

GENERAL NOTES:
 1. MODELLING CARRIED OUT IN TUFLOW
 2. FLOW DEPTHS SHOW IN FLOOD DEPTH PLANS EXCLUDE DEPTHS < 0.05M
 3. AFFLUX DEPTH CHANGES EXCLUDE CHANGES WITHIN -0.05M TO 0.05M.

IMAGERY CREDITS:
 AUCKLAND COUNCIL, MAXAR

MODEL IN & OUT	OLFP	02_Pr100yr LINKS	0.50-1.00m	3.50-4.00m	02_Pr100yr REVIEW	MAX DEPTH CHANGE (m)	0.05-0.20m
Auto_QvsH	2000m2 to 4000m2	02_Pr100yr SECTIONS	1.00-1.50m	02_Pr100yr SAFETY	LOW	-0.40--0.20m	0.20-0.40m
TP108_QvsT	4000m2 to 1ha	02_Pr100yr DEPTH	1.50-2.00m	HAZARDS	MEDIUM	-0.05--0.20m	02_Pr100yr AFFLUX LABELS
MODEL EXTENT	1ha to 3ha	MAX DEPTH (m)	2.00-2.50m	PEDESTRIAN	HIGH	-0.05-0.05m	
TuFlow Catchment Lengths	3ha to 100ha	0.00-0.05m	2.50-3.00m	VEHICLE+PEDESTRIAN			
PR. PARCELS	EX. PARCELS	0.05-0.50m	3.00-3.50m				

