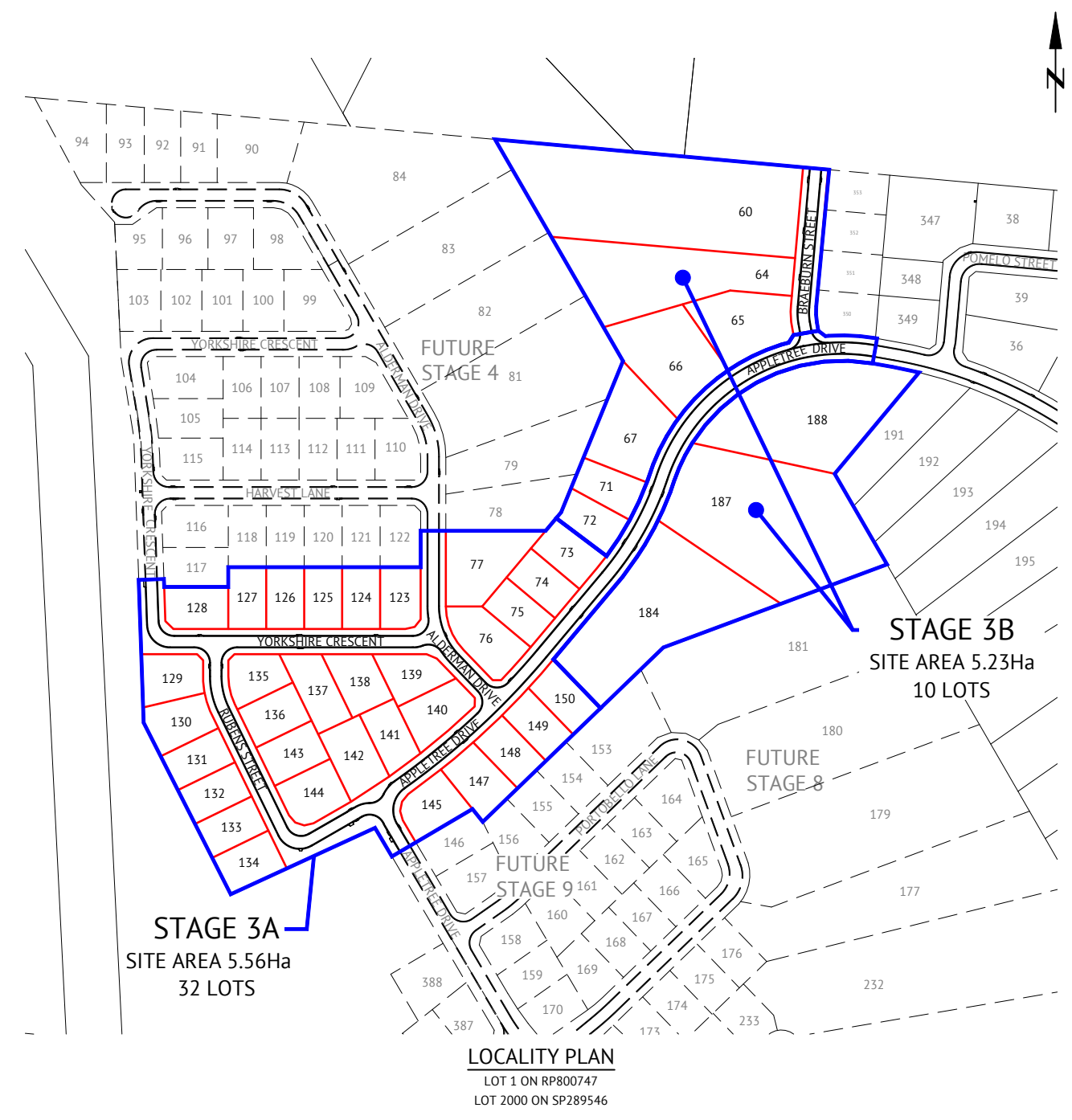


# THE ORCHARD STAGE 3

## DARLING ROAD, JENSEN

### FOR ELEMENTS NQ PTY LTD



SHEET LIST TABLE	
SHEET NO.	SHEET TITLE
C001	COVER SHEET, LOCALITY PLAN & DRAWING SCHEDULE
C002	SAFETY IN DESIGN REPORT
C003	ROAD GEOMETRY PLAN
C004	EARTHWORKS LAYOUT PLAN - SHEET 1 OF 3
C005	EARTHWORKS LAYOUT PLAN - SHEET 2 OF 3
C006	EARTHWORKS LAYOUT PLAN - SHEET 3 OF 3
C007	ROADWORKS & STORMWATER DRAINAGE PLAN - SHEET 1 OF 3
C008	ROADWORKS & STORMWATER DRAINAGE PLAN - SHEET 2 OF 3
C009	ROADWORKS & STORMWATER DRAINAGE PLAN - SHEET 3 OF 3
C010	APPLETREE DRIVE LONGITUDINAL SECTION - SHEET 1 OF 2
C011	APPLETREE DRIVE LONGITUDINAL SECTION - SHEET 2 OF 2
C012	APPLETREE DRIVE CROSS SECTIONS - SHEET 1 OF 2
C013	APPLETREE DRIVE CROSS SECTIONS - SHEET 2 OF 2
C014	BRAEBURN STREET LONGITUDINAL & CROSS SECTIONS
C015	DELETED
C016	ALDERMAN DRIVE LONGITUDINAL & CROSS SECTIONS
C017	RUBENS STREET LONGITUDINAL SECTION
C018	RUBENS STREET CROSS SECTIONS
C019	YORKSHIRE CRESCENT LONGITUDINAL SECTION
C020	YORKSHIRE CRESCENT CROSS SECTIONS
C021	ROADWORKS DETAILS PLAN
C022	DELETED
C023	Q2 STORMWATER LONGITUDINAL SECTION - SHEET 1 OF 2
C024	Q2 STORMWATER LONGITUDINAL SECTION - SHEET 2 OF 2
C025	WATER & SEWERAGE RETICULATION PLAN - SHEET 1 OF 3
C026	WATER & SEWERAGE RETICULATION PLAN - SHEET 2 OF 3
C027	WATER & SEWERAGE RETICULATION PLAN - SHEET 3 OF 3
C028	SEWER LONGITUDINAL SECTIONS - SHEET 1 OF 3
C029	SEWER LONGITUDINAL SECTIONS - SHEET 2 OF 3
C030	SEWER LONGITUDINAL SECTIONS - SHEET 3 OF 3
C031	SOIL EROSION & SEDIMENT CONTROL - CONSTRUCTION PHASE
C032	SOIL EROSION & SEDIMENT CONTROL - POST CONSTRUCTION PHASE
C033	SOIL EROSION & SEDIMENT CONTROL - DETAILS PLAN
C034	Q2 STORMWATER CATCHMENT PLAN
C035	Q2 STORMWATER DATA TABLE
C036	Q100 STORMWATER CATCHMENT PLAN & DATA TABLES

SURVEY BY BRAZIER MOTTI	
VERTICAL ALIGNMENT BASED ON	
PSM 130676	RL = 19.506
PSM 106258	RL = 17.525
PSM 121574	RL = 16902
PSM 131697	RL = 16.732
HORIZONTAL ALIGNMENT BASED ON THE FOLLOWING PSM AND THEIR COORDINATES	
PSM 131697	
PSM 56629	
PSM 98041	
PSM 130676	
PSM 121640	
PSM 106258	

PRELIMINARY - NOT FOR CONSTRUCTION

16/12/20	3	LOT LAYOUT REVISED	GB	PP
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17/07/20	1	FOR BULK EARTHWORKS APPROVAL	GB	PP
DATE	REV	DESCRIPTION	REC	APP

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G.BROSANAN  
CHECKED  
P.PETERSEN  
PROJECT MANAGER  
P.PETERSEN  
ENGINEERING CERTIFICATION  
P.PETERSEN RPEQ 13231

SCALE  
0 40 80 120m  
SCALE 1:2000 (A1)  
ORIGINAL SHEET SIZE A1

CLIENT  
ELEMENTS NQ PTY LTD

PROJECT  
THE ORCHARD - STAGE 3

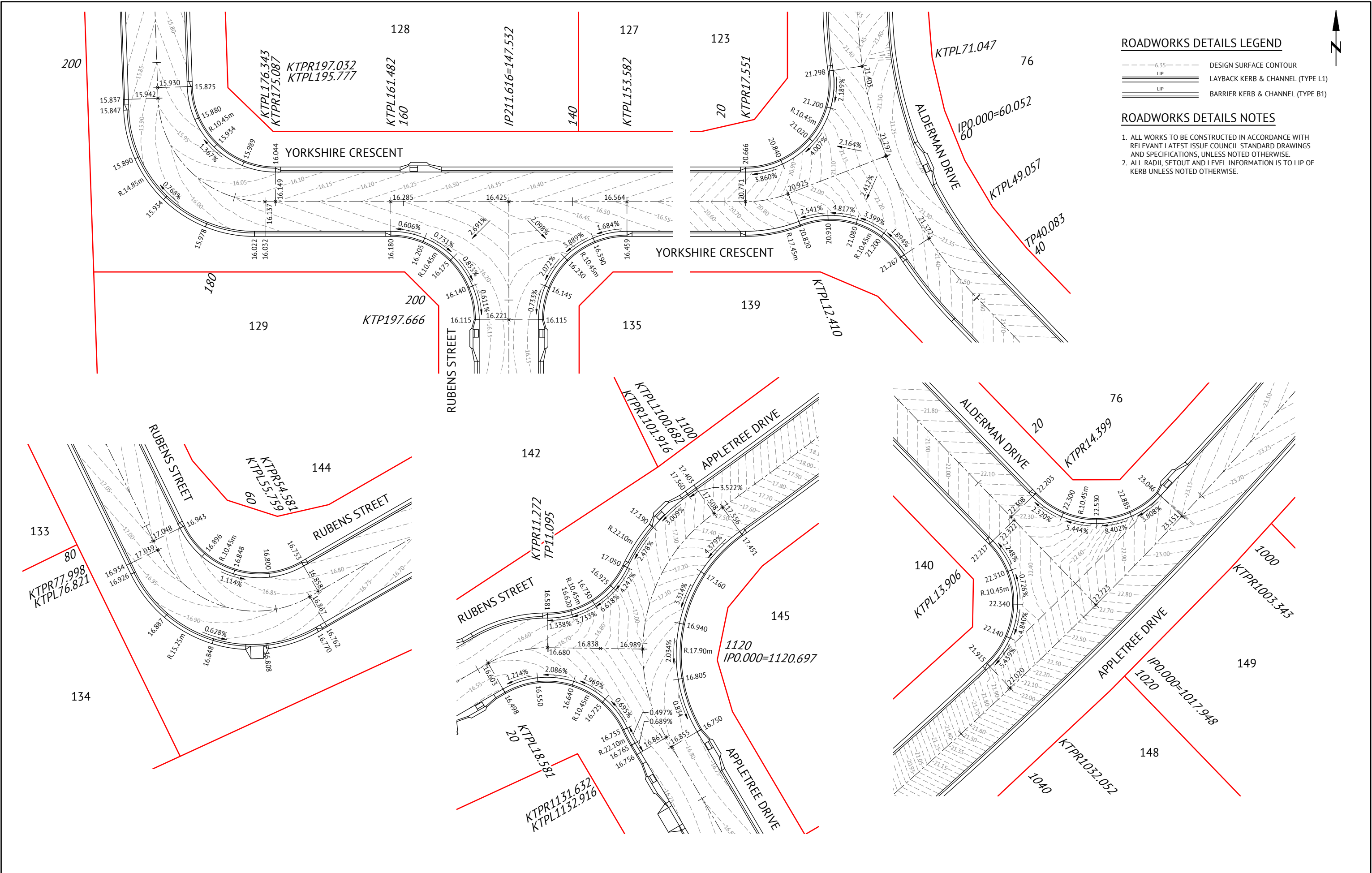
LOCATION  
DARLING ROAD, JENSEN

SHEET TITLE  
COVER SHEET, LOCALITY PLAN & DRAWING SCHEDULE

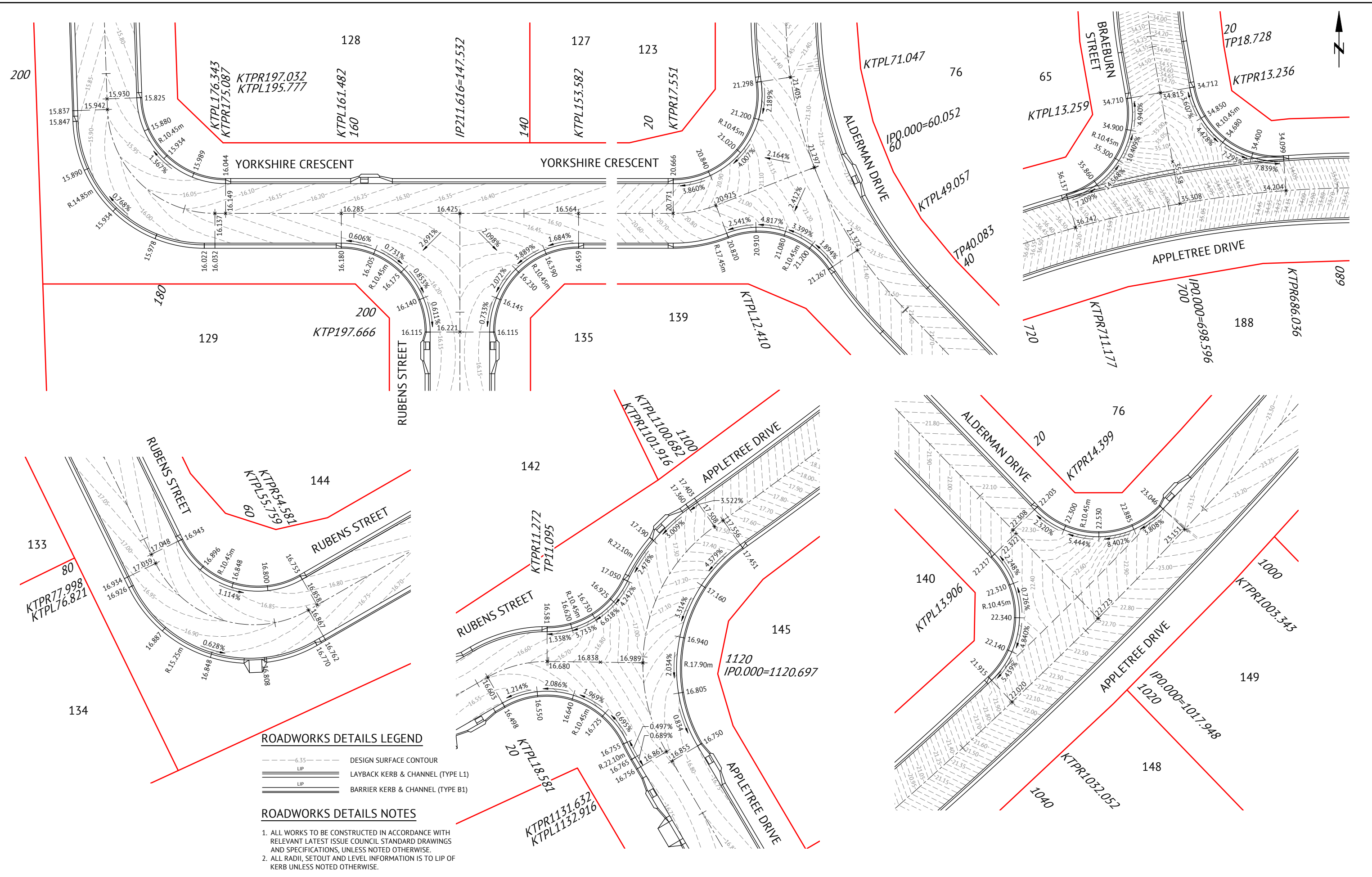
JOB CODE  
ELE-0006

SHEET NUMBER  
C001

REV  
3







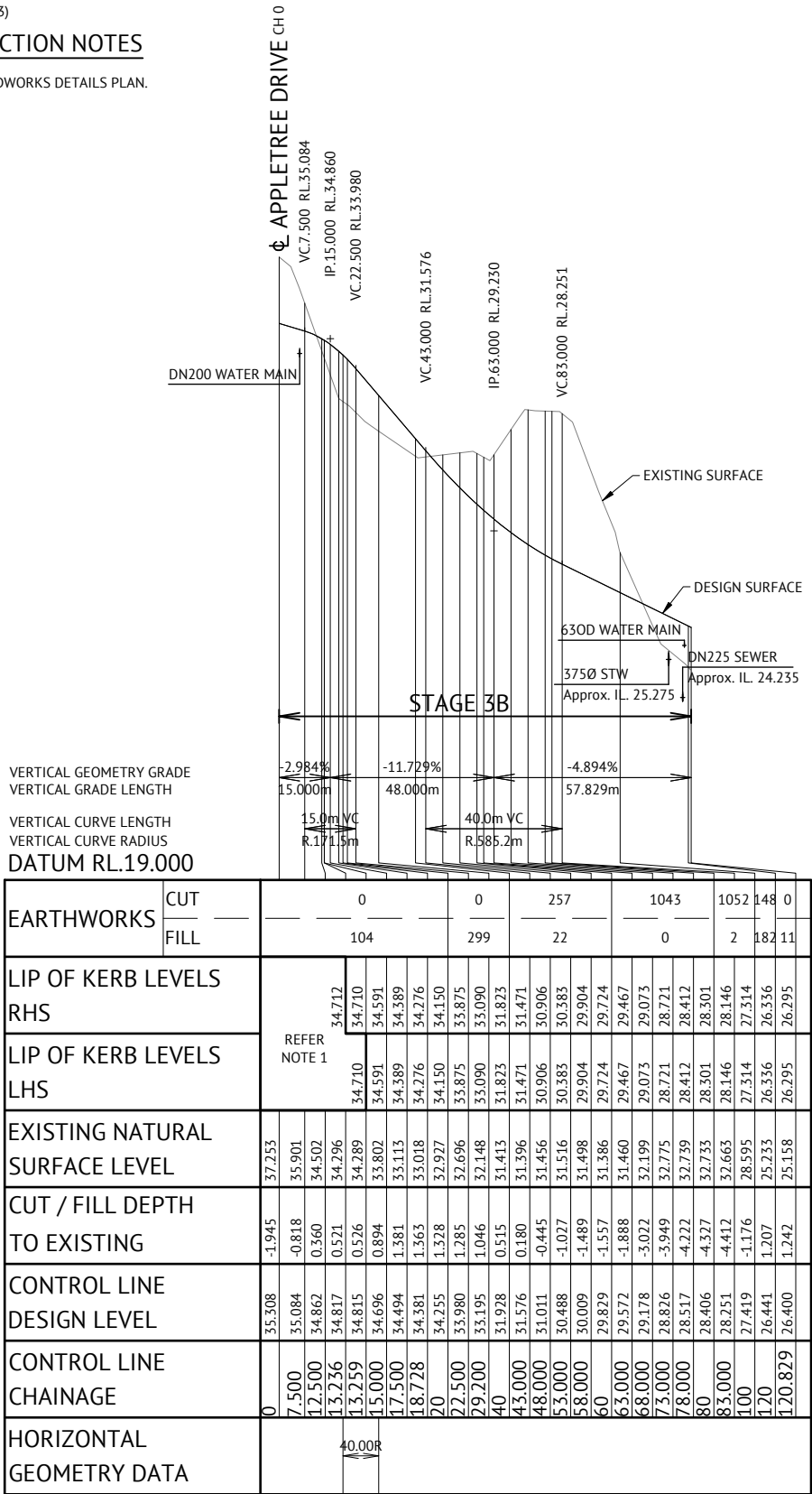
PROVISIONAL PAVEMENT DESIGN

BRAEBURN COURT

30mm ASPHALT SURFACING (AC10M)  
PRIME COAT 1.1L/m² (AMCO)  
125mm BASE COURSE (DMR TYPE 2.1)  
200mm SUB BASE COURSE (DMR TYPE 2.3)

