

Your Ref

In reply please quote
EngA0001/19

If calling, please ask for
James Templeton



06 July 2018

CivilPlan Consultants Limited
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Manukau City
Auckland 2241

Ngaruawahia Office
(Head Office)
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0800 492 452
www.waikatodistrict.govt.nz

Dear Sir/Madam

SUBDIVISION CONSENT SUB0311/18, APPLICANT: HUGHES DEVELOPMENTS LIMITED, ADDRESS: 99 ESCOTTS ROAD TUAKAU

I am pleased to advise that your engineering plans for Hughes Developments Limited were approved on 6 July 2018. Please see stamped plans.

When you are ready to begin construction please contact the Land Development Engineer who approved the Engineering plans to arrange site meetings as list below. Alternatively you can email subdivisions@waikato.govt.nz and we will have the Land Development Engineer contact you. If you decide to email us please provide a contact phone number so that we can call you back.

Required inspection hold points to be witnessed on site (at minimum):

1. Pre-construction meeting to meet contractors and developers representatives.
2. Sediment and Erosion control measures and Traffic Management (at areas where exposed to public). Could incorporate within the Pre-Con meeting.
3. Drainage inspections before backfilling (as agreed with the LDE).
4. Stringline levels, Subgrade, subbase, basecourse pavement testing on each road.
5. Pre-seal inspection and witness beam testing.
6. Wastewater and Water supply pressure testing. Visual MH haunch and pipe connection finishing.
7. Water disinfection testing.
8. Major structure inspections (eg water attenuation tank) at excavation/ before backfilling.

Please contact me if you have any queries regarding the information.

Yours faithfully

James Templeton
Land Development Engineer

CC: Hughes Developments Limited
PO Box 848
Christchurch 8140

Approved Engineering Plan for Subdivision
SUB 0311/18

Date: Thursday, 5 July 2018

Page: 1 of 3

Subject to notations in red

ISSUED BY: Ryan Pitkethley

DL = DOWNLOAD LINK, PDF = PDF FILE, HC = HARD COPY1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 2 of 3

Subject to notations in red



Plan Number	Plan Title	Date of Issue	Revision Details	Dwg Count	Section 127 and EPA	4/04/2018	19/04/2018	19/04/2018	27/04/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018	16/05/2018	16/05/2018	22/05/2018	22/05/2018
						85	16	22	85	20	10	7	17	6	6	6	6
2011-01-323	ROAD LONGITUDINAL SECTIONS - SHEET 4					C1			C1								
2011-01-330	ROAD TYPICAL CROSS SECTION - SHEET 1					C1			C1								
2011-01-331	ROAD TYPICAL CROSS SECTIONS SHEET 2					C1			C1								
2011-01-332	ROAD TYPICAL CROSS SECTION - SHEET 3					C1			C1								
2011-01-333	ROAD TYPICAL CROSS SECTION - SHEET 4					C1			C1								
2011-01-334	ROAD TYPICAL CROSS SECTION - SHEET 5					C1			C1								
2011-01-335	RAISED TABLE DETAILS					C1			C1	C2			C2				
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2011-01-381	ROAD MARKING PLAN - DETAIL SHEET 1					C1			C2	C2				C3	C3		
2011-01-382	ROAD MARKING PLAN - DETAIL SHEET 2					C1			C2	C2				C3	C3		
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2011-01-401	DRAINAGE RETICULATION PLAN - DETAIL SHEET 1					C1			C1	C2			C2	C2		C3	C3
2011-01-402	DRAINAGE RETICULATION PLAN - DETAIL SHEET 2					C1			C1	C2			C2	C2			
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2011-01-431	STORMWATER LONGITUDINAL SECTIONS - SHEET 2					C1			C1	C1							
2011-01-432	STORMWATER LONGITUDINAL SECTIONS - SHEET 3					C1			C1	C1							
2011-01-433	STORMWATER LONGITUDINAL SECTIONS - SHEET 4					C1			C1	C2							
2011-01-434	STORMWATER LONGITUDINAL SECTIONS - SHEET 5					C1			C1	C1							
2011-01-435	STORMWATER LONGITUDINAL SECTIONS - SHEET 6					C1			C1	C1							
2011-01-436	STORMWATER LONGITUDINAL SECTIONS - SHEET 7					C1			C1	C1							
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WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 3 of 3

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Page: 1 of 92



HUGHES DEVELOPMENTS LIMITED

99 ESCOTTS ROAD

TUAKAU

PROJECT NUMBER: 2011

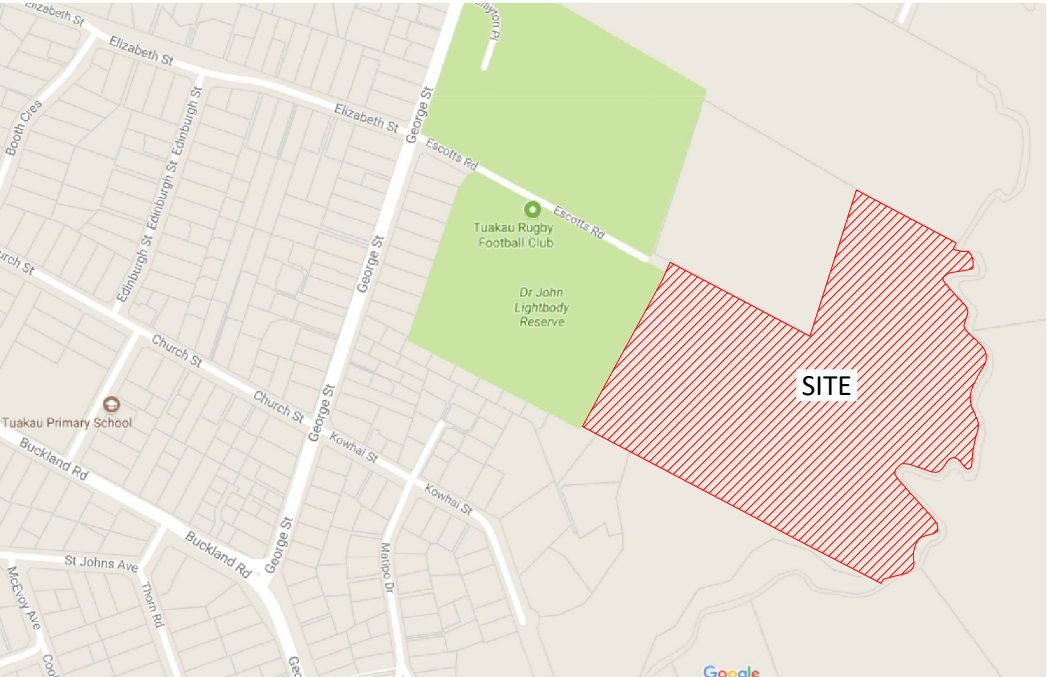
CONSENT ISSUE

MAY 2018

DRAWING INDEX	
Sheet Number	Sheet Title
100-Subdivision	
2011-01-000	COVER SHEET
2011-01-099	GENERAL LAYOUT PLAN
2011-01-100	PROPOSED SUBDIVISION PLAN-STAGE 1-OVERALL LAYOUT
2011-01-101	PROPOSED SUBDIVISION PLAN-STAGE 1-DETAIL SHEET
2011-01-102	PROPOSED SUBDIVISION PLAN-STAGE 2-OVERALL LAYOUT
2011-01-103	PROPOSED SUBDIVISION PLAN-STAGE 2-DETAIL SHEET 1
2011-01-104	PROPOSED SUBDIVISION PLAN-STAGE 2-DETAIL SHEET 2
2011-01-150	TOPOGRAPHICAL PLAN
2011-01-160	CLEARING PLAN
200-Earthworks	
2011-01-200	FINISHED CONTOURS PLAN
2011-01-220	ISOPACHS PLAN
2011-01-221	GEOTECHNICAL DRAINAGE DETAILS
2011-01-230	SEDIMENT AND EROSION CONTROL - LAYOUT PLAN
2011-01-231	SEDIMENT AND EROSION CONTROL - POND 2 DETAIL
2011-01-235	SEDIMENT AND EROSION CONTROL STD DETAILS - SHEET 1
2011-01-236	SEDIMENT AND EROSION CONTROL STD DETAILS - SHEET 2
2011-01-237	SEDIMENT AND EROSION CONTROL STD DETAILS - SHEET 2
2011-01-240	EARTHWORKS CROSS SECTIONS - SHEET 1
2011-01-241	EARTHWORKS CROSS SECTIONS - SHEET 2
2011-01-270	RETAINING WALL - PLAN AND ELEVATION - SHEET 1
2011-01-271	RETAINING WALL - PLAN AND ELEVATION - SHEET 2
2011-01-272	RETAINING WALL GEOTECHNICAL DETAILS - SHEET 1
2011-01-273	RETAINING WALL GEOTECHNICAL DETAILS - SHEET 2
2011-01-274	RETAINING WALL GEOTECHNICAL DETAILS - SHEET 3
2011-01-275	RETAINING WALL GEOTECHNICAL DETAILS - SHEET 4
2011-01-276	RETAINING WALL GEOTECHNICAL DETAILS - SHEET 5
2011-01-277	RETAINING WALL GEOTECHNICAL DETAILS - SHEET 6
2011-01-278	RETAINING WALL GEOTECHNICAL DETAILS - SHEET 7
300-Roading	
2011-01-300	ROAD LAYOUT PLAN
2011-01-305	VEHICLE TRACKING PLAN - LARGE RIGID TRUCK
2011-01-315	COMBINED SERVICES - DETAIL PLAN - SHEET 1
2011-01-316	COMBINED SERVICES - DETAIL PLAN - SHEET 2
2011-01-317	COMBINED SERVICES - DETAIL PLAN - SHEET 3
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2011-01-600	DUCTING - ROAD CROSSING PLAN





- LEGEND**
- RESERVE HATCH
 - RESIDENTIAL HATCH
 - BUILDING PLATFORM
 - 6m CIRCLE

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 2 of 92

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IMPORTANT INFORMATION
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All work shall be constructed in accordance with the Code of Practice HCC ITS

Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 2 of 92

Printed by: RYAN@10.05.18 // Filepath: S:\V08\2011 - HUGHES DEVELOPMENTS TUAKAU\CAD\2011-01-099.DWG

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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CIVILPLAN
CONSULTANTS

Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
GENERAL LAYOUT PLAN

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) 1:1000 / 1:2000

SCALE BAR 1:2000@A3 0 20 40 60 80 100m

DRAWING NUMBER: 2011-01-099 REV: C1

WAIKATO DISTRICT COUNCIL

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Page: 3 of 92

DP 164972

1
DP 98792

PT 2
DP 46000

STAGE 2

STREAM CENTRELINE AND
ABUTTAL ARE INDICATIVE ONLY
BASED ON OFFSET FROM
NATURAL BOUNDARY

KAIROA STREAM

2
DP 185077

1000
BALANCE LOT

ESCOTTS ROAD

LEGAL AND SEALED (20.12m WIDE)

100
ROAD TO VEST IN WAIKATO DISTRICT COUNCIL

PT ALLOT 14
PSH OF TUAKAU

STAGE 1

101
ROAD TO VEST IN WAIKATO DISTRICT COUNCIL

300
LOCAL PURPOSE
(DRAINAGE) RESERVE
TO VEST IN WAIKATO
DISTRICT COUNCIL

2
DP 336418
CT 149341

4
DP 153726

2
DP 156929

NOTES

- AREAS AND DIMENSIONS ARE SUBJECT TO FINAL SURVEY.
- BOUNDARIES SHOWN ON THIS PLAN ARE FROM LAND INFORMATION NZ DCDB AND HAVE NOT BEEN SURVEYED. A BOUNDARY DEFINITION SURVEY SHOULD BE CARRIED OUT TO ESTABLISH EXACT BOUNDARY POSITIONS ON SITE.
- THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN.
- THIS PLAN IS ISSUED FOR A SPECIFIC PROJECT AND MAY NOT BE ALTERED OR USED FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF CIVILPLAN CONSULTANTS LIMITED.
- SEE 2011-01-101 FOR LOT AREAS AND DIMENSIONS.

SCHEDULE OF AREAS

LEGAL DESCRIPTION	CT	AREA
LOT 1 DP 169701	NA102A/293	9.8740ha
	TOTAL	9.8740ha

SCHEDULE OF PROPOSED LOTS

DESCRIPTION	LOTS	NUMBER OF LOTS	AREA
LOTS	1-42, 55-66	54	2.9355ha
ROAD TO VEST	100-101	2	1.5216ha
DRAINAGE RESERVE	300	1	0.0666ha
BALANCE LOT	1000	1	5.1888ha
	TOTAL	58	9.7125ha

MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
RIGHT OF WAY RIGHT TO CONVEY ELECTRICITY, WATER, TELECOMMUNICATIONS AND COMPUTER MEDIA	(A)	LOT 32 HEREON	LOT 33 HEREON
	(B)	LOT 33 HEREON	LOT 32 HEREON
	(C)	LOT 34 HEREON	LOT 35 HEREON
	(D)	LOT 35 HEREON	LOT 34 HEREON

MEMORANDUM OF EASEMENTS IN GROSS

PURPOSE	SHOWN	SERVIENT TENEMENT	GRANTEE
RIGHT TO CONVEY TELECOMMUNICATIONS AND COMPUTER MEDIA	(A)	LOT 32 HEREON	CHORUS NEW ZEALAND LTD
	(B)	LOT 33 HEREON	
	(C)	LOT 34 HEREON	
	(D)	LOT 35 HEREON	
RIGHT TO CONVEY ELECTRICITY	(F)	LOT 1000 HEREON	COUNTIES POWER
RIGHT TO CONVEY TELECOMMUNICATIONS AND COMPUTER MEDIA	(F)	LOT 1000 HEREON	CHORUS NEW ZEALAND LTD

SCHEDULE OF EXISTING EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	CREATED BY
STORMWATER	(Y)	LOT 2 DP 336418	EI. 6583916.5

SCHEDULE OF EXISTING EASEMENTS IN GROSS

PURPOSE	SHOWN	SERVIENT TENEMENT	CREATED BY
RIGHT TO STORMWATER (RETENTION AND MAINTENANCE)	(Y)	LOT 2 DP 336418	EI. 6583916.6

ISSUE STATUS:

CONSENT

SCALE: (A1/A3)

1:1000 / 1:2000

SCALE BAR: 0

20

40

60

80

100m

DRAWING NUMBER:

2011-01-100

REV: C1

Printed by: RYAN@10.05.18 // Filepath: S:\JOBS\2011 - HUGHES DEVELOPMENTS TUAKAU\CAD\2011-01-100.DWG

REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
C1	REVISION DETAILS	BY	DATE

DRAWN: DPK	DATE: 09.2017
CHECKED: CLH	DATE: 29.03.18
APPROVED: CLH	DATE: 03.2018
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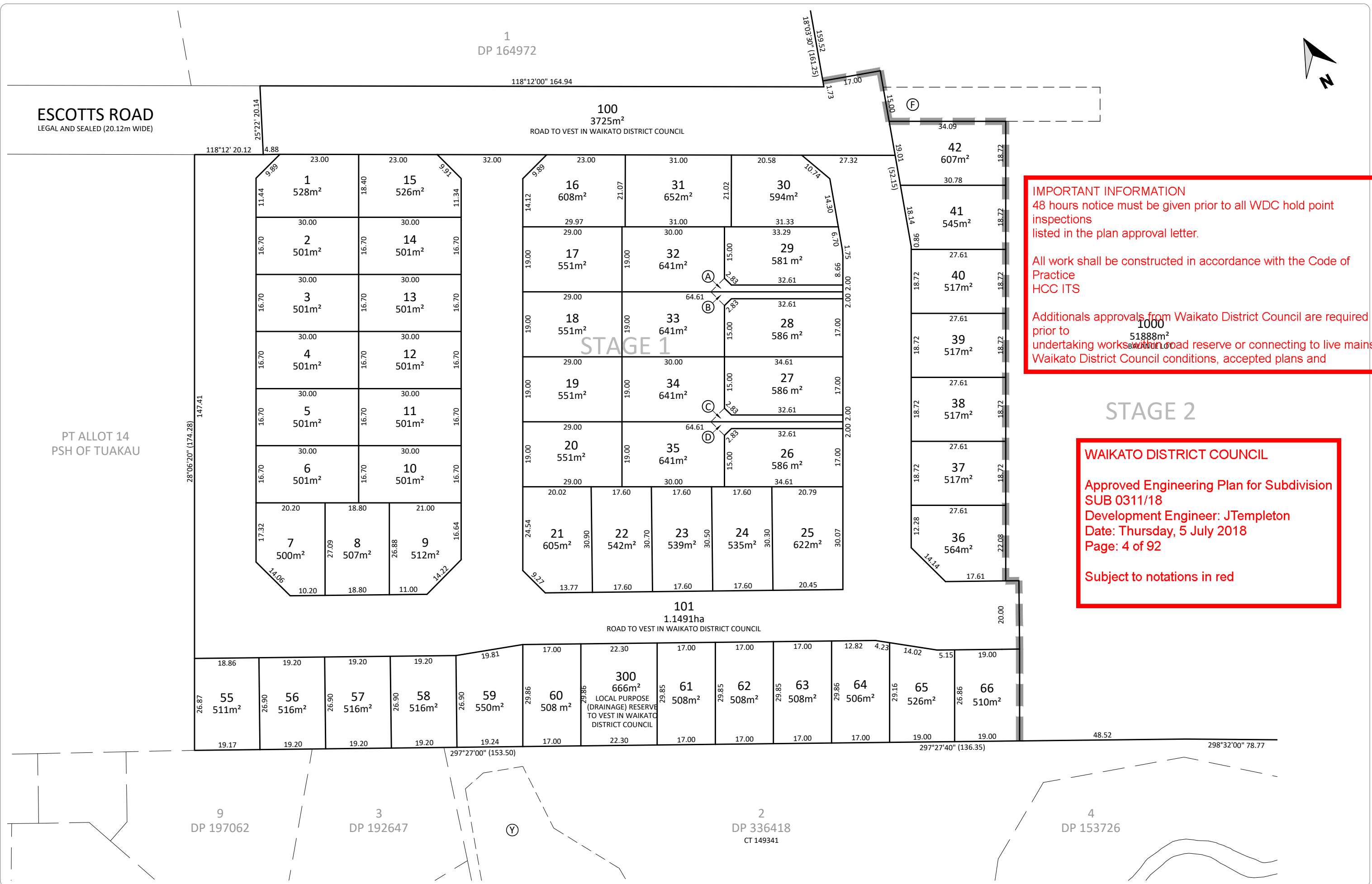
PROJECT TITLE:

HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:

PROPOSED SUBDIVISION OF LOT 1 DP 169701
AND EASEMENT OVER LOT 2 DP 336418
STAGE 1-OVERALL LAYOUT

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AND EASEMENT OVER LOT 2 DP 336418
STAGE 1-DETAIL SHEET 1

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) 1:500 / 1:1000

SCALE BAR: 0 10 20 30 40 50m

DRAWING NUMBER: 2011-01-101 REV: C1

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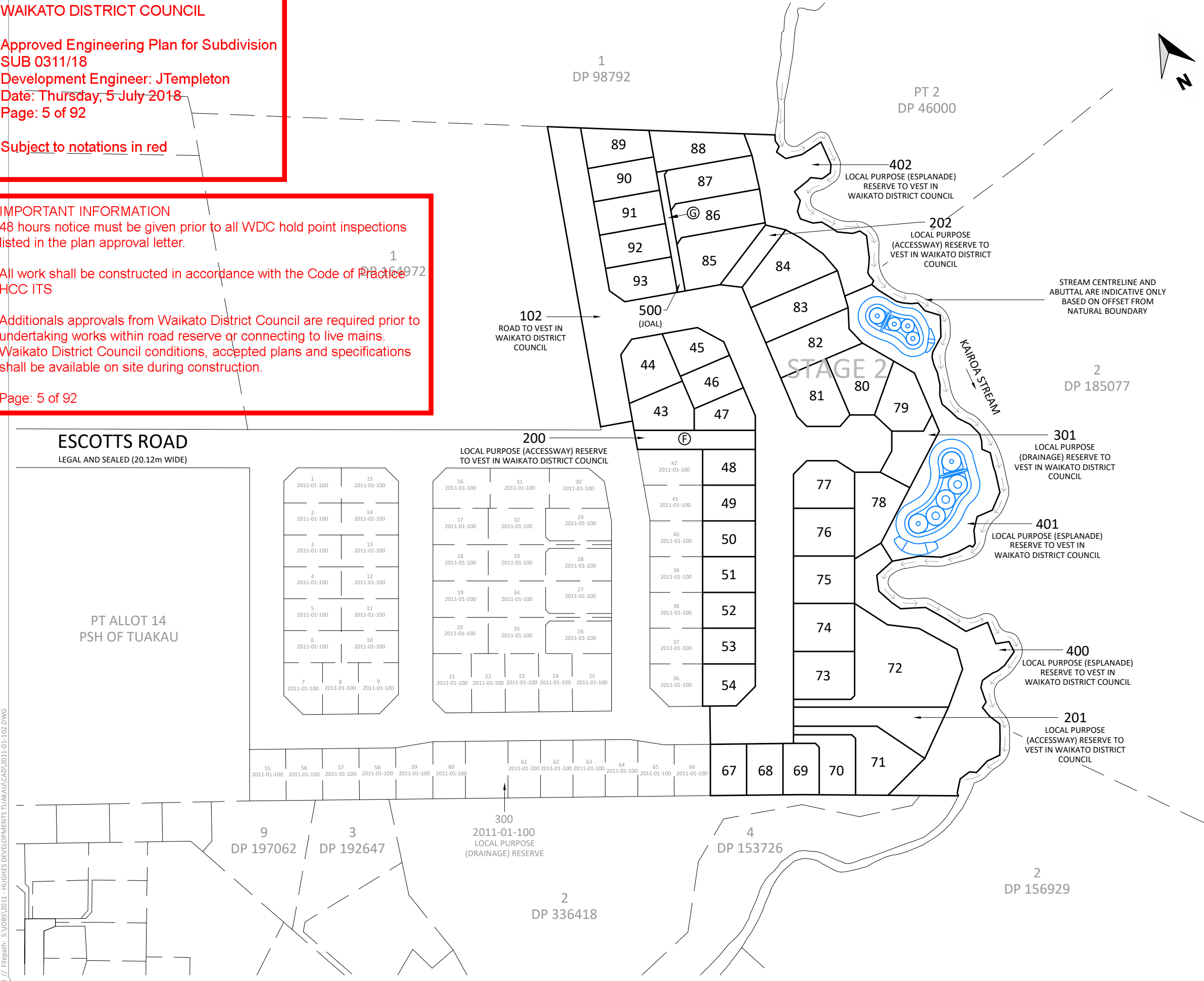
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Page: 5 of 92



NOTES

1. AREAS AND DIMENSIONS ARE SUBJECT TO FINAL SURVEY.
2. BOUNDARIES SHOWN ON THIS PLAN ARE FROM LAND INFORMATION NZ DCDB AND HAVE NOT BEEN SURVEYED. A BOUNDARY DEFINITION SURVEY SHOULD BE CARRIED OUT TO ESTABLISH EXACT BOUNDARY POSITIONS ON SITE.
3. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN.
4. THIS PLAN IS ISSUED FOR A SPECIFIC PROJECT AND MAY NOT BE ALTERED OR USED FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF CIVILPLAN CONSULTANTS LIMITED.
5. SEE 2011-01-102 AND 2011-01-103 FOR LOT AREAS AND DIMENSIONS.

AMALGAMATION CONDITION

THAT LOT 500 HEREON (LEGAL ACCESS) BE HELD AS TO FOUR UNDIVIDED ONE FOURTH SHARES BY THE OWNERS OF LOTS 85-88 HEREON AS TENANTS IN COMMON IN THE SAID SHARES, AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

SCHEDULE OF AREAS		
LEGAL DESCRIPTION	CT	AREA
LOT 1000 2011-01-100	TBA	5.1888ha
	TOTAL	5.1888ha

SCHEDULE OF PROPOSED LOTS			
DESCRIPTION	LOTS	NUMBER OF LOTS	AREA
LOTS	43-54, 67-93	39	2.8889ha
ROAD TO VEST	102	1	1.0393ha
ACCESSWAY RESERVE	200-202	3	0.2077ha
DRAINAGE RESERVE	301	2	0.0565ha
ESPLANADE RESERVE	400-402	3	0.9706ha
ACCESS LOT	500	1	0.0257ha
	TOTAL	48	5.1887ha

MEMORANDUM OF EASEMENTS IN GROSS			
PURPOSE	SHOWN	SERVIENT TENEMENT	GRANTEE
RIGHT TO CONVEY TELECOMMUNICATIONS AND COMPUTER MEDIA	Ⓞ	LOT 500 HEREON	CHORUS NEW ZEALAND LTD

SCHEDULE OF EXISTING EASEMENTS IN GROSS			
PURPOSE	SHOWN	SERVIENT TENEMENT	CREATED BY
RIGHT TO CONVEY ELECTRICITY	Ⓢ	LOT 200 HEREON	TBA
RIGHT TO CONVEY TELECOMMUNICATIONS AND COMPUTER MEDIA	Ⓢ	LOT 200 HEREON	TBA

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:	
DKP	09.2017	
CHECKED:	DATE:	
CLH	29.03.18	
APPROVED:	DATE:	
CLH	03.2018	
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CIVILPLAN
CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED SUBDIVISION OF
LOT 1000 2011-01-100
STAGE 2-OVERALL LAYOUT

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:1000 / 1:2000
SCALE BAR: 0 20 40 60 80 100m
DRAWING NUMBER: 2011-01-102 REV: C1

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WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 6 of 92

Subject to notations in red

IMPORTANT INFORMATION
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Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 6 of 92

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

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CLH	29.03.18
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CIVILPLAN CONSULTANTS

Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:

HUGHES DEVELOPMENTS LIMITED
99 ESCOTT'S ROAD
TUAKAU

SHEET TITLE:

PROPOSED SUBDIVISION OF
LOT 1000 2011-01-100
STAGE 2-DETAIL SHEET 1

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) 1:500 / 1:1000

SCALE BAR: 0 10 20 30 40 50m

DRAWING NUMBER: 2011-01-103 REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 7 of 92

Subject to notations in red

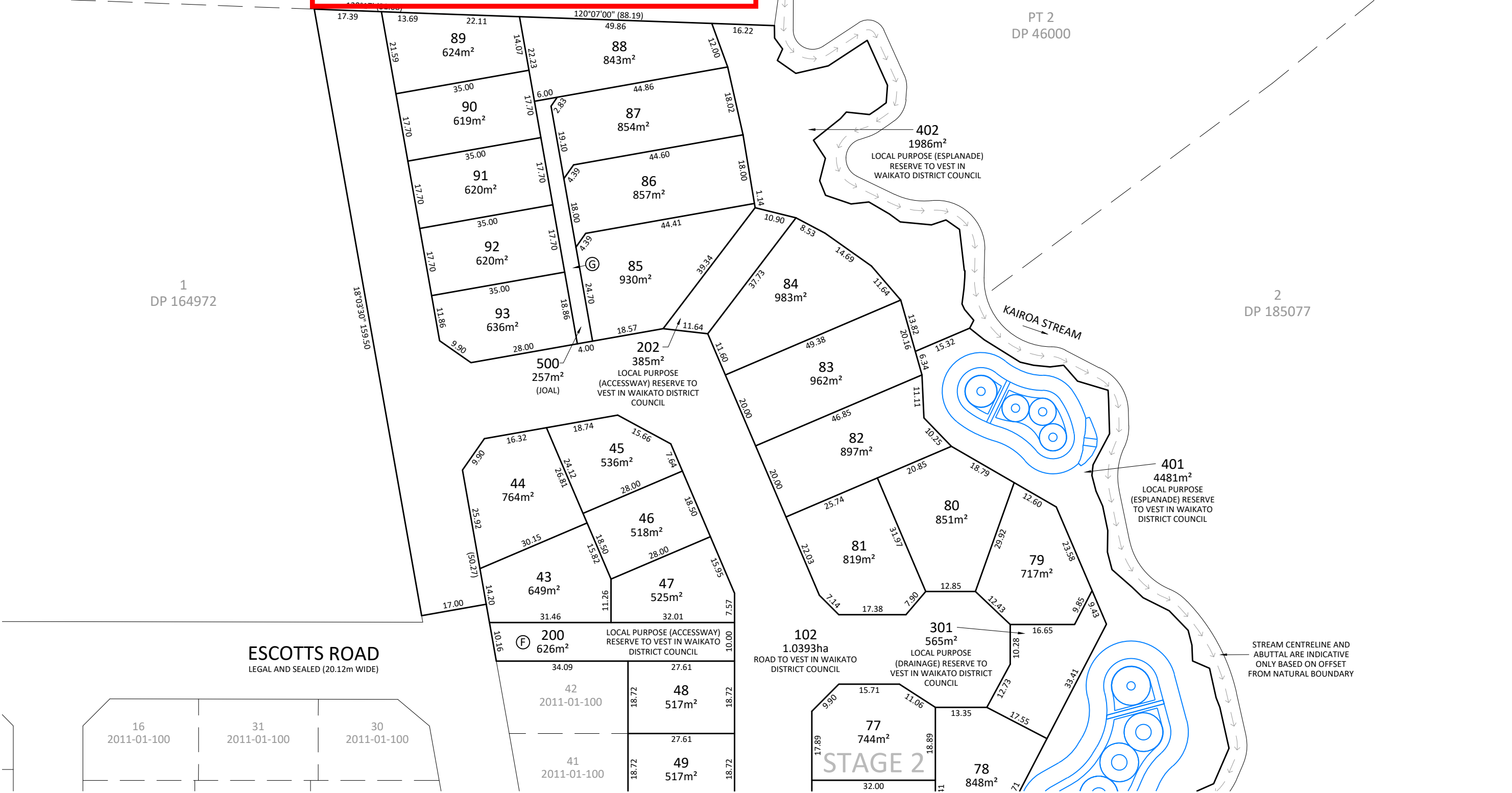
IMPORTANT INFORMATION

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Page: 7 of 92



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C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
DKP	09.2017
CHECKED:	DATE:
CLH	29.03.18
APPROVED:	DATE:
CLH	03.2018
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED SUBDIVISION OF
LOT 1000 2011-01-100
STAGE 2-DETAIL SHEET 2

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR: 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-104 REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 8 of 92

Subject to notations in red

IMPORTANT INFORMATION

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Page: 8 of 92

NOTES:

- LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946
ORIGIN OF LEVELS
RM II DP 56282 (CSFF)
RL 39.48

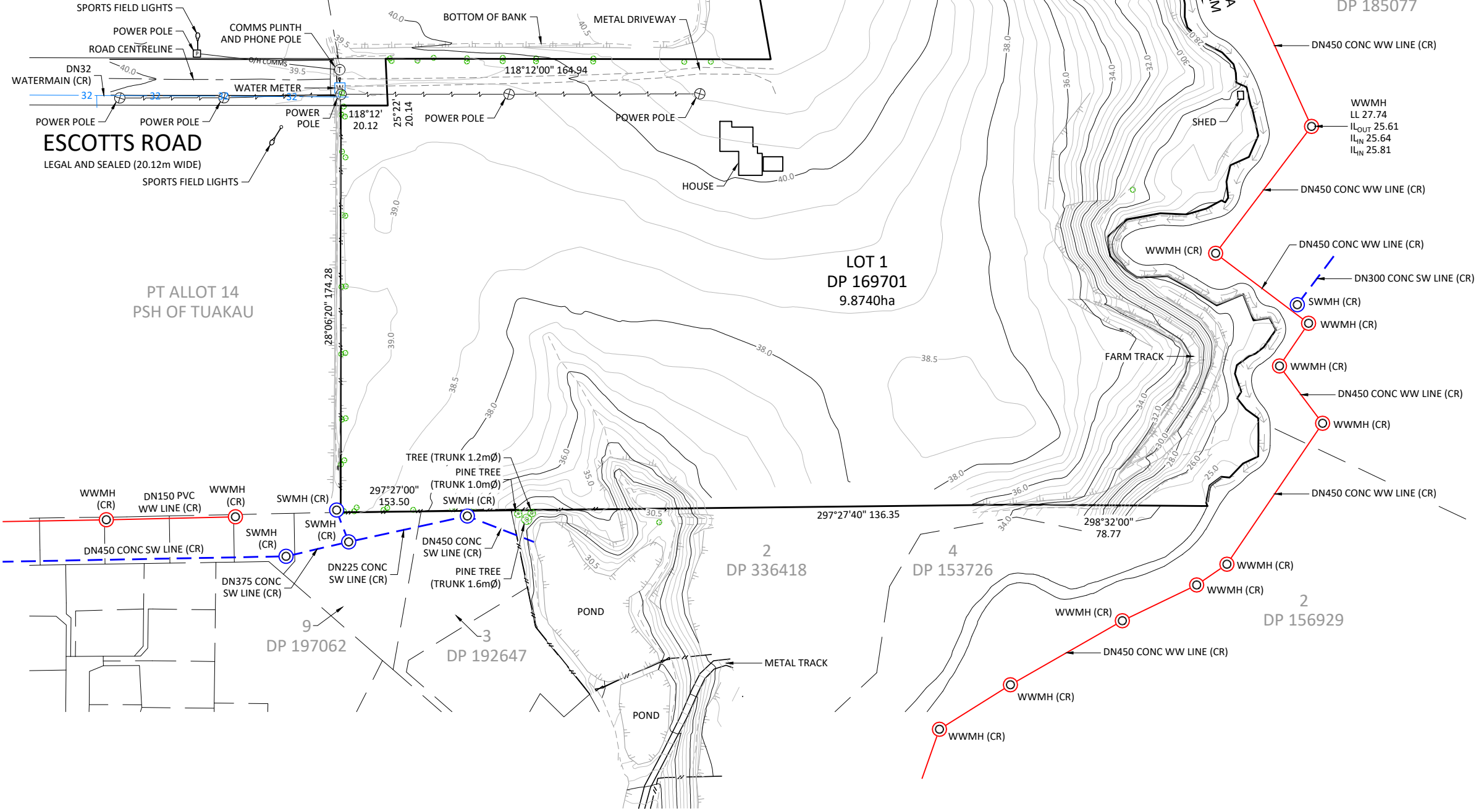
COORDINATES ARE IN TERMS MT. EDEN CIRCUIT 2000
ORIGIN OF COORDINATES
RM II DP 56282 (CSFF)
757089.231
415881.197
- CONTOURS ARE AT 0.50m INTERVALS.
- THIS PLAN HAS BEEN CARRIED OUT TO TOPOGRAPHICAL STANDARDS. ALL LEVELS SHOWN ARE CORRECT AT TIME OF SURVEY. CRITICAL DIMENSIONS AND LEVELS SHOULD BE VERIFIED.
- BOUNDARIES SHOWN ON THIS PLAN ARE FROM LAND INFORMATION NZ DCDB AND HAVE NOT BEEN SURVEYED. A BOUNDARY DEFINITION SURVEY SHOULD BE CARRIED OUT TO ESTABLISH EXACT BOUNDARY POSITIONS ON SITE.
- ALL EASEMENTS, COVENANTS AND OTHER LEGAL INSTRUMENTS ASSOCIATED WITH THIS SITE MAY NOT BE SHOWN ON THIS PLAN. AN INVESTIGATION OF THE MOST CURRENT LEGAL RECORDS SHOULD BE UNDERTAKEN PRIOR TO DESIGN AND CONSTRUCTION COMMENCING.
- THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN.
- THIS PLAN IS ISSUED FOR A SPECIFIC PROJECT AND MAY NOT BE ALTERED OR USED FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF HARVEY SURVEYING.
- INVERT LEVELS SHOWN ARE FROM IL_{OUT} IN A CLOCKWISE DIRECTION.
- MANHOLES ARE NOT CENTERED OVER PIPES. HYDRO LOCATION OF UNDERGROUND PIPES SHOULD BE UNDERTAKEN FOR CRITICAL DESIGN ELEMENTS.
- EXISTING UTILITY SERVICES HAVE BEEN PLOTTED FROM COUNCIL AND/OR UTILITY PROVIDER RECORDS. CONTRACTOR TO LOCATE/MARK AND CONFIRM ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORK ON SITE AND PROTECTION OF SAME.

SCHEDULE OF AREAS

LEGAL DESCRIPTION	CT	AREA
LOT 1 DP 169701	NA102A/293	9.8740ha
	TOTAL	9.8740ha

LEGEND

(CR)	PLOTTED FROM COUNCIL RECORDS
— — — — —	FENCE
— — — — —	TOP OF BANK
— — — — —	BOTTOM OF BANK
→ → →	WATERCOURSE
— — — — —	EDGE OF SEAL
— — — — —	EDGE OF METAL
— — — — —	WASTEWATER LINE
— — — — —	STORMWATER LINE
— — — — —	WATERMAIN
— — — — —	OVERHEAD POWER
— — — — —	OVERHEAD COMMS
— — — — —	ROAD CENTRELINE
— — — — —	CONTOUR
— — — — —	CONCRETE PATHS & DRIVEWAYS
— — — — —	BUILDING
— — — — —	SPORTS FIELD LIGHT
— — — — —	STORMWATER MANHOLE
— — — — —	WASTEWATER MANHOLE
— — — — —	INLET/OUTLET STRUCTURE
— — — — —	WATER METER
— — — — —	COMMS PLINTH
— — — — —	POWER PLINTH
— — — — —	POWER POLE
— — — — —	TREE



C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

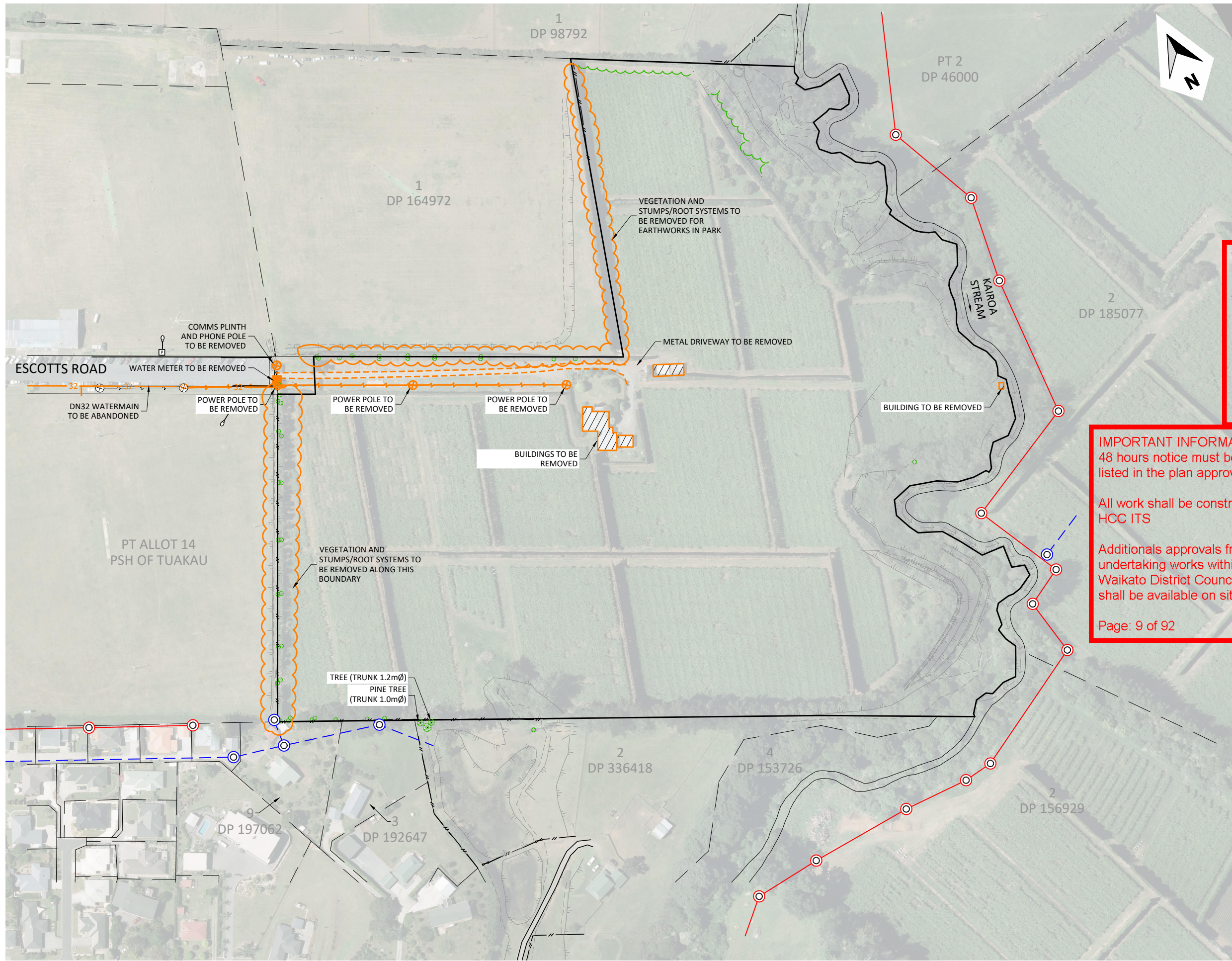
DRAWN:	DATE:
DKP	10.2017
CHECKED:	DATE:
CLH	29.03.18
APPROVED:	DATE:
RJP	03.2018
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
TOPOGRAPHICAL PLAN OF
LOT 1 DP 169701

ISSUE STATUS:	CONSENT
SCALE: (A1/A3)	1:1000 / 1:2000
SCALE BAR: 0 20 40 60 80 100m	
DRAWING NUMBER:	2011-01-150
REV:	C1



- NOTES:**
1. ALL VEGETATION TO BE REMOVED.
 2. CLEARANCE TO INCLUDE ALL STUMP GRINDING AND REMOVAL OF ALL PREVIOUSLY FELLED INTERNAL SHELTER BELT STUMPS AND ROOTS SYSTEMS WITHIN THE SITE AND AROUND THE SITE PERIMETER BOUNDARIES.
 3. EXISTING UTILITY SERVICES HAVE BEEN PLOTTED FROM COUNCIL AND/OR UTILITY PROVIDER RECORDS. CONTRACTOR TO LOCATE/MARK AND CONFIRM ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORK ON SITE AND PROTECTION OF SAME.

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 9 of 92

Subject to notations in red

IMPORTANT INFORMATION
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Page: 9 of 92

- LEGEND**
- PLOTTED FROM COUNCIL RECORDS
 - FENCE
 - TOP OF BANK
 - BOTTOM OF BANK
 - → → WATERCOURSE
 - EDGE OF SEAL
 - EDGE OF METAL
 - WASTEWATER LINE
 - STORMWATER LINE
 - WATERMAIN
 - OVERHEAD POWER
 - OVERHEAD COMMS
 - ROAD CENTRELINE
 - CONTOUR
 - CONCRETE PATHS & DRIVEWAYS
 - BUILDING TO REMOVE
 - SPORTS FIELD LIGHT
 - STORMWATER MANHOLE
 - WASTEWATER MANHOLE
 - INLET/OUTLET STRUCTURE
 - WATER METER
 - COMMS PLINTH
 - POWER PLINTH
 - POWER POLE
 - TREE

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C3	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RJP	22.05.18
C2	ISSUED FOR RESOURCE CONSENT	GDS	27.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN: DPK	DATE: 10.2017
CHECKED: CLH	DATE: 29.03.18
APPROVED: RJP	DATE: 03.2018
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PROJECT TITLE:
**HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU**

SHEET TITLE:
CLEARING PLAN

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) **1:1000 / 1:2000**

SCALE BAR: 0 20 40 60 80 100m

DRAWING NUMBER: **2011-01-160** REV: **C3**

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 10 of 92

Subject to notations in red

NOTES:

- 1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946.
ORIGIN OF LEVELS
RM II DP 56282 (C5FF)
RL 39.48
- 2. EXISTING CONTOURS ARE SHOWN AT 0.5m INTERVALS.
- 3. DESIGN CONTOURS ARE SHOWN AT 0.5m INTERVALS.
- 4. CONTOURS SHOWN ARE FINISHED SURFACE LEVELS.
- 5. SILT AND STORMWATER CONTROL IS TO BE IMPLEMENTED DAILY AND COMPLY WITH THE GENERAL SPECIFICATION.
- 6. THE CONTRACTOR MUST BE AWARE OF AND COMPLY WITH COUNCIL REQUIREMENTS FOR EARTHWORKS, AT ALL TIMES.
- 7. IT IS INTENDED THAT THE CONTRACTOR SHALL GRADE THE EARTHWORKS TO THE FINISHED CONTOURS SHOWN. HOWEVER, THE FINAL MARRYING AND SHAPING OF THE EARTHWORKS AREAS ARE SUBJECT TO THE ENGINEERS APPROVAL.
- 8. ROAD LONGSECTION SUBGRADE LEVELS, TYPICAL CROSS-SECTION LEVELS AND BOUNDARY LEVELS TAKE PRECEDENCE OVER PLAN CONTOUR LEVELS.

LEGEND

- 10.0
- 10.0
- PROPOSED MAJOR CONTOUR
- EARTHWORK EXTENT
- PROPOSED RETAINING WALL

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Page: 10 of 92

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C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
FINISHED CONTOURS PLAN

ISSUE STATUS:	CONSENT
SCALE: (A1/A3)	1:1000 / 1:2000
SCALE BAR: 0 20 40 60 80 100m	
DRAWING NUMBER:	2011-01-200
REV:	C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 11 of 92

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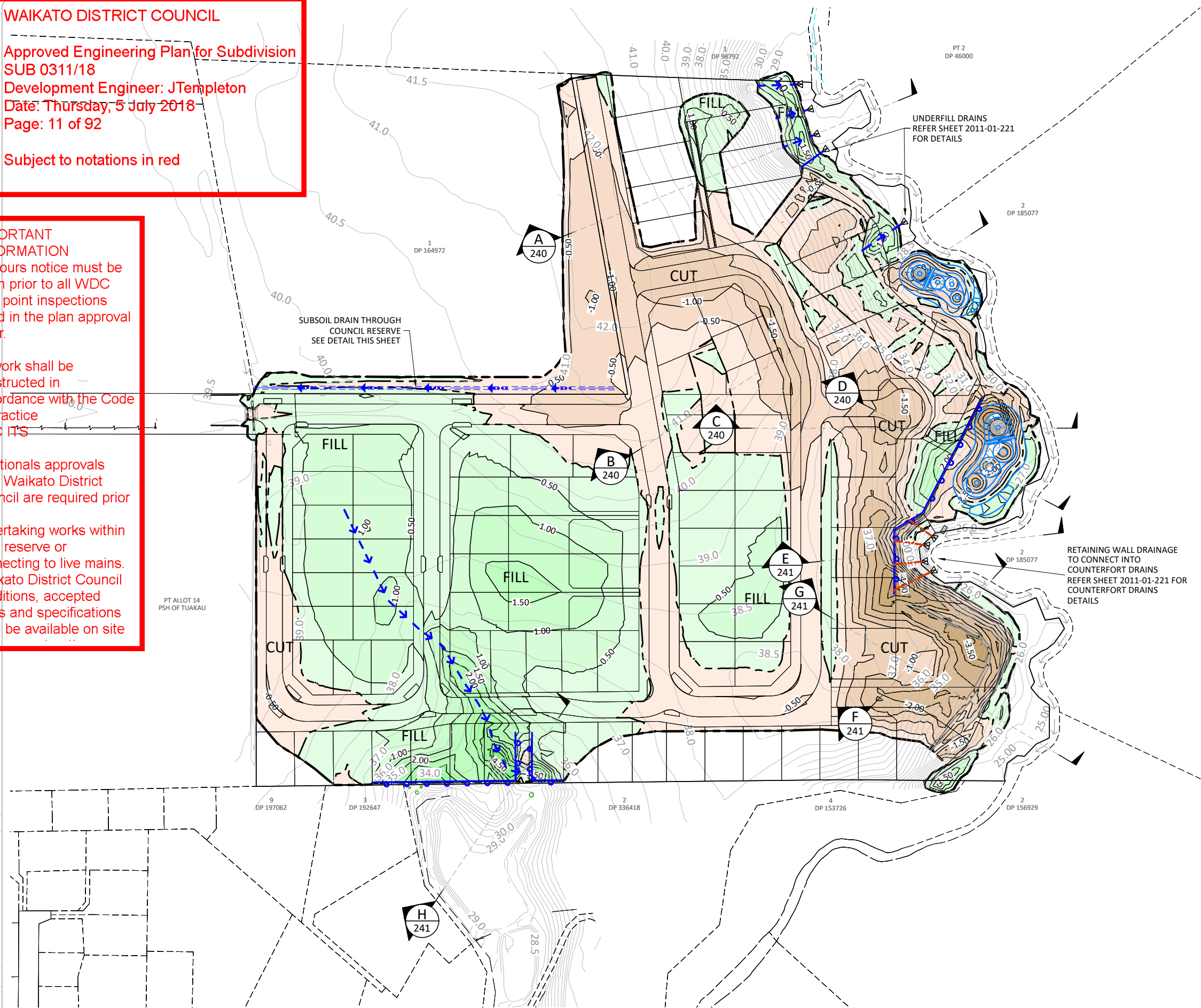
IMPORTANT
INFORMATION

48 hours notice must be
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hold point inspections
listed in the plan approval
letter.

All work shall be
constructed in
accordance with the Code
of Practice
HCC ITS

Additional approvals
from Waikato District
Council are required prior
to
undertaking works within
road reserve or
connecting to live mains.
Waikato District Council
conditions, accepted
plans and specifications
shall be available on site

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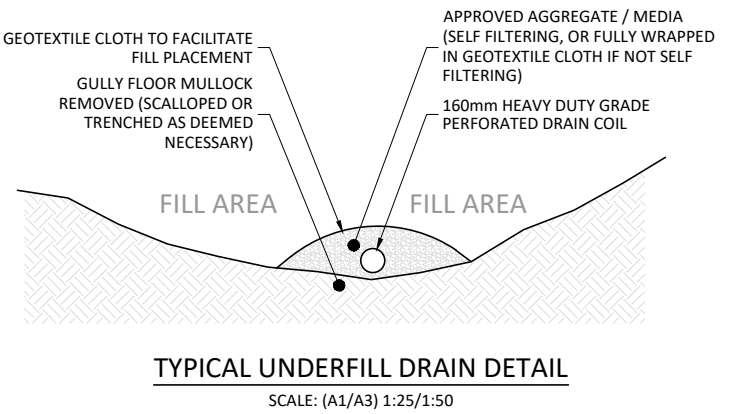
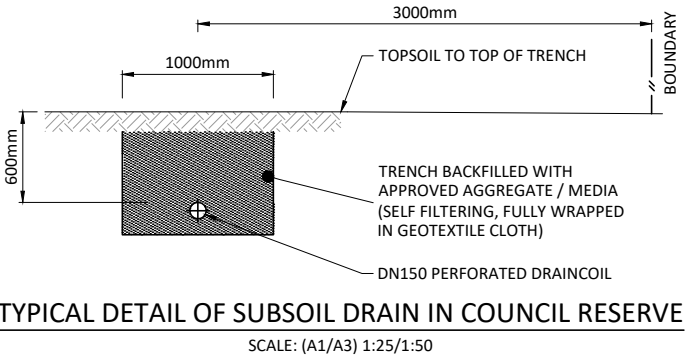


NOTES:

1. PROPOSED ISOPACHS ARE SHOWN AT 0.5m INTERVALS.
2. ALL WORKS AND MATERIALS ARE TO COMPLY WITH RELEVANT COUNCIL ENGINEERING STANDARDS.
3. ALL TOPSOIL TO BE STRIPPED AND STOCKPILED CLEAR OF THE PROPOSED EARTHWORKS IN A LOCATION AGREED WITH THE ENGINEER.
4. ALL EROSION AND SEDIMENT CONTROL DEVICES TO BE INSTALLED, AS-BUILT AND INSPECTED BY THE ENGINEER / COUNCIL REPRESENTATIVE PRIOR TO COMMENCING THE EARTHWORKS ON THE SITE.
5. AREA OF EARTHWORKS = 8.90 ha.
6. EARTHWORK VOLUMES ARE FROM EXISTING SURFACE, TOPSOIL STRIPPED 200mm TO FINISHED SUBGRADE SURFACE AND ARE:
CUT VOLUME = 30,700 m³ (x0.8 COMPACTION = 24,560 m³ SOLID IN PLACE)
FILL VOLUME = 30,000 m³ SOLID IN PLACE (SHORTFALL OF 5,500m³ SOLID IN PLACE)
7. UNDERFILL DRAINAGE TO BE CONFIRMED ON SITE DURING CONSTRUCTION.
8. COUNTERFORT DRAINS ARE 3m DEEP AT 12m SPACINGS AND ARE TO BE CONFIRMED ON SITE DURING CONSTRUCTION.

LEGEND

- 10.0 PROPOSED CUT ISOPACH
- 10.0 PROPOSED FILL ISOPACH
- EARTHWORKS ZERO CUT/FILL LINE
- EARTHWORK EXTENT
- UNDERFILL DRAIN
- COUNTERFORT DRAIN
- △ DRAIN OUTLET
- CUT PROPOSED CUT
- FILL PROPOSED FILL



REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN: GDS	DATE: 09.2017
CHECKED: RJP	DATE: 29.03.18
APPROVED: RJP	DATE: 03.2018
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CONSULTANTS
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

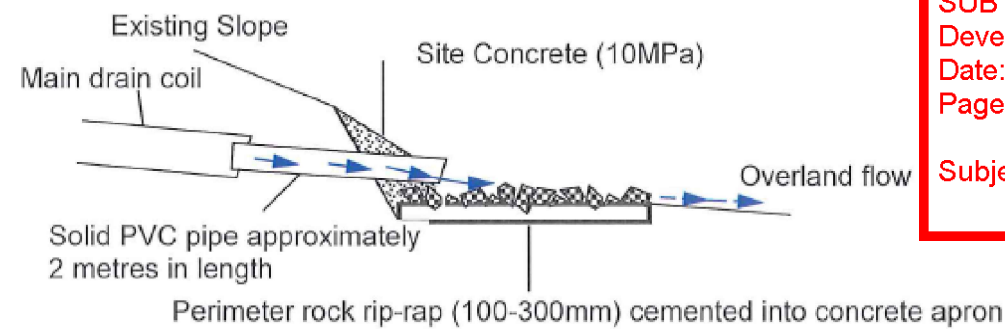
SHEET TITLE:
PROPOSED ISOPACHS PLAN

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:1000 / 1:2000
SCALE BAR: 0 20 40 60 80 100m
DRAWING NUMBER: 2011-01-220
REV: C1

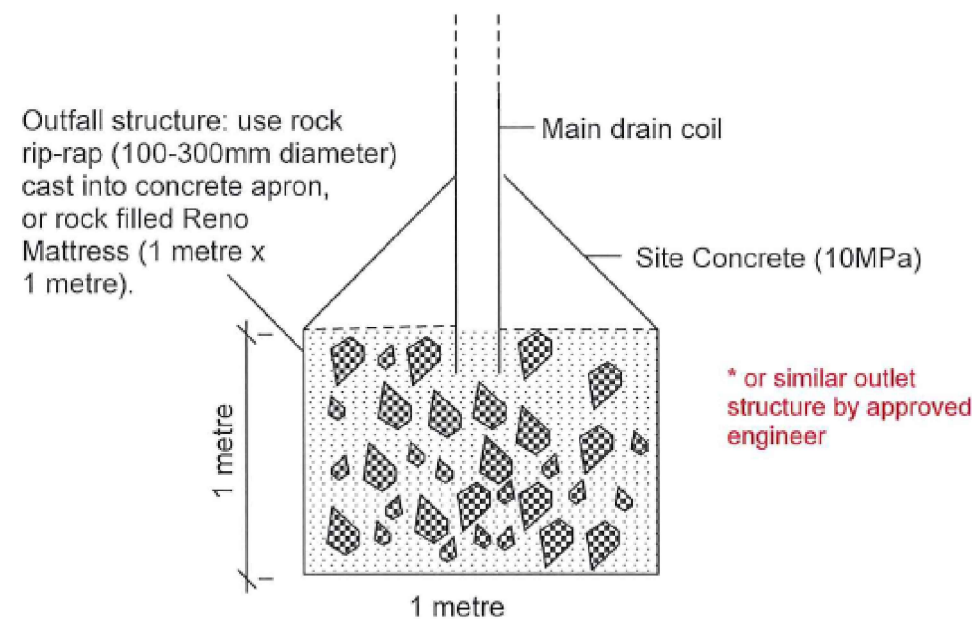
WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 12 of 92

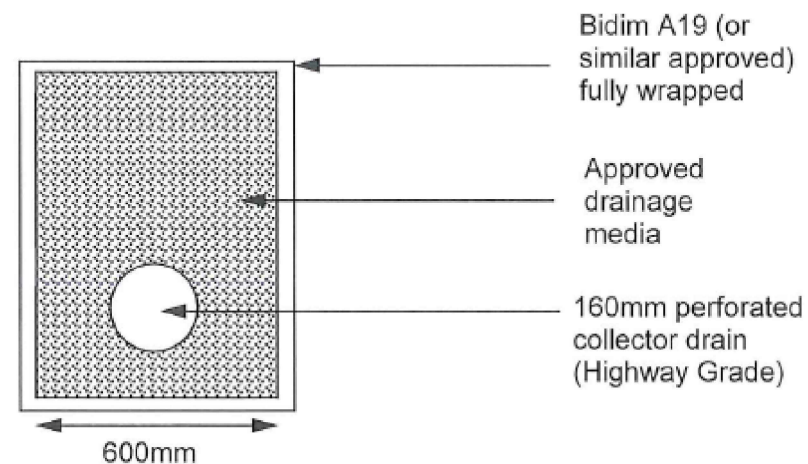
Subject to notations in red



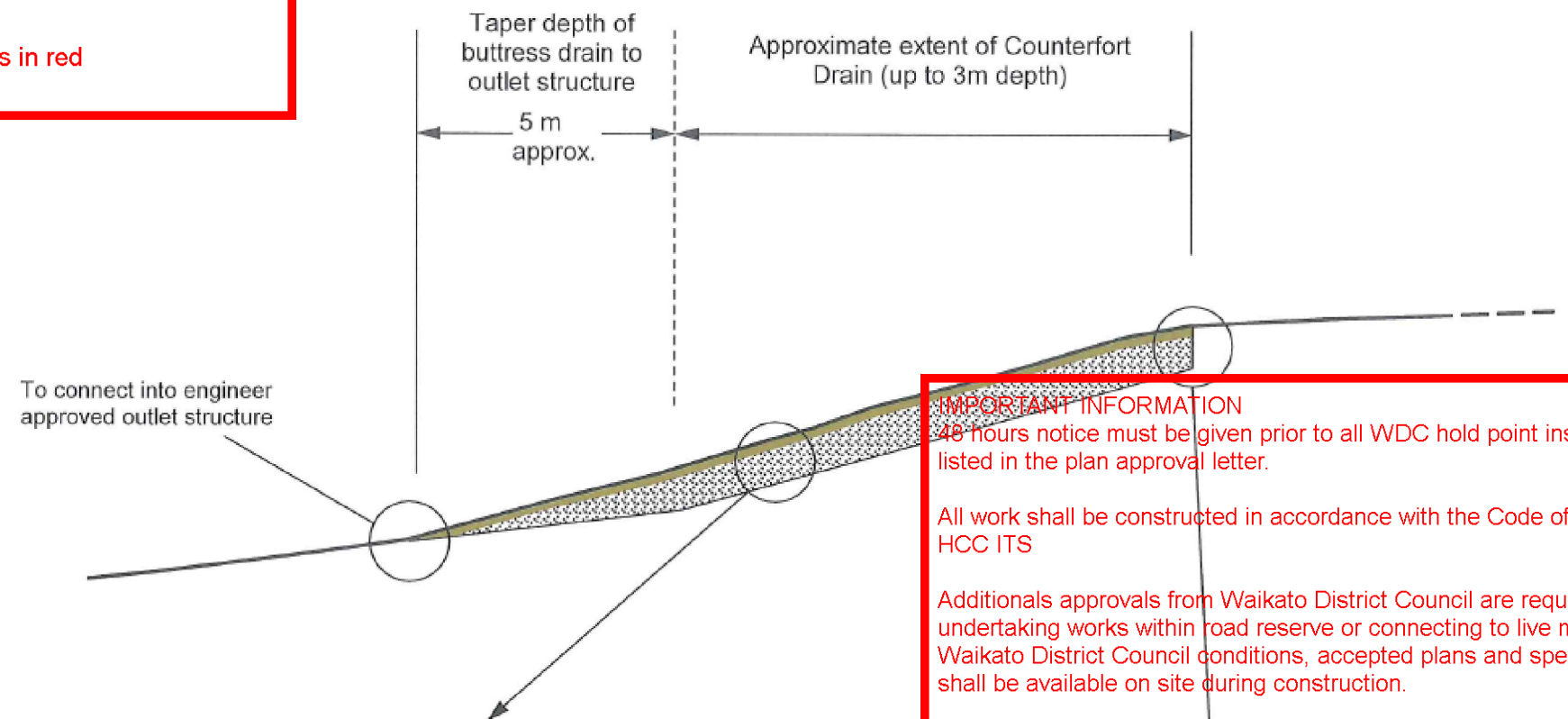
OUTLET STRUCTURE* - PLAN VIEW



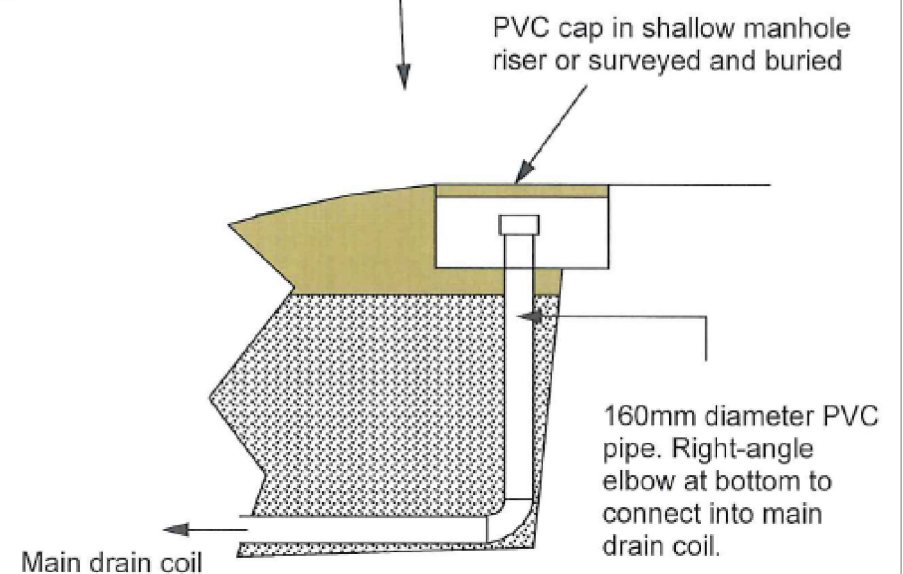
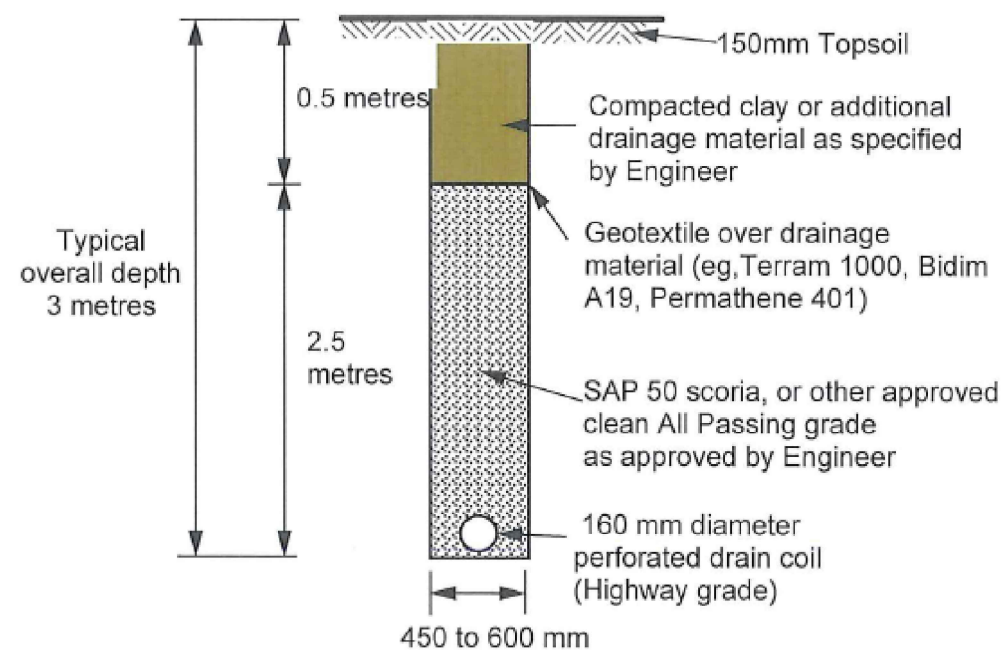
TYPICAL UNDERFILL DRAIN DETAIL - END VIEW



COUNTERFORT DRAINAGE DETAIL - CROSS SECTION VIEW



COUNTERFORT DRAINAGE DETAIL - END VIEW



FLUSHING PORT DETAILS - CROSS SECTION VIEW

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CI	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
--- XX.XXXX	---
CHECKED:	DATE:
--- 29.03.18	---
APPROVED:	DATE:
--- 03.2018	---
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
GEOTECHNICAL DRAINAGE DETAILS

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) NOT TO SCALE

SCALE BAR
N.T.S.

DRAWING NUMBER: 2011-01-221 REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 13 of 92

Subject to notations in red

IMPORTANT INFORMATION

48 hours notice must be given prior to all
WDC hold point inspections
listed in the plan approval letter.

All work shall be constructed in accordance
with the Code of Practice
HCC ITS

Additional approvals from Waikato District
Council are required prior to
undertaking works within road reserve or
connecting to live mains.
Waikato District Council conditions, accepted
plans and specifications
shall be available on site during construction.

Page: 13 of 92

NOTES:

- EXISTING CONTOURS ARE SHOWN AT 0.5m INTERVALS.
- TOTAL SITE AREA = 9.03ha.
- ALL WORKS TO COMPLY WITH COUNCIL ENGINEERING QUALITY STANDARDS AND ALL MATERIALS TO COMPLY WITH COUNCIL REQUIREMENTS.
- ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE OPERATIONAL PRIOR TO ANY WORKS COMMENCING.
- SEE SHEET 2011-01-235-237 FOR STANDARD DETAILS
- A COPY OF THE SEDIMENT CONTROL PLAN SHALL BE AVAILABLE ON THE SITE DURING WORK HOURS AND ALL PERSONNEL INVOLVED IN EARTHWORK ACTIVITIES ON THE SITE (INCLUSIVE OF SUB-CONTRACTORS) SHALL BE FAMILIAR WITH THE PLAN REQUIREMENTS AS THEY RELATE TO EROSION AND SEDIMENT CONTROL.
- ALL "CLEANWATER" RUNOFF FROM STABILISED SURFACES INCLUDING CATCHMENT AREAS ABOVE THE SITE SHALL BE DIVERTED AWAY FROM EARTHWORK AREA VIA STABILISED SYSTEM, SO AS TO PREVENT SURFACE EROSION. THE UPPER ROCK FACE BUND WORKS AS A NATURAL CLEAN WATER DIVERSION ABOVE THE SITE.
- CUTOFF DRAINS TO BE INSTALLED AT THE MAXIMUM INTERVAL OF 50m AT THE END OF EACH DAY UNTIL SLOPES ARE STABILISED.
- FURTHER SEDIMENT CONTROL WORKS MAY BE REQUIRED BY THE ENGINEER AS THE PROJECT ADVANCES. THESE WILL BE INSTALLED AS AND WHERE DIRECTED BY THE ENGINEER. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THAT THE SITE HAS EFFECTIVE SILT DETENTION FACILITIES OPERATING AT ALL TIMES.
- EITHER DECANTING EARTH BUND (DEB), POND, OR SILT FENCE TO BE UTILISED AS DIRECTED BY THE ENGINEER IN CONSULTATION WITH WAIKATO REGIONAL COUNCIL.
- ALL EROSION AND SEDIMENT CONTROL MEASURES TO COMPLY WITH TR0902.
- SEDIMENT AND EROSION CONTROL MEASURES SHOWN ON THIS DRAWING ARE WORST CASE AND ASSUME A FULLY OPEN SITE WITH UNSTABILISED CLAY. CONTRACTOR METHODOLOGY AND MATERIALS USED WILL HAVE A BEARING ON REQUIRED SEDIMENT AND EROSION CONTROL. FOR EXAMPLE, AS FINAL LAYERS OF FILL START TO SLOPE TOWARDS BOUNDARIES, IF METAL IS USED IN TO COVER THESE AREAS, THE AREA IS DEEMED STABILISED AND REQUIRED SEDIMENT AND EROSION CONTROL MEASURES WILL BE REDUCED UPON APPROVAL BY COUNCIL.
- DEVICES SHALL NOT BE DE-COMMISSIONED WITHOUT THE EXPRESS APPROVAL OF COUNCILS MONITORING OFFICER.

LEGEND

- 10.00 EXISTING CONTOURS
SF SILT FENCE
- STABILISED CONSTRUCTION ACCESS
- TOPSOIL DIVERSION BUND
RUNOFF DIVERSION CHANNEL
- DECANTING EARTH BUND
- CLEAN WATER DIVERSION
- CATCHMENT BOUNDARY
- STORMWATER CONVEYANCE CHANNEL
- STOCKPILE
- PROPOSED CUT
- PROPOSED FILL
- SILT POND

POND	1	2
CREST LEVEL	38.00	27.80
CREST WIDTH	16.4	-
CREST LENGTH	45.0	-
EMERGENCY SPILLWAY LEVEL	37.70	27.50
LEVEL SPREADER LEVEL	37.60	27.40
PRIMARY SPILLWAY LEVEL	37.40	27.20
FLOOR LEVEL	36.00	25.00
FLOOR WIDTH	6.0	-
FLOOR LENGTH	33.2	-
FOREBAY FLOOR LEVEL	36.60	26.40
# OF T BAR DECANTS	3 @ RL36.80, 37.20, 37.60m	3 @ RL25.80, 26.27, 26.73m
PRIMARY SPILLWAY DEVICE	MANHOLE RISER	MANHOLE RISER
EMERGENCY SPILLWAY BOTTOM WIDTH	6.0	8.0
VOLUME AT PRIMARY SPILLWAY	773m³	1112m³
DESIGN VOLUME REQUIRED	2% (<10%, <200m) = 712m³	3% = 960m³

STAGED METHODOLOGY

- DEB FOR CATCHMENT 9 TO TREAT RUNOFF FROM FILLING THE GULLY AND BUILD RETAINING WALLS
- POND FOR CATCHMENT 1 AND DEB FOR CATCHMENTS 8, 10, AND 11 FOR THE REST OF THE SURROUNDING EARTHWORKS
- DECOMMISSION DEB FOR CATCHMENT 9

EMERGENCY SPILLWAY TO BE DIRECTED TO OVERLAND FLOW PATH BETWEEN RETAINING WALLS.

CIVILPLAN
CONSULTANTS

Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:

HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:

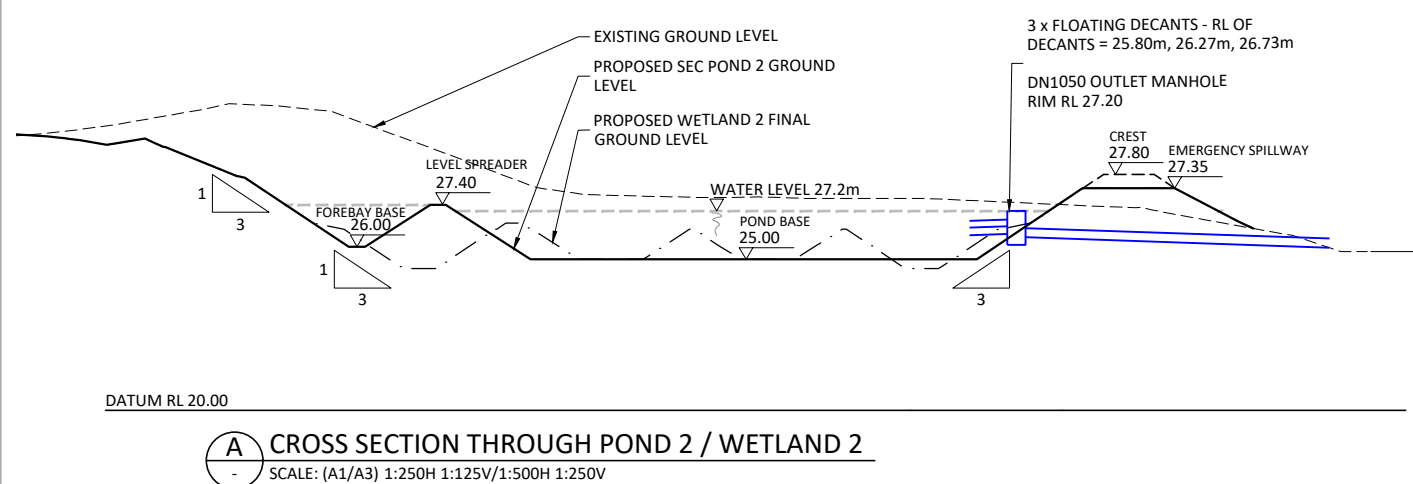
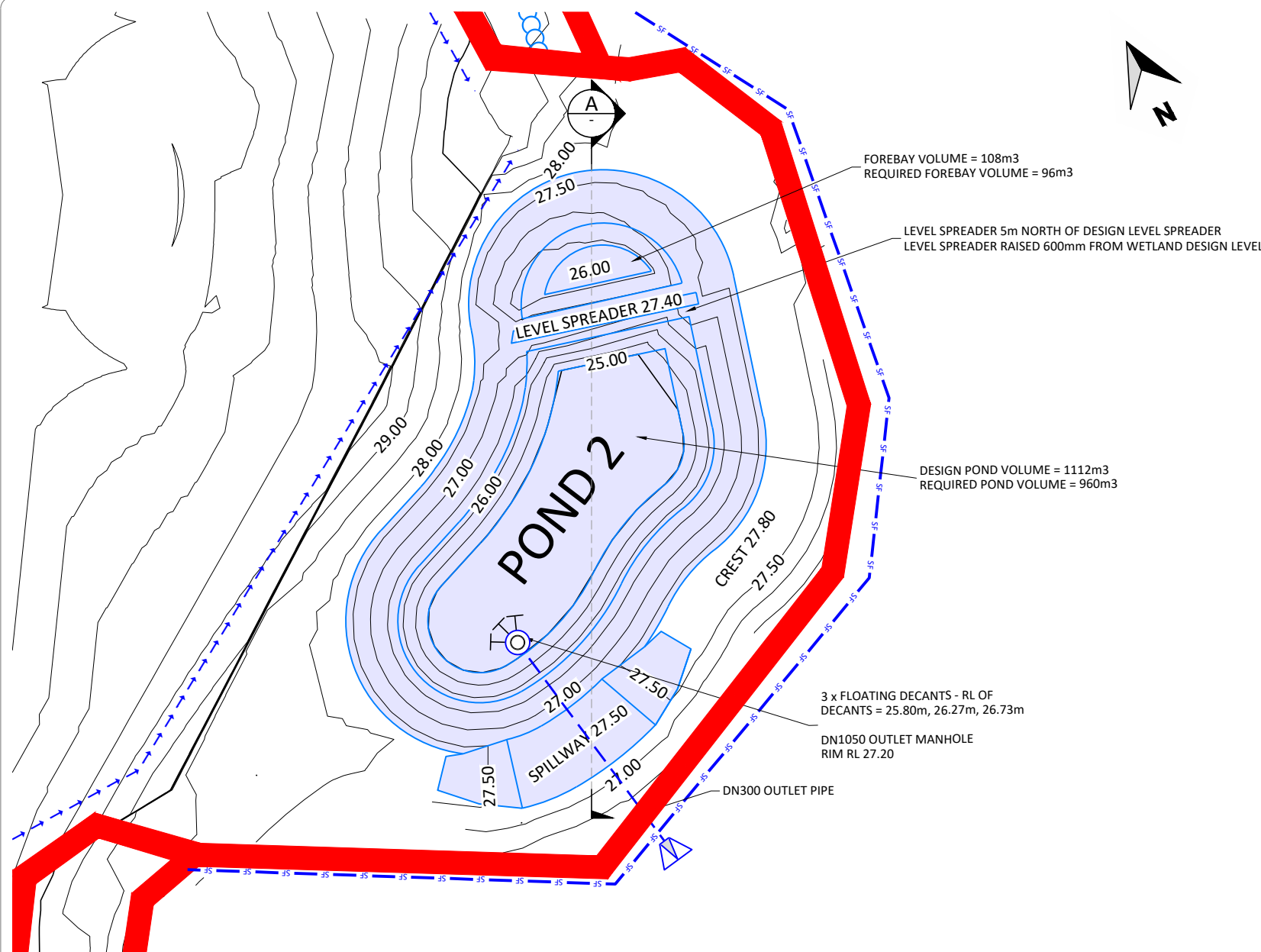
SEDIMENT AND EROSION CONTROL

ISSUE STATUS:

SCALE: (A1/A3) 1:1000 / 1:2000

SCALE BAR 0 20 40 60 80 100m

DRAWING NUMBER: 2011-01-230 REV: C1



- NOTES:**
- REFER TO DRAWING 2011-01-230 FOR LEGEND AND NOTES.
 - POND IS TO BE MODIFIED INTO WETLAND 2 ONCE EARTHWORKS COMPLETED AND SITE IS STABILISED. REFER TO DRAWING 2011-01-461 FOR DETAIL DRAWING OF WETLAND 2.

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 14 of 92

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IMPORTANT INFORMATION
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Page: 14 of 92

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REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
SEDIMENT AND EROSION CONTROL
POND 2 DETAIL

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) 1:1000 / 1:2000

SCALE BAR: 0 20 40 60 80 100m

DRAWING NUMBER: 2011-01-231 REV: C1

SILT FENCE:
APPLICATION

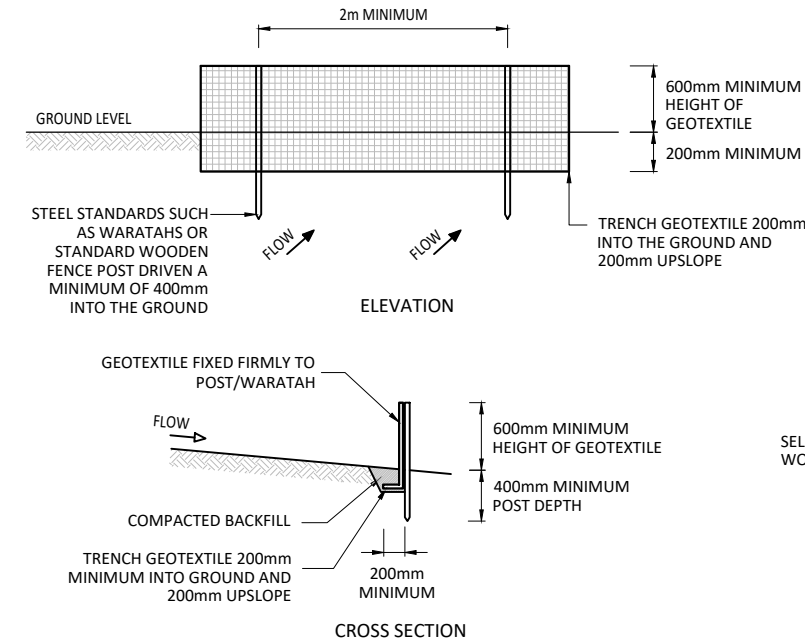
- ON LOW GRADIENT SITES OR FOR CONFINED AREAS WHERE THE CONTRIBUTING CATCHMENT IS SMALL, SUCH AS SHORT STEEP BATTER FILLS AND AROUND WATERCOURSES.
- TO DELINEATE THE LIMIT OF DISTURBANCE ON AN EARTHWORKS SITE SUCH AS RIPARIAN AREAS OR BUSH RESERVES.
- TO STORE RUNOFF BEHIND THE SILT FENCE WITHOUT DAMAGING THE FENCE OR THE SUBMERGED AREA BEHIND THE FENCE.
- DO NOT INSTALL SILT FENCES ACROSS WATERCOURSES OR IN AREAS OF CONCENTRATED FLOWS.

