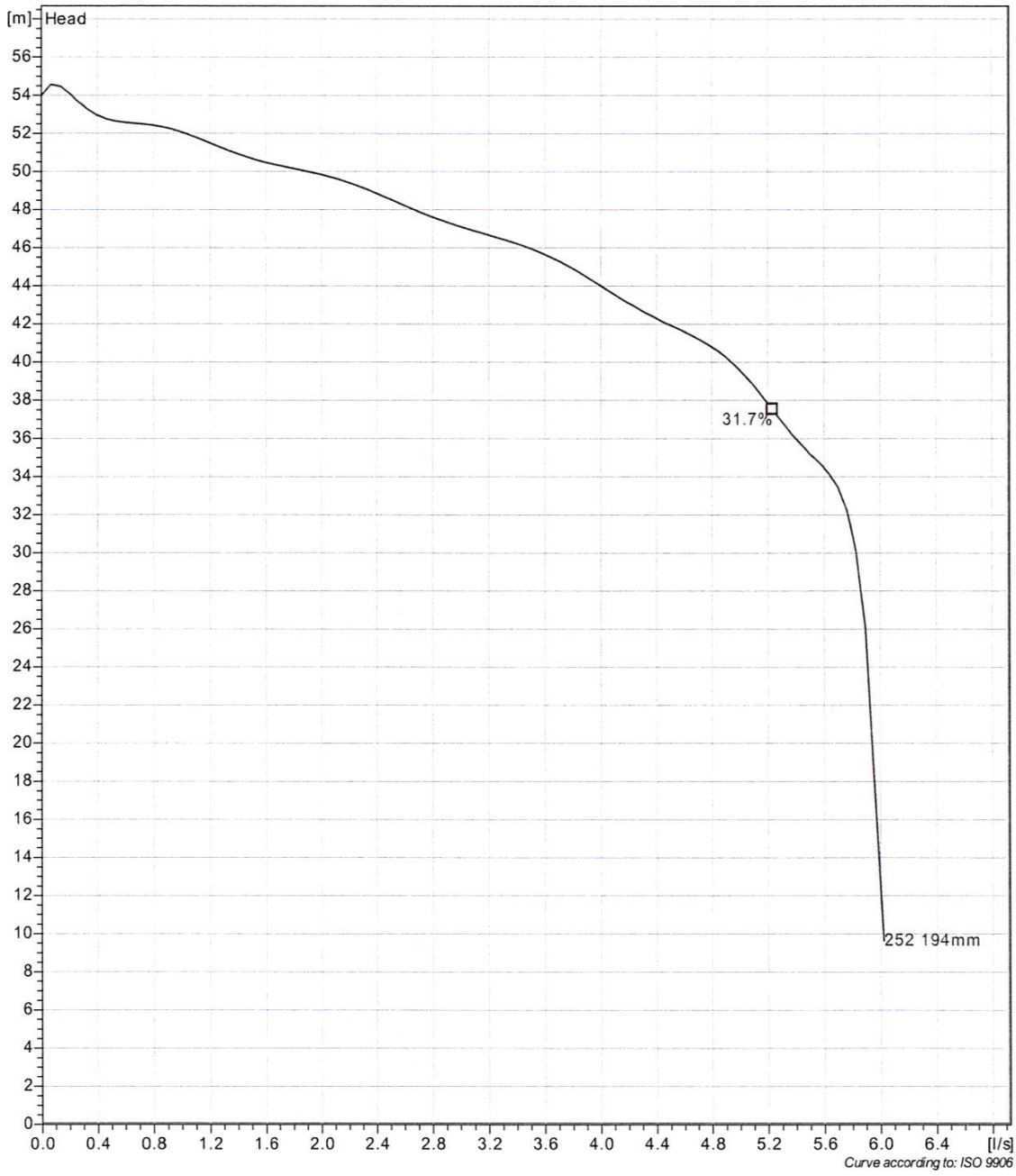
VFD Analysis



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Dimensional drawing

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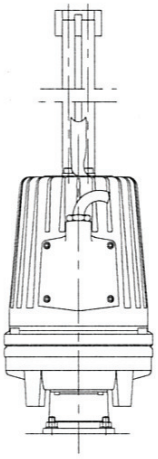

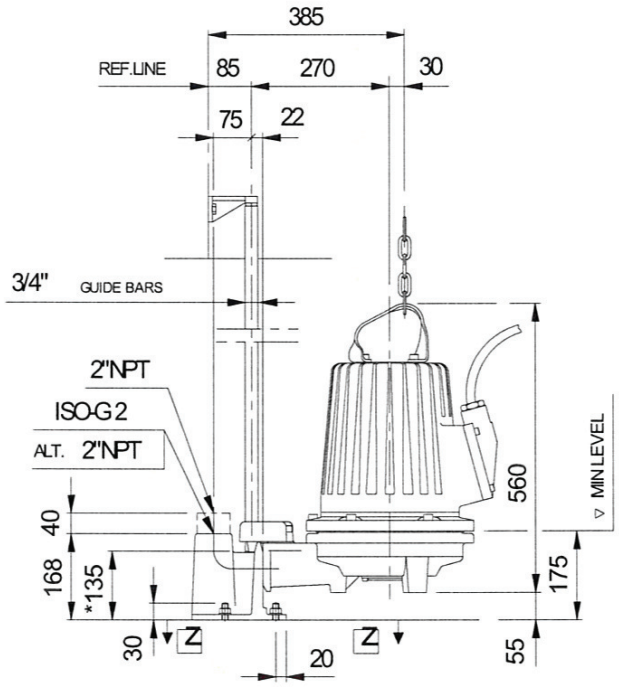

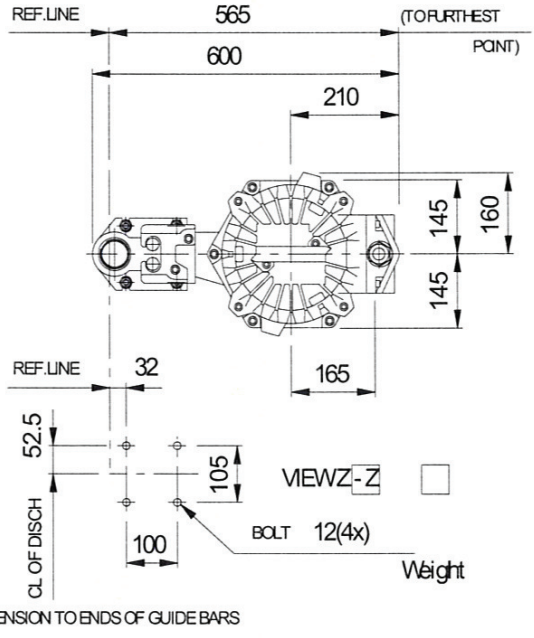

* DIMENSION TO ENDS OF GUIDE BARS

Dimensional dwg
MP3127HT,LT

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