ROAD LONGITUDINAL SECTION NOTES

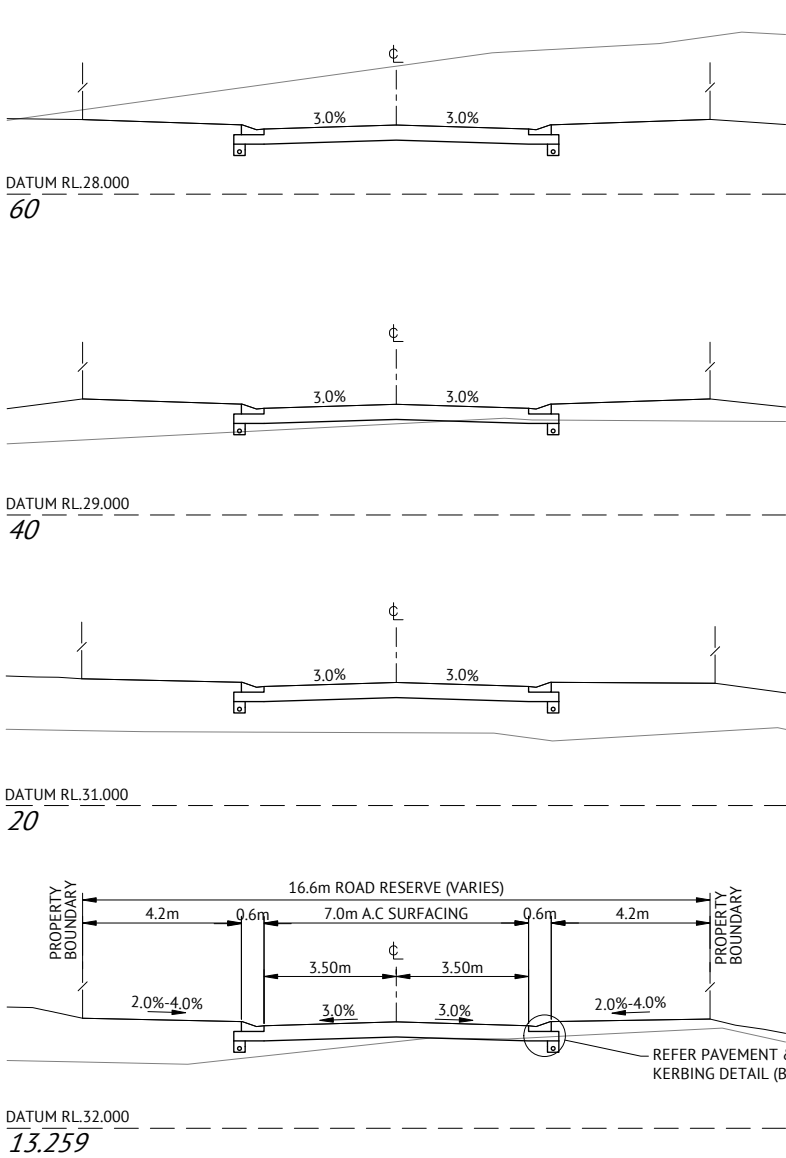
1. FOR LEVEL INFORMATION REFER ROADWORKS DETAILS PLAN.



EARTHWORKS	CUT	0	0	257	1043	1052	148	0
	FILL	104	299	22	0	2	182	11
LIP OF KERB LEVELS RHS	REFER NOTE 1	34.712	34.710	34.591	34.389	34.276	34.150	33.875
LIP OF KERB LEVELS LHS		34.710	34.591	34.389	34.276	34.150	33.875	33.090
EXISTING NATURAL SURFACE LEVEL		37.253	35.901	34.502	33.802	33.113	32.018	31.413
CUT / FILL DEPTH TO EXISTING		-1.945	-0.818	0.360	0.571	0.526	0.894	1.381
CONTROL LINE DESIGN LEVEL		35.308	35.084	34.862	34.817	34.815	34.696	34.494
CONTROL LINE CHAINAGE		0	7.500	12.500	13.236	13.259	17.500	18.728
HORIZONTAL GEOMETRY DATA		40.000						

BRAEBURN STREET LONGITUDINAL SECTION

SCALE 1:1000 HORIZONTAL, SCALE 1:100 VERTICAL



BRAEBURN STREET CROSS SECTIONS

SCALE 1:100

PRELIMINARY - NOT FOR CONSTRUCTION

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16/12/20	2	LOT LAYOUT REVISED	GB	PP
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			REC	APP



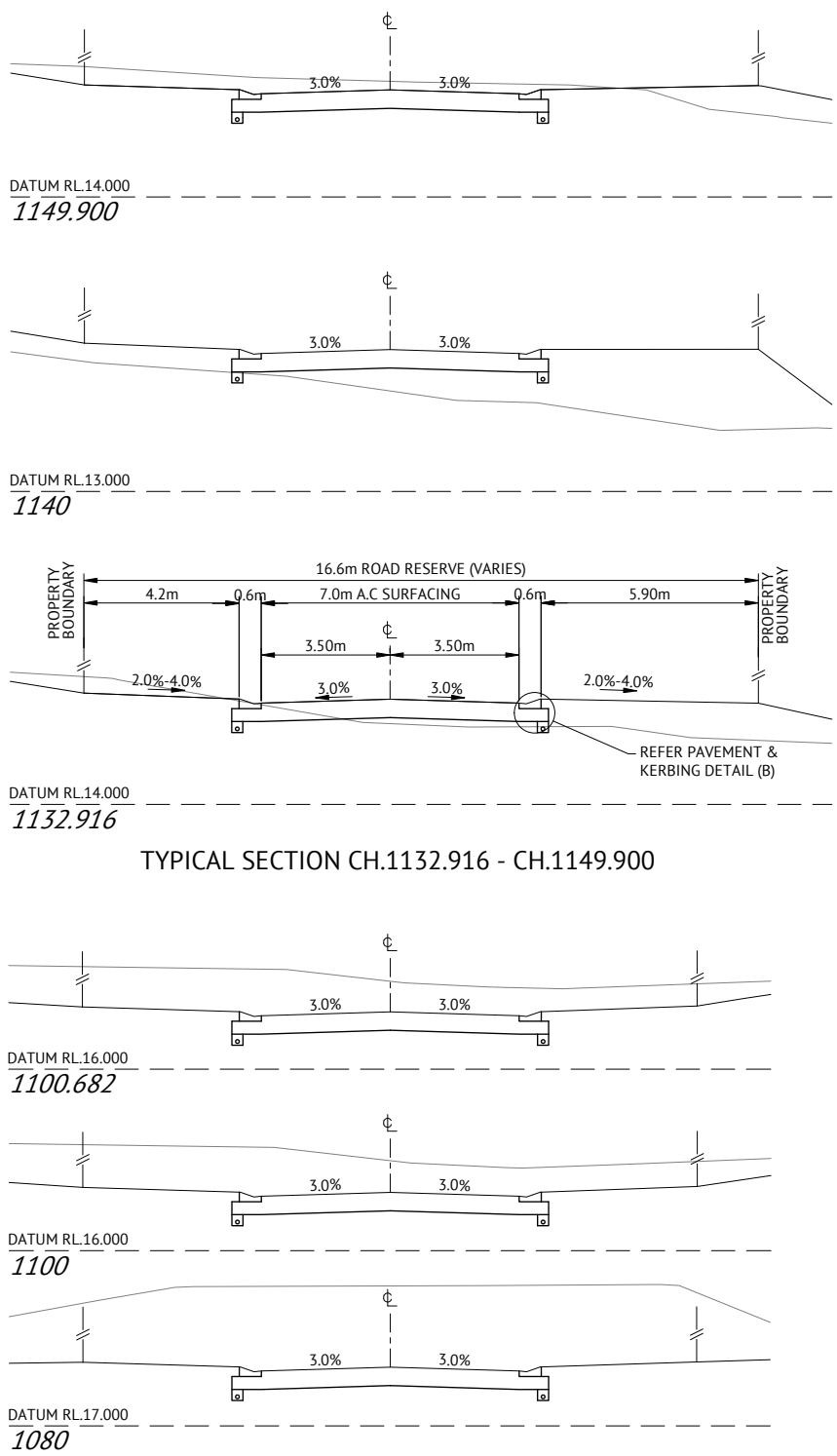
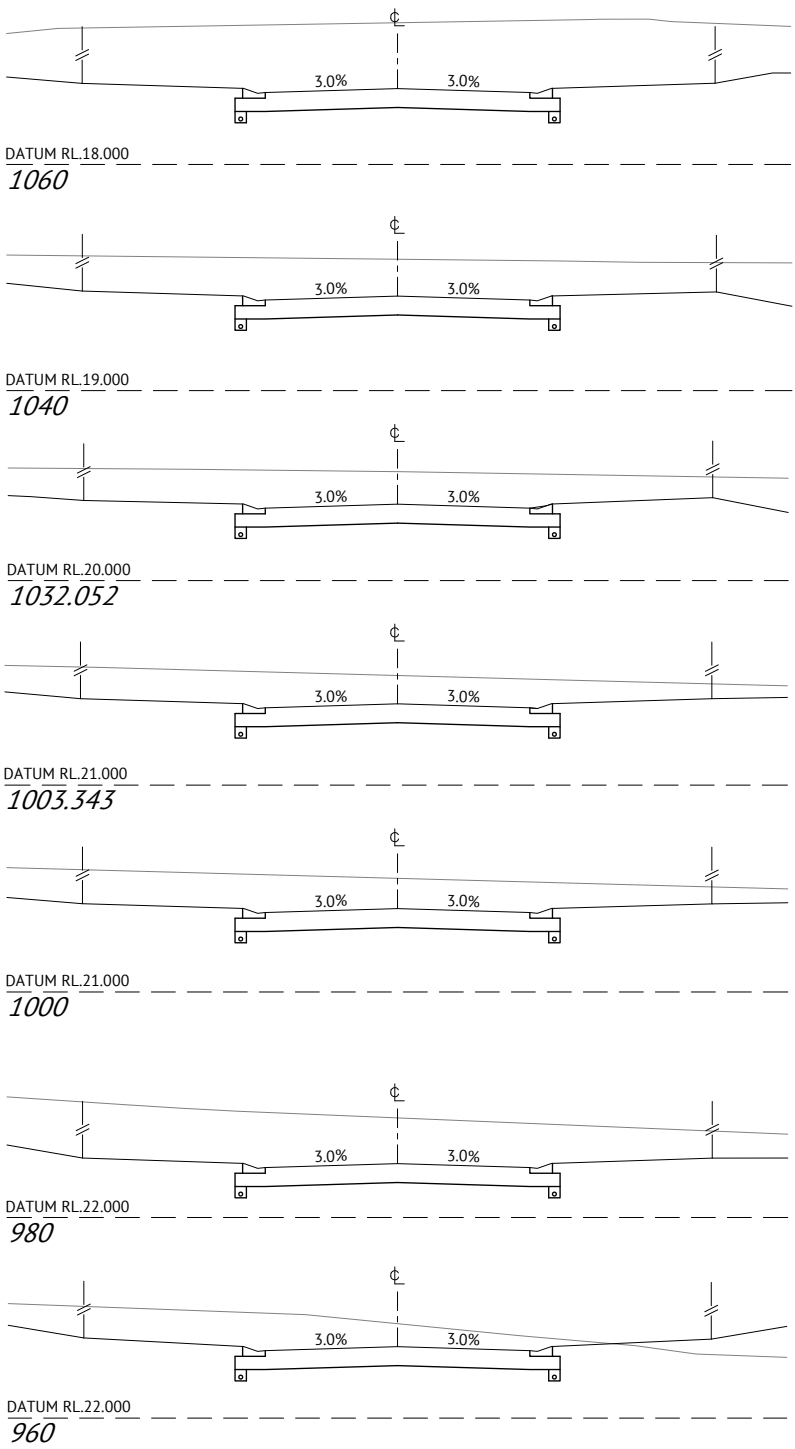
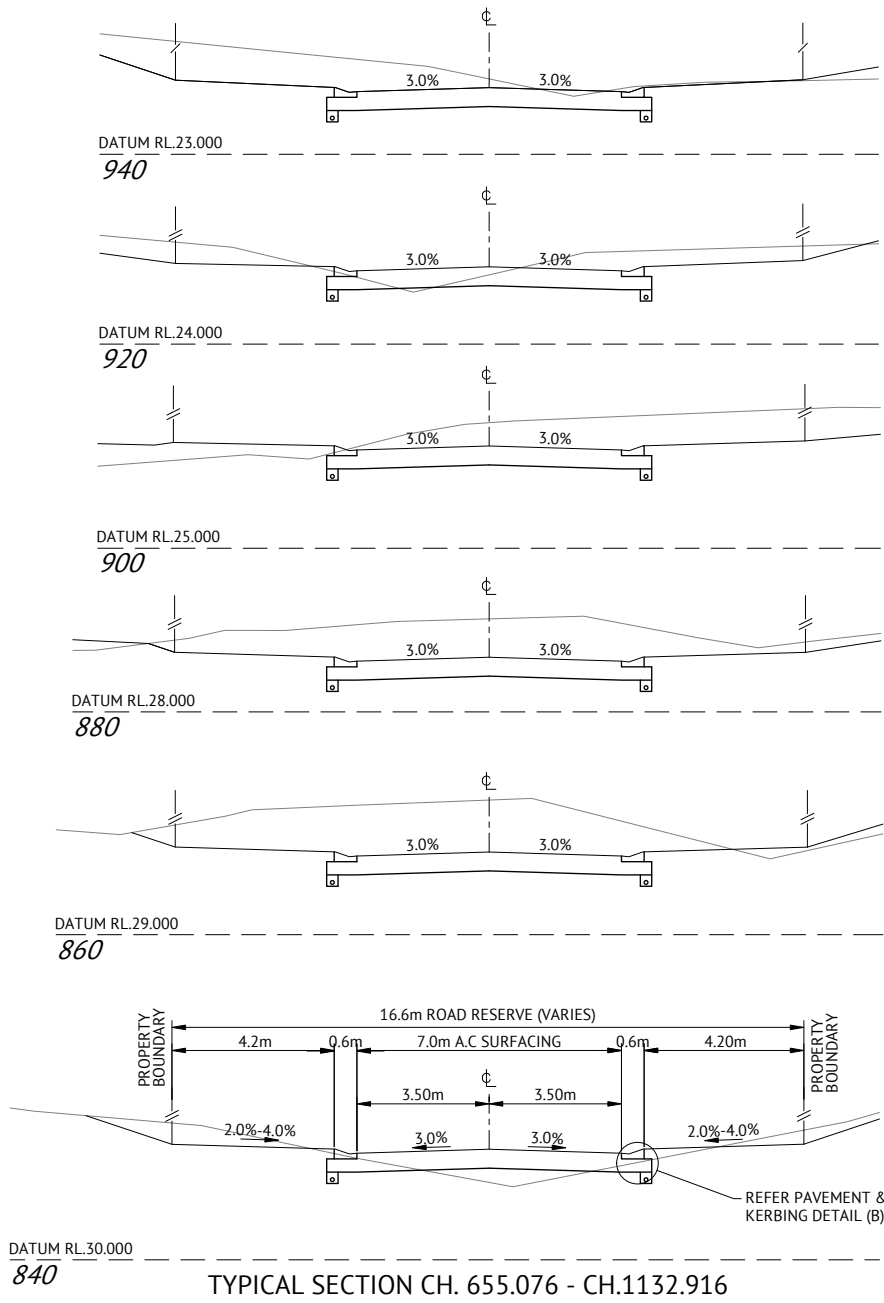
TOWNSVILLE OFFICE  
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DESIGNED  
G.BROSANAN  
CHECKED  
P.PETERSEN  
PROJECT MANAGER  
P.PETERSEN  
ENGINEERING CERTIFICATION  
P.PETERSEN RPEQ 13231

SCALE  
SCALE 1:1000 (A1)  
SCALE 1:100 (A1)  
ORIGINAL SHEET SIZE A1

CLIENT  
ELEMENTS NQ PTY LTD  
PROJECT  
THE ORCHARD - STAGE 3  
LOCATION  
DARLING ROAD, JENSEN  
SHEET TITLE  
BRAEBURN STREET LONGITUDINAL & CROSS SECTIONS

JOB CODE  
ELE-0006  
SHEET NUMBER  
C014  
REV  
2



APPLETREE DRIVE CROSS SECTIONS

SCALE 1:100

PRELIMINARY - NOT FOR CONSTRUCTION				
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DATE	REV	DESCRIPTION	REC	APP
REVISIONS				



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SCALE 1:100 (A1)