DESIGN

- ENSURE THE SILT FENCE HEIGHT IS A MINIMUM OF 600mm ABOVE GROUND LEVEL.
- PLACE SUPPORTING POSTS/WARATAHS FOR SILT FENCES NO MORE THAN 2m APART UNLESS ADDITIONAL SUPPORT IS PROVIDED BY TENSIONED WIRE (2.5mm HT) ALONG THE TOP OF THE SILT FENCE. WHERE A STRONG WOVEN FABRIC IS USED IN CONJUNCTION WITH A WIRE SUPPORT, THE DISTANCE BETWEEN POSTS CAN BE EXTENDED UP TO 4m. DOUBLE THE SILT FENCE FABRIC OVER AND FASTEN TO THE WIRE AND POSTS WITH WIRE TIES, CLOTH FASTENING CLIPS OR HOG RINGS AT 150mm SPACINGS. ENSURE SUPPORTING POSTS ARE EMBEDDED A MINIMUM OF 400mm INTO THE GROUND.
- ALWAYS INSTALL SILT FENCES ALONG THE CONTOUR. WHERE THIS IS NOT POSSIBLE OR WHERE THERE ARE LONG SECTIONS OF SILT FENCE, INSTALL SHORT SILT FENCE RETURNS PROJECTING UP SLOPE TO MINIMISE CONCENTRATION OF FLOWS. SILT FENCE RETURNS ARE A MINIMUM 2m IN LENGTH, CAN INCORPORATE A TIE BACK AND ARE GENERALLY CONSTRUCTED BY CONTINUING THE SILT FENCE AROUND THE RETURN AND DOUBLING BACK, ELIMINATING JOINS.
- JOIN LENGTHS OF SILT FENCE BY DOUBLING OVER FABRIC ENDS AROUND WOODEN POST OR BATTEN OR BY STAPLING THE FABRIC ENDS TO A BATTEN AND BUTTING THE TWO BATTENS TOGETHER OR BY OVERLAPPING AT LEAST 2m.
- MAXIMUM SLOPE LENGTHS, SPACING OF RETURNS AND ANGLES FOR SILT FENCES ARE SHOWN IN THE TABLE BELOW.
- INSTALL SILT FENCE WINGS AT EITHER END OF THE SILT FENCE PROJECTING UPSLOPE TO A SUFFICIENT HEIGHT TO PREVENT OUTFLANKING.
- WHERE IMPOUNDED FLOW MAY OVERTOP THE SILT FENCE, CROSSING NATURAL DEPRESSIONS OR LOW POINTS, MAKE PROVISION FOR A RIPRAP SPLASH PAD OR OTHER OUTLET PROTECTION DEVICE.

MAINTENANCE

- INSPECT SILT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY NECESSARY REPAIRS WHEN BULGES OCCUR OR WHEN SEDIMENT ACCUMULATION REACHES 50% OF THE FABRIC HEIGHT.
- ANY AREAS OF COLLAPSE, DECOMPOSITION OR INEFFECTIVENESS NEED TO BE IMMEDIATELY REPLACED.
- REMOVE SEDIMENT DEPOSITS AS NECESSARY TO CONTINUE TO ALLOW FOR ADEQUATE SEDIMENT STORAGE AND REDUCE PRESSURE ON THE SILT FENCE. ENSURE THAT THE SEDIMENT IS REMOVED TO A SECURE AREA.
- DO NOT REMOVE SILT FENCE MATERIALS AND SEDIMENT DEPOSITION UNTIL THE CATCHMENT AREA HAS BEEN APPROPRIATELY STABILISED. STABILISE THE AREA OF THE REMOVED SILT FENCE.



SILT FENCE CONSTRUCTION

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 15 of 92

Subject to notations in red

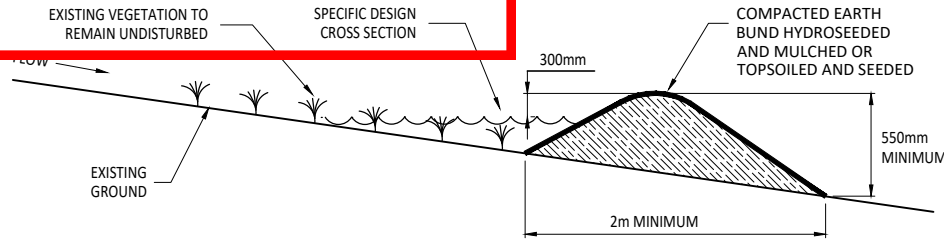
IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

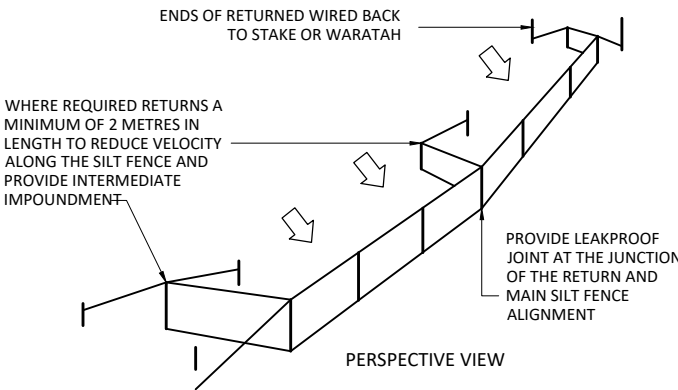
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Page: 15 of 92



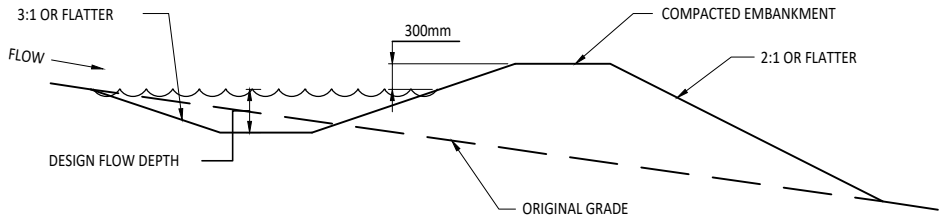
CLEANWATER RUNOFF DIVERSION BUND - CROSS SECTION



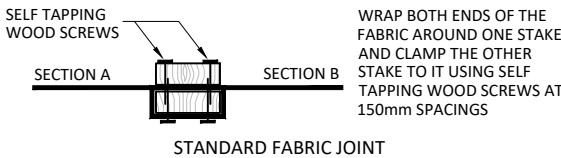
SILT FENCE DESIGN CRITERIA:

SLOPE STEEPNESS %	SLOPE LENGTH (m) (MAXIMUM)	SPACING OF RETURNS (m)
< 2%	N/A	UNLIMITED
2-10%	40	60
10-20%	30	50
20-33%	20	40
33-50%	15	30
>50%	6	20

GRAB TENSILE STRENGTH: >440N (ASTM D4632)
TENSILE MODULUS: 0.140 pa (MINIMUM)
APPARENT OPENING SIZE: 0.1-0.5mm (ASTM D4751)



RUNOFF DIVERSION BUND - CROSS SECTION



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STABILISED CONSTRUCTION ENTRANCE:

APPLICATION

- USE A STABILISED CONSTRUCTION ENTRANCE AT ALL POINTS OF CONSTRUCTION SITE INGRESS AND EGRESS WITH A CONSTRUCTION PLAN LIMITING TRAFFIC TO THESE ENTRANCES ONLY.

DESIGN

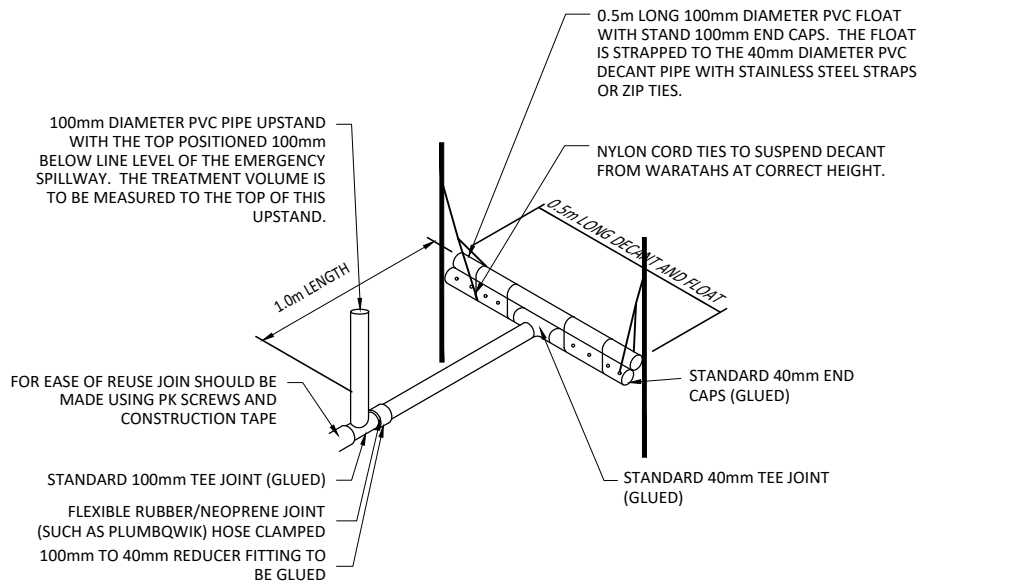
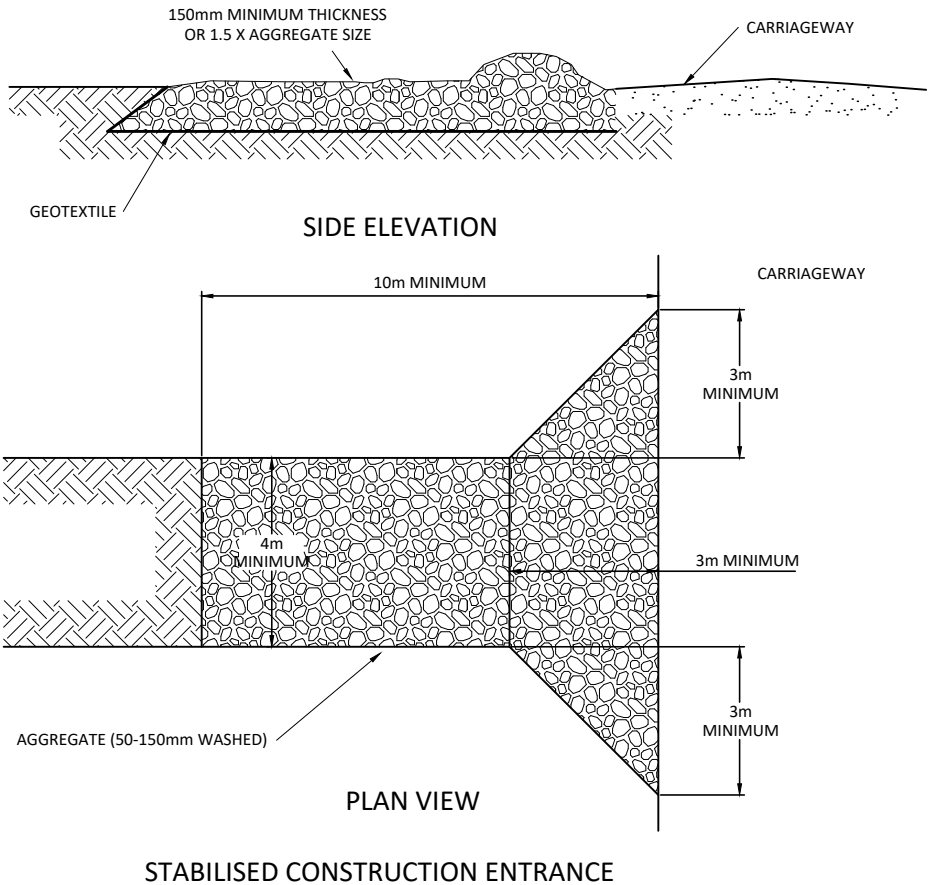
- CLEAR THE ENTRANCE AND EXIT AREA OF ALL VEGETATION, ROOTS AND OTHER UNSUITABLE MATERIAL AND PROPERLY GRADE IT.
- LAY WOVEN GEOTEXTILE; PIN DOWN EDGES AND OVERLAP JOINTS.
- PROVIDE DRAINAGE TO CARRY RUNOFF FROM THE STABILISED CONSTRUCTION ENTRANCE TO A SEDIMENT CONTROL MEASURE.
- PLACE AGGREGATE TO THE SPECIFICATIONS BELOW AND SMOOTH IT.

STABILISED CONSTRUCTION ENTRANCE AGGREGATE SPECIFICATIONS:

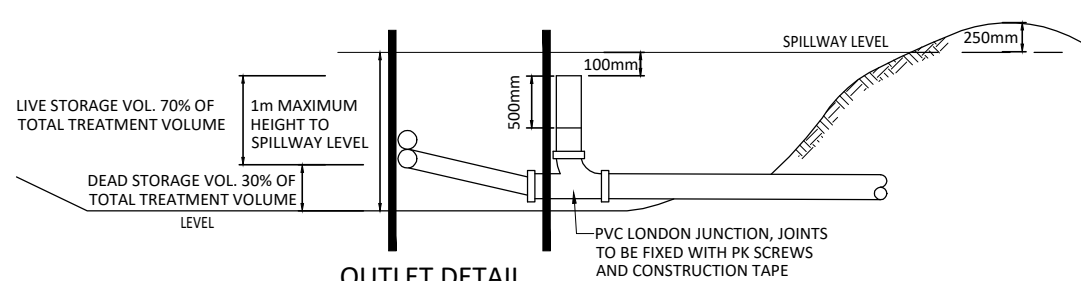
AGGREGATE SIZE	50-150mm WASHED AGGREGATE
THICKNESS	150mm MINIMUM OR 1.5 X AGGREGATE SIZE
LENGTH	10m MINIMUM LENGTH RECOMMENDED
WIDTH	4m MINIMUM WIDTH

MAINTENANCE

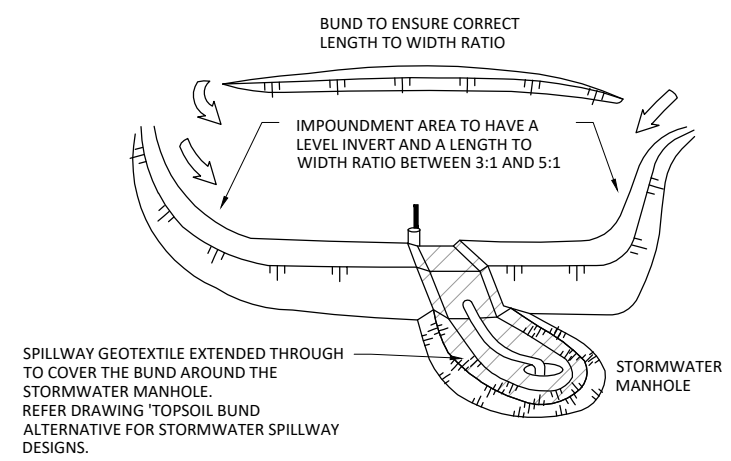
- MAINTAIN THE STABILISED CONSTRUCTION ENTRANCE IN A CONDITION TO PREVENT SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. AFTER EACH RAINFALL INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT FROM THE STABILISED CONSTRUCTION ENTRANCE AND CLEAN OUT AS NECESSARY.
- WHEN WHEEL WASHING IS ALSO REQUIRED, ENSURE THIS IS DONE ON AN AREA STABILISED WITH AGGREGATE WHICH DRAINS TO AN APPROVED SEDIMENT RETENTION FACILITY.



40mm DECANT WITH UPSTAND DETAIL



OUTLET DETAIL



DECANTING EARTH BUND

DECANTING EARTH BUND SIZING
MAXIMUM CATCHMENT 0.3ha
2% VOLUME (60m3 PER 0.3ha CATCHMENT)

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REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

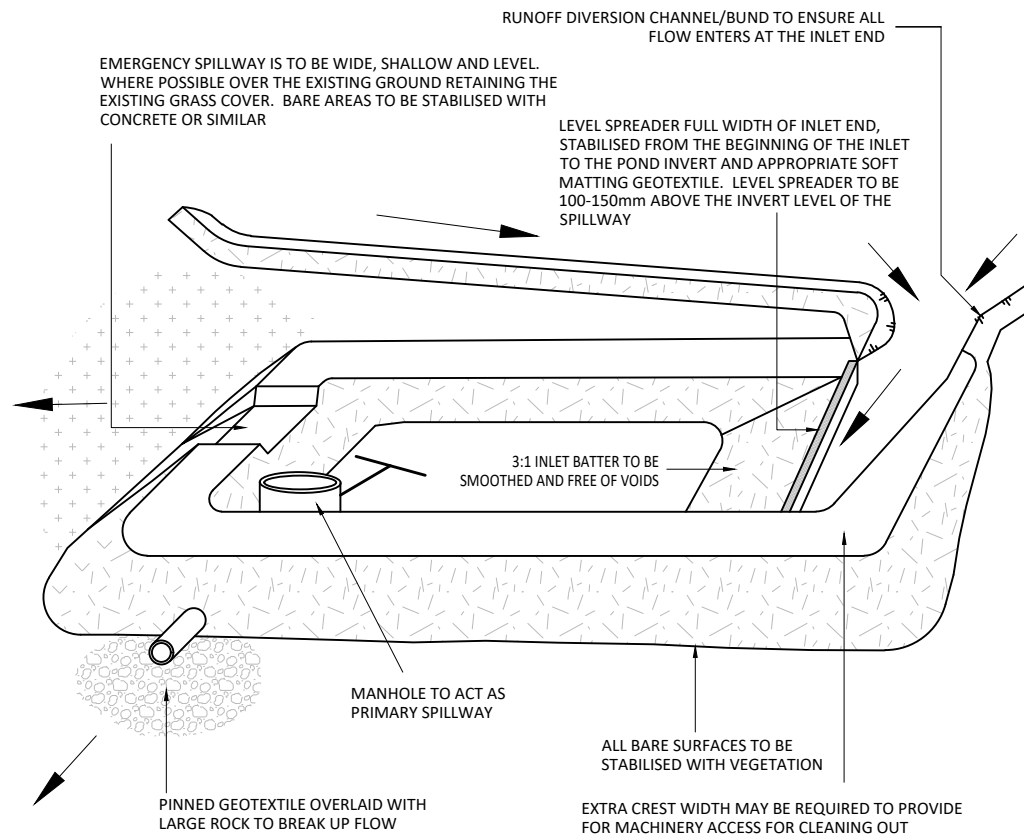
DRAWN: GDS	DATE: 09.2017
CHECKED: RJP	DATE: 29.03.18
APPROVED: RJP	DATE: 03.2018
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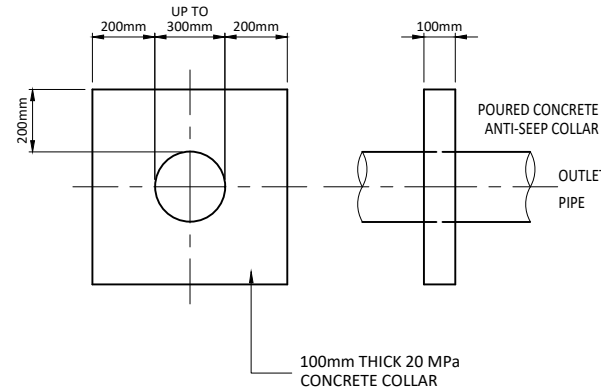
PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED EARTHWORKS
SEDIMENT AND EROSION CONTROL
STANDARD DETAIL SHEET 2 OF 3

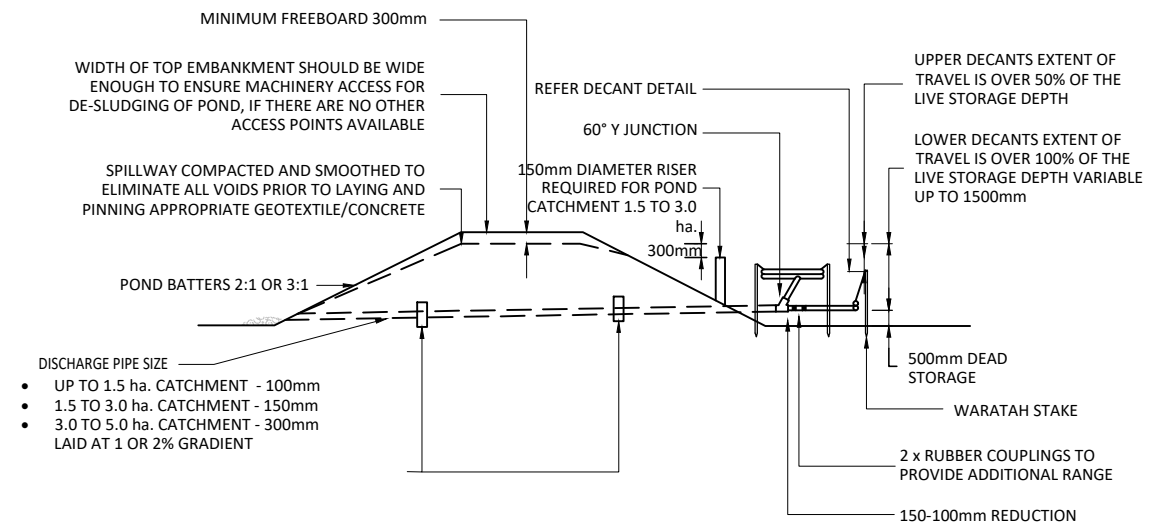
ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) **NOT TO SCALE**
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DRAWING NUMBER: **2011-01-236** REV: **C1**



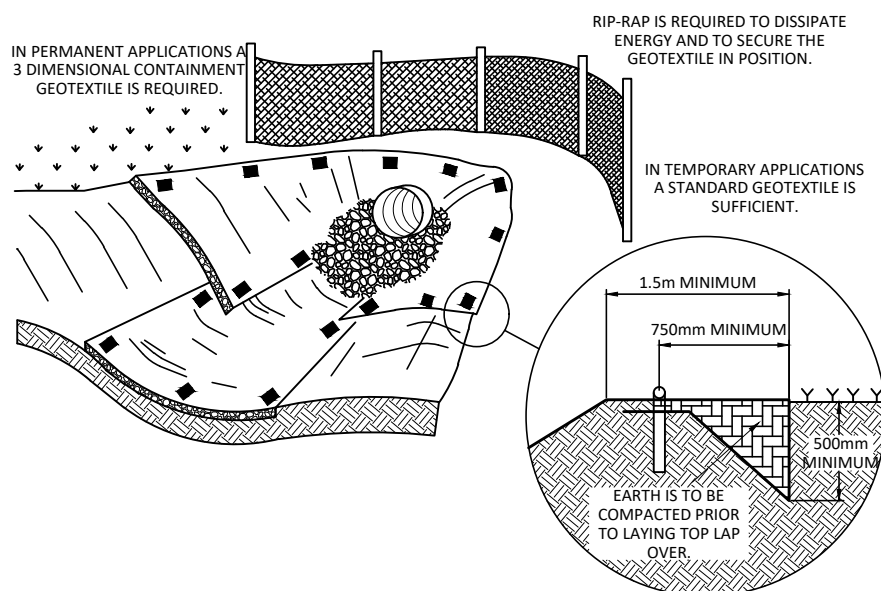
SEDIMENT RETENTION POND



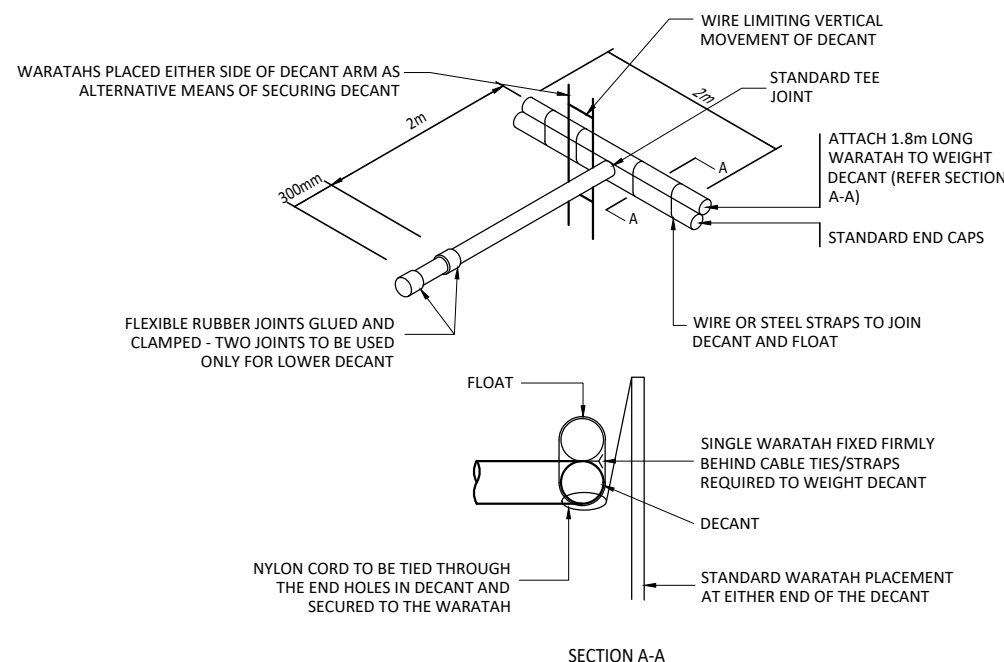
ANTI-SEEP COLLAR



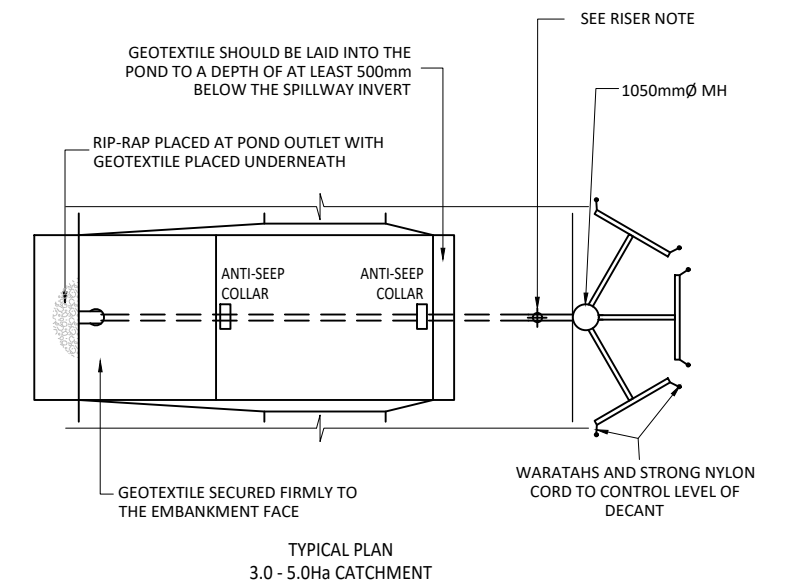
TYPICAL CROSS SECTION
1.5 - 3.0Ha CATCHMENT



GEOTEXTILE AT CULVERT OUTLET



SEDIMENT RETENTION POND - DECANT DETAIL



SEDIMENT RETENTION POND - EMBANKMENT DETAIL

- NUMBER OF DECANTS FOR EACH POND SHALL BE AS FOLLOWS:
- UP TO 1.5ha CATCHMENT - 1 DECANT
 - 1.5 - 3.0ha CATCHMENT - 2 DECANTS
 - 3.0 - 5.0 ha CATCHMENT - 3 DECANTS - CONNECTED TO DN1050 MH

WAIKATO DISTRICT COUNCIL

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SUB 0311/18

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Date: Thursday, 5 July 2018

Page: 17 of 92

Subject to notations in red

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Page: 17 of 92

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

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WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 18 of 92

Subject to notations in red

LEGEND

--- EXISTING GROUND LINE
— PROPOSED GROUND LINE

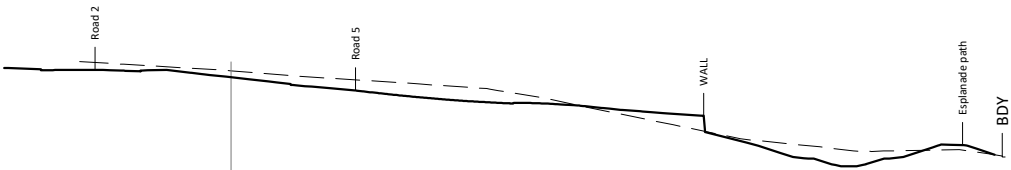
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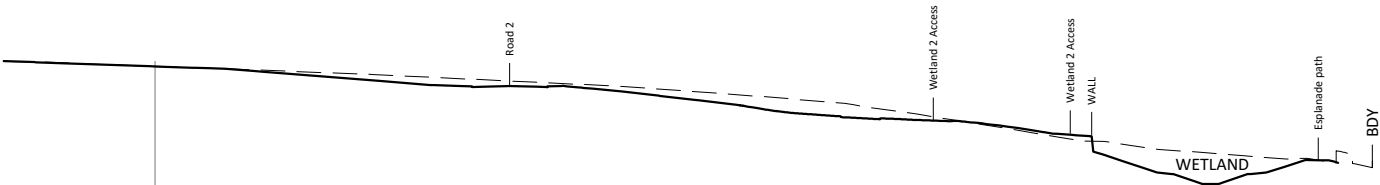
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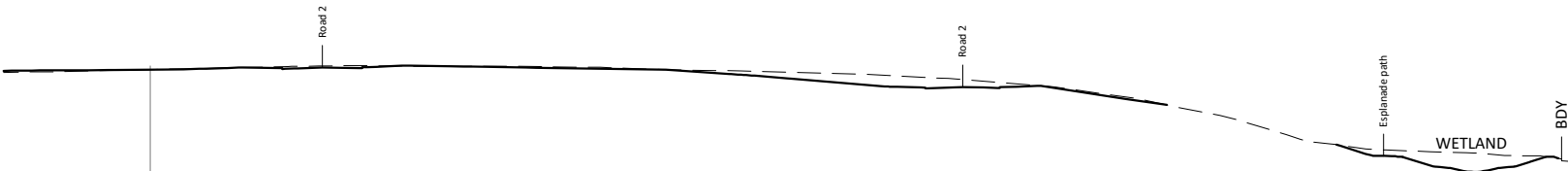
Page: 18 of 92



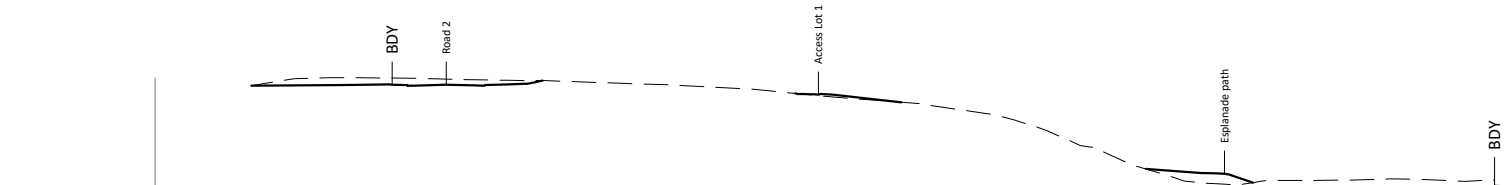
D SITE CROSS SECTION
200 SCALE: (A1/A3) 1:500/1:1000



C SITE CROSS SECTION
200 SCALE: (A1/A3) 1:500/1:1000



B SITE CROSS SECTION
200 SCALE: (A1/A3) 1:500/1:1000



A SITE CROSS SECTION
200 SCALE: (A1/A3) 1:500/1:1000

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C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN: ---	DATE: XX.XXXX
CHECKED: ---	DATE: 29.03.18
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
EARTHWORKS CROSS SECTIONS
SHEET 1

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR: 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-240
REV: C1

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 19 of 92

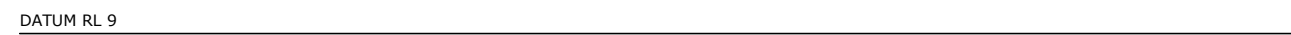
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Page: 19 of 92

— — — — — EXISTING GROUND LINE
 _____ PROPOSED GROUND LINE

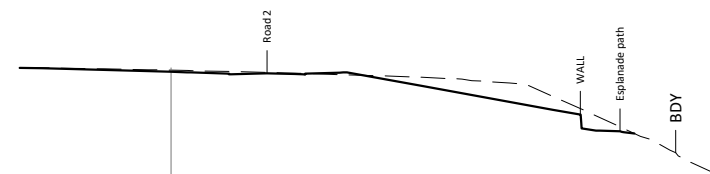


The diagram shows a horizontal line representing the coastline. Above the line, 'Road 2' is labeled with a vertical line pointing to the road. Below the line, 'Eplanade entrance 1' and 'Eplanade path' are labeled with vertical lines pointing to their respective locations. The coastline line is solid black, while the area below it is white. The labels are in black text.

G SITE CROSS SECTION
200 SCALE: (A1/A3) 1:500/1:1000



F SITE CROSS SECTION
200 SCALE: (A1/A3) 1:500/1:1000



E SITE CROSS SECTION
200 SCALE: (A1/A3) 1:500/1:1000

[illegible]

DRAWN: DATE: --- XX.XXXX	
CHECKED: DATE: --- 29.03.18	
APPROVED: DATE: --- 03.03.18	
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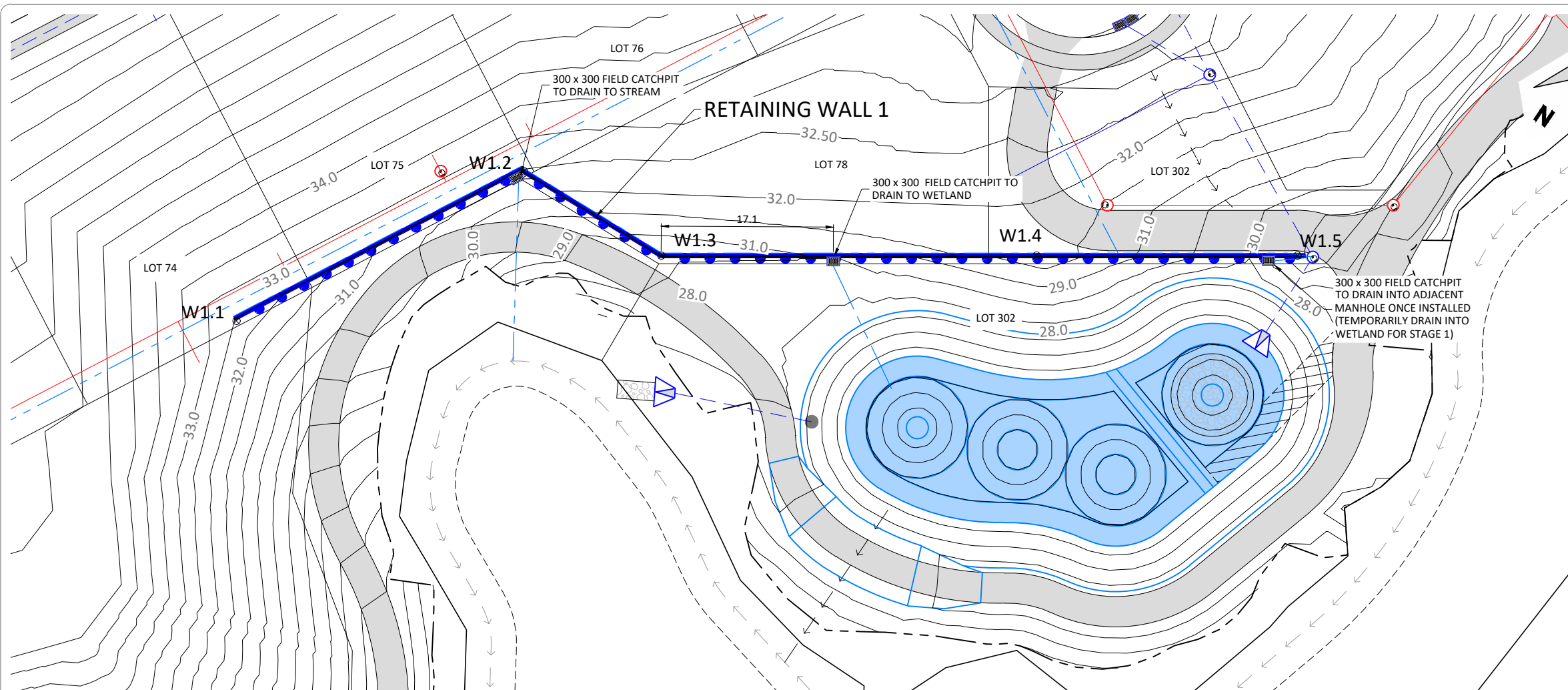


SHEET TITLE:

EARTHWORKS CROSS SECTIONS

SHEET 2

ISSUE STATUS:	CONSENT	
SCALE: (A1/A3)	1:500 / 1:1000	
SCALE BAR 1:1000 @A3		
DRAWING NUMBER:	2011-01-241	REV: C1



- LEGEND**
- 10.0
 - PROPOSED MAJOR CONTOUR
 - EARTHWORK EXTENT
 - PROPOSED RETAINING WALL
- NOTES**
- WALL 1 IS A TIMBER POST RETAINING WALL.
 - TOPS OF WALLS TO BE FENCED OFF TEMPORARILY UNTIL PERMANENT FENCING IS INSTALLED.
 - PERMANENT FENCING TO BE TYPICAL WIRE FENCE DETAIL B TO HCC ITS D3.8.17, ON TOP OF RETAINING WALLS, INCLUDING 300mm WIDE, 100mm THICK 20MPa MOWING STRIP.
 - REFER TO LANDER GEOTECHNICAL WALL DESIGN REPORT J00779 DATED 9 MAY 2018, AND DRAWINGS SHOWN ON 2011-01-272-277 FOR DETAILED WALL DESIGNS.
 - ALL WALLS TO HAVE 300mm WIDE, 100mm THICK 20MPa MOWING STRIP AT THE BASE OF THE RAILS AND POSTS FOR THE ENTIRE LENGTH.

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 20 of 92

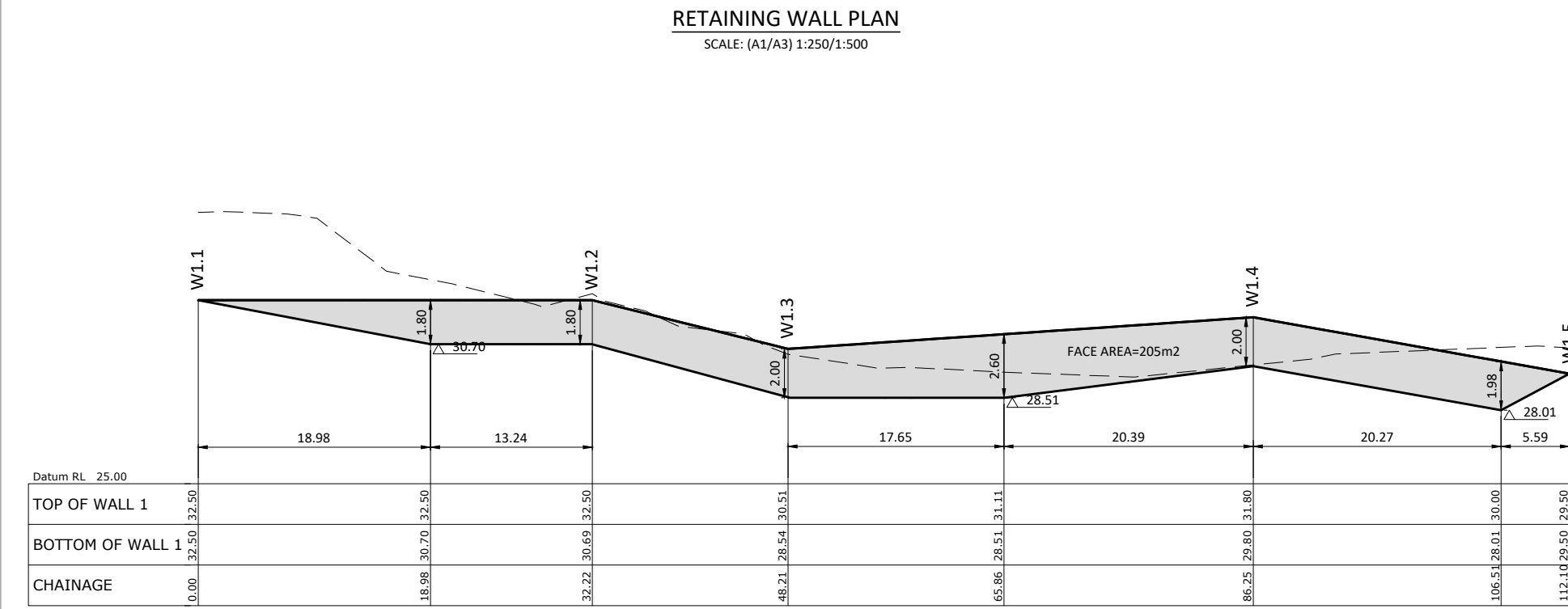
Subject to notations in red

IMPORTANT INFORMATION
48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

All work shall be constructed in accordance with the Code of Practice HCC ITS

Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 20 of 92



RETAINING WALL 1 LONGITUDINAL SECTION
SCALE: (A1/A3) 1:250H 1:125V / 1:500H 1:250V

BUILDING CONSENT REQUIRED FOR WALLS

Printed by: RYAN@16.05.18 // Filepath: S:\0005\2011 - HUGHES DEVELOPMENTS TUAKAU\CAD\2011-01-270.DWG

C3	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RIP	16.05.18
C2	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RIP	10.05.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN: DATE: 09.2017
CHECKED: DATE: 29.03.18
APPROVED: DATE: 03.2018

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CIVILPLAN CONSULTANTS

Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

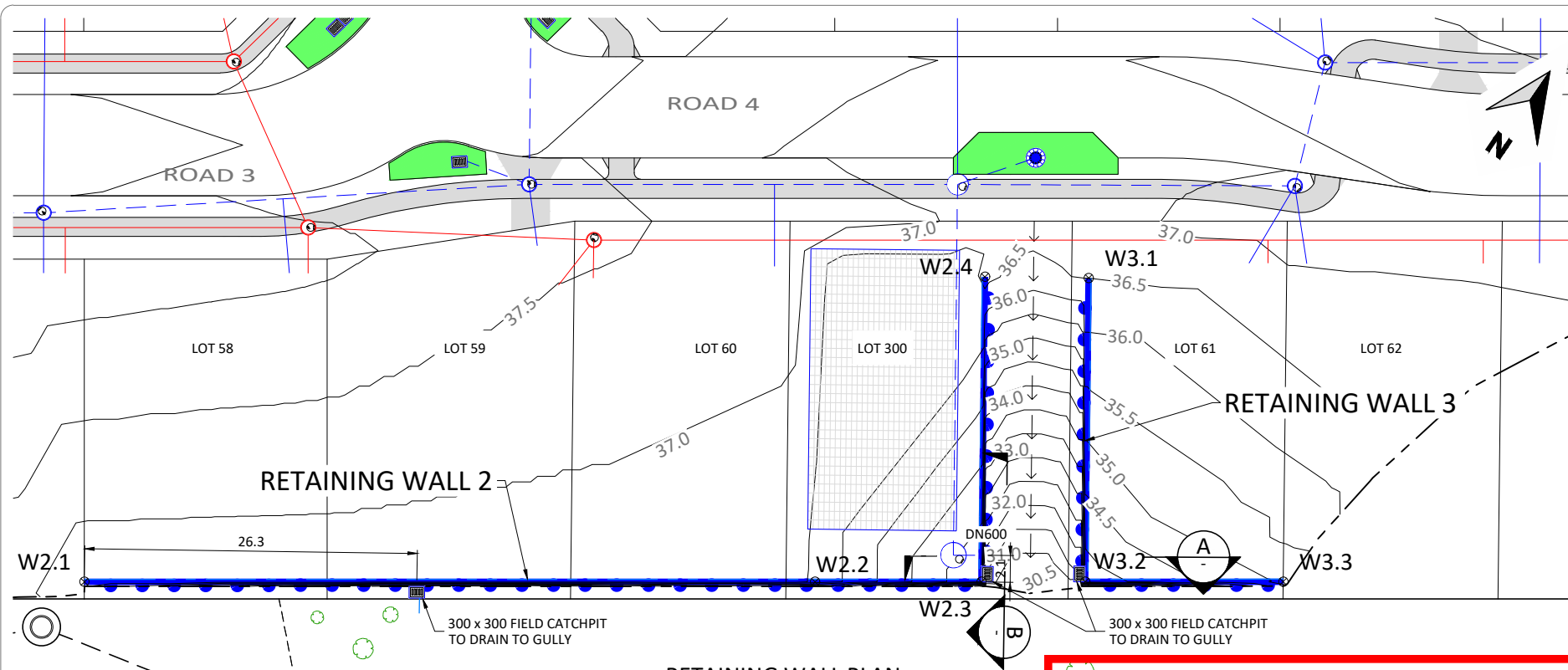
SHEET TITLE:
RETAINING WALL PLAN AND ELEVATION
SHEET 1

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) 1:250 / 1:500

SCALE BAR 1:500@A3 0 5 10 15 20 25m

DRAWING NUMBER: 2011-01-270 REV: C3



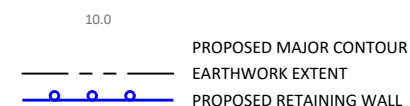
RETAINING WALL PLAN
SCALE: (A1/A3) 1:250/1:500

IMPORTANT INFORMATION
48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

All work shall be constructed in accordance with the Code of Practice HCC ITS

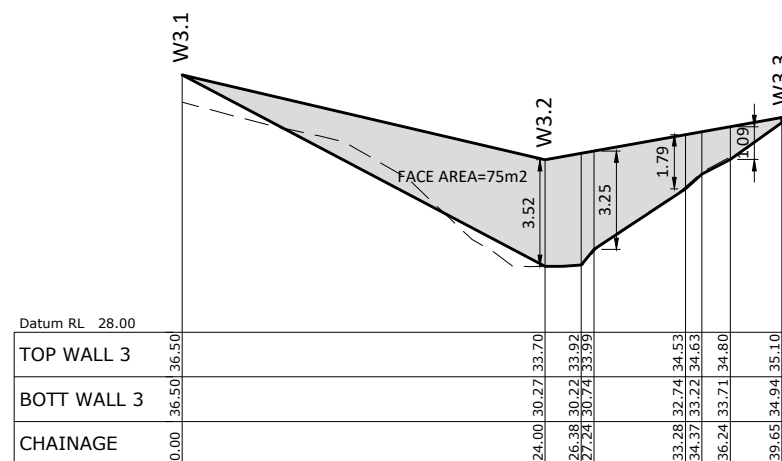
HEIGHT IN RELATION TO BOUNDARY DETAIL
SCALE: NTS

LEGEND

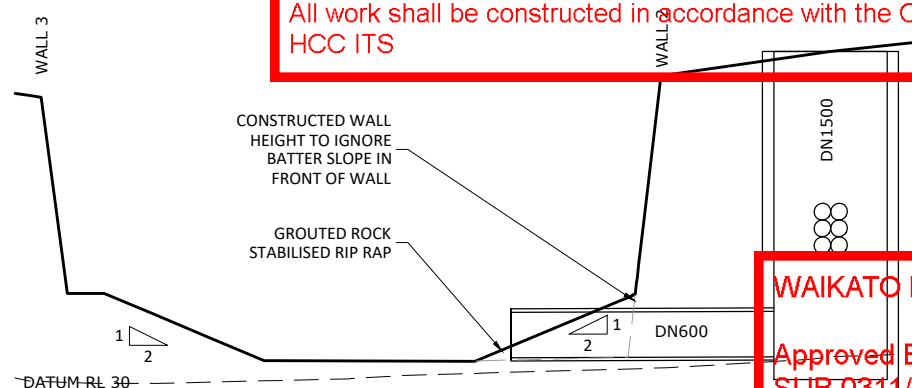


NOTES

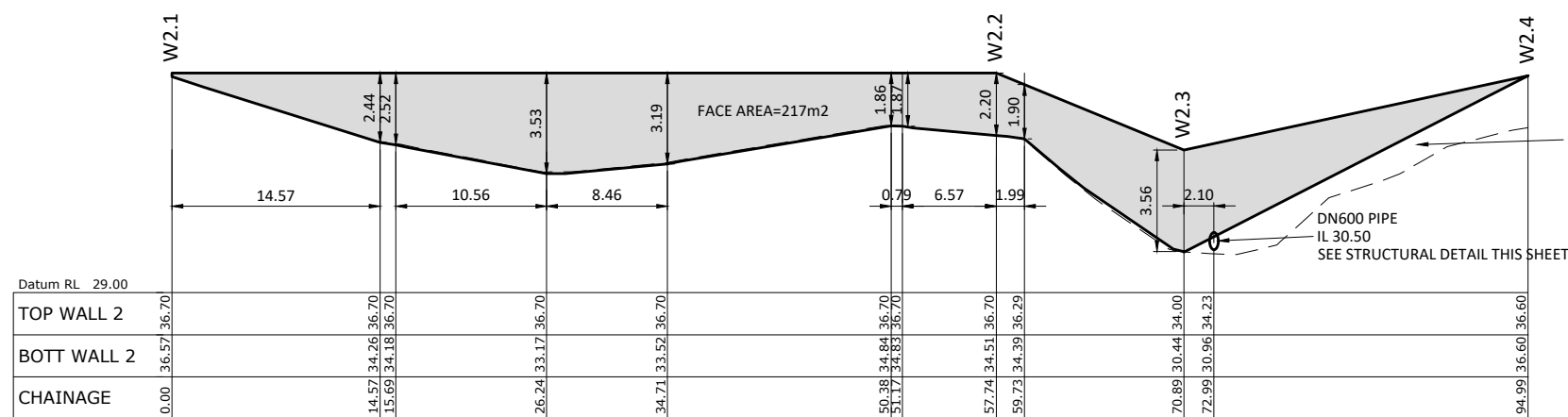
1. WALL 2 AND 3 ARE STEEL UB AND TIMBER RAIL RETAINING WALLS.
2. NO PART OF THE WALL IS TO BE WITHIN 1m OF THE BOUNDARY.
3. TOPS OF WALLS TO BE FENCED OFF TEMPORARILY UNTIL PERMANENT FENCING IS INSTALLED.
3. PERMANENT FENCING TO BE TYPICAL WIRE FENCE DETAIL B TO HCC ITS D3.8.17, ON TOP OF RETAINING WALLS, INCLUDING 300mm WIDE, 100mm THICK 20MPa MOWING STRIP.
4. DN600 OUTLET PIPE TO BE LOCATED ONSITE AND POSITIONED TO BE EQUIDISTANT BETWEEN STEEL UB PILE SPANS. REFER TO DETAIL THIS SHEET.
5. REFER TO LANDER GEOTECHNICAL WALL DESIGN REPORT J00779 DATED 9 MAY 2018, AND DRAWINGS SHOWN ON 2011-01-272-277 FOR DETAILED WALL DESIGNS.
6. ALL WALLS TO HAVE 300mm WIDE, 100mm THICK 20MPa MOWING STRIP AT THE BASE OF THE RAILS AND POSTS FOR THE ENTIRE LENGTH.



RETAINING WALL 3 LONGITUDINAL SECTION
SCALE: (A1/A3) 1:250H 1:125V / 1:500H 1:250V



PIPE EXIT WALL CROSS SECTION
SCALE: (A1/A3) 1:50/1:100



RETAINING WALL 2 LONGITUDINAL SECTION
SCALE: (A1/A3) 1:250H 1:125V / 1:500H 1:250V

BUILDING CONSENT REQUIRED FOR WALLS

WAIKATO DISTRICT COUNCIL

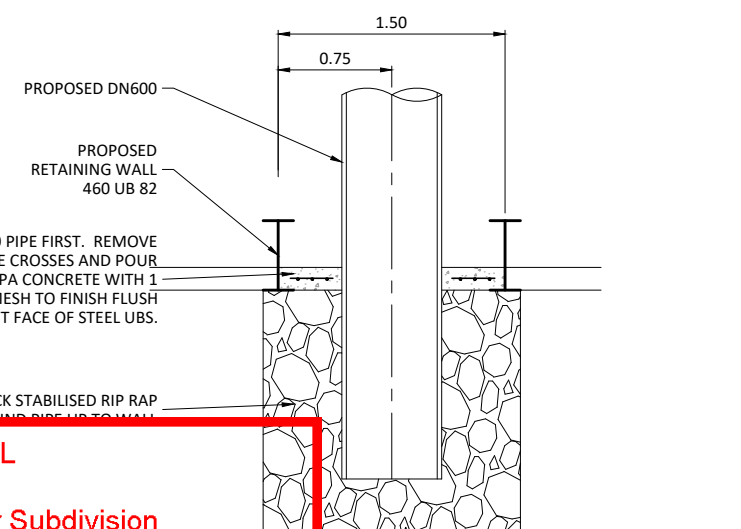
Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 21 of 92

Subject to notations in red

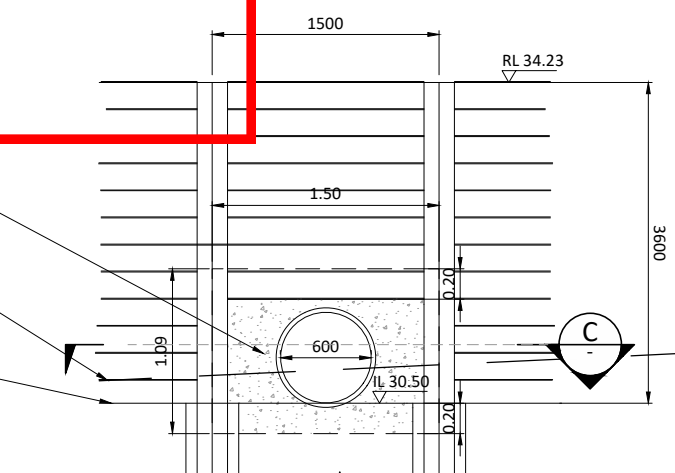
INSTALL DN600 PIPE FIRST. REMOVE RAILS WHERE PIPE CROSSES AND POUR 150mm THICK 30MPa CONCRETE WITH 1 LAYER OF 661 MESH TO FINISH FLUSH WITH FRONT FACE OF STEEL UBS.

GROUND LEVEL IN FRONT OF WALL PART OF OVERLAND FLOW PATH. REFER TO DRAWING 2011-01-465

CONSTRUCTED WALL HEIGHT TO IGNORE BATTER SLOPE IN FRONT OF WALL



PIPE EXITING WALL PLAN
SCALE: (A1/A3) 1:25/1:50



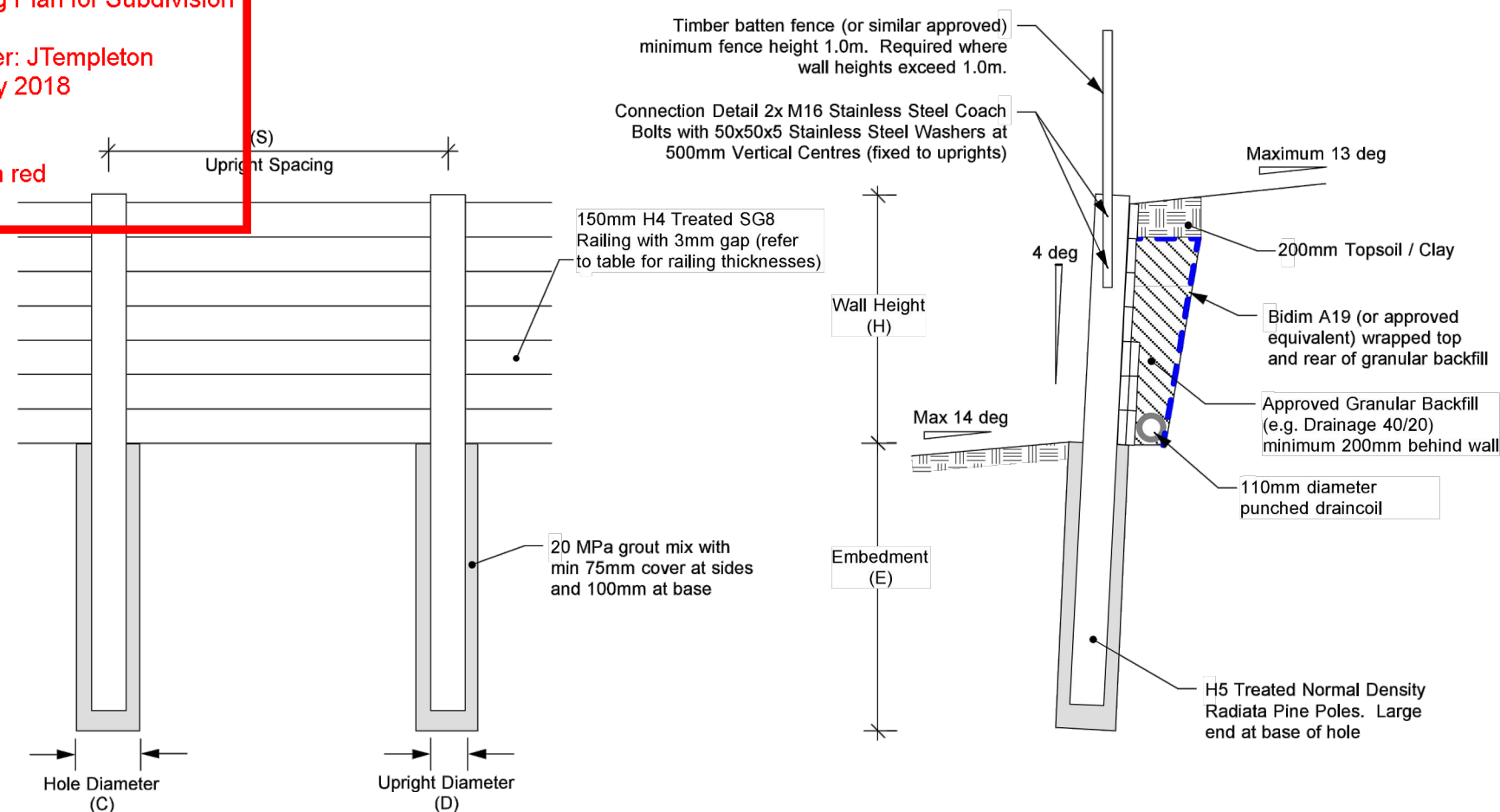
PIPE EXITING WALL DETAIL
SCALE: (A1/A3) 1:25/1:50

REV	REVISION DETAILS	BY	DATE
C3	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RIP	16.05.18
C2	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RIP	10.05.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18

DRAWN:	GDS	DATE:	09.2017
CHECKED:	RIP	DATE:	29.03.18
APPROVED:	RIP	DATE:	03.2018

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Subject to notations in red



Retaining Wall Elevation
NTS

Retaining Wall Typical Cross Section
NTS

Retaining Wall Schedule					
Wall Height (H)	Embedment Depth (E)	Upright Spacing (S)	Upright SED Dia (D)	Hole Diameter (C)	Rail Thickness
2.6m	3.9m	1.2m	425mm	600mm	100mm*
2.4m	3.6m	1.2m	400mm	550mm	100mm*
2.2m	3.2m	1.2m	375mm	550mm	100mm*
2.1m	2.9m	1.2m	350mm	500mm	100mm*
1.9m	2.9m	1.2m	325mm	500mm	100mm*
1.7m	2.5m	1.2m	300mm	450mm	100mm*
1.5m	2.2m	1.2m	275mm	450mm	100mm*
1.4m	2.2m	1.2m	250mm	400mm	100mm*
1.2m	1.8m	1.2m	225mm	400mm	100mm*
1.0m	1.4m	1.2m	200mm	350mm	100mm*
0.8m	1.2m	1.2m	175mm	350mm	50mm
0.6m	1.2m	1.2m	150mm	300mm	50mm

* - 50mm wide railings may be used for top 0.8m of wall

revision						drawn	KM		client: HUGHES DEVELOPMENTS LIMITED	
						approved	CE		project: 99 ESCOTTS ROAD, TUAKAU	
						date	3.05.18		title: RETAINING WALL 1 (CH0-67) - TYPICAL DETAIL	
						scale	NTS		project no: J00779 figure no: 01	
						original size	A3			

Template revision: Timber Detail (25/06/2016)

Printed by: RYAN@10.05.18

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	10.05.18
REV	REVISION DETAILS	RY	DATE

DRAWN: GDS	DATE: 05.2018	
CHECKED: RJP	DATE: 10.05.18	
APPROVED: RJP	DATE: 10.05.18	

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NOTES :

1. The contractor is responsible for locating and confirming all services on site prior to commencement of works on site. Where service trenches conflict, the Design Engineer should be notified immediately. Where services are within 1.5x height of the wall, all backfilling must be Engineer certified clay or compacted hardfill and must be completed prior to wall construction commencing.

2. All timber poles shall be H5 treated radiata pine in accordance with NZS3602 unless otherwise approved. Cutting of timber is to be avoided wherever possible. If cutting is necessary the exposed surface shall be flooded with a copper naphthenate type of wood preservative.

3. Poles must be bored and concreted. Driven piles are expressly excluded unless specifically approved by the Design Engineer.

4. Timber rails shall be fixed to uprights with 150mm long galvanised nails. Rails are to be H4 treated SG8 treated radiata pine made continuous over two or more spans and with staggered joints. A minimum gap of 3mm must be left between rails to permit water pressure relief during heavy rainfall conditions.

5. Where rails are doubled up to create the required thickness, a minimum nail pattern comprising two nails at each upright and at midspan between uprights must be used.

6. The maximum height specified on this drawing shall not be exceeded in any case. Where heights exceed this the matter should be referred back to the design engineer for redesign.

7. Contractor to provide appropriate means of controlling groundwater if it is encountered during construction. All water should be removed from augered holes prior to concrete being poured. Where this cannot be achieved the design engineer should be notified and concrete should be tremie poured.

8. Design Engineer must inspect all pile holes and retained soils to confirm design assumptions (Undrained shear strength $> 80\text{kPa}$) for each pile hole during construction. They should also be given every opportunity to observe timber poles, railings, drainage backfill, and draincoil during construction.

9. The retaining wall has been designed for a 12kPa surcharge. It does not allow for any foundation loading or any heavy construction plant loadings. The Design Engineer should be notified immediately if the retaining wall is subject to any other loadings greater than this.

10. Novaflo drain should be exited through the toe of the wall and outlet to stormwater system or specifically designed outlet structures at locations shown on CivilPlan drawings.

11. If significant overland flow is present above wall surface cut-off drainage must be installed and discharged to the stormwater system or specifically designed outlet structures.

12. Contractor is responsible for ensuring that all necessary precautions are taken to ensure short term stability. If cut batters are utilised the contractor must ensure works are staged appropriately based on available plant and predicted weather conditions. Ideally any cut faces should not be left unsupported for more than a few days or any period of time during rain and should be monitored regularly. If this cannot be achieved, then a temporary batter formed to a stable angle should be left in place, under engineering direction.

13. Timber batten fence (or similar approved barrier) must be installed where wall heights exceed 1.0m. Barrier should be constructed in accordance with Department of Building and Housing F4/AS1 & Guidance on Barrier Design (March 2012) and have a minimum height of 1.0m above the top of wall.

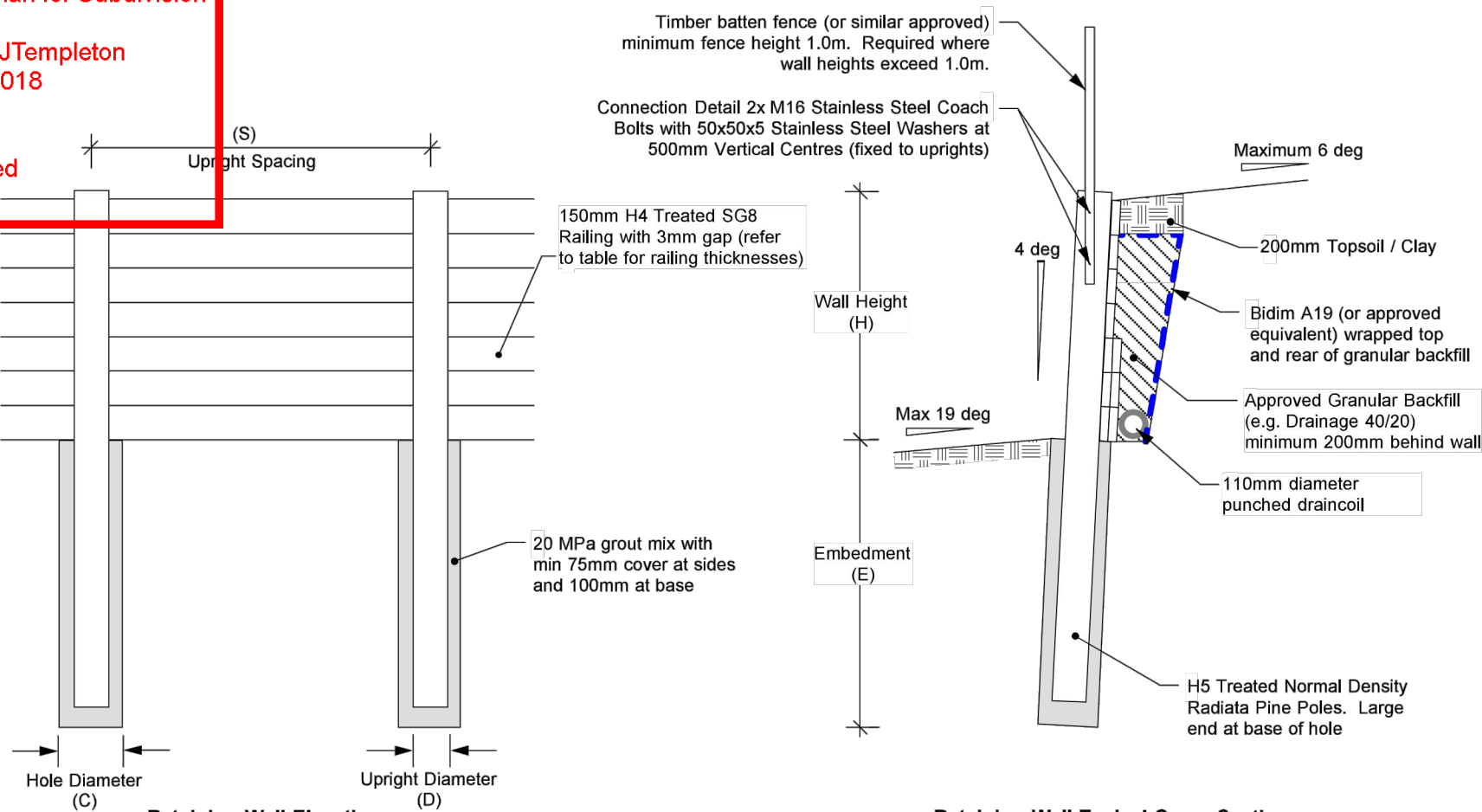
14. If basalt 'floaters' are encountered within pile holes, contractor to make allowance to drill/break through the layers where encountered.

Page: 22 of 92

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Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 23 of 92

Subject to notations in red



Retaining Wall Elevation
NTS

Retaining Wall Typical Cross Section
NTS

Retaining Wall Schedule					
Wall Height (H)	Embedment Depth (E)	Upright Spacing (S)	Upright SED Dia (D)	Hole Diameter (C)	Rail Thickness
2.6m	3.9m	1.2m	425mm	600mm	100mm*
2.4m	3.6m	1.2m	400mm	550mm	100mm*
2.2m	3.2m	1.2m	375mm	550mm	100mm*
2.1m	2.9m	1.2m	350mm	500mm	100mm*
1.9m	2.9m	1.2m	325mm	500mm	100mm*
1.7m	2.5m	1.2m	300mm	450mm	100mm*
1.6m	2.2m	1.2m	275mm	450mm	100mm*
1.4m	2.2m	1.2m	250mm	400mm	100mm*
1.2m	1.8m	1.2m	225mm	400mm	100mm*
1.1m	1.4m	1.2m	200mm	350mm	100mm*
0.9m	1.2m	1.2m	175mm	350mm	50mm
0.7m	1.1m	1.2m	150mm	300mm	50mm

* - 50mm wide railings may be used for top 1.0m of wall

NOTES :


1. The contractor is responsible for locating and confirming all services on site prior to commencement of works on site. Where service trenches conflict, the Design Engineer should be notified immediately. Where services are within 1.5x height of the wall, all backfilling must be Engineer certified clay or compacted hardfill and must be completed prior to wall construction commencing.
2. All timber poles shall be H5 treated radiata pine in accordance with NZS3602 unless otherwise approved. Cutting of timber is to be avoided wherever possible. If cutting is necessary the exposed surface shall be flooded with a copper naphthenate type of wood preservative.
3. Poles must be bored and concreted. Driven piles are expressly excluded unless specifically approved by the Design Engineer.
4. Timber rails shall be fixed to uprights with 150mm long galvanised nails. Rails are to be H4 treated SG8 treated radiata pine made continuous over two or more spans and with staggered joints. A minimum gap of 3mm must be left between rails to permit water pressure relief during heavy rainfall conditions.
5. Where rails are doubled up to create the required thickness, a minimum nail pattern comprising two nails at each upright and at midspan between uprights must be used.
6. The maximum height specified on this drawing shall not be exceeded in any case. Where heights exceed this the matter should be referred back to the design engineer for redesign.
7. Contractor to provide appropriate means of controlling groundwater if it is encountered during construction. All water should be removed from augered holes prior to concrete being poured. Where this cannot be achieved the design engineer should be notified and concrete should be tremie poured.
8. Design Engineer must inspect all pile holes and retained soils to confirm design assumptions (Undrained shear strength > 80kPa) for each pile hole during construction. They should also be given every opportunity to observe timber poles, railings, drainage backfill, and draincoil during construction.
9. The retaining wall has been designed for a 12kPa surcharge. It does not allow for any foundation loading or any heavy construction plant loadings. The Design Engineer should be notified immediately if the retaining wall is subject to any other loadings greater than this.
10. Novaflo drain should be exited through the toe of the wall and outlet to stormwater system or specifically designed outlet structures at locations shown on CivilPlan drawings.
11. If significant overland flow is present above wall surface cut-off drainage must be installed and discharged to the stormwater system or specifically designed outlet structures.
12. Contractor is responsible for ensuring that all necessary precautions are taken to ensure short term stability. If cut batters are utilised the contractor must ensure works are staged appropriately based on available plant and predicted weather conditions. Ideally any cut faces should not be left unsupported for more than a few days or any period of time during rain and should be monitored regularly. If this cannot be achieved, then a temporary batter formed to a stable angle should be left in place, under engineering direction.
13. Timber batten fence (or similar approved barrier) must be installed where wall heights exceed 1.0m. Barrier should be constructed in accordance with Department of Building and Housing F4/AS1 & Guidance on Barrier Design (March 2012) and have a minimum height of 1.0m above the top of wall.
14. If basalt 'floaters' are encountered within pile holes, contractor to make allowance to drill/break through the layers where encountered.

IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

All work shall be constructed in accordance with the Code of Practice HCC ITS

Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

revision	description	drawn	approved	date	drawn	KM		client:	HUGHES DEVELOPMENTS LIMITED	
					approved	CE		project:	99 ESCOTTS ROAD, TUAKAU	
					date	3.05.18		title:	RETAINING WALL 1 (CH67-112) - TYPICAL DETAIL	
					scale	NTS		project no:	J00779	figure no:
					original size	A3				02

Template revision: Timber Detail (25/06/2016)

Printed by: RYAN@10.05.18 // Filepath: S:\005\2011 - HUGHES DEVELOPMENTS\5 TUAKAU\CH67-112\DWG\CH67-112-RETAINING WALL 1 (CH67-112) - TYPICAL DETAIL.dwg					
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	10.05.18		
REV	REVISION DETAILS	BY	DATE		

DRAWN: GDS	DATE: 05.2018
CHECKED: RJP	DATE: 10.05.18
APPROVED: RJP	DATE: 10.05.18
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CIVILPLAN
CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
RETAINING WALL DETAILS
GEOTECHNICAL DESIGN
SHEET 2

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) NOT TO SCALE
SCALE BAR
DRAWING NUMBER: 2011-01-273
REV: C1

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 24 of 92

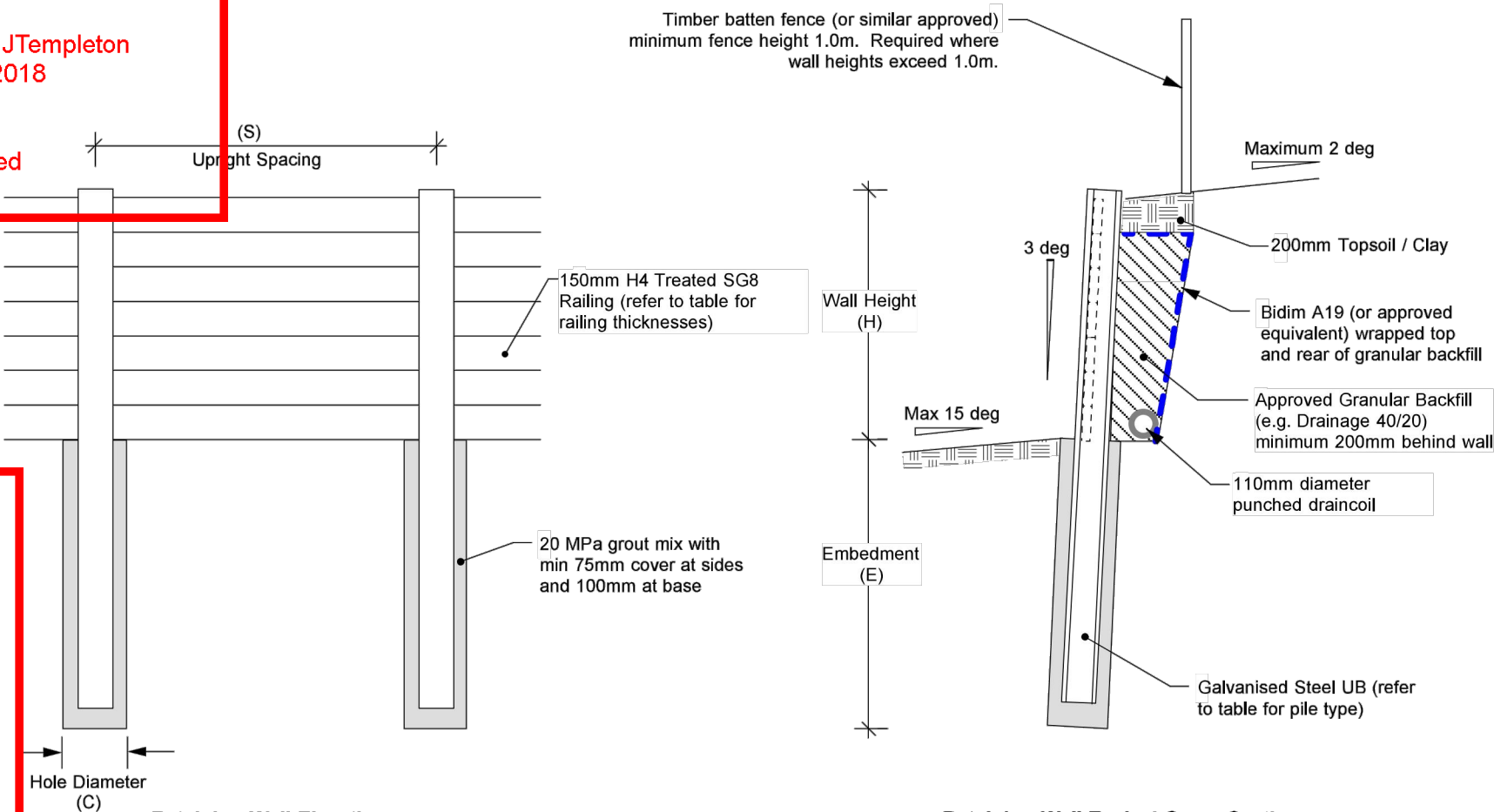
Subject to notations in red

IMPORTANT INFORMATION
48 hours notice must be given
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inspections
listed in the plan approval
letter.

All work shall be constructed in
accordance with the Code of
Practice
HCC ITS

Additional approvals from
Waikato District Council are
required prior to
undertaking works within road
reserve or connecting to live
mains.
Waikato District Council
conditions, accepted plans and
specifications
shall be available on site during
construction.

Page: 24 of 92



Retaining Wall Elevation
NTS

Retaining Wall Typical Cross Section
NTS

Retaining Wall Schedule					
Wall Height (H)	Embedment Depth (E)	Upright Spacing (S)	Upright Pile Type	Hole Diameter (C)	Rail Thickness*
3.6m	4.3m	1.5m	460UB67	650mm	150mm
3.4m	4.1m	1.5m	410UB60	600mm	150mm
3.2m	3.8m	1.5m	360UB57	550mm	100mm
3.1m	3.5m	1.5m	360UB51	550mm	100mm
2.9m	3.3m	1.5m	310UB46	450mm	100mm
2.7m	3.0m	1.5m	310UB40	450mm	100mm
2.6m	2.8m	1.5m	310UB40	450mm	100mm
2.4m	2.6m	1.5m	250UB37	400mm	100mm
2.2m	2.4m	1.5m	250UB31	400mm	100mm
2.0m	2.2m	1.5m	200UB30	350mm	100mm
1.9m	2.0m	1.5m	200UB25	350mm	100mm
1.7m	1.8m	1.5m	200UB22	350mm	100mm
1.5m	1.7m	1.5m	180UB18	350mm	100mm
1.3m	1.6m	1.5m	150UB18	300mm	100mm
1.2m	1.3m	1.5m	150UB14	300mm	100mm

* - 100mm thick railings may be used for top 3.2m of wall
Alternatively 110mm diameter full round unilogs may be used instead of planks

revision	description	drawn	approved	date	drawn	KM		client:	HUGHES DEVELOPMENTS LIMITED
					approved	CE		project:	99 ESCOTTS ROAD, TUAKAU
					date	4.05.18		title:	RETAINING WALL 2 (CH0-50) - TYPICAL DETAIL
					scale	NTS		project no:	J00779
					original size	A3		figure no:	03

Template revision: Timber Detail (25/06/2016)

NOTES :

- The contractor is responsible for locating and confirming all services on site prior to commencement of works on site. Where service trenches conflict, the Design Engineer should be notified immediately. Where services are within 1.5x height of the wall, all backfilling must be Engineer certified clay or compacted hardfill and must be completed prior to wall construction commencing.
- All steel UB sections should be Grade 300 and be galvanised in accordance with NZS4680 (with a minimum coating mass of 500g/m2) to a minimum depth of 300mm below final ground level.
- Poles must be bored and concreted. Driven piles are expressly excluded unless specifically approved by the Design Engineer.
- Timber rails shall be fixed to uprights with 150mm long galvanised nails. Bitumen barrier tape to be placed between Steel UB and railings at all connections. Rails are to be H4 treated SG8 treated radiata pine. A minimum gap of 3mm must be left between rails to permit water pressure relief during heavy rainfall conditions.
- Where rails are doubled up to create the required thickness, a minimum nail pattern comprising two nails at each upright and at midspan between uprights must be used.
- The maximum height specified on this drawing shall not be exceeded in any case. Where heights exceed this the matter should be referred back to the design engineer for redesign.
- Contractor to provide appropriate means of controlling groundwater if it is encountered during construction. All water should be removed from augered holes prior to concrete being poured. Where this cannot be achieved the design engineer should be notified and concrete should be tremie poured.
- Design Engineer must inspect all pile holes and retained soils to confirm design assumptions (Undrained shear strength > 80kPa) for each pile hole during construction. They should also be given every opportunity to observe timber poles, railings, drainage backfill, and draincoil during construction.
- The retaining wall has been designed for a 12kPa surcharge. It does not allow for any foundation loading or any heavy construction plant loadings. The Design Engineer should be notified immediately if the retaining wall is subject to any other loadings greater than this.
- Novaflo drain should be exited through the toe of the wall and outlet to stormwater system or specifically designed outlet structures at locations shown on CivilPlan drawings.
- If significant overland flow is present above wall surface cut-off drainage must be installed and discharged to the stormwater system or specifically designed outlet structures.
- Timber batten fence (or similar approved barrier) must be installed where wall heights exceed 1.0m. Barrier should be constructed in accordance with Department of Building and Housing F4/AS1 & Guidance on Barrier Design (March 2012) and have a minimum height of 1.0m above the top of wall.
- If basalt 'floaters' are encountered within pile holes, contractor to make allowance to drill/break through the layers where encountered.

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	10.05.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	05.2018
CHECKED:	DATE:
RJP	10.05.18
APPROVED:	DATE:
RJP	10.05.18
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
RETAINING WALL DETAILS
GEOTECHNICAL DESIGN
SHEET 3

ISSUE STATUS:	CONSENT
SCALE: (A1/A3)	NOT TO SCALE
SCALE BAR	
N.T.S.	
DRAWING NUMBER:	2011-01-274
REV:	C1

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 25 of 92

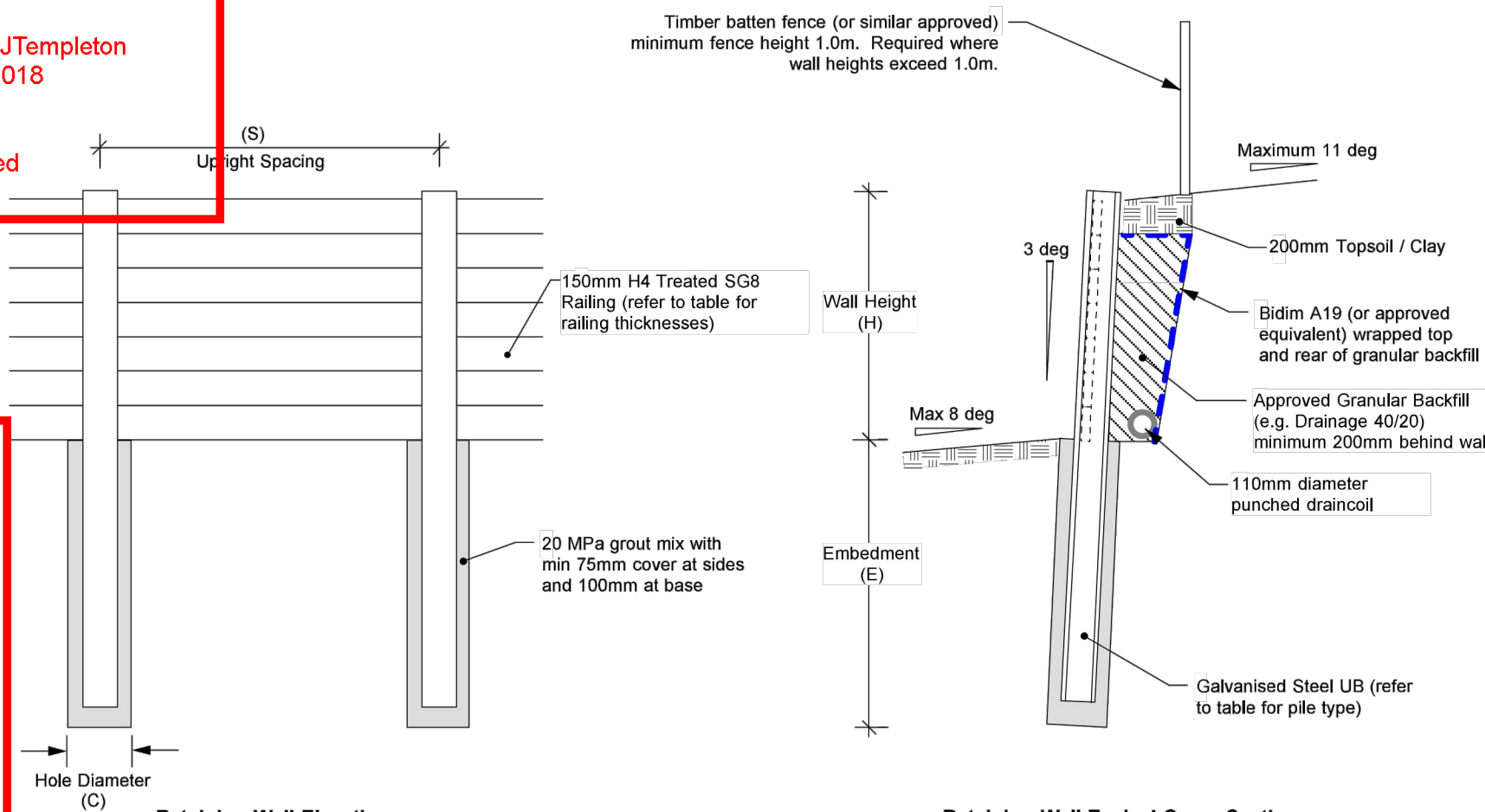
Subject to notations in red

IMPORTANT INFORMATION
48 hours notice must be
given prior to all WDC hold
point inspections
listed in the plan approval
letter.

All work shall be constructed
in accordance with the Code
of Practice
HCC ITS

Additional approvals from
Waikato District Council are
required prior to
undertaking works within road
reserve or connecting to live
mains.
Waikato District Council
conditions, accepted plans
and specifications
shall be available on site
during construction.

Page: 25 of 92



Retaining Wall Elevation
NTS

Retaining Wall Typical Cross Section
NTS

Retaining Wall Schedule					
Wall Height (H)	Embedment Depth (E)	Upright Spacing (S)	Upright Pile Type	Hole Diameter (C)	Rail Thickness*
3.6m	4.1m	1.5m	410UB60	600mm	150mm
3.4m	3.8m	1.5m	410UB54	600mm	150mm
3.2m	3.6m	1.5m	360UB51	550mm	100mm
3.0m	3.3m	1.5m	360UB45	550mm	100mm
2.9m	3.0m	1.5m	310UB40	450mm	100mm
2.7m	2.8m	1.5m	310UB40	450mm	100mm
2.5m	2.6m	1.5m	250UB37	400mm	100mm
2.3m	2.4m	1.5m	250UB31	400mm	100mm
2.1m	2.2m	1.5m	200UB30	350mm	100mm
1.9m	2.0m	1.5m	200UB25	350mm	100mm
1.8m	1.8m	1.5m	200UB22	350mm	100mm
1.6m	1.6m	1.5m	180UB18	350mm	100mm
1.4m	1.5m	1.5m	150UB18	300mm	100mm
1.2m	1.3m	1.5m	150UB14	300mm	100mm
1.0m	1.2m	1.5m	150UB14	300mm	100mm

* - 100mm thick railings may be used for top 3.2m of wall
Alternatively 110mm diameter full round unilogs may be used instead of planks

revision	description	drawn	approved	date	drawn	KM		client:	HUGHES DEVELOPMENTS LIMITED	
					approved	CE		project:	99 ESCOTTS ROAD, TUAKAU	
					date	4.05.18		title:	RETAINING WALL 2 (CH50-71) - TYPICAL DETAIL	
					scale	NTS		project no:	J00779	figure no: 04
					original size	A3				

Template revision: Timber Detail (25/06/2016)

NOTES :

- The contractor is responsible for locating and confirming all services on site prior to commencement of works on site. Where service trenches conflict, the Design Engineer should be notified immediately. Where services are within 1.5x height of the wall, all backfilling must be Engineer certified clay or compacted hardfill and must be completed prior to wall construction commencing.
- All steel UB sections should be Grade 300 and be galvanised in accordance with NZS4680 (with a minimum coating mass of 500g/m²) to a minimum depth of 300mm below final ground level.
- Poles must be bored and concreted. Driven piles are expressly excluded unless specifically approved by the Design Engineer.
- Timber rails shall be fixed to uprights with 150mm long galvanised nails. Bitumen barrier tape to be placed between Steel UB and railings at all connections. Rails are to be H4 treated SG8 treated radiata pine. A minimum gap of 3mm must be left between rails to permit water pressure relief during heavy rainfall conditions.
- Where rails are doubled up to create the required thickness, a minimum nail pattern comprising two nails at each upright and at midspan between uprights must be used.
- The maximum height specified on this drawing shall not be exceeded in any case. Where heights exceed this the matter should be referred back to the design engineer for redesign.
- Contractor to provide appropriate means of controlling groundwater if it is encountered during construction. All water should be removed from augered holes prior to concrete being poured. Where this cannot be achieved the design engineer should be notified and concrete should be tremie poured.
- Design Engineer must inspect all pile holes and retained soils to confirm design assumptions (Undrained shear strength > 80kPa) for each pile hole during construction. They should also be given every opportunity to observe timber poles, railings, drainage backfill, and draincoil during construction.
- The retaining wall has been designed for a 12kPa surcharge. It does not allow for any foundation loading or any heavy construction plant loadings. The Design Engineer should be notified immediately if the retaining wall is subject to any other loadings greater than this.
- Novaflo drain should be exited through the toe of the wall and outlet to stormwater system or specifically designed outlet structures at locations shown on CivilPlan drawings.
- If significant overland flow is present above wall surface cut-off drainage must be installed and discharged to the stormwater system or specifically designed outlet structures.
- Timber batten fence (or similar approved barrier) must be installed where wall heights exceed 1.0m. Barrier should be constructed in accordance with Department of Building and Housing F4/AS1 & Guidance on Barrier Design (March 2012) and have a minimum height of 1.0m above the top of wall.
- If basalt 'floaters' are encountered within pile holes, contractor to make allowance to drill/break through the layers where encountered.

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REV	DESCRIPTION	DATE	BY	DATE
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	10.05.18	GDS	10.05.18

DRAWN:	DATE:	05.2018
CHECKED:	DATE:	10.05.18
APPROVED:	DATE:	10.05.18

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CIVILPLAN CONSULTANTS

Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:

HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:

RETAINING WALL DETAILS
GEOTECHNICAL DESIGN
SHEET 4

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) NOT TO SCALE

SCALE BAR

DRAWING NUMBER: 2011-01-275

REV: C1

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 26 of 92

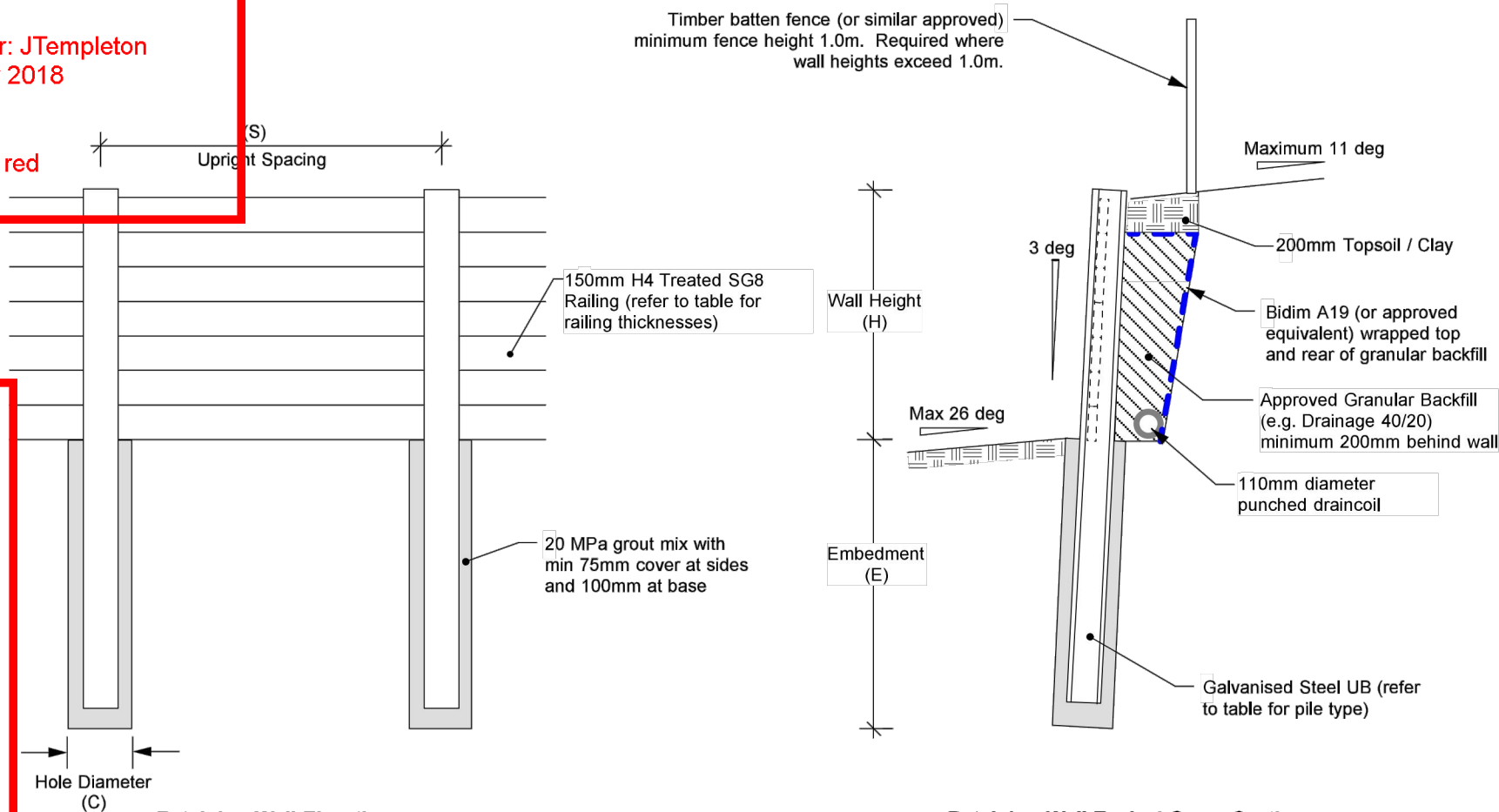
Subject to notations in red

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inspections
listed in the plan approval
letter.

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of Practice
HCC ITS

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undertaking works within road
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mains.
Waikato District Council
conditions, accepted plans
and specifications
shall be available on site
during construction.

Page: 26 of 92



Retaining Wall Elevation
NTS

Retaining Wall Typical Cross Section
NTS

Retaining Wall Schedule					
Wall Height (H)	Embedment Depth (E)	Upright Spacing (S)	Upright Pile Type	Hole Diameter (C)	Rail Thickness*
3.6m	5.6m	1.5m	460UB82	650mm	150mm
3.4m	5.3m	1.5m	460UB75	650mm	150mm
3.3m	5.0m	1.5m	460UB67	650mm	150mm
3.1m	4.7m	1.5m	460UB67	650mm	100mm
3.0m	4.4m	1.5m	410UB54	600mm	100mm
2.8m	4.0m	1.5m	360UB57	550mm	100mm
2.7m	3.8m	1.5m	360UB51	550mm	100mm
2.5m	3.5m	1.5m	360UB45	550mm	100mm
2.4m	3.2m	1.5m	310UB46	450mm	100mm
2.2m	3.0m	1.5m	310UB40	450mm	100mm
2.0m	2.7m	1.5m	310UB32	450mm	100mm
1.9m	2.5m	1.5m	250UB37	400mm	100mm
1.7m	2.2m	1.5m	250UB31	400mm	100mm
1.6m	2.1m	1.5m	200UB22	350mm	100mm
1.4m	1.8m	1.5m	180UB22	350mm	100mm
1.3m	1.7m	1.5m	150UB18	300mm	100mm
1.1m	1.5m	1.5m	150UB14	300mm	100mm

* - 100mm thick railings may be used for top 3.2m of wall
Alternatively 110mm diameter full round unilogs may be used instead of planks

NOTES :

1. The contractor is responsible for locating and confirming all services on site prior to commencement of works on site. Where service trenches conflict, the Design Engineer should be notified immediately. Where services are within 1.5x height of the wall, all backfilling must be Engineer certified clay or compacted hardfill and must be completed prior to wall construction commencing.
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3. Poles must be bored and concreted. Driven piles are expressly excluded unless specifically approved by the Design Engineer.
4. Timber rails shall be fixed to uprights with 150mm long galvanised nails. Bitumen barrier tape to be placed between Steel UB and railings at all connections. Rails are to be H4 treated SG8 treated radiata pine. A minimum gap of 3mm must be left between rails to permit water pressure relief during heavy rainfall conditions.
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8. Design Engineer must inspect all pile holes and retained soils to confirm design assumptions (Undrained shear strength > 80kPa) for each pile hole during construction. They should also be given every opportunity to observe timber poles, railings, drainage backfill, and draincoil during construction.
9. The retaining wall has been designed for a 12kPa surcharge. It does not allow for any foundation loading or any heavy construction plant loadings. The Design Engineer should be notified immediately if the retaining wall is subject to any other loadings greater than this.
10. Novaflor drain should be exited through the toe of the wall and outlet to stormwater system or specifically designed outlet structures at locations shown on CivilPlan drawings.
11. If significant overland flow is present above wall surface cut-off drainage must be installed and discharged to the stormwater system or specifically designed outlet structures.
12. Timber batten fence (or similar approved barrier) must be installed where wall heights exceed 1.0m. Barrier should be constructed in accordance with Department of Building and Housing F4/AS1 & Guidance on Barrier Design (March 2012) and have a minimum height of 1.0m above the top of wall.
13. If basalt 'floaters' are encountered within pile holes, contractor to make allowance to drill/break through the layers where encountered.

revision	description				drawn	approved	date	drawn	KM		client:	HUGHES DEVELOPMENTS LIMITED	
								approved	CE		project:	99 ESCOTTS ROAD, TUAKAU	
								date	4.05.18		title:	RETAINING WALL 2 (CH71-95) - TYPICAL DETAIL	
								scale	NTS		project no:	J00779	figure no: 05
								original size	A3				

Template revision: Timber Detail (25/06/2016)


CI	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	10.05.18
REV	REVISION DETAILS	BY	DATE


DRAWN: GDS	DATE: 05.2018
CHECKED: RJP	DATE: 10.05.18
APPROVED: RJP	DATE: 10.05.18
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
RETAINING WALL DETAILS
GEOTECHNICAL DESIGN
SHEET 5

ISSUE STATUS:	CONSENT
SCALE: (A1/A3)	NOT TO SCALE
SCALE BAR	
DRAWING NUMBER:	2011-01-276
REV:	C1

ISSUE STATUS:	CONSENT	
SCALE: (A1/A3)	NOT TO SCALE	
SCALE BAR N.T.S.		
DRAWING NUMBER:	2011-01-277	REV: C1

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 28 of 92

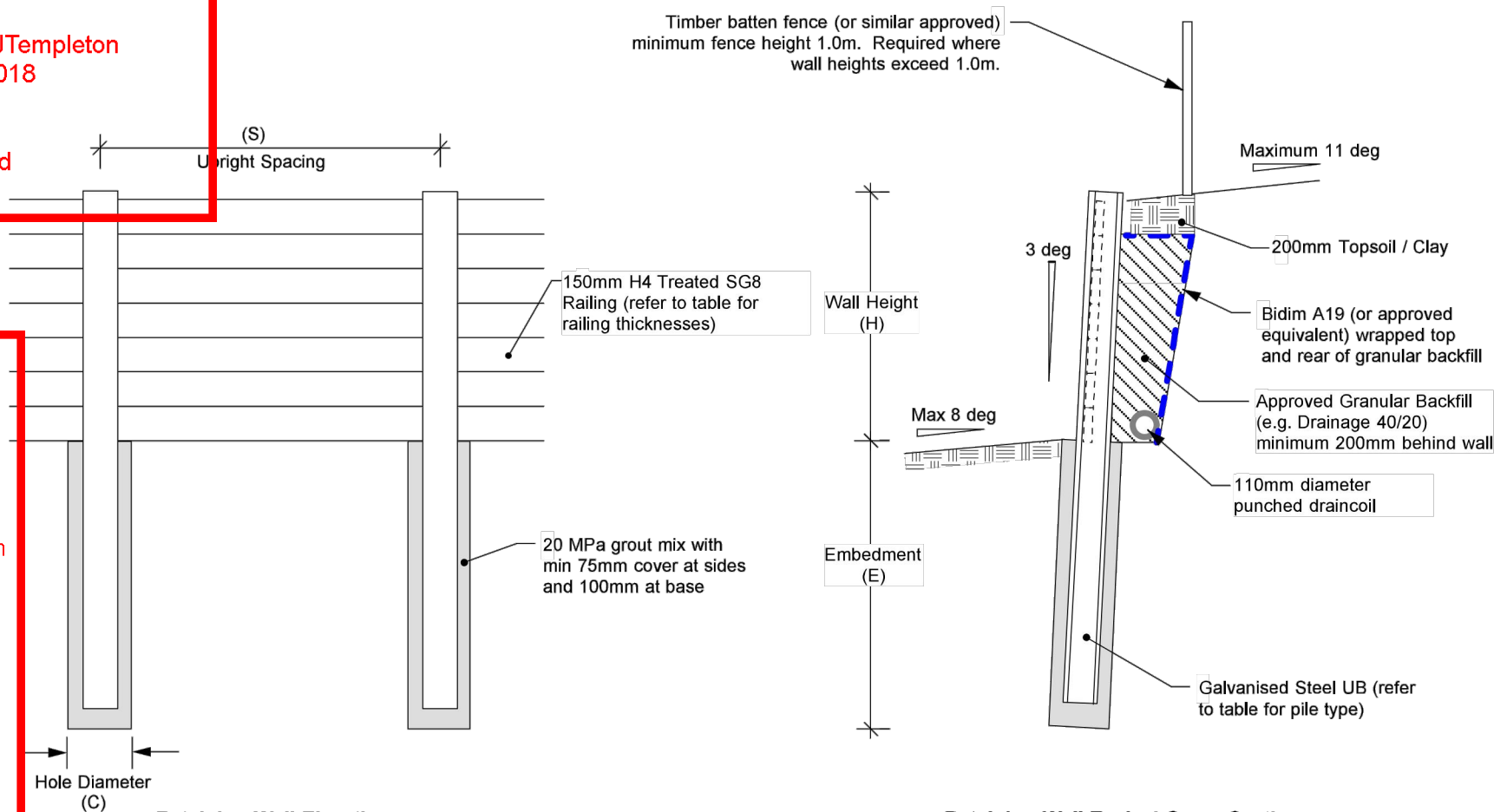
Subject to notations in red

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listed in the plan approval
letter.

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Practice
HCC ITS

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Waikato District Council
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specifications
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during construction.

Page: 28 of 92



Retaining Wall Elevation
NTS

Retaining Wall Typical Cross Section
NTS

Retaining Wall Schedule					
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3.4m	3.8m	1.5m	410UB54	600mm	150mm
3.2m	3.6m	1.5m	360UB51	550mm	100mm
3.0m	3.3m	1.5m	360UB45	550mm	100mm
2.9m	3.0m	1.5m	310UB40	450mm	100mm
2.7m	2.8m	1.5m	310UB40	450mm	100mm
2.5m	2.6m	1.5m	250UB37	400mm	100mm
2.3m	2.4m	1.5m	250UB31	400mm	100mm
2.1m	2.2m	1.5m	200UB30	350mm	100mm
1.9m	2.0m	1.5m	200UB25	350mm	100mm
1.8m	1.8m	1.5m	200UB22	350mm	100mm
1.6m	1.6m	1.5m	180UB18	350mm	100mm
1.4m	1.5m	1.5m	150UB18	300mm	100mm
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revision	description	drawn	approved	date	drawn	KM	client:	HUGHES DEVELOPMENTS LIMITED	
					approved	CE	project:	99 ESCOTTS ROAD, TUAKAU	
					date	4.05.18	title:	RETAINING WALL 3 (CH24-40) - TYPICAL DETAIL	
					scale	NTS	project no:	J00779	figure no: 07
					original size	A3			

Template revision: Timber Detail (25/06/2016)

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C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	10.05.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	05.2018
CHECKED:	DATE:
RJP	10.05.18
APPROVED:	DATE:
RJP	10.05.18

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CIVILPLAN
CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
RETAINING WALL DETAILS
GEOTECHNICAL DESIGN
SHEET 7

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) NOT TO SCALE
SCALE BAR
N.T.S.
DRAWING NUMBER: 2011-01-278
REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 29 of 92

Subject to notations in red

IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

All work shall be constructed in accordance with the Code of Practice HCC ITS DP 164972

Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

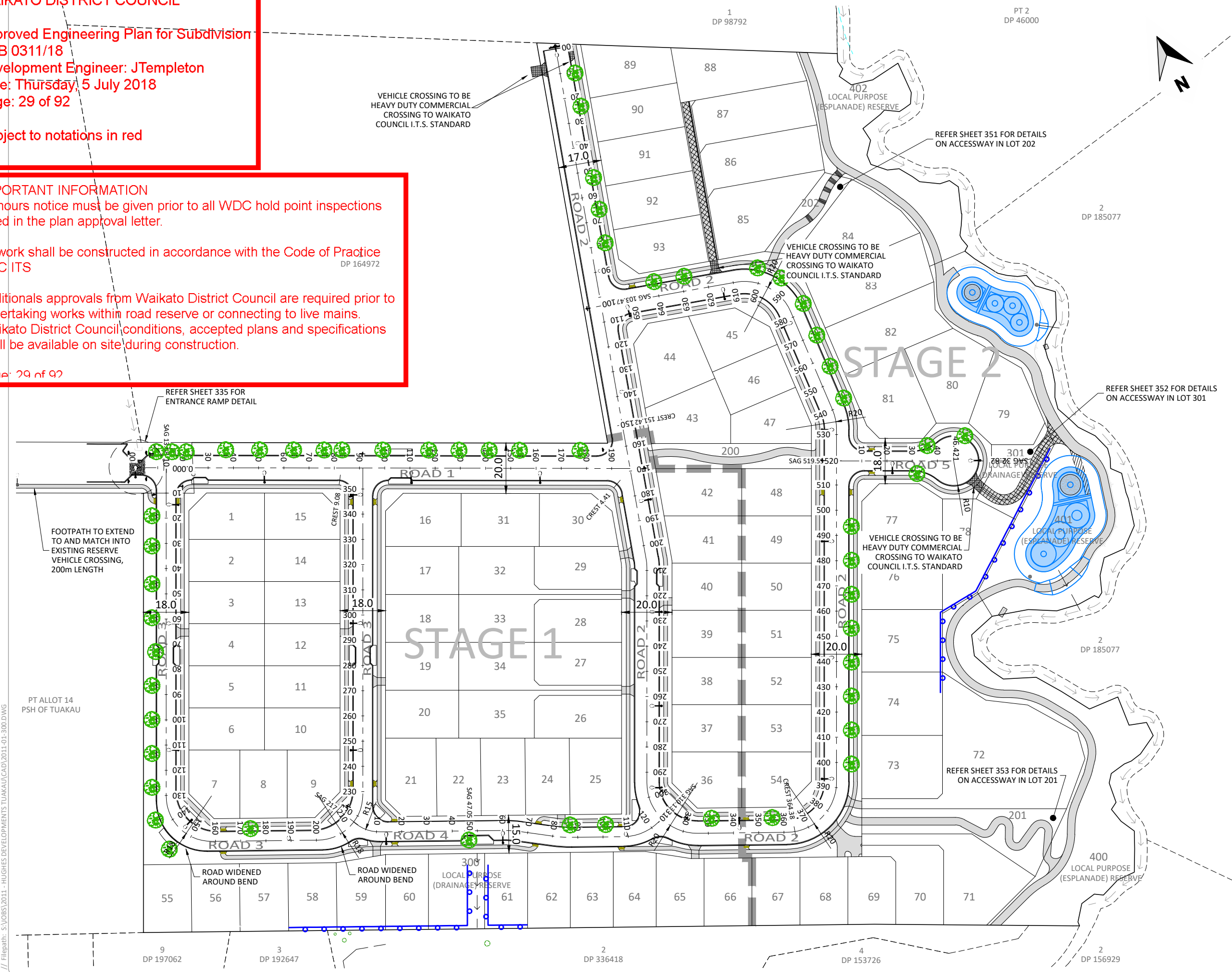
Page: 29 of 92

NOTES:

- ALL WORKS AND MATERIALS ARE TO COMPLY WITH RELEVANT COUNCIL ENGINEERING STANDARDS.
- ALL STREET TREES TO HAVE ROOT BARRIERS INSTALLED TO PROTECT PAVEMENT CONSTRUCTION AND SERVICES IN BERM.
- STREET TREES TO HAVE ADEQUATE SOIL (MIN. 3.0m3) FOR OPTIMUM GROWTH.

LEGEND

- PROPOSED PRAM CROSSING
- PROPOSED STREET LIGHT
- PROPOSED STREET TREE
- FOOTPATH
- ACCESSWAY CONCRETE
150mm 25MPa CONCRETE ON
75mm GAP20 WITH 665 MESH



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C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED ROAD LAYOUT
OVERALL LAYOUT

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:750 / 1:1500
SCALE BAR: 0 15 30 45 60 75m
DRAWING NUMBER: 2011-01-300 REV: C1

WAIKATO DISTRICT COUNCIL

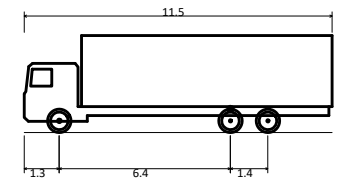
Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 30 of 92

Subject to notations in red



Large Rigid Truck

Overall Length 11.500m
Overall Width 2.500m
Overall Body Height 3.632m
Min Body Ground Clearance 0.427m
Track Width 2.500m
Lock-to-lock time 6.00s
Wall to Wall Turning Radius 12.000m

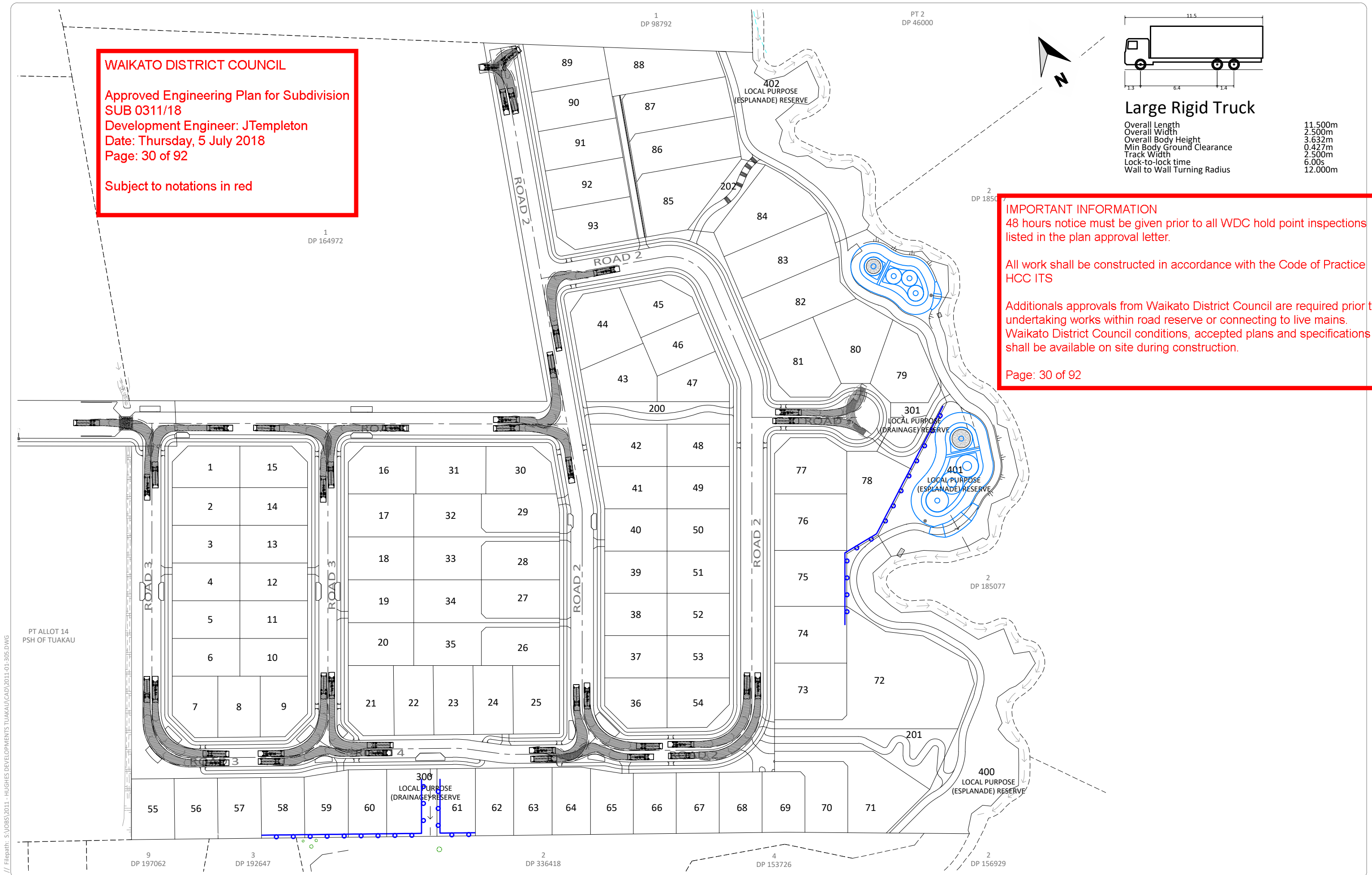
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Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 30 of 92



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REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	DATE
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN: GDS	DATE: 09.2017
CHECKED: RJP	DATE: 29.03.18
APPROVED: RJP	DATE: 03.2018
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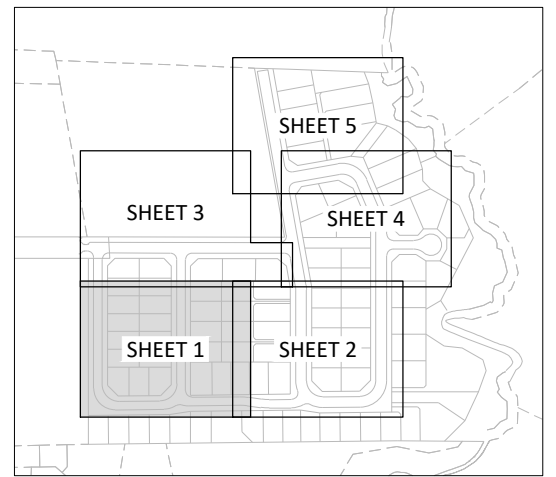
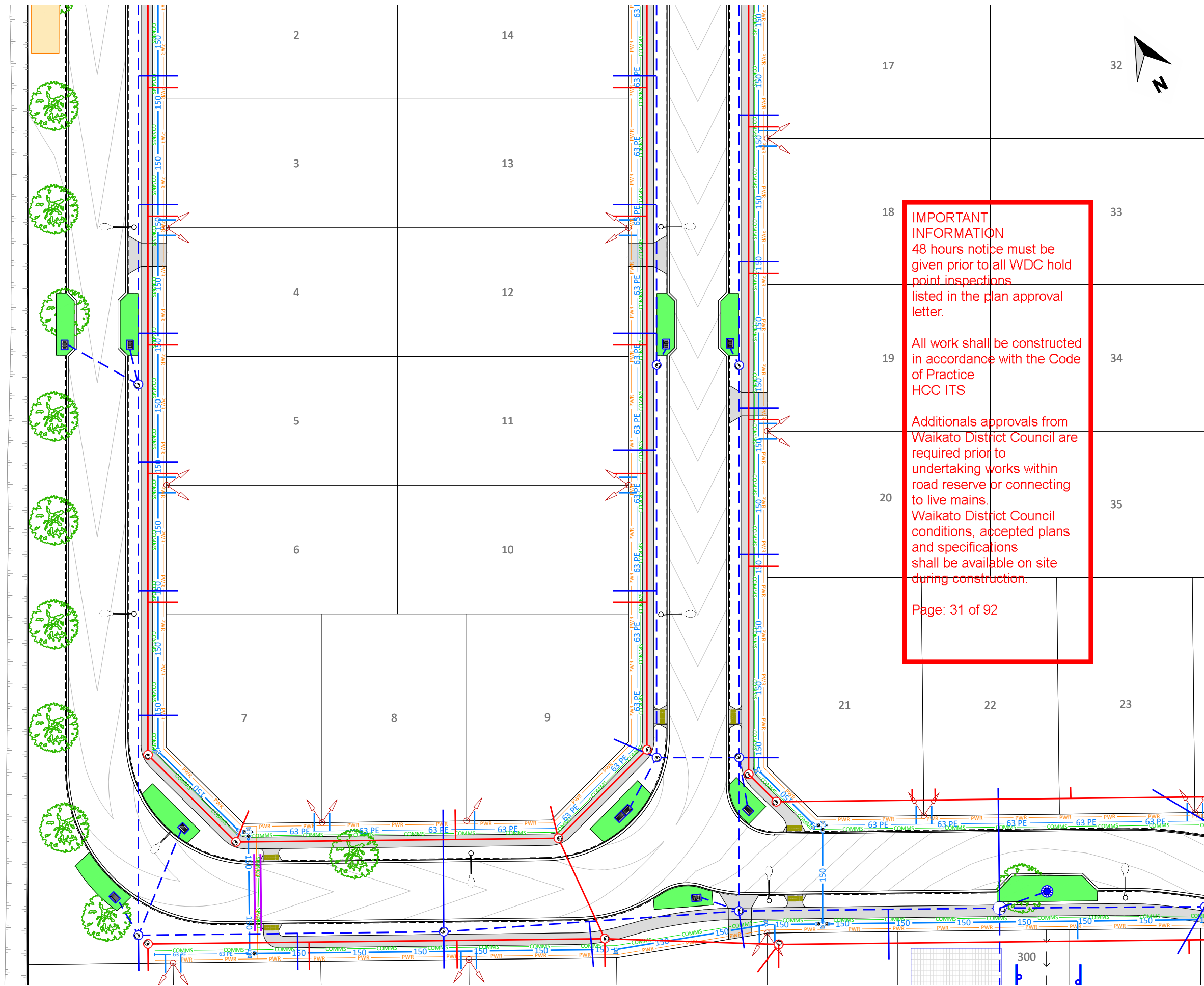
CIVILPLAN
CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED VEHICLE TRACKING CURVES
LARGE RIGID TRUCK

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR: 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-305
REV: C1

Printed by: RYAN@0.05.18 // Filepath: S:\OBS\2011 - HUGHES DEVELOPMENTS TUAKAU\CAD\2011-01-315.DWG



KEYPLAN

NOTES:

1. ALL WORKS AND MATERIALS ARE TO COMPLY WITH RELEVANT COUNCIL ENGINEERING STANDARDS.
2. ALL STREET TREES TO HAVE ROOT BARRIERS INSTALLED TO PROTECT THE ROAD PAVEMENT AND SERVICES IN THE BERM.

LEGEND
PROPOSED

- 125 PE PE WATERMAIN
- POWER AND COMMS CONNECTION POINT
- COMMS
- PWR POWER
- MANHOLES
- CATCHPIT
- TREES
- STREETLIGHT
- PROPOSED PRAM CROSSING

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Page: 31 of 92

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 31 of 92

Subject to notations in red

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
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RJP	29.03.18
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RJP	03.2018
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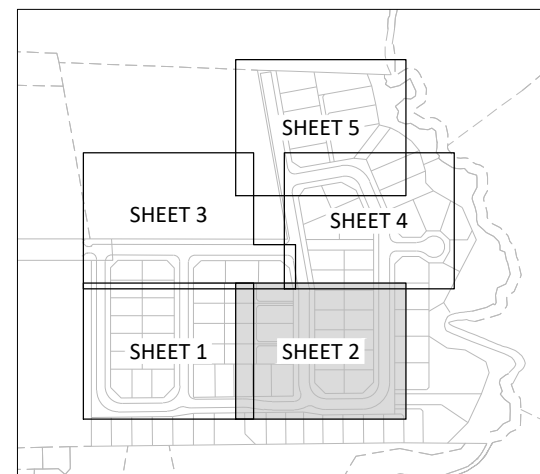
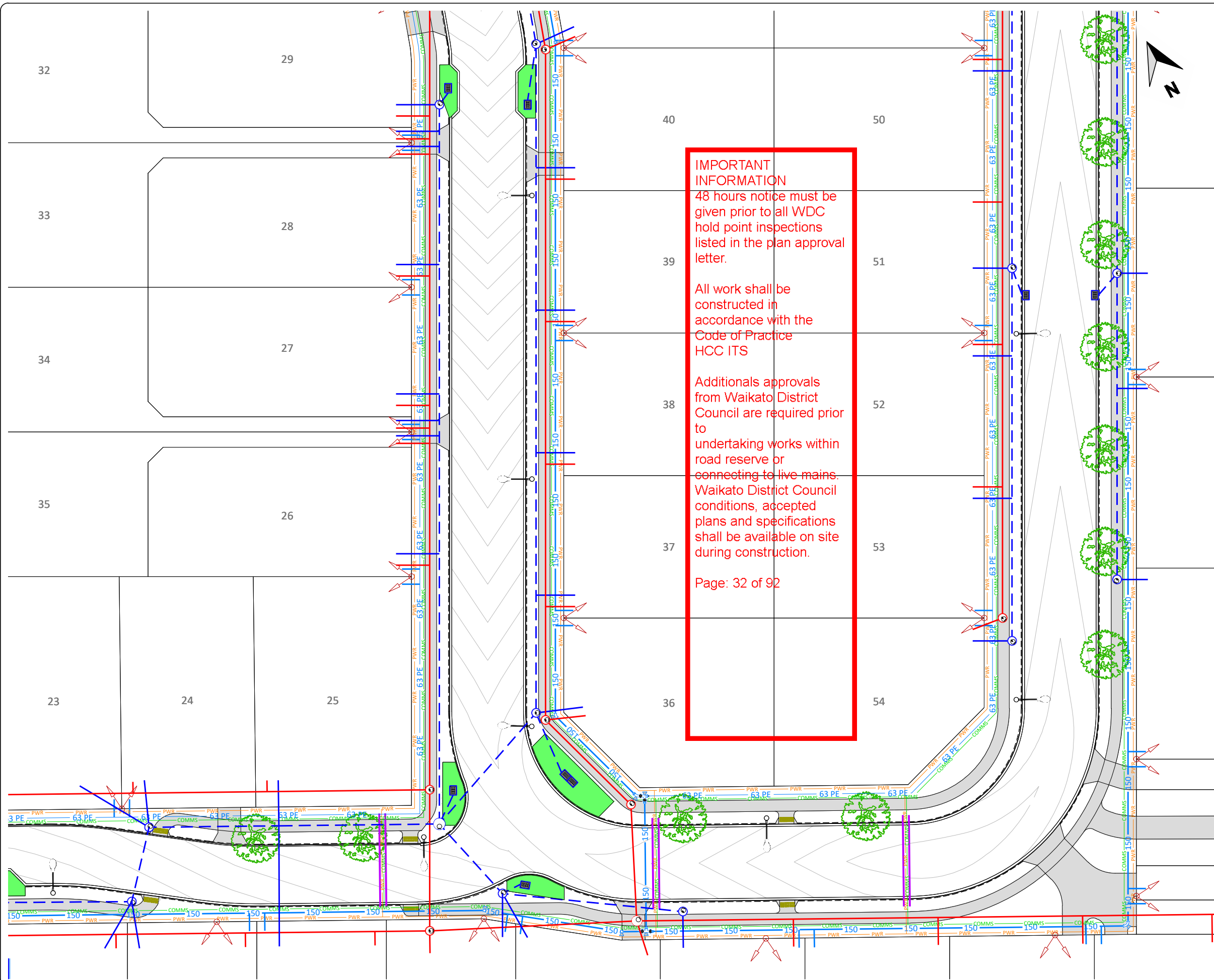
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CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
COMBINED SERVICES AND FEATURES PLAN
DETAIL SHEET 1

ISSUE STATUS:	CONSENT
SCALE: (A1/A3)	1:250 / 1:500
SCALE BAR	0 5 10 15 20 25m
DRAWING NUMBER:	2011-01-315
REV:	C1

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KEYPLAN

NOTES:

- ALL WORKS AND MATERIALS ARE TO COMPLY WITH RELEVANT COUNCIL ENGINEERING STANDARDS.
- ALL STREET TREES TO HAVE ROOT BARRIERS INSTALLED TO PROTECT THE ROAD PAVEMENT AND SERVICES IN THE BERM.

LEGEND
PROPOSED

- 125 PE PE WATERMAIN
- POWER AND COMMS CONNECTION POINT
- COMMS
- PWR POWER
- MANHOLES
- CATCHPIT
- TREES
- STREETLIGHT
- PROPOSED PRAM CROSSING

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 32 of 92

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C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

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PROJECT TITLE:
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99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
COMBINED SERVICES AND FEATURES PLAN
DETAIL SHEET 2

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 0 5 10 15 20 25m
DRAWING NUMBER: 2011-01-316 REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 33 of 92

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1
DP 164972

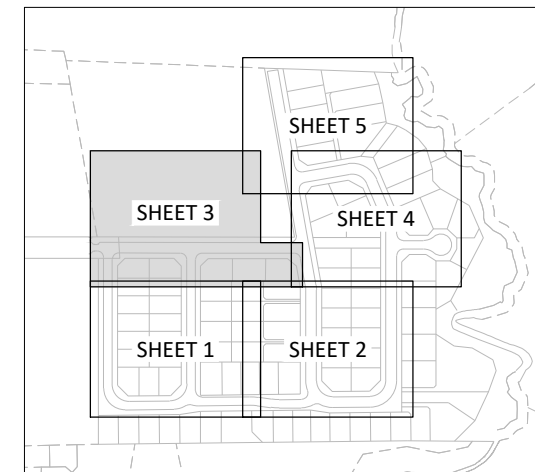
IMPORTANT INFORMATION

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Page: 33 of 92



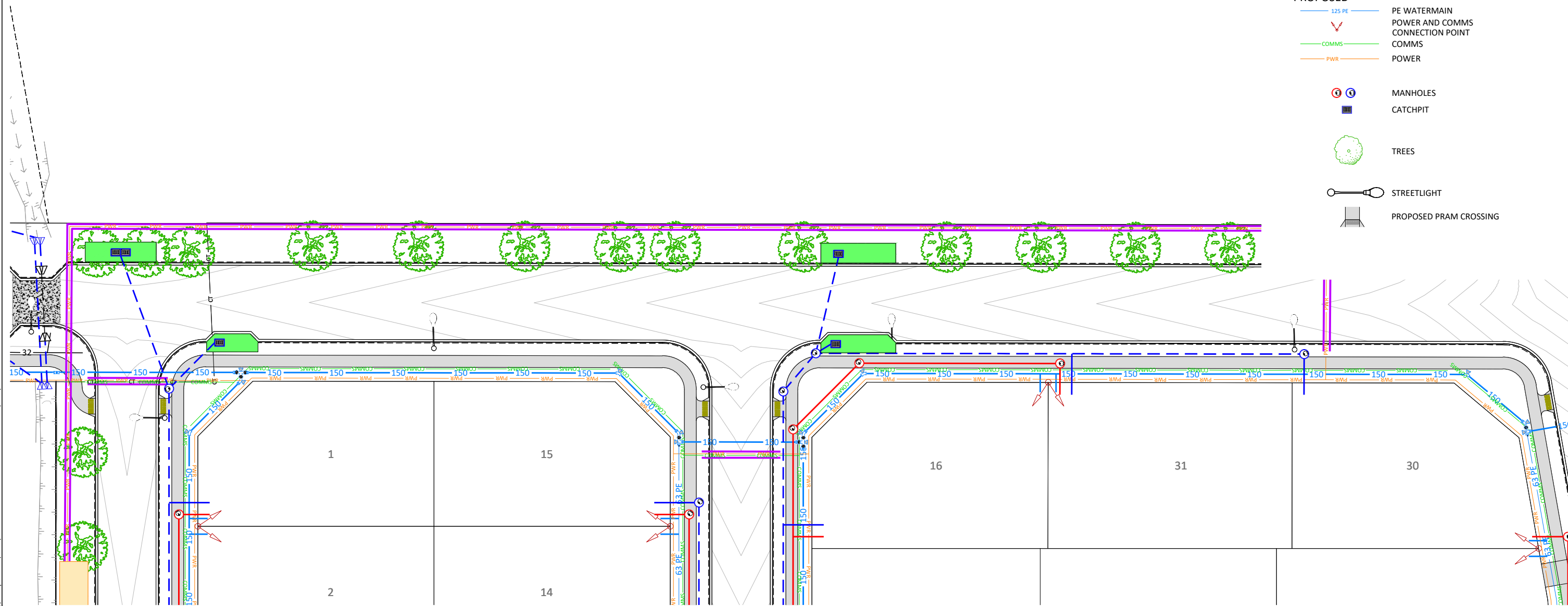
KEYPLAN

NOTES:

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2. ALL STREET TREES TO HAVE ROOT BARRIERS INSTALLED TO PROTECT THE ROAD PAVEMENT AND SERVICES IN THE BERM.

LEGEND
PROPOSED

- 125 PE PE WATERMAIN
- POWER AND COMMS CONNECTION POINT
- COMMS COMMS
- PWR POWER
- MANHOLES
- CATCHPIT
- TREES
- STREETLIGHT
- PROPOSED PRAM CROSSING



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REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	DATE
C1			04.04.18

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

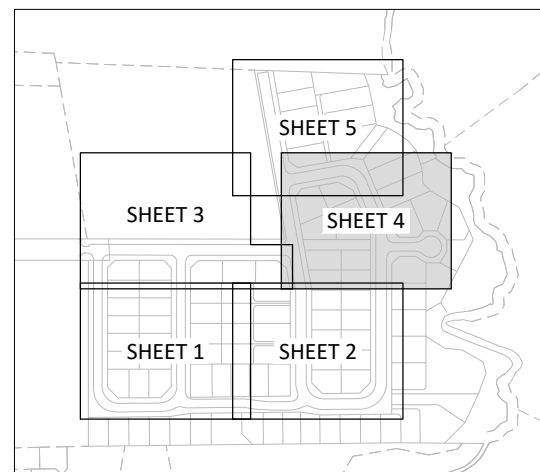
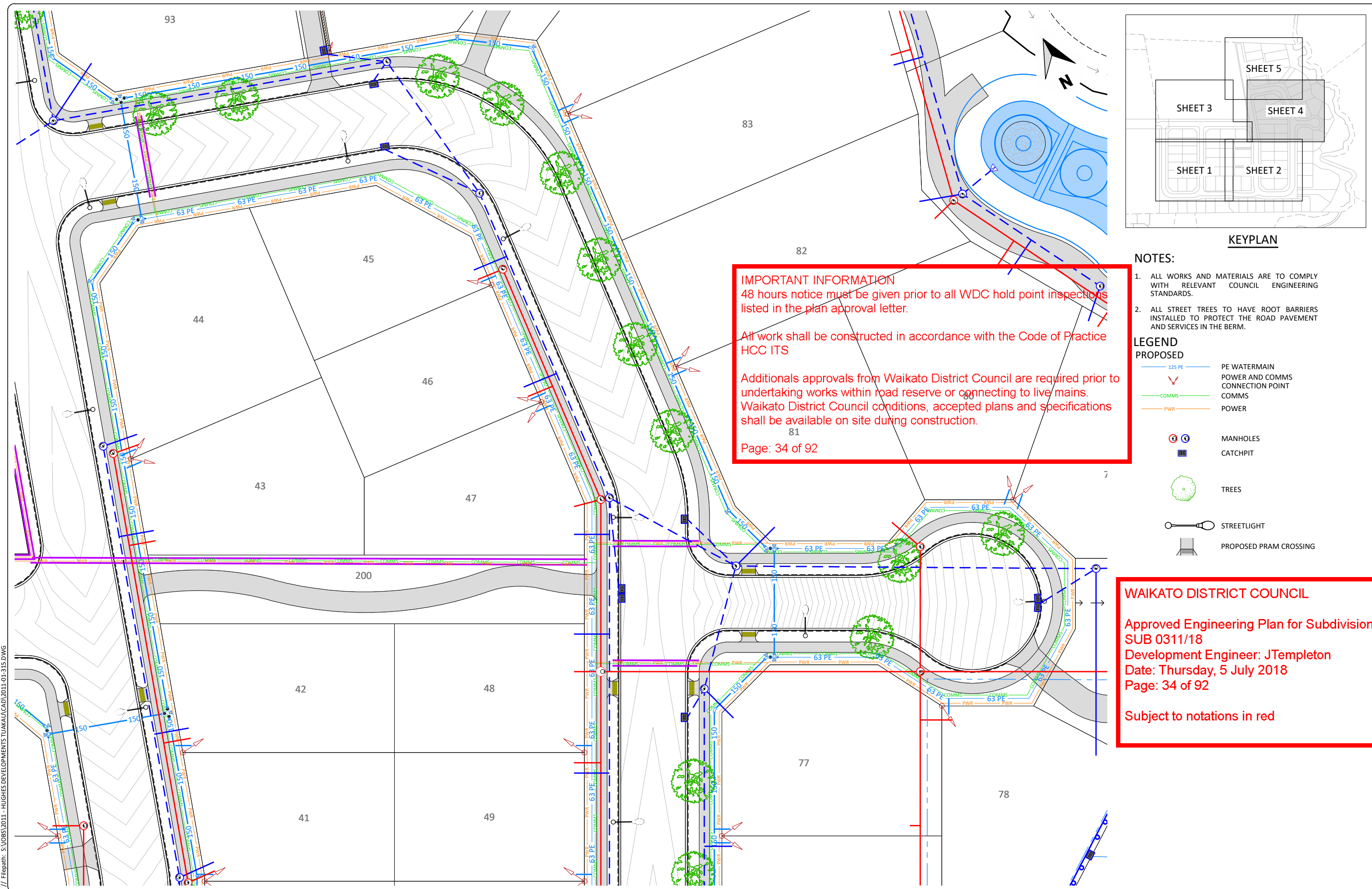
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
COMBINED SERVICES AND FEATURES PLAN
DETAIL SHEET 3

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 0 5 10 15 20 25m
DRAWING NUMBER: 2011-01-317 REV: C1



KEYPLAN

NOTES:

- 1. ALL WORKS AND MATERIALS ARE TO COMPLY WITH RELEVANT COUNCIL ENGINEERING STANDARDS.
- 2. ALL STREET TREES TO HAVE ROOT BARRIERS INSTALLED TO PROTECT THE ROAD PAVEMENT AND SERVICES IN THE BERM.

LEGEND
PROPOSED

- 125 PE PE WATERMAIN
- 63 PE POWER AND COMMS CONNECTION POINT
- COMMS COMMS
- PWR POWER
- MANHOLES
- CATCHPIT
- TREES
- STREETLIGHT
- PROPOSED PRAM CROSSING

IMPORTANT INFORMATION
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Page: 34 of 92

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 34 of 92

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C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
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PROJECT TITLE:
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99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
COMBINED SERVICES AND FEATURES PLAN
DETAIL SHEET 4

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) 1:250 / 1:500

SCALE BAR 0 5 10 15 20 25m

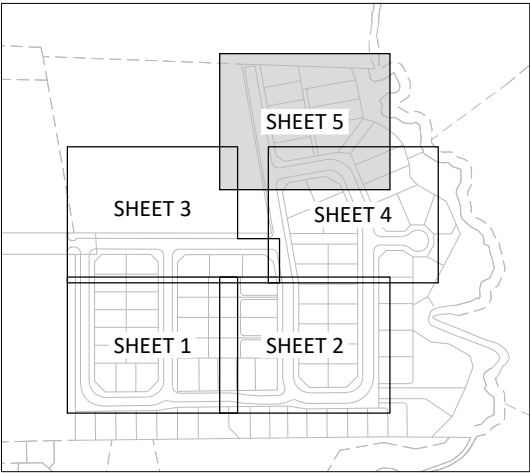
DRAWING NUMBER: 2011-01-318 REV: C1

IMPORTANT INFORMATION
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Page: 35 of 92



KEYPLAN

NOTES:

1. ALL WORKS AND MATERIALS ARE TO COMPLY WITH RELEVANT COUNCIL ENGINEERING STANDARDS.
2. ALL STREET TREES TO HAVE ROOT BARRIERS INSTALLED TO PROTECT THE ROAD PAVEMENT AND SERVICES IN THE BERM.

LEGEND
PROPOSED

- 125 PE PE WATERMAIN
- POWER AND COMMS CONNECTION POINT
- COMMS COMMS
- PWR POWER
- MANHOLES
- CATCHPIT
- TREES
- STREETLIGHT
- PROPOSED PRAM CROSSING

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 35 of 92

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C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
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PROJECT TITLE:
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99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
COMBINED SERVICES AND FEATURES PLAN
DETAIL SHEET 5

ISSUE STATUS:	CONSENT
SCALE: (A1/A3)	1:250 / 1:500
SCALE BAR	0 5 10 15 20 25m
DRAWING NUMBER:	2011-01-319
REV:	C1

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Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 36 of 92

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IMPORTANT INFORMATION

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Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 36 of 92

LEGEND

--- EXISTING GROUND LINE
— PROPOSED GROUND LINE

SAG R.L. 39.564m
SAG CH 13.496m
VIP R.L. 39.553
VIP CH 15.469m

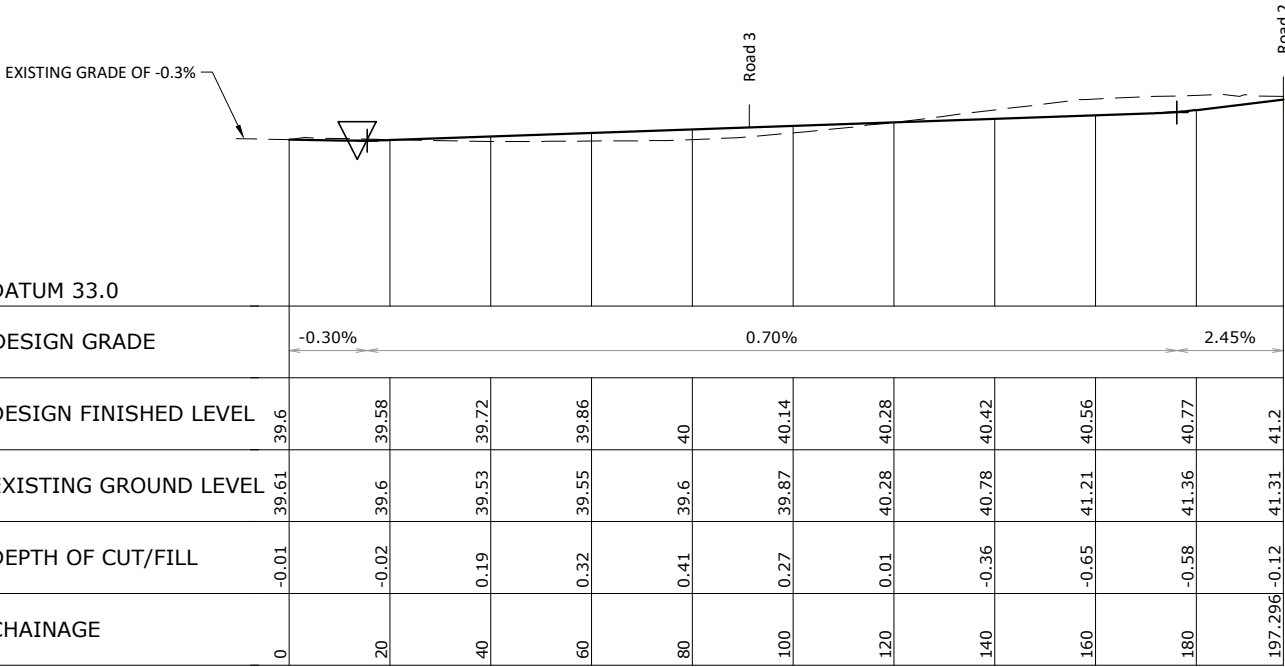
10.00m V.C.
K = 9.96

VTP CH 10.469
R.L. 39.568
VTP CH 20.469
R.L. 39.588

VIP R.L. 40.678
VIP CH 176.136m

10.00m V.C.
K = 5.71

VTP CH 171.136
R.L. 40.643
VTP CH 181.136
R.L. 40.8



LONGITUDINAL SECTION ROAD 1

SCALE: (A1/A3) 1:750H 1:150V / 1:1500H 1:300V

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C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
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DRAWN: GDS	DATE: 09.2017
CHECKED: RIP	DATE: 29.03.18
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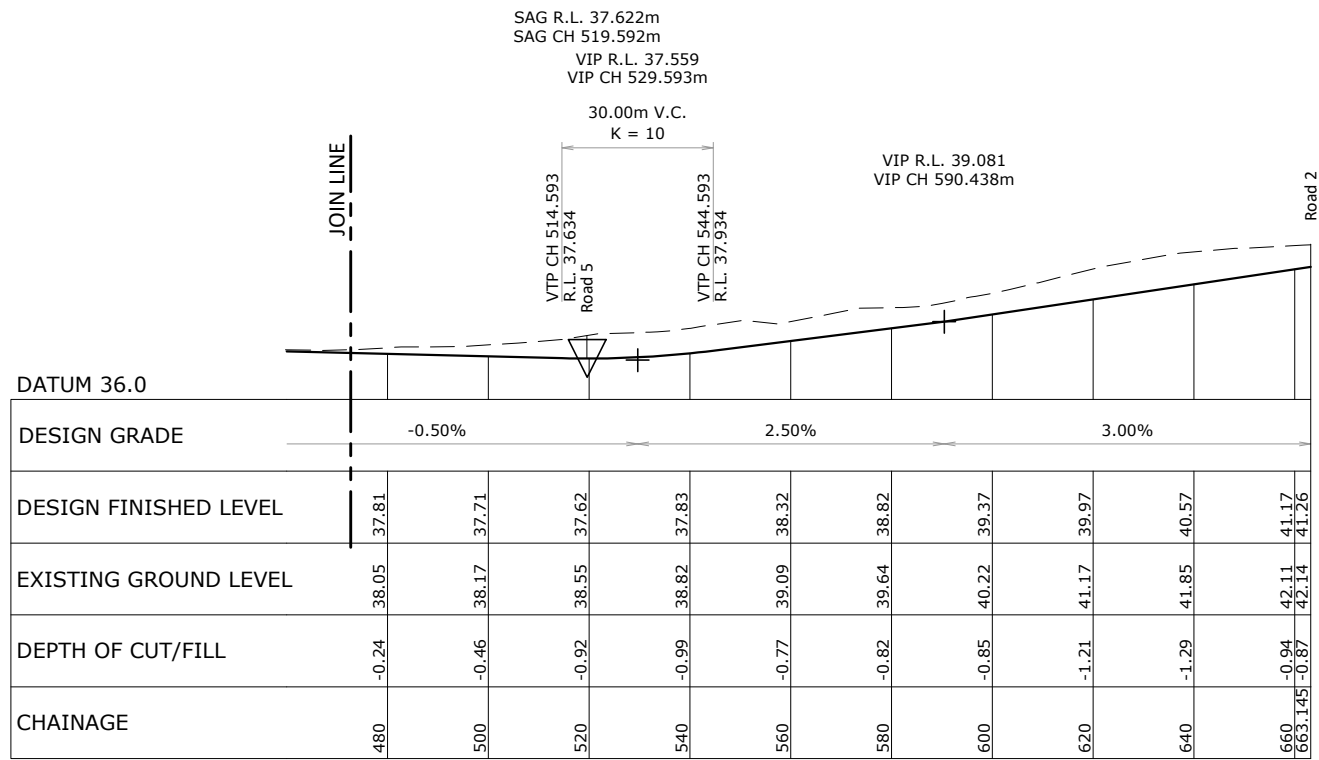


PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

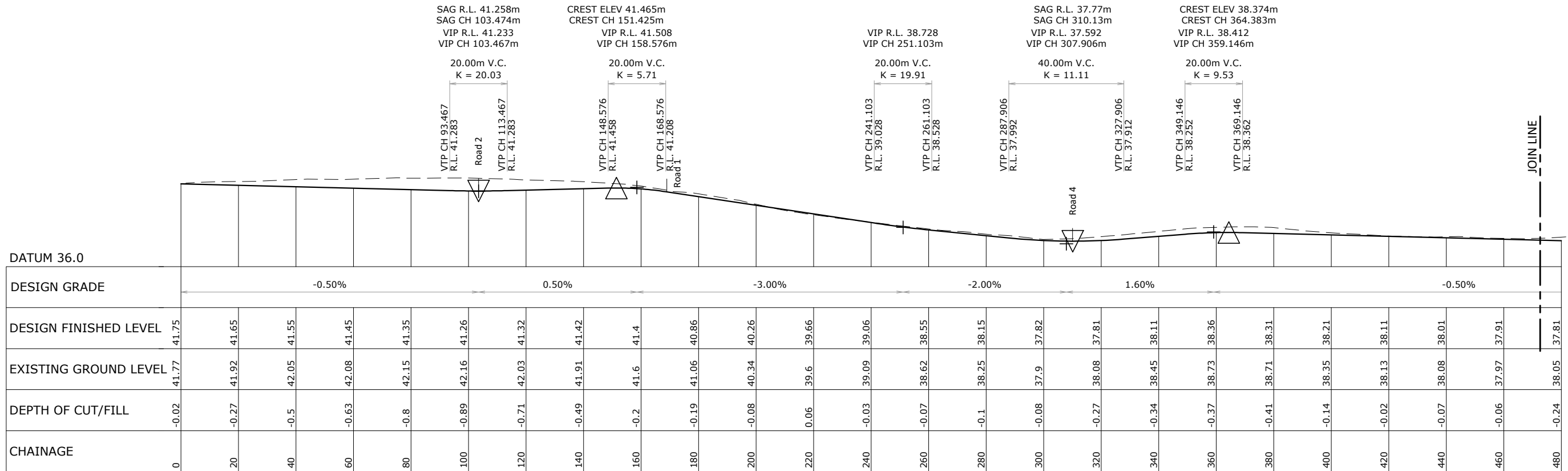
SHEET TITLE:
PROPOSED ROADING
LONGITUDINAL SECTIONS
SHEET 1

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:750 / 1:1500
SCALE BAR: 0 15 30 45 60 75m
DRAWING NUMBER: 2011-01-320
REV: C1

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LONGITUDINAL SECTION ROAD 2 - CONTINUED
SCALE: (A1/A3) 1:750H 1:150V / 1:1500H 1:300V



LONGITUDINAL SECTION ROAD 2
SCALE: (A1/A3) 1:750H 1:150V / 1:1500H 1:300V

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 37 of 92

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IMPORTANT INFORMATION

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All work shall be constructed in accordance with the Code of Practice HCC ITS

Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains.

Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 37 of 92

LEGEND

--- EXISTING GROUND LINE
--- PROPOSED GROUND LINE

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED ROADING
LONGITUDINAL SECTIONS
SHEET 2

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:750 / 1:1500
SCALE BAR: 0 15 30 45 60 75m
DRAWING NUMBER: 2011-01-321 REV: C1

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SUB 0311/18

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Page: 38 of 92

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IMPORTANT INFORMATION

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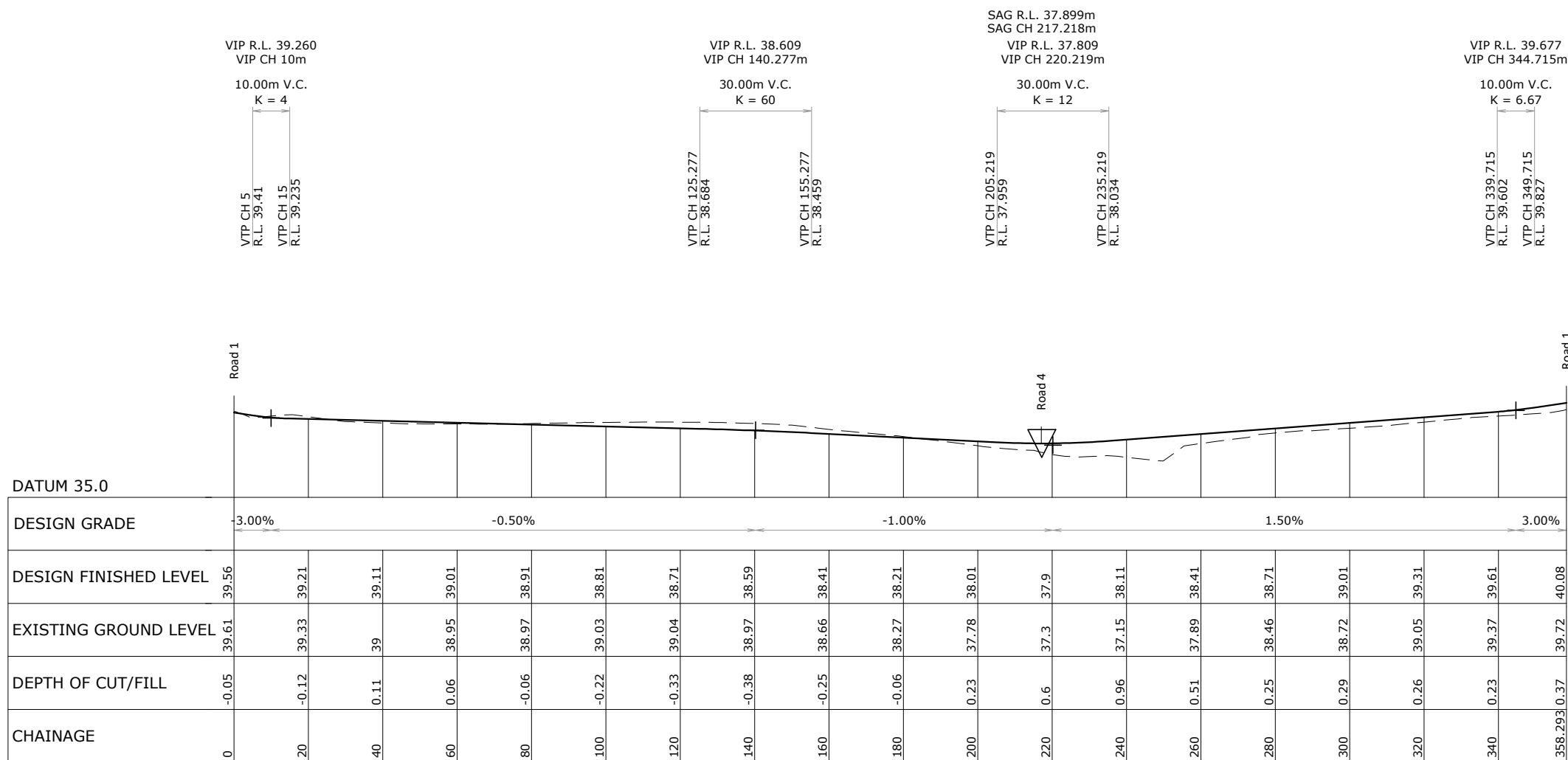
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HCC ITS

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Waikato District Council conditions, accepted plans and specifications
shall be available on site during construction.

Page: 38 of 92

LEGEND

--- EXISTING GROUND LINE
— PROPOSED GROUND LINE



LONGITUDINAL SECTION ROAD 3

SCALE: (A1/A3) 1:750H 1:150V / 1:1500H 1:300V

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99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED ROADING
LONGITUDINAL SECTIONS
SHEET 3

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:750 / 1:1500
SCALE BAR: 0 15 30 45 60 75m
DRAWING NUMBER: 2011-01-322 REV: C1

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SUB 0311/18

Development Engineer: JTempleton

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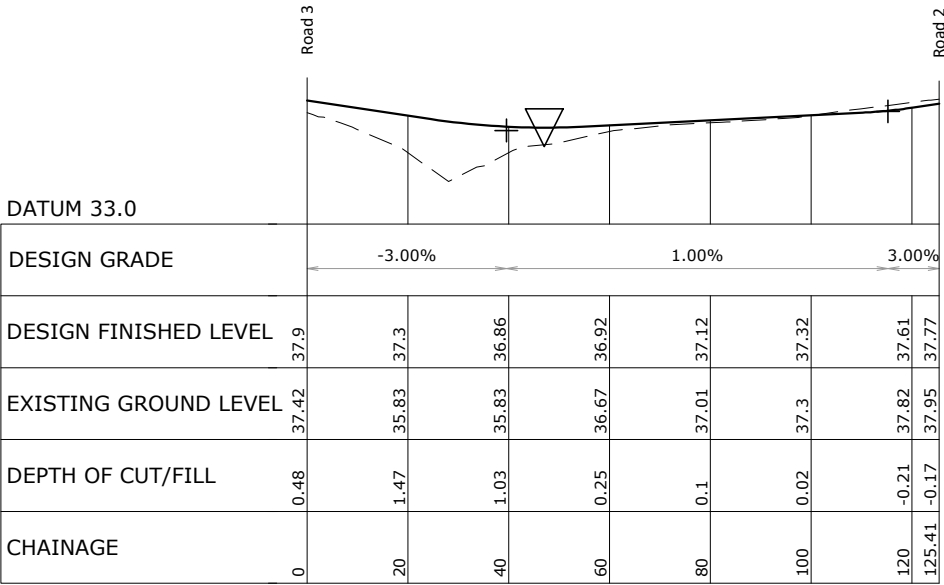
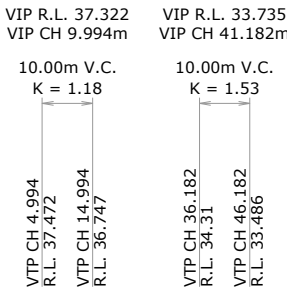
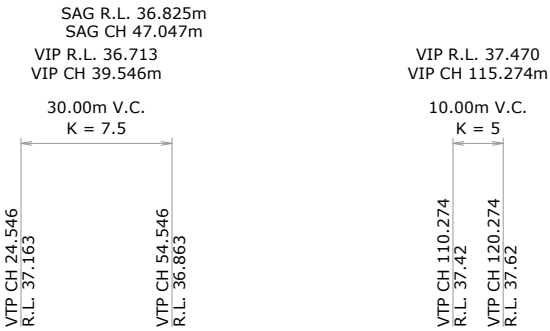
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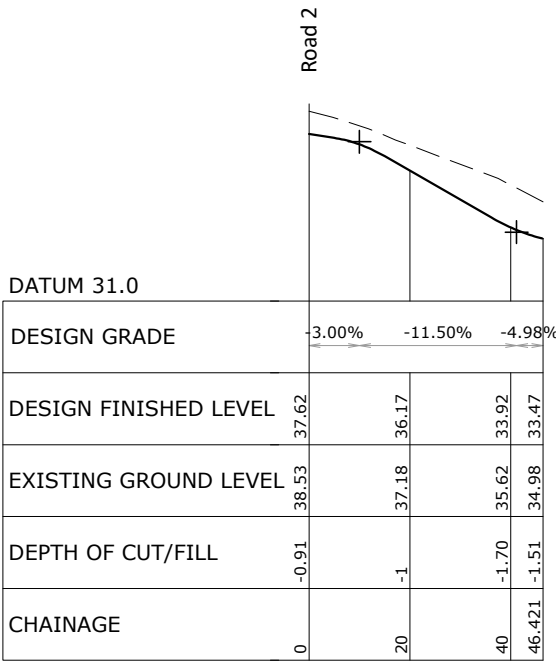
Page: 39 of 92

LEGEND

--- EXISTING GROUND LINE
— PROPOSED GROUND LINE



LONGITUDINAL SECTION ROAD 4
SCALE: (A1/A3) 1:750H 1:150V / 1:1500H 1:300V



LONGITUDINAL SECTION ROAD 5
SCALE: (A1/A3) 1:750H 1:150V / 1:1500H 1:300V

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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED ROADING
LONGITUDINAL SECTIONS
SHEET 4

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) 1:750 / 1:1500

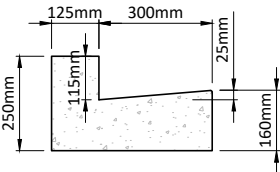
SCALE BAR: 0 15 30 45 60 75m

DRAWING NUMBER: 2011-01-323 REV: C1

NOTES

- 1. ALL WORKS AND MATERIALS ARE TO COMPLY WITH RELEVANT COUNCIL ENGINEERING STANDARDS.
- 2. FOOTPATHS TO BE 100mm MINIMUM CONCRETE (20 MPa) BROOM FINISH ON 75mm GAP20 GRANULAR BEDDING ON A FIRM SUBGRADE (CBR>10) TO COUNCIL DETAIL D3.3.5. BEDDING LAYER DEPTH TO BE INCREASED FOR CBR<3 AT THE ENGINEER'S INSTRUCTION. TRANSVERSE CONTROL JOINTS TO BE INSTALLED AT MAXIMUM 3m SPACINGS.
- 3. ALL MANHOLES AND SERVICE CHAMBERS/BOXES LOCATED IN CONCRETE FOOTPATHS AND VEHICLE CROSSINGS TO HAVE 8XD12 TRIMMER BARS LAID IN CONCRETE AROUND OPENING TO PREVENT UNCONTROLLED CRACKING.
- 4. ALL PRAM CROSSINGS SHALL HAVE TACTILE GROUND SURFACE INDICATORS (TGSi) INSTALLED IN ACCORDANCE WITH NZTA RTS 14 AND AS/NZS 1428.4:2009. SEE COUNCIL STANDARD DETAIL D3.6.2 AND D3.6.3 FOR CONSTRUCTION DETAILS.
- 5. KERBING TO BE STANDARD SLIP FORM VERTICAL KERB AND CHANNEL (REFER DETAIL THIS SHEET) CONCRETE IS STANDARD 20 MPa CONCRETE.
- 6. DN100 UNDERCHANNEL DRAINCOIL WITH FILTER SOCK TO BE INSTALLED IN ACCORDANCE WITH COUNCIL DETAILS, CONNECTED TO ROAD CATCHPIT SUMPS. TO BE INSTALLED IN 300mm WIDE TRENCH WITH MINIMUM OF 450mm COVER BELOW SUBGRADE LEVEL. BACKFILL WITH CLEAN DRAINAGE METAL. REFER TO STANDARD DRAWING D3.4.1 FOR FURTHER SPECIFICATION.