ORIGINAL SHEET SIZE A1

CLIENT  
ELEMENTS NQ PTY LTD

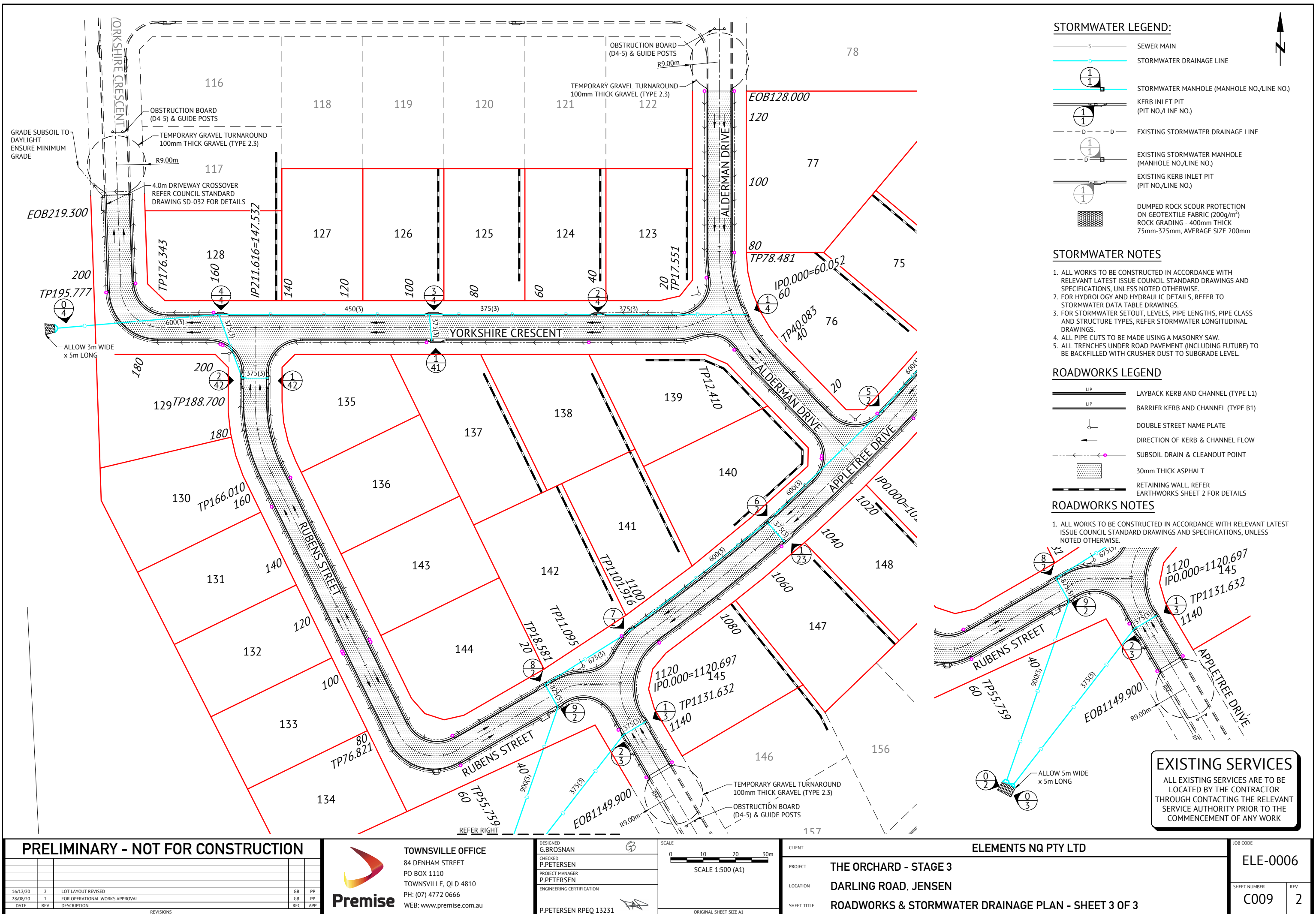
PROJECT  
THE ORCHARD - STAGE 3

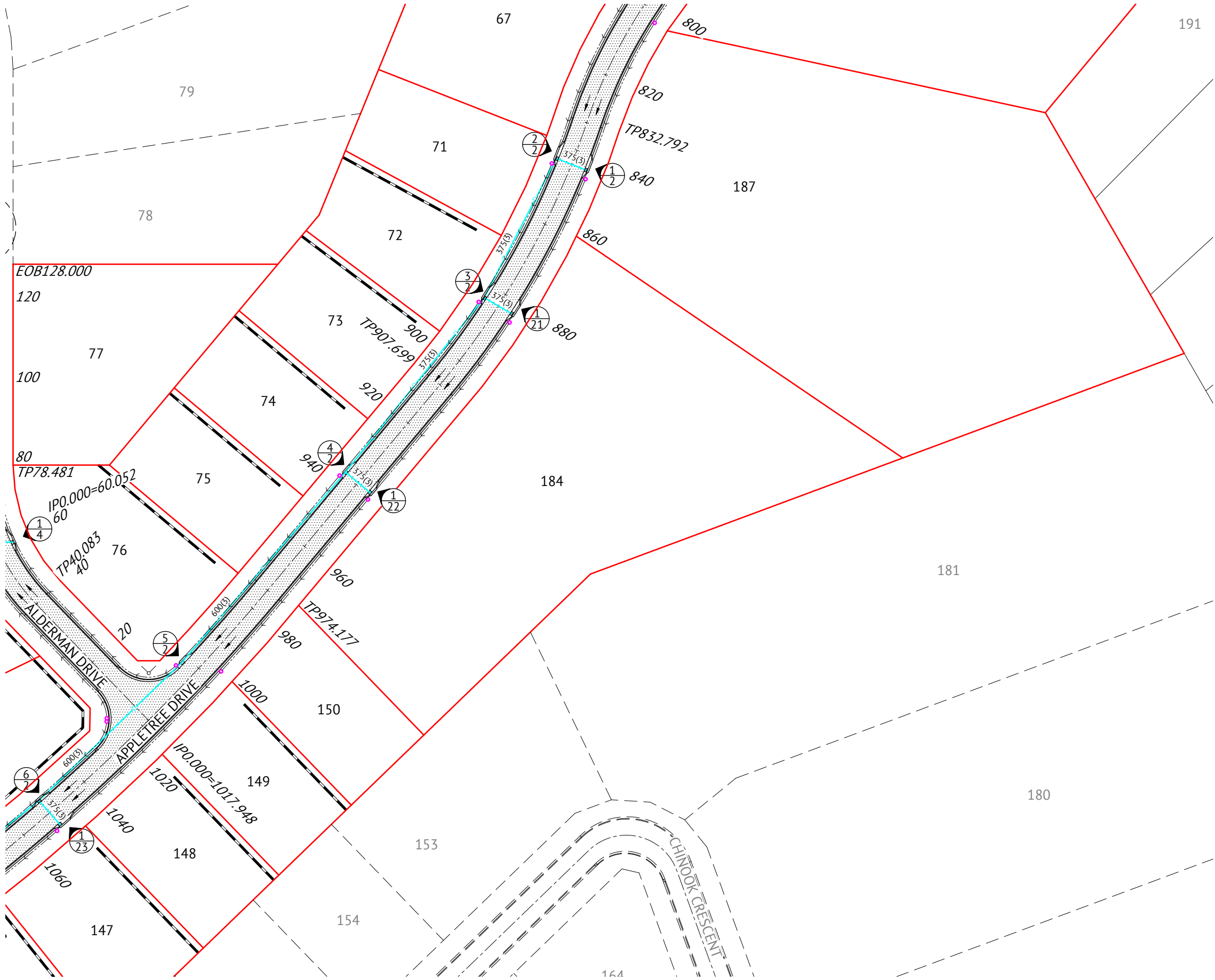
LOCATION  
DARLING ROAD, JENSEN

SHEET TITLE  
APPLETREE DRIVE CROSS SECTIONS - SHEET 2 OF 2

JOB CODE ELE-0006	
SHEET NUMBER C013	REV 2







STORMWATER LEGEND:

- SEWER MAIN
- STORMWATER DRAINAGE LINE
- STORMWATER MANHOLE (MANHOLE NO./LINE NO.)
- KERB INLET PIT (PIT NO./LINE NO.)
- EXISTING STORMWATER DRAINAGE LINE
- EXISTING STORMWATER MANHOLE (MANHOLE NO./LINE NO.)
- EXISTING KERB INLET PIT (PIT NO./LINE NO.)
- DUMPED ROCK SCOUR PROTECTION ON GEOTEXTILE FABRIC (200g/m<sup>2</sup>)  
ROCK GRADING - 400mm THICK  
75mm-325mm, AVERAGE SIZE 200mm

STORMWATER NOTES

- ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH RELEVANT LATEST ISSUE COUNCIL STANDARD DRAWINGS AND SPECIFICATIONS, UNLESS NOTED OTHERWISE.
- FOR HYDROLOGY AND HYDRAULIC DETAILS, REFER TO STORMWATER DATA TABLE DRAWINGS.
- FOR STORMWATER SETOUT, LEVELS, PIPE LENGTHS, PIPE CLASS AND STRUCTURE TYPES, REFER STORMWATER LONGITUDINAL DRAWINGS.
- ALL PIPE CUTS TO BE MADE USING A MASONRY SAW.
- ALL TRENCHES UNDER ROAD PAVEMENT (INCLUDING FUTURE) TO BE BACKFILLED WITH CRUSHER DUST TO SUBGRADE LEVEL.

ROADWORKS LEGEND

- LIP LAYBACK KERB AND CHANNEL (TYPE L1)
- LIP BARRIER KERB AND CHANNEL (TYPE B1)
- DOUBLE STREET NAME PLATE
- DIRECTION OF KERB & CHANNEL FLOW
- SUBSOIL DRAIN & CLEANOUT POINT
- 30mm THICK ASPHALT
- RETAINING WALL. REFER EARTHWORKS SHEET 2 FOR DETAILS

ROADWORKS NOTES

- ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH RELEVANT LATEST ISSUE COUNCIL STANDARD DRAWINGS AND SPECIFICATIONS, UNLESS NOTED OTHERWISE.

EXISTING SERVICES

ALL EXISTING SERVICES ARE TO BE LOCATED BY THE CONTRACTOR THROUGH CONTACTING THE RELEVANT SERVICE AUTHORITY PRIOR TO THE COMMENCEMENT OF ANY WORK

PRELIMINARY - NOT FOR CONSTRUCTION

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			REC APP



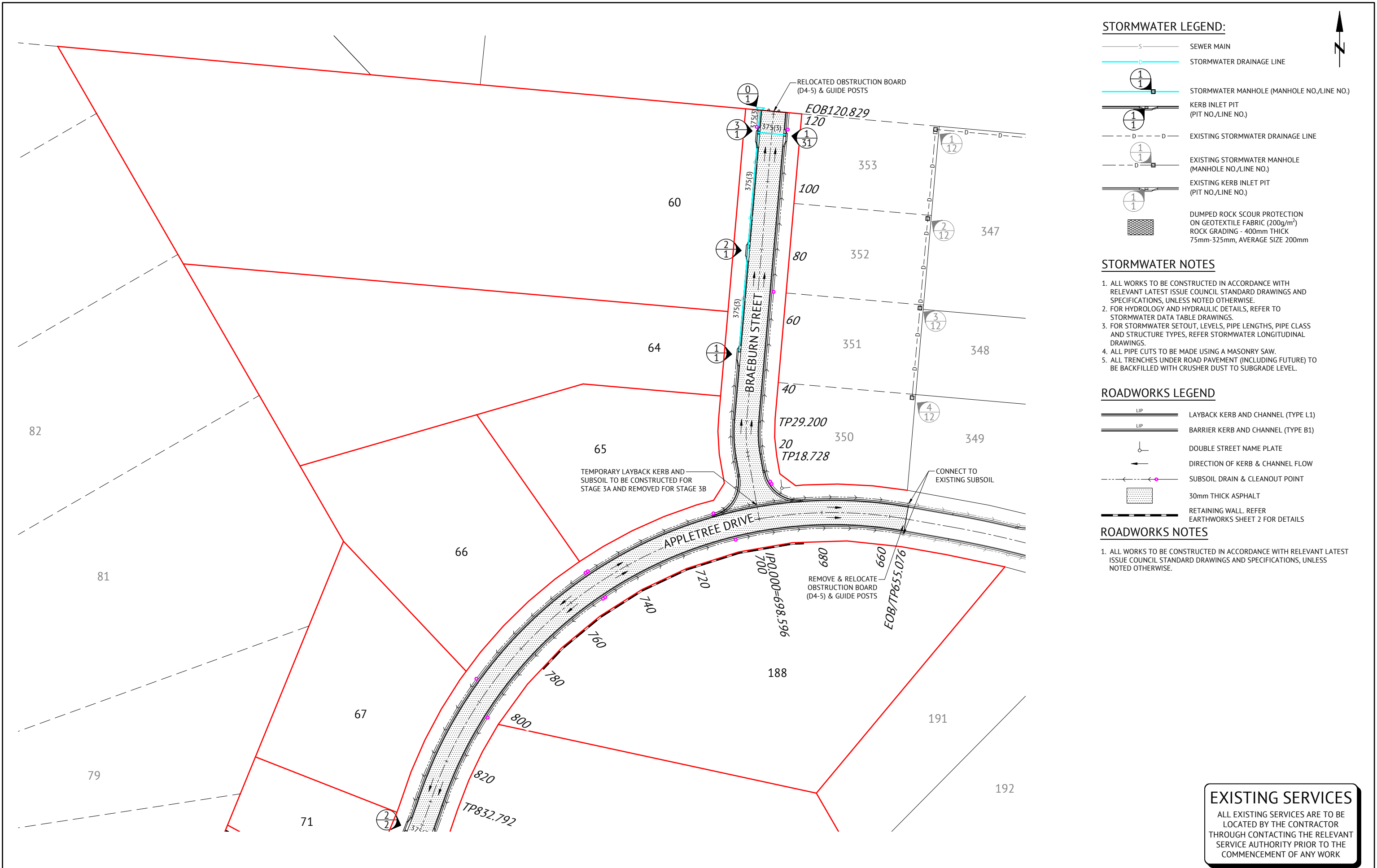
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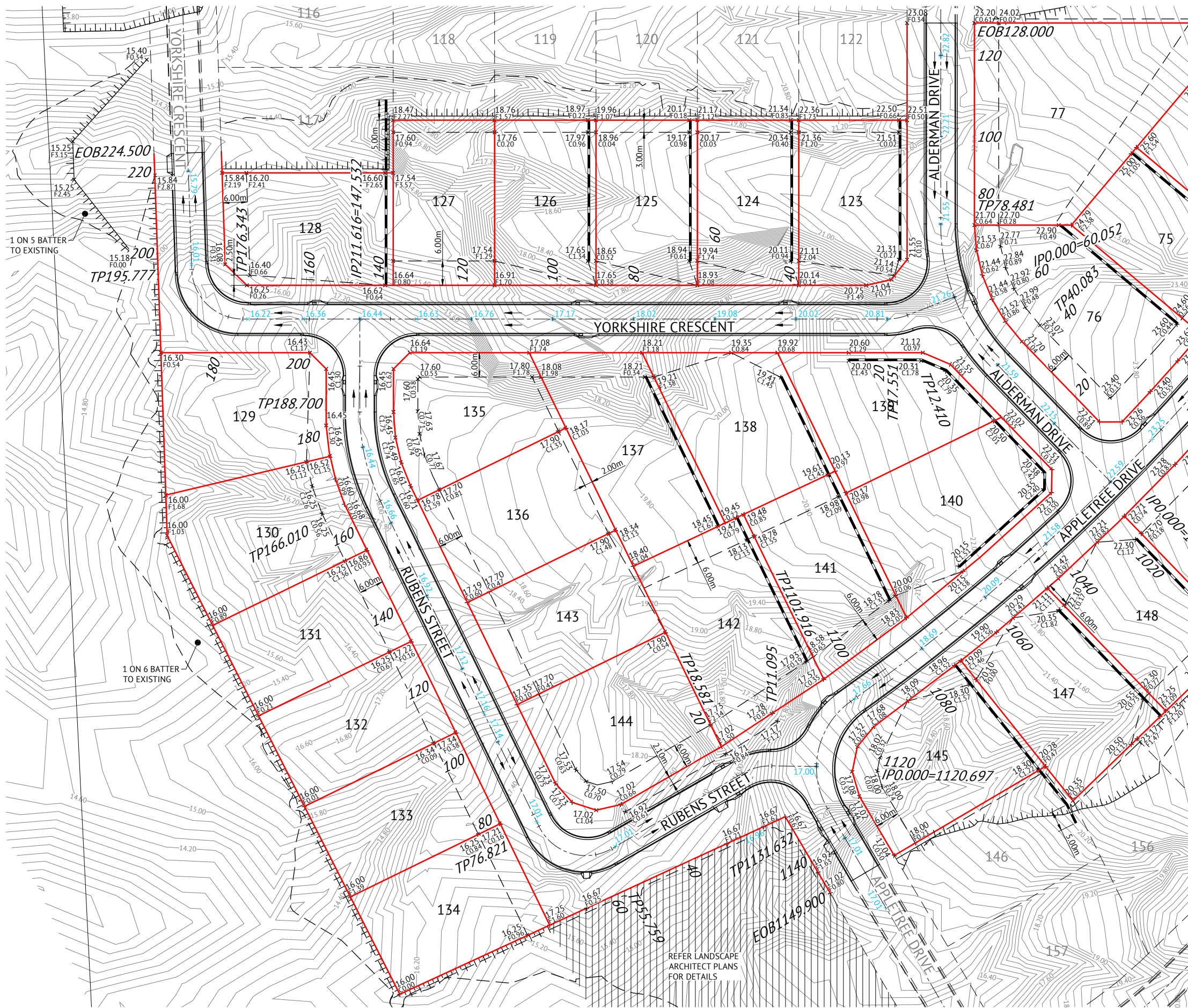
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SCALE 1:500 (A1)  
ORIGINAL SHEET SIZE A1

CLIENT  
ELEMENTS NQ PTY LTD  
PROJECT  
THE ORCHARD - STAGE 3  
LOCATION  
DARLING ROAD, JENSEN  
SHEET TITLE  
ROADWORKS & STORMWATER DRAINAGE PLAN - SHEET 2 OF 3

JOB CODE  
ELE-0006  
SHEET NUMBER  
C008  
REV  
2







EARTHWORKS LEGEND

- EXISTING SURFACE CONTOURS
- FINISHED ALLOTMENT LEVEL
- CUT/FILL VALUE
- DENOTES EXISTING ALLOTMENT LEVEL
- DENOTES Q100 FLOOD LEVEL
- TOP OF BATTER
- BOTTOM OF BATTER
- INVERT OF DRAIN
- DIRECTION OF KERB & CHANNEL FLOW
- RETAINING WALL REFER SHEET 2 FOR DETAILS

EARTHWORKS NOTES

- ALL EARTHWORKS OPERATIONS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH THE PROJECT SPECIFICATION.
- ALLOTMENTS TO BE GRADED EVENLY BETWEEN LEVELS SHOWN. MINIMUM FINISHED ALLOTMENT GRADE TO BE 1:200.