- 7. ROAD PAVEMENT TO BE CONSTRUCTED IN ACCORDANCE WITH TABLE 1 FOR ROADS 1 AND 2, AND TABLE 2 FOR ROADS 3, 4, AND 5. CONTRACTOR TO TEST SUBGRADE AT 10m CENTRES ALTERNATING LANES AND REPORT BACK TO ENGINEER PRIOR TO COMMENCING PLACEMENT OF MATERIALS. IF SUBGRADE CBR IS 3% OR LESS, SUBGRADE IMPROVEMENT WILL BE REQUIRED AT THE ENGINEER'S INSTRUCTION.
- 8. PAVEMENT MATERIALS ARE TO BE TO THE FOLLOWING SPECIFICATION:
 - 8.1. SURFACING: ASPHALTIC CONCRETE ON MEMBRANE TO NZTA M/10 2014.
 - 8.2. BASECOURSE: AP40 TO NZTA M/4 AS PER ITS 2016 SECTION 3.2.12 AND TABLE 6, PAGE 1-21
 - 8.3. SUBBASE: GAP65
- 9. SERVICES TO BE LAID IN ACCORDANCE WITH EACH UTILITY SERVICE PROVIDER'S LAY SPECIFICATIONS, AND GENERALLY IN THE FOLLOWING LOCATIONS:
 - 9.1. POWER: 0.4m OFF BDY; LV: 600mm COVER, HV: 900mm COVER
 - 9.2. WATER: 1.1m OFF BDY; 600mm COVER (900mm IN CARRIAGEWAYS)
 - 9.3. TELECOM: 1.6m OFF BDY; 600mm COVER (900mm IN CARRIAGEWAYS)
 - 9.4. STREET LIGHTS WHERE NECESSARY: 0.8m OFF KERB FACE



SLIPFORM VERTICAL KERB AND CHANNEL

SCALE: (A1/A3) 1:10/1:20

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 40 of 92

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TABLE 1: ROADS 1 AND 2 PAVEMENT CONSTRUCTION

SUBGRADE STRENGTH	SUBBASE DEPTH (mm)	BASECOURSE DEPTH (mm)	SURFACING DEPTH (mm)
CBR	GAP 65	M/4	NZTA M/10 DG10
6%+	200	150	30
5%	250	150	30
4%	300	150	30
3%	350	150	30
<=3%	REFER TO ENGINEER	REFER TO ENGINEER	30

NOTES:
1. GEOTEXTILE TO BE USED ON SUBGRADE WHERE CBR IS 4% OR LESS.
2. PAVEMENT DESIGN BASED ON ITS COUNCIL STANDARD SECTION 3.2.12.1 USING THE AUSTRoads DESIGN METHOD FOR DESA OF 3.1x10^5.
3. 8.2T DEFLECTION TESTING ON FINAL SURFACE TO ITS COUNCIL STANDARD SECTION 3 TABLE 20, A3, AVERAGE DEFLECTION 1.0mm, 90TH PERCENTILE DEFLECTION 1.2mm, WITH MAXIMUM DEFLECTION OF 1.6mm. NO MORE THAN 10% OF THE RESULTS SHALL EXCEED THE 90TH PERCENTILE AND NO SINGLE RESULT SHALL EXCEED THE MAXIMUM.

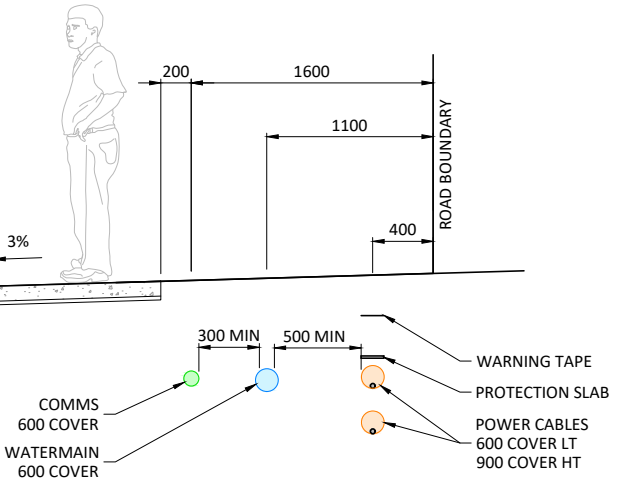
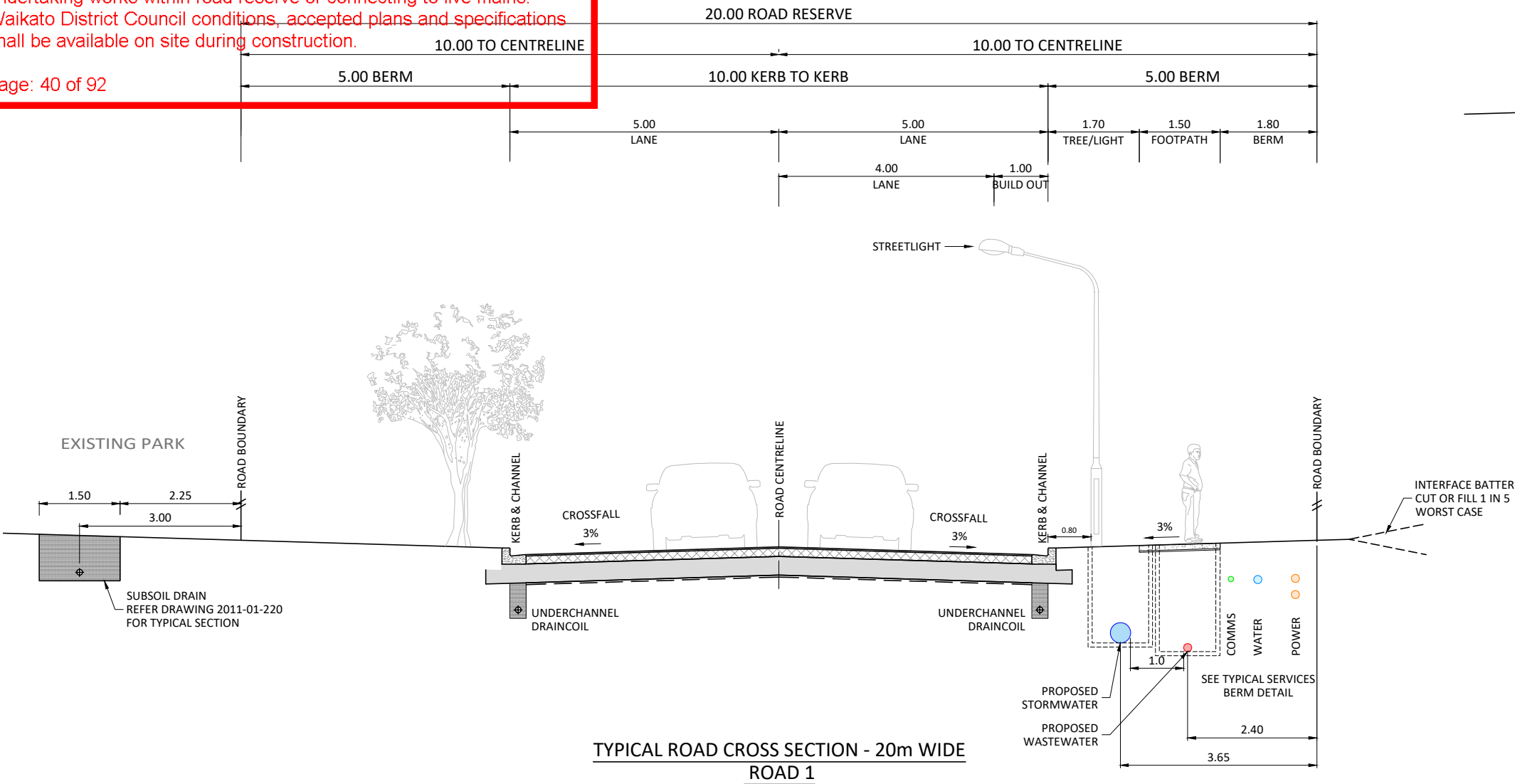
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Page: 40 of 92



TYPICAL SERVICES BERM DETAIL
COLLECTOR ROAD

SCALE 1:25 A1 / 1:50 A3

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

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CIVILPLAN
CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED ROADING
TYPICAL CROSS SECTIONS
SHEET 1

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:50 / 1:100
SCALE BAR 1:100@A3 0 1 2 3 4 5m
DRAWING NUMBER: 2011-01-330 REV: C1

NOTES

- 1. ALL WORKS AND MATERIALS ARE TO COMPLY WITH RELEVANT COUNCIL ENGINEERING STANDARDS.
- 2. FOOTPATHS TO BE 100mm MINIMUM CONCRETE (20 MPa) BROOM FINISH ON 75mm GAP20 GRANULAR BEDDING ON A FIRM SUBGRADE (CBR>10) TO COUNCIL DETAIL D3.3.5. BEDDING LAYER DEPTH TO BE INCREASED FOR CBR<3 AT THE ENGINEER'S INSTRUCTION. TRANSVERSE CONTROL JOINTS TO BE INSTALLED AT MAXIMUM 3m SPACINGS.
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- 5. KERBING TO BE STANDARD SLIP FORM VERTICAL KERB AND CHANNEL (REFER DETAIL THIS SHEET) CONCRETE IS STANDARD 20 MPa CONCRETE.
- 6. DN100 UNDERCHANNEL DRAINCOIL WITH FILTER SOCK TO BE INSTALLED IN ACCORDANCE WITH COUNCIL DETAILS, CONNECTED TO ROAD CATCHPIT SUMPS. TO BE INSTALLED IN 300mm WIDE TRENCH WITH MINIMUM OF 450mm COVER BELOW SUBGRADE LEVEL. BACKFILL WITH CLEAN DRAINAGE METAL. REFER TO STANDARD DRAWING D3.4.1 FOR FURTHER SPECIFICATION.

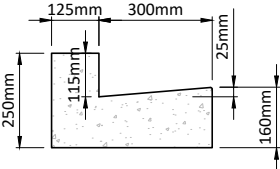
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Page: 41 of 92

- 7. ROAD PAVEMENT TO BE CONSTRUCTED IN ACCORDANCE WITH TABLE 1 FOR ROADS 1 AND 2, AND TABLE 2 FOR ROADS 3, 4, AND 5. CONTRACTOR TO TEST SUBGRADE AT 10m CENTRES ALTERNATING LANES AND REPORT BACK TO ENGINEER PRIOR TO COMMENCING PLACEMENT OF MATERIALS. IF SUBGRADE CBR IS 3% OR LESS, SUBGRADE IMPROVEMENT WILL BE REQUIRED AT THE ENGINEER'S INSTRUCTION.
- 8. PAVEMENT MATERIALS ARE TO BE TO THE FOLLOWING SPECIFICATION:
 - 8.1. SURFACING: ASPHALTIC CONCRETE ON MEMBRANE TO NZTA M/10 2014.
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 - 8.3. SUBBASE: GAP65
- 9. SERVICES TO BE LAID IN ACCORDANCE WITH EACH UTILITY SERVICE PROVIDER'S LAY SPECIFICATIONS, AND GENERALLY IN THE FOLLOWING LOCATIONS:
 - 9.1. POWER: 0.4m OFF BDY; LV: 600mm COVER, HV: 900mm COVER
 - 9.2. WATER: 1.1m OFF BDY; 600mm COVER (900mm IN CARRIAGEWAYS)
 - 9.3. TELECOM: 1.6m OFF BDY; 600mm COVER (900mm IN CARRIAGEWAYS)
 - 9.4. STREET LIGHTS WHERE NECESSARY: 0.8m OFF KERB FACE



SLIPFORM VERTICAL KERB AND CHANNEL
SCALE: (A1/A3) 1:10/1:20

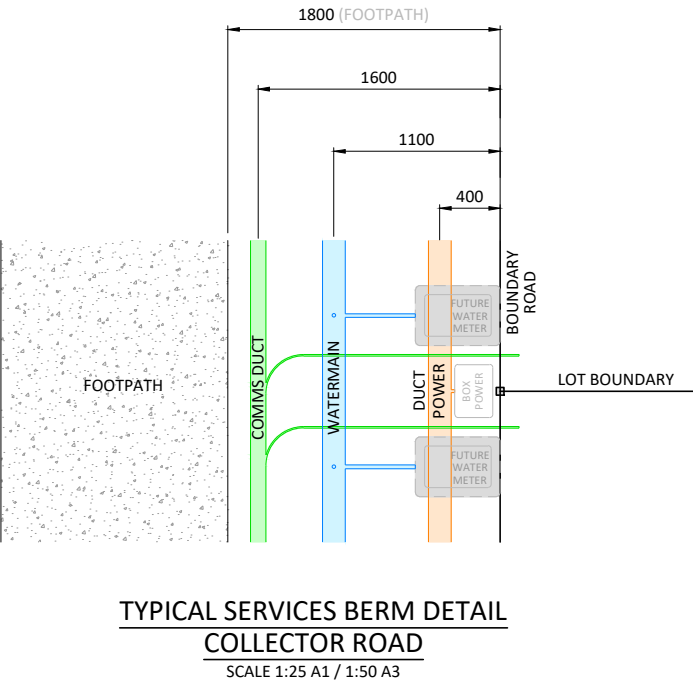
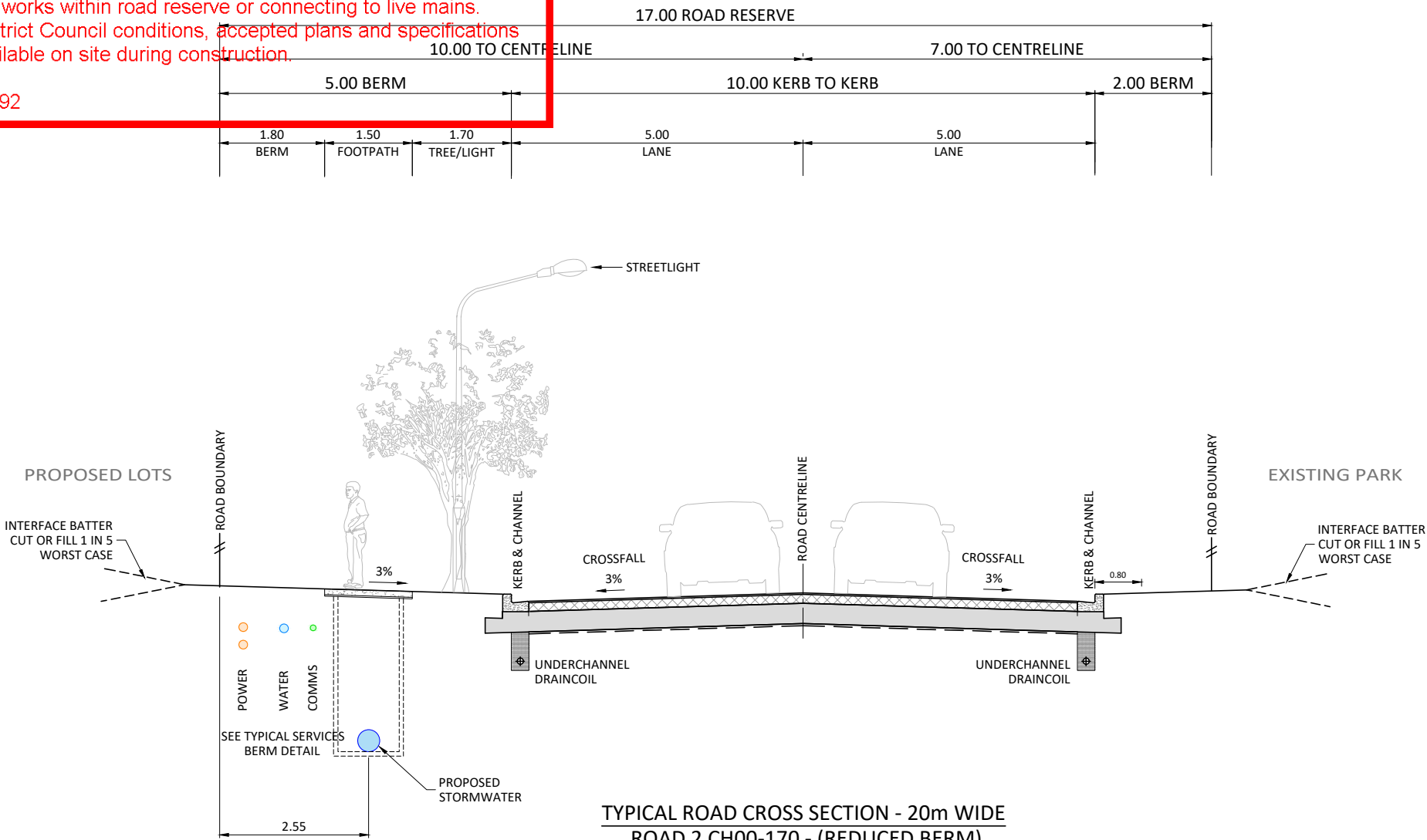
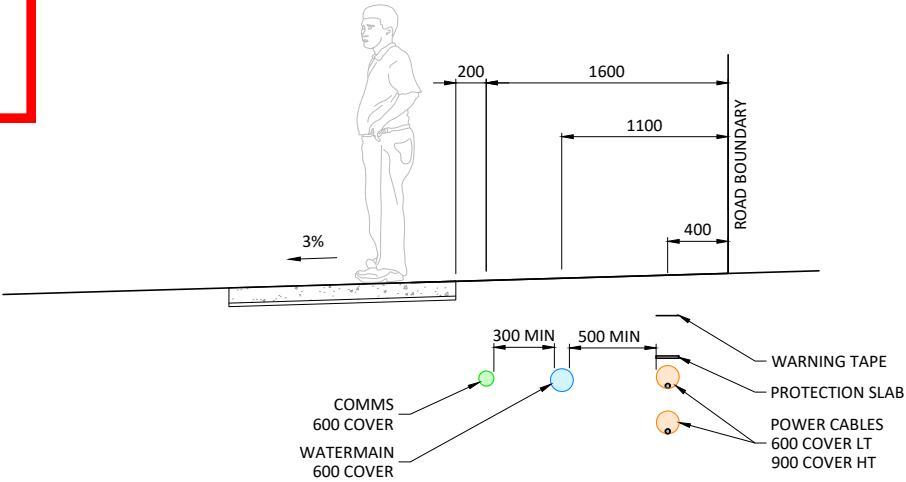
WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 41 of 92

Subject to notations in red

TABLE 1: ROADS 1 AND 2 PAVEMENT CONSTRUCTION			
SUBGRADE STRENGTH	SUBBASE DEPTH (mm)	BASECOURSE DEPTH (mm)	SURFACING DEPTH (mm)
CBR	GAP 65	M/4	NZTA M/10 DG10
6%+	200	150	30
5%	250	150	30
4%	300	150	30
3%	350	150	30
<=3%	REFER TO ENGINEER	REFER TO ENGINEER	30

NOTES:
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REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	BY	DATE

DRAWN: GDS	DATE: 09.2017
CHECKED: RIP	DATE: 29.03.18
APPROVED: RIP	DATE: 03.2018

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CIVILPLAN
CONSULTANTS

Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED ROADING
TYPICAL CROSS SECTIONS
SHEET 2

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) 1:50 / 1:100

SCALE BAR 1:100@A3 0 1 2 3 4 5m

DRAWING NUMBER: 2011-01-331 REV: C1

NOTES

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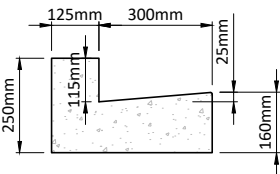
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Page: 42 of 92

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SLIPFORM VERTICAL KERB AND CHANNEL

SCALE: (A1/A3) 1:10/1:20

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

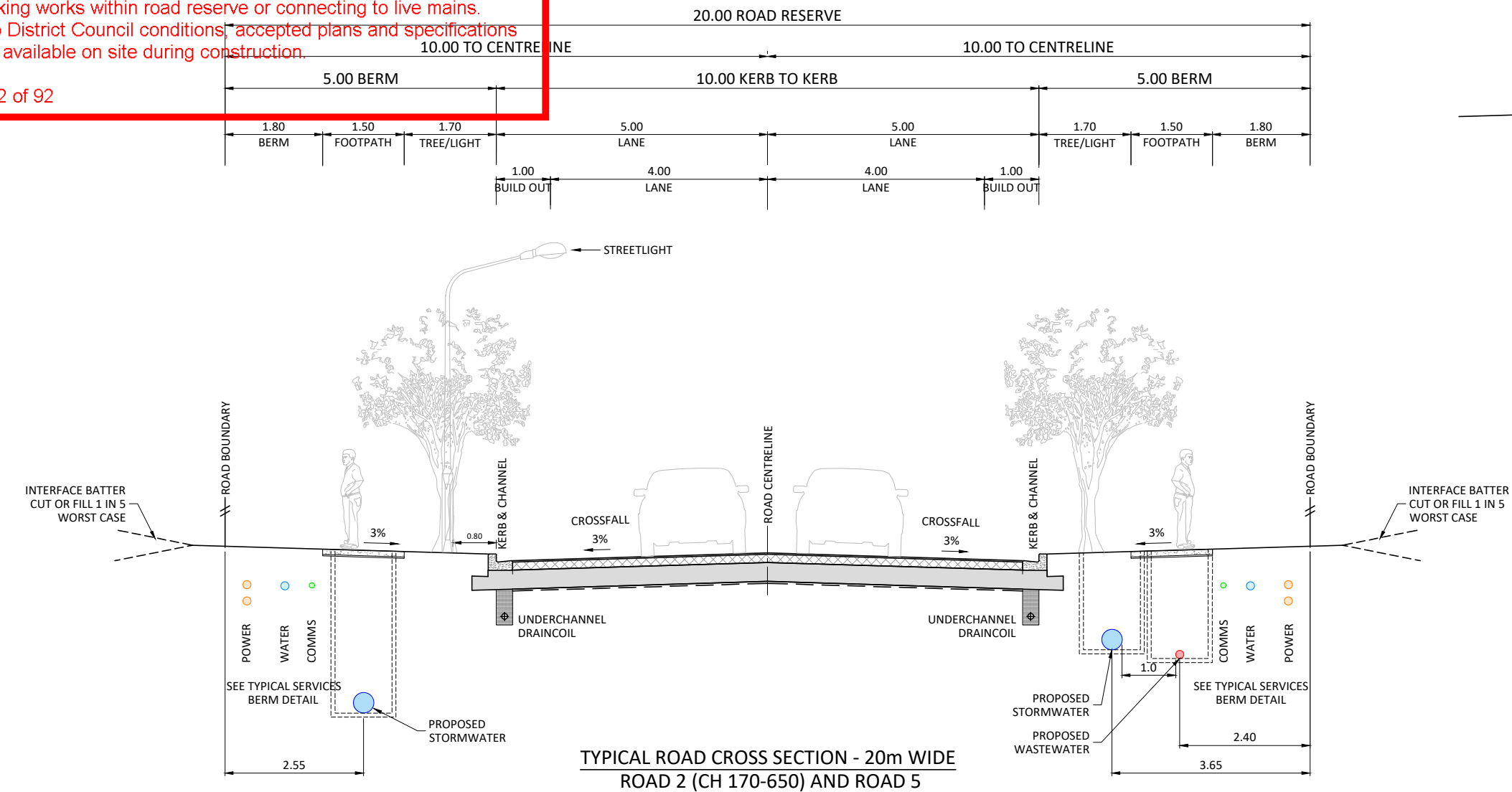
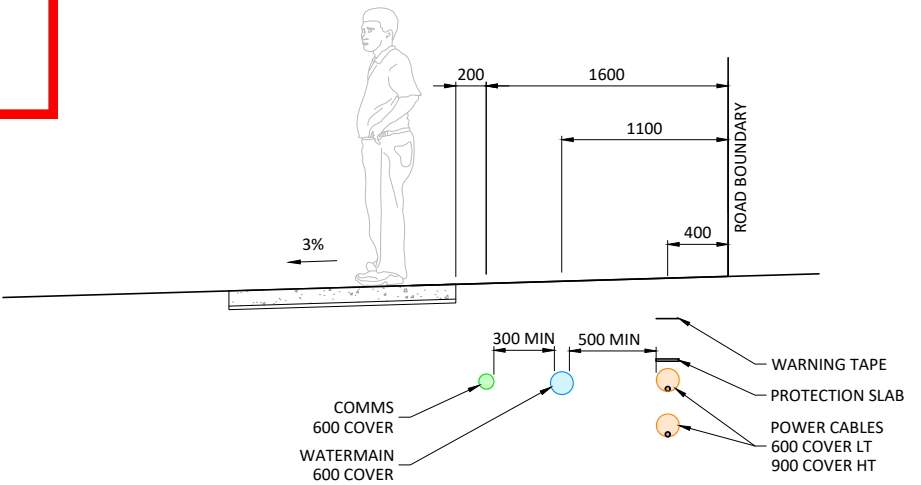
Page: 42 of 92

Subject to notations in red

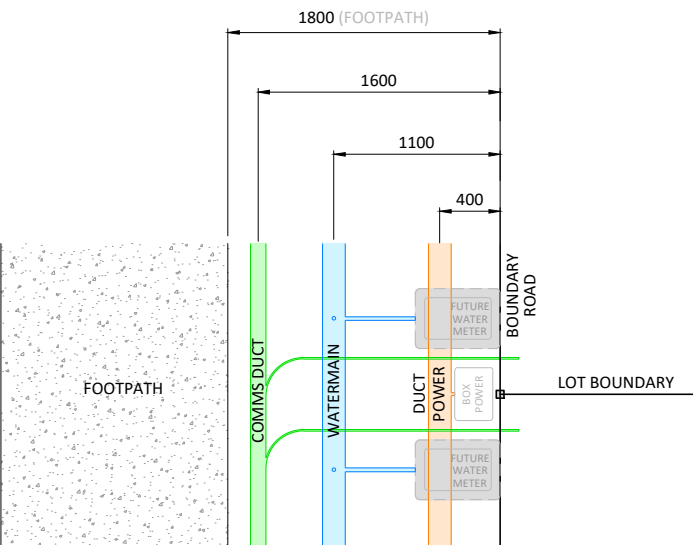
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TYPICAL ROAD CROSS SECTION - 20m WIDE
ROAD 2 (CH 170-650) AND ROAD 5



TYPICAL SERVICES BERM DETAIL
COLLECTOR ROAD

SCALE 1:25 A1 / 1:50 A3

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REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	BY	DATE

DRAWN: GDS	DATE: 09.2017
CHECKED: RIP	DATE: 29.03.18
APPROVED: RIP	DATE: 03.2018

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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

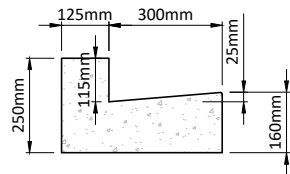
SHEET TITLE:
PROPOSED ROADING
TYPICAL CROSS SECTIONS
SHEET 3

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:50 / 1:100
SCALE BAR 1:100@A3 0 1 2 3 4 5m
DRAWING NUMBER: 2011-01-332 REV: C1

NOTES

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SLIPFORM VERTICAL KERB AND CHANNEL

SCALE: (A1/A3) 1:10/1:20

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 43 of 92

Subject to notations in red

TABLE 2: ROADS 3, 4, 5 PAVEMENT CONSTRUCTION

SUBGRADE STRENGTH	SUBBASE DEPTH (mm)	BASECOURSE DEPTH (mm)	SURFACING DEPTH (mm)
CBR	GAP 65	M/4	NZTA M/10 DG10
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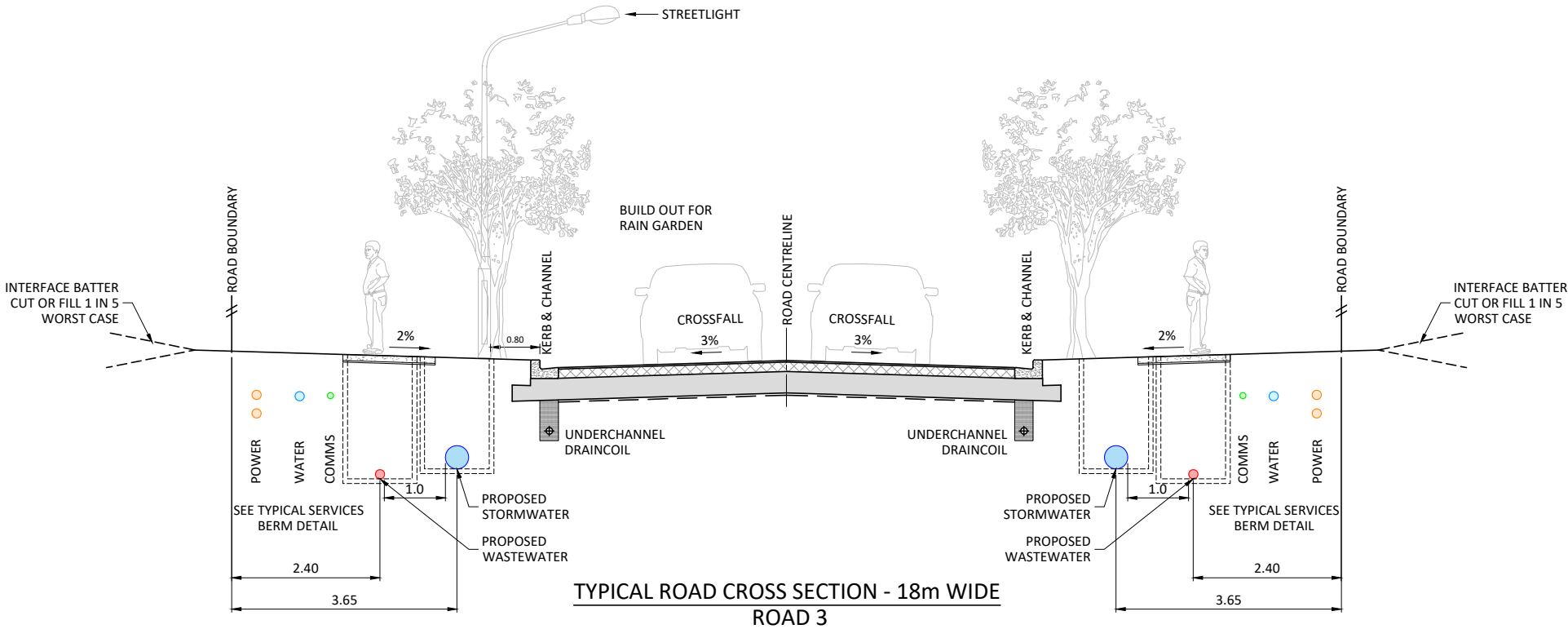
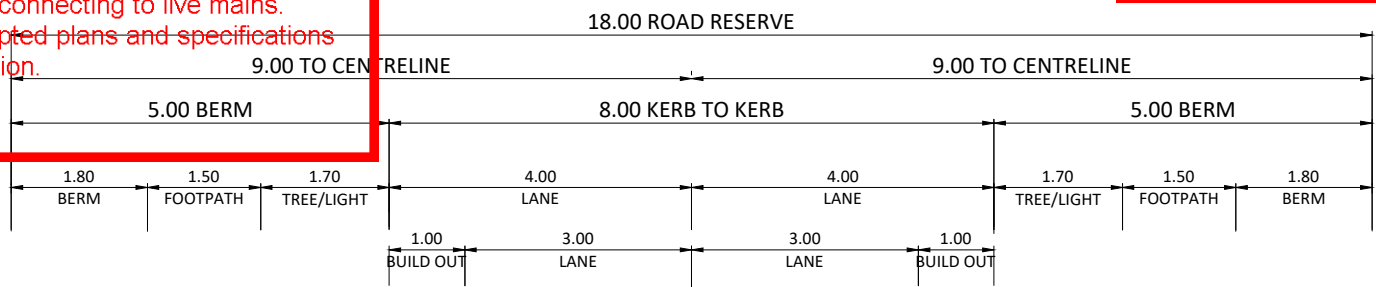
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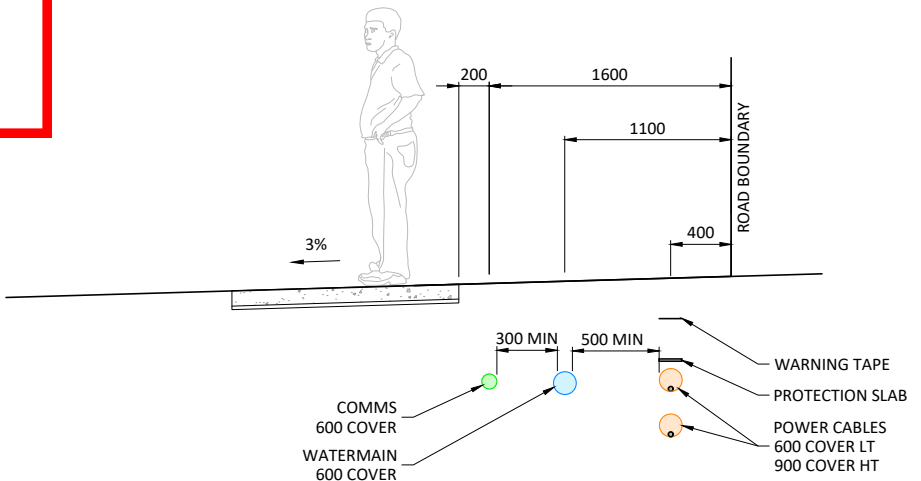
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Page: 43 of 92



TYPICAL ROAD CROSS SECTION - 18m WIDE
ROAD 3



TYPICAL SERVICES BERM DETAIL
COLLECTOR ROAD

SCALE 1:25 A1 / 1:50 A3

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REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18

DRAWN: GDS	DATE: 09.2017
CHECKED: RIP	DATE: 29.03.18
APPROVED: RIP	DATE: 03.2018

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CONSULTANTS
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

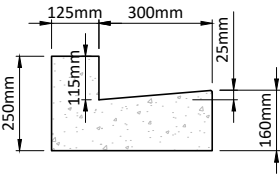
SHEET TITLE:
PROPOSED ROADING
TYPICAL CROSS SECTIONS
SHEET 4

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:50 / 1:100
SCALE BAR 1:100@A3 0 1 2 3 4 5m
DRAWING NUMBER: 2011-01-333 REV: C1

NOTES

- 1. ALL WORKS AND MATERIALS ARE TO COMPLY WITH RELEVANT COUNCIL ENGINEERING STANDARDS.
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- 8. PAVEMENT MATERIALS ARE TO BE TO THE FOLLOWING SPECIFICATION:
 - 8.1. SURFACING: ASPHALTIC CONCRETE ON MEMBRANE TO NZTA M/10 2014.
 - 8.2. BASECOURSE: AP40 TO NZTA M/4 AS PER ITS 2016 SECTION 3.2.12 AND TABLE 6, PAGE 1-21
 - 8.3. SUBBASE: GAP65
- 9. SERVICES TO BE LAID IN ACCORDANCE WITH EACH UTILITY SERVICE PROVIDER'S LAY SPECIFICATIONS, AND GENERALLY IN THE FOLLOWING LOCATIONS:
 - 9.1. POWER: 0.4m OFF BDY; LV: 600mm COVER, HV: 900mm COVER
 - 9.2. WATER: 1.1m OFF BDY; 600mm COVER (900mm IN CARRIAGEWAYS)
 - 9.3. TELECOM: 1.6m OFF BDY; 600mm COVER (900mm IN CARRIAGEWAYS)
 - 9.4. STREET LIGHTS WHERE NECESSARY: 0.8m OFF KERB FACE



SLIPFORM VERTICAL KERB AND CHANNEL

SCALE: (A1/A3) 1:10/1:20

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 44 of 92

Subject to notations in red

TABLE 2: ROADS 3, 4, 5 PAVEMENT CONSTRUCTION

SUBGRADE STRENGTH	SUBBASE DEPTH (mm)	BASECOURSE DEPTH (mm)	SURFACING DEPTH (mm)
CBR	GAP 65	M/4	NZTA M/10 DG10
6%+	200	100	30
5%	250	100	30
4%	300	100	30
3%	350	100	30
<=3%	REFER TO ENGINEER	REFER TO ENGINEER	30

NOTES:
1. GEOTEXTILE TO BE USED ON SUBGRADE WHERE CBR IS 4% OR LESS.
2. PAVEMENT DESIGN BASED ON ITS COUNCIL STANDARD SECTION 3.2.12.1 USING THE AUSTRROADS DESIGN METHOD FOR DESA OF 1.3x10^5.
3. 8.2T DEFLECTION TESTING ON FINAL SURFACE TO ITS COUNCIL STANDARD SECTION 3 TABLE 20, A2, AVERAGE DEFLECTION 1.1mm, 90TH PERCENTILE DEFLECTION 1.35mm, WITH MAXIMUM DEFLECTION OF 1.8mm. NO MORE THAN 10% OF THE RESULTS SHALL EXCEED THE 90TH PERCENTILE AND NO SINGLE RESULT SHALL EXCEED THE MAXIMUM.

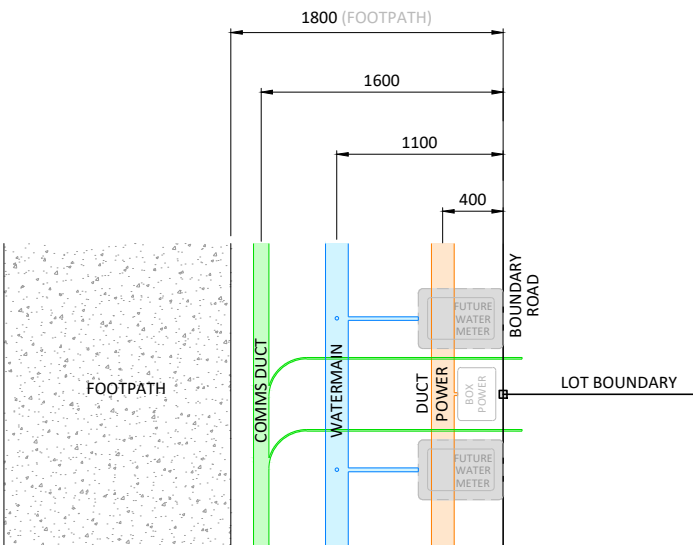
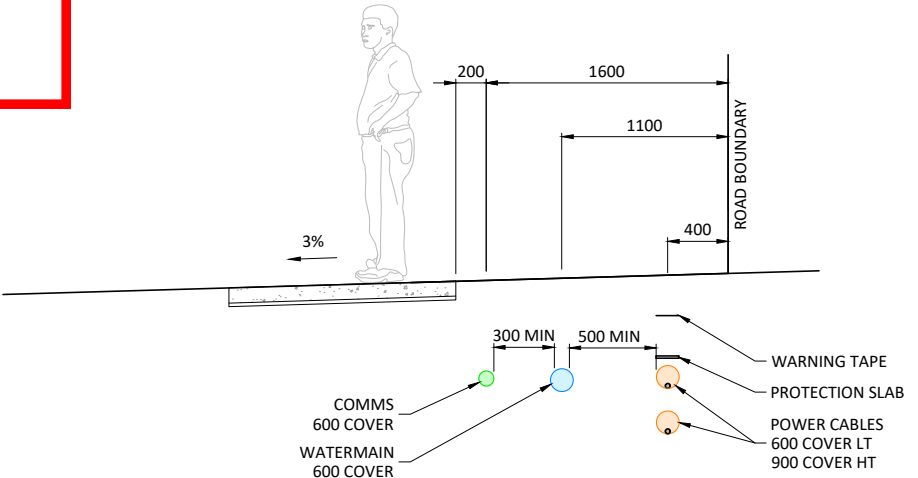
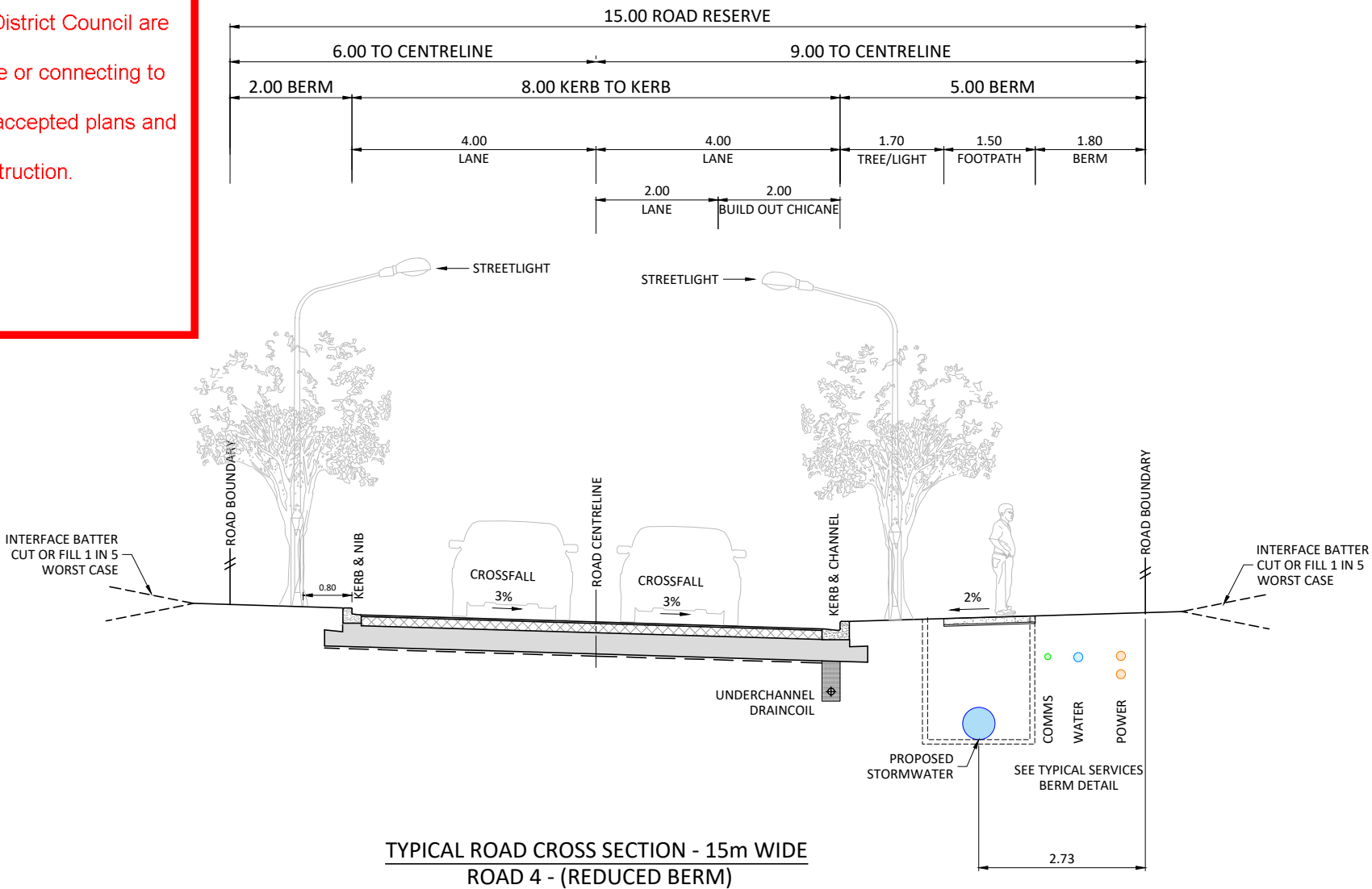
IMPORTANT INFORMATION

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Page: 44 of 92



TYPICAL SERVICES BERM DETAIL
COLLECTOR ROAD

SCALE 1:25 A1 / 1:50 A3

Printed by: RYAN@10.05.18 // Filepath: S:\VORBS\2011 - HUGHES DEVELOPMENTS TUAKAU\CAD\2011-01-330.DWG

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:	09.2017
CHECKED:	DATE:	29.03.18
APPROVED:	DATE:	03.2018
RJP		
RJP		
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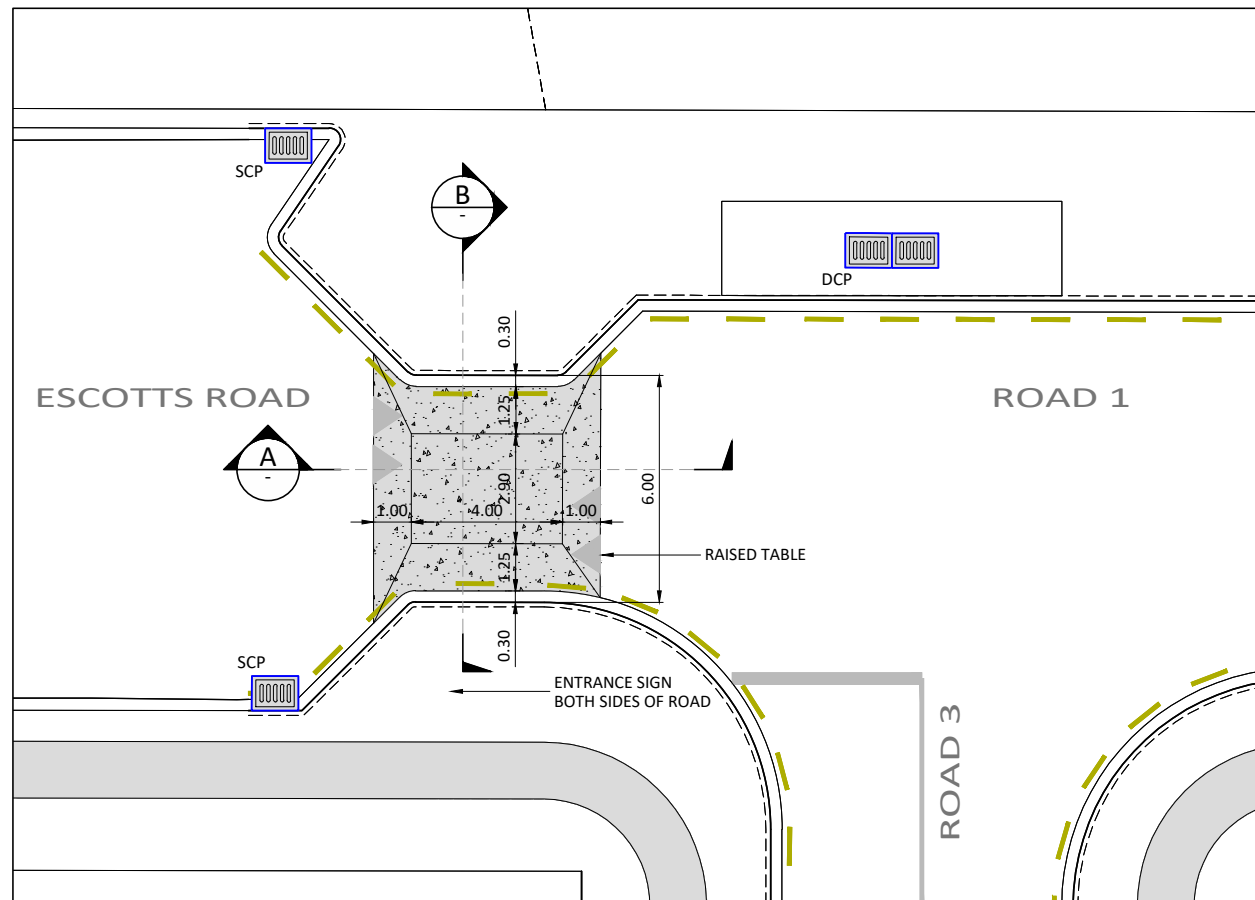
CIVILPLAN
CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED ROADING
TYPICAL CROSS SECTIONS
SHEET 5

ISSUE STATUS:
SCALE: (A1/A3) 1:50 / 1:100
SCALE BAR 1:100@A3 0 1 2 3 4 5m
DRAWING NUMBER: 2011-01-334 REV: C1

CONSENT



TYPICAL RAISED TABLE PLAN
SCALE: (A1/A3) 1:100/1:200

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Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 45 of 92

Subject to notations in red

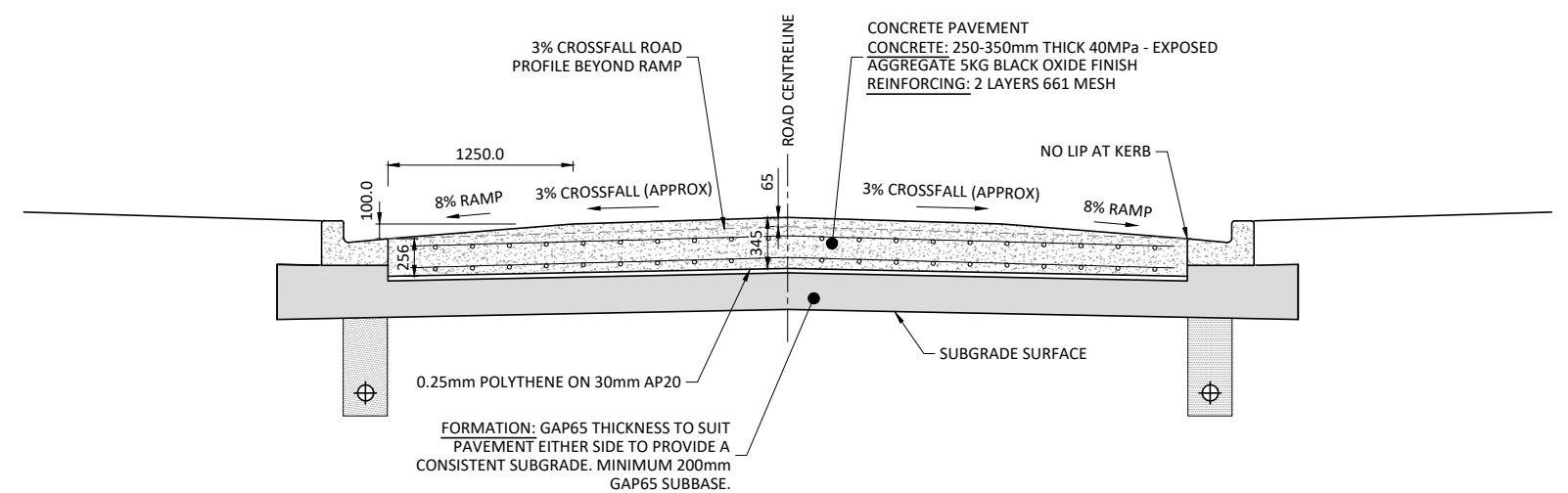
IMPORTANT INFORMATION

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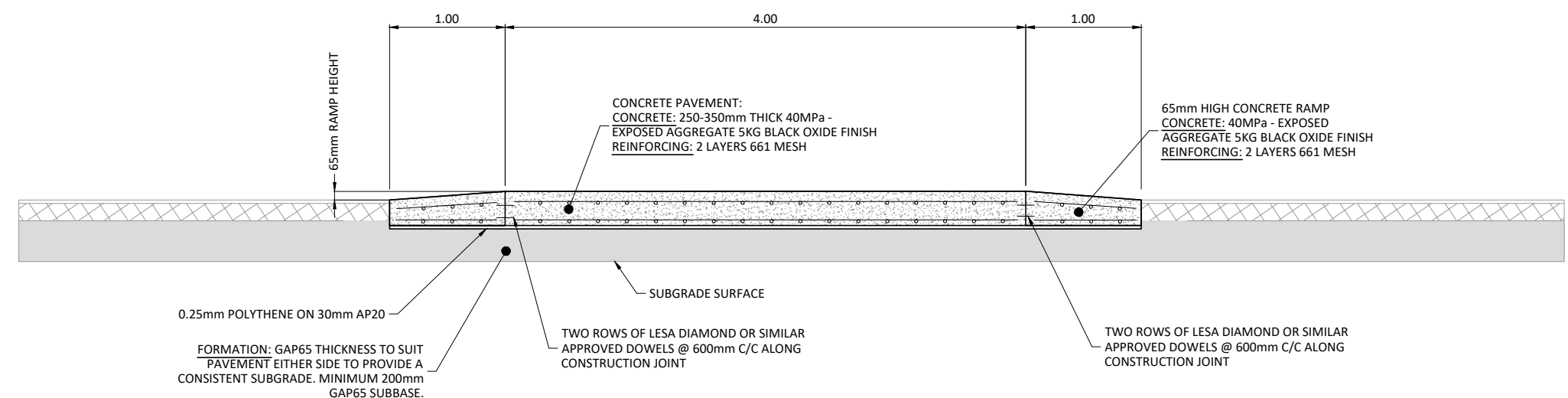
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Page: 45 of 92



B TYPICAL RAISED TABLE CROSS SECTION DETAIL
SCALE: (A1/A3) 1:25/1:50



A TYPICAL RAISED TABLE LONG SECTION DETAIL
SCALE: (A1/A3) 1:25/1:50

REV	REVISION DETAILS	BY	DATE
C2	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RJP	10.05.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

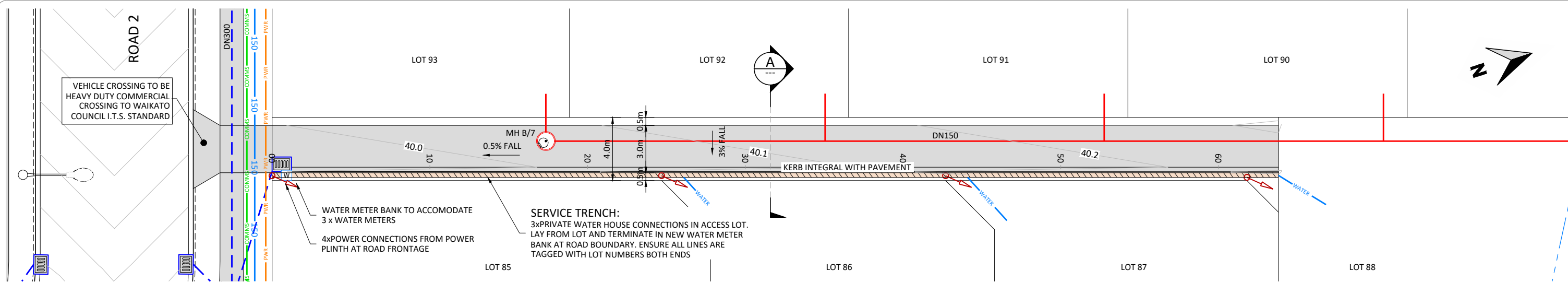
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTT'S ROAD
TUAKAU

SHEET TITLE:
PROPOSED ROADING
RAISED TABLE DETAIL SHEET

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) AS SHOWN
SCALE BAR
N.T.S.
DRAWING NUMBER: 2011-01-335
REV: C2



PLAN

SCALE: (A1/A3) 1:125/1:250

LEGEND

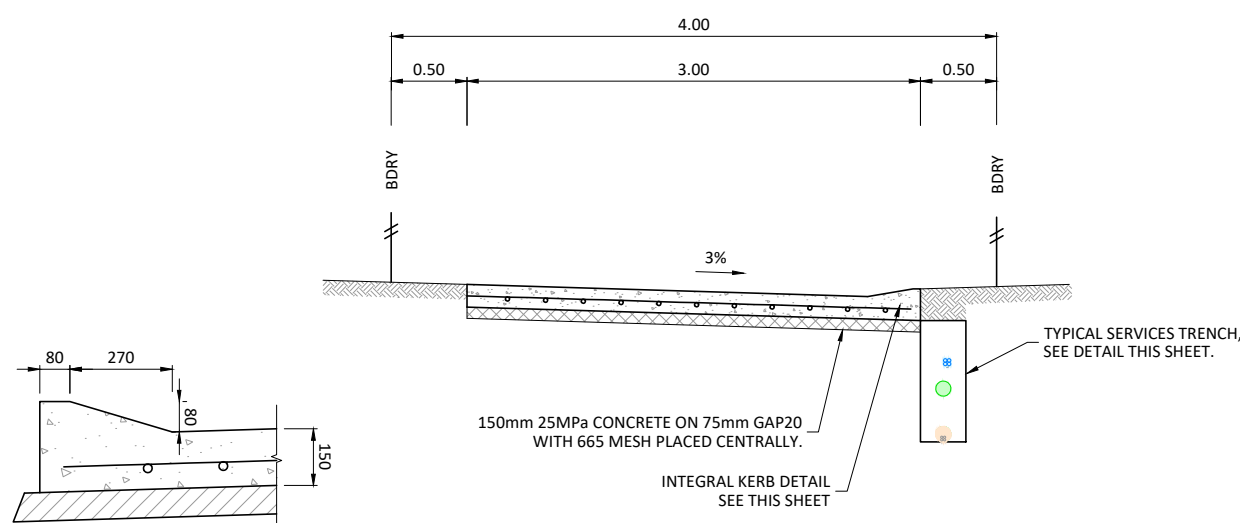
- WATER
- HOUSE CONNECTION
- POWER AND COMMS
- CONNECTION POINT
- COMBINED SERVICE TRENCH

DATUM 38.0

DESIGN GRADE	0.50%									
DESIGN FINISHED LEVEL	39.92	39.97	40.02	40.07	40.12	40.17	40.22	40.24		
EXISTING GROUND LEVEL	40.78	40.54	40.4	40.1	39.82	39.67	39.37	39.26		
DEPTH OF CUT/FILL	-0.87	-0.57	-0.38	-0.03	0.3	0.5	0.85	0.97		
CHAINAGE	0	10	20	30	40	50	60	63.799		

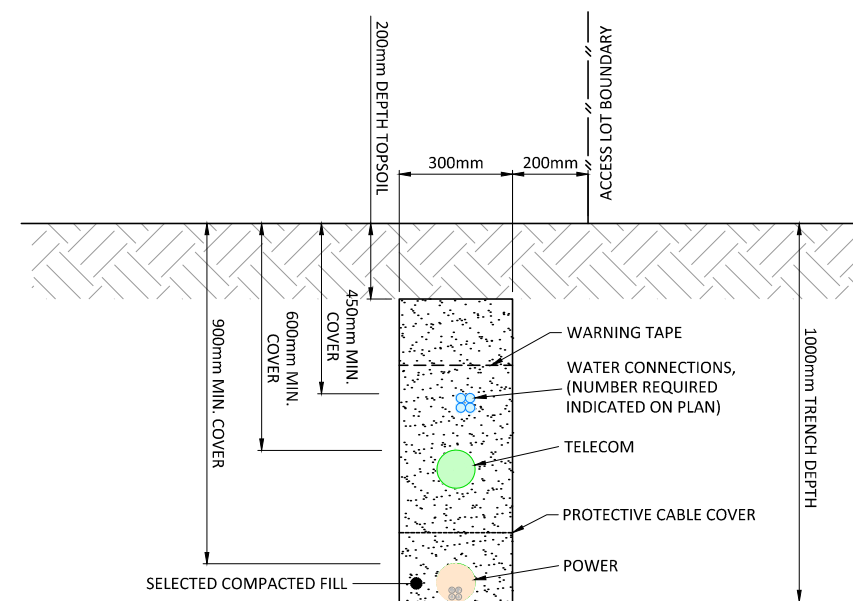
LONGITUDINAL SECTION

SCALE: (A1/A3) 1:125H 1:62.5V / 1:250H 1:125V



TYPICAL CROSS SECTION

SCALE: (A1/A3) 1:25/1:50



PRIVATE WAY - SERVICE TRENCH DETAIL

SCALE: (A1/A3) 1:10/1:20

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 46 of 92

Subject to notations in red

IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC
hold point inspections
listed in the plan approval letter.

All work shall be constructed in accordance with
the Code of Practice
HCC ITS

Additional approvals from Waikato District
Council are required prior to
undertaking works within road reserve or
connecting to live mains.
Waikato District Council conditions, accepted
plans and specifications
shall be available on site during construction.

Page: 46 of 92

REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
C1	REVISION DETAILS	BY	DATE

DRAWN: GDS	DATE: 09.2017
CHECKED: RIP	DATE: 29.03.18
APPROVED: RIP	DATE: 03.2018
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Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 48 of 92

Subject to notations in red

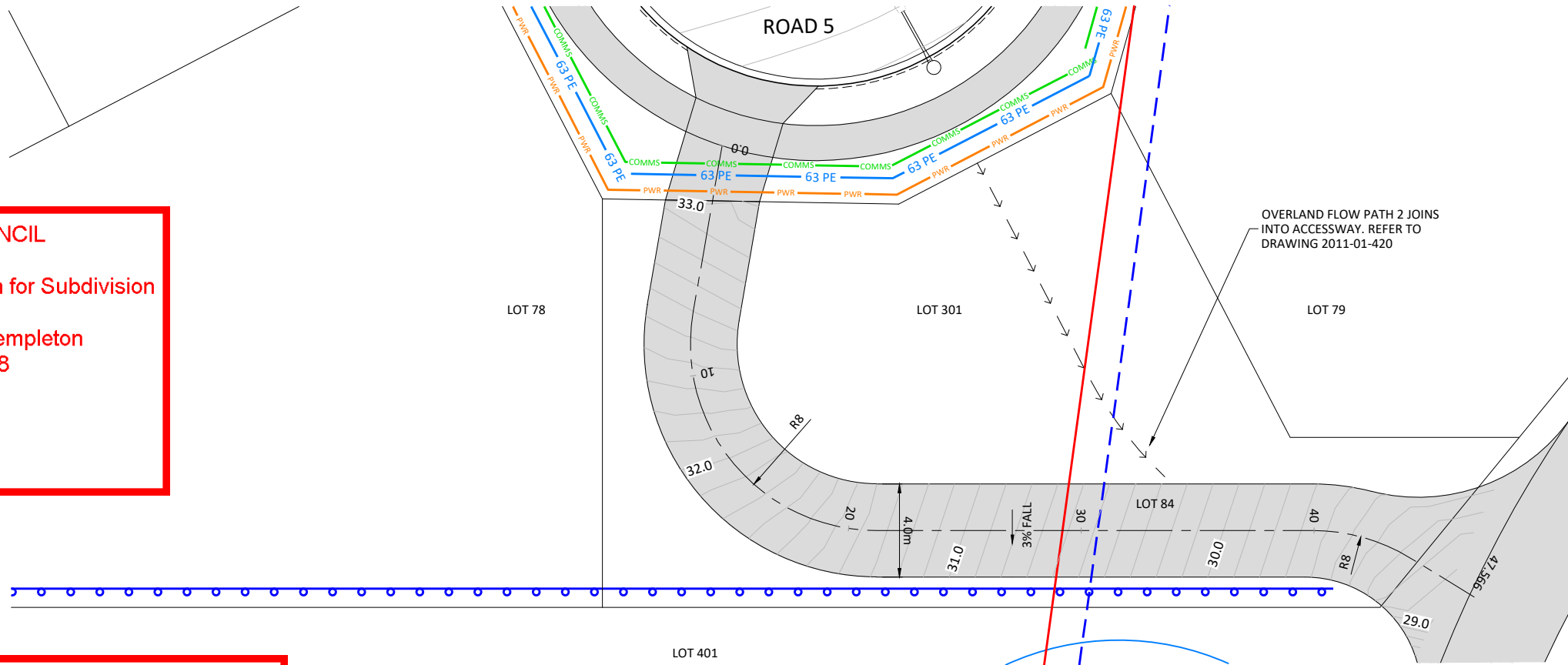
IMPORTANT INFORMATION

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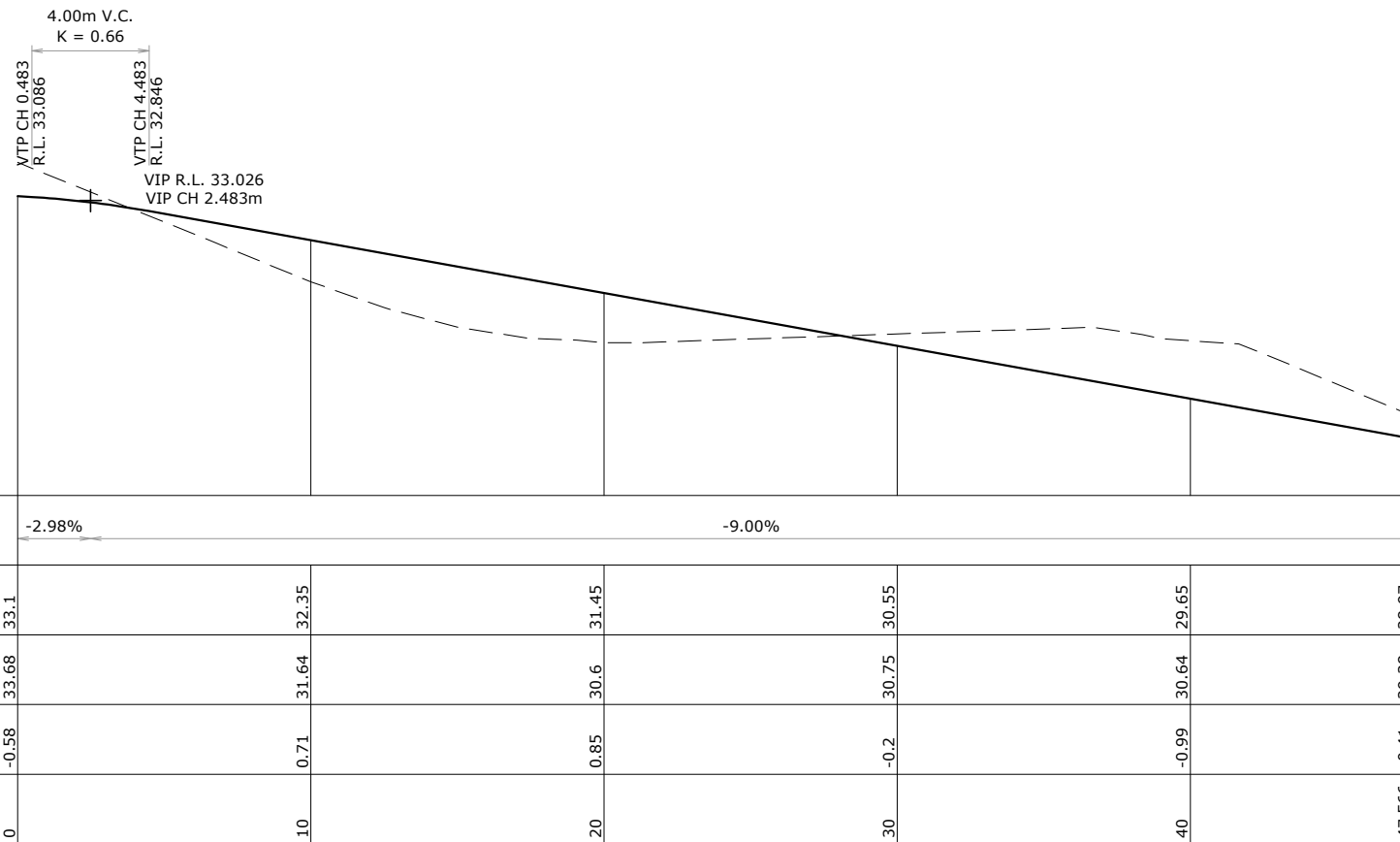
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Page: 48 of 92



PLAN

SCALE: (A1/A3) 1:125/1:250



LONGITUDINAL SECTION

SCALE: (A1/A3) 1:125H 1:62.5V / 1:250H 1:125V

DATUM 28.0

DESIGN GRADE	<div><div></div><div>-2.98%</div></div>		<div><div></div><div>-9.00%</div></div>			
DESIGN FINISHED LEVEL	33.1	32.35	31.45	30.55	29.65	28.97
EXISTING GROUND LEVEL	33.68	31.64	30.6	30.75	30.64	29.38
DEPTH OF CUT/FILL	-0.58	0.71	0.85	-0.2	-0.99	-0.41
CHAINAGE	0	10	20	30	40	47.566

NOTES:

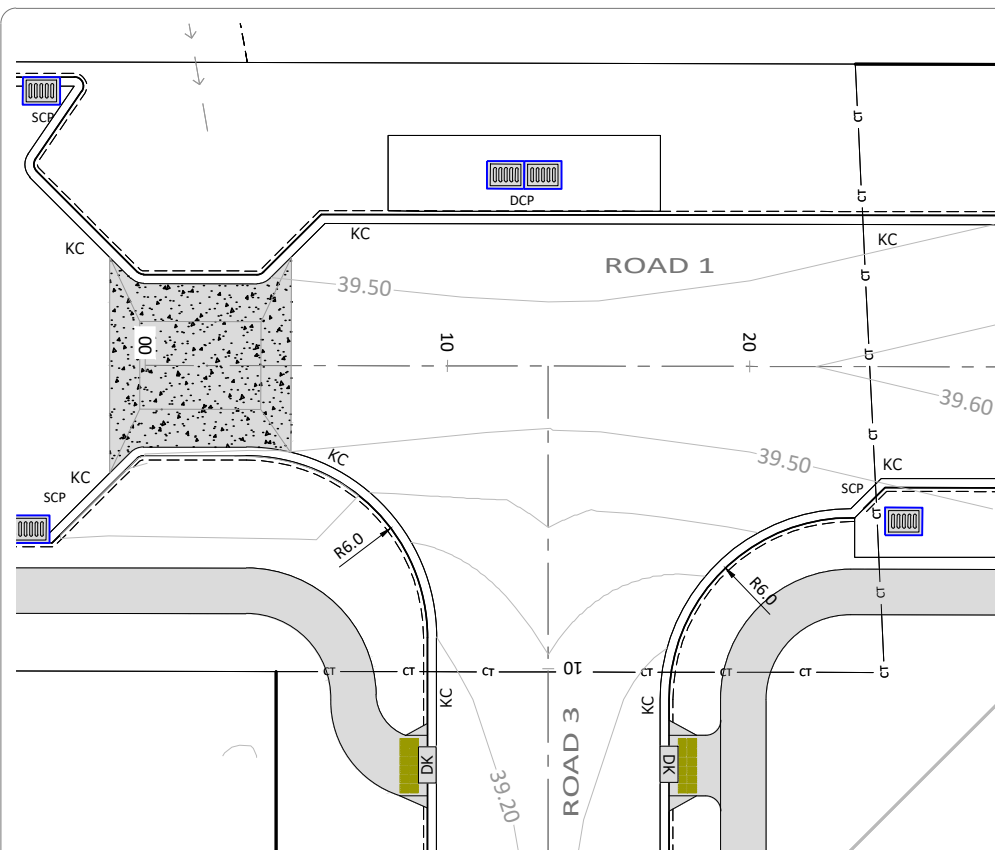
1. REFER TO DRAWING 2011-01-330 NOTE 2 FOR CONCRETE FOOTPATH CONSTRUCTION.