EXISTING SERVICES

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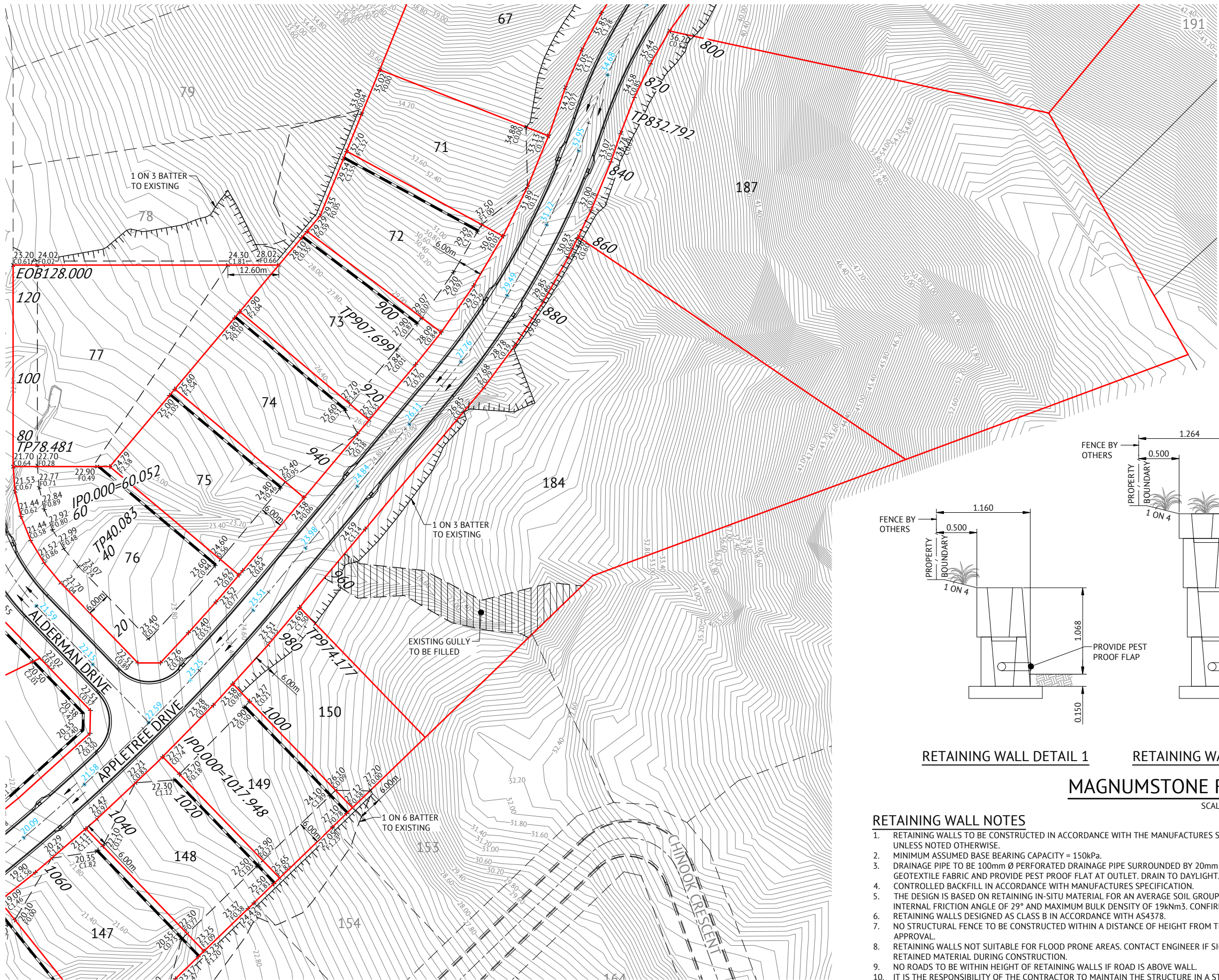
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P.PETERSEN RPEQ 13231

SCALE  
0 10 20 30m  
SCALE 1:500 (A1)  
ORIGINAL SHEET SIZE A1

CLIENT  
ELEMENTS NQ PTY LTD  
PROJECT  
THE ORCHARD - STAGE 3  
LOCATION  
DARLING ROAD, JENSEN  
SHEET TITLE  
EARTHWORKS LAYOUT PLAN - SHEET 3 OF 3

JOB CODE  
ELE-0006  
SHEET NUMBER  
C006  
REV  
3



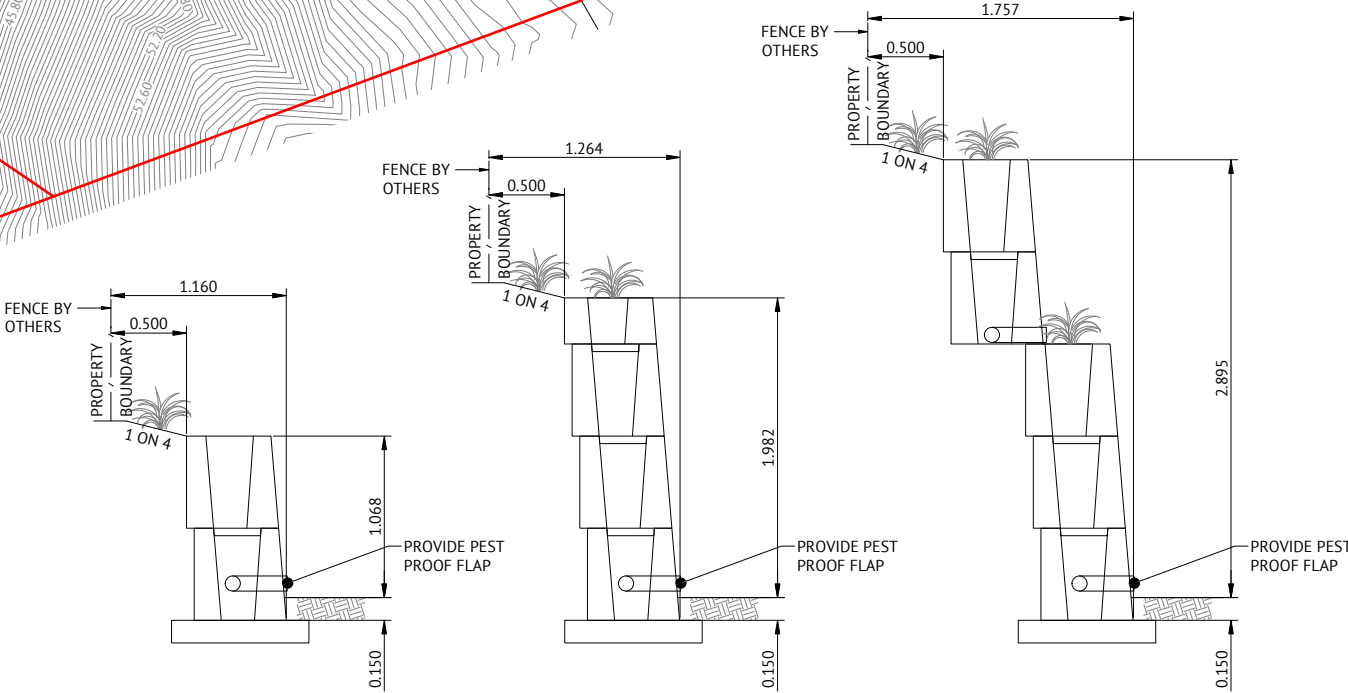


EARTHWORKS LEGEND

- EXISTING SURFACE CONTOURS
- FINISHED ALLOTMENT LEVEL CUT/FILL VALUE
- DENOTES EXISTING ALLOTMENT LEVEL
- DENOTES Q100 FLOOD LEVEL
- TOP OF BATTER
- BOTTOM OF BATTER
- INVERT OF DRAIN
- DIRECTION OF KERB & CHANNEL FLOW
- RETAINING WALL REFER DETAILS THIS SHEET

EARTHWORKS NOTES

- ALL EARTHWORKS OPERATIONS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH THE PROJECT SPECIFICATION.
- ALLOTMENTS TO BE GRADED EVENLY BETWEEN LEVELS SHOWN. MINIMUM FINISHED ALLOTMENT GRADE TO BE 1:200.



RETAINING WALL DETAIL 1      RETAINING WALL DETAIL 2      RETAINING WALL DETAIL 3

MAGNUMSTONE RETAINING WALLS

SCALE 1:25

RETAINING WALL NOTES

- RETAINING WALLS TO BE CONSTRUCTED IN ACCORDANCE WITH THE MANUFACTURES STANDARD DRAWINGS AND SPECIFICATIONS, UNLESS NOTED OTHERWISE.
- MINIMUM ASSUMED BASE BEARING CAPACITY = 150kPa.
- DRAINAGE PIPE TO BE 100mm Ø PERFORATED DRAINAGE PIPE SURROUNDED BY 20mm BLUE METAL (SCREENED) WRAPPED IN GEOTEXTILE FABRIC AND PROVIDE PEST PROOF FLAT AT OUTLET. DRAIN TO DAYLIGHT.
- CONTROLLED BACKFILL IN ACCORDANCE WITH MANUFACTURES SPECIFICATION.
- THE DESIGN IS BASED ON RETAINING IN-SITU MATERIAL FOR AN AVERAGE SOIL GROUP (REFER TABLE D4, AS4678), WITH A MINIMUM INTERNAL FRICTION ANGLE OF 29° AND MAXIMUM BULK DENSITY OF 19kNm<sup>3</sup>. CONFIRM ON SITE.
- RETAINING WALLS DESIGNED AS CLASS B IN ACCORDANCE WITH AS4378.
- NO STRUCTURAL FENCE TO BE CONSTRUCTED WITHIN A DISTANCE OF HEIGHT FROM THE RETAINING WALL WITHOUT ENGINEERING APPROVAL.
- RETAINING WALLS NOT SUITABLE FOR FLOOD PRONE AREAS. CONTACT ENGINEER IF SIGNIFICANT GROUND WATER ENCOUNTERED IN RETAINED MATERIAL DURING CONSTRUCTION.
- NO ROADS TO BE WITHIN HEIGHT OF RETAINING WALLS IF ROAD IS ABOVE WALL.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN THE STRUCTURE IN A STABLE CONDITION DURING CONSTRUCTION, ENSURING NO PART IS OVERSTRESSED AND PROVIDE TEMPORARY BRACING AS REQUIRED (eg. DURING BACKFILL COMPACTION).

EXISTING SERVICES

ALL EXISTING SERVICES ARE TO BE LOCATED BY THE CONTRACTOR THROUGH CONTACTING THE RELEVANT SERVICE AUTHORITY PRIOR TO THE COMMENCEMENT OF ANY WORK

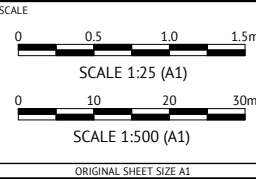
PRELIMINARY - NOT FOR CONSTRUCTION

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CHECKED P.PETERSEN
PROJECT MANAGER P.PETERSEN
ENGINEERING CERTIFICATION
P.PETERSEN RPEQ 13231



CLIENT

ELEMENTS NQ PTY LTD

PROJECT

THE ORCHARD - STAGE 3

LOCATION

DARLING ROAD, JENSEN

SHEET TITLE

EARTHWORKS LAYOUT PLAN - SHEET 2 OF 3

JOB CODE

ELE-0006

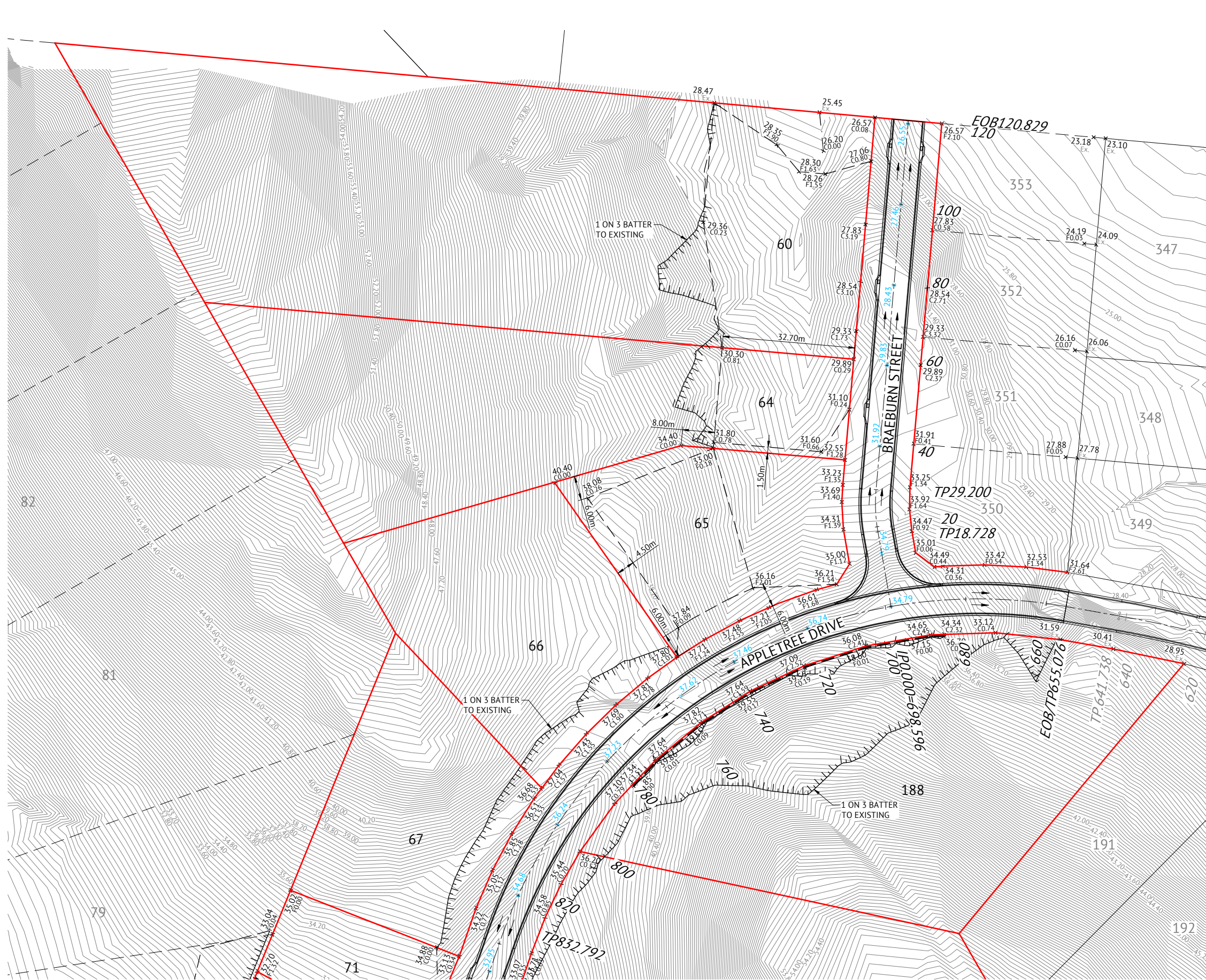
SHEET NUMBER

C005

REV

3





**EARTHWORKS LEGEND**

—5.90—

6.32  
x  
C0.43

6.41  
x  
Ex

6.30  
x

|||||

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—

—

EXISTING SURFACE CONTOURS

FINISHED ALLOTMENT LEVEL  
CUT/FILL VALUE

DENOTES EXISTING ALLOTMENT LEVEL

DENOTES Q100 FLOOD LEVEL

TOP OF BATTER

BOTTOM OF BATTER

INVERT OF DRAIN

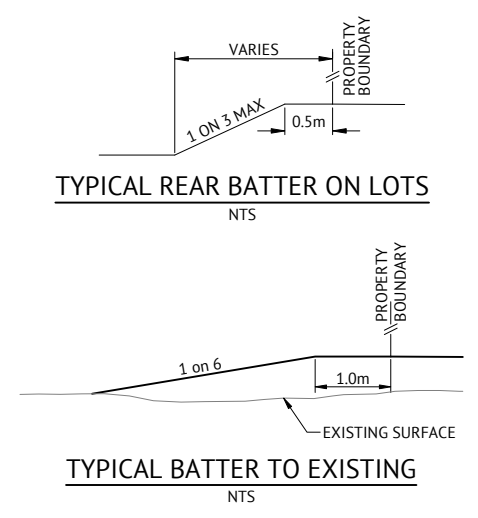
DIRECTION OF KERB & CHANNEL FLOW

RETAINING WALL REFER SHEET 2 FOR DETAILS

**EARTHWORKS NOTES**

1. ALL EARTHWORKS OPERATIONS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH THE PROJECT SPECIFICATION.

2. ALLOTMENTS TO BE GRADED EVENLY BETWEEN LEVELS SHOWN. MINIMUM FINISHED ALLOTMENT GRADE TO BE 1:200.



**EXISTING SERVICES**

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**PRELIMINARY - NOT FOR CONSTRUCTION**

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CHECKED  
P.PETERSEN

PROJECT MANAGER  
P.PETERSEN

ENGINEERING CERTIFICATION

P.PETERSEN RPEQ 13231

SCALE

0 10 20 30m

SCALE 1:500 (A1)

ORIGINAL SHEET SIZE A1

CLIENT  
**ELEMENTS NQ PTY LTD**

PROJECT  
**THE ORCHARD - STAGE 3**

LOCATION  
**DARLING ROAD, JENSEN**

SHEET TITLE  
**EARTHWORKS LAYOUT PLAN - SHEET 1 OF 3**

JOB CODE  
**ELE-0006**

SHEET NUMBER  
**C004**

REV  
**3**



CONTROL LINE ALDERMAN DRIVE

	CHAINAGE	EASTING	NORTHING	BEARING	RADIUS	LENGTH
START	0.000	61957.730	93981.766	315d59'60"	STRAIGHT	40.083
END	40.083	61929.886	94010.599	315d59'60"		
START	40.083	61929.886	94010.599	315d59'60"		
END	78.481	61915.853	94045.332	0d 0' 0"	50.000	38.397
CENTRE		61965.853	94045.332			
START	78.481	61915.853	94045.332	0d 0' 0"		
END	128.000	61915.853	94094.852	0d 0' 0"	STRAIGHT	49.519
START	128.000	61915.853	94094.852	0d 0' 0"		
END	176.699	61915.853	94143.551	0d 0' 0"		
START	176.699	61915.853	94143.551	0d 0' 0"	STRAIGHT	48.699

CONTROL LINE RUBENS STREET

	CHAINAGE	EASTING	NORTHING	BEARING	RADIUS	LENGTH
START	0.000	61885.222	93911.642	270d49'56"	STRAIGHT	11.095
END	11.095	61874.129	93911.803	270d49'56"		
START	11.095	61874.129	93911.803	270d49'56"		
END	18.581	61866.969	93909.946	240d 5' 16"	13.950	7.485
CENTRE		61873.926	93897.855			
START	18.581	61866.969	93909.946	240d 5' 16"		
END	55.759	61834.744	93891.407	240d 5' 16"	STRAIGHT	37.178
START	55.759	61834.744	93891.407	240d 5' 16"		
END	76.821	61816.786	93896.912	334d 0' 0"		
CENTRE		61828.336	93902.545		12.850	21.062
START	76.821	61816.786	93896.912	334d 0' 0"		
END	166.010	61777.688	93977.075	334d 0' 0"		
START	166.010	61777.688	93977.075	334d 0' 0"	STRAIGHT	89.190
END	188.700	61772.628	93998.994	360d 0' 0"		
CENTRE		61822.628	93998.994			
START	188.700	61772.628	93998.994	359d59'60"	STRAIGHT	22.917
END	211.616	61772.628	94021.910	360d 0' 0"		
START	211.616	61772.628	94021.910	360d 0' 0"		

LEGEND



GEOTECHNICAL TEST LOCATION  
(STAGE NUMBER - TEST LOCATION NUMBER)



EXISTING GEOTECHNICAL TEST LOCATION

GEOTECHNICAL NOTES

THE CONTRACTOR IS TO PERFORM SOIL SAMPLING TO A DEPTH OF 600mm BELOW THE PROPOSED SUBGRADE LEVELS IN ACCORDANCE WITH TOWNSVILLE CITY COUNCIL'S DEVELOPMENT MANUAL PLANNING SCHEME POLICY SC6.4.4.2-PAVEMENT DESIGN, AT THE LOCATIONS SHOWN AND PROVIDE A WRITTEN REPORT WHICH INCLUDES:-

1. A DESCRIPTIVE LOG OF THE SOIL TYPES FOR EACH LOCATION
2. LABORATORY TEST RESULTS FOR EACH SOIL TYPE SAMPLE BETWEEN THE SUBGRADE AND 600mm BELOW FOR THE FOLLOWING:-