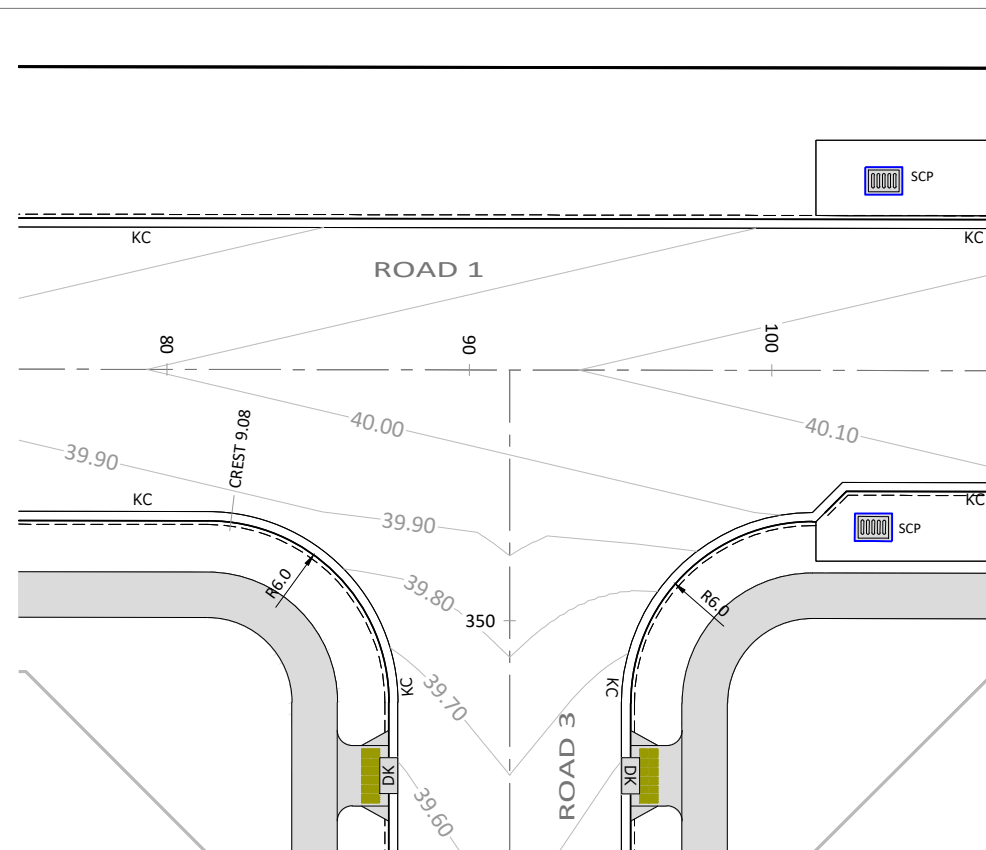
REV	REVISION DETAILS	BY	DATE
C2	ISSUED FOR RESOURCE CONSENT	GDS	27.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18

DRAWN: GDS	DATE: 09.2017
CHECKED: RJP	DATE: 29.03.18
APPROVED: RJP	DATE: 03.2018

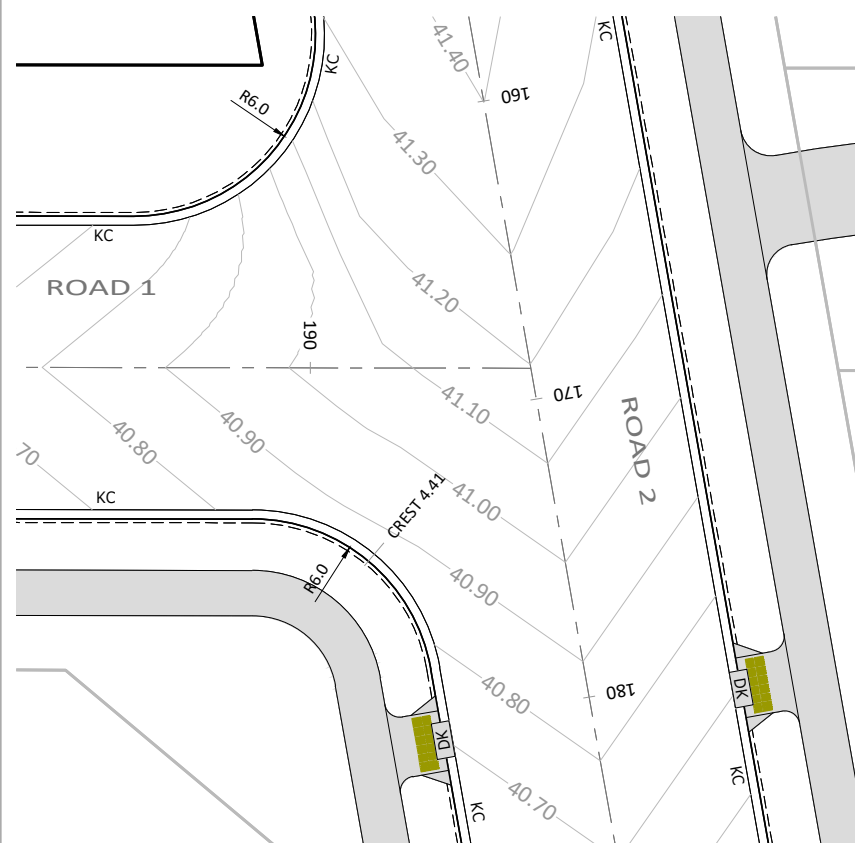
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INTERSECTION DETAIL 1
SCALE: (A1/A3) 1:125 / 1:250



INTERSECTION DETAIL 2
SCALE: (A1/A3) 1:125 / 1:250



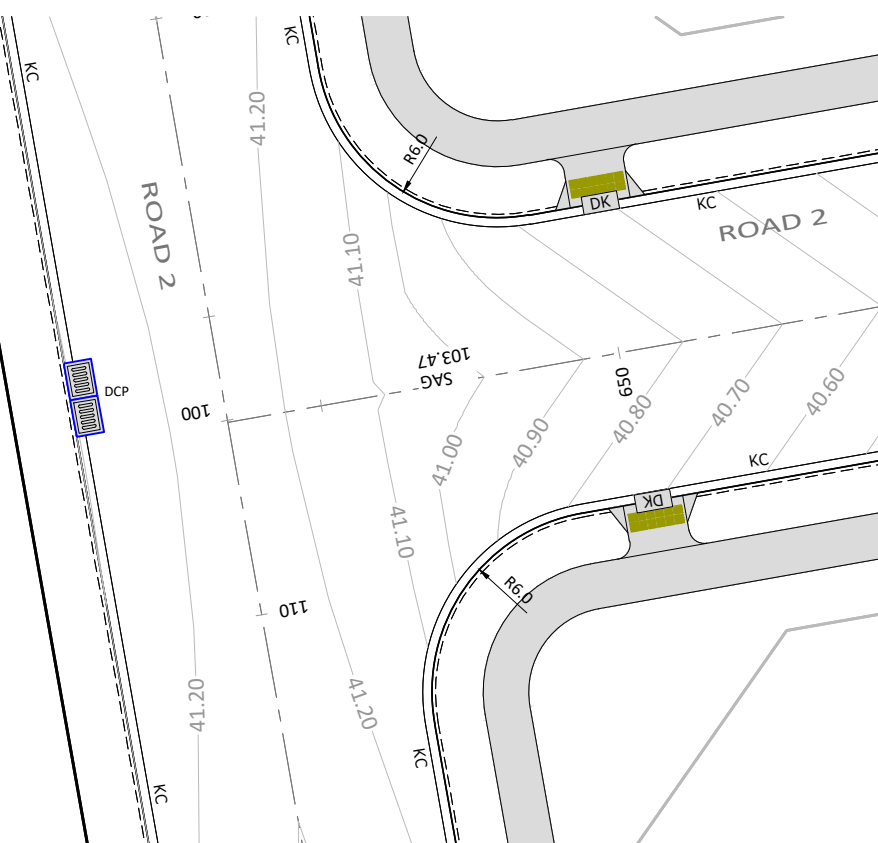
INTERSECTION DETAIL 3
SCALE: (A1/A3) 1:125 / 1:250

IMPORTANT INFORMATION
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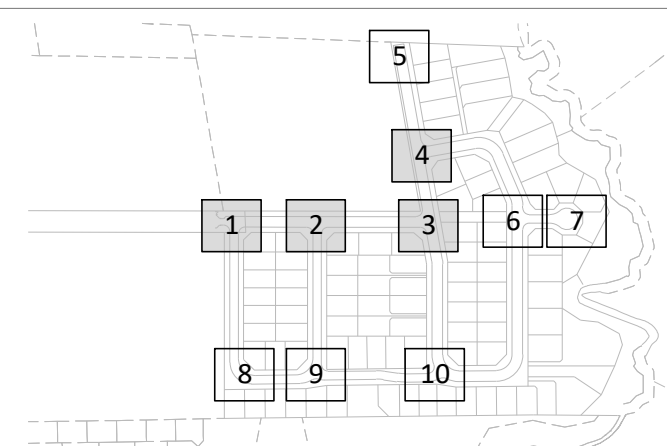
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Page: 50 of 92



INTERSECTION DETAIL 4
SCALE: (A1/A3) 1:125 / 1:250



KEYPLAN

LEGEND

- EOS / EOM EDGE OF SEAL / EDGE OF METAL
KC KERB AND CHANNEL
KN KERB AND NIB
DK DROP KERB FOR CROSSING
SCP SINGLE CATCHPIT
DCP DOUBLE CATCHPIT
BLACK OXIDE EXPOSED AGGREGATE RAISED TABLE - REFER PLAN 335 FOR DETAIL
PROPOSED BROOM FINISHED STANDARD FOOTPATH AND PRAM CROSSING

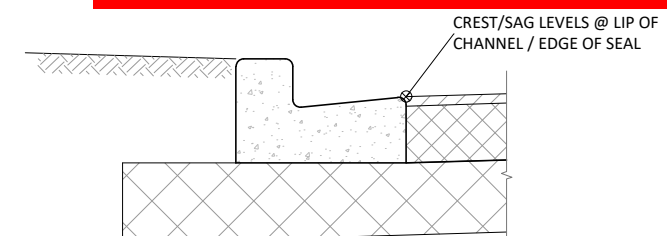
NOTES:

1. REFER PLAN SERIES 2011-01-330 FOR KERB AND CHANNEL DIMENSIONS

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 50 of 92

Subject to notations in red



KERB AND CHANNEL SETOUT POINT

SCALE: (A1/A3) 1:10 / 1:20

REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
BY	DATE		

DRAWN:	DATE:	
GDS	09.2017	
CHECKED:	DATE:	
RJP	29.03.18	
APPROVED:	DATE:	
RJP	03.2018	

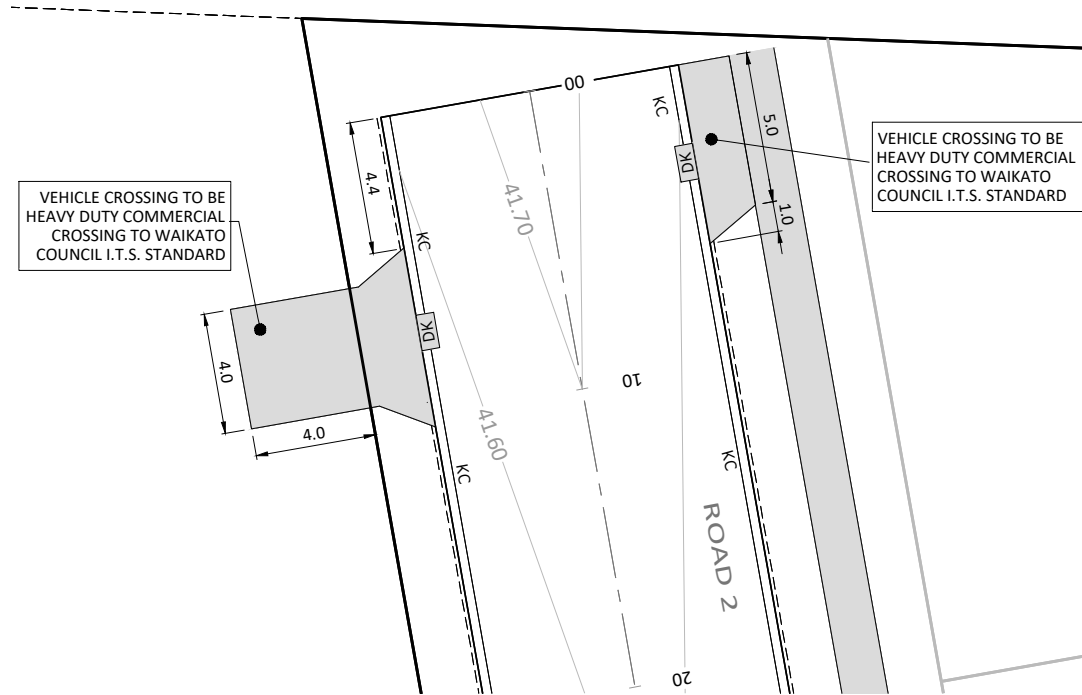
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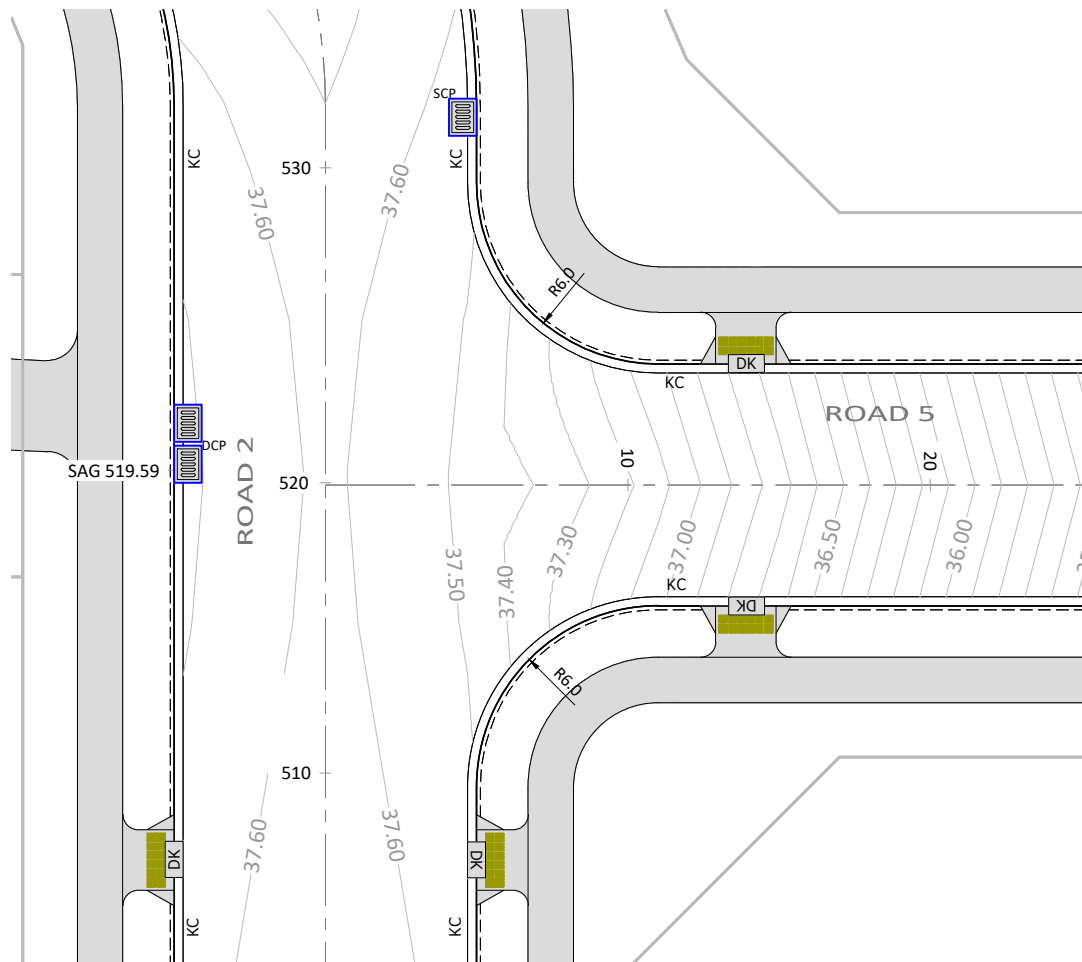
PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED ROADING
INTERSECTION DETAILS PLAN
SHEET 1

ISSUE STATUS:	1:125 / 1:250	CONSENT
SCALE: (A1/A3)	1:125 / 1:250	
SCALE BAR	0 2.5 5 7.5 10 12.5m	
DRAWING NUMBER:	2011-01-360	REV: C1



INTERSECTION DETAIL 5
SCALE: (A1/A3) 1:125 / 1:250



INTERSECTION DETAIL 6
SCALE: (A1/A3) 1:125 / 1:250

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Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 51 of 92

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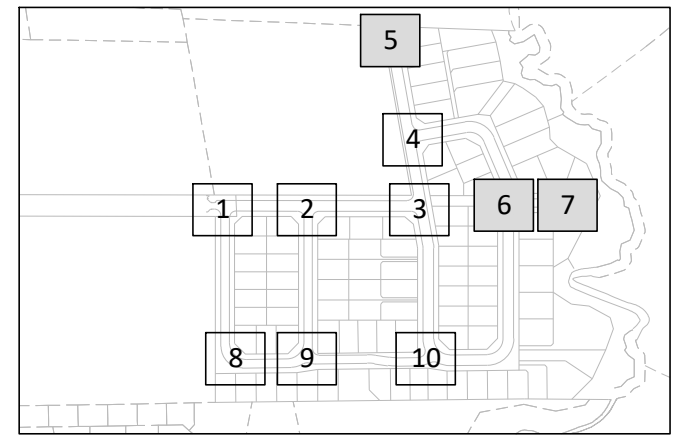
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Page: 51 of 92



KEYPLAN

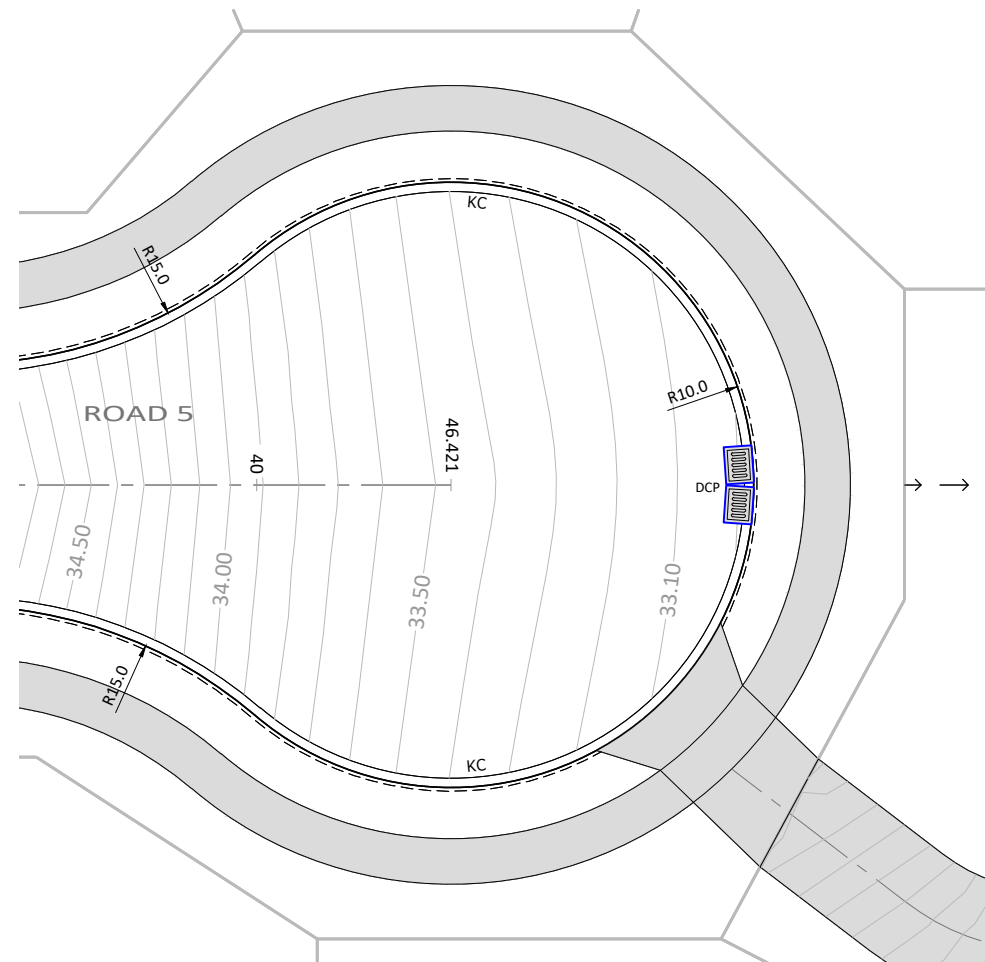
LEGEND

- EOS / EOM EDGE OF SEAL / EDGE OF METAL
- KC KERB AND CHANNEL
- KN KERB AND NIB
- DK DROP KERB FOR CROSSING
- SCP SINGLE CATCHPIT
- DCP DOUBLE CATCHPIT

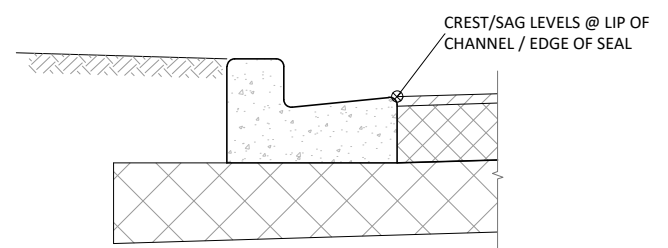
PROPOSED BROOM FINISHED STANDARD FOOTPATH AND PRAM CROSSING

NOTES:

- REFER PLAN SERIES 2011-01-330 FOR KERB AND CHANNEL DIMENSIONS



INTERSECTION DETAIL 7
SCALE: (A1/A3) 1:125 / 1:250



KERB AND CHANNEL SETOUT POINT
SCALE: (A1/A3) 1:10 / 1:20

REV	REVISION DETAILS	BY	DATE
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18

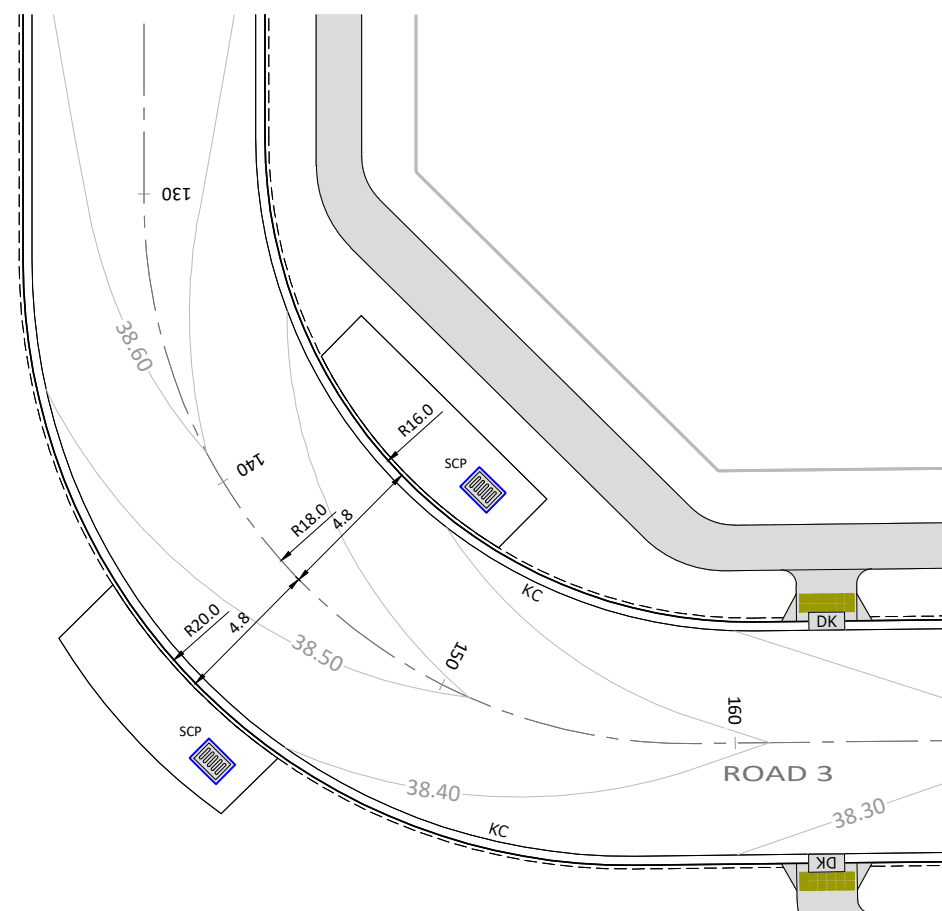
DRAWN: GDS	DATE: 09.2017
CHECKED: RJP	DATE: 29.03.18
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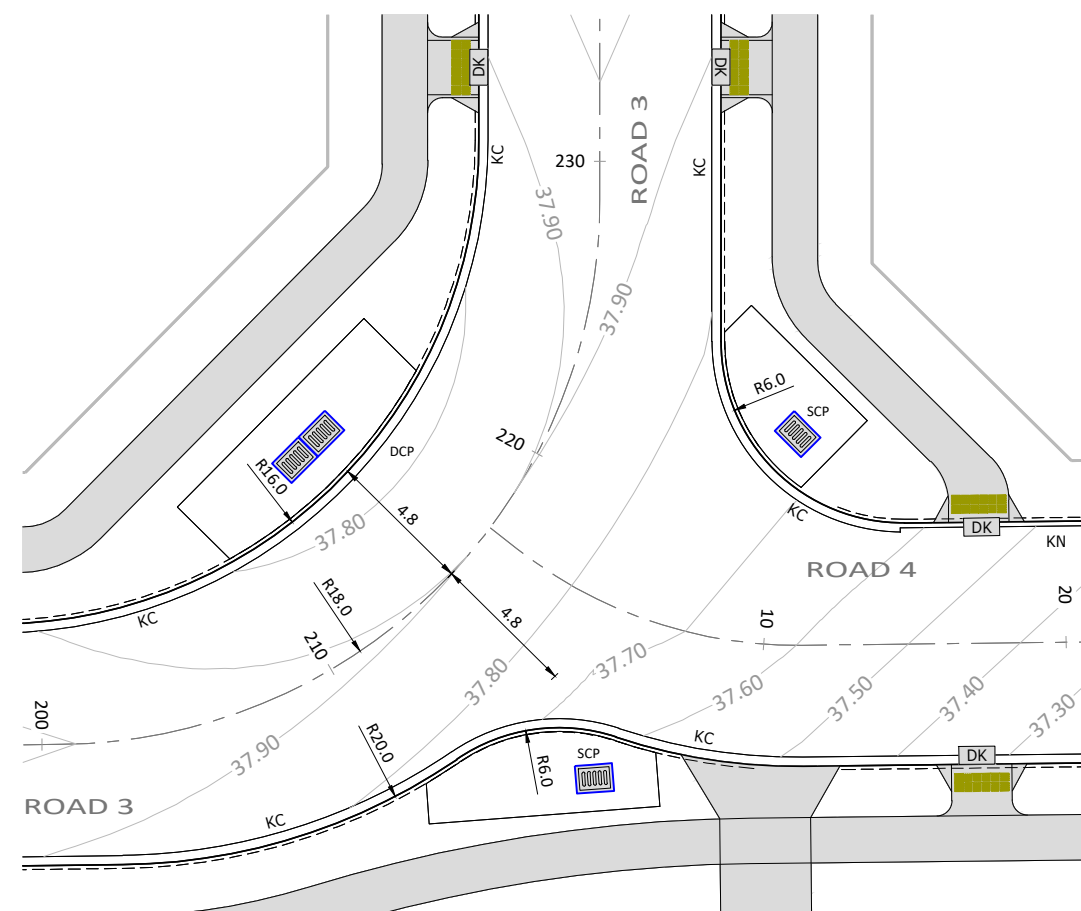
PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED ROADING
INTERSECTION DETAILS PLAN
SHEET 2

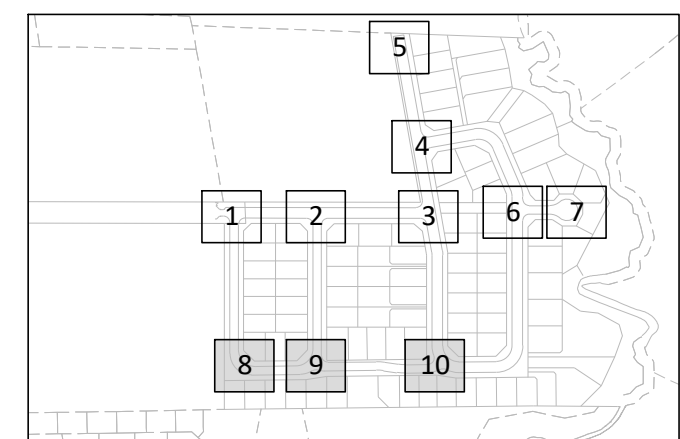
ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:125 / 1:250
SCALE BAR 0 2.5 5 7.5 10 12.5m
DRAWING NUMBER: 2011-01-361 REV: C1



INTERSECTION DETAIL 8
SCALE: (A1/A3) 1:125 / 1:250







INTERSECTION DETAIL 9
SCALE:(A1/A3) 1:125 / 1:250



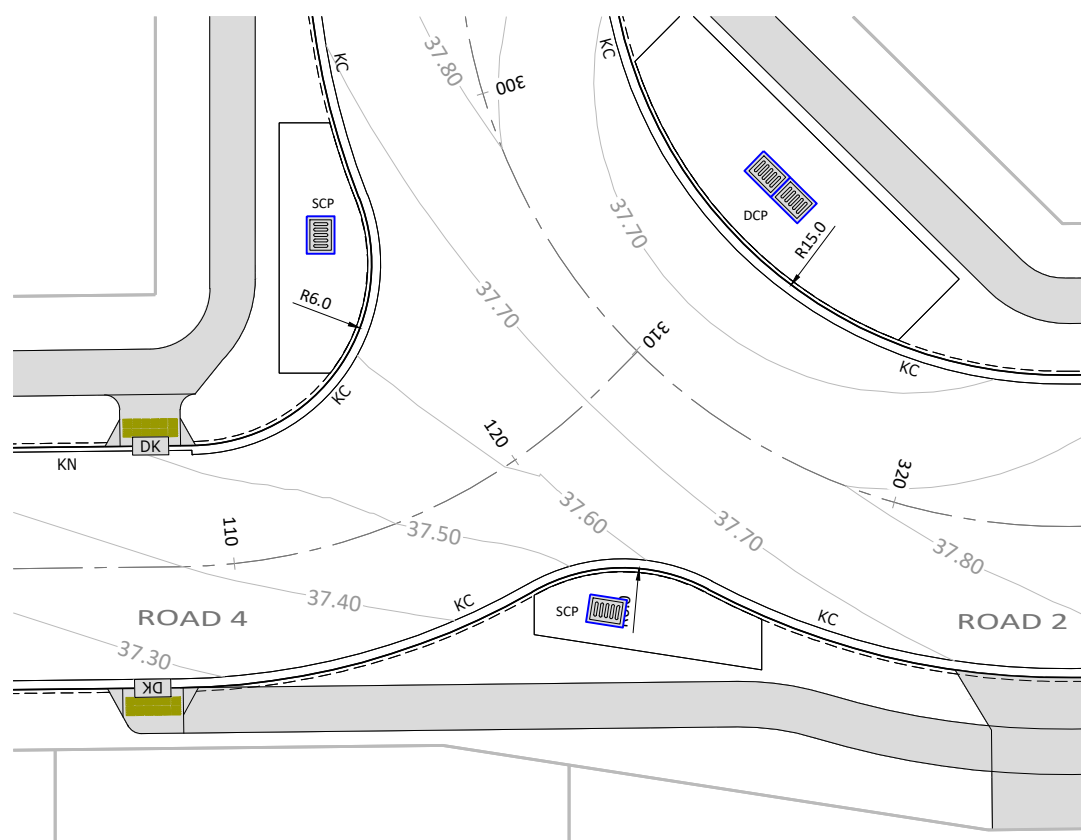
KEYPLAN

LEGEND

EOS / EOM	EDGE OF SEAL / EDGE OF METAL
KC	KERB AND CHANNEL
KN	KERB AND NIB
	DROP KERB FOR CROSSING
SCP 	SINGLE CATCHPIT
DCP 	DOUBLE CATCHPIT
	PROPOSED BROOM FINISHED STANDARD FOOTPATH AND PRAM CROSSING

NOTES:

1. REFER PLAN SERIES 2011-01-330 FOR KERB AND CHANNEL DIMENSIONS



INTERSECTION DETAIL 10
SCALE:(A1/A3) 1:125 / 1:250

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 52 of 92

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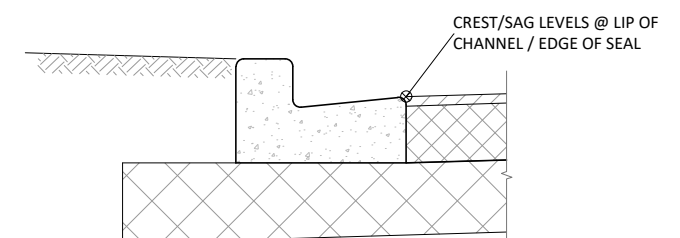
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HCC ITS

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Page: 52 of 92



KERB AND CHANNEL SETOUT POINT
SCALE: (A1/A3) 1:10 / 1:20

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN: GDS	DATE: 09.2017	
CHECKED: RJP	DATE: 29.03.18	
APPROVED: RJP	DATE: 03.2018	
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PROJECT TITLE:

HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:

PROPOSED ROADING
INTERSECTION DETAILS PLAN
SHEET 3

ISSUE STATUS:	CONSENT	
SCALE: (A1/A3)	1:125 / 1:250	
SCALE BAR 1:250@A3		
DRAWING NUMBER:	2011-01-362	REV: C1

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SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 53 of 92

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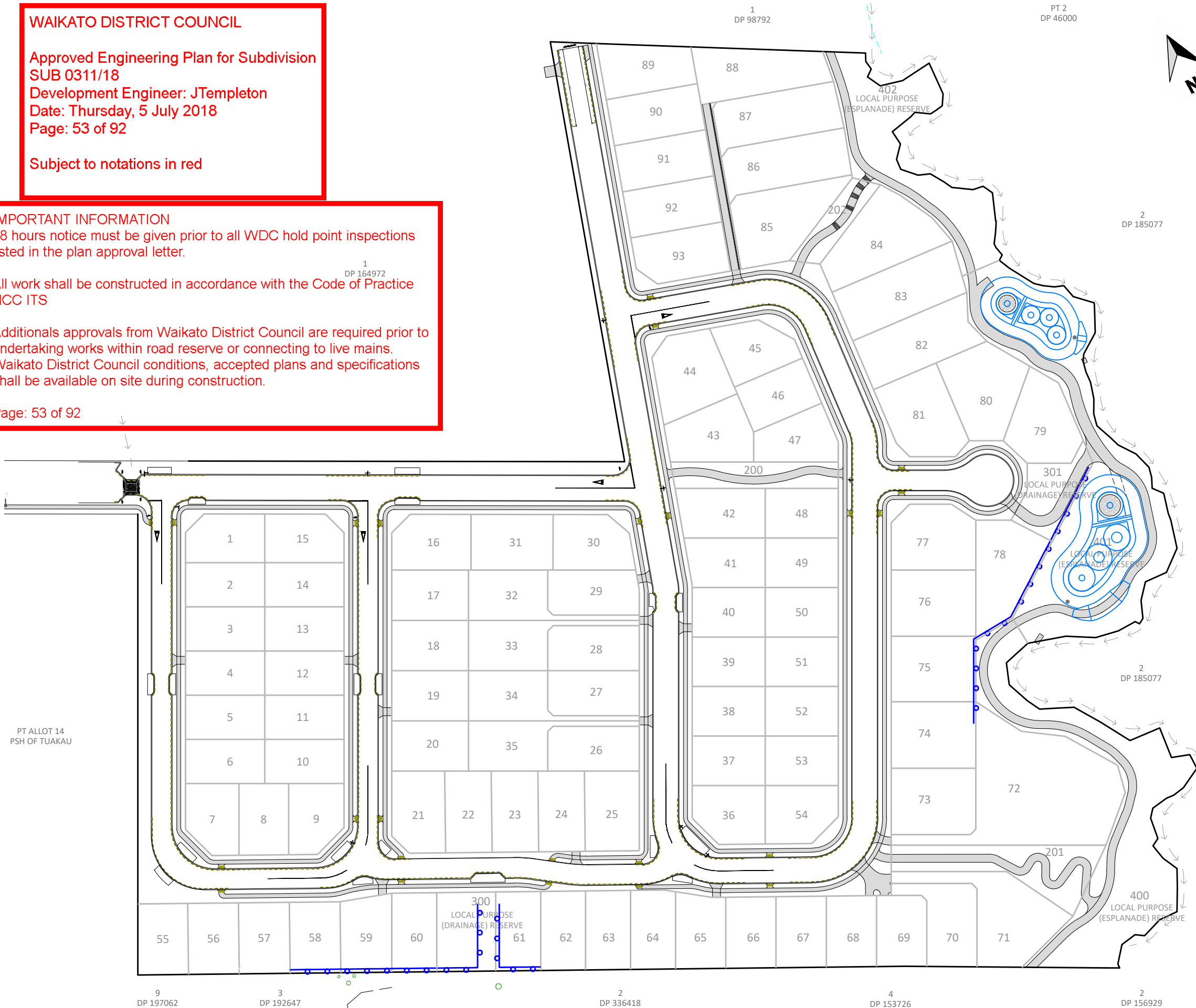
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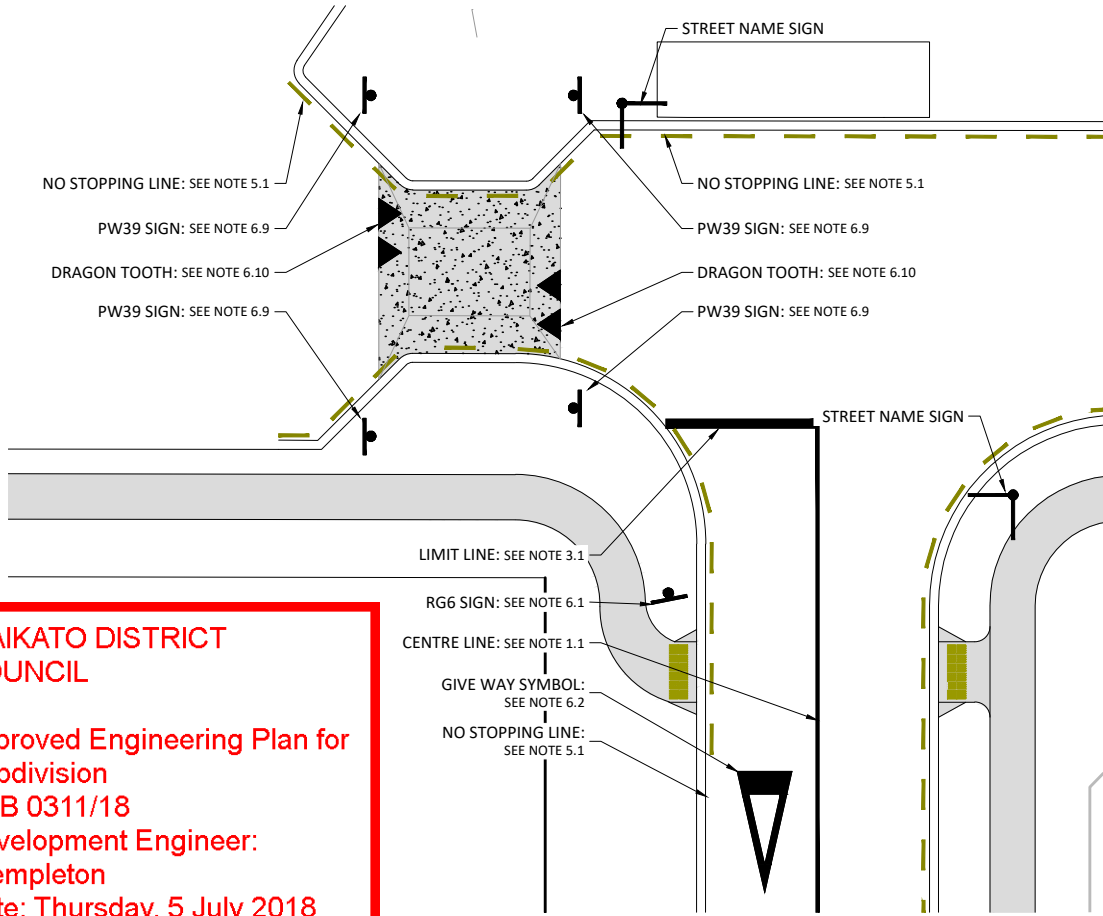
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Page: 53 of 92

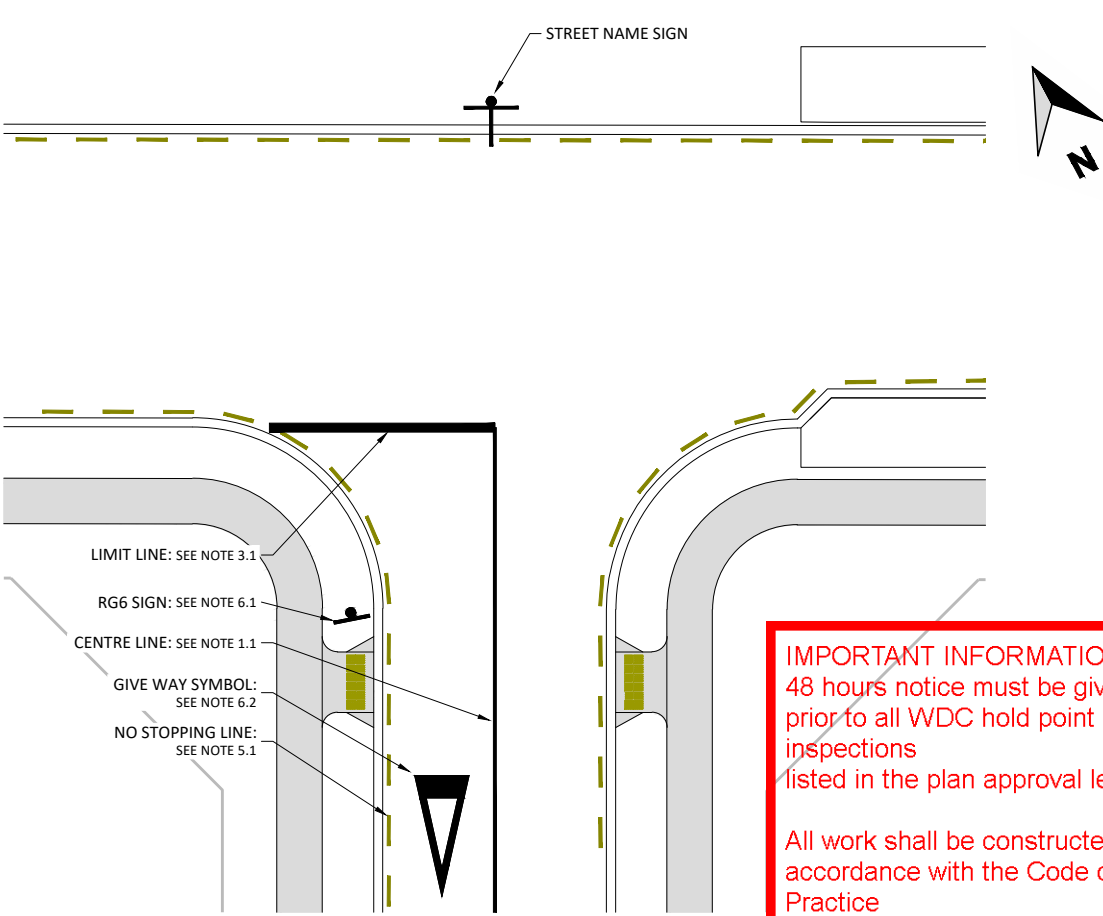


WAIKATO DISTRICT COUNCIL

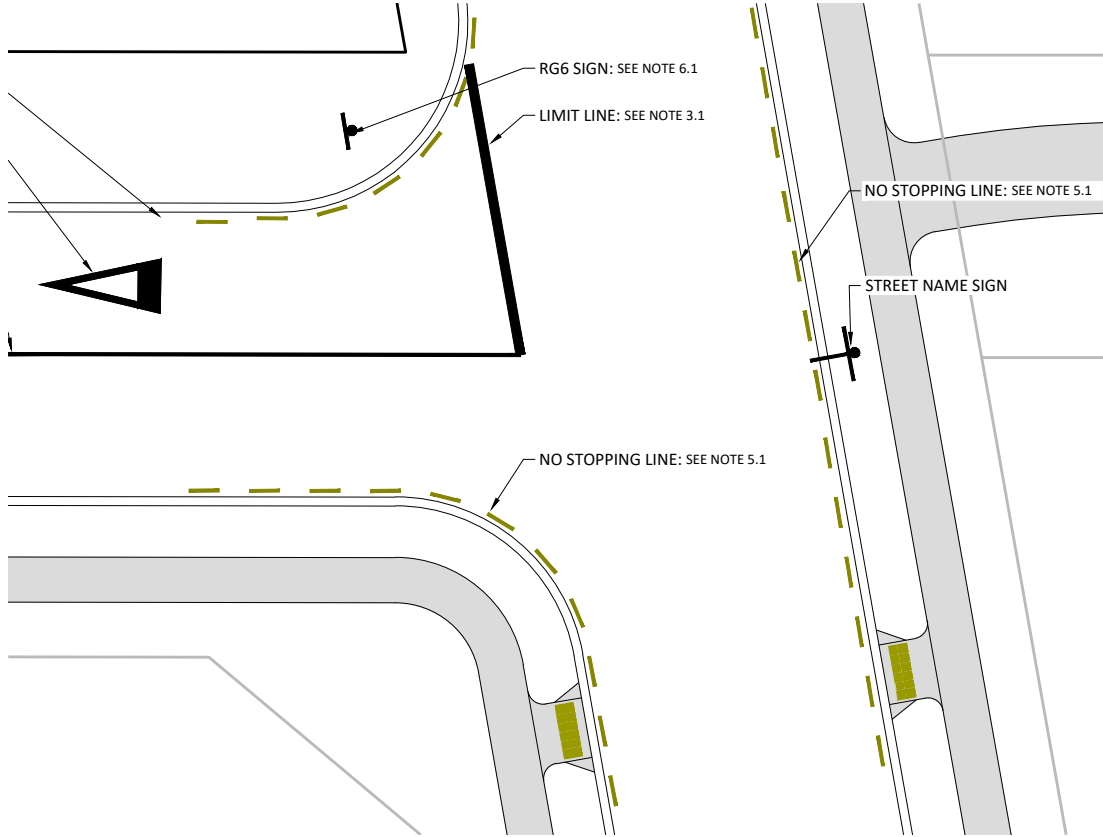
Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer:
JTempleton
Date: Thursday, 5 July 2018
Page: 54 of 92



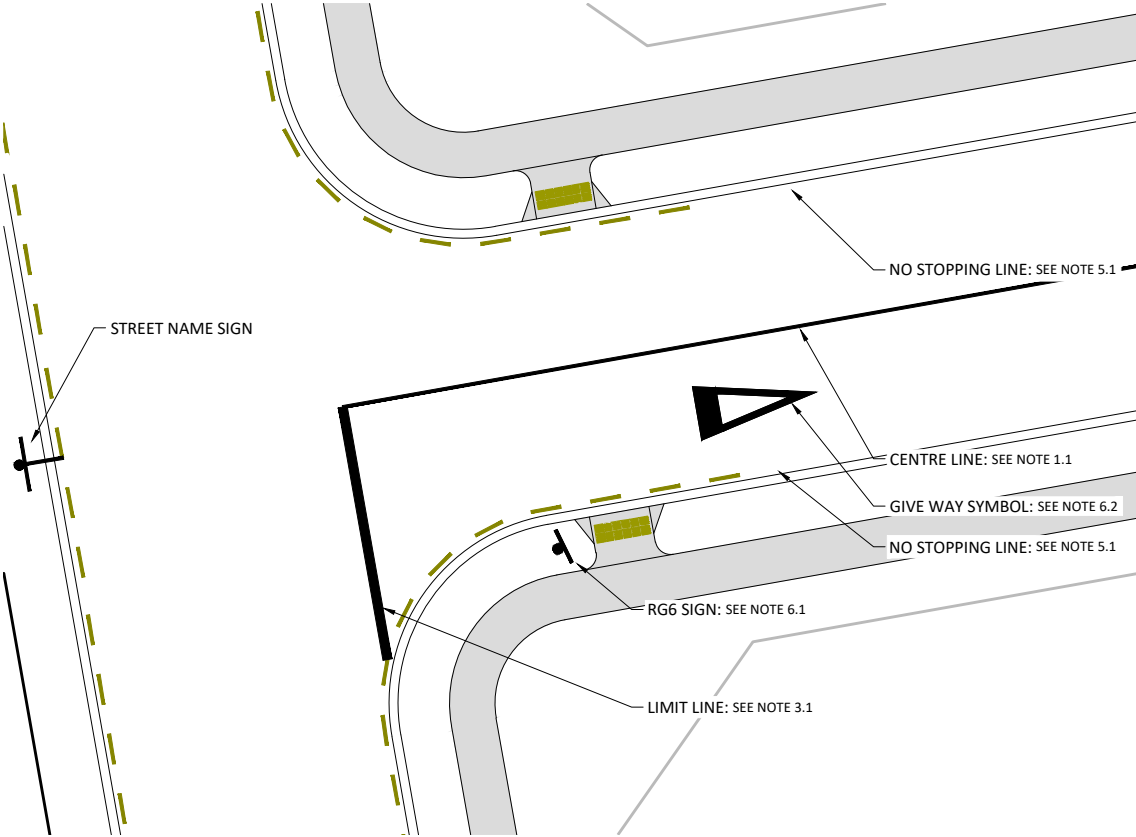
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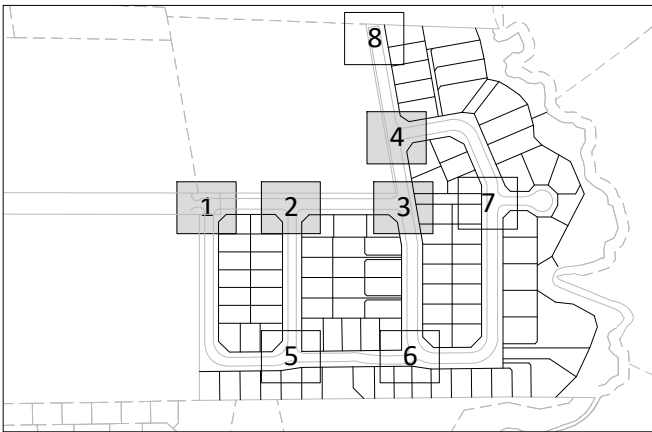
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INTERSECTION DETAIL 3
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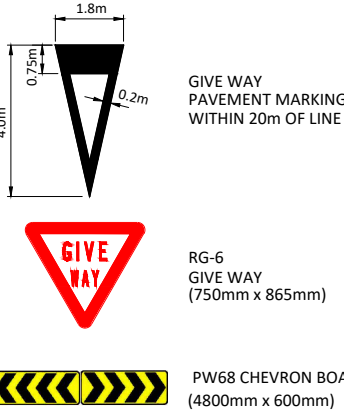
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SCALE:(A1/A3) 1:125 / 1:250



KEYPLAN

- NOTES:
- ROAD MARKINGS AND SIGNS TO BE IN STRICT ACCORDANCE WITH BOTH WAIKATO DISTRICT COUNCIL STANDARDS AND M.O.T.S.A.M.
- CENTRELINE LINE:
 - 100mm REFLECTORISED WHITE CONTINUOUS 30m LONG.
 - 100mm REFLECTORISED WHITE: 3m STRIPE, 7m GAP.
 - EDGE LINE AND CYCLE LANE:
 - 100mm REFLECTORISED WHITE CONTINUOUS.
 - LIMIT LINE & HOLDING LINE:
 - 300mm REFLECTORISED WHITE CONTINUOUS LIMIT LINE.
 - 200mm REFLECTORISED WHITE CONTINUOUS LIMIT LINE.
 - 300mm REFLECTORISED YELLOW CONTINUOUS LIMIT LINE.
 - CONTINUITY LINE:
 - 100mm REFLECTORISED WHITE: 1m STRIPE, 3m GAP.
 - NO STOPPING LINE:
 - 100mm YELLOW: 1m STRIPE, 1m GAP (2m IF OVER 30m LONG).
 - SIGNS AND SIGN SYMBOLS:
 - RG6 GIVE WAY SIGN
 - GIVE WAY SYMBOL, 4.0m HEIGHT REFLECTORISED WHITE WITHIN 20m OF LIMIT LINE.
 - CYCLE LANE SYMBOL REFLECTORISED WHITE IN 1.4m WIDE BY 5m LONG GREEN PAINTED RECTANGLE (SPACING OF 50m TO 100m).
 - GREEN PAINT THROUGH INTERSECTION, 1.4m WIDE.
 - PW-68 CHEVRON, ROTATED AT LEAST 10° OFF PERPENDICULAR TO APPROACHING TRAFFIC.
 - RG-26 CYCLE LANE SIGN
 - RP-5 BUS STOP SIGN
 - RG-26C SHARED PEDESTRIAN AND CYCLE PATH.
 - PW-39 SPEED HUMP SIGN
 - DRAGON TOOTH RAMP MARKING REFLECTORISED WHITE

LEGEND



C3	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RJP	16.05.18
C2	ISSUED FOR RESOURCE CONSENT	GDS	27.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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PROJECT TITLE:

HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:

PROPOSED ROADING
INTERSECTION ROADMARKING PLAN
DETAIL PLAN - SHEET 1

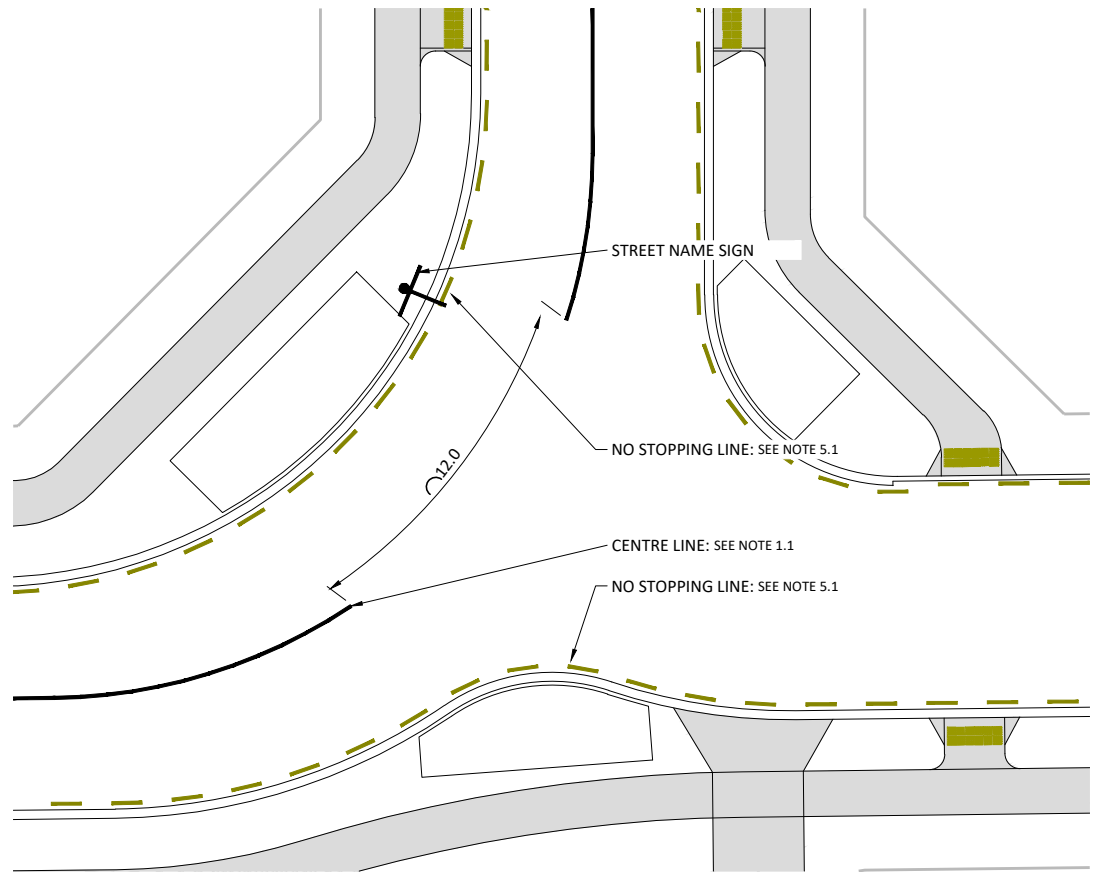
ISSUE STATUS:

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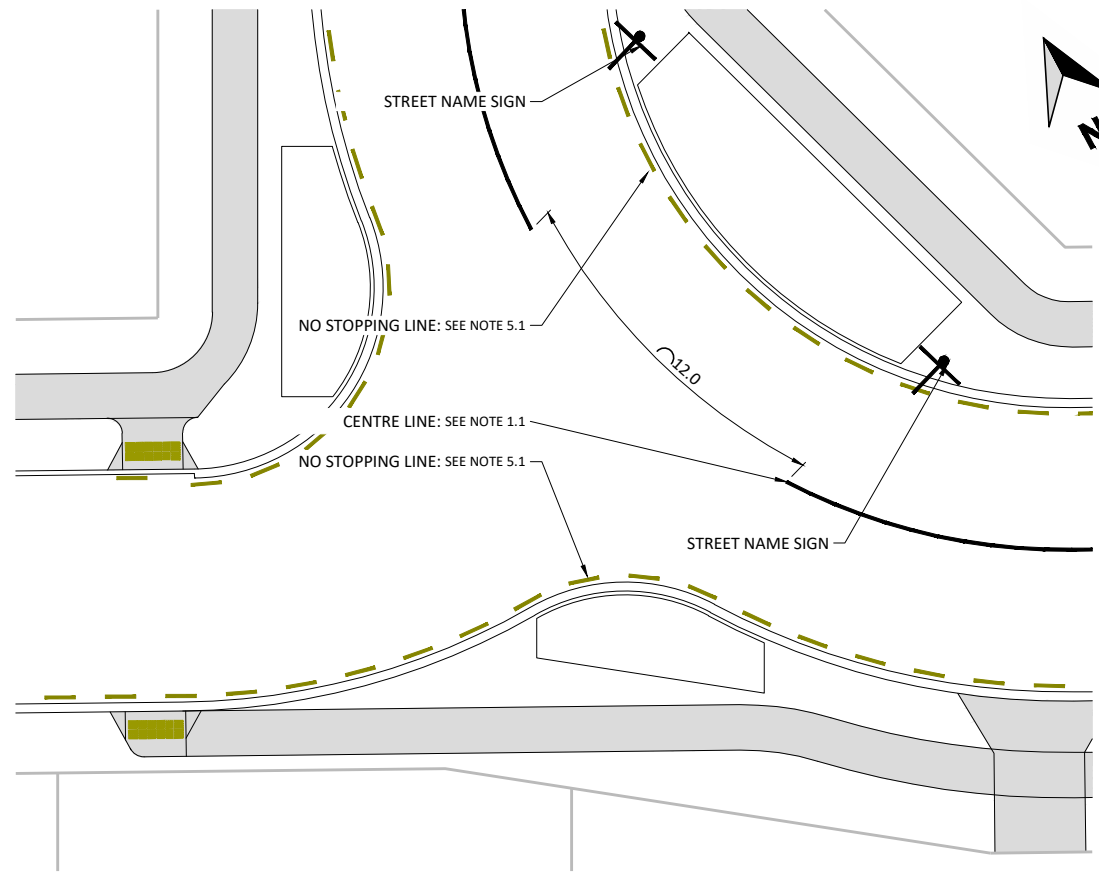
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DRAWING NUMBER: 2011-01-381 REV: C3

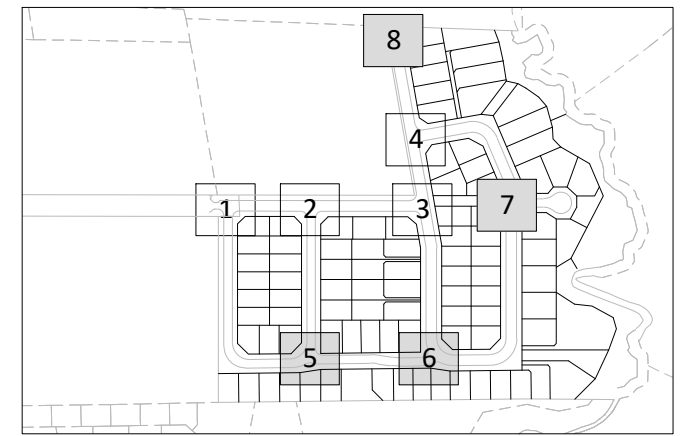
CONSENT



INTERSECTION DETAIL 5
SCALE: (A1/A3) 1:125 / 1:250



INTERSECTION DETAIL 6
SCALE: (A1/A3) 1:125 / 1:250



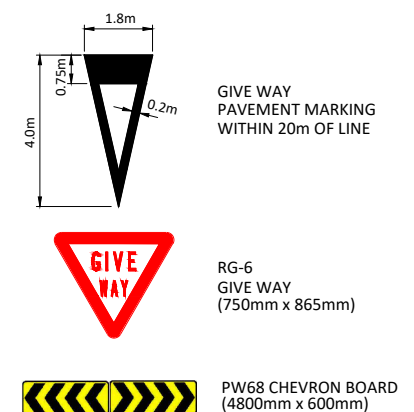
KEYPLAN

NOTES:

ROAD MARKINGS AND SIGNS TO BE IN STRICT ACCORDANCE WITH BOTH WAIKATO DISTRICT COUNCIL STANDARDS AND M.O.T.S.A.M.

1. CENTRELINE LINE:
 - 1.1. 100mm REFLECTORISED WHITE CONTINUOUS 30m LONG.
 - 1.2. 100mm REFLECTORISED WHITE: 3m STRIPE, 7m GAP.
2. EDGE LINE AND CYCLE LANE:
 - 2.1. 100mm REFLECTORISED WHITE CONTINUOUS.
3. LIMIT LINE & HOLDING LINE:
 - 3.1. 300mm REFLECTORISED WHITE CONTINUOUS LIMIT LINE.
 - 3.2. 200mm REFLECTORISED WHITE CONTINUOUS LIMIT LINE.
 - 3.3. 300mm REFLECTORISED YELLOW CONTINUOUS LIMIT LINE.
4. CONTINUITY LINE:
 - 4.1. 100mm REFLECTORISED WHITE: 1m STRIPE, 3m GAP.
5. NO STOPPING LINE:
 - 5.1. 100mm YELLOW: 1m STRIPE, 1m GAP (2m IF OVER 30m LONG).
6. SIGNS AND SIGN SYMBOLS:
 - 6.1. RG6 GIVE WAY SIGN
 - 6.2. GIVE WAY SYMBOL, 4.0m HEIGHT REFLECTORISED WHITE WITHIN 20m OF LIMIT LINE.
 - 6.3. CYCLE LANE SYMBOL REFLECTORISED WHITE IN 1.4m WIDE BY 5m LONG GREEN PAINTED RECTANGLE (SPACING OF 50m TO 100m).
 - 6.4. GREEN PAINT THROUGH INTERSECTION, 1.4m WIDE.
 - 6.5. PW-68 CHEVRON, ROTATED AT LEAST 10° OFF PERPENDICULAR TO APPROACHING TRAFFIC.
 - 6.6. RG-26 CYCLE LANE SIGN
 - 6.7. RP-5 BUS STOP SIGN
 - 6.8. RG-26C SHARED PEDESTRIAN AND CYCLE PATH.
 - 6.9. PW-39 SPEED HUMP SIGN
 - 6.10. DRAGON TOOTH RAMP MARKING REFLECTORISED WHITE.

LEGEND



IMPORTANT INFORMATION
48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

All work shall be constructed in accordance with the Code of Practice HCC ITS

WAIKATO DISTRICT COUNCIL
Approved Engineering Plan for Subdivision SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 55 of 92

Subject to notations in red

REV	REVISION DETAILS	BY	DATE
C3	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RJP	16.05.18
C2	ISSUED FOR RESOURCE CONSENT	GDS	27.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18

DRAWN: GDS	DATE: 09.2017
CHECKED: RJP	DATE: 29.03.18
APPROVED: RJP	DATE: 03.2018

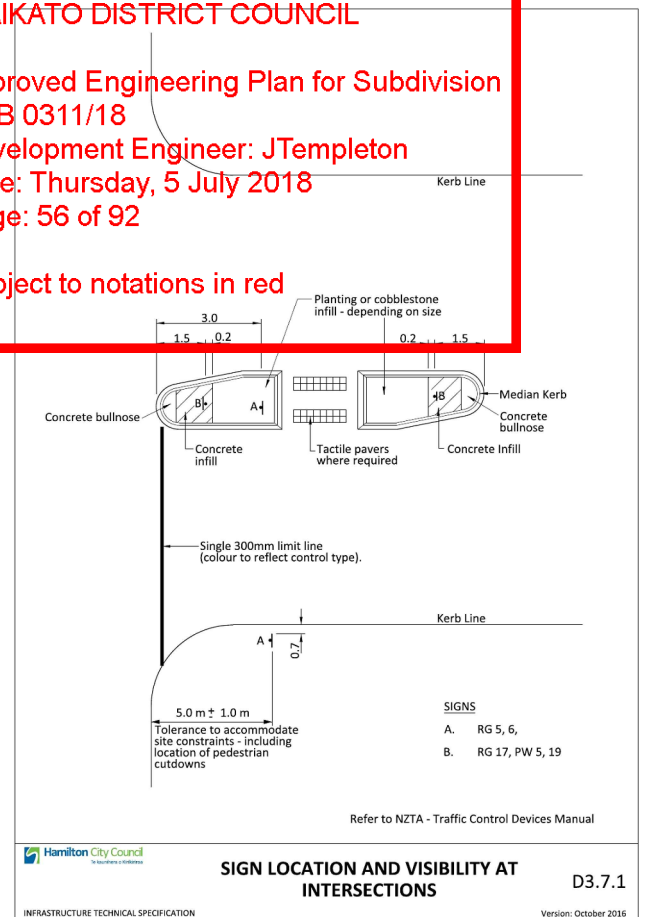
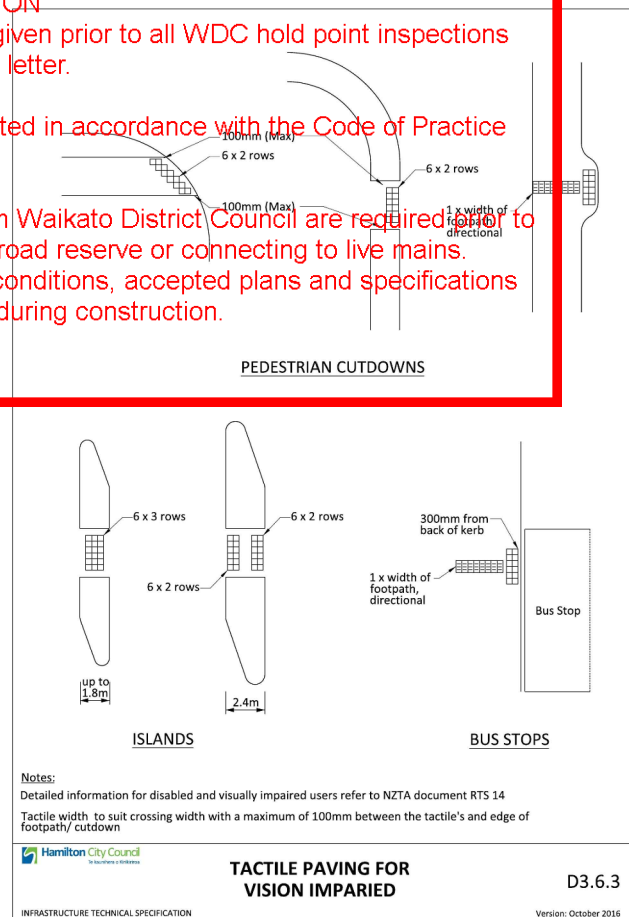
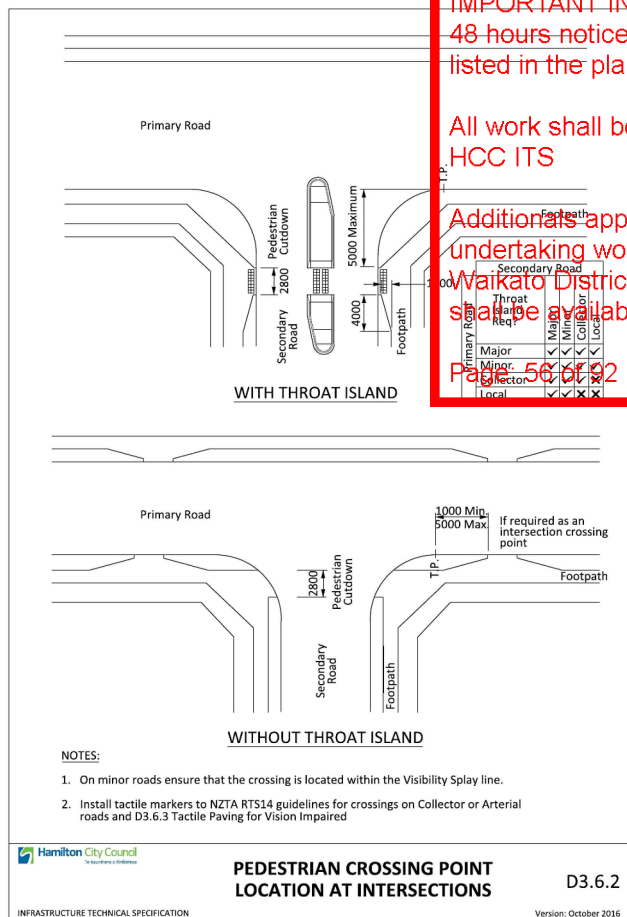
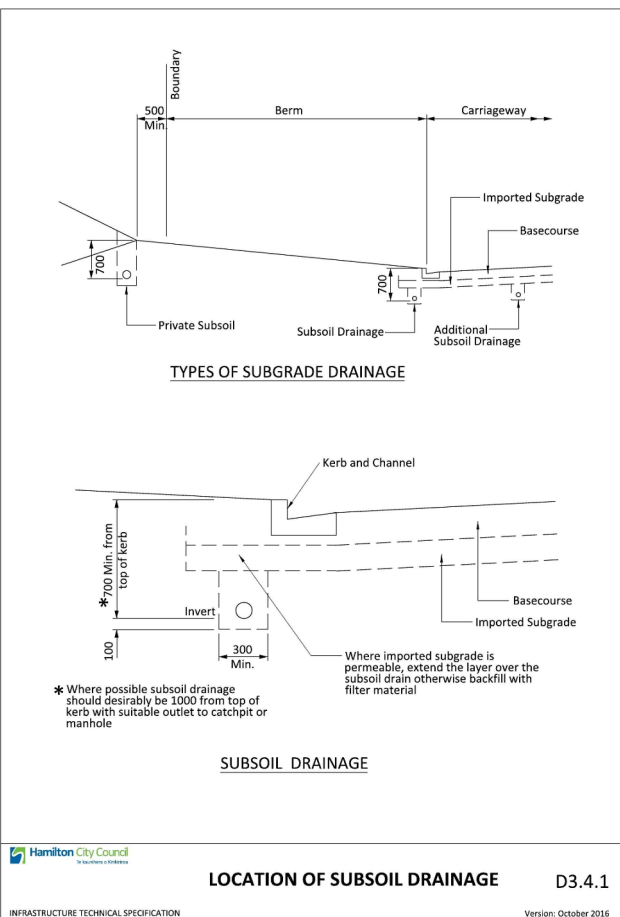
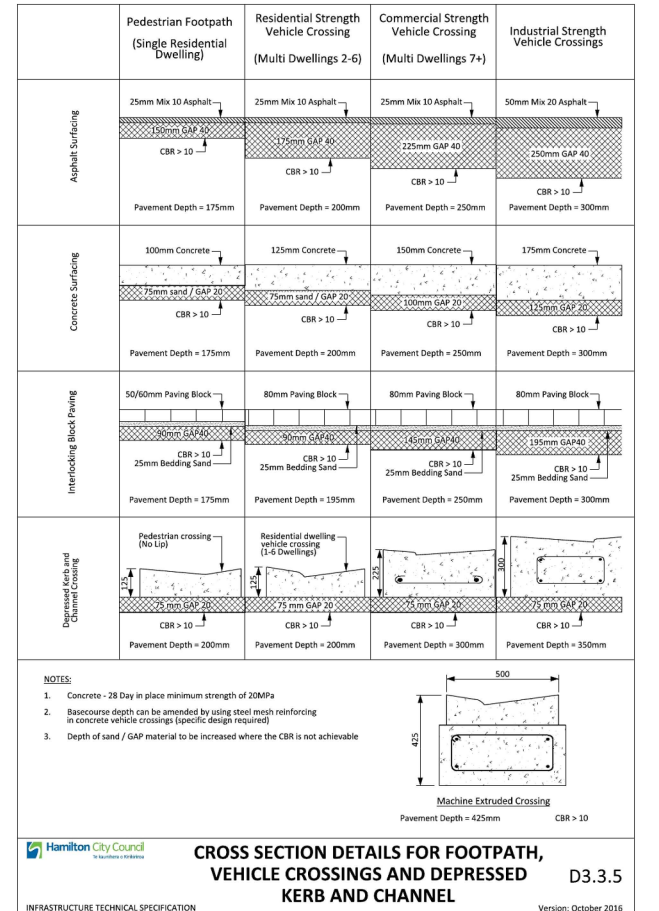
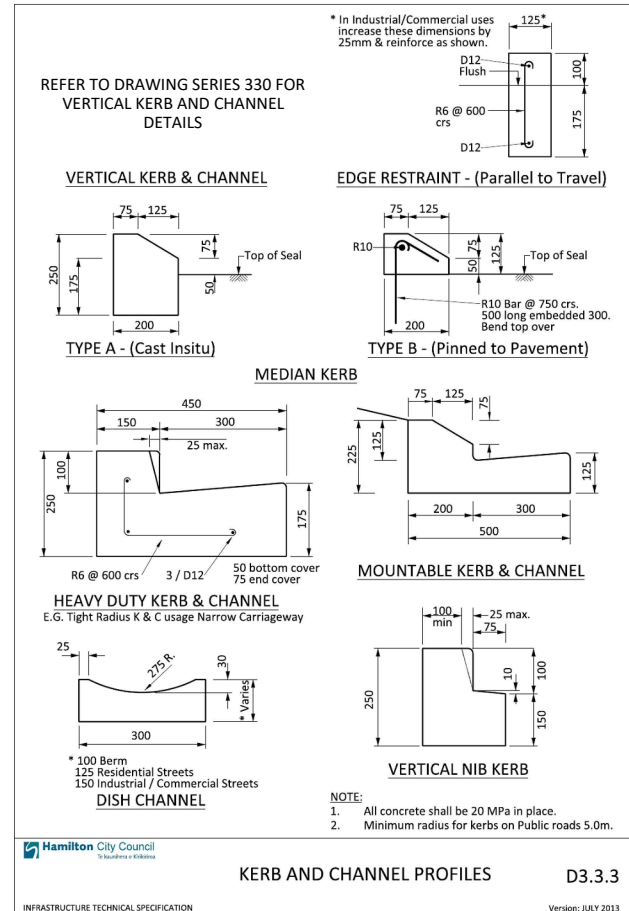
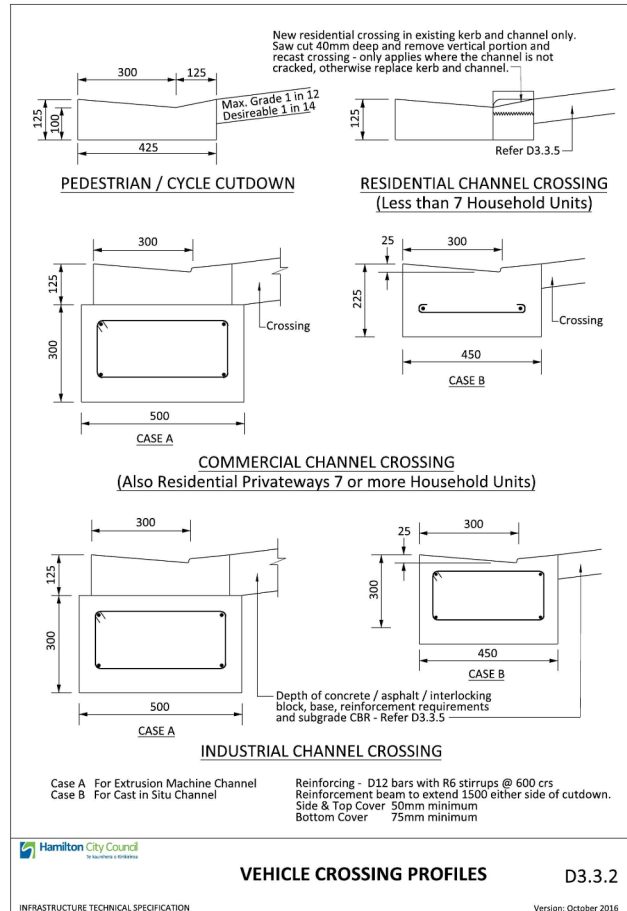
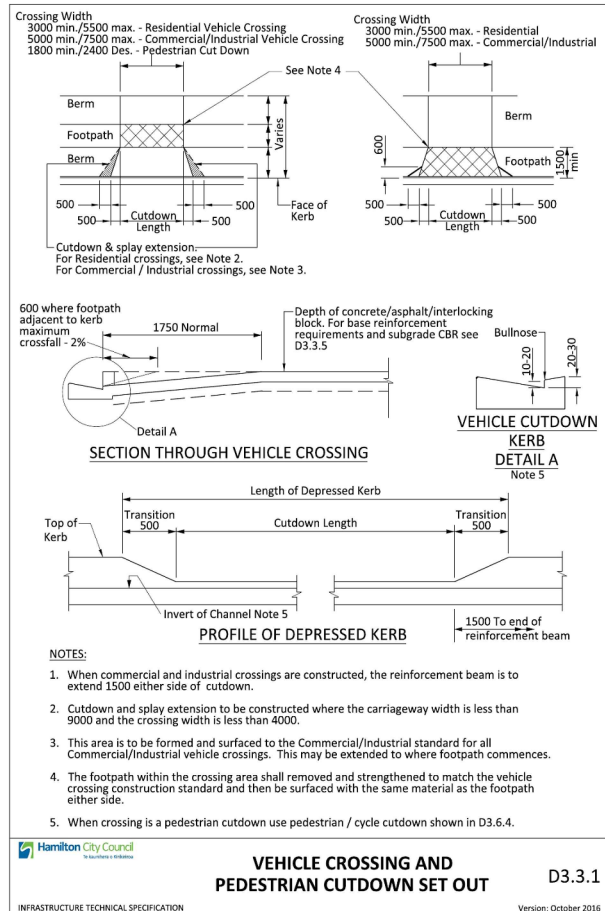
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Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED ROADING
INTERSECTION ROADMARKING PLAN
DETAIL PLAN - SHEET 2

ISSUE STATUS:	CONSENT
SCALE: (A1/A3)	1:125 / 1:250
SCALE BAR 1:250@A3	0 2.5 5 7.5 10 12.5m
DRAWING NUMBER:	2011-01-382
REV:	C3



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Page 56 of 92

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 56 of 92

Subject to notations in red

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

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PROJECT TITLE:

HUGHES DEVELOPMENTS LIMITED

99 ESCOTTS ROAD

TUAKAU

SHEET TITLE:

ROADING STANDARD DETAILS

SHEET 1

ISSUE STATUS:

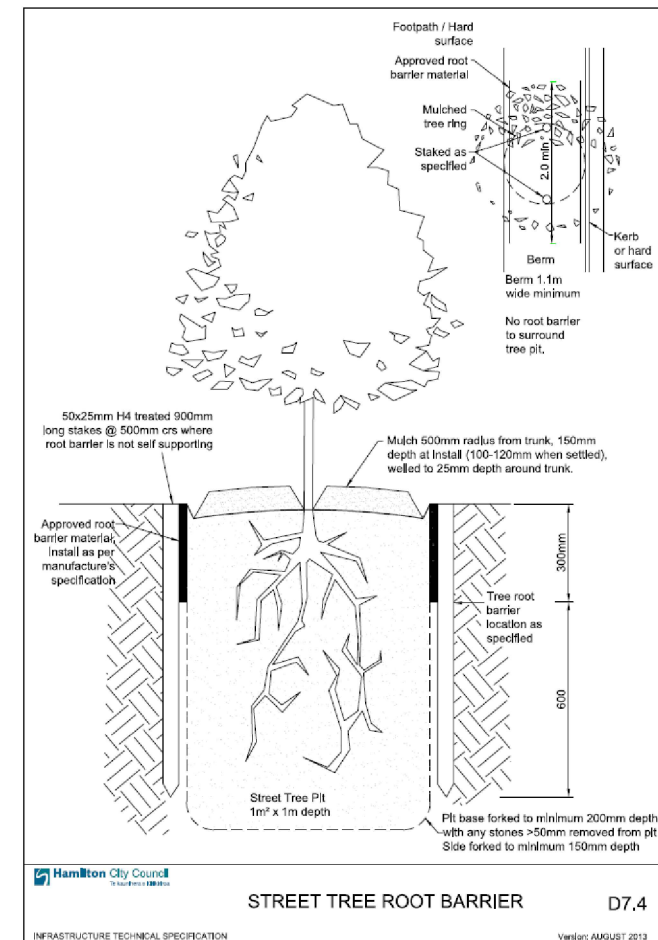
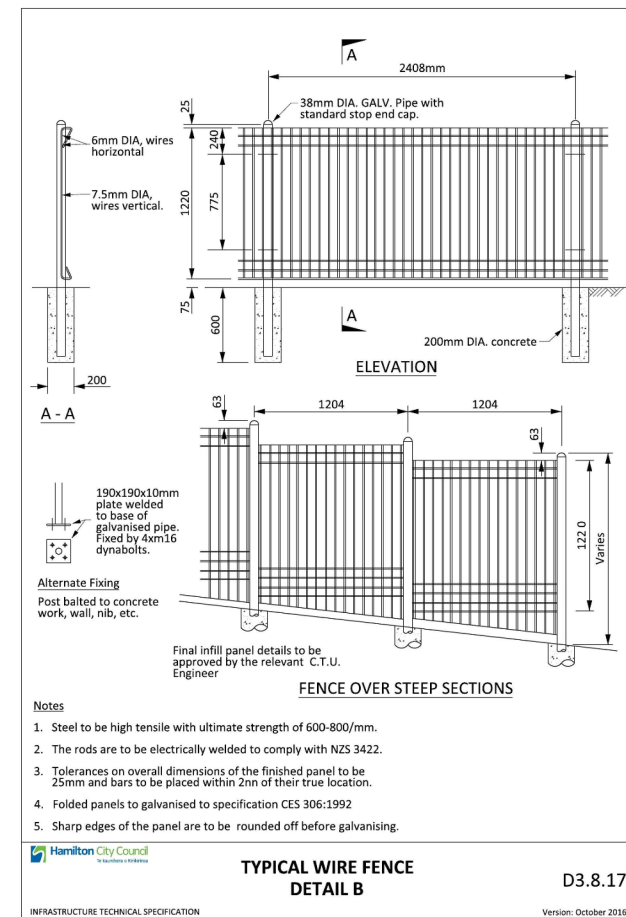
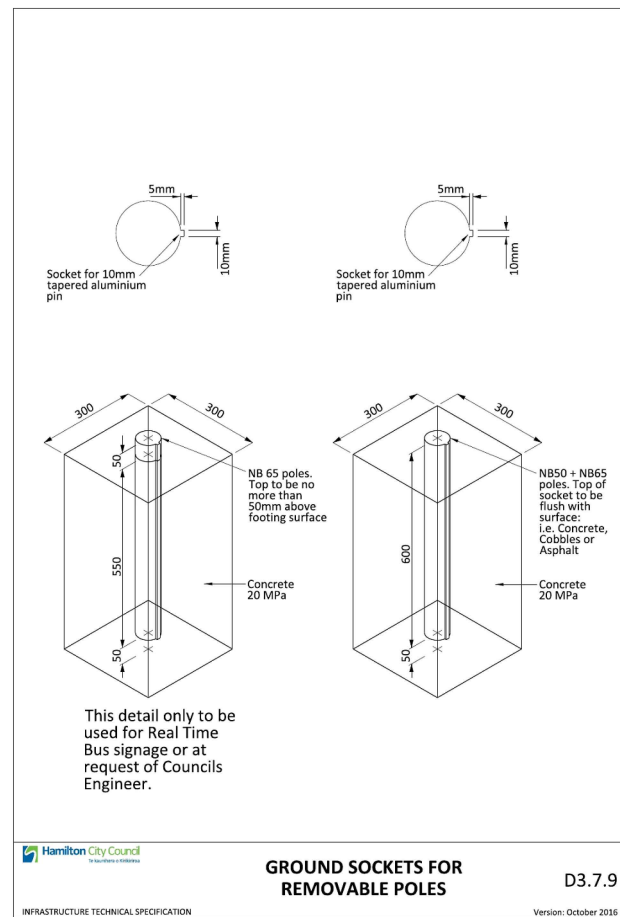
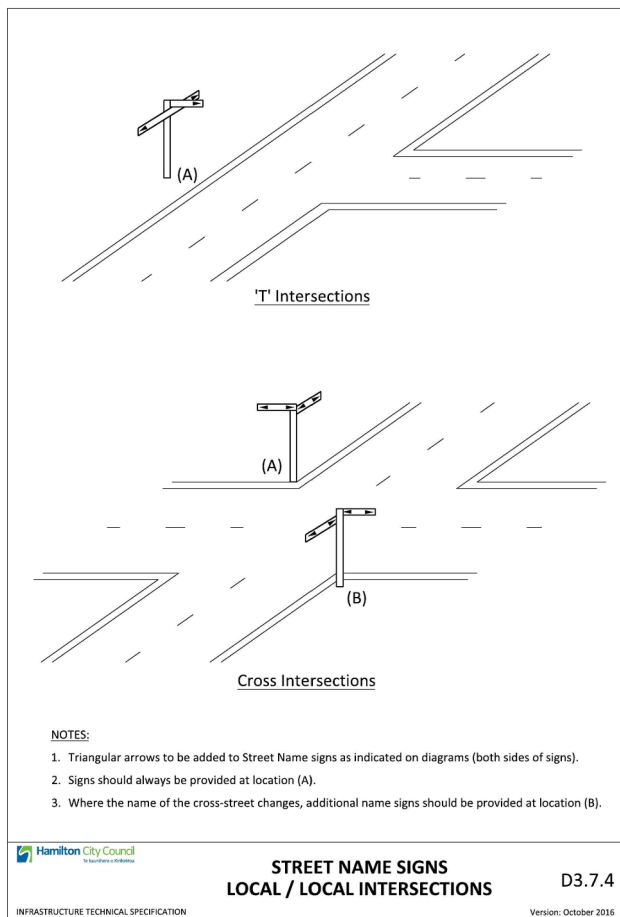
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SCALE BAR

DRAWING NUMBER: 2011-01-390

REV: C1

CONSENT



WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 57 of 92

Subject to notations in red

IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

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Page: 57 of 92

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

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PROJECT TITLE:

HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:

ROADING STANDARD DETAILS
SHEET 2

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) NOT TO SCALE

SCALE BAR
N.T.S.

DRAWING NUMBER: 2011-01-391 REV: C1

LEGEND

(CR)	PLOTTED FROM COUNCIL RECORDS
DN1350 SW	STORMWATER LINE AND MANHOLE
	WASTEWATER LINE AND MANHOLE
PROPOSED	
PERFORATED DRAIN COIL	
STORMWATER LINE AND MANHOLE	
WASTEWATER LINE AND MANHOLE	
STORMWATER CONNECTION	
WASTEWATER CONNECTION	
STORMWATER CATCHPIT	
SCRUFFY DOME INLET/OUTLET MANHOLE	
STORMWATER INLET	
STORMWATER OUTLET	
RAIN GARDEN	
DETENTION TANK	

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 58 of 92

Subject to notations in red

**IMPORTANT
INFORMATION**
48 hours notice
must be given prior
to all WDC hold
point inspections
listed in the plan
approval letter.
All work shall be
constructed in
accordance with the
Code of Practice
HCC ITS

NOTES:

- ALL WORKS AND MATERIALS ARE TO COMPLY WITH RELEVANT COUNCIL ENGINEERING STANDARDS.
- ALL WORKS ON EXISTING STORMWATER, WASTEWATER LINES AND WATERMAINS TO BE CARRIED OUT BY AN APPROVED LICENSED CONTRACTOR AT THE DEVELOPERS EXPENSE.
- CONTRACTOR TO LOCATE / MARK AND CONFIRM ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORK ON SITE AND PROTECTION OF SAME.
- CONTRACTOR TO CHECK ALL PIPE INVERTS AGAINST PIPE CLASHES BEFORE LAYING.
- ALL WASTEWATER LINES SHALL BE DN150 uPVC DWV SN16 AS/NZ 1260, UNLESS SHOWN OTHERWISE.
- ALL DN 100 & DN 150 STORMWATER LINES SHALL BE uPVC DWV SN16 AS/NZ 1260, UNLESS SHOWN OTHERWISE.
- ALL DN225 AND ABOVE STORMWATER LINES SHALL BE CLASS 2 REINFORCED CONCRETE RUBBER RING JOINTED (RCRRJ) UNLESS SHOWN OTHERWISE.
- ALL PROPOSED CONNECTIONS SHALL BE DN100, UNLESS SHOWN OTHERWISE AND ARE DIMENSIONED FROM THE CENTRE OF THE DOWNSTREAM MANHOLE.
- ALL PROPOSED CONNECTIONS SHOULD TERMINATE 1m FROM THE FINISH GRADE LEVEL.
- MAINTAIN 1m DISTANCE BETWEEN CONNECTION AND BOUNDARY.
- ALL SINGLE CATCHPIT LEADS SHALL BE DN 225 RCRRJ CLASS 4 PIPE, UNLESS SHOWN OTHERWISE.
- ALL CATCHPITS TO BE CONSTRUCTED WITH A STANDARD 675x450 CAST IRON GRATING & FRAME AS PER ITS STD DETAILS.
- PIPE LENGTH ON LONGITUDINAL SECTIONS IS LENGTH OF PIPE HORIZONTALLY BETWEEN CENTRE OF MANHOLES.
- FOR PIPE GRADES BETWEEN 10% - 20%, CEMENT STABILISED BEDDING IS REQUIRED.
- RETAINING WALL NOVACOIL DRAINAGE TO BE CONNECTED TO 300x300 CATCHPITS WITH SUMP. NOVACOIL UNDER PAVED AREAS TO BE SOLID WALL AND HARDFILL BACK FILLED.
- ALL MANHOLES SHALL BE DN1050 RC WITH MIN. 600mm OPENING, CAST IRON COVERS. HEAVY DUTY CONCRETE LIDS TO BE USED IN PAVEMENT AREAS, UNLESS SHOWN OTHERWISE.
- BEDDING TO COMPLY WITH RELEVANT COUNCIL DETAILS.
- HARDFILL BACKFILL ALL PIPE CROSSINGS BELOW CARRIAGEWAY / TRAFFIC AREAS 1.0m BEYOND LIMIT OF CARRIAGEWAY.
- HARDFILL BACKFILL 1.0m EITHER SIDE OF PIPE CROSSOVERS.
- WHERE CLEARANCE BETWEEN PIPELINE CROSSOVERS IS LESS THAN 100mm THE GAP IS TO BE POLYSTYRENE PACKED IN ADDITION TO HARDFILLING OF CROSSOVERS.
- ADJUSTMENT OF ANY INVERT LEVELS IS AT CONTRACTORS OWN RISK DUE TO TIGHT TOLERANCE AT PIPE CROSSINGS.
- ANY WORK DEEMED BY THE ENGINEER AS BEING SUBSTANDARD WORK SHALL BE RECTIFIED AT THE CONTRACTORS EXPENSE.
- REFER TO SHEETS 2011-01-461/462/463 FOR WETLAND DETAILS, AND 2011-01-465/466 FOR TANK 1 DETAILS.
- LENGTHS OF LOT CONNECTIONS ON PLAN ARE STATED IN HORIZONTAL LENGTH OF PIPE. CONTRACTOR TO ENSURE CORRECT LENGTH OF PIPE IS USED SO THAT THE CONNECTION TERMINATES WITHIN THE APPROPRIATE LOT BOUNDARY.
- WASTEWATER STREAM CROSSING TO BE CONSTRUCTED IN GENERAL ACCORDANCE WITH BIRCH SURVEYORS DRAWINGS 3942 SHEET 42 AND 43, AND IN ACCORDANCE WITH WRC STREAM CROSSING CONSENT No. AUTH137652.01.01. REFER TO CIVILPLAN DRAWING 2011-01-457 FOR LONG SECTION AND MATERIALS.
- STORMWATER DISCHARGE IS IN ACCORDANCE WITH WRC CONSENT No. AUTH 135580.02.01.
- ALL MANHOLES AND SERVICE CHAMBERS/BOXES LOCATED IN CONCRETE FOOTPATHS AND VEHICLE CROSSINGS TO HAVE 8x12 TRIMMER BARS LAID IN CONCRETE AROUND OPENING TO PREVENT UNCONTROLLED CRACKING.

CIVILPLAN
CONSULTANTS

Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:

HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:

DRAINAGE RETICULATION PLAN
OVERALL LAYOUT

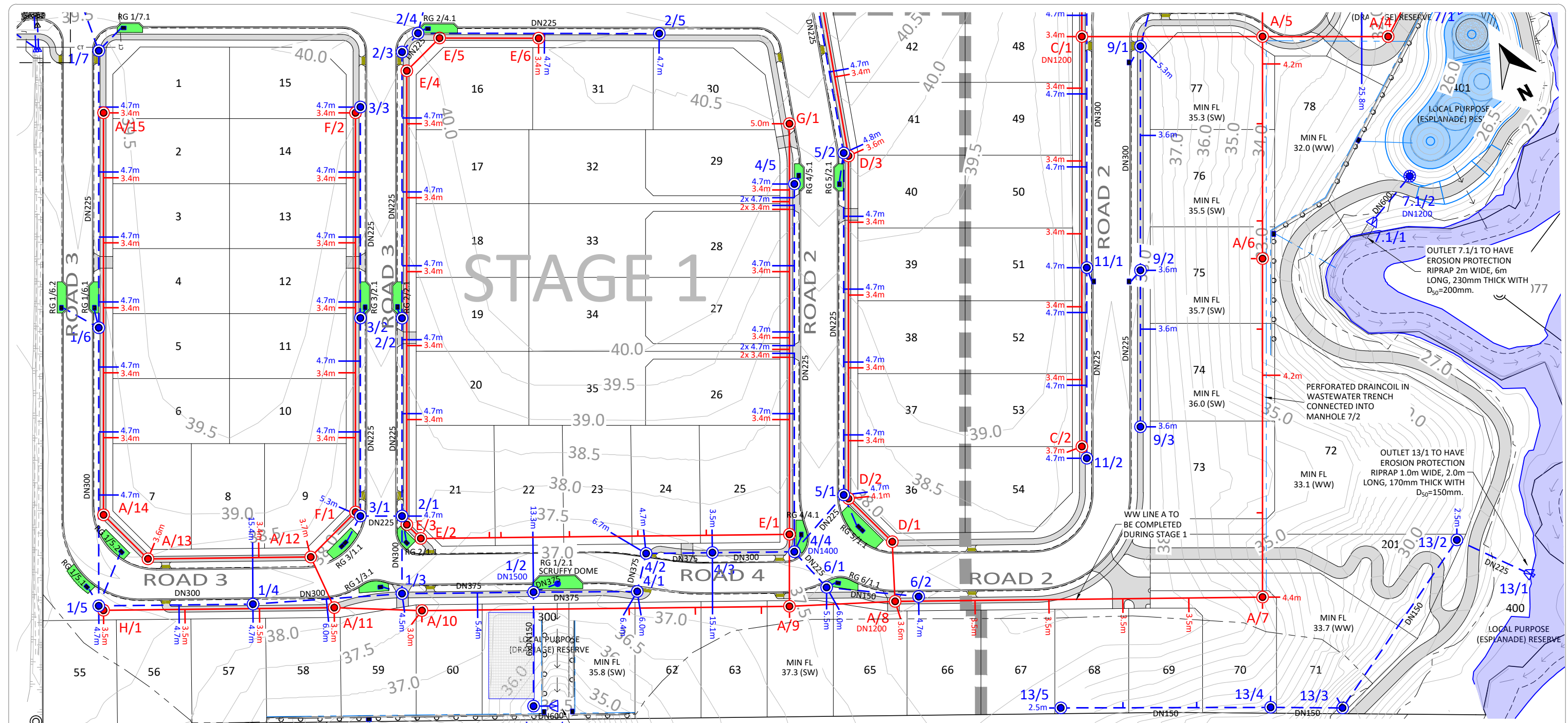
ISSUE STATUS:

SCALE: (A1/A3) 1:750 / 1:1500
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DRAWING NUMBER: 2011-01-400 REV: C3

C3	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RIP	22.05.18
C2	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RIP	10.05.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RIP	29.03.18
APPROVED:	DATE:
RIP	03.2018

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NOTES:
REFER TO DWG 2011-01-400 FOR GENERAL NOTES.

LEGEND

EXISTING

- (CR) PLOTTED FROM COUNCIL RECORDS
- DN1350 SW STORMWATER LINE AND MANHOLE
- DN1350 WW WASTEWATER LINE AND MANHOLE

PROPOSED

- DN300 PERFORATED DRAIN COIL
- DN300 STORMWATER LINE AND MANHOLE
- DN1200 WASTEWATER LINE AND MANHOLE
- X.Xm STORMWATER CONNECTION
- X.Xm WASTEWATER CONNECTION
- STORMWATER CATCHPIT
- SCRUFFY DOME INLET/OUTLET MANHOLE
- STORMWATER INLET
- STORMWATER OUTLET
- RAIN GARDEN

IMPORTANT INFORMATION
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Page: 59 of 92

WAIKATO DISTRICT COUNCIL


Approved Engineering Plan for Subdivision SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 59 of 92

Subject to notations in red

Printed by: RYAN@22.05.18 // Filepath: S:\JOBS\2011-01-400\DWG



PERFORATED DRAIN COIL
 DN300
 STORMWATER LINE AND MANHOLE
 WASTEWATER LINE AND MANHOLE
 STORMWATER CONNECTION
 WASTEWATER CONNECTION
 STORMWATER CATCHPIT
 SCRUFFY DOME INLET/OUTLET MANHOLE
 STORMWATER INLET
 STORMWATER OUTLET
 RAIN GARDEN

ISSUE STATUS:	CONSENT	
SCALE: (A1/A3)	1:500 / 1:1000	
SCALE BAR 1:1000@A3		
DRAWING NUMBER:	2011-01-402	REV: C2

CONSENT

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 61 of 92

Subject to notations in red

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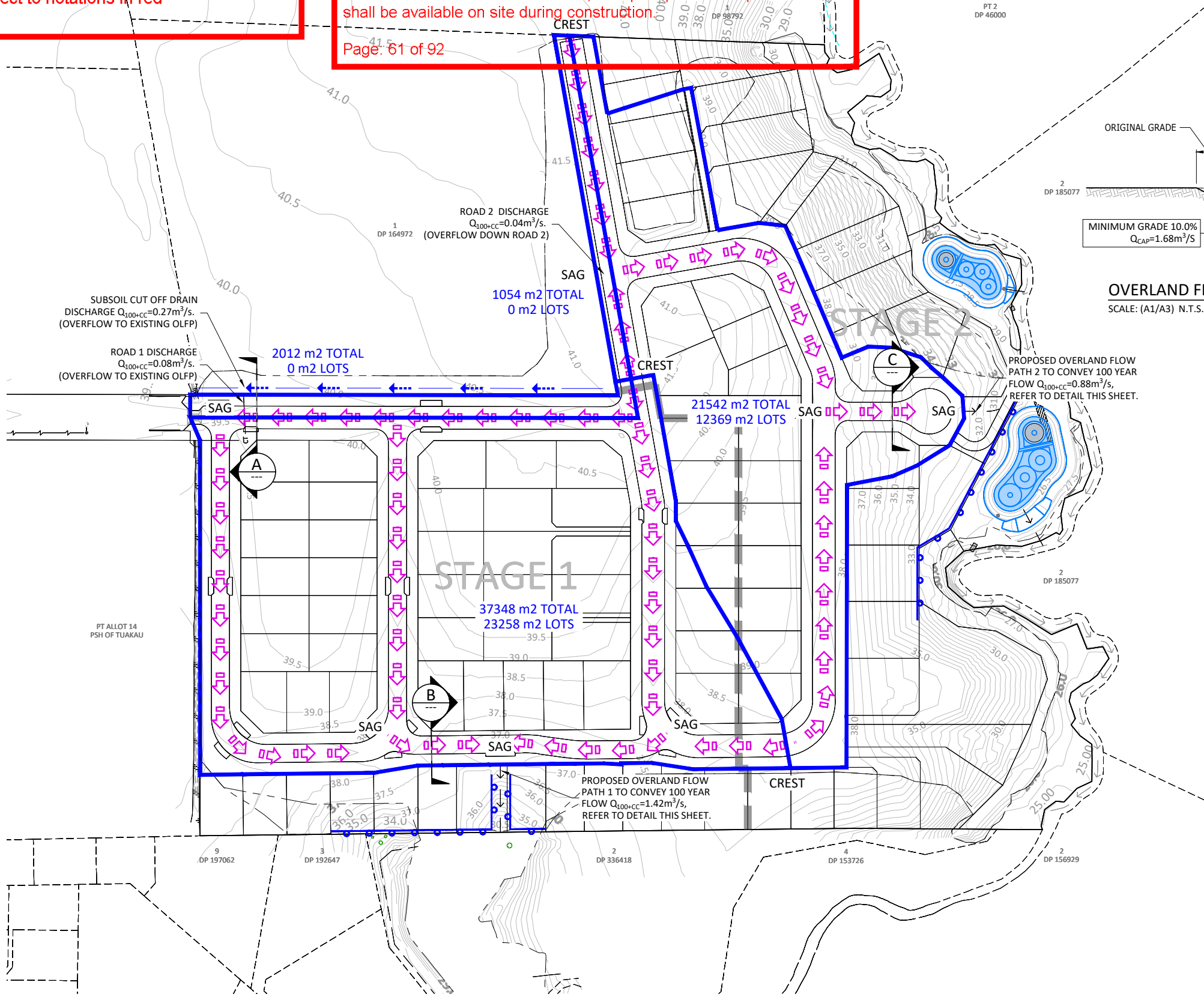
Page: 61 of 92

LEGEND

CATCHMENT BOUNDARY
1% AEP+CC OVERLAND FLOWPATH

NOTES:

- REFER TO ENGINEERING CALCULATIONS AND HYDRAULIC MODELLING RESULTS FOR DETAILS OF OVERLAND FLOWPATH WITHIN ROAD RESERVE WIDTH.
- CONTOURS ARE 0.5m INTERVAL.
- PONDING / FLOW DEPTH IS NO GREATER THAN 200mm AND ALL FLOW DEPTH IS HELD WITHIN THE ROAD RESERVE.



OVERLAND FLOW PATH 1

SCALE: (A1/A3) N.T.S.

OVERLAND FLOW PATH 2

SCALE: (A1/A3) N.T.S.

A ROAD 1 OVERLAND FLOW

SCALE: (A1/A3) 1:100H 1:50v / 1:200H 1:100V

B ROAD 4 OVERLAND FLOW

SCALE: (A1/A3) 1:100H 1:50v / 1:200H 1:100V

C ROAD 5 OVERLAND FLOW

SCALE: (A1/A3) 1:100H 1:50v / 1:200H 1:100V

Printed by: RYAN@10.05.18 // Filepath: S:\005\2011 - HUGHES DEVELOPMENTS TUAKAU\CAD\2011-01-420.DWG

REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN: GDS	DATE: 09.2017
CHECKED: RJP	DATE: 29.03.18
APPROVED: RJP	DATE: 03.2018

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CIVILPLAN
CONSULTANTS

Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED DRAINAGE
OVERLAND FLOWPATH PLAN

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:1000 / 1:2000
SCALE BAR: 0 20 40 60 80 100m
DRAWING NUMBER: 2011-01-420
REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 62 of 92

Subject to notations in red

IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

All work shall be constructed in accordance with the Code of Practice HCC ITS

Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

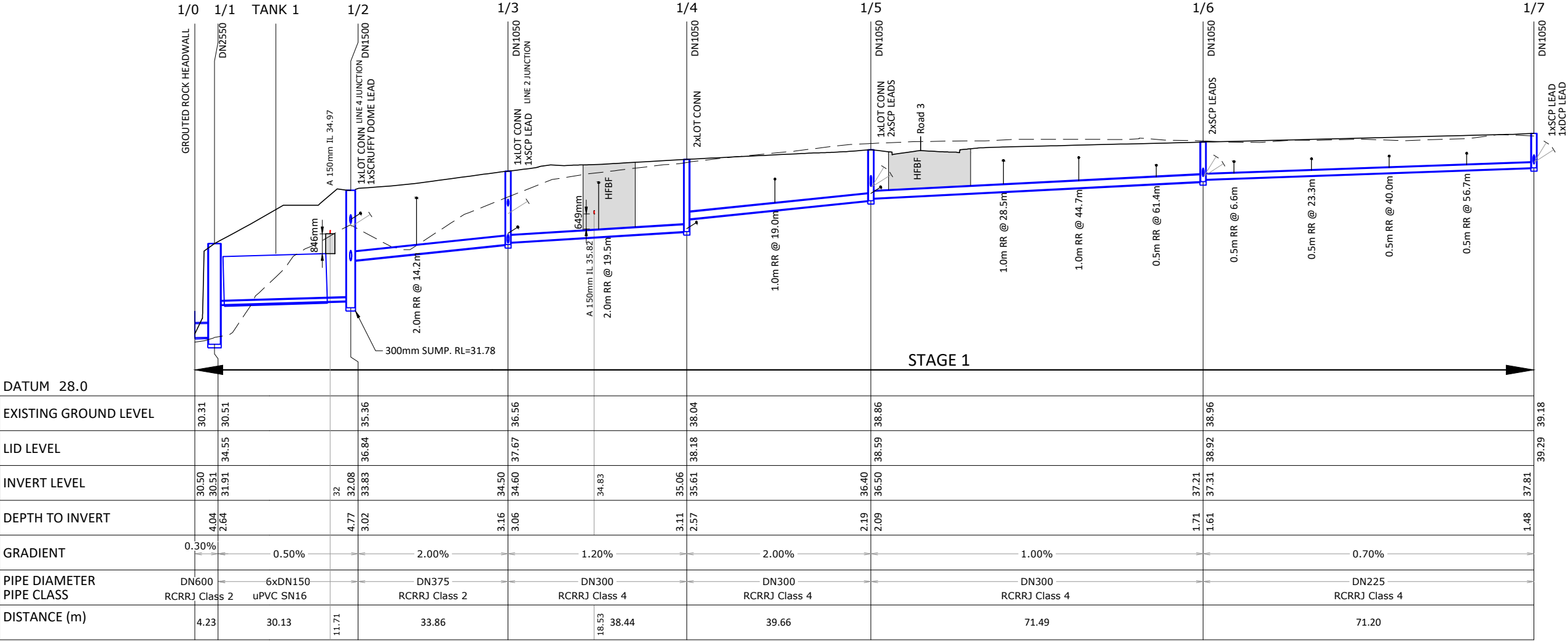
Page: 62 of 92

NOTES

1. REFER TO SHEET 2011-01-400 FOR GENERAL NOTES.
2. LOT CONNECTIONS TO TERMINATE 1m FROM PROPOSED GROUND LINE
3. LENGTHS OF RAMP RISERS ARE STATED IN VERTICAL LENGTH OF PIPE. CONTRACTOR TO ENSURE CORRECT LENGTH OF PIPE IS USED SO THAT THE CONNECTION TERMINATES WITHIN THE APPROPRIATE LOT BOUNDARY.
4. CONTRACTOR TO ENSURE THAT ALL STORMWATER LOT CONNECTIONS WILL NOT CLASH WITH THE ADJACENT PROPOSED WASTEWATER LINE. THIS MAY MEAN LAYING CONNECTIONS AT AN ANGLE TO OTHER THAN 45 DEGREES TO AVOID CLASHES.

LEGEND

- EXISTING GROUND LINE
- PROPOSED GROUND LINE
- PROPOSED HARDFILL BACKFILL
- PROPOSED LOT CONNECTIONS
- PROPOSED CATCHPIT OR RAIN GARDEN CONNECTION
- CASCADE DROP



LINE 1

Printed by: RYAN@22.05.18 // Filepath: S:\V\0311-18 - HUGHES DEVELOPMENTS\TUAKAU\CAD\SUPERSEDED\20180522.1615_2011-01-430.DWG

C3	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RJP	22.05.18
C2	ISSUED FOR RESOURCE CONSENT	GDS	27.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED DRAINAGE
STORMWATER LONGITUDINAL SECTIONS
SHEET 1

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:500H 1:100V / 1:1000H 1:200V
SCALE BAR
N.T.S.
DRAWING NUMBER: 2011-01-430
REV: C3

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 63 of 92

Subject to notations in red

IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

All work shall be constructed in accordance with the Code of Practice HCC ITS

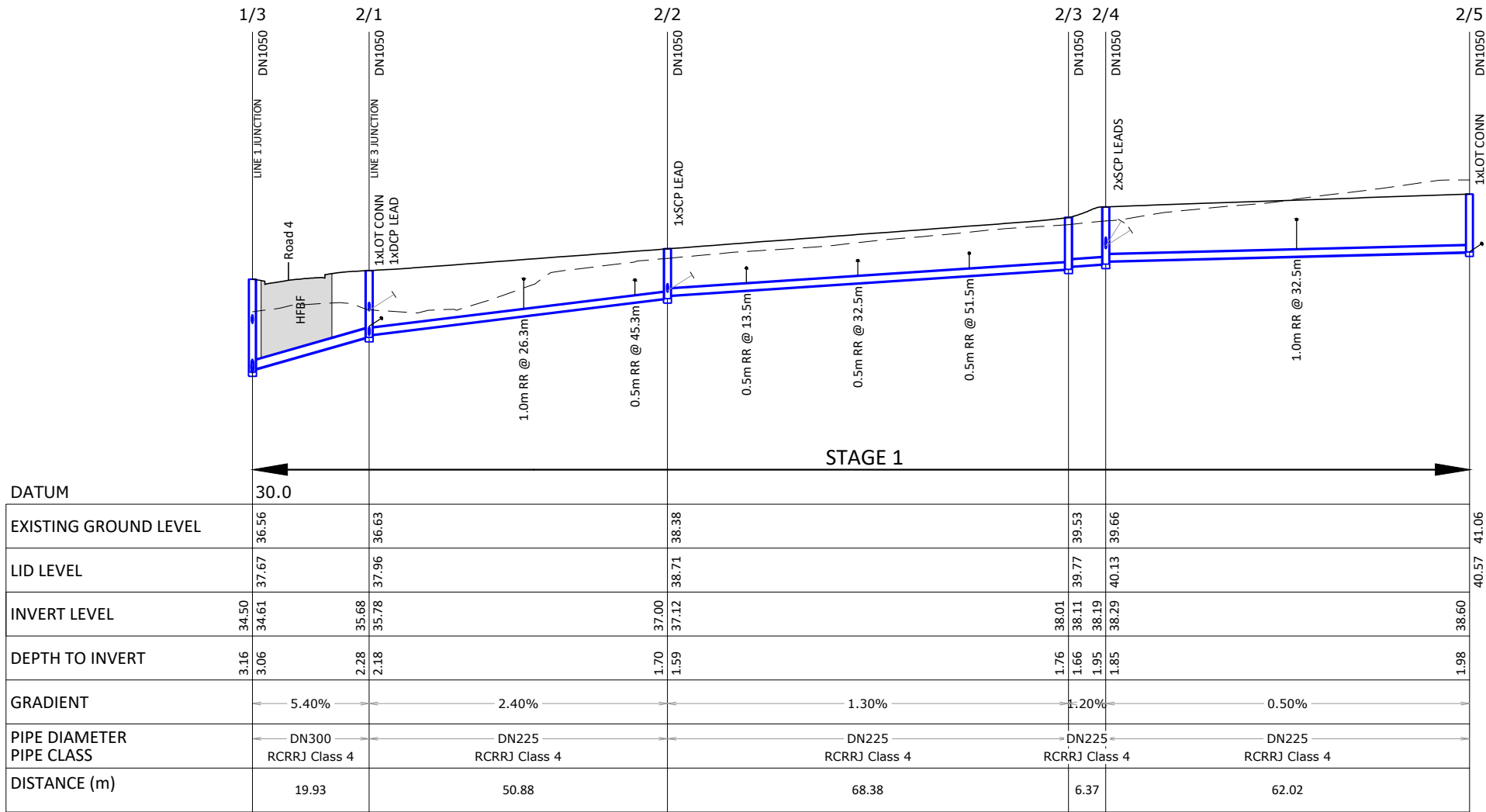
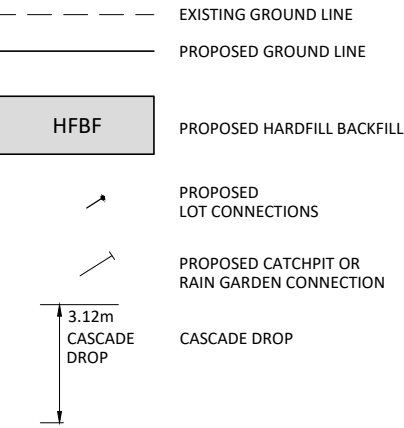
Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 63 of 92

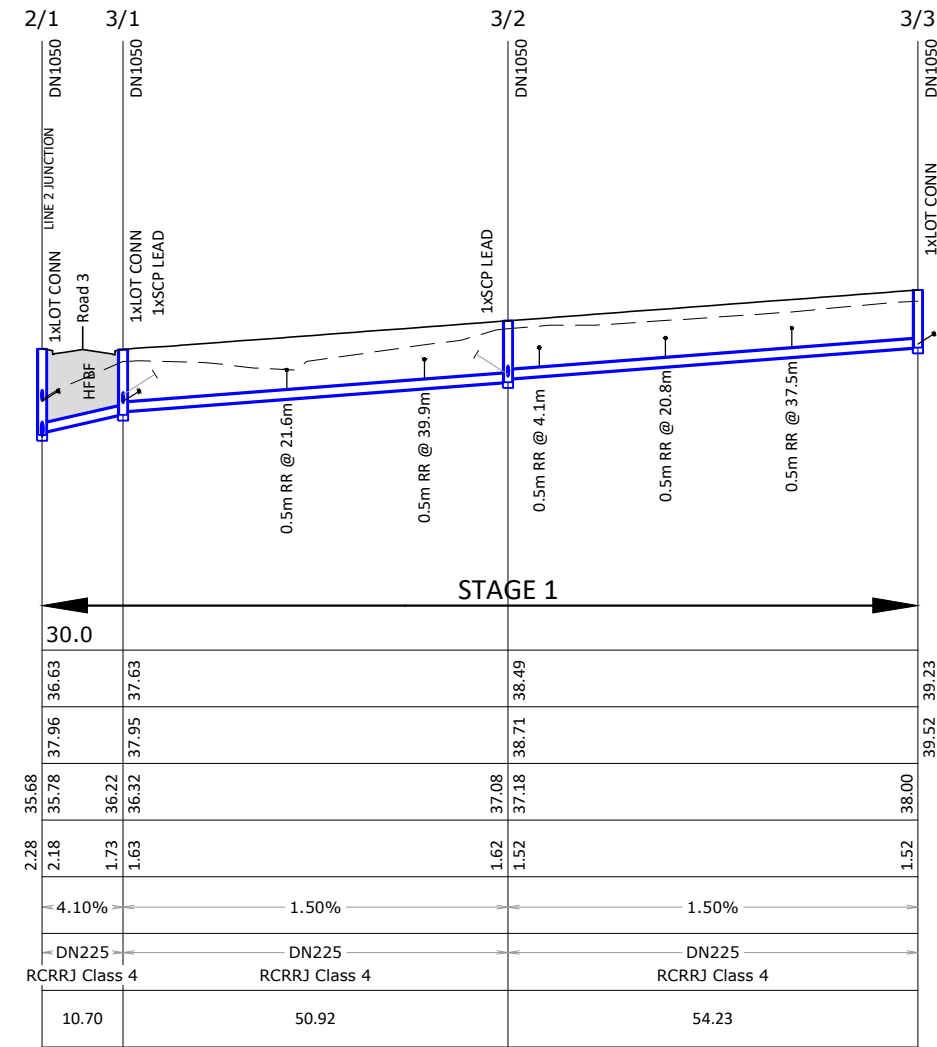
NOTES

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LEGEND



LINE 2



LINE 3

Printed by: RYAN@10.05.18 // Filepath: S:\V\0311-18 - HUGHES DEVELOPMENTS TUAKAU\CA\2011-01-430.DWG

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED DRAINAGE
STORMWATER LONGITUDINAL SECTIONS
SHEET 2

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:500H 1:100V / 1:1000H 1:200V
SCALE BAR
N.T.S.
DRAWING NUMBER: 2011-01-431
REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 64 of 92

Subject to notations in red

IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

All work shall be constructed in accordance with the Code of Practice HCC ITS

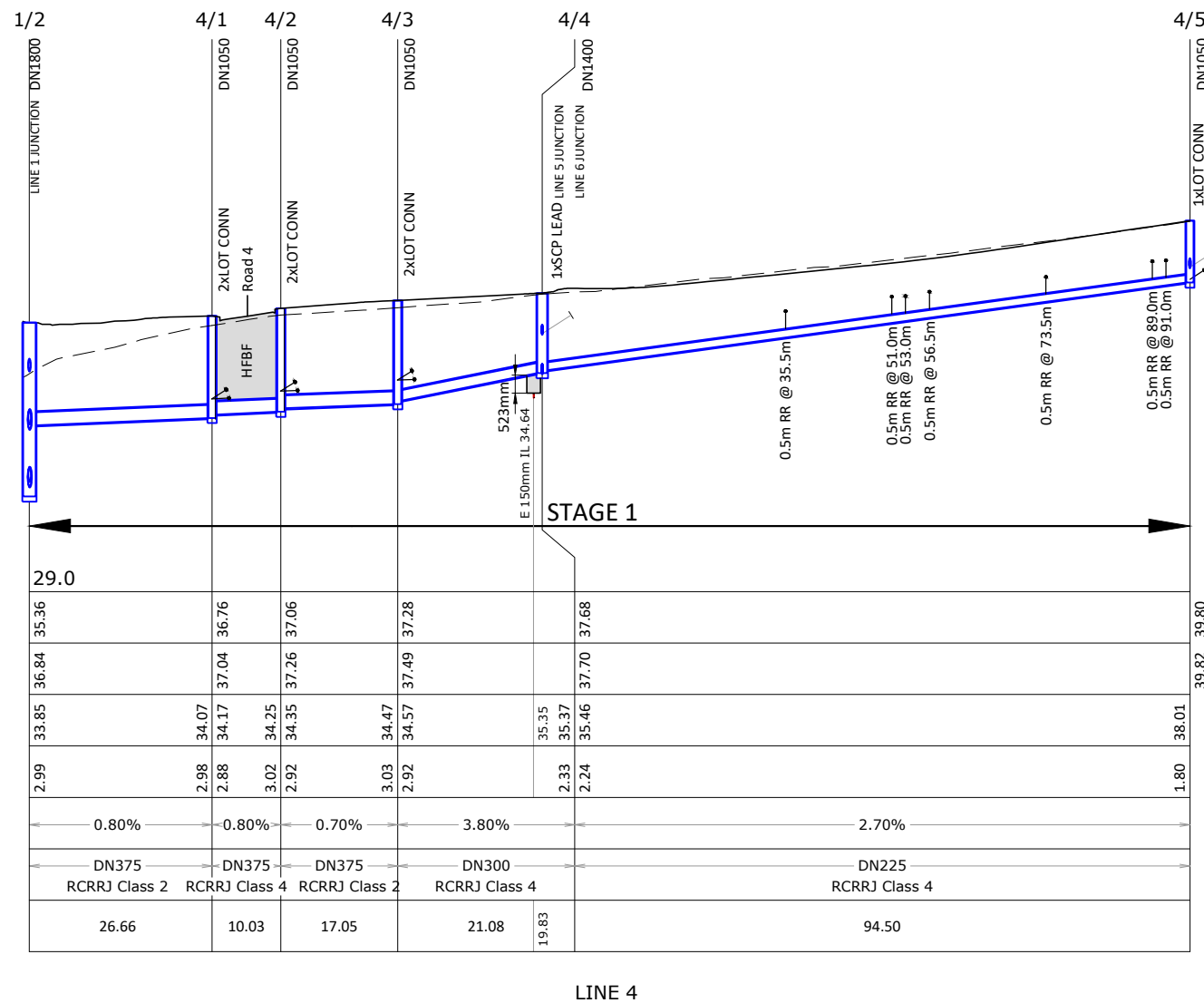
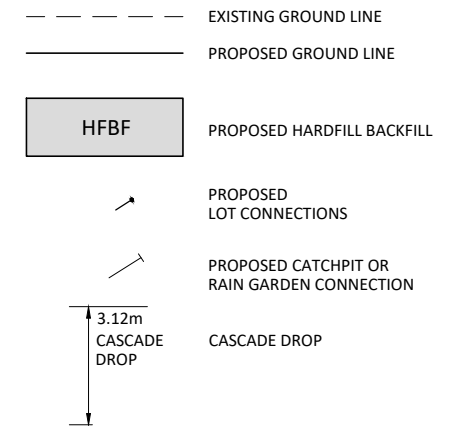
Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 64 of 92

NOTES

1. REFER TO SHEET 2011-01-400 FOR GENERAL NOTES.
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LEGEND



Printed by: RYAN@10.05.18 // Filepath: S:\V\08\2011 - HUGHES DEVELOPMENTS TUAKAU\CAD\2011-01-430.DWG

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED DRAINAGE
STORMWATER LONGITUDINAL SECTIONS
SHEET 3

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) 1:500H 1:100V / 1:1000H 1:200V

SCALE BAR
N.T.S.

DRAWING NUMBER: 2011-01-432 REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 65 of 92

Subject to notations in red

IMPORTANT INFORMATION

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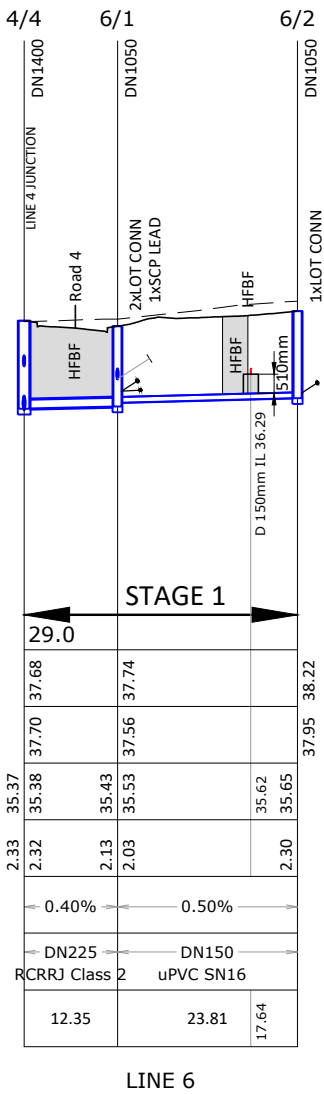
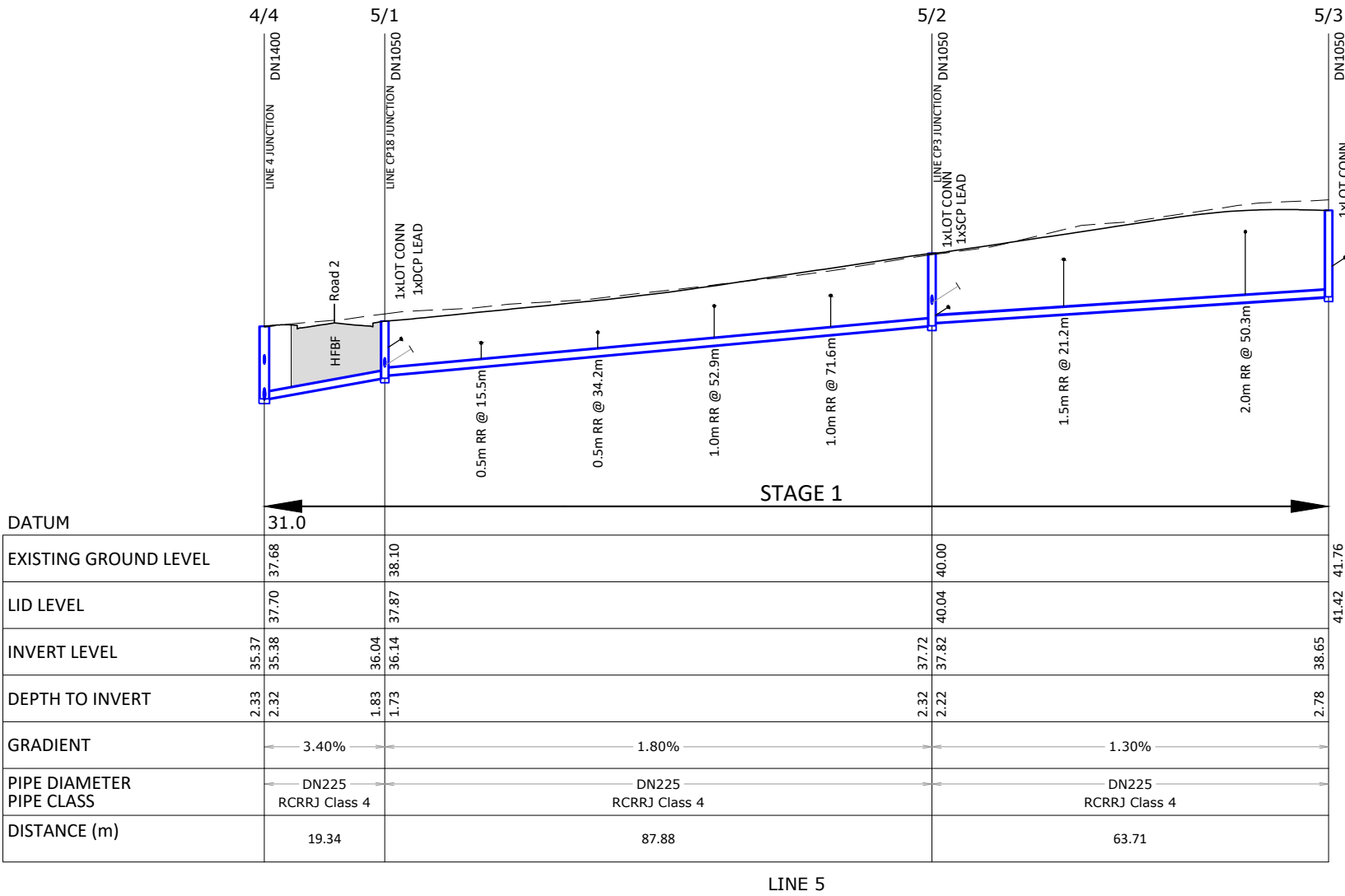
Page: 65 of 92

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LEGEND

- EXISTING GROUND LINE
- PROPOSED GROUND LINE
- PROPOSED HARDFILL BACKFILL
- PROPOSED LOT CONNECTIONS
- PROPOSED CATCHPIT OR RAIN GARDEN CONNECTION
- CASCADE DROP



REV	REVISION DETAILS	BY	DATE
C2	ISSUED FOR RESOURCE CONSENT	GDS	27.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

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WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 66 of 92

Subject to notations in red

IMPORTANT INFORMATION

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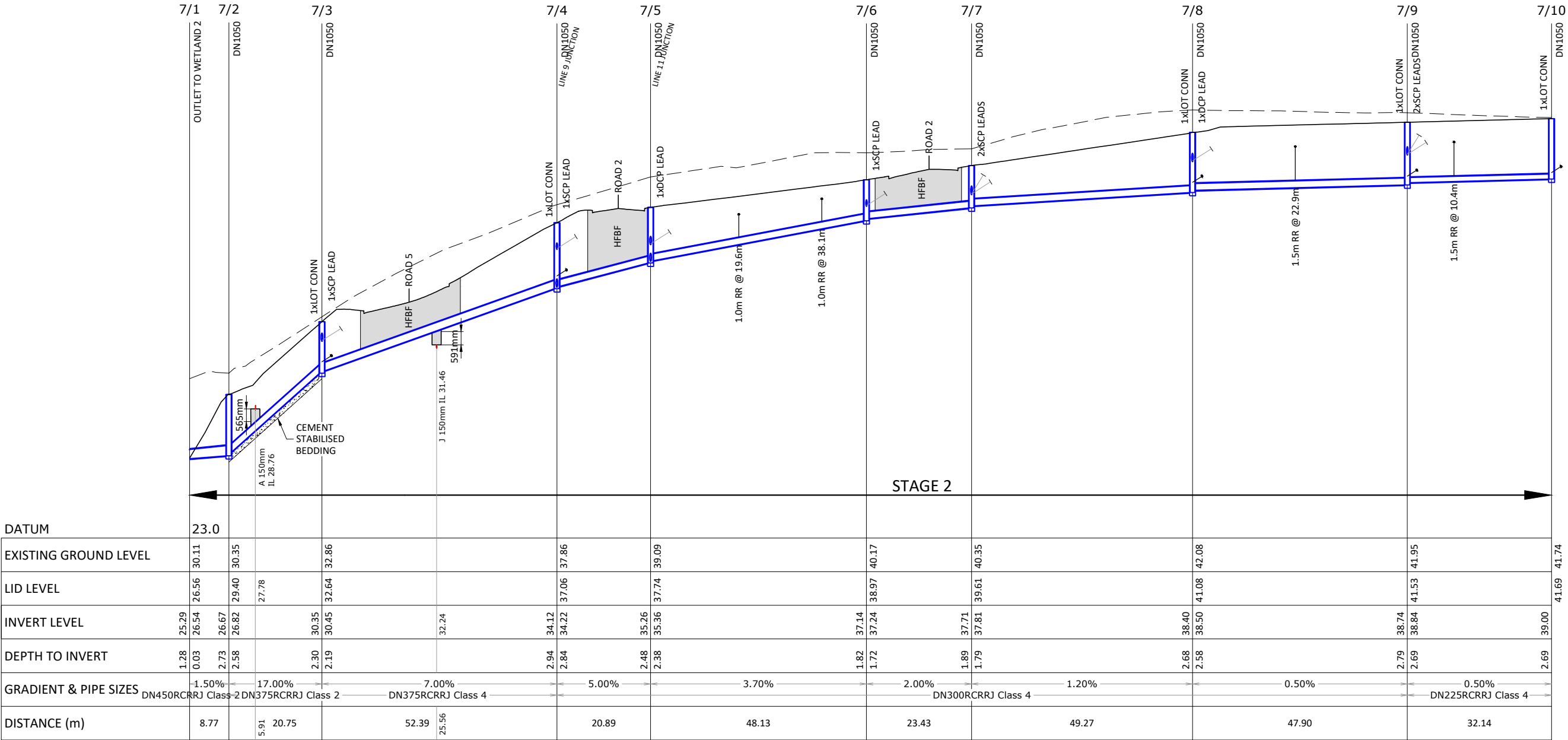
Page: 66 of 92

NOTES

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LEGEND

- EXISTING GROUND LINE
- PROPOSED GROUND LINE
- HFBF PROPOSED HARDFILL BACKFILL
- PROPOSED LOT CONNECTIONS
- PROPOSED CATCHPIT OR RAIN GARDEN CONNECTION
- CASCADE DROP



LINE 7

Printed by: RYAN@10.05.18 // Filepath: S:\JOBS\2011 - HUGHES DEVELOPMENTS TUAKAU\CAD\2011-01-430.DWG

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN: GDS	DATE: 09.2017
CHECKED: RJP	DATE: 29.03.18
APPROVED: RJP	DATE: 03.2018
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CIVILPLAN
CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED DRAINAGE
STORMWATER LONGITUDINAL SECTIONS
SHEET 5

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:500H 1:100V / 1:1000H 1:200V
SCALE BAR
DRAWING NUMBER: 2011-01-434
REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 67 of 92

Subject to notations in red

IMPORTANT INFORMATION

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Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

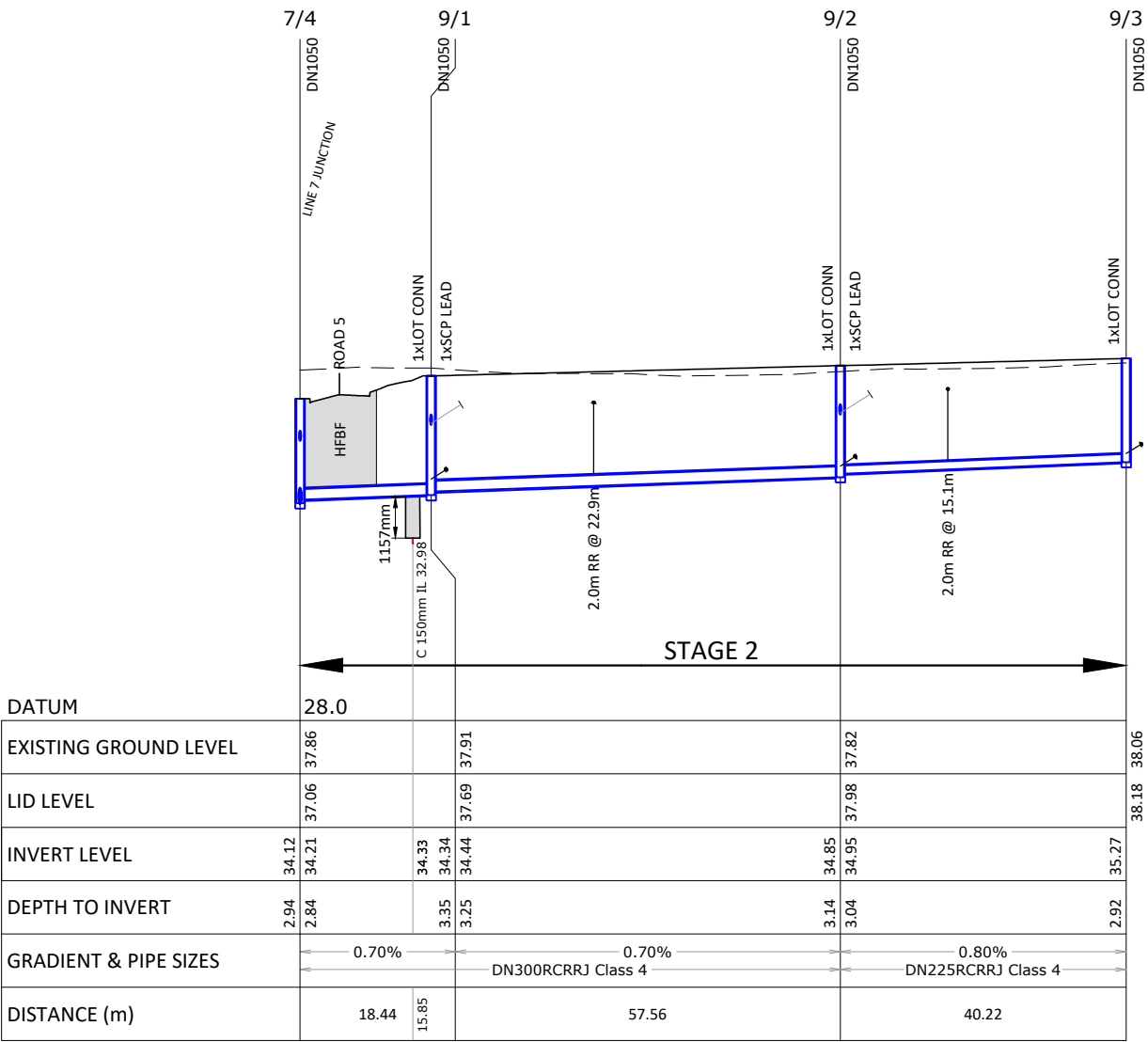
Page: 67 of 92

NOTES

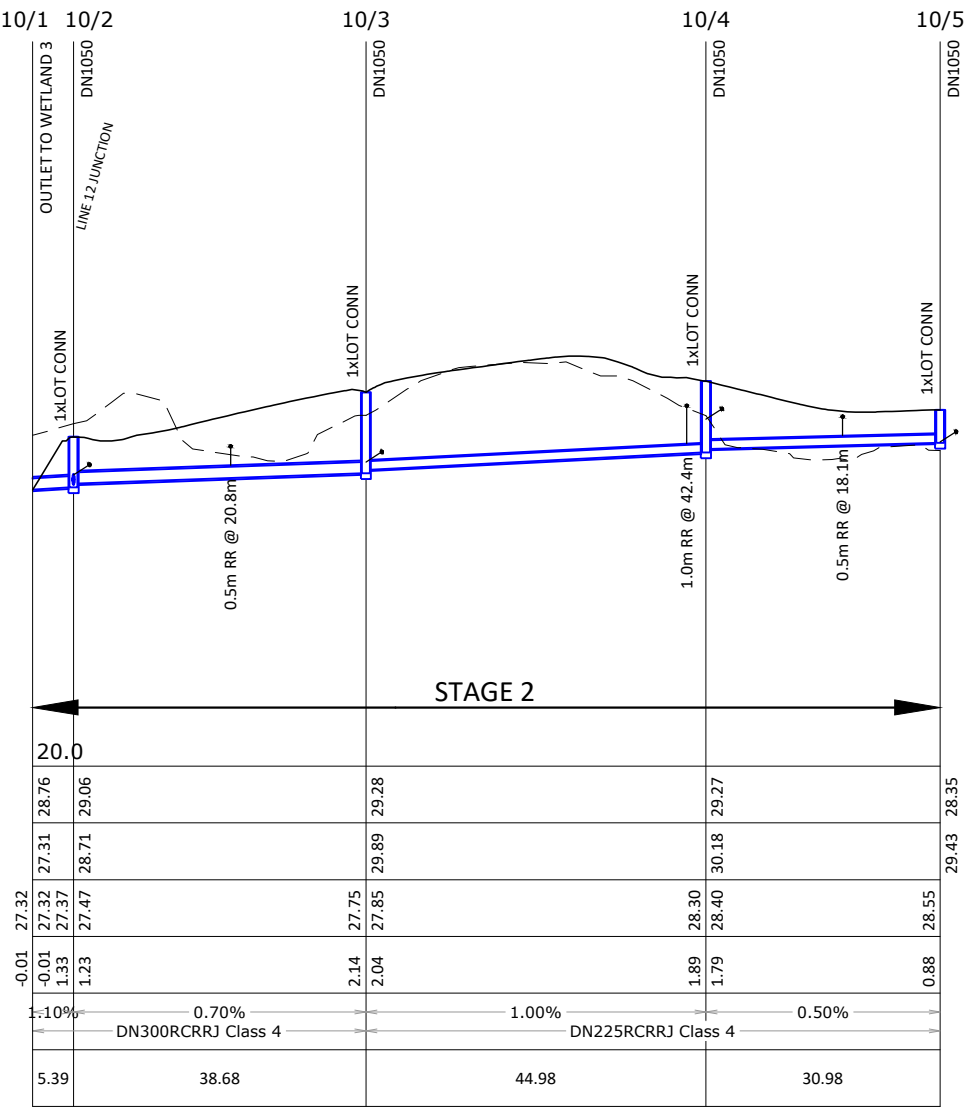
1. REFER TO SHEET 2011-01-400 FOR GENERAL NOTES.
2. LOT CONNECTIONS TO TERMINATE 1m FROM PROPOSED GROUND LINE
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LEGEND

- EXISTING GROUND LINE
- PROPOSED GROUND LINE
- HFBF PROPOSED HARDFILL BACKFILL
- PROPOSED LOT CONNECTIONS
- PROPOSED CATCHPIT OR RAIN GARDEN CONNECTION
- CASCADE DROP



LINE 9



LINE 10

Printed by: RYAN@10.05.18 // Filepath: S:\V\0311-18 - HUGHES DEVELOPMENTS\TUAKAU\CA\2011-01-430.DWG

REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
BY	DATE		

DRAWN: GDS	DATE: 09.2017
CHECKED: RJP	DATE: 29.03.18
APPROVED: RJP	DATE: 03.2018

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CIVILPLAN
CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED DRAINAGE
STORMWATER LONGITUDINAL SECTIONS
SHEET 6

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:500H 1:100V / 1:1000H 1:200V
SCALE BAR
N.T.S.
DRAWING NUMBER: 2011-01-435
REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 68 of 92

Subject to notations in red

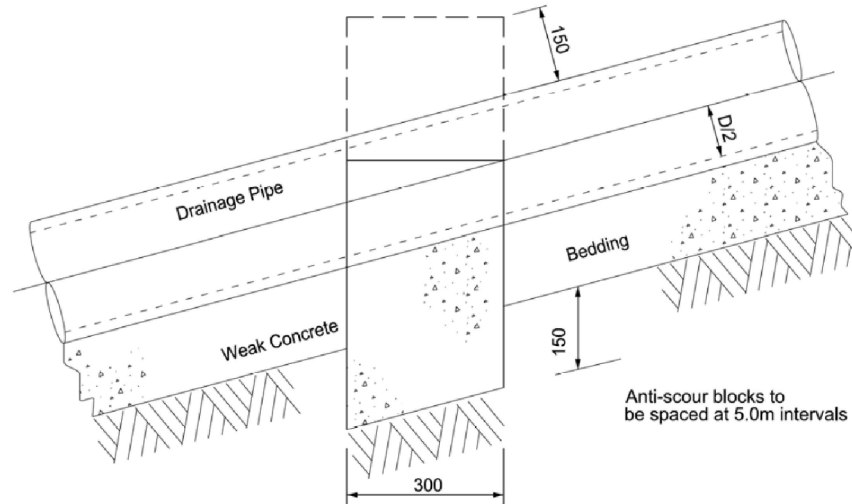
IMPORTANT
INFORMATION

48 hours notice must be
given prior to all WDC
hold point inspections
listed in the plan approval
letter.

All work shall be
constructed in accordance
with the Code of Practice
HCC ITS

Additional approvals from
Waikato District Council
are required prior to
undertaking works within
road reserve or
connecting to live mains.
Waikato District Council
conditions, accepted
plans and specifications
shall be available on site
during construction.

Page: 68 of 92



ANCHOR BLOCK DETAILS

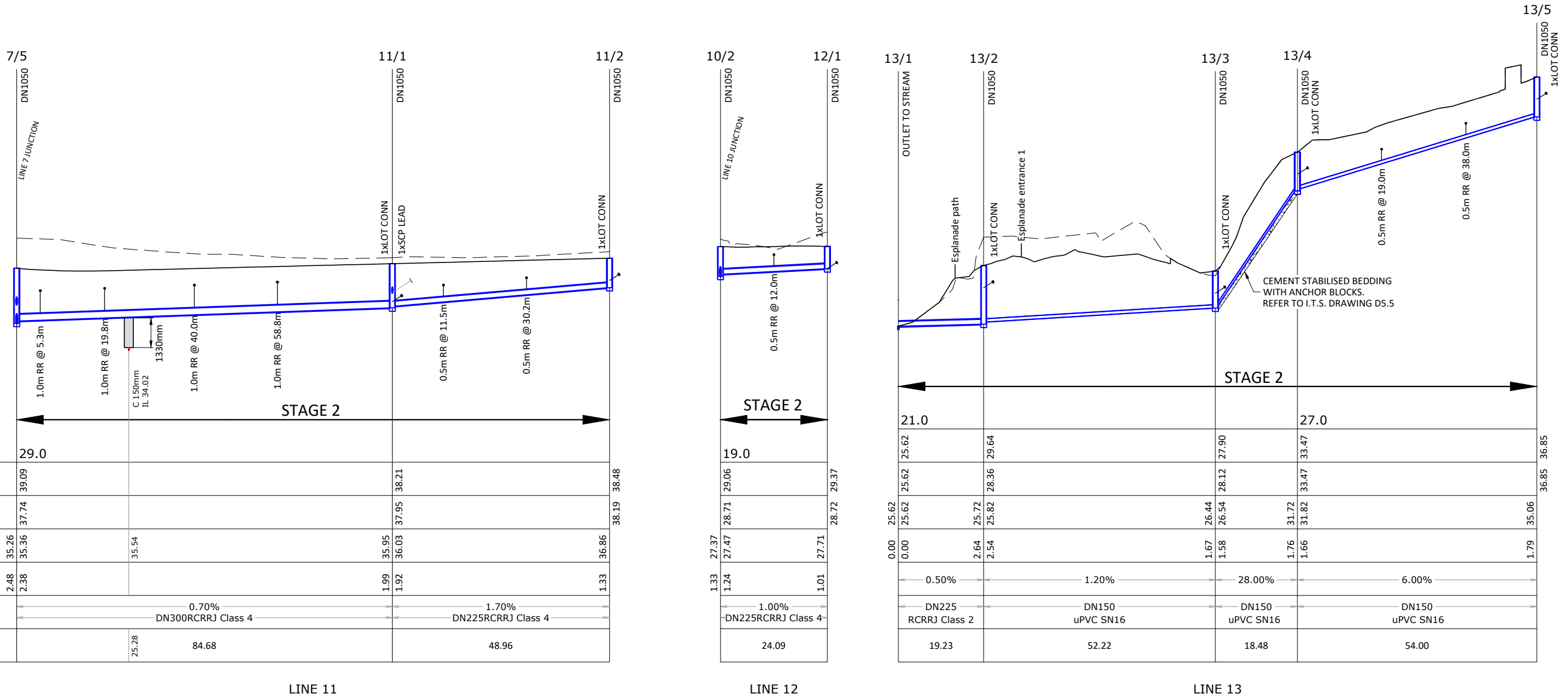
SCALE: (A1/A3) N.T.S.

NOTES

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LEGEND

- EXISTING GROUND LINE
- PROPOSED GROUND LINE
- HFBF PROPOSED HARDFILL BACKFILL
- PROPOSED LOT CONNECTIONS
- PROPOSED CATCHPIT OR RAIN GARDEN CONNECTION
- 3.12m CASCADE DROP
- CASCADE DROP



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C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

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CIVILPLAN
CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED DRAINAGE
STORMWATER LONGITUDINAL SECTIONS
SHEET 7

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:500H 1:100V / 1:1000H 1:200V
SCALE BAR
N.T.S.
DRAWING NUMBER: 2011-01-436
REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 69 of 92

Subject to notations in red

IMPORTANT INFORMATION

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All work shall be constructed in accordance with the Code of Practice HCC ITS

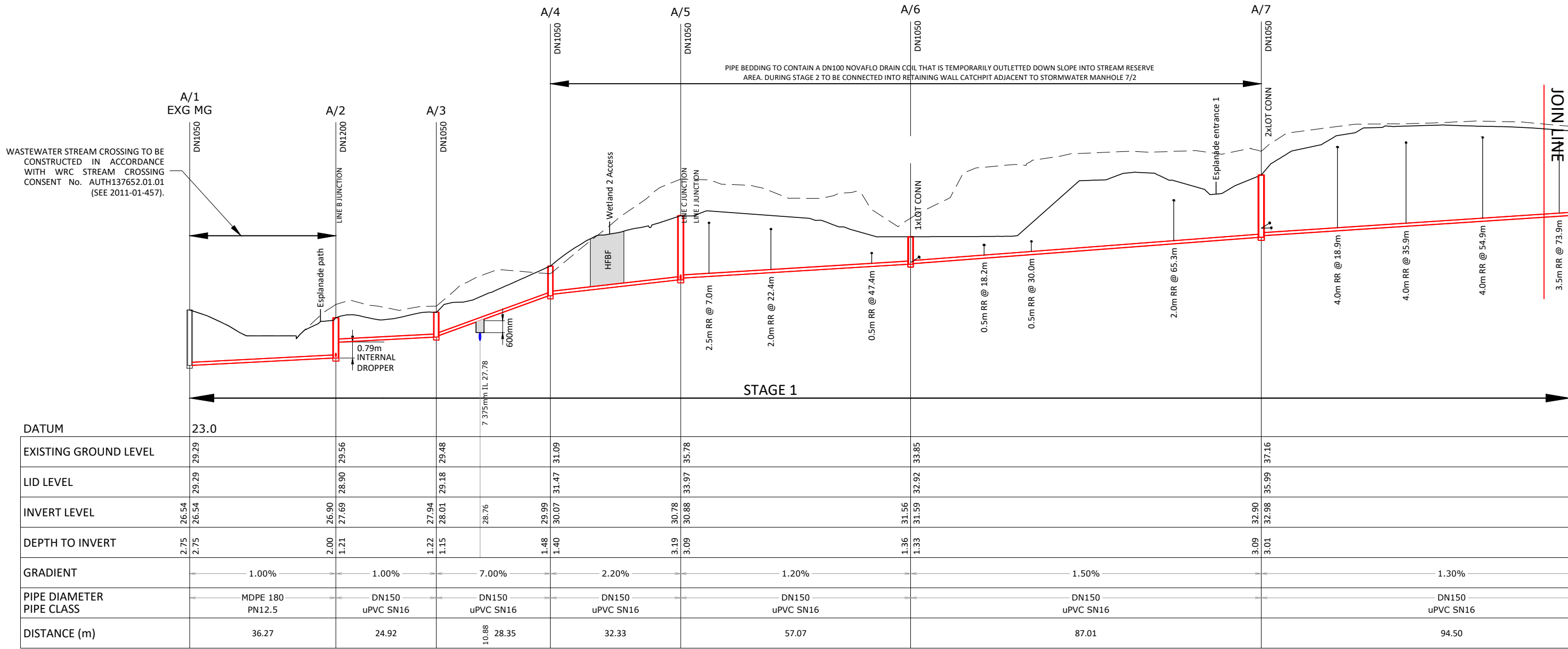
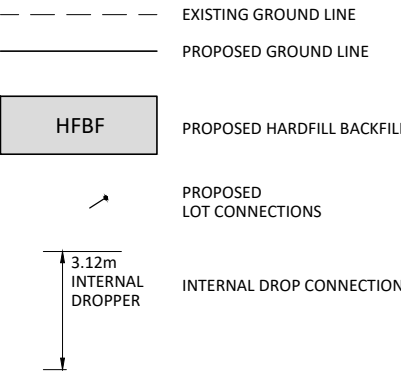
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Page: 69 of 92

NOTES

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LEGEND



Printed by: RYAN@10.05.18 // Filepath: S:\V\0311-18 - HUGHES DEVELOPMENTS TUAKAU\CA\2011-01-450.DWG

REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
BY	DATE		

DRAWN: MRR	DATE: 11.2017
CHECKED: RIP	DATE: 29.03.18
APPROVED: RIP	DATE: 03.2018

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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED DRAINAGE
WASTEWATER LONGITUDINAL SECTIONS
SHEET 1

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:500H 1:100V / 1:1000H 1:200V
SCALE BAR
N.T.S.
DRAWING NUMBER: 2011-01-450
REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 70 of 92

Subject to notations in red

IMPORTANT INFORMATION

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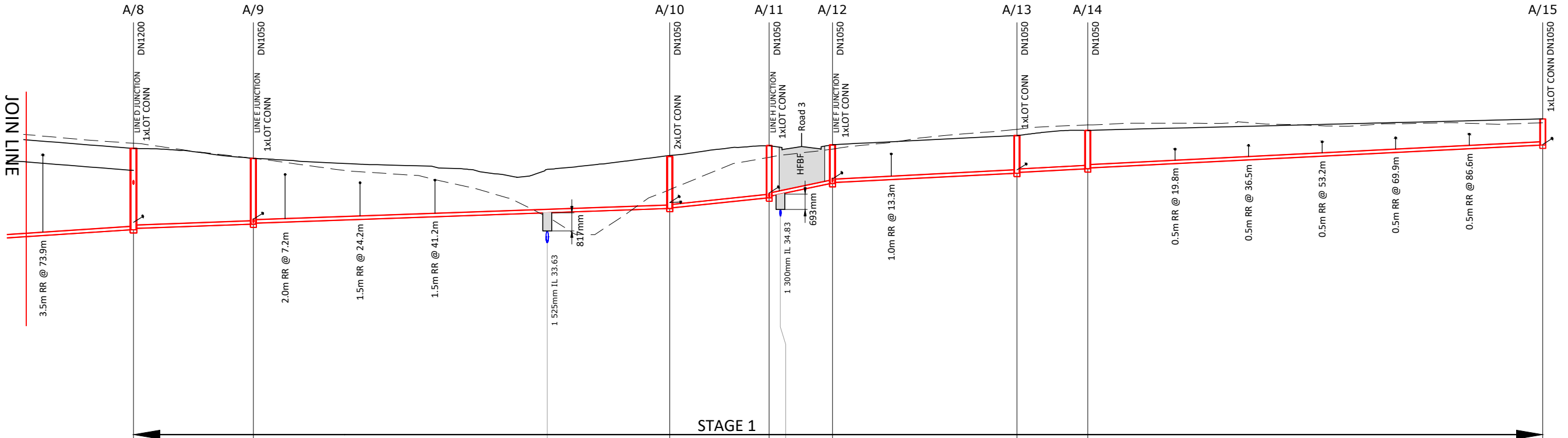
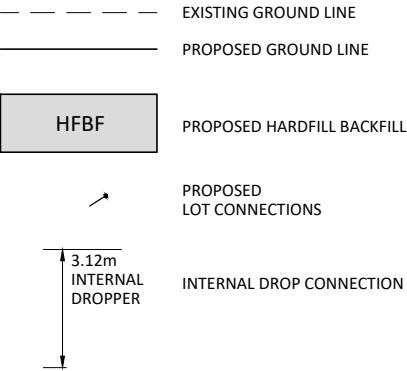
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Page: 70 of 92

NOTES

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LEGEND



DATUM	23.0																		
EXISTING GROUND LEVEL		38.13		37.44				36.03		37.49			37.86		38.76		38.96		
LID LEVEL		37.90		37.44				37.57		38.02			38.06		38.47		38.70		
INVERT LEVEL	34.21	34.27		34.46		34.51	34.98	35.17	35.20		35.65	35.74	35.82		36.30	36.35			38.04
DEPTH TO INVERT	3.69	3.63		2.98		2.93		2.41	2.42		2.36	2.28		1.76	1.71		1.71	1.67	1.73
GRADIENT	1.30%		0.70%		0.70%				2.00%		3.90%		1.00%		1.00%		1.00%		
PIPE DIAMETER	DN150		DN150		DN150				DN150		DN150		DN150		DN150		DN150		
PIPE CLASS	uPVC SN16		uPVC SN16		uPVC SN16				uPVC SN16		uPVC SN16		uPVC SN16		uPVC SN16		uPVC SN16		
DISTANCE (m)	94.50		27.22		94.52		66.71	22.58			2.54	14.36		41.87		16.08		103.32	

LINE A CONTINUED

Printed by: RYAN@10.05.18 // Filepath: S:\V\0311-18 - HUGHES DEVELOPMENTS TUAKAU\CAD\2011-01-450.DWG

REV	REVISION DETAILS	BY	DATE
C2	ISSUED FOR RESOURCE CONSENT	GDS	27.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18

DRAWN: MRR	DATE: 11.2017
CHECKED: RJP	DATE: 29.03.18
APPROVED: RJP	DATE: 03.2018

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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED DRAINAGE
WASTEWATER LONGITUDINAL SECTIONS
SHEET 2

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:500H 1:100V / 1:1000H 1:200V
SCALE BAR
N.T.S.
DRAWING NUMBER: 2011-01-451
REV: C2

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 71 of 92

Subject to notations in red

IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

All work shall be constructed in accordance with the Code of Practice HCC ITS

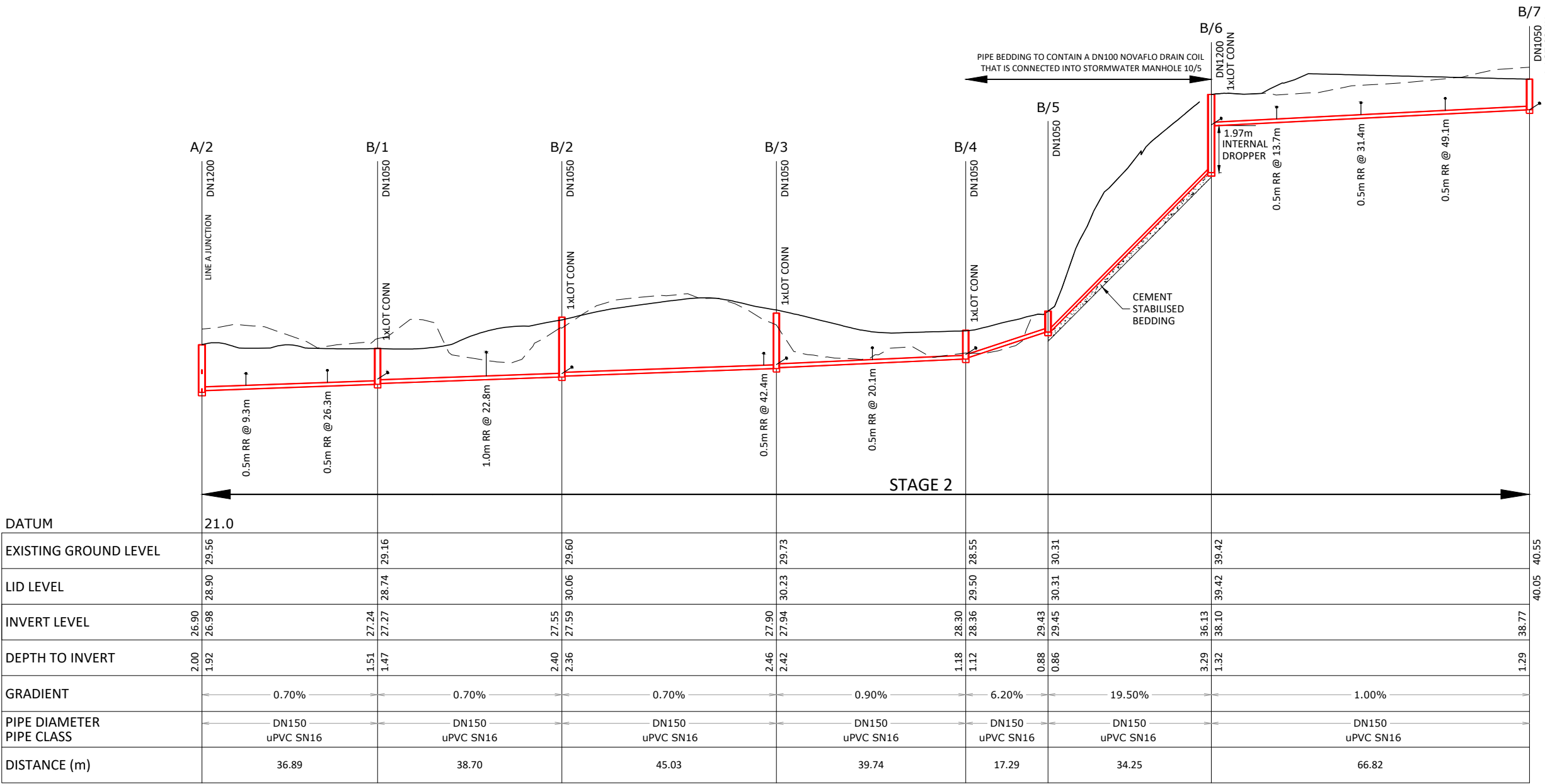
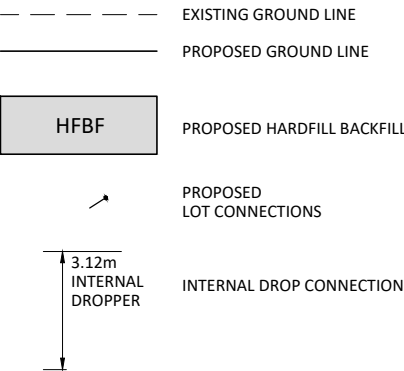
Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 71 of 92

NOTES

1. REFER TO SHEET 2011-01-400 FOR GENERAL NOTES.
2. LOT CONNECTIONS TO TERMINATE 1m FROM PROPOSED GROUND LINE
3. LENGTHS OF RAMP RISERS ARE STATED IN VERTICAL LENGTH OF PIPE. CONTRACTOR TO ENSURE CORRECT LENGTH OF PIPE IS USED SO THAT THE CONNECTION TERMINATES WITHIN THE APPROPRIATE LOT BOUNDARY.

LEGEND



Printed by: RYAN@0.05.18 // Filepath: S:\V\0\0\0\2011-01-450.DWG

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
MRR	11.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED DRAINAGE
WASTEWATER LONGITUDINAL SECTIONS
SHEET 3

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:500H 1:100V / 1:1000H 1:200V
SCALE BAR
N.T.S.
DRAWING NUMBER: 2011-01-452
REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 72 of 92

Subject to notations in red

IMPORTANT INFORMATION

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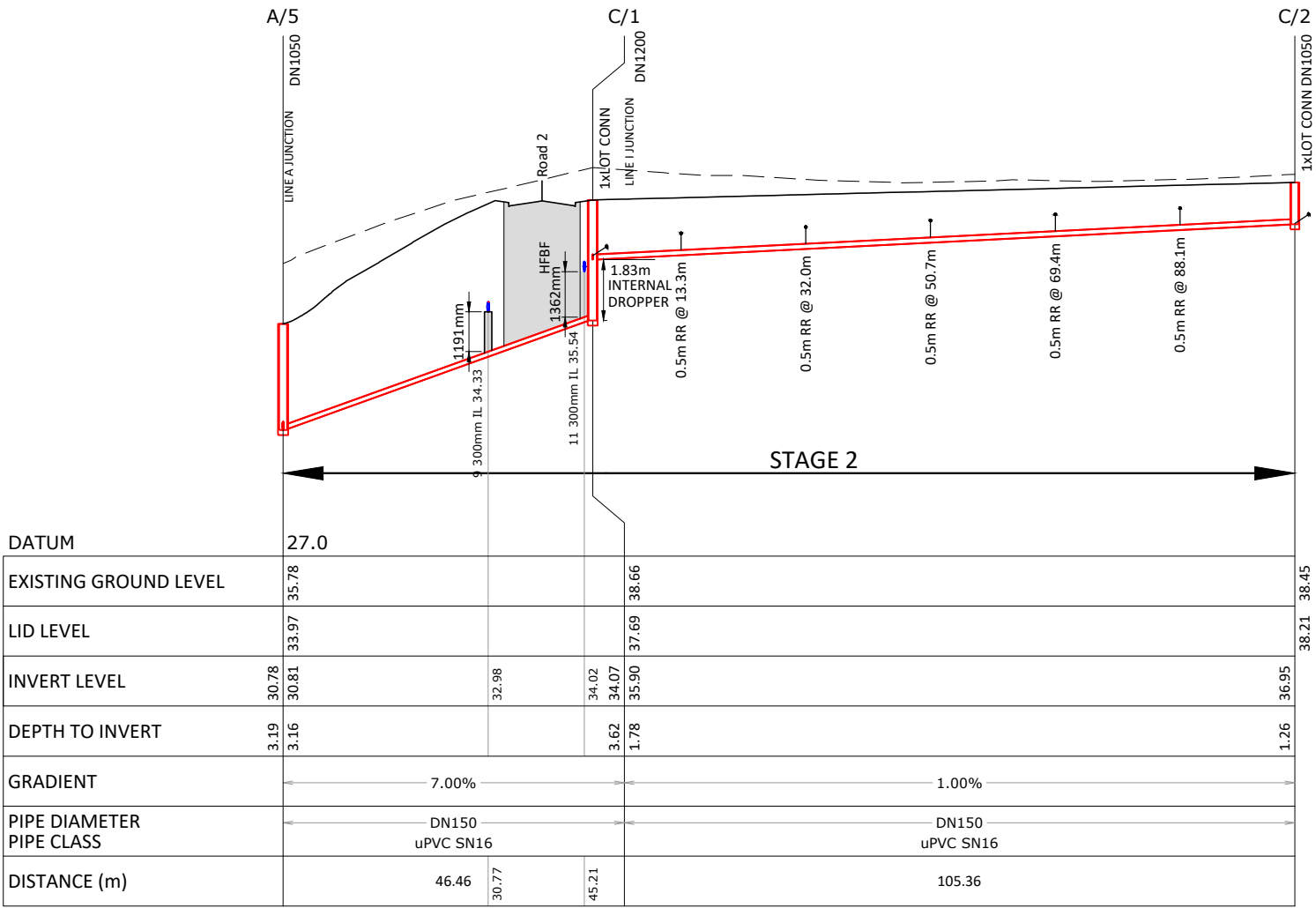
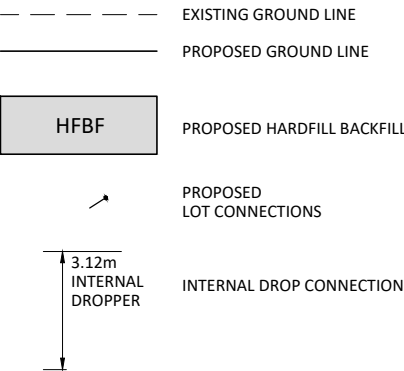
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Page: 72 of 92

NOTES

1. REFER TO SHEET 2011-01-400 FOR GENERAL NOTES.
2. LOT CONNECTIONS TO TERMINATE 1m FROM PROPOSED GROUND LINE
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LEGEND



LINE C

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C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
MRR	11.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED DRAINAGE
WASTEWATER LONGITUDINAL SECTIONS
SHEET 4

ISSUE STATUS:	CONSENT
SCALE: (A1/A3)	1:500H 1:100V / 1:1000H 1:200V
SCALE BAR	N.T.S.
DRAWING NUMBER:	2011-01-453
REV:	C1

Subject to notations in red

Page: 73 of 92

ISSUE STATUS:	CONSENT	
SCALE: (A1/A3)	1:500H 1:100V / 1:1000H 1:200V	
SCALE BAR		
N.T.S.		
DRAWING NUMBER:	2011-01-454	REV: C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 74 of 92

Subject to notations in red

IMPORTANT INFORMATION

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All work shall be constructed in accordance with the Code of Practice HCC ITS

Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains.