- 2.1. ATTERBERG LIMITS
- 2.2. LINEAR SHRINKAGE
- 2.3. PARTICLE ANALYSIS; AND
- 2.4. SOAKED CBR AND CBR SWELL

SURVEY CONTROL POINTS

STN NUMBER	EASTING	NORTHING	DIGITAL RL	MARK TYPE
C1	62591.490	94273.753	15.356	Star-Picket-STN-1-GPS-Level
C2	62575.689	93859.174	29.620	Star-Picket-STN-2-GPS-Level
C3	62445.095	93388.591	19.676	Star-Picket-STN-3-GPS-Level
C4	62001.080	93422.687	16.115	Star-Picket-STN-4-GPS-Level
C5	62360.904	92942.041	17.696	Star-Picket-STN-5-GPS-Level
C6	61756.802	93058.731	17.835	Star-Picket-STN-6-GPS-Level
C7	61711.886	93031.732	18.035	OPM142702
C8	61749.693	93286.015	17.784	Star-Picket-STN-8-Levelled
C9	61705.745	93452.178	15.760	Drill-Hole-STN-9-GPS-Level
C10	61693.380	93752.383	13.486	Star-Picket-STN-10-GPS-Level
C11	61668.153	94361.160	15.630	Star-Picket-STN-11-GPS-Level
C12	62794.376	94263.335	14.273	Iron-Pin-STN-12-GPS-Level
C13	62755.297	94110.461	15.240	OPM-98041
C14	62081.072	92979.972	16.902	OPM-121574

CONTROL LINE APPLETREE DRIVE

	CHAINAGE	EASTING	NORTHING	BEARING	RADIUS	LENGTH
START	641.738	62219.791	94210.946	279d59'60"	STRAIGHT	13.338
END	655.076	62206.656	94213.262	279d59'60"		
START	655.076	62206.656	94213.262	279d59'60"		
END	832.792	62066.438	94129.909	198d32'27"	125.000	177.716
CENTRE		62184.950	94090.161			
START	832.792	62066.438	94129.909	198d32'27"		
END	907.699	62030.027	94064.948	220d 0' 0"	200.000	74.907
CENTRE		61876.818	94193.505			
START	907.699	62030.027	94064.948	220d 0' 0"		
END	974.177	61987.296	94014.023	220d 0' 0"	STRAIGHT	66.478
START	974.177	61987.296	94014.023	220d 0' 0"		
END	1101.916	61893.645	93927.662	234d38'16"		
CENTRE		61604.274	94335.417		500.000	127.739
START	1101.916	61893.645	93927.662	234d38'16"		
END	1131.632	61887.987	93901.203	149d30'25"		
CENTRE		61905.220	93911.352		20.000	29.716
START	1131.632	61887.987	93901.203	149d30'25"		
END	1149.900	61897.256	93885.461	149d30'25"		
START	1149.900	61897.256	93885.461	149d30'25"	STRAIGHT	18.268
END	1280.216	61963.383	93773.169	149d30'25"		
START	1280.216	61963.383	93773.169	149d30'25"		
END					STRAIGHT	130.316

CONTROL LINE BRAEBURN STREET

	CHAINAGE	EASTING	NORTHING	BEARING	RADIUS	LENGTH
START	0.000	62163.356	94213.282	350d 0' 0"	STRAIGHT	18.728
END	18.728	62160.104	94231.725	350d 0' 0"		
START	18.728	62160.104	94231.725	350d 0' 0"		
END	29.200	62159.648	94242.157	5d 0' 0"	40.000	10.472
CENTRE		62199.496	94238.671			
START	29.200	62159.648	94242.157	5d 0' 0"		
END	120.829	62167.634	94333.438	5d 0' 0"	STRAIGHT	91.629
START	120.829	62167.634	94333.438	5d 0' 0"		
END						

CONTROL LINE YORKSHIRE CRESCENT

	CHAINAGE	EASTING	NORTHING	BEARING	RADIUS	LENGTH
START	0.000	61919.211	94027.318	248d52'57"	STRAIGHT	12.410
END	12.410	61907.634	94022.847	248d52'57"		
START	12.410	61907.634	94022.847	248d52'57"		
END	17.551	61902.608	94021.910	270d 0' 0"	13.950	5.142
CENTRE		61902.608	94035.860			
START	17.551	61902.608	94021.910	270d 0' 0"		
END	176.343	61743.817	94021.910	270d 0' 0"	STRAIGHT	158.792
START	176.343	61743.817	94021.910	270d 0' 0"		
END	195.777	61731.174	94034.123	358d 1' 13"		
CENTRE		61743.817	94034.560		12.650	19.433
START	195.777	61731.174	94034.123	358d 1' 13"		
END	224.500	61730.182	94062.830	358d 1' 13"		
START	224.500	61730.182	94062.830	358d 1' 13"	STRAIGHT	28.723
END	306.543	61727.348	94144.824	358d 1' 13"		
START	306.543	61727.348	94144.824	358d 1' 13"		
END					STRAIGHT	82.043

PRELIMINARY - NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION	REC	APP
16/12/20	3	LOT LAYOUT REVISED	GB	PP
28/08/20	2	FOR OPERATIONAL WORKS APPROVAL	GB	PP
17/07/20	1	FOR BULK EARTHWORKS APPROVAL	GB	PP
DATE	REV	DESCRIPTION	REC	APP



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DESIGNED  
G.BROSAN

CHECKED  
P.PETERSEN

PROJECT MANAGER  
P.PETERSEN

ENGINEERING CERTIFICATION

P.PETERSEN RPEQ 13231

SCALE

0 20 40 60m  
SCALE 1:1000 (A1)

ORIGINAL SHEET SIZE A1

CLIENT

ELEMENTS NQ PTY LTD

PROJECT

THE ORCHARD - STAGE 3

LOCATION

DARLING ROAD, JENSEN

SHEET TITLE

ROAD GEOMETRY PLAN

JOB CODE

ELE-0006

SHEET NUMBER

C003

REV

3

DESIGN HAZARD SCHEDULE

ITEM	DESIGN HAZARD	POTENTIAL HAZARD	RISK	ELIMINATION / MINIMISATION OF HAZARD / RISK	RESIDUAL RISK
D1	EMBANKMENT AND SLOPE STABILITY HAZARD	ALLOTMENTS HAVE BEEN BENCHED FOR HOUSE PADS WHICH HAVE CREATED STEEP EMBANKMENTS WHICH WILL HAVE A LONG TERM SLOPE STABILITY ISSUE AND THE EMBANKMENTS ARE GREATER THAN 1M HIGH.	HIGH	A RETAINING WALL IS TO BE CONSTRUCTED ALONG THE BOUNDARY TO ELIMINATE THE UNSTABLE SLOPE HAZARD AND THE CONTRACTOR IS TO BE ADVISED TO MITIGATE THE HEIGHT HAZARD DURING CONSTRUCTION.	MODERATE
D2	EXISTING UNDERGROUND / OVERHEAD SERVICES HAZARD	EXISTING UNDERGROUND AND/OR OVERHEAD SERVICES HAZARD EXIST ON SITE.	HIGH	THE DESIGN OF THE STRUCTURE HAS ACCOUNTED FOR THE RELOCATION OF THESE EXISTING SERVICES AND THE CONTRACTOR IS TO BE MADE AWARE OF THESE EXISTING SERVICES AND TAKE ALL ACTIONS NECESSARY TO MITIGATE THIS HAZARD DURING CONSTRUCTION.	MODERATE
D3	DEEP EXCAVATION HAZARD	DEEP EXCAVATION IS REQUIRED TO INSTALL SEWER TO SERVICE STRUCTURE.	HIGH	THE DEEP EXCAVATION HAZARD CANNOT BE AVOIDED AND THE CONTRACTOR WILL NEED TO TAKE ALL ACTIONS NECESSARY TO ADDRESS THIS HAZARD DURING CONSTRUCTION.	MODERATE

DESIGN HAZARD NOTES:

1. PREMISE AUSTRALIA PTY LTD (PREMISE), HAVING BEEN COMMISSIONED TO CARRY OUT DETAILED DESIGN AND DOCUMENTATION OF THESE WORKS, CONFIRM THAT THE PREMISE DRAWING SET HAS BEEN INTERNALLY REVIEWED FOR DESIGN SAFETY IN ACCORDANCE WITH SECTION 22 OF THE WORK HEALTH AND SAFETY ACT 2011 QLD.
2. THIS REPORT SUMMARISES AN INTERNAL REVIEW OF THE PREMISE DETAILED DESIGN DRAWINGS FOR DESIGN SAFETY.
3. THIS REPORT IN NO WAY RELIEVES THE PRINCIPAL, CONTRACTOR OR ANY OTHER PARTY OF THEIR OWN OBLIGATIONS AND RESPONSIBILITIES UNDER THE WORK HEALTH AND SAFETY ACT 2011 QLD, INCLUDING (BUT NOT LIMITED TO) CONSULTATION WITH THE DESIGNER UNDER SECTION 294 OF THE ACT, THE PREPARATION OF SATISFACTORY SAFE WORK METHOD STATEMENTS AND DUTIES OF CARE.
4. IT IS A REQUIREMENT UNDER SECTION 296 OF THE WORK HEALTH AND SAFETY ACT 2011 QLD, THAT A COPY OF THIS REPORT BE PROVIDED TO THE CONTRACTOR BY THE ENTITY COMMISSIONING THE WORK SHOWN ON THE PREMISE DRAWINGS.
5. AS PER THE DEPARTMENT OF JUSTICE AND THE ATTORNEY-GENERAL- WORKPLACE HEALTH AND SAFETY QUEENSLAND, A WRITTEN REPORT IS NOT REQUIRED FOR DESIGNS THAT HAVE TYPICAL FEATURES.

CONSTRUCTION HAZARD NOTES:

1. UNDER THE QUEENSLAND WORK HEALTH AND SAFETY ACT 2011, THE WORK HEALTH AND SAFETY REGULATION 2011 AND OTHER LEGISLATION AND GUIDELINES, THE PRINCIPAL CONTRACTOR HAS SPECIFIC OBLIGATIONS IN RELATION TO THE SAFE OPERATION OF THE SITE AND OF THE WORKS. TO ASSIST THE PRINCIPAL CONTRACTOR IN COMPLYING WITH THESE OBLIGATIONS THE PROJECT DESIGNERS HAVE IDENTIFIED BY DRAWING NOTES, AREAS WHERE POTENTIAL HAZARDS MAY ARISE. THESE NOTES OR ADVICE, SHALL NOT NECESSARILY BE CONSIDERED COMPLETE AND ARE BASED UPON THE DESIGNERS' UNDERSTANDING OF THE SAFETY RISKS ASSOCIATED WITH THE WORKS. THESE NOTES OR ADVICE SHALL NOT RELIEVE THE PRINCIPAL CONTRACTOR OF ANY OBLIGATION UNDER THE RELEVANT LEGISLATION OR GUIDELINE. THE PRINCIPAL CONTRACTOR SHALL REMAIN RESPONSIBLE FOR THE PREPARATION OF AN APPROPRIATE WORK HEALTH SAFETY MANAGEMENT PLAN AND SAFE WORK METHOD STATEMENTS FOR THE SITE.
2. PURSUANT TO THE WORK HEALTH AND SAFETY ACT 2011 WE HEREBY ADVISE THAT OUR DESIGN SAFETY REVIEW HAS IDENTIFIED UNUSUAL OR ATYPICAL DESIGN FEATURES THAT MAY PRESENT ADDITIONAL HAZARDS OR RISKS DURING THE CONSTRUCTION PHASE AND THESE ARE LISTED IN THE CONSTRUCTION HAZARD SCHEDULE.

CONSEQUENCE TABLE

LEVEL	CONSEQUENCE	COST/TIME
5 - CATASTROPHIC	FATALITY OR MULTIPLE PERSONS ONSITE WITH LIFE THREATENING HEALTH EFFECTS OR INABILITY TO CONTINUE	HUGE FINANCIAL OR TIME LOSS
4 - MAJOR	EXTENSIVE INJURIES, OR ONSET OF SEVERE OR LIFE THREATENING HEALTH EFFECTS TO SINGLE PERSON ONSITE. MULTIPLE PERSONS WITH ONSET OF IRREVERSIBLE HEALTH EFFECTS. PERMANENT INJURY TO PERSON ONSITE.	MAJOR FINANCIAL OR TIME LOSS
3 - MODERATE	MEDICAL TREATMENT REQUIRED. IRREVERSIBLE HEALTH EFFECT TO A SINGLE PERSON. MULTIPLE PERSONS ONSITE WITH REVERSIBLE HEALTH EFFECTS.	HIGH FINANCIAL OR TIME LOSS
2 - MINOR	FIRST AID, SINGLE OR MULTIPLE INJURIES AMONGST PERSONS ONSITE. SINGLE PERSON ONSITE WITH MODERATE SHORT TERM REVERSIBLE HEALTH EFFECTS.	MEDIUM FINANCIAL OR TIME LOSS
1 - INSIGNIFICANT	NO INJURIES, OVER EXPOSURE TO A SINGLE PERSON ONSITE, BUT NO REPORTED HEALTH EFFECTS.	LOW FINANCIAL OR TIME LOSS

LIKELIHOOD TABLE

LEVEL	DESCRIPTION	QUANTIFICATION GUIDE
A - ALMOST CERTAIN	THE EVENT <u>IS</u> EXPECTED TO OCCUR IN MOST CERTAIN CIRCUMSTANCES	MORE THAN ONCE PER YEAR
B - LIKELY	THE EVENT <u>WILL</u> PROBABLY OCCUR IN MOST CIRCUMSTANCES	AT LEAST ONCE IN 5 YEARS
C - POSSIBLE	THE EVENT <u>SHOULD</u> OCCUR AT SOME TIME	AT LEAST ONCE IN 10 YEARS
D - UNLIKELY	THE EVENT <u>COULD</u> OCCUR AT SOME TIME	AT LEAST ONCE IN 30 YEARS
E - RARE	THE EVENT <u>MAY</u> OCCUR IN EXCEPTIONAL CIRCUMSTANCES	LESS THAN ONCE IN 30 YEARS

RISK ANALYSIS MATRIX

		CONSEQUENCE				
		1 - INSIGNIFICANT	2 - MINOR	3 - MODERATE	4 - MAJOR	5 - CATASTROPHIC
LIKELIHOOD	A - ALMOST CERTAIN	MODERATE	HIGH	EXTREME	EXTREME	EXTREME
	B - LIKELY	MODERATE	HIGH	HIGH	EXTREME	EXTREME
	C - POSSIBLE	LOW	MODERATE	HIGH	EXTREME	EXTREME
	D - UNLIKELY	LOW	LOW	MODERATE	HIGH	EXTREME
	E - RARE	LOW	LOW	MODERATE	HIGH	HIGH

RISK EVALUATION TABLE

RISK LEVEL	ACTION REQUIRED
EXTREME	UNACCEPTABLE RISK. RE-DESIGN REQUIRED. DO NOT PROCEED WITHOUT ADDITIONAL CONTROLS.
HIGH	UNACCEPTABLE RISK. ADDITIONAL CONTROLS NEEDED. CONSIDER FURTHER REVIEW AND CONSIDER RE-DESIGN
MODERATE	RISK MAY BE ACCEPTABLE. MANAGEMENT TO DETERMINE ACTIONS REQUIRED
LOW	ACCEPTABLE. MANAGE RISK THROUGH ROUTINE PROCEDURES AND OTHER ADMINISTRATIVE CONTROLS

CONSTRUCTION HAZARD SCHEDULE


ITEM	POTENTIAL HAZARD	POSSIBLE PREVENTATIVE ACTION
C1	DEEP EXCAVATION HAZARD	ALL STEPS MUST BE TAKEN TO OBTAIN CURRENT UNDERGROUND SERVICES INFORMATION BEFORE EXCAVATION WORKS COMMENCE. EXCAVATION WORK MUST BE UNDERTAKEN BY APPROPRIATELY EXPERIENCED AND QUALIFIED PERSONNEL. EXCAVATIONS SHALL BE ADEQUATELY SHORED AND APPROPRIATE BARRICADES AND SIGNAGE ERECTED, IF REQUIRED.
C2	OVERHEAD POWER HAZARD	WARNING SIGNS AND MARKERS SHALL BE ERECTED ADVISING OF THE PRESENCE OF LIVE OVERHEAD CABLES. A REPRESENTATIVE OF THE SUPPLY AUTHORITY SHALL REMAIN ON SITE DURING EARTHWORKS AND ANY OTHER HIGH RISK WORKS, IF REQUIRED.
C3	UNDERGROUND ELECTRICAL, TELECOMMUNICATION, GAS AND WATER MAIN HAZARD	WARNING SIGNS AND MARKERS SHALL BE ERECTED ADVISING OF THE PRESENCE OF THE EXISTING SERVICE. THE SERVICE SHALL BE IDENTIFIED AND MARKED BY THE SUPPLY AUTHORITY PRIOR TO THE COMMENCEMENT OF EXCAVATION. A REPRESENTATIVE OF THE SUPPLY AUTHORITY SHALL REMAIN ON SITE DURING THE EXCAVATION WORK, IF REQUIRED.
C4	DEMOLITION AND CLEARING HAZARD	SUITABLE QUALIFIED AND EXPERIENCED PERSONNEL SHALL BE RESPONSIBLE FOR THE DEMOLITION AND CLEARING WORKS FOR THE PROJECT AT ALL TIMES. THE CONTRACTORS WORK METHOD STATEMENT SHALL ALSO GIVE CONSIDERATION TO FALLING DEBRIS, COLLAPSE AND DANGEROUS AIRBORNE AGENTS.
C5	TRAFFIC MANAGEMENT HAZARD	SUITABLE QUALIFIED AND EXPERIENCED PERSONNEL SHALL BE RESPONSIBLE FOR THE SAFE AND ORDERLY PASSAGE OF VEHICULAR AND PEDESTRIAN TRAFFIC THROUGH THE PROJECT AT ALL TIMES. THE CONTRACTOR SHALL DEVELOP A TRAFFIC MANAGEMENT PLAN (TMP) FOR THE PROJECT TO ESTABLISH APPROPRIATE CONTROLS IN ACCORDANCE WITH THE MANUAL FOR UNIFORM TRAFFIC CONTROL.
C6	POTENTIAL ROCK FALL	LAND ABOVE THE SITE HAS BEEN CLEARED AND SOME EARTHWORKS HAS BEEN UNDERTAKEN CREATING A POTENTIAL ROCK FALL HAZARD. SUITABLE PERSONNEL SHALL BE RESPONSIBLE FOR IDENTIFYING ANY POTENTIAL HAZARD AND THE CONTRACTOR SHALL TAKE APPROPRIATE ACTION TO ELIMINATE THE HAZARD.