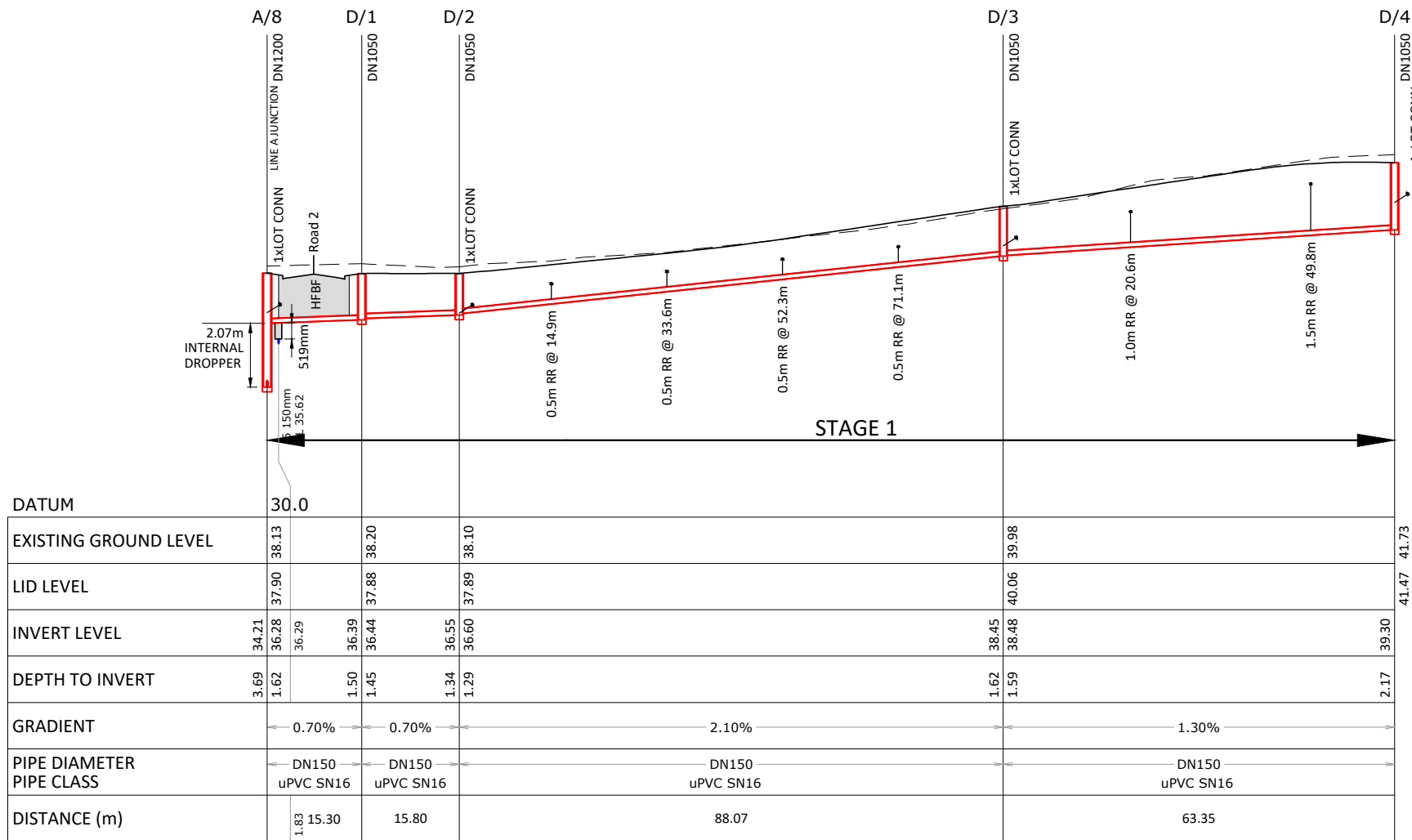
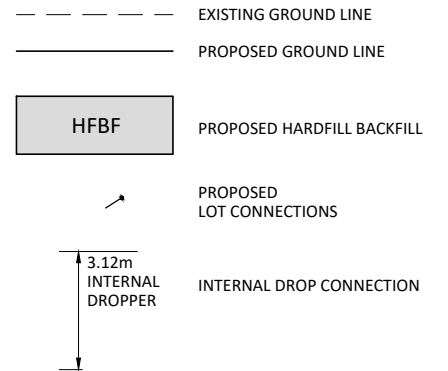
Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 74 of 92

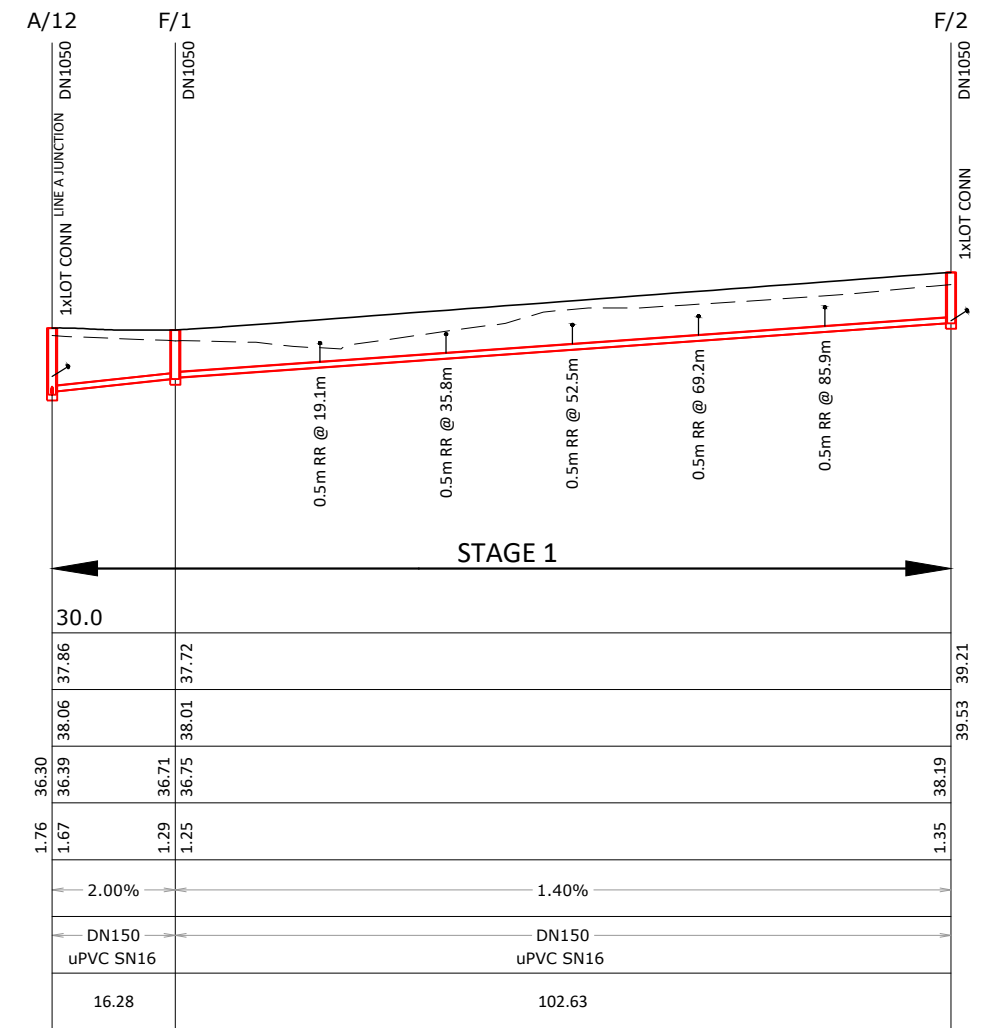
NOTES

- REFER TO SHEET 2011-01-400 FOR GENERAL NOTES.
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LEGEND



LINE D



LINE F

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
MRR	11.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

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WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 75 of 92

Subject to notations in red

IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

All work shall be constructed in accordance with the Code of Practice HCC ITS

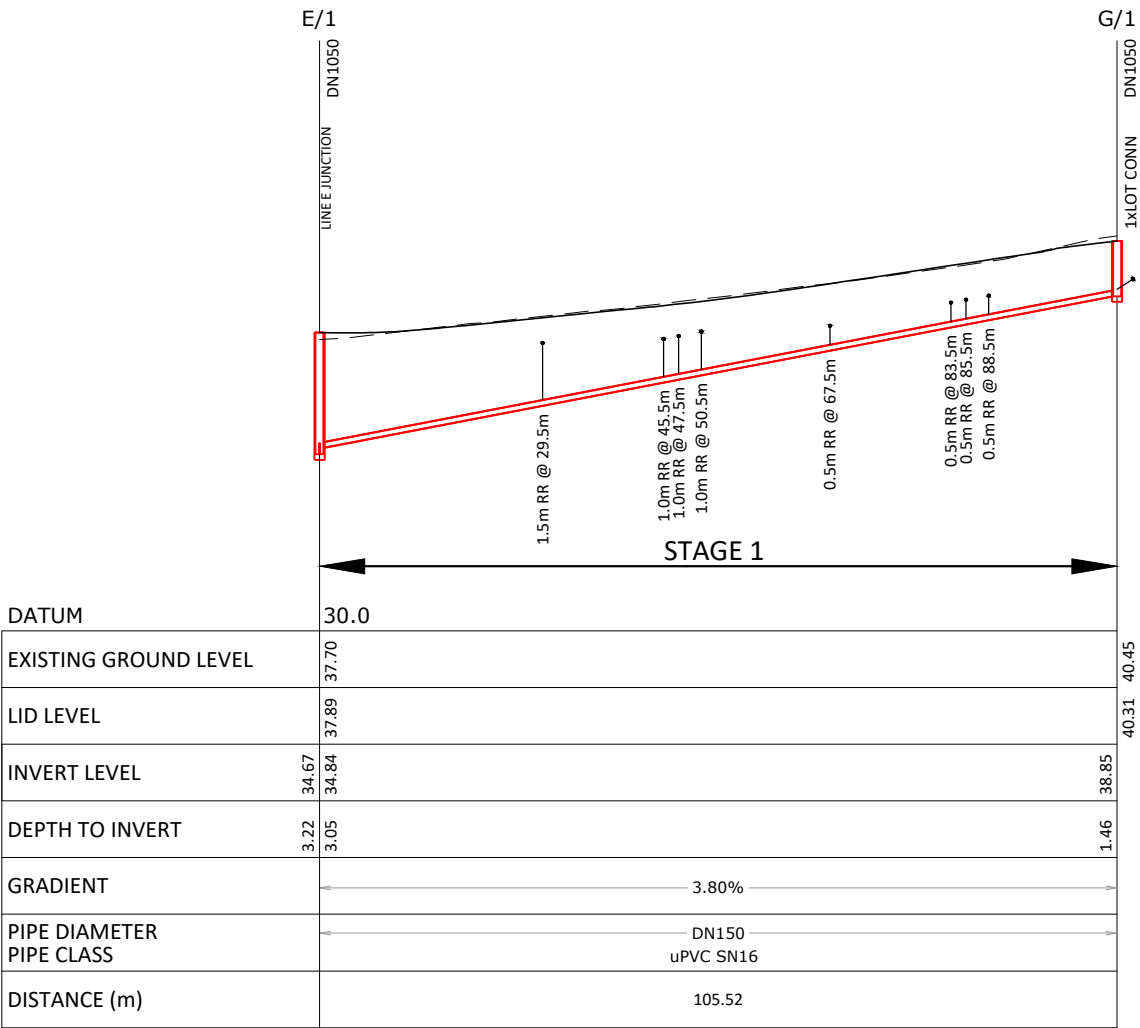
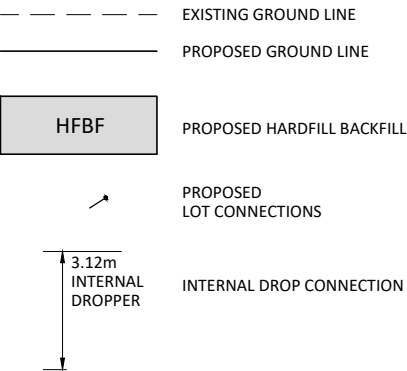
Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 75 of 92

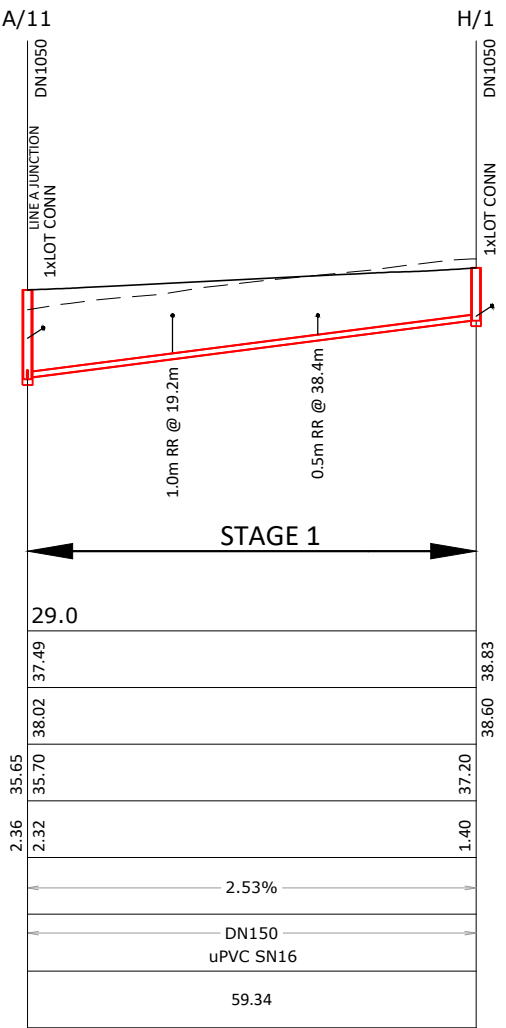
NOTES

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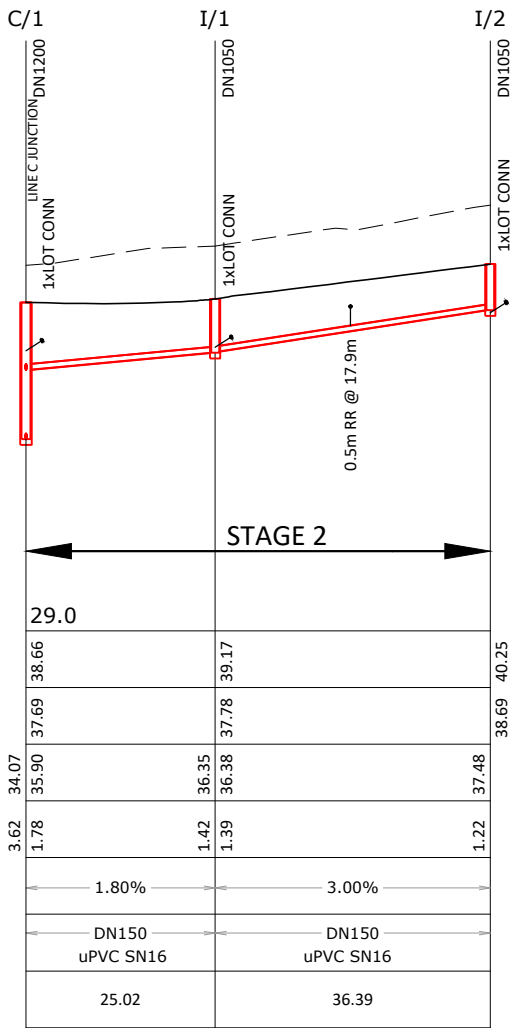
LEGEND



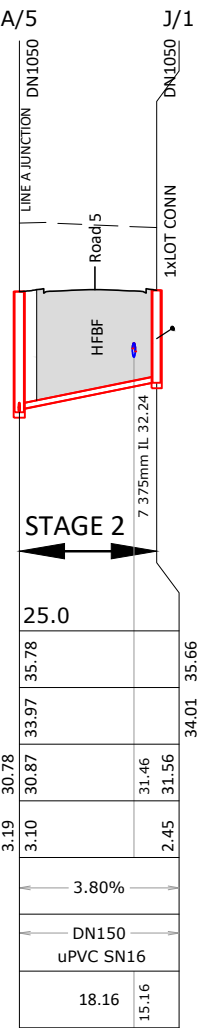
LINE G



LINE H



LINE I



LINE J

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
MRR	11.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 76 of 92

Subject to notations in red

IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

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Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 76 of 92

LEGEND

EXISTING GROUND LINE

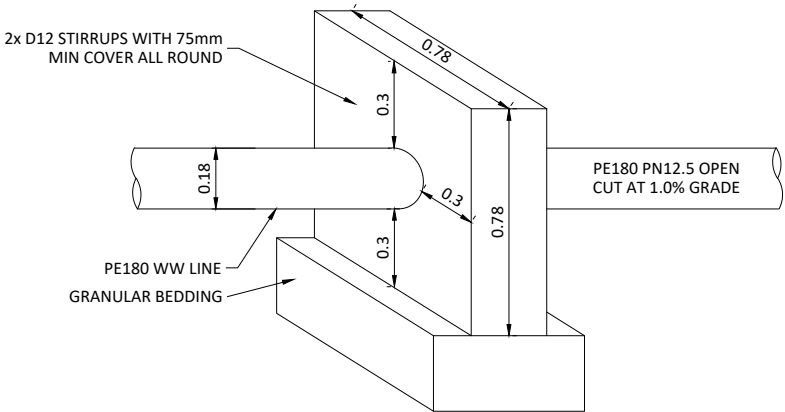
PROPOSED GROUND LINE

HFBF

PROPOSED HARDFILL BACKFILL

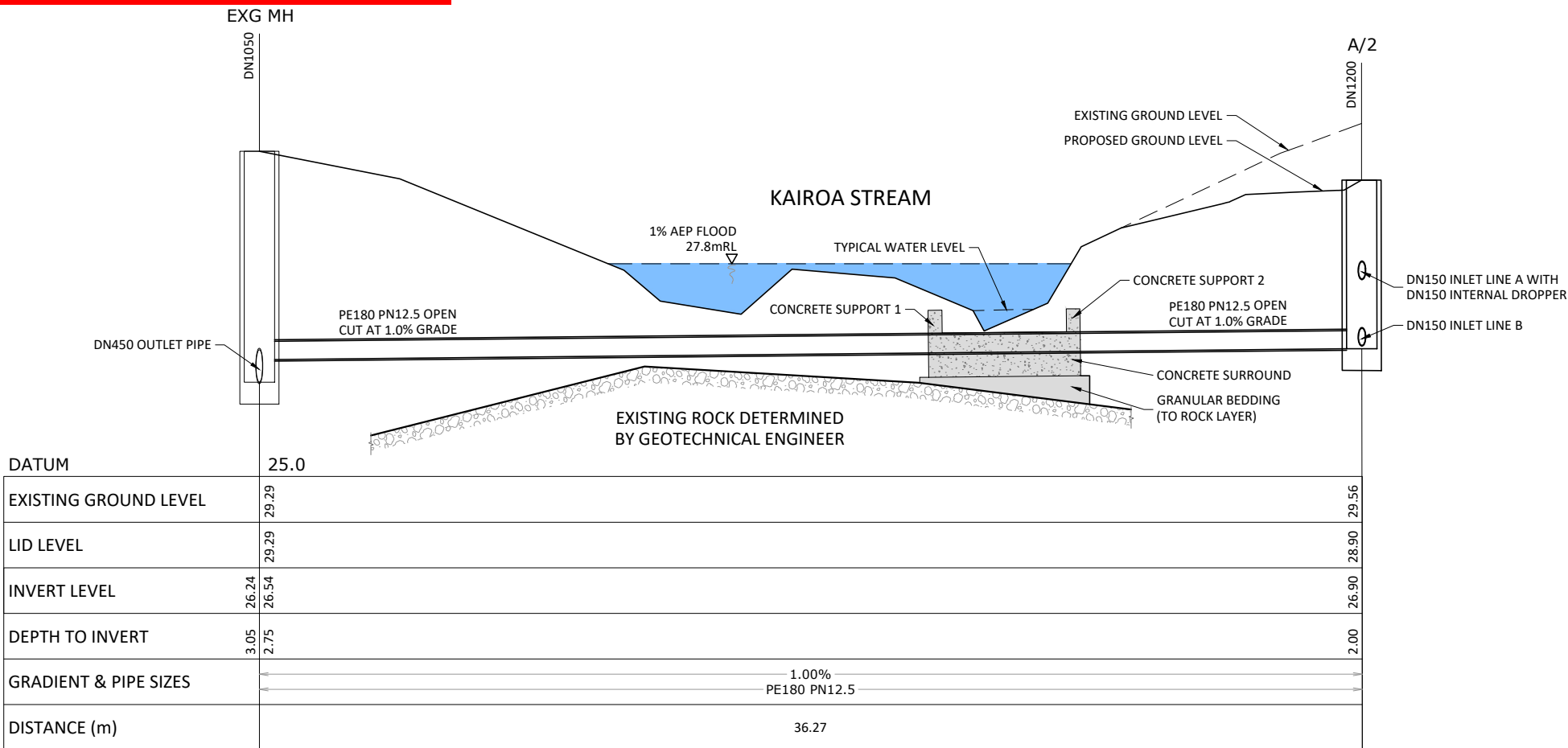
NOTES

- REFER TO SHEET 2011-01-400 FOR GENERAL NOTES.
- STREAM FLOOD LEVEL BASED ON BECA MODELLING COMPLETED IN OCTOBER 2017.
- WASTEWATER STREAM CROSSING TO BE CONSTRUCTED IN ACCORDANCE WITH WRC STREAM CROSSING CONSENT No. AUTH137652.01.01.



CONCRETE SUPPORT DETAIL

SCALE: (A1/A3) NOT TO SCALE



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C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

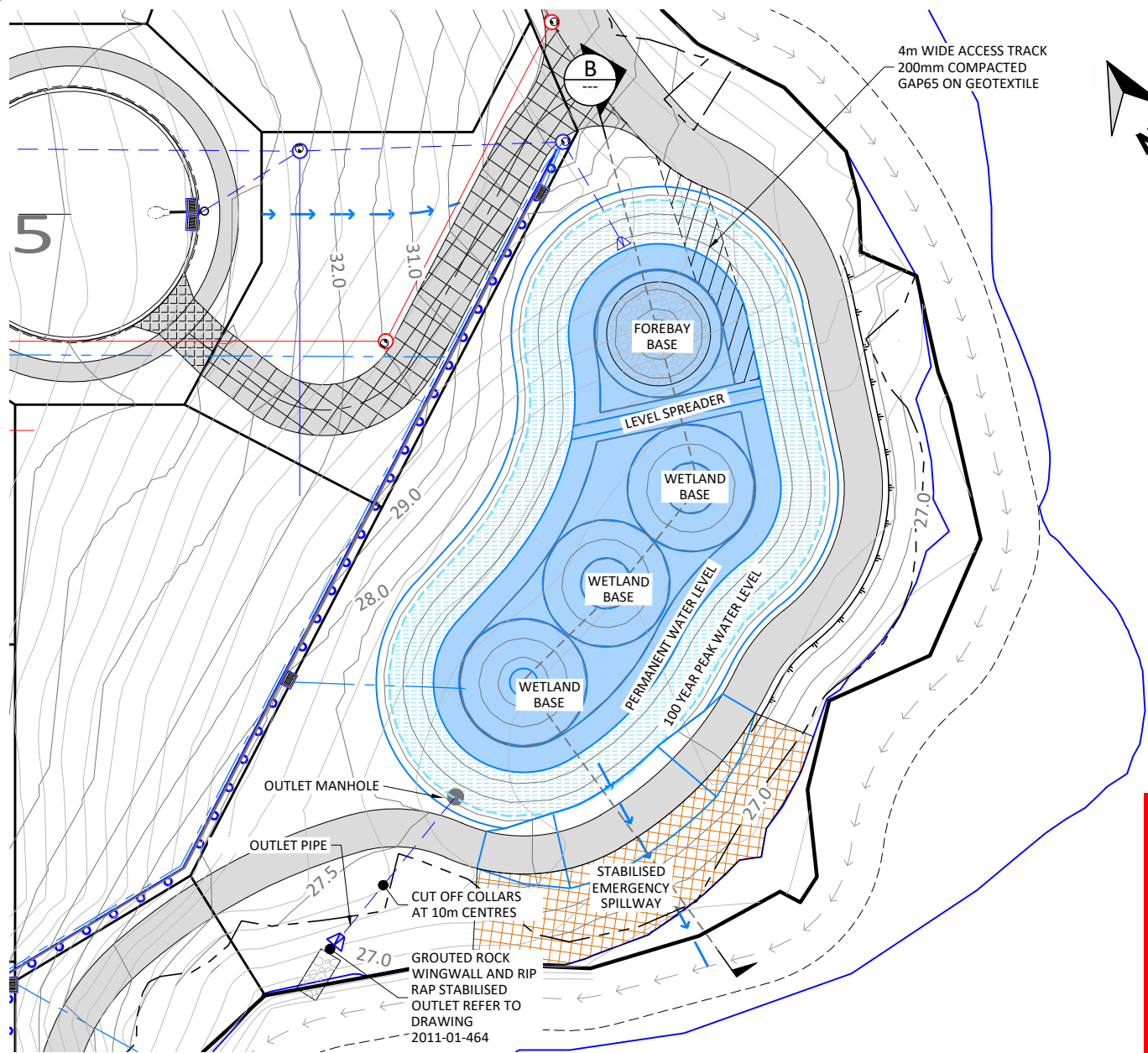
DRAWN:	DATE:
MRR	12.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

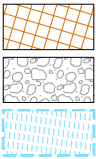
PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WASTEWATER STREAM
CROSSING LONGITUDINAL SECTION

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:100H 1:40V / 1:200H 1:80V
SCALE BAR
N.T.S.
DRAWING NUMBER: 2011-01-457 REV: C1



LEGEND



- GRASS REINFORCED SPILLWAY (CIRTEX PYRAMAT OR SIMILAR APPROVED)
- RIPRAP
- EXTENDED WATER LEVEL

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 77 of 92

Subject to notations in red

NOTES

- EXISTING CONTOURS ARE SHOWN AT 0.5m INTERVALS.
- DESIGN CONTOURS ARE SHOWN AT 0.5m INTERVALS.
- CONTOURS SHOWN ARE FINISHED SURFACE LEVELS.
- SILT AND STORMWATER CONTROL IS TO BE IMPLEMENTED DAILY AND COMPLY WITH THE GENERAL SPECIFICATION.
- THE CONTRACTOR MUST BE AWARE OF AND COMPLY WITH WAIKATO DISTRICT AND REGIONAL COUNCIL REQUIREMENTS FOR EARTHWORKS, AT ALL TIMES.
- IT IS INTENDED THAT THE CONTRACTOR SHALL GRADE THE EARTHWORKS TO THE FINISHED CONTOURS SHOWN. HOWEVER, THE FINAL MARRYING AND SHAPING OF THE EARTHWORKS AREAS ARE SUBJECT TO THE ENGINEERS APPROVAL.
- TO PREVENT SEEPAGE, BASIN SUBGRADES TO BE LINED WITH IMPERMEABLE LINER (CLAY OR SIMILAR) UNLESS APPROPRIATE PERMEABILITY RATES CAN BE DEMONSTRATED BY INSITU TESTING, IN CONJUNCTION WITH THE GEOTECHNICAL ENGINEER.

WETLAND 2

Water Quality Volume (m³)	402
Permanent Water Level Volume (m³)	268
Extended Detention Volume (EDV) (m³)	541
Base of Wetland RL (m)	24.7
Permanent Water Level RL / EDV orifice IL (m)	26.2
Attenuation Storm Outlet RL (m)	26.92
Weir Spillway RL (manhole rim) (m)	27.3
Emergency Spillway RL (m)	27.35
Crest of Wetland RL (m)	27.85
EDV Orifice Diameter (mm)	90
Attenuation Storm Outlet Slot Width (mm)	350
Outlet Weir Length (manhole rim) (m)	3.77 (DN1200)
Emergency Spillway Dimensions (m)	9mL x 0.5mH
Outlet Pipe Diameter (mm)	600 @ 0.5%
Riprap dimensions	6mL x 2mW x 0.23mD, 0.2m D50 stone diameter

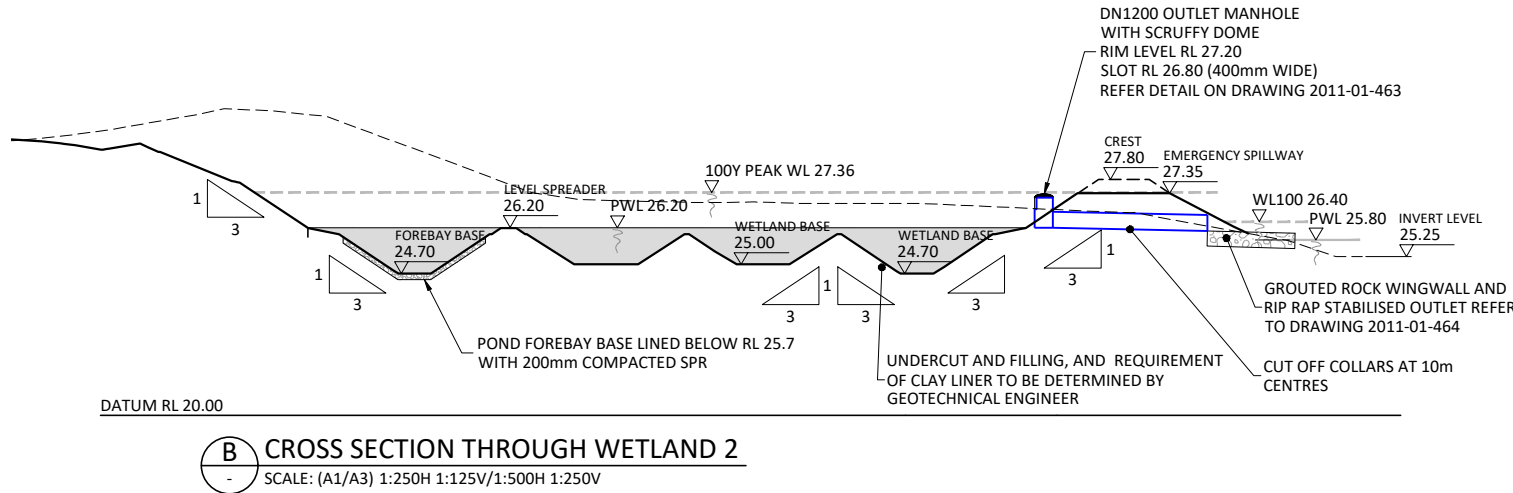
IMPORTANT INFORMATION

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Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 77 of 92



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REV	REVISION DETAILS	BY	DATE
C3	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RIP	10.05.18
C2	ISSUED FOR RESOURCE CONSENT	GDS	27.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18

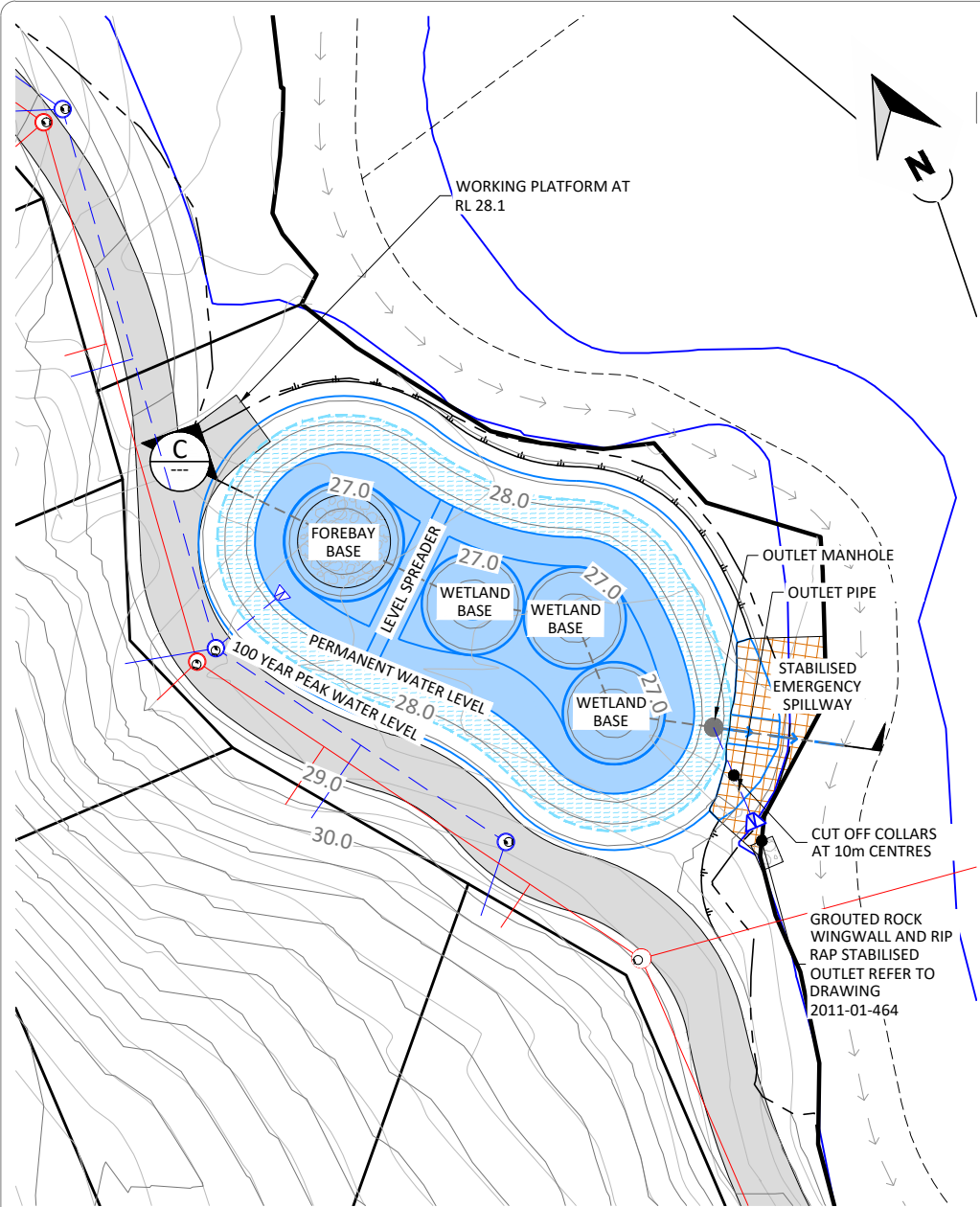
DRAWN: GDS	DATE: 09.2017
CHECKED: RIP	DATE: 29.03.18
APPROVED: RIP	DATE: 03.2018
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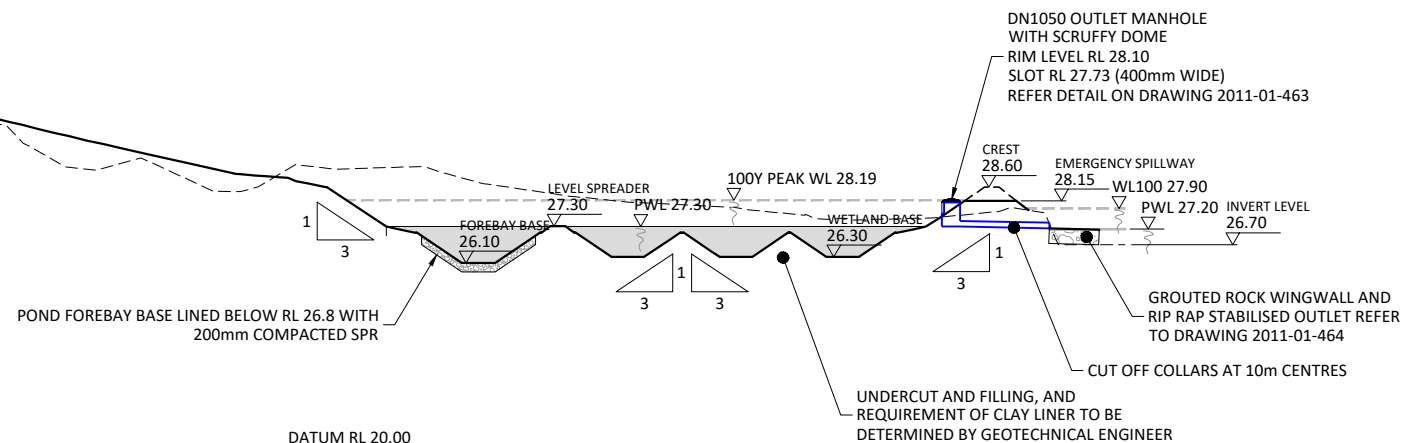
PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WETLAND 2
PLAN AND DETAILS

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 1:500@A3 0 5 10 15 20 25m
DRAWING NUMBER: 2011-01-461 REV: C3



PLAN
SCALE: (A1/A3) 1:250/1:500



C CROSS SECTION THROUGH WETLAND 3
SCALE: (A1/A3) 1:250H/1:125V/1:500H 1:250V

LEGEND

	GRASS REINFORCED SPILLWAY (CIRTEX PYRAMAT OR SIMILAR APPROVED)
	RIPRAP
	EXTENDED WATER LEVEL

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 78 of 92

Subject to notations in red

IMPORTANT INFORMATION

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Page: 78 of 92

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WETLAND 3

Water Quality Volume (m ³)	154
Permanent Water Level Volume (m ³)	103
Extended Detention Volume (EDV) (m ³)	207
Base of Wetland RL (m)	26.1
Permanent Water Level RL / EDV orifice IL (m)	27.3
Attenuation Storm Outlet RL (m)	27.73
Weir Spillway RL (manhole rim) (m)	28.1
Emergency Spillway RL (m)	28.15
Crest of Wetland RL (m)	28.6
EDV Orifice Diameter (mm)	50
Attenuation Storm Outlet Slot Width (mm)	200
Outlet Weir Length (manhole rim) (m)	3.30 (DN1050)
Emergency Spillway Dimensions (m)	2mL x 0.45mH
Outlet Pipe Diameter (mm)	525 @ 0.5%
Riprap dimensions	2mL x 2mW x 0.17mD, 0.15m D50 stone diameter

REV	REVISION DETAILS	BY	DATE
C3	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RJP	10.05.18
C2	ISSUED FOR RESOURCE CONSENT	GDS	27.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18

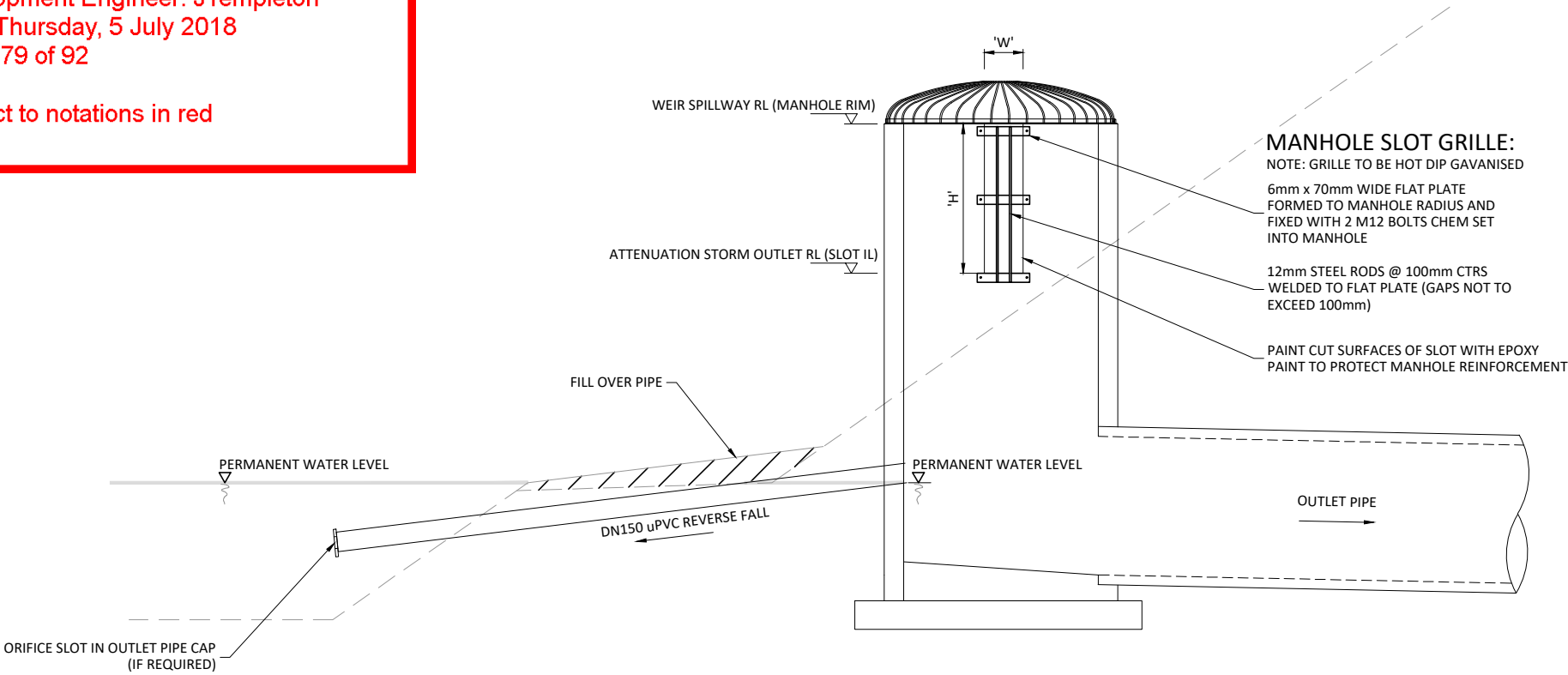
DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

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WAIKATO DISTRICT COUNCIL

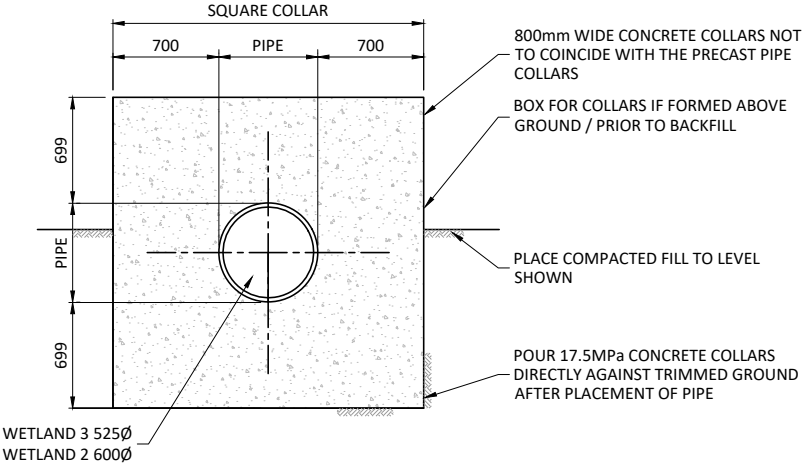
Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 79 of 92

Subject to notations in red



2 OUTLET MANHOLE DETAILS
SCALE: (A1/A3) 1:25/1:50

MANHOLE SLOT GRILLE		
	WETLAND 2	WETLAND 3
6mm FLAT PLATE	3 @500mm LONG	3 @300mm LONG
12mm STEEL RODS	3 @ 440mm LONG	1 @ 420mm



TYPICAL CUT-OFF COLLAR DETAIL
SCALE: (A1/A3) 1:25 1:50

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Page: 79 of 92

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C2	ISSUED FOR RESOURCE CONSENT	GDS	27.04.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:	
GDS	09.2017	
CHECKED:	DATE:	
RJP	29.03.18	
APPROVED:	DATE:	
RJP	03.2018	
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CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WETLANDS 2 AND 3
PLAN AND DETAILS

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) 1:25 / 1:50

SCALE BAR: 1:50@A3 0 0.5 1 1.5 2 2.5m

DRAWING NUMBER: 2011-01-463 REV: C2

IMPORTANT INFORMATION
48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

All work shall be constructed in accordance with the Code of Practice HCC ITS

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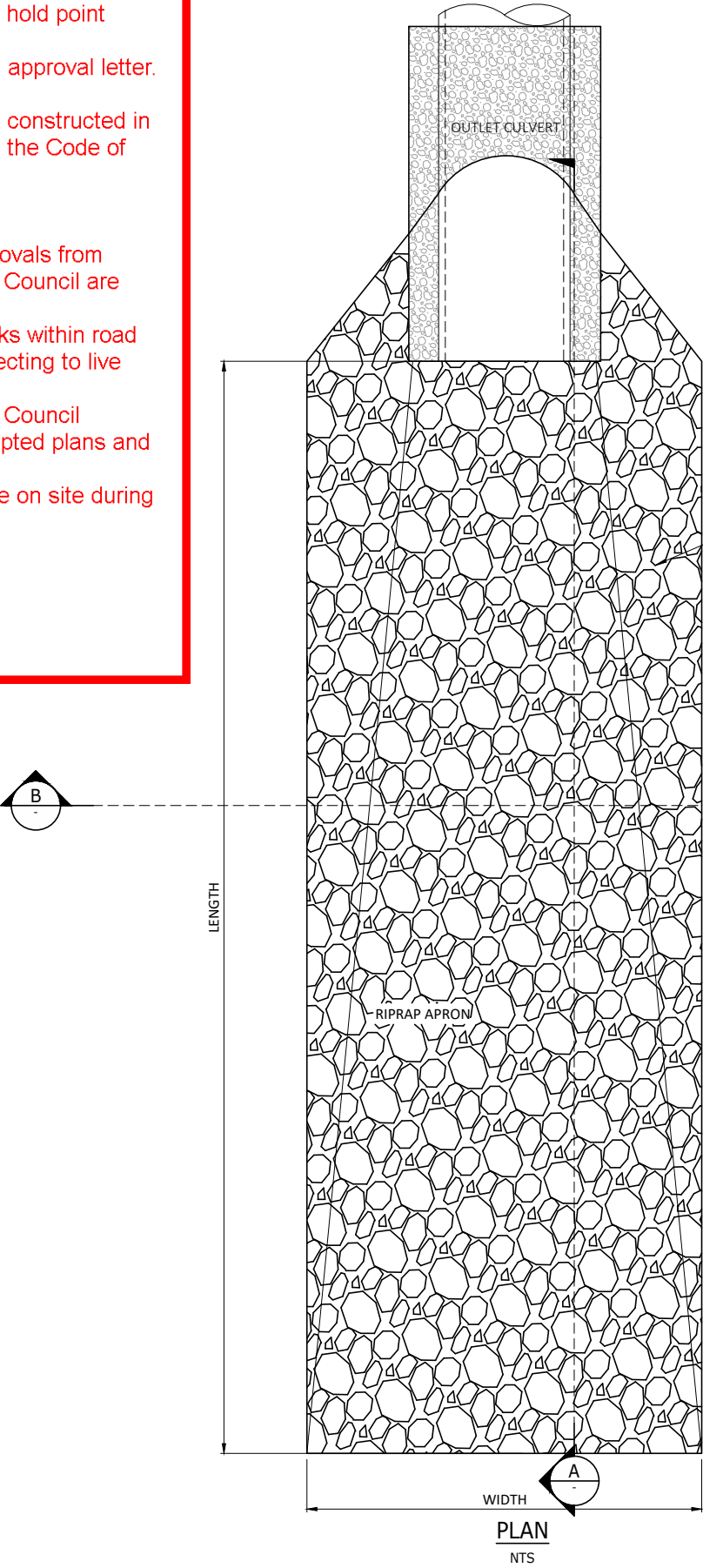
WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 80 of 92

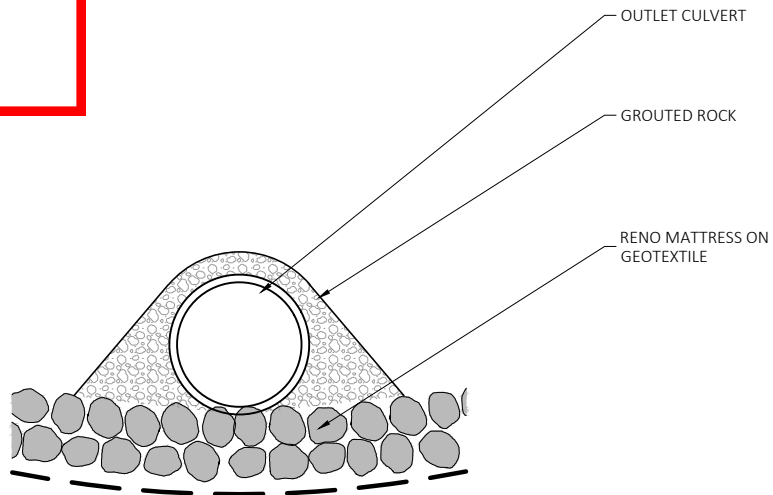
Subject to notations in red

NOTES:

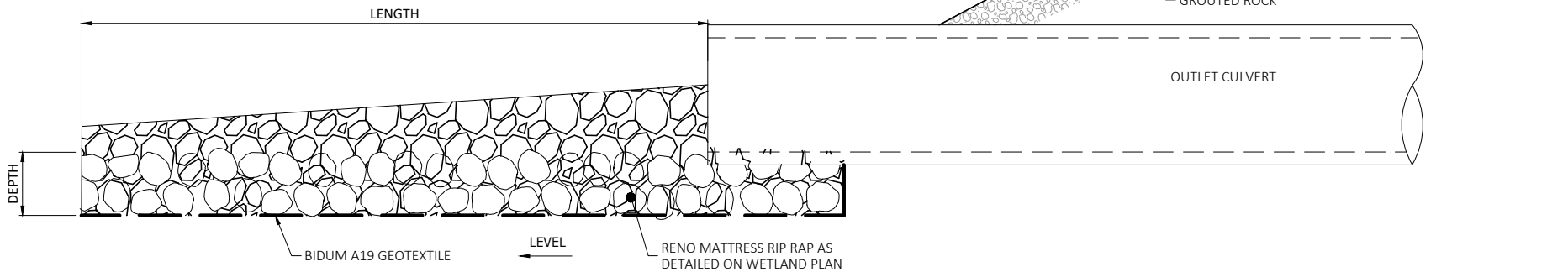
- PIPE TO HAVE GROUTED ROCK RIP RAP OVER AND AROUND OUTLET PIPE TO BLEND IN TO GROUND SLOPES AND MATCH ROCK IN RENO MATTRESS. VISIBLE GROUT WIDTH NOT TO EXCEED 50mm.
- REFER TO DRAWINGS 2011-01-400, 401, 402, 461, 462, 465 FOR RIP RAP MATTRESS DIMENSIONS.



PLAN
NTS



B OUTLET CROSS SECTION
SCALE: (A1/A3) NTS



A OUTLET LONGITUDINAL SECTION
SCALE: (A1/A3) NTS

Printed by: RYAN@10.05.18 // Filepath: S:\OBS\2011 - HUGHES DEVELOPMENTS TUAKAU\CAD\2011-01-460.DWG

C2	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RIP	10.05.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

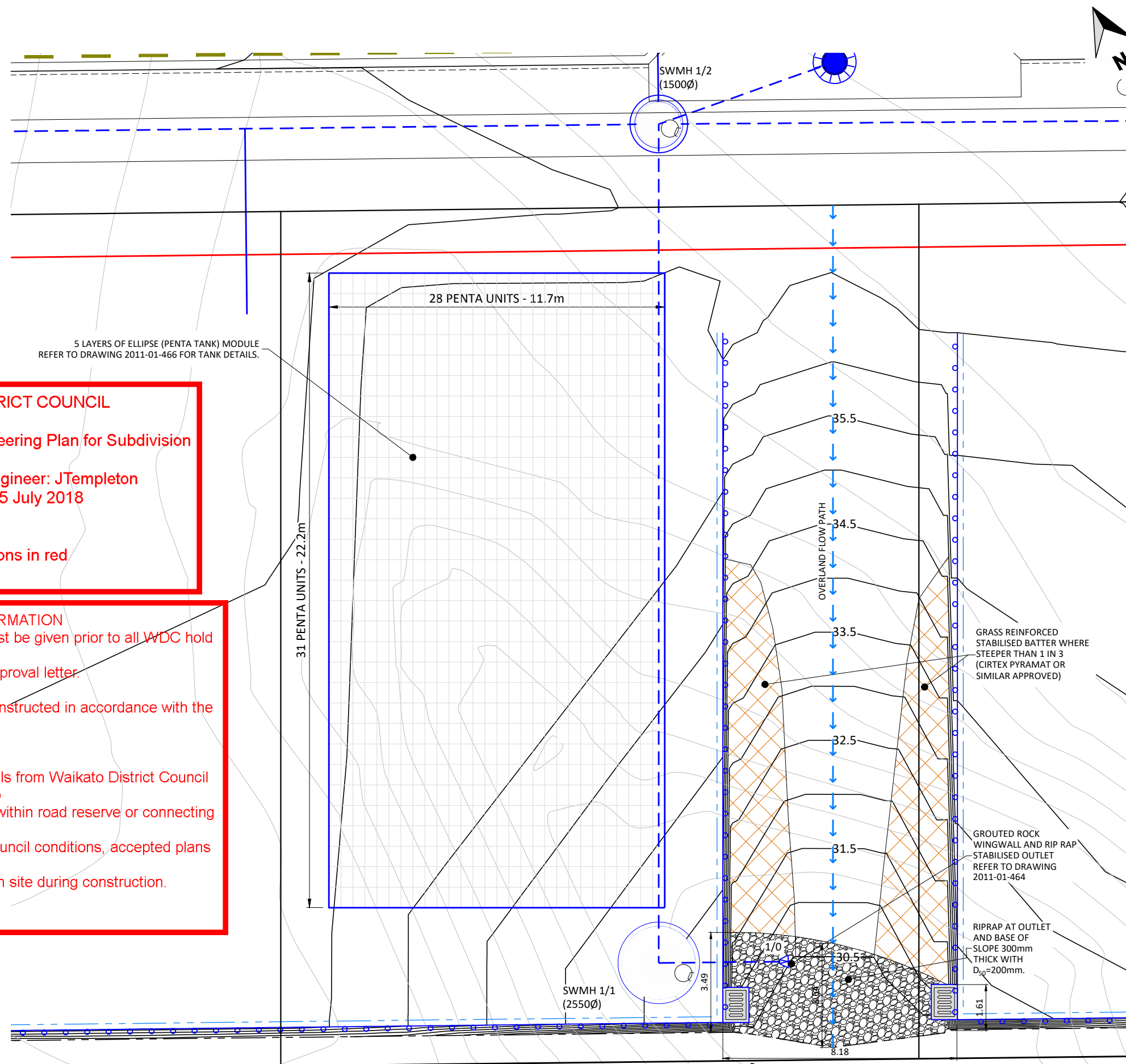
DRAWN:	DATE:	
GDS	09.2017	
CHECKED:	DATE:	
RIP	29.03.18	
APPROVED:	DATE:	
RIP	03.2018	
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
OUTLET DETAIL

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) N.T.S.
SCALE BAR
NOT TO SCALE
DRAWING NUMBER: 2011-01-464 REV: C2



LEGEND



GRASS REINFORCED SPILLWAY (CIRTEX PYRAMAT OR SIMILAR APPROVED)

RIPRAP

TANK 1

Extended Detention Volume (EDV) (m ³)	355
Base of Tank RL (m)	31.92
Attenuation Storm Outlet 1 RL (m)	32.77
Attenuation Storm Outlet 2 RL (m)	33.52
Weir Spillway RL (m)	34.00
EDV Orifice Diameter (mm)	50
Attenuation Storm Outlet 1 Orifice Diameter (mm)	300
Attenuation Storm Outlet 2 Orifice Diameter (mm)	375
Outlet Weir Length (m)	1.50
Outlet Pipe Diameter (mm)	600
Riprap dimensions	AS SHOWN, 0.35mD, 0.2m D50 stone diameter

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 81 of 92

Subject to notations in red

IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC hold
point inspections
listed in the plan approval letter.

All work shall be constructed in accordance with the
Code of Practice
HCC ITS

Additional approvals from Waikato District Council
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to live mains.

Waikato District Council conditions, accepted plans
and specifications
shall be available on site during construction.

Page: 81 of 92

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REV	REVISION DETAILS	BY	DATE
C3	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RJP	22.05.18
C2	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	RJP	10.05.18
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18

DRAWN:	DATE:
MM	12.03.18
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

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PROJECT TITLE:

HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:

ROAD STORMWATER MITIGATION
LAYOUT PLAN

ISSUE STATUS:

SCALE: (A1/A3) 1:75 / 1:150
SCALE BAR 1:150@A3 0 1.5 3 4.5 6 7.5m

DRAWING NUMBER: 2011-01-465 REV: C3

CONSENT

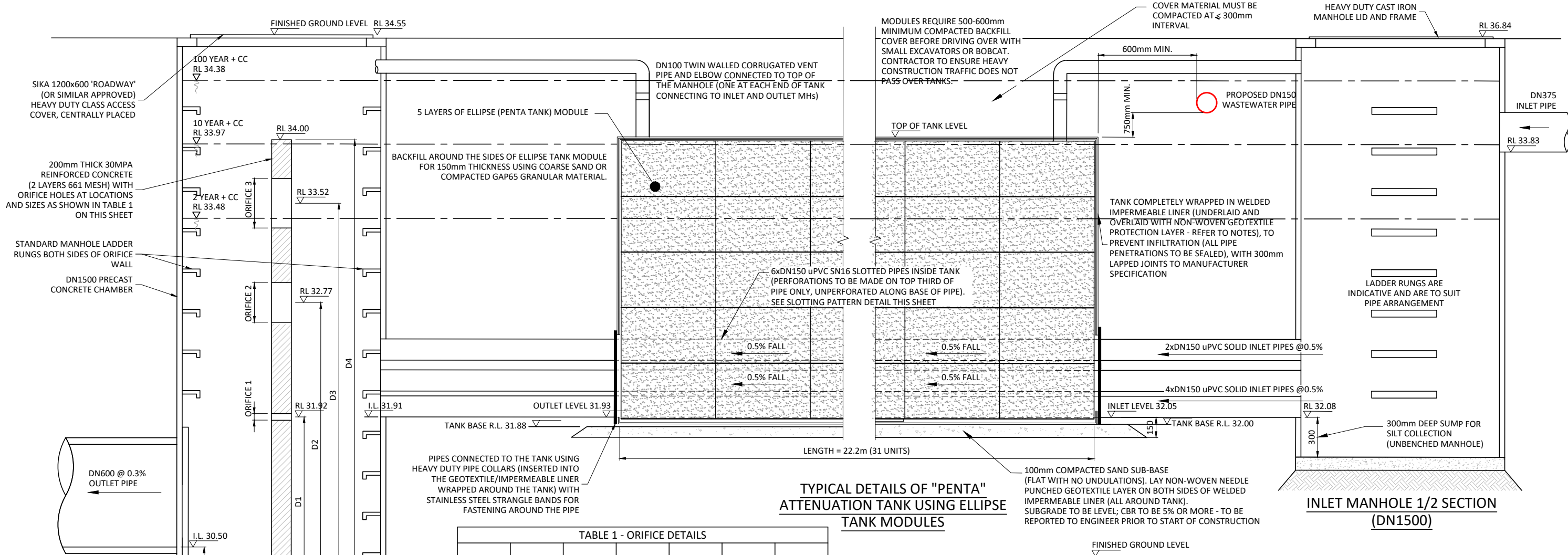
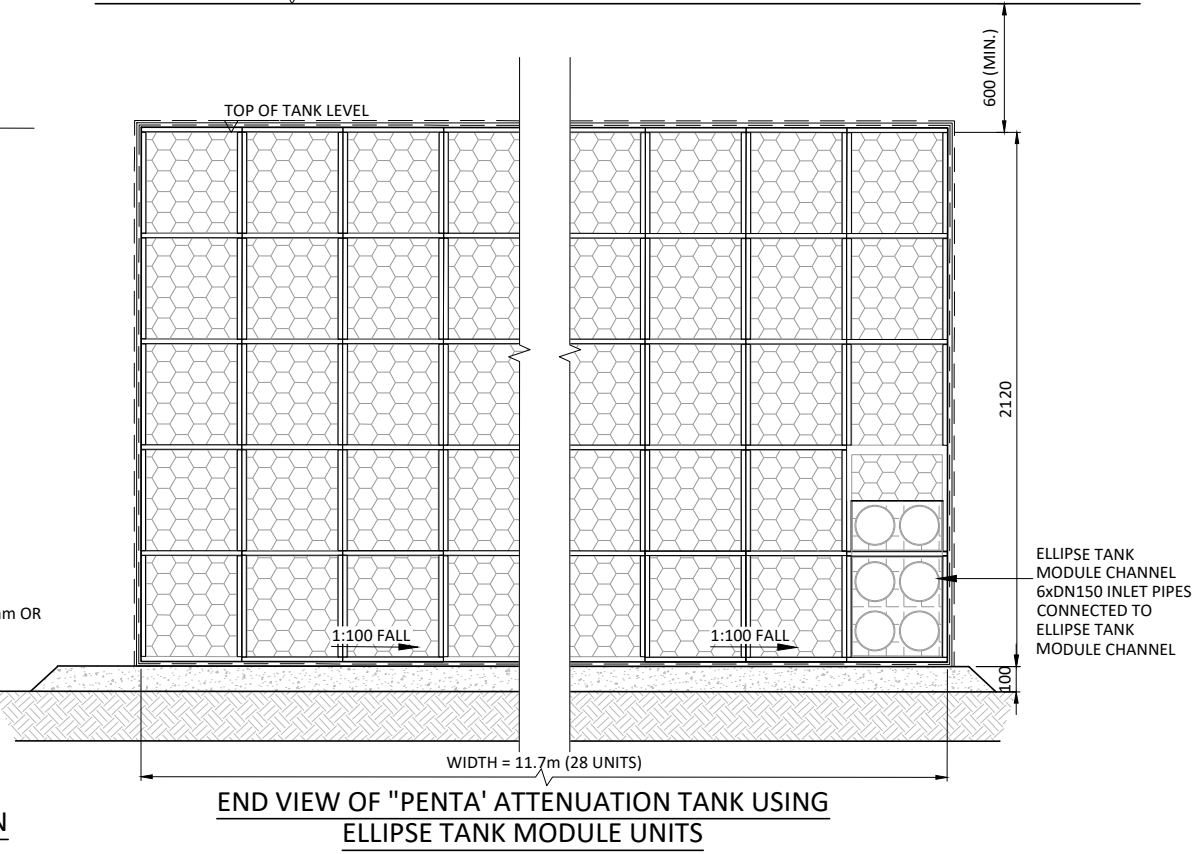
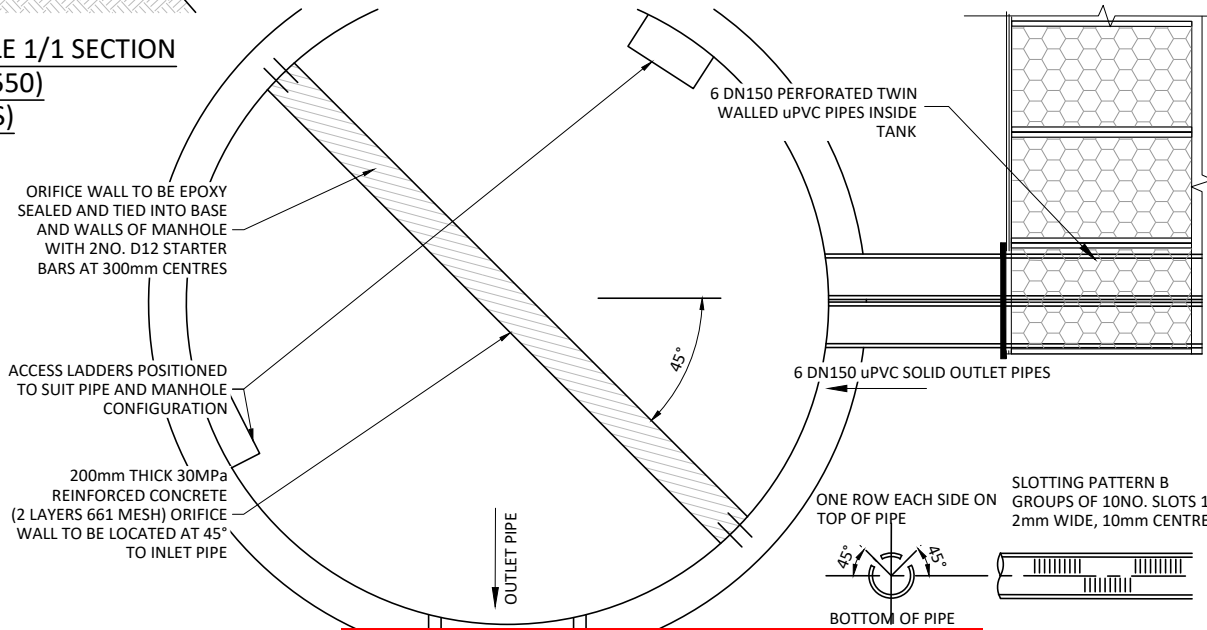


TABLE 1 - ORIFICE DETAILS						
ORIFICE 1 (mm Ø)	ORIFICE 2 (mm Ø)	ORIFICE 3 (mm Ø)	D1 (mm)	D2 (mm)	D3 (mm)	D4 (mm)
50	300	375	1710	2560	3310	3790

- NOTES:**
- ALL STORAGE TANK DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE SPECIFICATIONS, INSTALLATION GUIDE, METHOD STATEMENTS AND RECOMMENDATIONS OF RAINSMART SOLUTIONS PTY LTD (OR SIMILAR APPROVED).
 - ALL LEVELS AND DIMENSIONS SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORKS AND ANY DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
 - TANK TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. REFER TO SEQUENCE OF WORK DOCUMENT FOR DETAILED INSTALLATION METHODOLOGY.
 - IMPERMEABLE LINER MUST BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE RELEVANT GEOSYNTHETIC RESEARCH INSTITUTE (GRI) SPECIFICATION FOR EITHER HDPE (HIGH DENSITY POLYETHYLENE), LDPE (LINEAR LOW DENSITY POLYETHYLENE) OR FPP (FLEXIBLE POLYPROPYLENE).
 - ONE LAYER OF NON-WOVEN NEEDLE PUNCHED GEOTEXTILE (DURAFORCE AS410 OR SIMILAR APPROVED) TO BE PLACED EACH SIDE OF THE IMPERMEABLE MEMBRANE.



WAIKATO DISTRICT COUNCIL
Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: J. Templeton
Date: Thursday, 5 July 2018
Page: 82 of 92
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Subject to notations in red

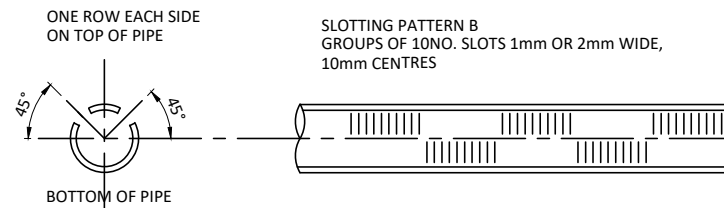
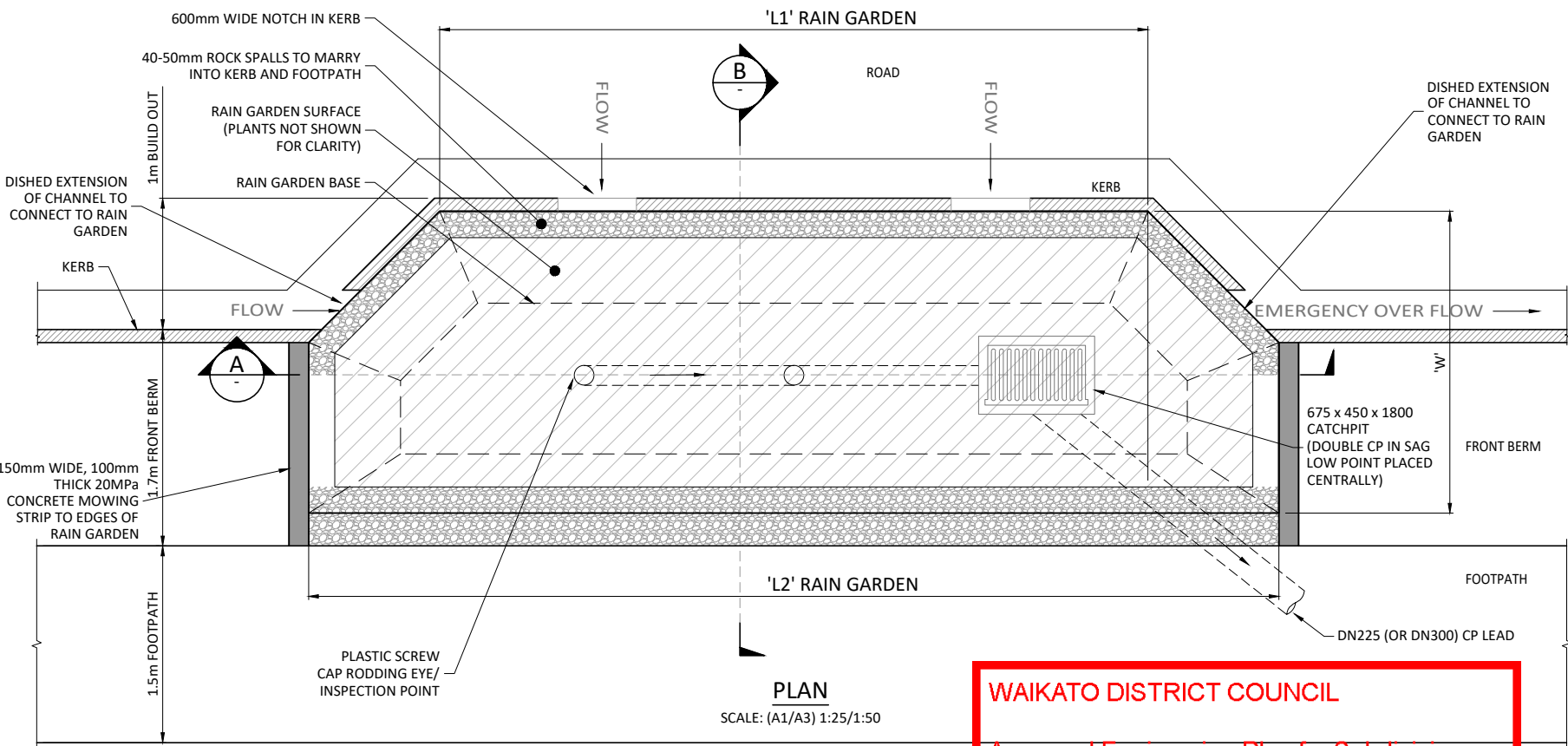
PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
ROAD STORMWATER MITIGATION
ATTENUATION TANK DETAILS

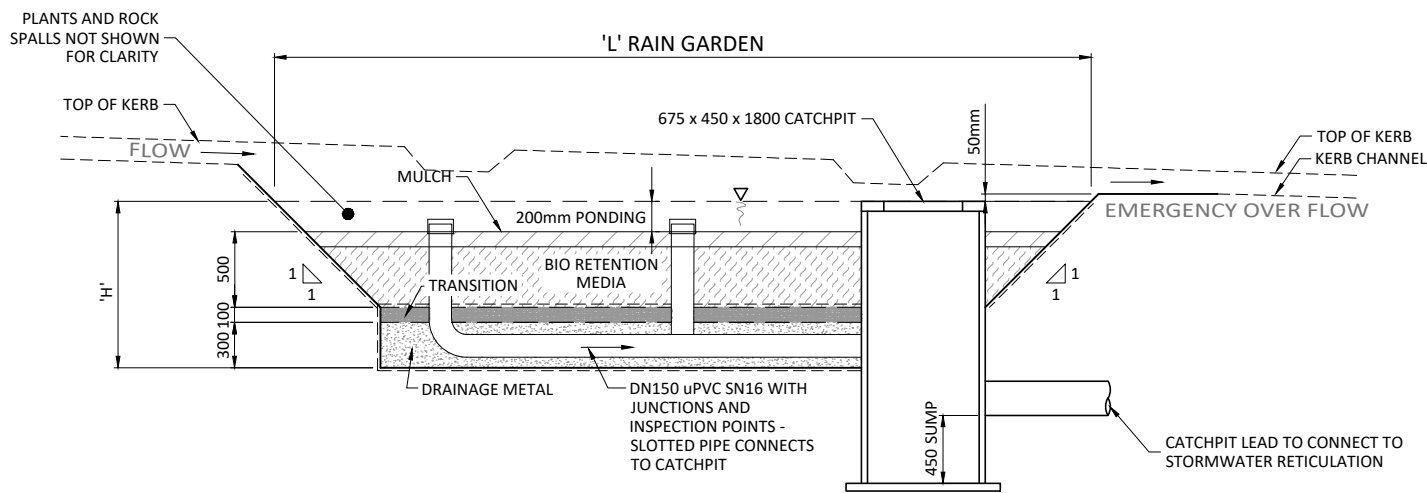
ISSUE STATUS:
SCALE: (A1/A3)
SCALE BAR
DRAWING NUMBER: 2011-01-466
REV: C2
CONSENT

IMPORTANT INFORMATION
All work shall be constructed
in accordance with the Code
of Practice
HCC ITS

Page: 83 of 92



UNDER DRAIN SLOTTING PATTERN
SCALE: (A1/A3) NTS



A CROSS SECTION ARRANGEMENT A
SCALE: (A1/A3) 1:25/1:50

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

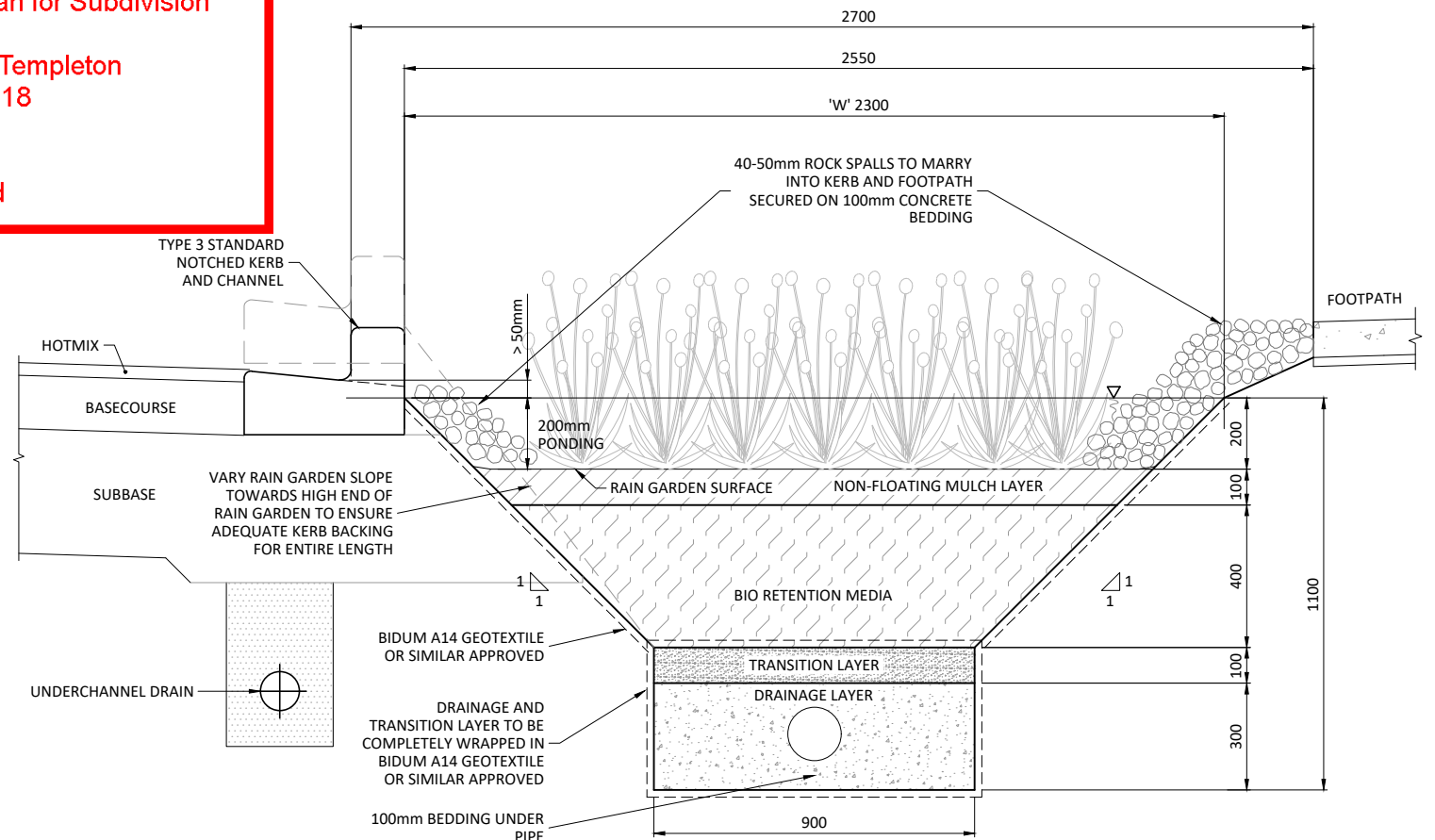
Page: 83 of 92

Subject to notations in red

RAIN GARDEN SIZING					
RAIN GARDEN	LENGTH 'L1' (m)	LENGTH 'L2' (m)	WIDTH 'W' (m)	MIN MEDIA SURFACE AREA (m2)	DEPTH FROM OUTLET CATCHPIT TO OVERFLOW (m)
1/2.1	9.0	13.0	3.3	27.4	**0.20
1/3.1	*	*	*	13.1	0.05
1/5.1	*	*	*	15.3	0.05
1/5.2	*	*	*	15.3	0.05
1/6.1	6.0	8.0	2.3	12.8	0.05
1/6.2	6.0	8.0	2.3	12.8	0.05
1/7.1	4.5	6.5	2.3	10.1	0.05
1/7.2	9.0	9.0	2.5	17.0	0.05
2/1.1	*	*	*	10.9	0.05
2/2.1	6.0	8.0	2.3	12.8	0.05
2/4.1	7.5	9.5	2.3	15.5	0.05
2/4.2	9.5	9.5	2.5	18.0	0.05
3/1.1	*	*	*	19.6	0.05
3/2.1	6.0	8.0	2.3	12.8	0.05
4/4.1	*	*	*	15.4	0.05
4/5.1	3.0	5.0	2.3	7.4	0.05
5/1.1	*	*	*	38.0	0.05
5/2.1	5.0	7.0	2.3	11.0	0.05
6/1.1	*	*	*	12.1	0.05

NOTES:

- CONTRACTOR TO ENSURE MINIMUM MEDIA/MULCH SURFACE AREA IS ACHIEVED. RAIN GARDEN WIDTHS AND LENGTHS MAY BE ADJUSTED IF NECESSARY TO ACHIEVE THIS.
- * RAIN GARDEN WIDTH, LENGTH AND SHAPE TO BE DETERMINED DURING CONSTRUCTION. MINIMUM MEDIA/MULCH SURFACE AREA MUST BE ACHIEVED. SEE 2011-01-400/401/402 FOR ESTIMATED SHAPE AND SIZE.
- ** RAIN GARDEN 1/2.1 OUTLET TO BE DN1050 SCRUFFY MANHOLE.
- THE SURFACE OF THE BIO-RETENTION AREA IS TO BE FINISHED TO PROVIDE A PONDING AREA NOT LESS THAN 200mm IN DEPTH.
- THE BIO-RETENTION SOIL MIXTURE IS TO BE APPROXIMATELY 600mm DEEP (NOT LESS THAN 500mm) AND IS TO HAVE A LONG TERM HYDRAULIC CONDUCTIVITY (Ks) OF 100mm/hr SUCH AS LIVING EARTH RAIN GARDEN MIX.
- THE TRANSITION LAYER SHALL COMPRISE 50mm THICK LAYER OF #3 SAND ON 50mm THICK LAYER OF GRADE 6 CHIP. CARE SHALL BE TAKEN TO ENSURE THAT THESE LAYER THICKNESSES ARE ACHIEVED.
- THE DRAINAGE LAYER SHALL COMPRISE 20-7 CLEAN DRAINAGE AGGREGATE. THIS SHALL FULLY ENCASE THE PERFORATED UNDER-DRAIN.
- THE BIO-RETENTION PIT MAY NEED TO BE LINED WITH AN IMPERMEABLE MEMBRANE (DEPENDING ON THE SOIL TYPE AT THE SITE). OPTIONS FOR THIS INCLUDE GEOSYNTHETIC CLAY LINER (EG BENTOFIX NSP4000) INSTALLED TO MANUFACTURER'S RECOMMENDATIONS OR HD 300 MICRON POLYETHYLENE. THE FINAL SOLUTION SHALL BE DETERMINED ON SITE BY THE ENGINEER.
- THE UNDER-DRAIN SHALL CONSIST OF SLOTTED 150mm DIAMETER uPVC PIPE (1.0mm SLOTS) FROM STRATA PLASTICS OR AN APPROVED EQUIVALENT. SLOTS TO BE LOCATED ON TOP HALF OF PIPE ONLY (SOLID BASE). BENDS AND STAND PIPE AND OTHER FITTINGS SHALL BE HD uPVC WITH ALL JOINTS WELL GLUED. SEE DETAIL THIS SHEET.
- REFER TO LANDSCAPE ARCHITECT'S PLANS FOR PLANTING SPECIES AND LAYOUT



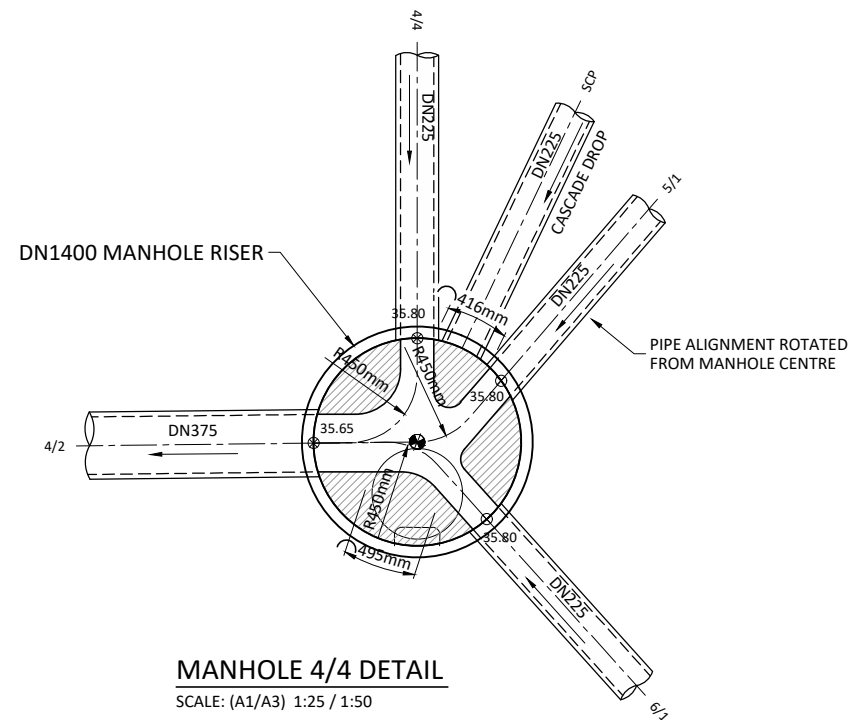
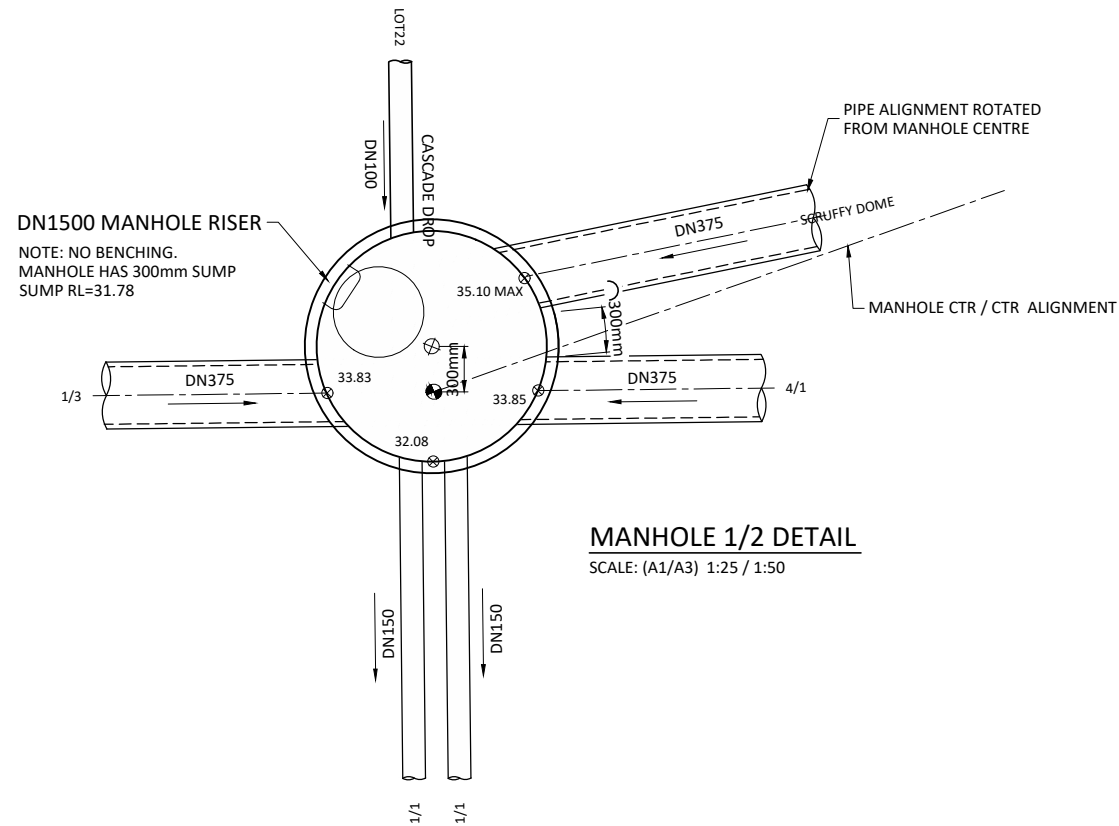
B CROSS SECTION ARRANGEMENT B
SCALE: (A1/A3) 1:10/1:20

REV	REVISION DETAILS	GDS	DATE
C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL		04.04.18

DRAWN: MRR	DATE: 09.2017
CHECKED: RJP	DATE: 29.03.18
APPROVED: RJP	DATE: 03.2018

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Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 84 of 92

Subject to notations in red

LEGEND

- ⊕ CENTRE OF MANHOLE RISER
- PIPE ALIGNMENT POSITION
- ⊗ XX.XX PIPE INVERT LEVEL
- 200mm MANHOLE OFFSET DIMENSION
- 456mm DIMENSION OF ARC BETWEEN PIPE OPENINGS (MINIMUM 300mm)

IMPORTANT INFORMATION

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Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 84 of 92

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
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RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED STORMWATER
MANHOLE DETAILS
SHEET 1

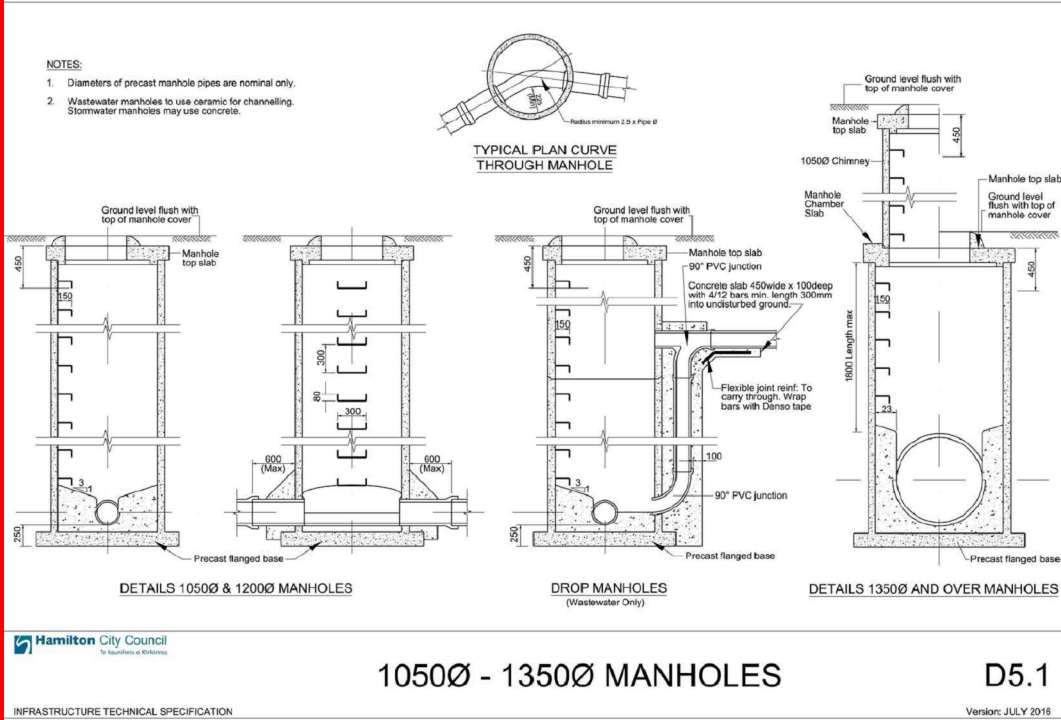
ISSUE STATUS: **CONSENT**
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DRAWING NUMBER: 2011-01-480 REV: C1

IMPORTANT INFORMATION
48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

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Page: 85 of 92



WAIKATO DISTRICT COUNCIL

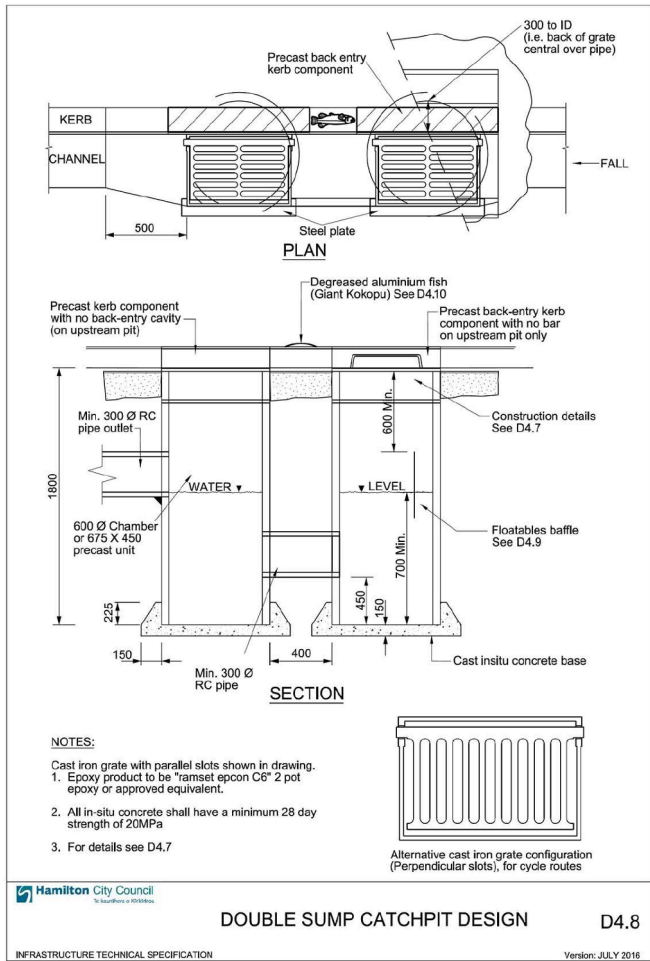
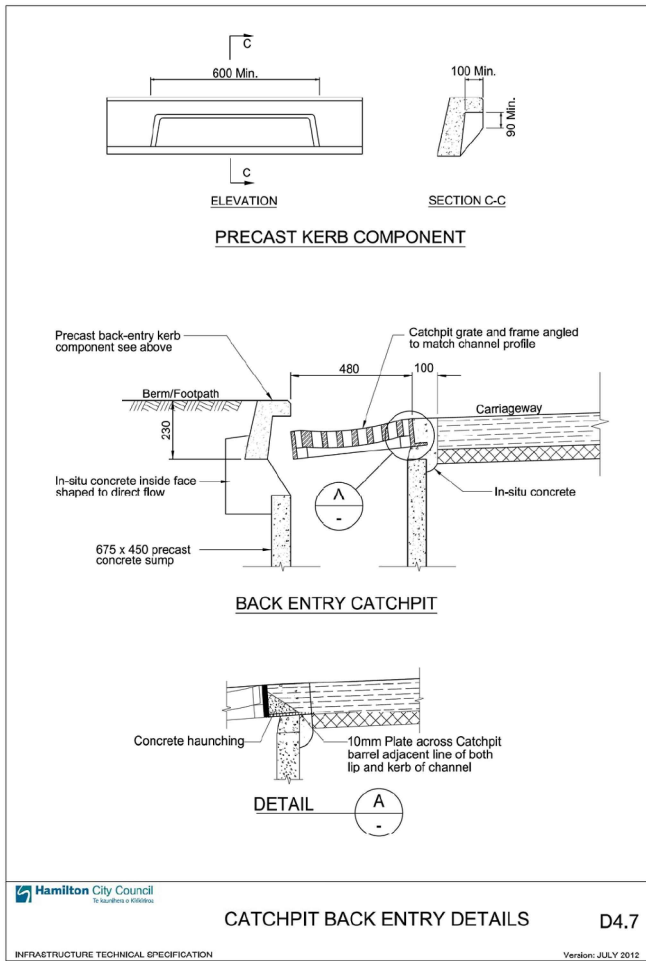
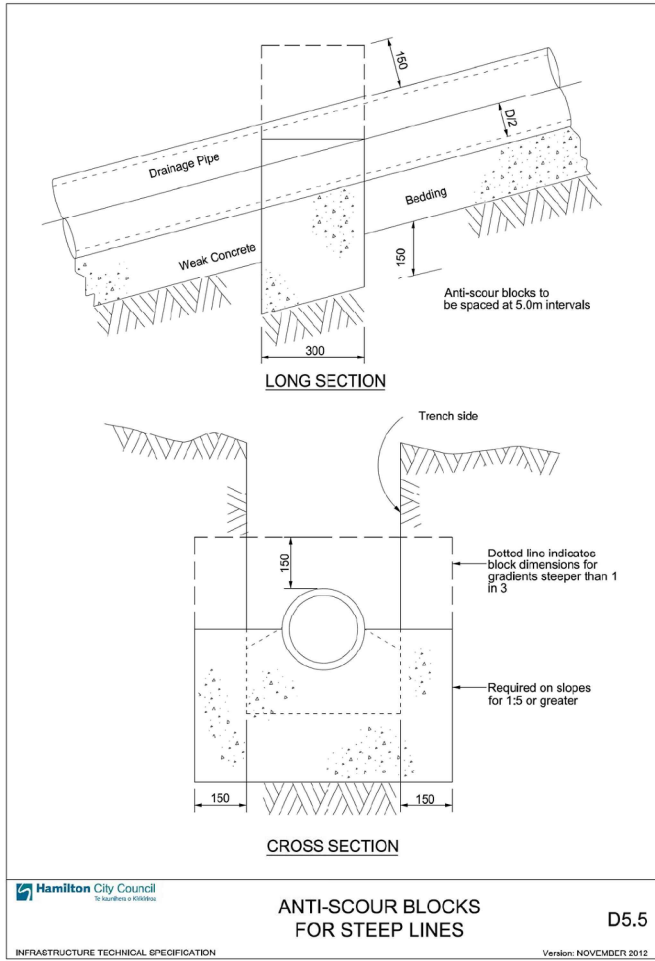
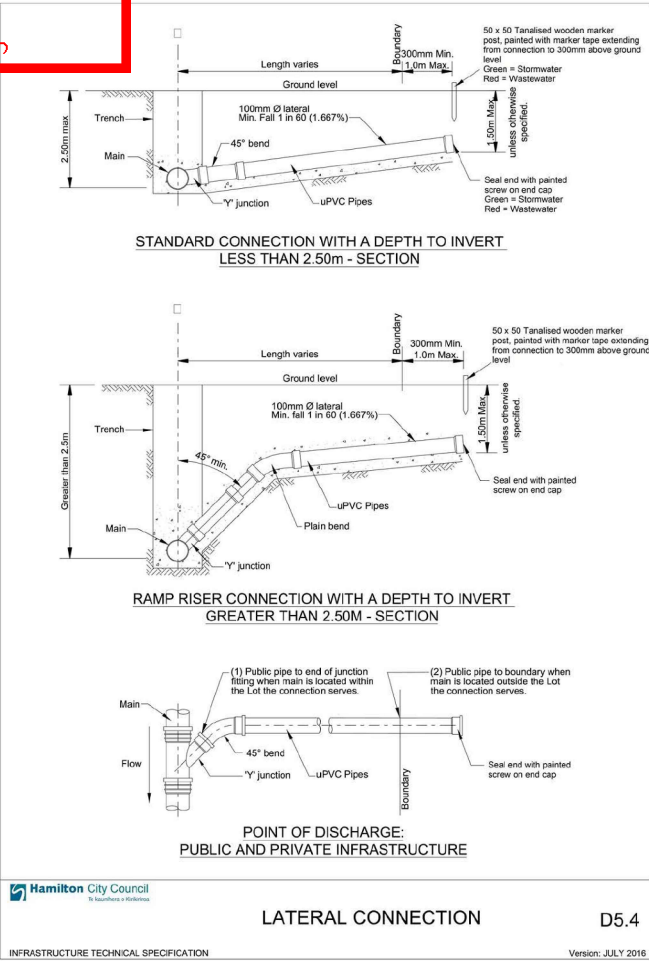
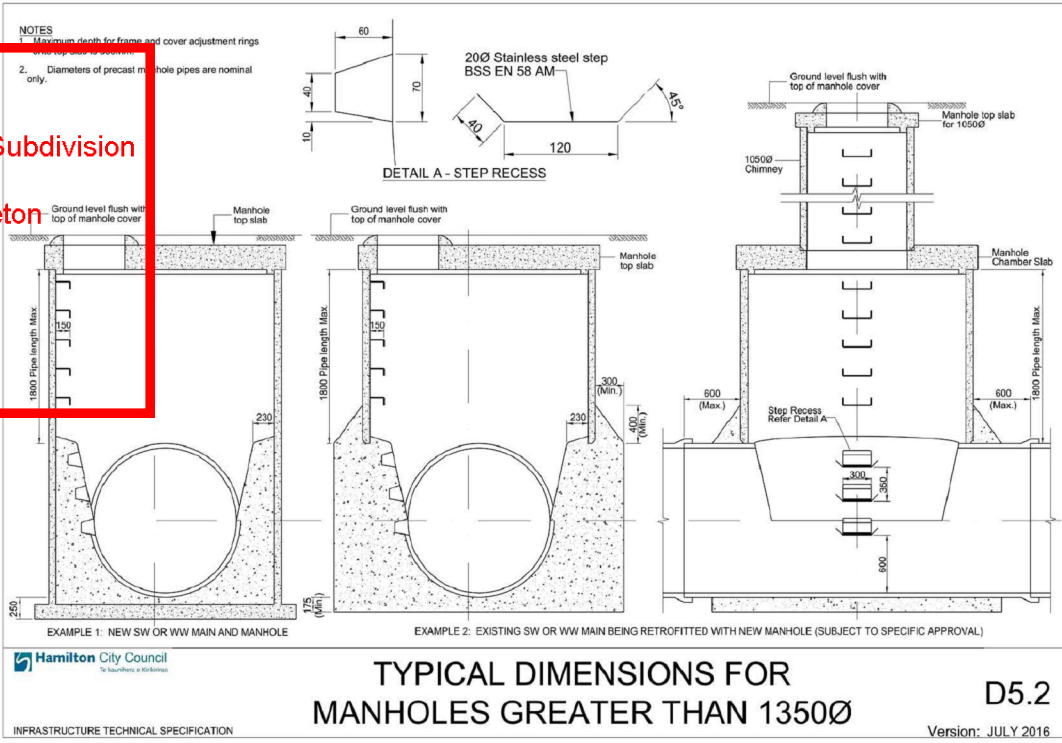
Approved Engineering Plan for Subdivision SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 85 of 92

Subject to notations in red



C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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CONSULTANTS

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PROJECT TITLE:

HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:

STORMWATER STANDARD DETAILS
SHEET 1

ISSUE STATUS:

SCALE: (A1/A3) NOT TO SCALE

SCALE BAR
N.T.S.

DRAWING NUMBER: 2011-01-490

REV: C1

CONSENT

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 87 of 92

Subject to notations in red

WATERMAIN CONNECTION AT GEORGE STREET

SCALE: (A1/A3) 1:750/1:1500

IMPORTANT INFORMATION
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HCC ITS

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Page: 87 of 92

ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REVISION DETAILS	BY	DATE

DRAWN: GDS	DATE: 09.2017
CHECKED: RJP	DATE: 29.03.18
APPROVED: RJP	DATE: 03.2018
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED WATERMAIN PLAN

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:750 / 1:1500
SCALE BAR: 0 15 30 45 60 75m
DRAWING NUMBER: 2011-01-500
REV: C1

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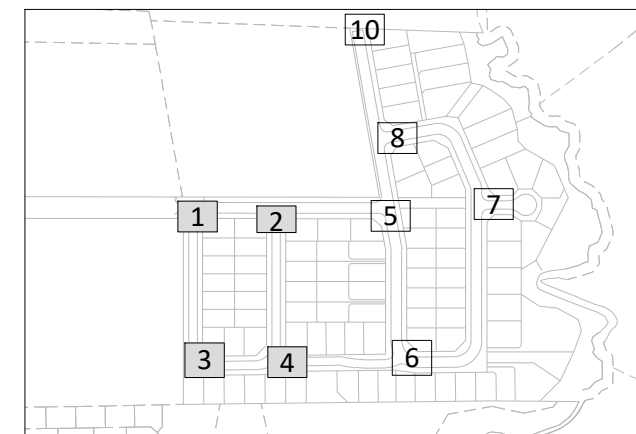
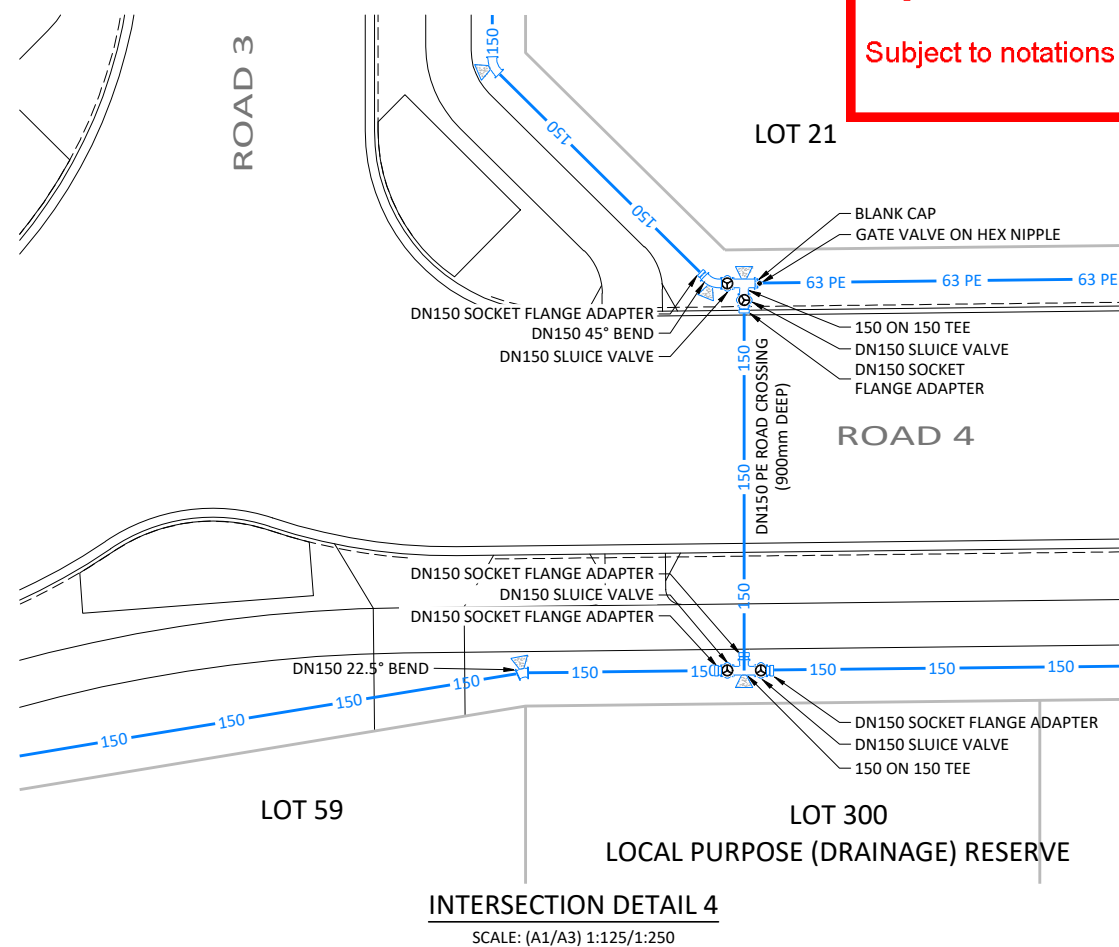
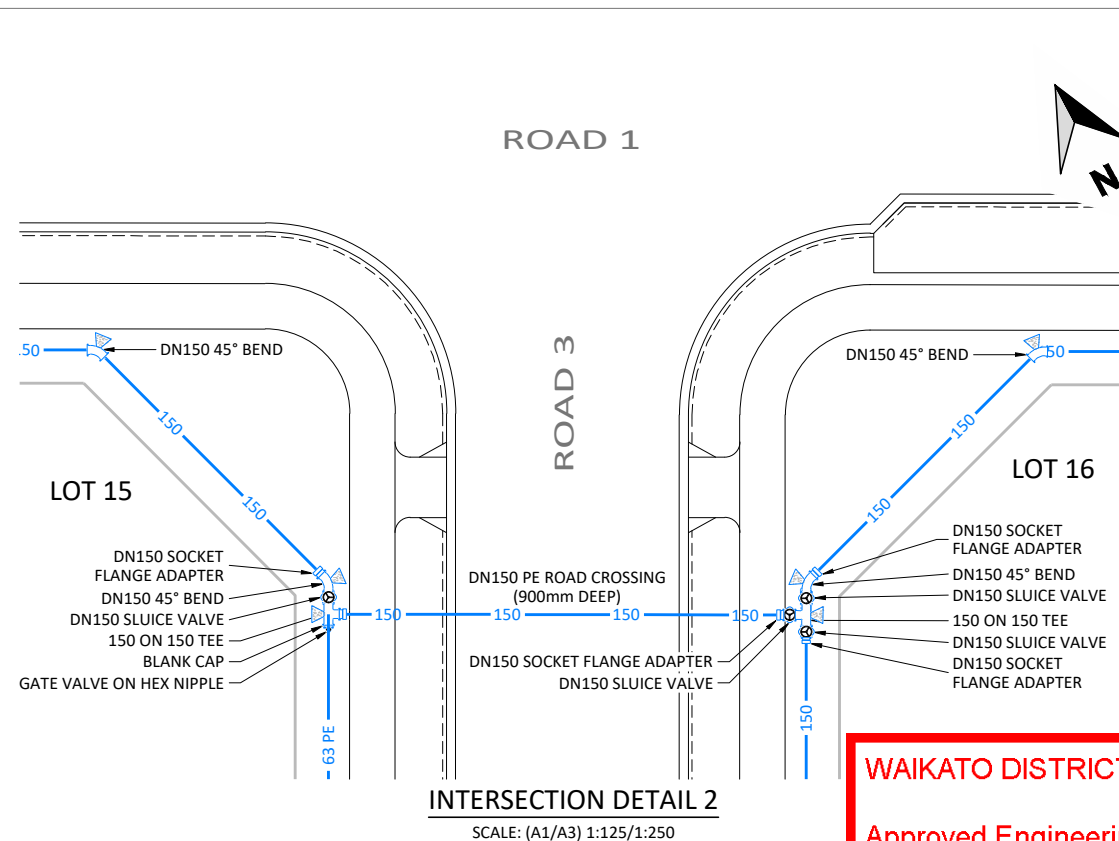
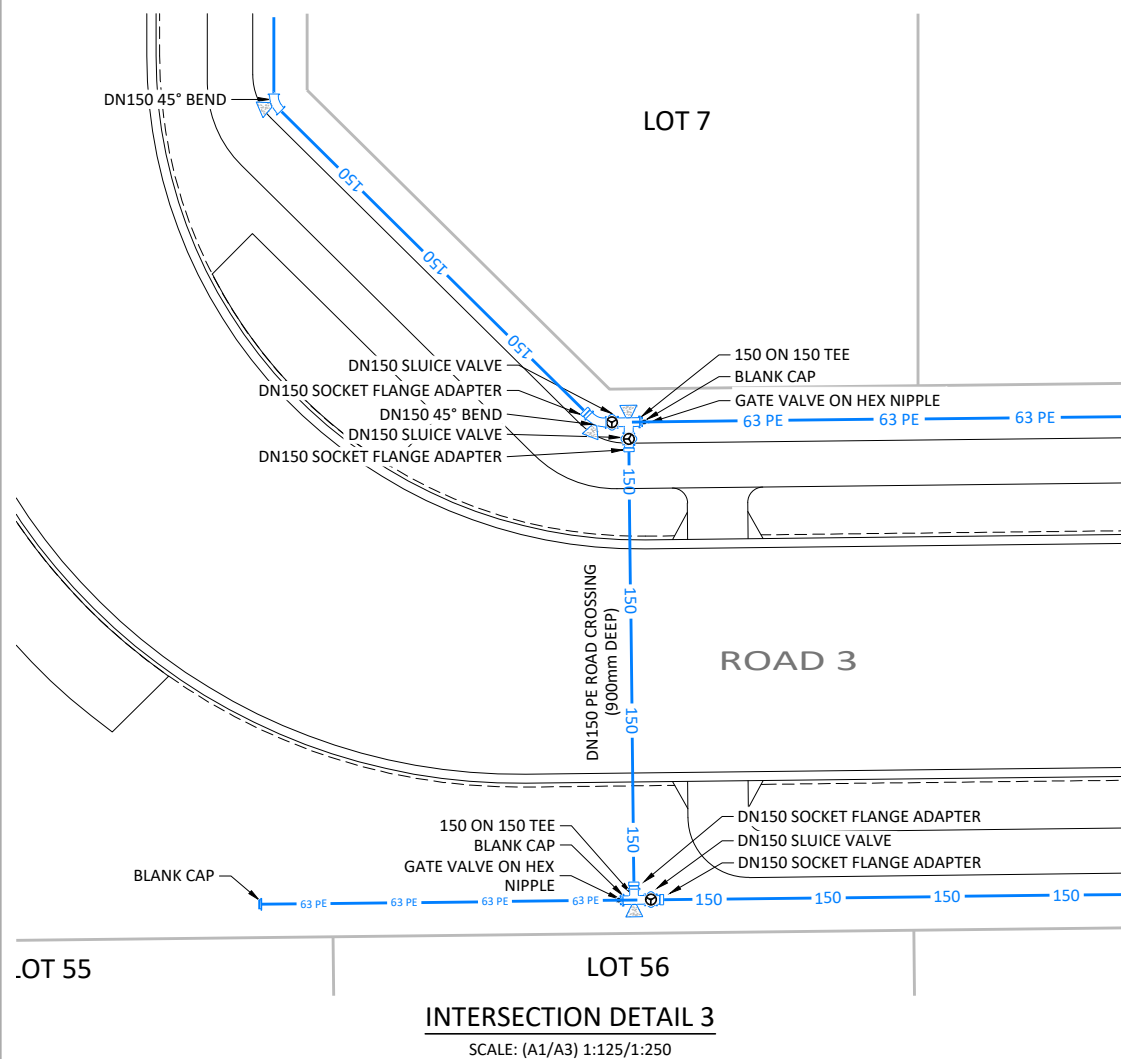
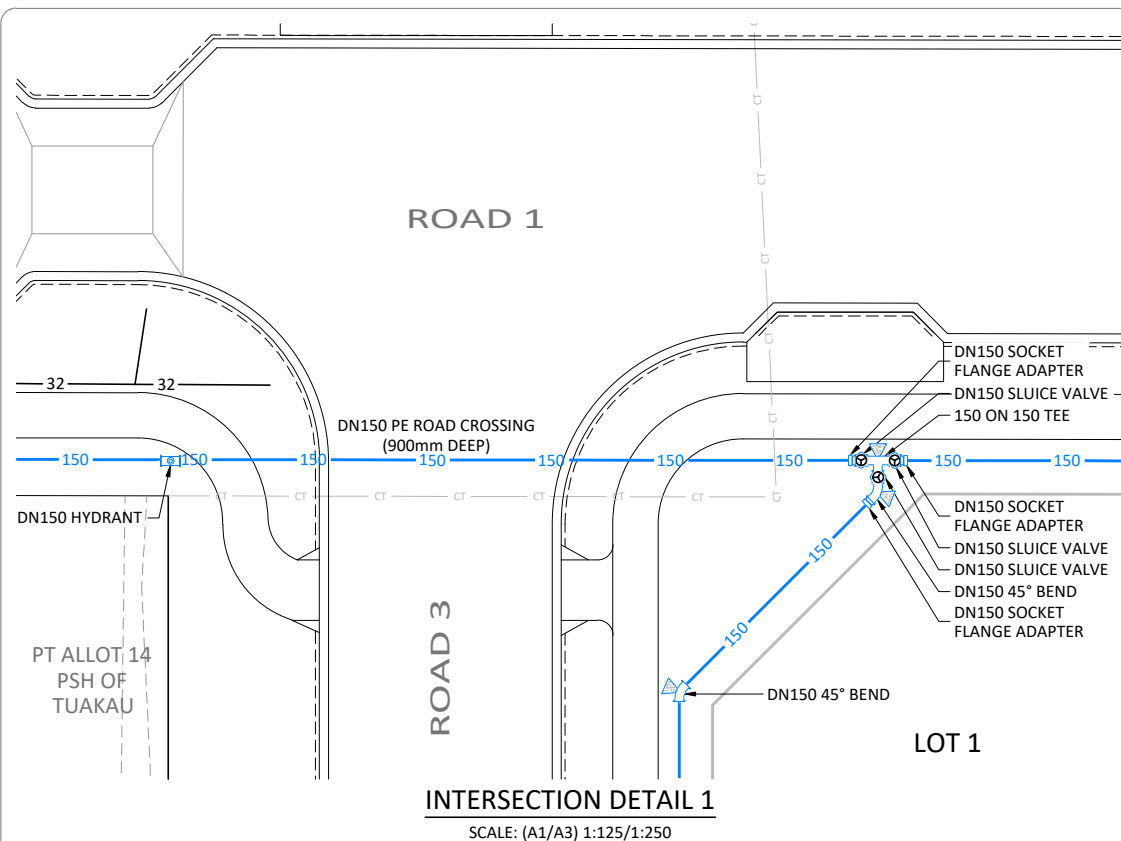
- ALL WATERMAINS TO COMPLY WITH WAIKATO DISTRICT COUNCIL INFRASTRUCTURE TECHNICAL SPECIFICATION AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING CODE.
- ALL WATERMAINS TO BE LAID AND BACKFILLED IN ACCORDANCE WITH COUNCIL STANDARD SPECIFICATIONS.
- ALL WATERMAINS TO BE LAID 1.1m FROM AND PARALLEL TO THE BOUNDARY UNLESS SHOWN OTHERWISE WITH 750mm MIN. COVER (900mm UNDER CARRIAGEWAYS).
- ALL ROAD CROSSINGS TO BE A MINIMUM OF DN150.
- ALL TRENCHES UNDER CARRIAGEWAY / VEHICLE CROSSINGS TO BE BACKFILLED WITH HARDFILL.
- ALL WORKS ON EXISTING WATERMAINS ARE TO BE CARRIED OUT BY AN APPROVED CONTRACTOR UNDER APPROVAL FROM WAIKATO DISTRICT COUNCIL AT DEVELOPERS EXPENSE.
- WHERE WATERMAINS ARE TO BE LAID IN AN ARC, THE PIPES SHALL BE LAID IN A CONSTANT RADIUS IN THE APPROPRIATE POSITION.
- CONTRACTOR TO SEARCH, LOCATE, PROTECT AND MAINTAIN ALL EXISTING SERVICES, POWER, COMMS ETC.
- CONTRACTOR IS TO FIX BY SURVEY ALL CHANGES IN DIRECTION AND AS-BUILT DEPTH OF WATERMAIN.
- WATERMAIN MATERIAL:
PVC
DN150 PVC PN12.5
PE
OD63 MDPE PE80B PN12 (SDR11)
- SEE SHEETS 2011-01-560 TO 562 FOR WATERMAIN FITTINGS AT INTERSECTIONS.
- SEE SHEET 2011-01-590 TO 591 FOR STANDARD DETAILS.

LEGEND
EXISTING

(CR)	PLOTTED FROM COUNCIL RECORDS
32	OD32 GI RIDERMAIN
50	OD50 GI RIDERMAIN
100	DN100 AC WATERMAIN
200	DN200 WATERMAIN
⊗	FIRE HYDRANT
⊗	SLUICE VALVE
○	PEET VALVE
⊗	BLANK CAP

PROPOSED

63 PE	OD63 PE RIDERMAIN
150	DN150 WATERMAIN
FH	FIRE HYDRANT
SV	SLUICE VALVE
PV	PEET VALVE
BC	BLANK CAP (WITH THRUST BLOCK)
W	WATER METER
—	WATER CONNECTION



NOTES:

1. REFER SHEET 2011-01-500 FOR NOTES.

LEGEND

- TEE
- 90° BEND
- 45° BEND
- 22.5° BEND
- 11.25° BEND
- SLUICE OR GATE VALVE
- BLANK CAP
- FIRE HYDRANT
- FLANGE ADAPTER
- ANCHOR BLOCK (ALL BENDS AND TEES)

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 88 of 92

Subject to notations in red

IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

All work shall be constructed in accordance with the Code of Practice HCC ITS

Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 88 of 92

REV	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	DATE
C1			04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
DKP	10.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

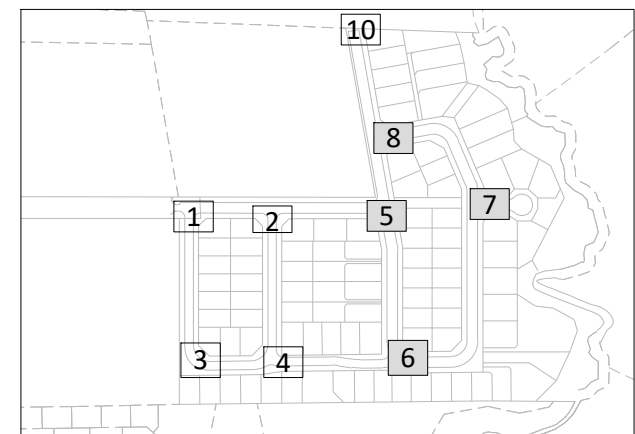
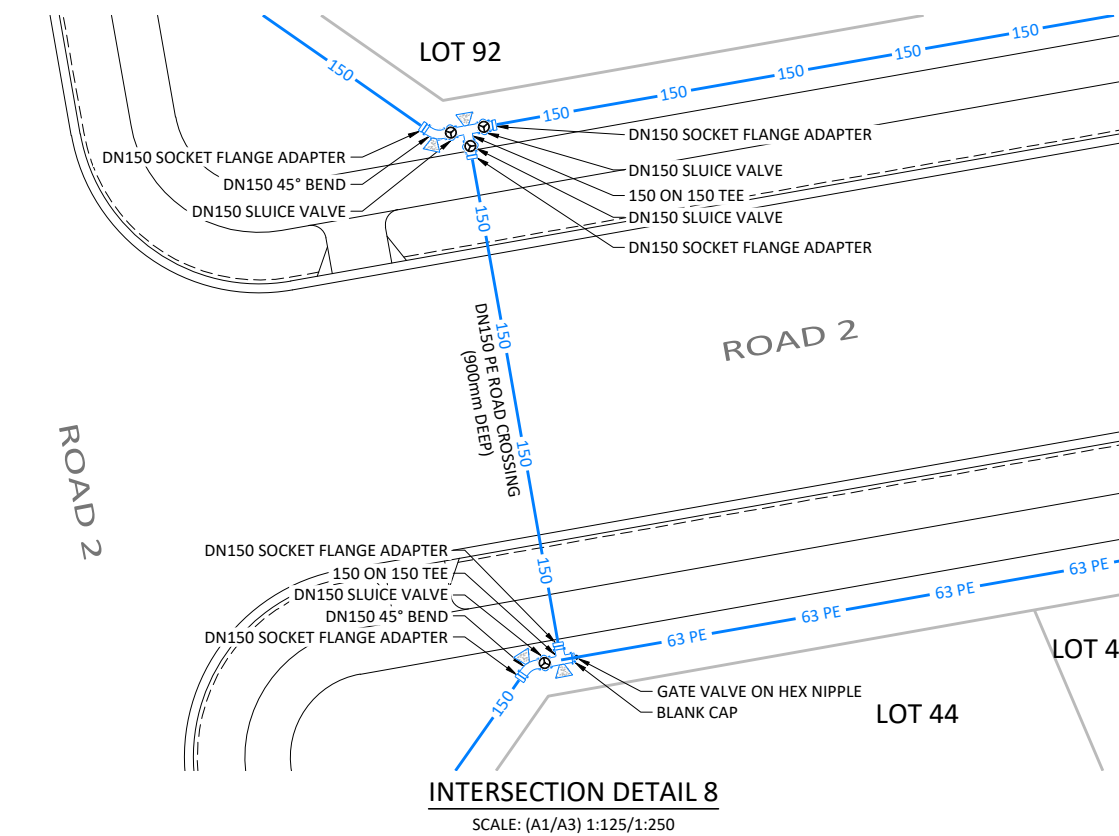
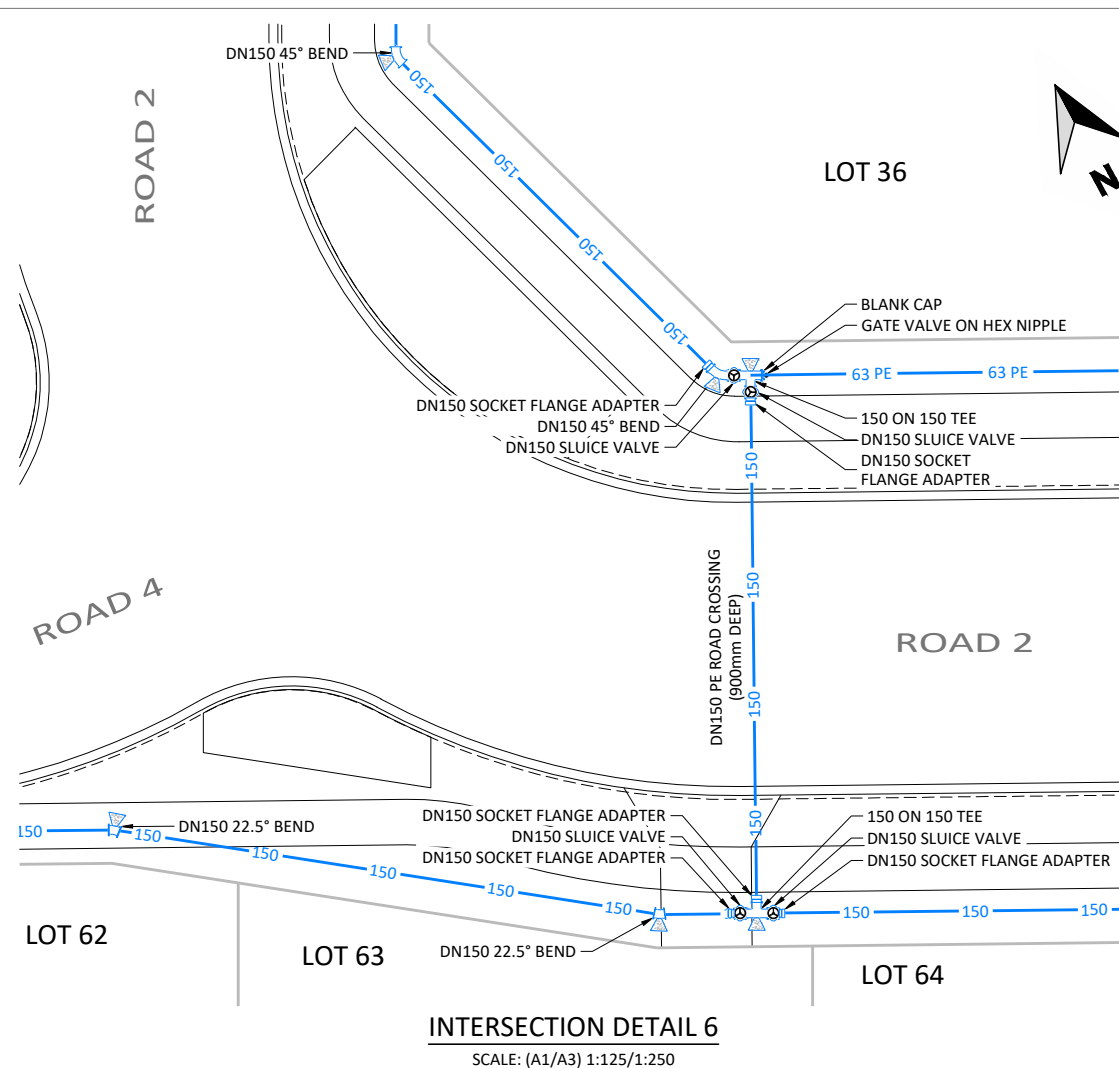
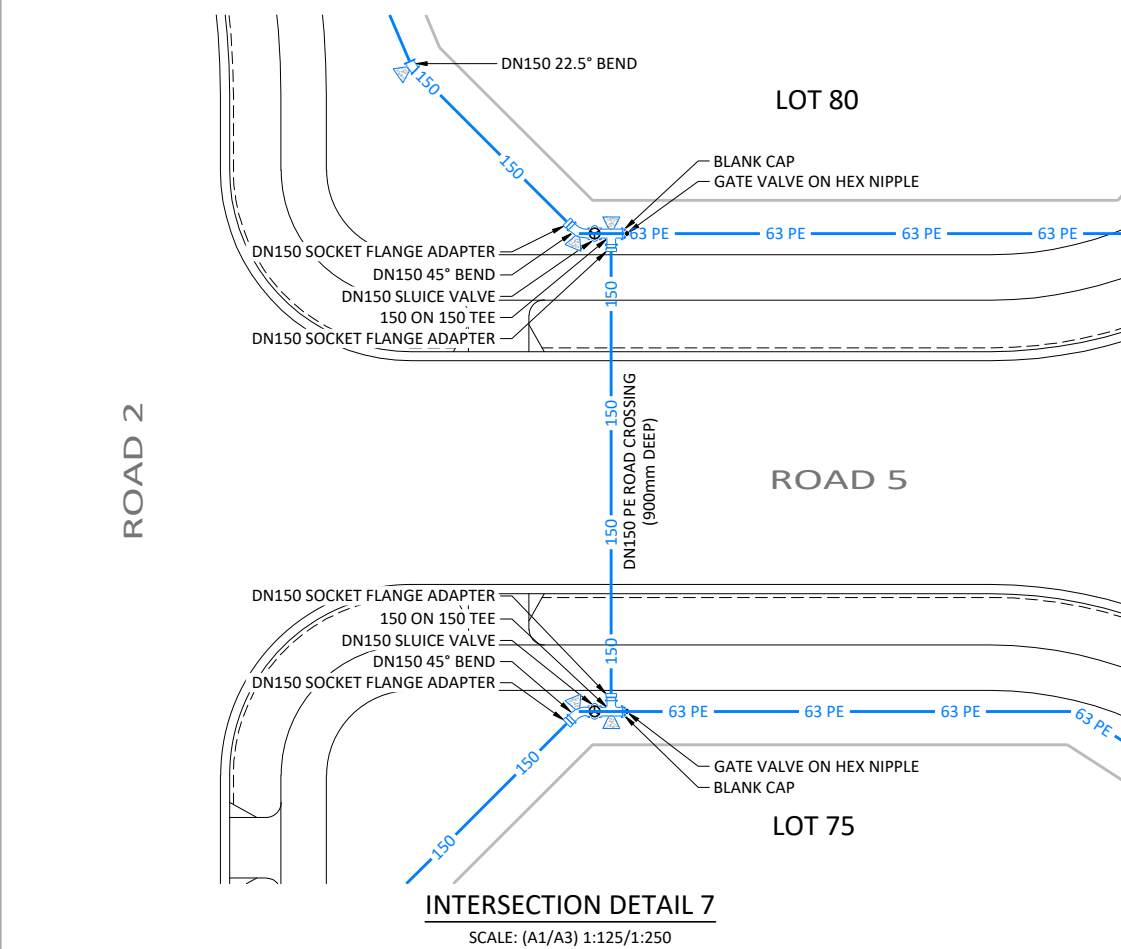
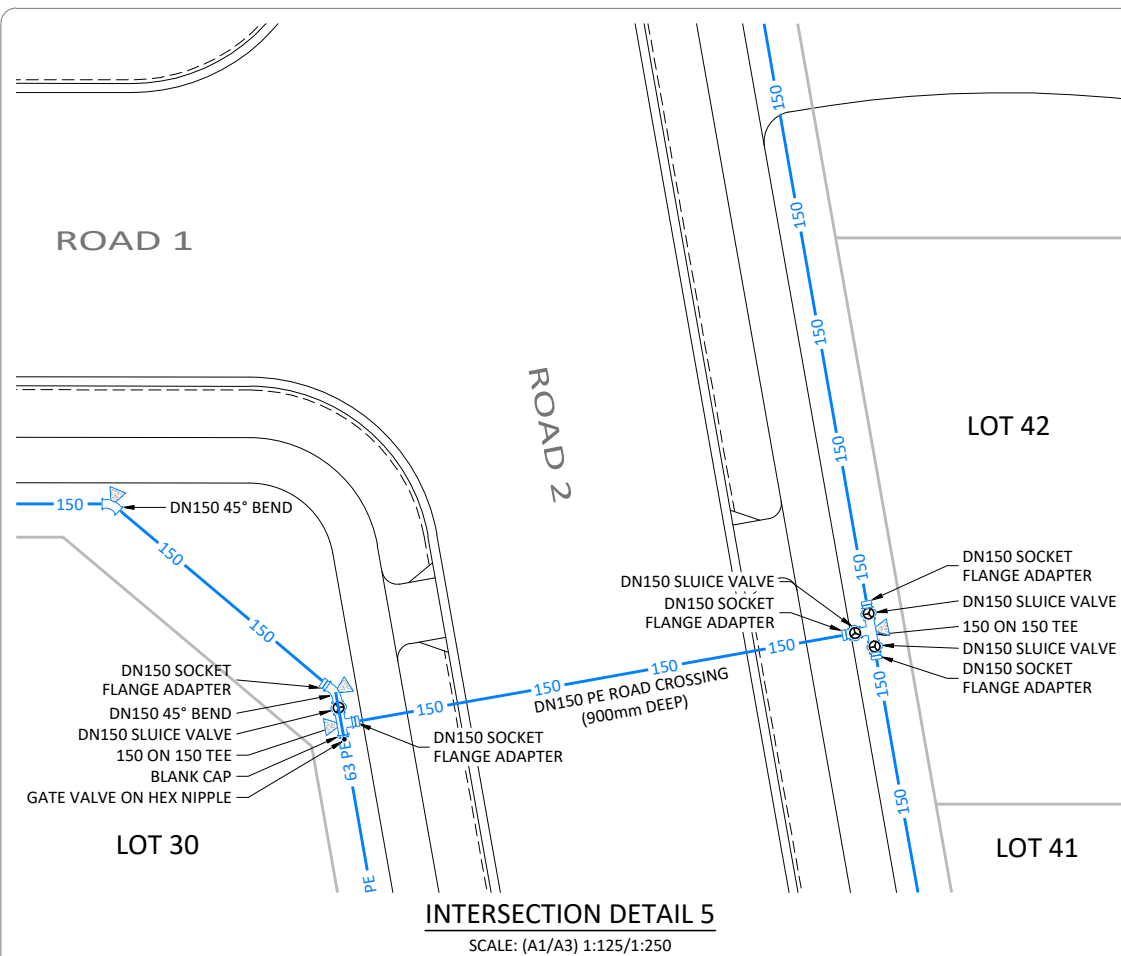
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CIVILPLAN
CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED WATERMAIN
INTERSECTION DETAILS PLAN
SHEET 1

ISSUE STATUS:	CONSENT
SCALE: (A1/A3)	1:125 / 1:250
SCALE BAR	0 2.5 5 7.5 10 12.5m
DRAWING NUMBER:	2011-01-560
REV:	C1



KEYPLAN

NOTES:

1. REFER SHEET 2011-01-500 FOR NOTES.

LEGEND

- TEE
- 90° BEND
- 45° BEND
- 22.5° BEND
- 11.25° BEND
- SLUICE OR GATE VALVE
- BLANK CAP
- FIRE HYDRANT
- FLANGE ADAPTER
- ANCHOR BLOCK (ALL BENDS AND TEES)

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 89 of 92

Subject to notations in red

IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC
hold point inspections
listed in the plan approval letter.

All work shall be constructed in accordance with
the Code of Practice
HCC ITS

Additional approvals from Waikato District Council
are required prior to
undertaking works within road reserve or
connecting to live mains.
Waikato District Council conditions, accepted plans
and specifications
shall be available on site during construction.

Page: 89 of 92

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
DKP	10.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

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CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED WATERMAIN
INTERSECTION DETAILS PLAN
SHEET 2

ISSUE STATUS:	CONSENT
SCALE: (A1/A3)	1:125 / 1:250
SCALE BAR	0 2.5 5 7.5 10 12.5m
DRAWING NUMBER:	2011-01-561
REV:	C1

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 90 of 92

Subject to notations in red

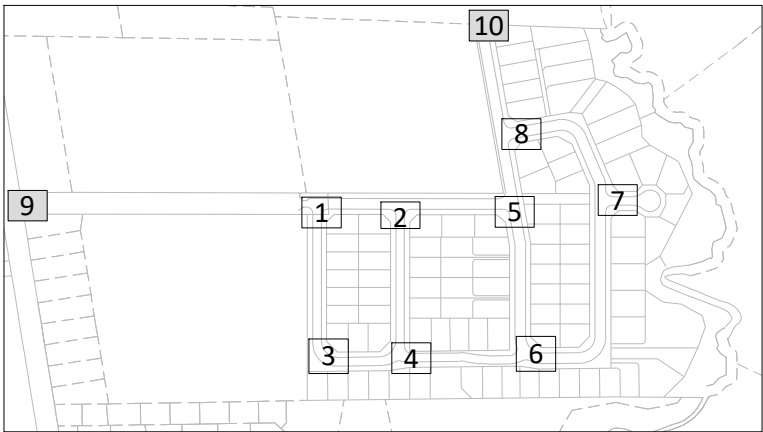
IMPORTANT INFORMATION

48 hours notice must be given prior to all WDC hold point inspections listed in the plan approval letter.

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Additional approvals from Waikato District Council are required prior to undertaking works within road reserve or connecting to live mains. Waikato District Council conditions, accepted plans and specifications shall be available on site during construction.

Page: 90 of 92



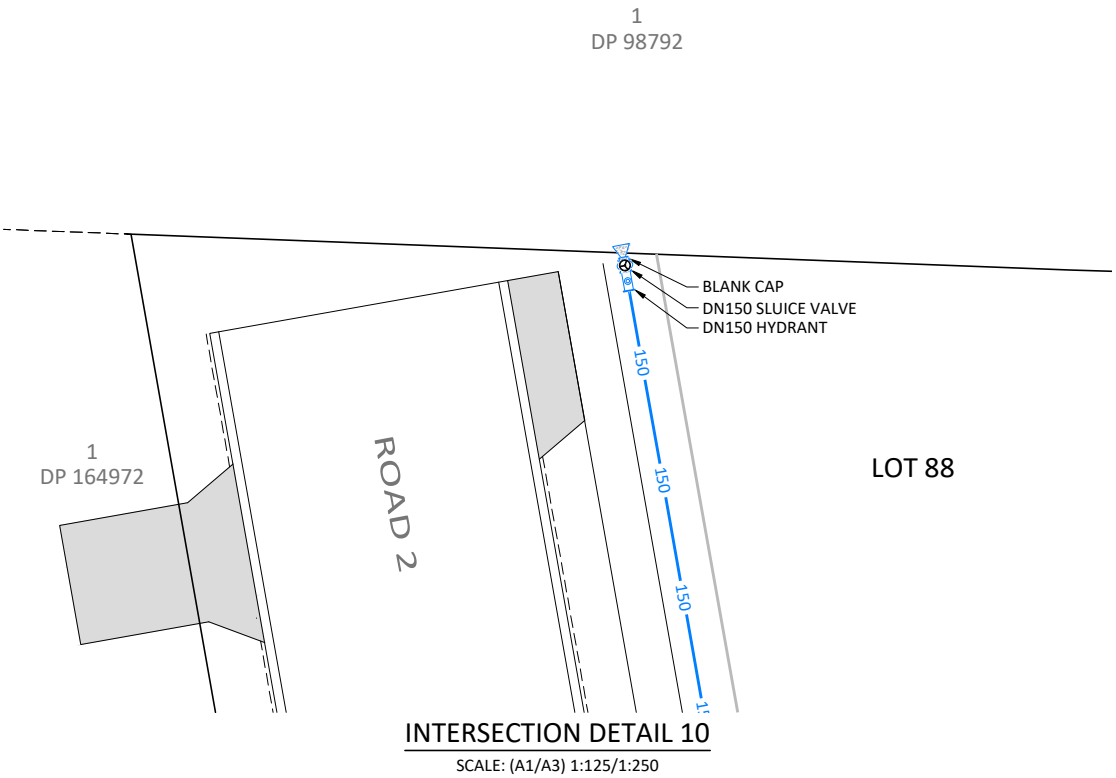
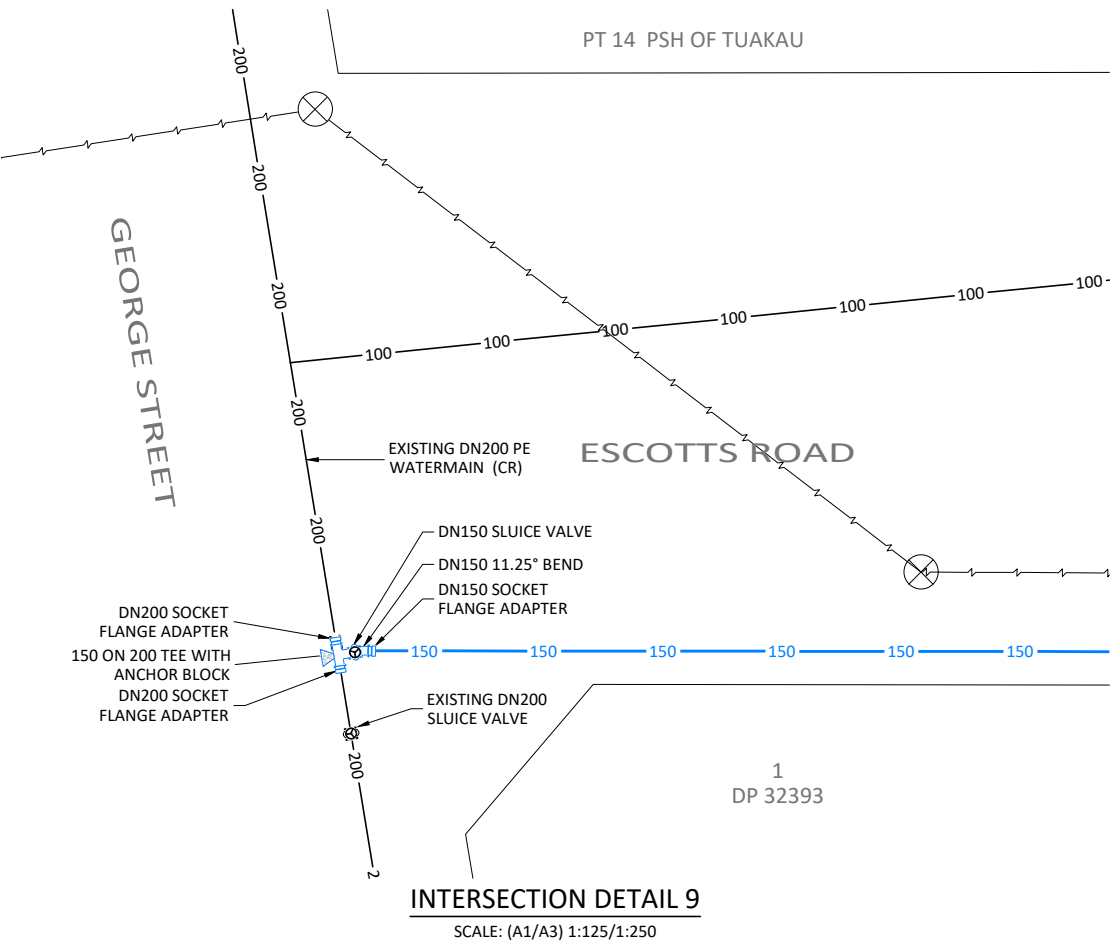
KEYPLAN

NOTES:

1. REFER SHEET 2011-01-500 FOR NOTES.

LEGEND

- TEE
- 90° BEND
- 45° BEND
- 22.5° BEND
- 11.25° BEND
- SLUICE OR GATE VALVE
- BLANK CAP
- FIRE HYDRANT
- FLANGE ADAPTER
- ANCHOR BLOCK (ALL BENDS AND TEES)



C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18		
REV	REVISION DETAILS	BY	DATE		

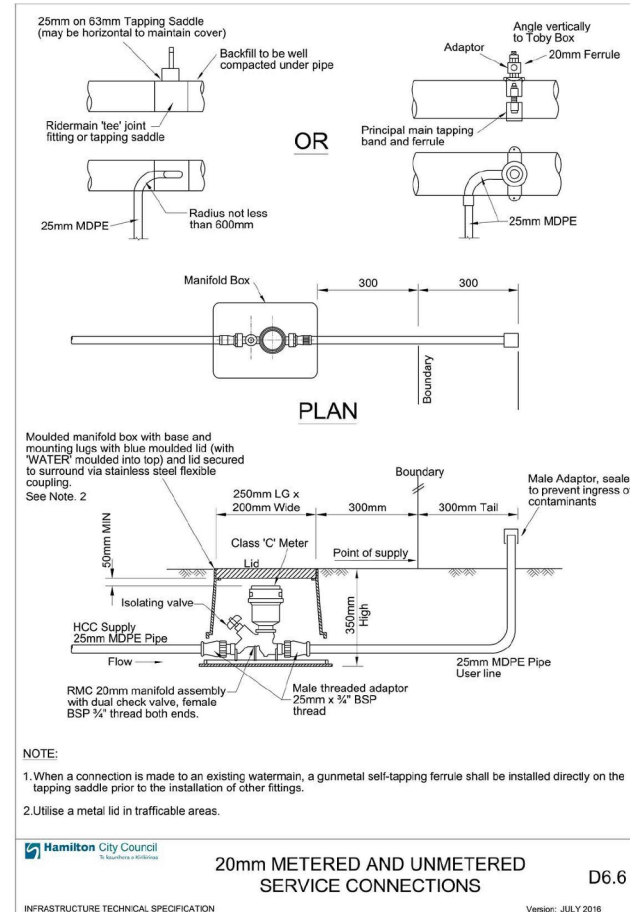
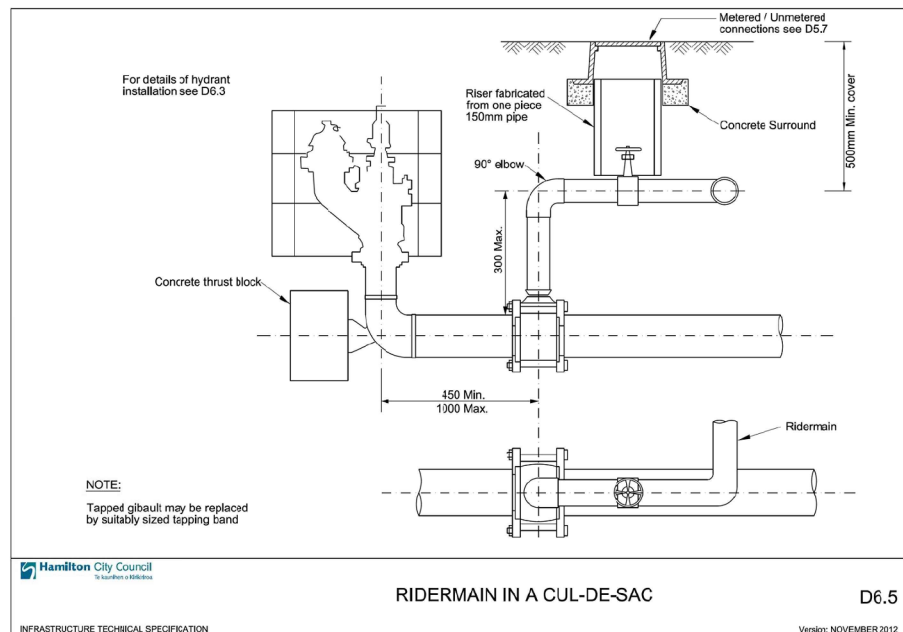
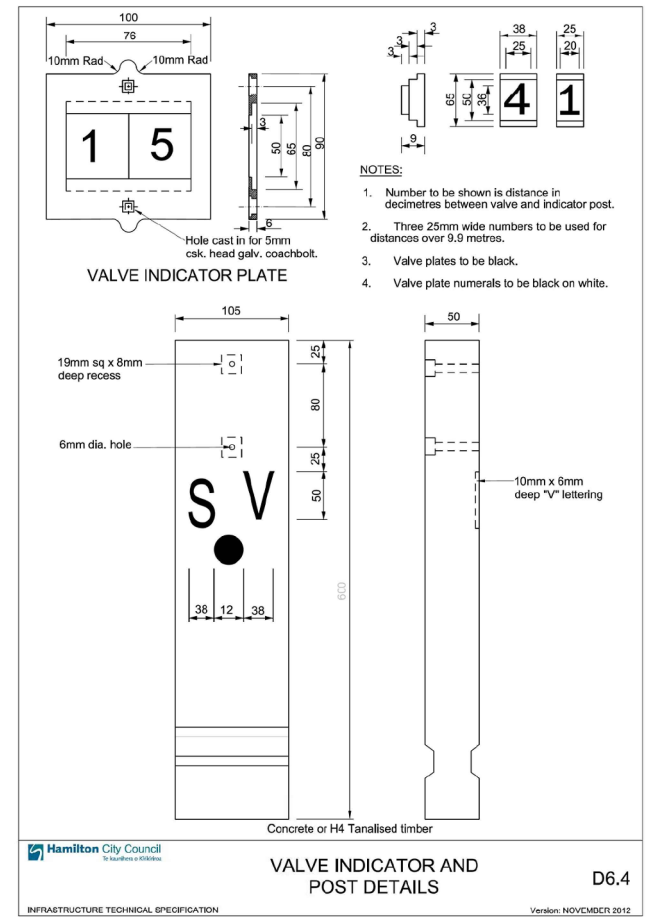
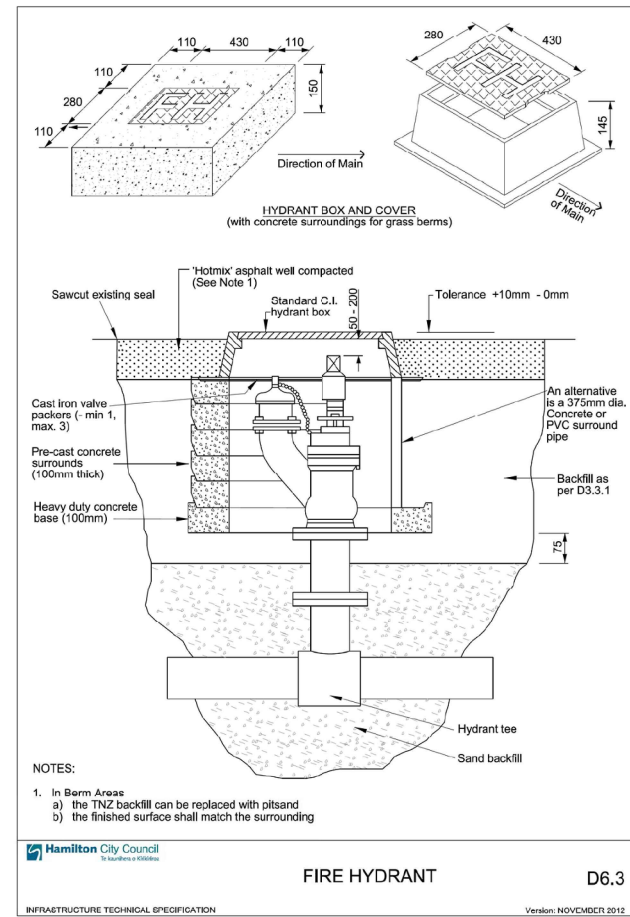
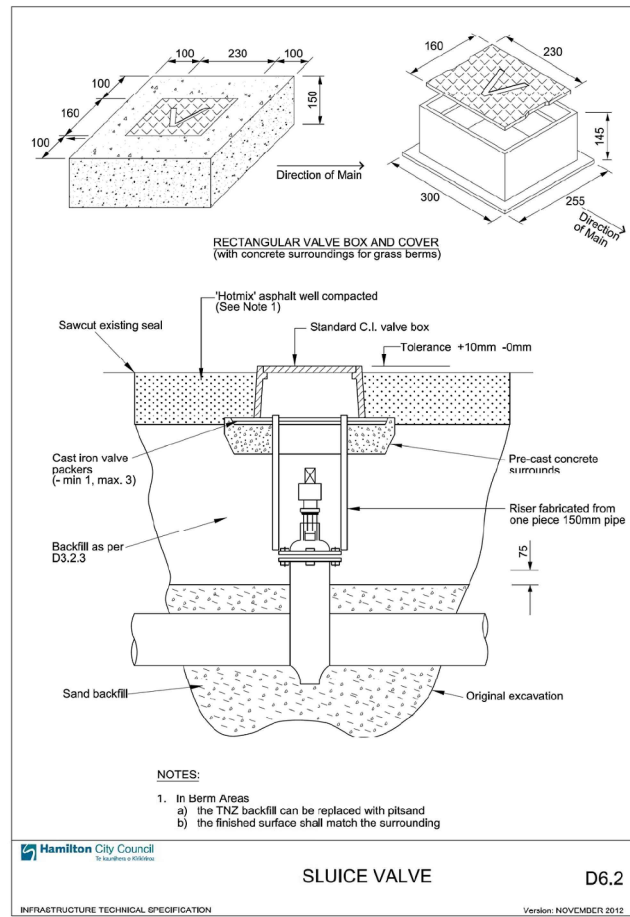
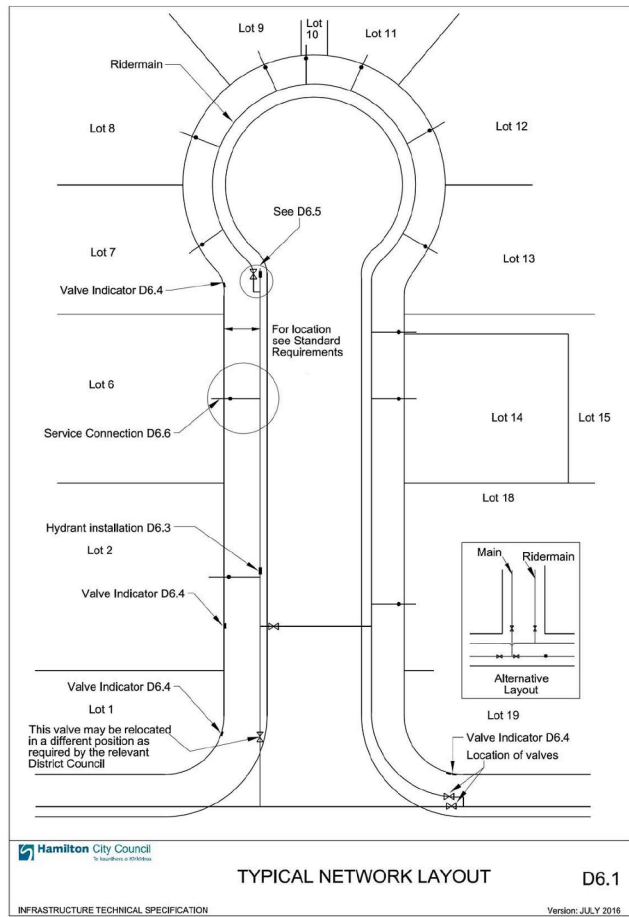
DRAWN:	DATE:	
DKP	10.2017	
CHECKED:	DATE:	
RJP	29.03.18	
APPROVED:	DATE:	
RJP	03.2018	
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PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
PROPOSED WATERMAIN
INTERSECTION DETAILS PLAN
SHEET 3

ISSUE STATUS: **CONSENT**
SCALE: (A1/A3) 1:125 / 1:250
SCALE BAR 0 2.5 5 7.5 10 12.5m
DRAWING NUMBER: 2011-01-562 REV: C1



WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18

Development Engineer: JTempleton

Date: Thursday, 5 July 2018

Page: 91 of 92

Subject to notations in red

IMPORTANT INFORMATION

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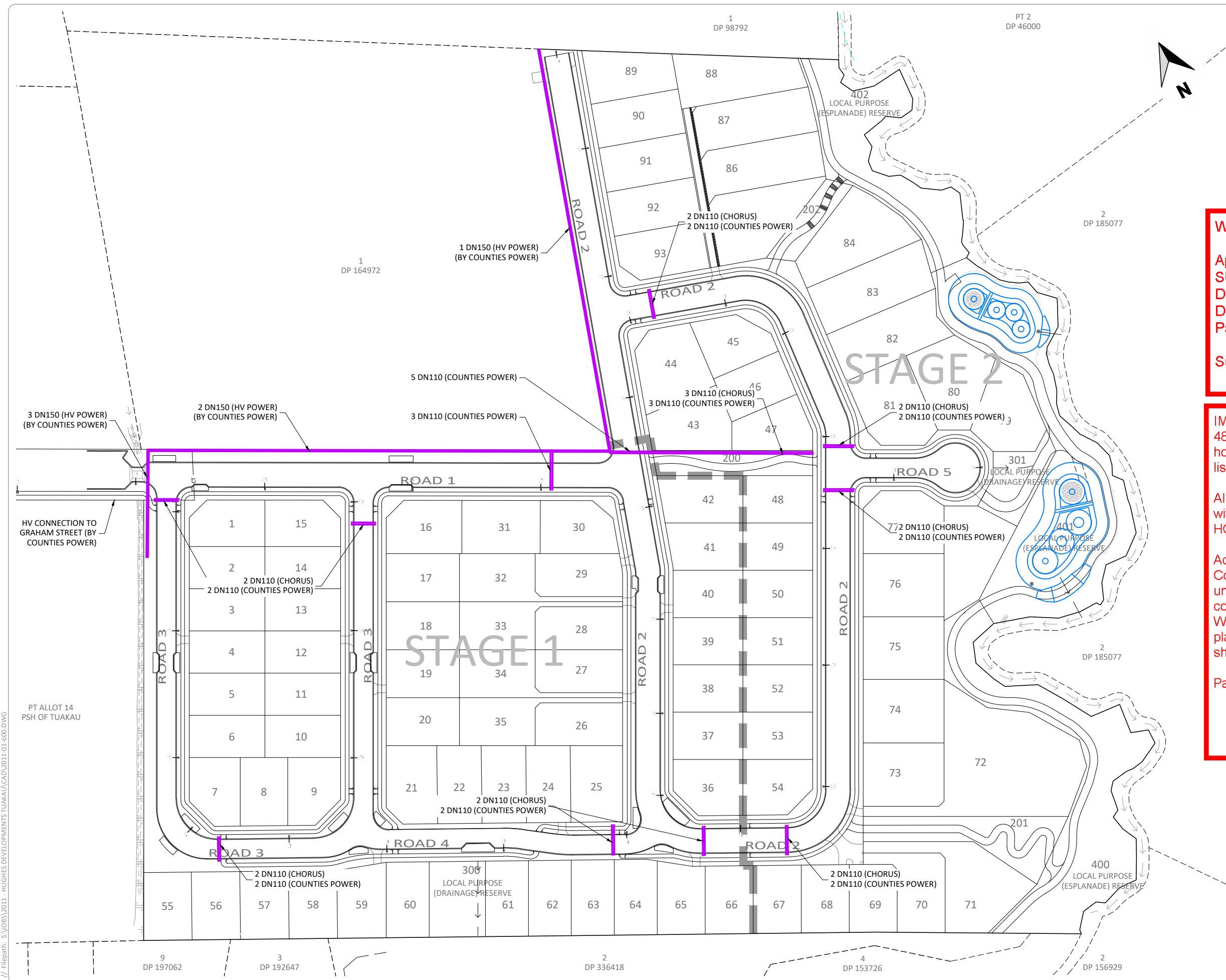
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Page: 91 of 92

C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018

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- NOTES:
- 1. ALL WORKS AND MATERIALS ARE TO COMPLY WITH RELEVANT COUNCIL AND UTILITIES ENGINEERING STANDARDS.
 - 2. CHORUS DUCT = GREEN
 - 3. POWER DUCT = RED

LEGEND

UTILITIES PVC DUCT

WAIKATO DISTRICT COUNCIL

Approved Engineering Plan for Subdivision
SUB 0311/18
Development Engineer: JTempleton
Date: Thursday, 5 July 2018
Page: 92 of 92

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Page: 92 of 92

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C1	ISSUED FOR RESOURCE CONSENT AND ENGINEERING APPROVAL	GDS	04.04.18
REV	REVISION DETAILS	BY	DATE

DRAWN:	DATE:
GDS	09.2017
CHECKED:	DATE:
RJP	29.03.18
APPROVED:	DATE:
RJP	03.2018
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CIVILPLAN
CONSULTANTS

Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:

HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:

DUCTING - ROAD CROSSING PLAN

ISSUE STATUS: **CONSENT**

SCALE: (A1/A3) 1:750 / 1:1500

SCALE BAR: 0 15 30 45 60 75m

DRAWING NUMBER: 2011-01-600

REV: C1