PRELIMINARY - NOT FOR CONSTRUCTION

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DATE	REV	DESCRIPTION	REC	APP	
REVISIONS					



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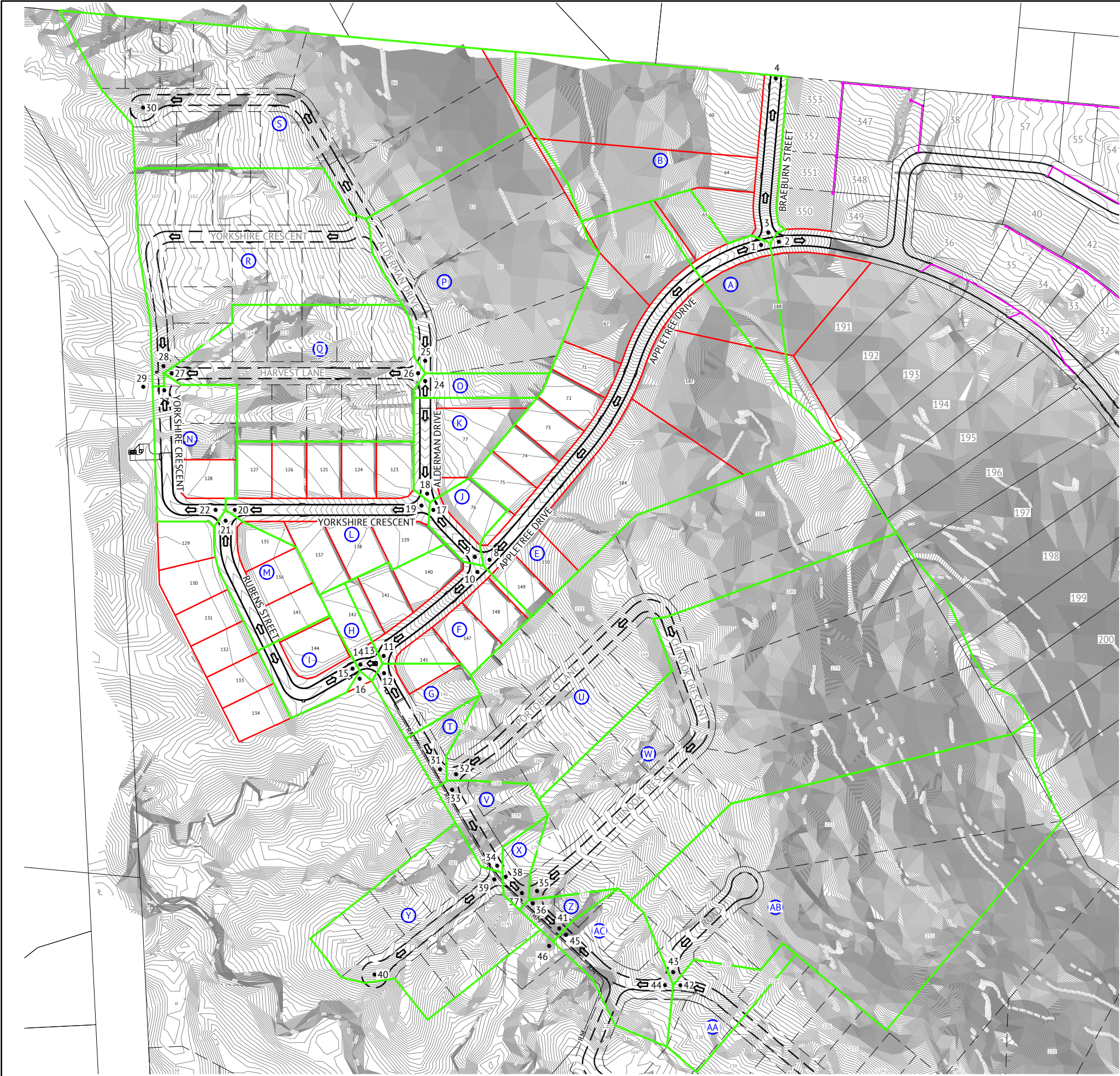
DESIGNED G.BROSANAN	
CHECKED P.PETERSEN	
PROJECT MANAGER P.PETERSEN	
ENGINEERING CERTIFICATION	
P.PETERSEN RPEQ 13231	

SCALE
ORIGINAL SHEET SIZE A1

CLIENT	ELEMENTS NQ PTY LTD
PROJECT	THE ORCHARD - STAGE 3
LOCATION	DARLING ROAD, JENSEN
SHEET TITLE	SAFETY IN DESIGN REPORT

JOB CODE	ELE-0006	
SHEET NUMBER	C002	REV
		2





LEGEND:

A

•24

CATCHMENT BOUNDARY

DENOTES CATCHMENT NAME

DENOTES DESIGN POINT

DIRECTION OF FLOW

FINISHED SURFACE CONTOURS

CATCHMENT DATA

CATCHMENT NAME	AREA (Ha)	C100	E.I.A (Ha)
A	0.513	1.00	0.513
B	1.883	1.00	1.883
E	3.480	1.00	3.480
F	0.772	1.00	0.772
G	0.266	1.00	0.266
H	0.126	1.00	0.126
I	0.312	1.00	0.312
J	0.203	1.00	0.203
K	0.410	1.00	0.410
L	1.147	1.00	1.147
M	0.470	1.00	0.470
N	0.568	1.00	0.568
O	0.161	1.00	0.161
P	1.987	1.00	1.987
Q	1.387	1.00	1.387

CATCHMENT NAME	AREA (Ha)	C100	E.I.A (Ha)
R	1.795	1.00	1.795
S	2.999	1.00	2.999
T	0.126	1.00	0.126
U	2.930	1.00	2.930
V	0.303	1.00	0.303
W	4.427	1.00	4.427
X	0.112	1.00	0.112
Y	1.143	1.00	1.143
Z	0.112	1.00	0.112
AA	0.390	1.00	0.390
AB	3.631	1.00	3.631
AC	0.525	1.00	0.525

Q100 - DATA TABLE

DESIGN POINT	CATCHMENTS CONTRIBUTING	E.I.A (Ha)	Tc (mins)	I100 (mm/hr)	Q100 (m3/s)	Q2 PIPE DIAMETRE (mm)	Q2 PIPE FLOW @ 0.7m/s (m3/s)	Q100 NET (m3/s)
1	A	0.513	19.3	208	0.297	93	0.070	0.226
2	60% 1	0.308	19.3	208	0.178	93	0.042	0.136
3	40% 1	0.205	19.3	208	0.119	93	0.028	0.091
4	3 + B	2.088	21.3	200	1.158	89	0.274	0.884
8	E	3.480	17.7	216	2.089	96	0.495	1.594
9	20% 8	0.696	17.7	216	0.418	96	0.099	0.319
10	80% 8	2.784	17.7	216	1.671	96	0.396	1.275
11	10 + F	3.556	19.4	208	2.054	93	0.487	1.567
12	G	0.266	18.3	213	0.157	95	0.037	0.120
13	11 + 12	3.822	19.4	208	2.208	93	0.523	1.685
14	13 + H	3.948	19.9	206	2.255	91	0.534	1.721
15	I	0.312	21.1	201	0.174	89	0.041	0.133
16	14 + 15	4.260	21.1	201	2.375	89	0.563	1.812
17	9 + J	0.899	18.9	210	0.525	93	0.124	0.400
18	K	0.410	18.0	214	0.244	95	0.058	0.186
19	17 + 18	1.309	18.9	210	0.764	93	0.181	0.583
20	19 + L	2.456	23.0	193	1.318	86	0.312	1.006
21	M	0.470	20.8	202	0.264	90	0.062	0.201
22	20 + 21	2.926	23.0	193	1.570	86	0.372	1.198
23	22 + N	3.494	25.8	184	1.783	82	0.422	1.361
24	O	0.161	19.6	207	0.093	92	0.022	0.071
25	P	1.987	17.4	217	1.200	97	0.284	0.916
26	24 + 25	2.148	19.6	207	1.236	92	0.293	0.943
27	26 + Q	3.535	22.7	194	1.909	86	0.452	1.457
28	R	1.795	22.3	196	0.976	87	0.231	0.745
29	23 + 27 + 28	8.824	25.8	184	4.503	82	1.066	3.437
30	S	2.999	18.4	213	1.772	95	0.420	1.352
31	T	0.126	16.6	222	0.078	99	0.018	0.059
32	U	2.930	16.2	224	1.821	100	0.431	1.389
33	31 + 32	3.056	16.6	222	1.882	99	0.446	1.436
34	33 + V	3.359	18.7	211	1.968	94	0.466	1.502
35	W	4.427	21.2	200	2.461	89	0.583	1.878
36	50% 35	2.214	21.2	200	1.231	89	0.292	0.939
37	50% 35	2.214	21.2	200	1.231	89	0.292	0.939
38	37 + X	2.326	22.0	197	1.274	88	0.302	0.972
39	34 + 38	5.685	22.0	197	3.113	88	0.738	2.376
40	39 + Y	6.828	25.2	186	3.521	85	0.834	2.687
41	36 + Z	2.326	22.1	197	1.270	87	0.301	0.969
42	AA	0.390	19.6	207	0.224	92	0.053	0.171
43	AB	3.631	19.6	207	2.087	92	0.494	1.592
44	42 + 43	4.021	19.6	207	2.311	92	0.548	1.763
45	44 + AC	4.546	21.2	200	2.530	89	0.599	1.930
46	41 + 45	6.872	22.1	197	3.751	87	0.889	2.863

PRELIMINARY - NOT FOR CONSTRUCTION

16/12/20	2	LOT LAYOUT REVISED	GB	PP
28/08/20	1	FOR OPERATIONAL WORKS APPROVAL	GB	PP
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DESIGNED  
G.BROSANAN

CHECKED  
P.PETERSEN

PROJECT MANAGER  
P.PETERSEN

ENGINEERING CERTIFICATION

P.PETERSEN RPEQ 13231

SCALE  
0 30 60 90m  
SCALE 1:1500 (A1)

ORIGINAL SHEET SIZE A1

CLIENT  
ELEMENTS NQ PTY LTD

PROJECT  
THE ORCHARD - STAGE 3

LOCATION  
DARLING ROAD, JENSEN

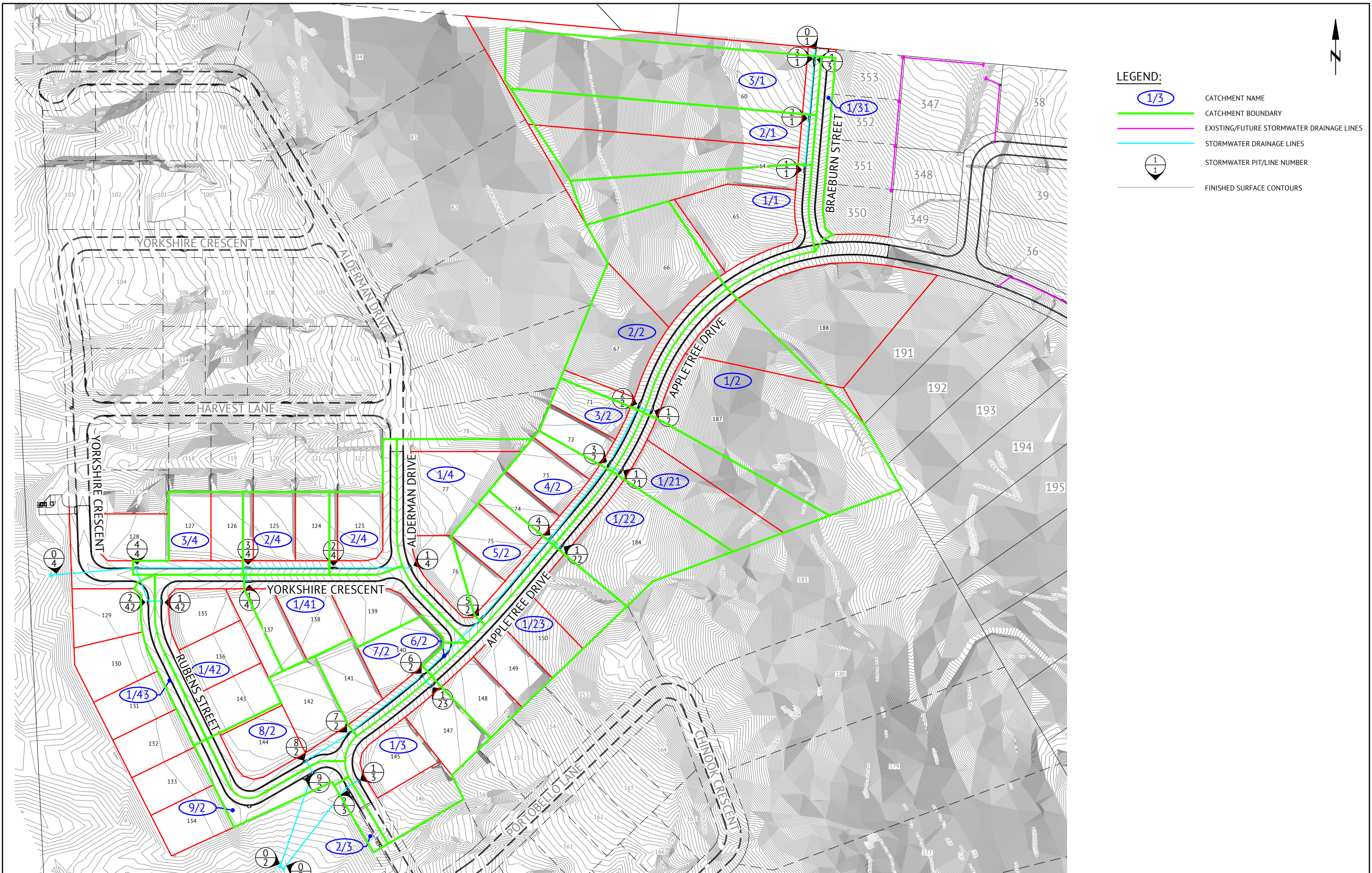
SHEET TITLE  
Q100 STORMWATER CATCHMENT PLAN & DATA TABLES

JOB CODE  
ELE-0006

SHEET NUMBER  
C036

REV  
2





LEGEND:

- 1/3 CATCHMENT NAME
- CATCHMENT BOUNDARY
- EXISTING/FUTURE STORMWATER DRAINAGE LINES
- STORMWATER DRAINAGE LINES
- 1  
1 STORMWATER PIT/LINE NUMBER
- FINISHED SURFACE CONTOURS

PRELIMINARY - NOT FOR CONSTRUCTION

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			REC	APP

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DESIGNED G.BROSANAN	
CHECKED P.PETERSEN	
PROJECT MANAGER P.PETERSEN	
ENGINEERING CERTIFICATION	

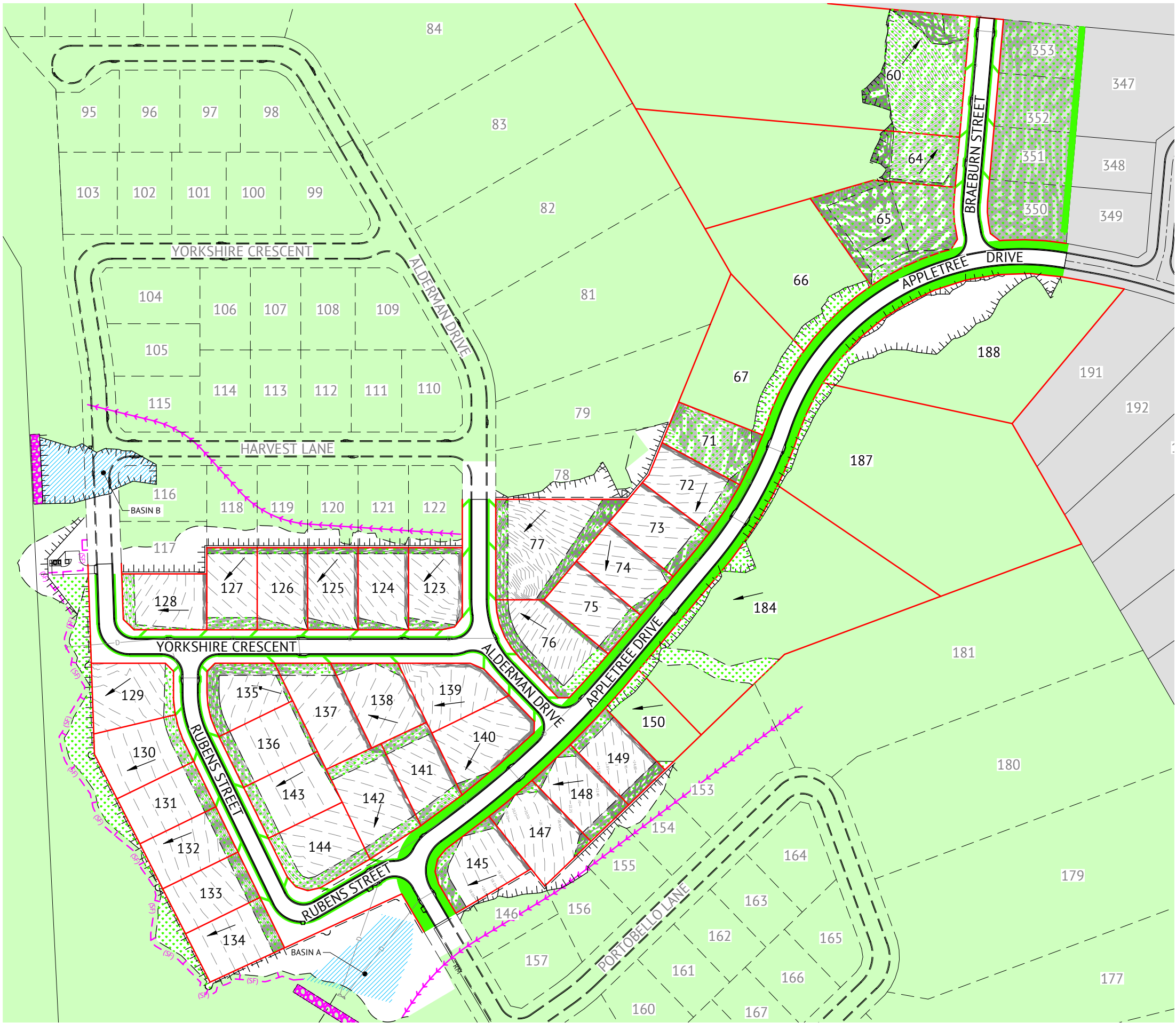
P.PETERSEN RPEQ 13231

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SCALE 1:1000 (A1)  
ORIGINAL SHEET SIZE A1

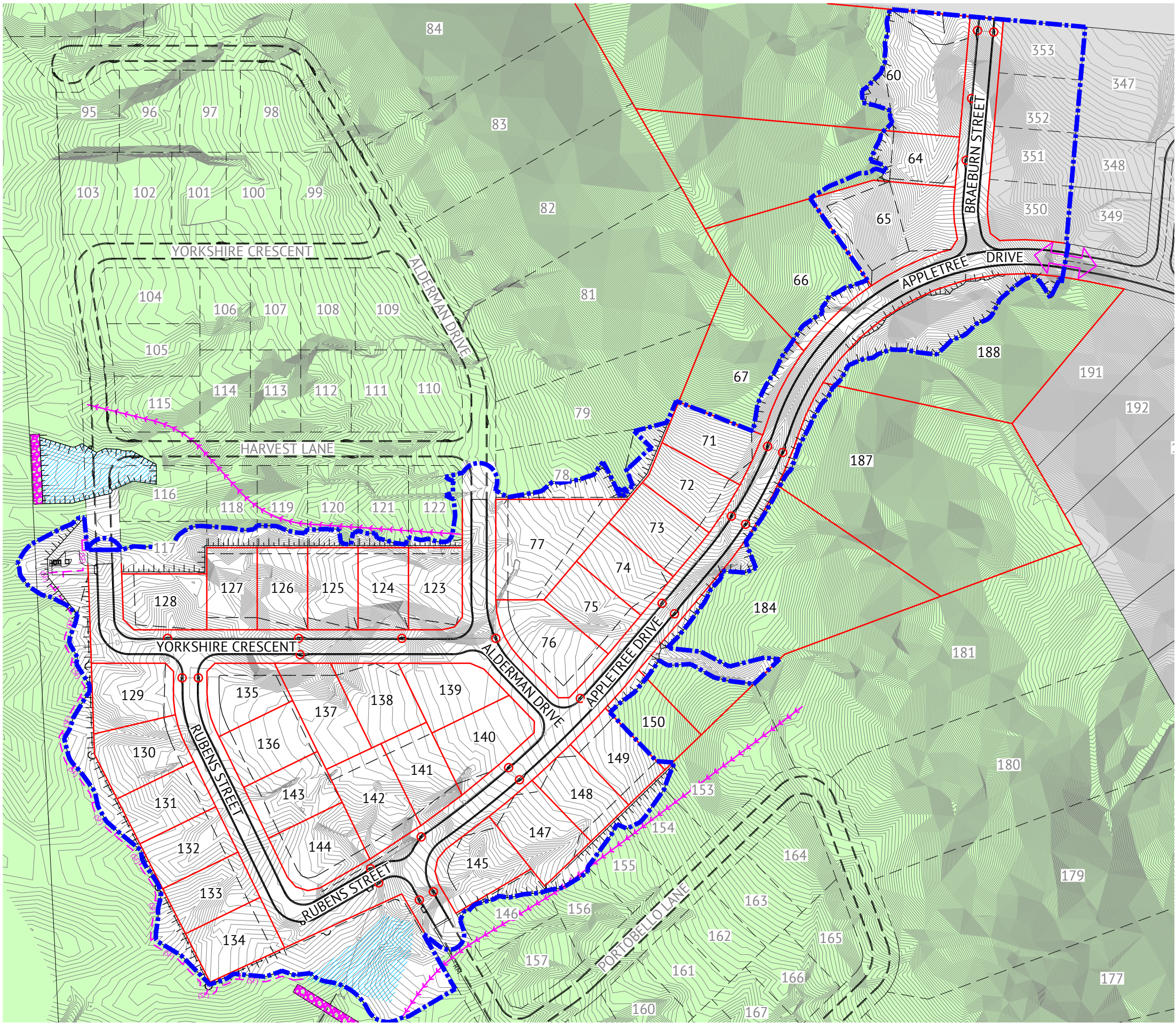
CLIENT ELEMENTS NQ PTY LTD	PROJECT THE ORCHARD - STAGE 3 LOCATION DARLING ROAD, JENSEN SHEET TITLE Q2 STORMWATER CATCHMENT PLAN
JOB CODE ELE-0006	
SHEET NUMBER C034	

REV 2









SOIL EROSION AND SEDIMENT  
CONTROL LEGEND

- EXISTING SURFACE CONTOURS
- STORMWATER DRAIN
- EXTENTS OF SITE
- SEDIMENT FENCE (SF) WITH RETURNS AT 20m SPACINGS
- DIVERSION MOUND, ENSURE POSITIVE LONGITUDINAL GRADE
- ENTRY/EXIT
- EXISTING ALLOTMENTS
- NATURAL VEGETATION TO REMAIN UNDISTURBED
- DUMPED ROCK
- TEMPORARY SEDIMENT BASIN
- PIT/MH - TEMPORARY CONSTRUCTION

SOIL EROSION AND SEDIMENT  
CONTROL NOTES

- FOR NOTES AND DETAILS REFER TO SOIL EROSION AND SEDIMENT CONTROL DETAILS PLAN
- STOCKPILE LOCATIONS TO BE DESIGNATED BY THE CONTRACTOR ON SITE DURING CONSTRUCTION AND CONFIRMED WITH THE SUPERINTENDENT.
- EXISTING SOIL TYPE - CLAYEY SAND, SANDY CLAY OR SILTY CLAY (FINE OR FINE TO MEDIUM GRAINED SAND WITH PLASTICITY RANGING FROM HIGH TO LOW)

PRELIMINARY - NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION	GB	PP	REC	APP
16/12/20	3	LOT LAYOUT REVISED	GB	PP		
28/08/20	2	FOR OPERATIONAL WORKS APPROVAL	GB	PP		
17/07/20	1	FOR BULK EARTHWORKS APPROVAL	GB	PP		



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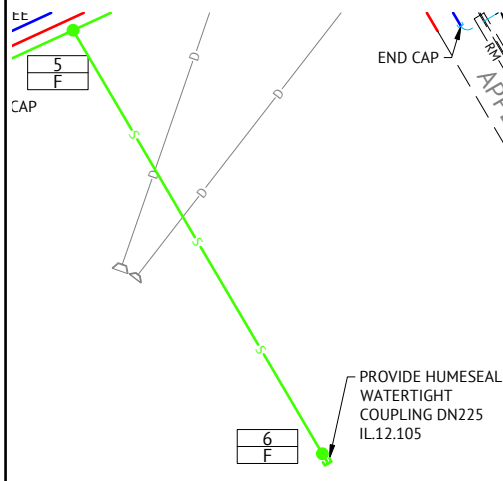
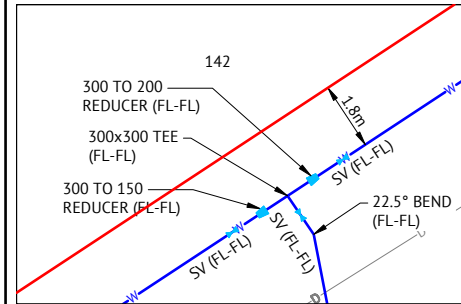
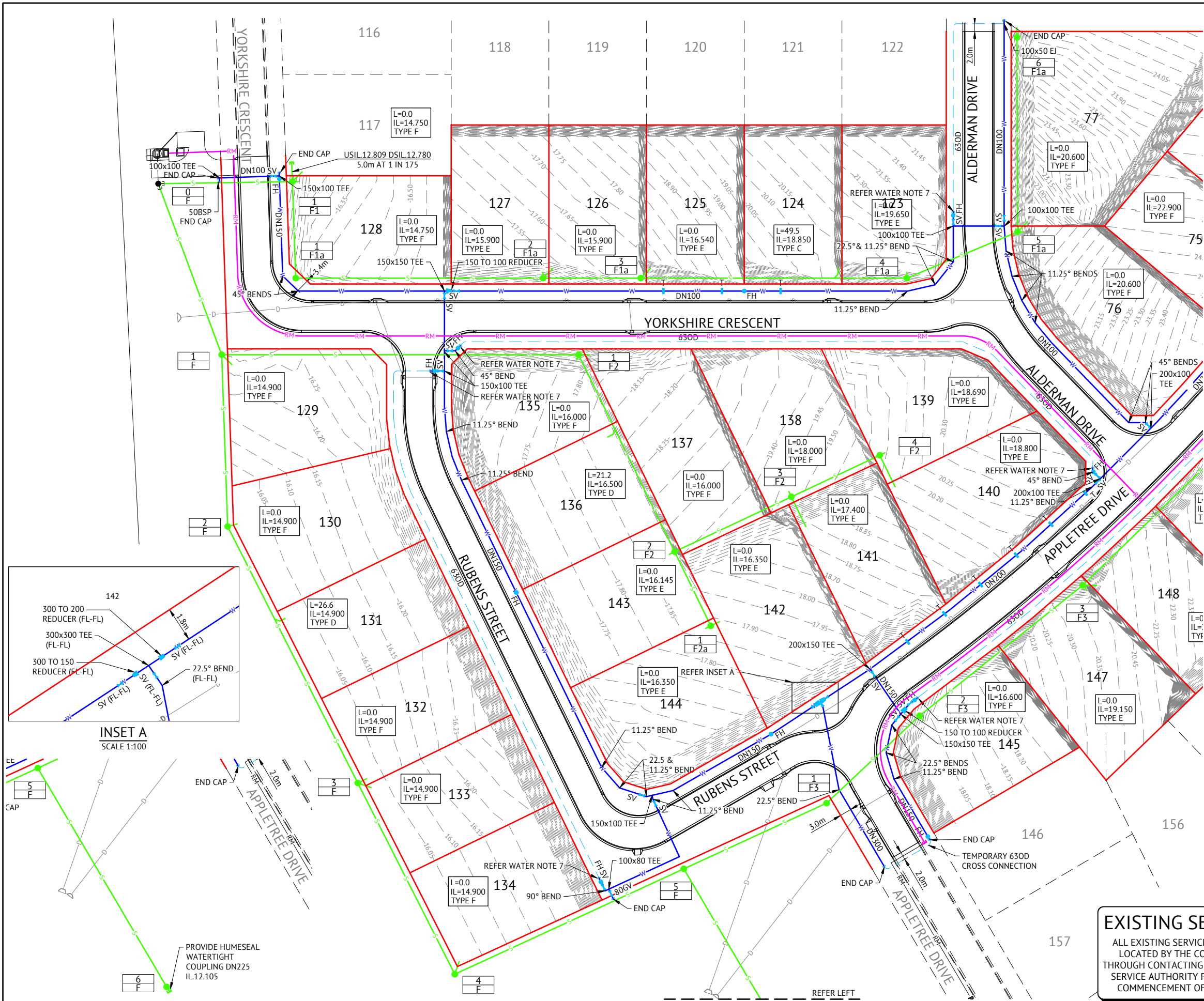
DESIGNED  
G.BROSANAN  
CHECKED  
P.PETERSEN  
PROJECT MANAGER  
P.PETERSEN  
ENGINEERING CERTIFICATION  
P.PETERSEN RPEQ 13231

SCALE  
0 20 40 60m  
SCALE 1:1000 (A1)  
ORIGINAL SHEET SIZE A1

CLIENT  
PROJECT  
LOCATION  
SHEET TITLE  
ELEMENTS NQ PTY LTD  
THE ORCHARD - STAGE 3  
DARLING ROAD, JENSEN  
SOIL EROSION & SEDIMENT CONTROL - CONSTRUCTION PHASE

JOB CODE  
SHEET NUMBER  
REV  
ELE-0006  
C031  
3





### WATER LEGEND

- DN100 WATER MAIN AND DIAMETER
- 630D POLYETHYLENE WATER MAIN AND DIAMETER
- FH FIRE HYDRANT, VALVE AND REDUCER
- T PROPOSED TRENCH STOP
- EXISTING WATER MAIN, VALVE AND HYDRANT

### WATER NOTES

- ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH RELEVANT LATEST ISSUE COUNCIL STANDARD DRAWINGS AND PROJECT SPECIFICATION.
- ALL WATER MAINS ARE TO BE LOCATED ON A 1.8m ±0.1m ALIGNMENT OFFSET FROM PROPERTY BOUNDARIES, UNLESS NOTED OTHERWISE.
- ALL FIRE HYDRANTS TO BE LOCATED PERPENDICULAR TO PROPERTY BOUNDARY UNLESS NOTED OTHERWISE.
- ALL uPVC MAINS ARE TO BE CLASS PN16 SERIES 2 COMPATIBLE TO AS 1477 RUBBER RING JOINTED, WITH SOCKETED DICTL FITTINGS UNLESS NOTED OTHERWISE.
- ALL 630D MAINS TO BE POLYETHYLENE CLASS PN16 TO AS 4130.
- ALL TRENCHES UNDER ROAD PAVEMENT (INCLUDING FUTURE) TO BE BACKFILLED WITH CRUSHER DUST TO SUBGRADE LEVEL.
- REFER TCC STANDARD DRAWING SD-315 FOR PVC TO PE SERVICE MAIN CONNECTION DETAIL.
- CONNECTION TO EXISTING WATER MAINS TO BE CARRIED OUT BY COUNCIL AT THE CONTRACTORS EXPENSE.

### SEWER LEGEND

- DESIGN SURFACE CONTOURS
- PRELIMINARY DESIGN SURFACE CONTOURS
- STORMWATER DRAINAGE LINE
- SEWER MAIN AND MANHOLE (MH)
- SEWER MAIN AND MAINTENANCE SHAFT (MS)
- DN100 SEWER HOUSE DRAIN
- SEWER RISING MAIN 0.9m OFFSET FROM BOK REFER ELE-0011 FOR DETAILS
- EXISTING SEWER MAIN AND MANHOLE
- TYPE & INDICATIVE TOP OF MANHOLE LEVEL MANHOLE NUMBER LINE NUMBER
- HOUSE CONNECTION (X&Y DIMENSIONS AS PER RELEVANT COUNCIL STANDARD DRAWING U.N.O.)
- DISTANCE FROM DOWNSTREAM MANHOLE INVERT LEVEL OF HOUSE CONNECTION POINT HOUSE CONNECTION TYPE
- TYPE A - ACROSS BOUNDARY 'SLOPE DROP'
- TYPE B - ACROSS BOUNDARY 'JUMP UP'
- TYPE C - WITHIN LOT 'DIRECT CONNECTION'
- TYPE D - WITHIN LOT 'JUMP UP'
- TYPE E - MANHOLE 'DIRECT CONNECTION'
- TYPE F - MANHOLE 'INTERNAL DROP'
- TYPE G - MAINTENANCE SHAFT CONNECTION
- TYPE Ex - EXISTING HOUSE CONNECTION

- EXISTING SEWER MAIN AND MANHOLE
- TYPE & INDICATIVE TOP OF MANHOLE LEVEL MANHOLE NUMBER LINE NUMBER
- HOUSE CONNECTION (X&Y DIMENSIONS AS PER RELEVANT COUNCIL STANDARD DRAWING U.N.O.)
- DISTANCE FROM DOWNSTREAM MANHOLE INVERT LEVEL OF HOUSE CONNECTION POINT HOUSE CONNECTION TYPE
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- TYPE F - MANHOLE 'INTERNAL DROP'
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- TYPE Ex - EXISTING HOUSE CONNECTION

### SEWER NOTES

- ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH RELEVANT LATEST ISSUE COUNCIL STANDARD DRAWINGS AND PROJECT SPECIFICATION.
- ALL SEWERAGE MAINS TO BE LOCATED ON 1.5m ±0.1m ALIGNMENT OFFSET FROM THE PROPERTY BOUNDARIES, UNLESS NOTED OTHERWISE.
- ALL SEWERAGE MAINS TO BE DN150, UNLESS NOTED OTHERWISE.
- ALL DN150 AND DN225 SEWERAGE MAINS TO BE uPVC DWV SN8, UNLESS NOTED OTHERWISE.
- ALL DN100 HOUSE DRAINS TO BE uPVC DWV SN10, UNLESS NOTED OTHERWISE. (MAXIMUM LENGTH 10.0m)
- ALL TRENCHES UNDER ROAD PAVEMENT (INCLUDING FUTURE) TO BE BACKFILLED WITH CRUSHER DUST TO SUBGRADE LEVEL.
- CONNECTION/ALTERATIONS TO EXISTING SEWERAGE INFRASTRUCTURE TO BE CARRIED OUT BY COUNCIL AT THE CONTRACTORS EXPENSE.
- ALL MANHOLE INTERNAL DROP 'CORES' ARE NOT TO BE LOCATED WITHIN 150mm OF PRECAST WALL JOINTS. IF CLASH OCCURS SUPERINTENDENT TO PROVIDE FURTHER INSTRUCTIONS PRIOR TO MANHOLE BEING 'CORED'.
- TOP OF MANHOLE LEVELS PROVIDED ARE INDICATIVE. REFER TCC STANDARD DRAWING SD-475 FOR FINISHED LEVELS OF MANHOLE COVERS.

### EXISTING SERVICES

ALL EXISTING SERVICES ARE TO BE LOCATED BY THE CONTRACTOR THROUGH CONTACTING THE RELEVANT SERVICE AUTHORITY PRIOR TO THE COMMENCEMENT OF ANY WORK

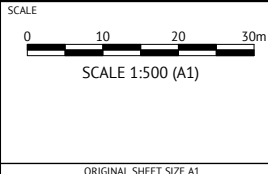
### PRELIMINARY - NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION	GB	PP
16/12/20	2	LOT LAYOUT REVISED	GB	PP
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			REC	APP



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ENGINEERING CERTIFICATION  
P.PETERSEN RPEQ 13231



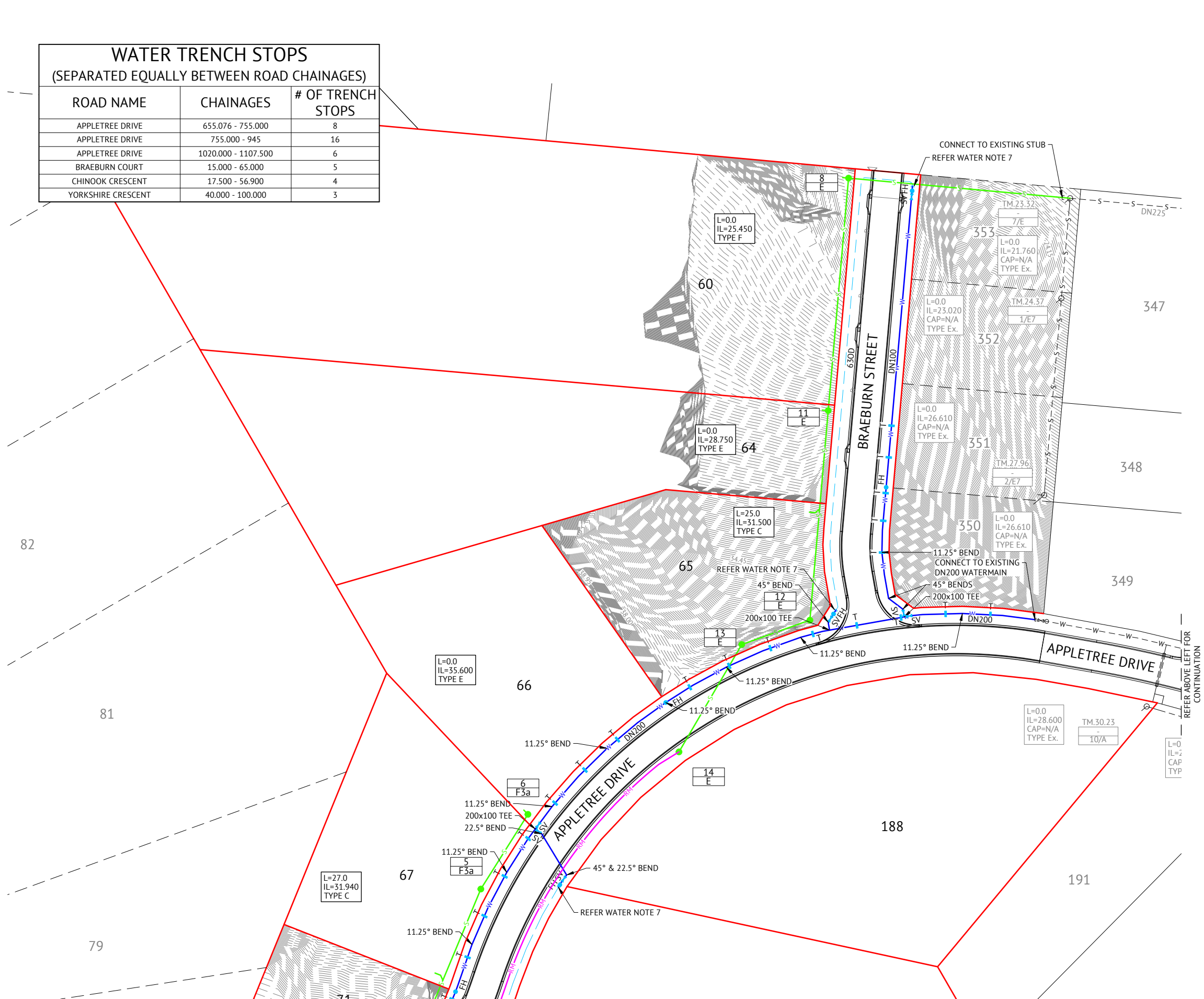
CLIENT  
ELEMENTS NQ PTY LTD  
PROJECT  
THE ORCHARD - STAGE 3  
LOCATION  
DARLING ROAD, JENSEN  
SHEET TITLE  
WATER & SEWERAGE RETICULATION PLAN - SHEET 3 OF 3

JOB CODE  
ELE-0006  
SHEET NUMBER  
C027  
REV  
2





WATER TRENCH STOPS (SEPARATED EQUALLY BETWEEN ROAD CHAINAGES)		
ROAD NAME	CHAINAGES	# OF TRENCH STOPS
APPLETREE DRIVE	655.076 - 755.000	8
APPLETREE DRIVE	755.000 - 945	16
APPLETREE DRIVE	1020.000 - 1107.500	6
BRAEBURN COURT	15.000 - 65.000	5
CHINOOK CRESCENT	17.500 - 56.900	4
YORKSHIRE CRESCENT	40.000 - 100.000	3



WATER LEGEND

DN100

630D

FH SV

T

—○— W— —○— W—

WATER MAIN AND DIAMETER

POLYETHYLENE WATER MAIN AND DIAMETER

FIRE HYDRANT, VALVE AND REDUCER

PROPOSED TRENCH STOP

EXISTING WATER MAIN, VALVE AND HYDRANT

WATER NOTES

1. ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH RELEVANT LATEST ISSUE COUNCIL STANDARD DRAWINGS AND PROJECT SPECIFICATION.

2. ALL WATER MAINS ARE TO BE LOCATED ON A 1.8m ±0.1m ALIGNMENT OFFSET FROM PROPERTY BOUNDARIES, UNLESS NOTED OTHERWISE.

3. ALL FIRE HYDRANTS TO BE LOCATED PERPENDICULAR TO PROPERTY BOUNDARY UNLESS NOTED OTHERWISE.

4. ALL uPVC MAINS ARE TO BE CLASS PN16 SERIES 2 COMPATIBLE TO AS 1477 RUBBER RING JOINTED, WITH SOCKETED DICL FITTINGS UNLESS NOTED OTHERWISE.

5. ALL 630D MAINS TO BE POLYETHYLENE CLASS PN16 TO AS 4130.

6. ALL TRENCHES UNDER ROAD PAVEMENT (INCLUDING FUTURE) TO BE BACKFILLED WITH CRUSHER DUST TO SUBGRADE LEVEL.

7. REFER TCC STANDARD DRAWING SD-315 FOR PVC TO PE SERVICE MAIN CONNECTION DETAIL.

8. CONNECTION TO EXISTING WATER MAINS TO BE CARRIED OUT BY COUNCIL AT THE CONTRACTORS EXPENSE.

SEWER LEGEND

—6.75—

—6.75—

D

S

S

DN100 SEWER HOUSE DRAIN

RM

—S—○—S—

MH.6.57  
1  
ML04F

S

L=3.0  
IL=5.160  
TYPE D

DESIGN SURFACE CONTOURS

PRELIMINARY DESIGN SURFACE CONTOURS

STORMWATER DRAINAGE LINE

SEWER MAIN AND MANHOLE (MH)

SEWER MAIN AND MAINTENANCE SHAFT (MS)

DN100 SEWER HOUSE DRAIN

SEWER RISING MAIN 0.9m OFFSET FROM BOK  
REFER ELE-0011 FOR DETAILS

EXISTING SEWER MAIN AND MANHOLE

TYPE & INDICATIVE TOP OF MANHOLE  
LEVEL MANHOLE NUMBER  
LINE NUMBER

HOUSE CONNECTION (X&Y DIMENSIONS AS  
PER RELEVANT COUNCIL STANDARD  
DRAWING U.N.O.)

DISTANCE FROM DOWNSTREAM MANHOLE  
INVERT LEVEL OF HOUSE CONNECTION POINT  
HOUSE CONNECTION TYPE  
TYPE A - ACROSS BOUNDARY 'SLOPE DROP'  
TYPE B - ACROSS BOUNDARY 'JUMP UP'  
TYPE C - WITHIN LOT 'DIRECT CONNECTION'  
TYPE D - WITHIN LOT 'JUMP UP'  
TYPE E - MANHOLE 'DIRECT CONNECTION'  
TYPE F - MANHOLE 'INTERNAL DROP'  
TYPE G - MAINTENANCE SHAFT CONNECTION  
TYPE Ex. - EXISTING HOUSE CONNECTION

SEWER NOTES

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2. ALL SEWERAGE MAINS TO BE LOCATED ON 1.5m ±0.1m ALIGNMENT OFFSET FROM THE PROPERTY BOUNDARIES, UNLESS NOTED OTHERWISE.

3. ALL SEWERAGE MAINS TO BE DN150, UNLESS NOTED OTHERWISE.

4. ALL DN150 AND DN225 SEWERAGE MAINS TO BE uPVC DWV SN8, UNLESS NOTED OTHERWISE.

5. ALL DN100 HOUSE DRAINS TO BE uPVC DWV SN10, UNLESS NOTED OTHERWISE. (MAXIMUM LENGTH 10.0m)

6. ALL TRENCHES UNDER ROAD PAVEMENT (INCLUDING FUTURE) TO BE BACKFILLED WITH CRUSHER DUST TO SUBGRADE LEVEL.

7. CONNECTION/ALTERATIONS TO EXISTING SEWERAGE INFRASTRUCTURE TO BE CARRIED OUT BY COUNCIL AT THE CONTRACTORS EXPENSE.

8. ALL MANHOLE INTERNAL DROP 'CORES' ARE NOT TO BE LOCATED WITHIN 150mm OF PRECAST WALL JOINTS.  
IF CLASH OCCURS SUPERINTENDENT TO PROVIDE FURTHER INSTRUCTIONS PRIOR TO MANHOLE BEING 'CORED'.

9. TOP OF MANHOLE LEVELS PROVIDED ARE INDICATIVE.  
REFER TCC STANDARD DRAWING SD-475 FOR FINISHED LEVELS OF MANHOLE COVERS.

EXISTING SERVICES

ALL EXISTING SERVICES ARE TO BE  
LOCATED BY THE CONTRACTOR  
THROUGH CONTACTING THE RELEVANT  
SERVICE AUTHORITY PRIOR TO THE  
COMMENCEMENT OF ANY WORK

PRELIMINARY - NOT FOR CONSTRUCTION

16/12/20	2	LOT LAYOUT REVISED	GB	PP
28/08/20	1	FOR OPERATIONAL WORKS APPROVAL	GB	PP
DATE	REV	DESCRIPTION	REC	APP

Premise

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DESIGNED  
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CHECKED  
P.PETERSEN

PROJECT MANAGER  
P.PETERSEN

ENGINEERING CERTIFICATION

P.PETERSEN RPEQ 13231

SCALE

0 10 20 30m

SCALE 1:500 (A1)

ORIGINAL SHEET SIZE A1

CLIENT

PROJECT

LOCATION

SHEET TITLE

ELEMENTS NQ PTY LTD

THE ORCHARD - STAGE 3

DARLING ROAD, JENSEN

WATER & SEWERAGE RETICULATION PLAN - SHEET 1 OF 3

JOB CODE

SHEET NUMBER

REV

ELE-0006

C025

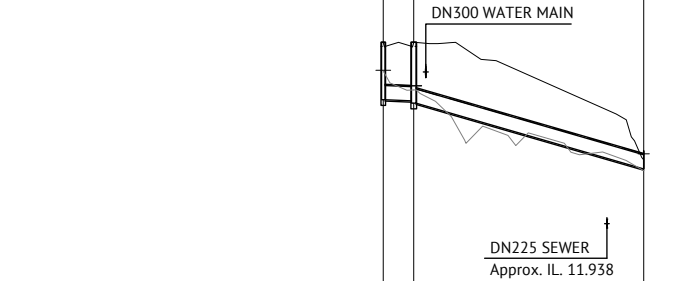
2



STRUCTURE NAME	1/3	2/3	0/3
STRUCTURE DESCRIPTION	TCC INLET PIT 2.4m LINTEL; MH TYPE 1	TCC INLET PIT 2.4m LINTEL; MH TYPE 2	OUTLET
	61893.182 E 93900.323 N	61886.236 E 93896.235 N	61848.967 E 93848.195 N

LEGEND

TRENCH STOPS  
REFER TCC STD DWG SD-482

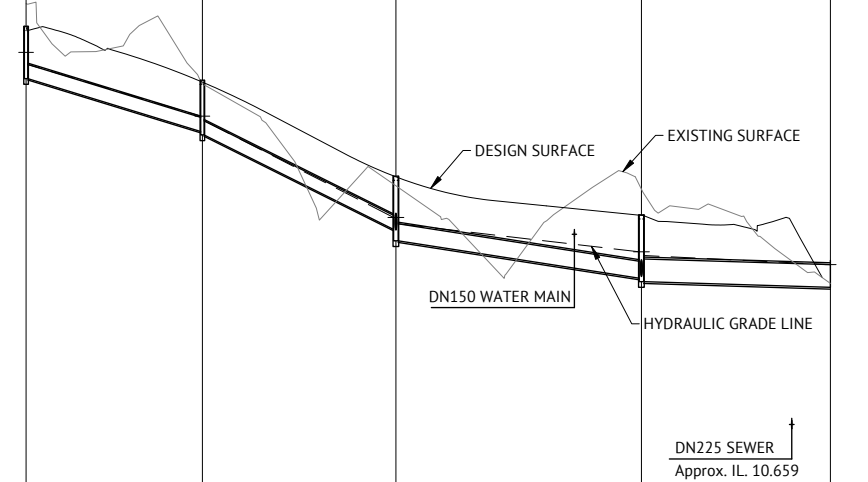


PIPE SIZE (mm)	375	375
PIPE CLASS	3	3
PIPE GRADE (%)	0.37%	2.86%
PIPE SLOPE (1 in X)	268.7	35.0
FULL PIPE VELOCITY (m/s)	1.05	1.25
PART FULL VELOCITY (m/s)	1.05	2.64
PIPE FLOW (cumecs)	0.116	0.138
PIPE CAPACITY AT GRADE (cumecs)	0.107	0.297
DATUM RL	-2.0	

WSE IN STRUCTURE	16.109		
HGL IN PIPE	15.733	15.698	13.900
DEPTH OF INVERT BELOW FSL	1.522	1.552	0.485
INVERT LEVEL	15.330	15.300	13.500
FINISHED (& EXISTING) SURFACE LEVEL	16.852 (16.085)	16.852 (15.589)	13.985 (13.454)
CHAINAGE	0.000	8.060	68.903

LINE 3

STRUCTURE NAME	1/4	2/4	3/4	4/4	0/4
STRUCTURE DESCRIPTION	TCC INLET PIT 2.4m LINTEL; MH TYPE 1	TCC INLET PIT 2.4m LINTEL; MH TYPE 1	TCC INLET PIT 3.6m LINTEL; MH TYPE 2	TCC INLET PIT 2.4m LINTEL; MH TYPE 2	PRECAST CONCRETE HEADWALL
	61924.173 E 94025.940 N	61877.563 E 94025.841 N	61826.363 E 94025.940 N	61761.395 E 94025.940 N	61711.575 E 94021.698 N



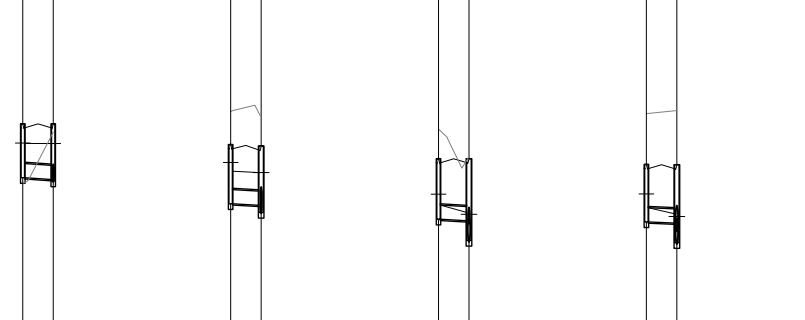
PIPE SIZE (mm)	375	375	450	600
PIPE CLASS	3	3	3	3
PIPE GRADE (%)	3.00%	4.88%	1.52%	0.30%
PIPE SLOPE (1 in X)	33.3	20.5	65.6	333.3
FULL PIPE VELOCITY (m/s)	0.89	1.27	1.64	1.51
PART FULL VELOCITY (m/s)	2.46	3.23	2.42	1.51
PIPE FLOW (cumecs)	0.099	0.141	0.261	0.427
PIPE CAPACITY AT GRADE (cumecs)	0.304	0.388	0.352	0.336
DATUM RL	1.0			

WSE IN STRUCTURE	20.614				
HGL IN PIPE	20.295	18.928	16.249	15.339	15.000
DEPTH OF INVERT BELOW FSL	1.385	1.358	1.409	1.677	0.710
INVERT LEVEL	19.920	18.520	15.930	14.640	14.400
FINISHED (& EXISTING) SURFACE LEVEL	21.305 (21.901)	19.878 (19.782)	17.339 (17.087)	16.317 (16.996)	15.110 (14.504)
CHAINAGE	0.000	46.652	97.853	162.821	212.823

LINE 4

Q2 STORMWATER LONGITUDINAL SECTION  
SCALE 1:1000 HORIZONTAL, SCALE 1:100 VERTICAL

STRUCTURE NAME	1/11	3/1	1/21	1/22	1/23	6/2
STRUCTURE DESCRIPTION	TCC INLET PIT 2.4m LINTEL; MH TYPE 1	TCC INLET PIT 3.6m LINTEL; MH TYPE 1	TCC INLET PIT 3.6m LINTEL; MH TYPE 2	TCC INLET PIT 2.4m LINTEL; MH TYPE 1	TCC INLET PIT 3.6m LINTEL; MH TYPE 1	TCC INLET PIT 2.4m LINTEL; MH TYPE 2
	62171.074 E 94326.515 N	62163.045 E 94327.216 N	62047.998 E 94082.484 N	62012.783 E 94038.128 N	61935.895 E 93955.842 N	61930.537 E 93961.864 N

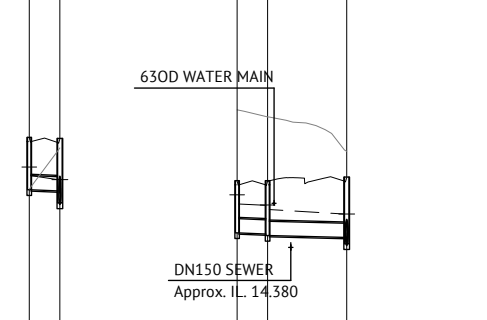


PIPE SIZE (mm)	375	375	375	375	375	375
PIPE CLASS	3	3	3	3	3	3
PIPE GRADE (%)	0.62%	0.50%	0.50%	0.37%	0.37%	0.37%
PIPE SLOPE (1 in X)	161.2	201.8	201.5	268.7	270.0	268.7
FULL PIPE VELOCITY (m/s)	0.20	1.06	1.06	1.00	0.70	1.03
PART FULL VELOCITY (m/s)	0.92	1.27	1.27	1.10	1.05	1.09
PIPE FLOW (cumecs)	0.022	0.118	0.091	0.111	0.077	0.114
PIPE CAPACITY AT GRADE (cumecs)	0.138	0.123	0.124	0.107	0.107	0.107
DATUM RL	9.0			4.0		

WSE IN STRUCTURE	26.216					
HGL IN PIPE	26.206	26.204	28.472	25.575	16.355	15.603
DEPTH OF INVERT BELOW FSL	1.427	1.477	1.566	1.604	1.387	1.381
INVERT LEVEL	25.300	25.250	27.610	23.200	15.980	14.840
FINISHED (& EXISTING) SURFACE LEVEL	26.727 (25.145)	26.727 (26.505)	29.139 (29.903)	24.804 (25.587)	17.367 (15.994)	16.221 (18.095)
CHAINAGE	0.000	8.060	8.073	8.060	8.099	8.060

LINE 11

STRUCTURE NAME	1/41	3/4	1/42	2/42	4/4
STRUCTURE DESCRIPTION	TCC INLET PIT 3.6m LINTEL; MH TYPE 1	TCC INLET PIT 3.6m LINTEL; MH TYPE 2	TCC INLET PIT 2.4m LINTEL; MH TYPE 1	TCC INLET PIT 2.4m LINTEL; MH TYPE 1	TCC INLET PIT 2.4m LINTEL; MH TYPE 2
	61877.104 E 94017.380 N	61826.363 E 94025.940 N	61776.658 E 94006.350 N	61768.598 E 94006.350 N	61761.395 E 94025.940 N



PIPE SIZE (mm)	375	375	375	375	375
PIPE CLASS	3	3	3	3	3
PIPE GRADE (%)	0.37%	0.37%	0.37%	0.37%	0.24%
PIPE SLOPE (1 in X)	270.0	270.0	268.7	268.7	418.8
FULL PIPE VELOCITY (m/s)	0.70	0.70	1.03	1.03	1.19
PART FULL VELOCITY (m/s)	1.05	1.05	1.09	1.09	1.19
PIPE FLOW (cumecs)	0.077	0.077	0.114	0.114	0.131
PIPE CAPACITY AT GRADE (cumecs)	0.107	0.107	0.107	0.107	0.086
DATUM RL	0.0				

WSE IN STRUCTURE	16.582				
HGL IN PIPE	16.355	16.249	15.603	15.569	15.339
DEPTH OF INVERT BELOW FSL	1.387	1.389	1.381	1.411	1.597
INVERT LEVEL	15.980	15.950	14.840	14.810	14.720
FINISHED (& EXISTING) SURFACE LEVEL	17.367 (15.994)	17.339 (17.087)	16.221 (18.095)	16.221 (17.907)	16.317 (16.996)
CHAINAGE	0.000	8.099	8.060	8.060	29.000

LINE 41

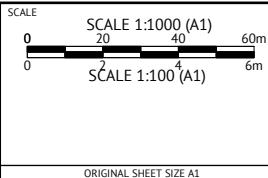
PRELIMINARY - NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION	GB	PP
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			REC	APP



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DESIGNED G.BROSANAN	
CHECKED P.PETERSEN	
PROJECT MANAGER P.PETERSEN	
ENGINEERING CERTIFICATION	
P.PETERSEN RPEQ 13231	



CLIENT

PROJECT

LOCATION

SHEET TITLE

THE ORCHARD - STAGE 3

DARLING ROAD, JENSEN

Q2 STORMWATER LONGITUDINAL SECTION - SHEET 2 OF 2

ELEMENTS NQ PTY LTD

JOB CODE

ELE-0006

SHEET NUMBER

C024

REV

2