REV	DATE	DESCRIPTION	DES	REV	REL	LOGG

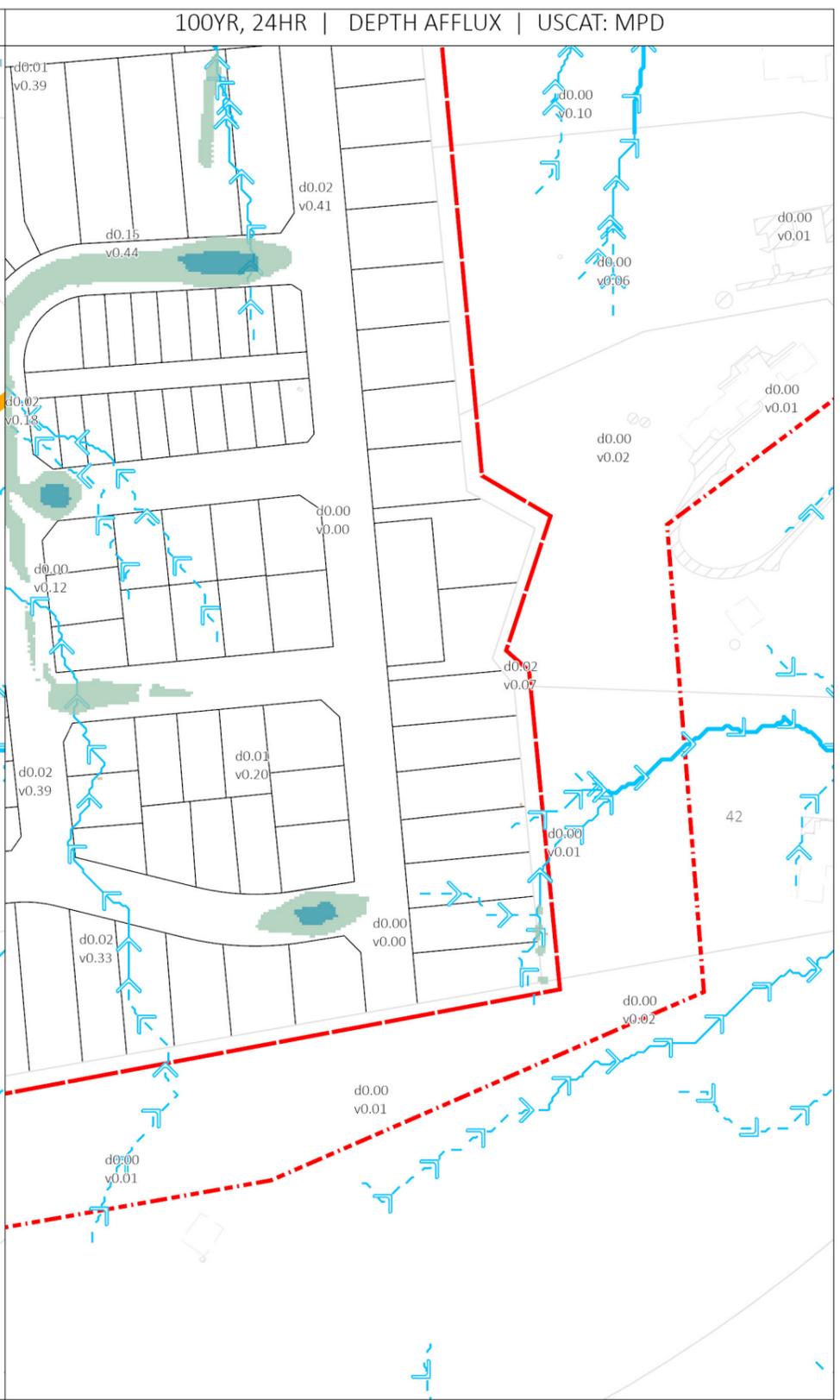
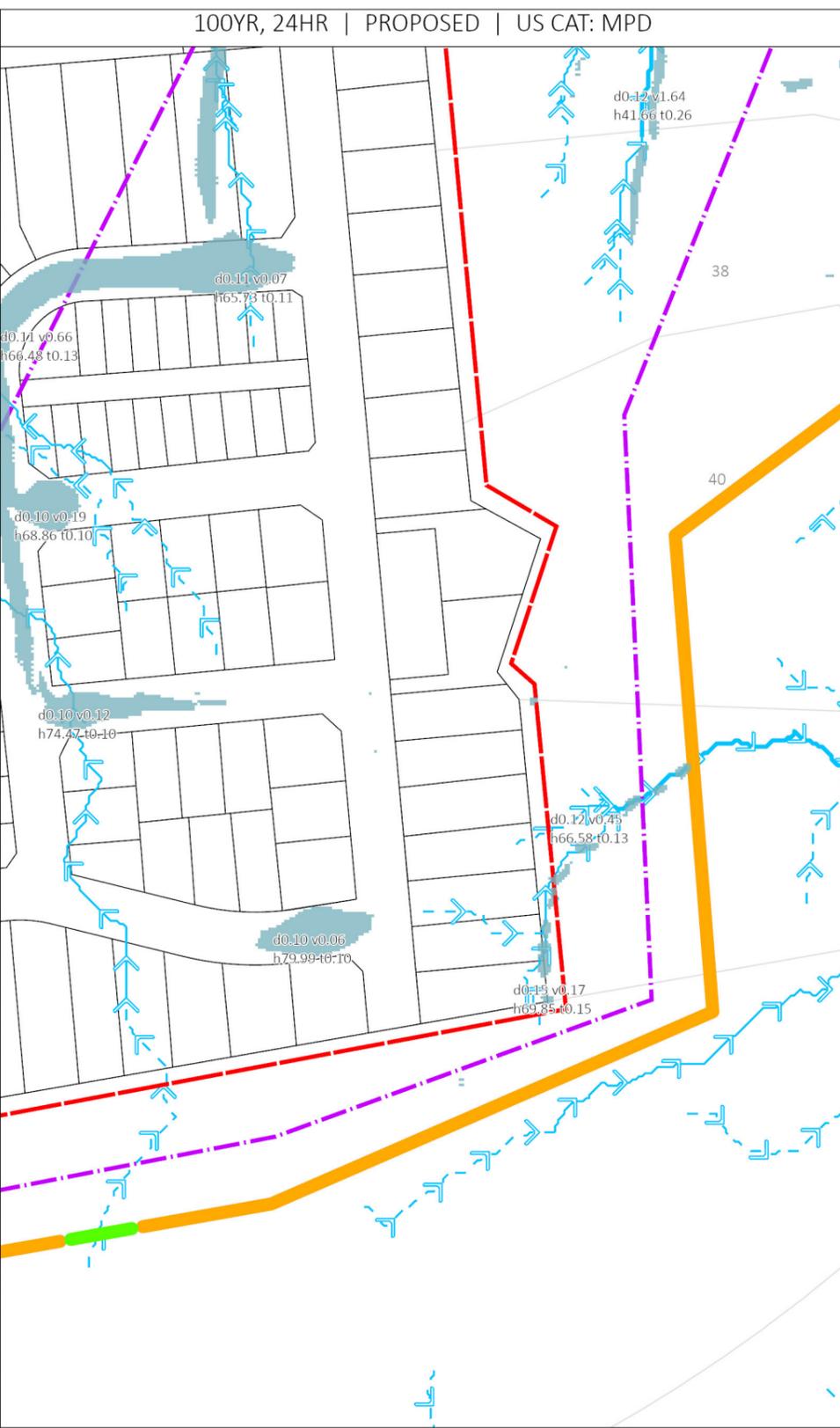
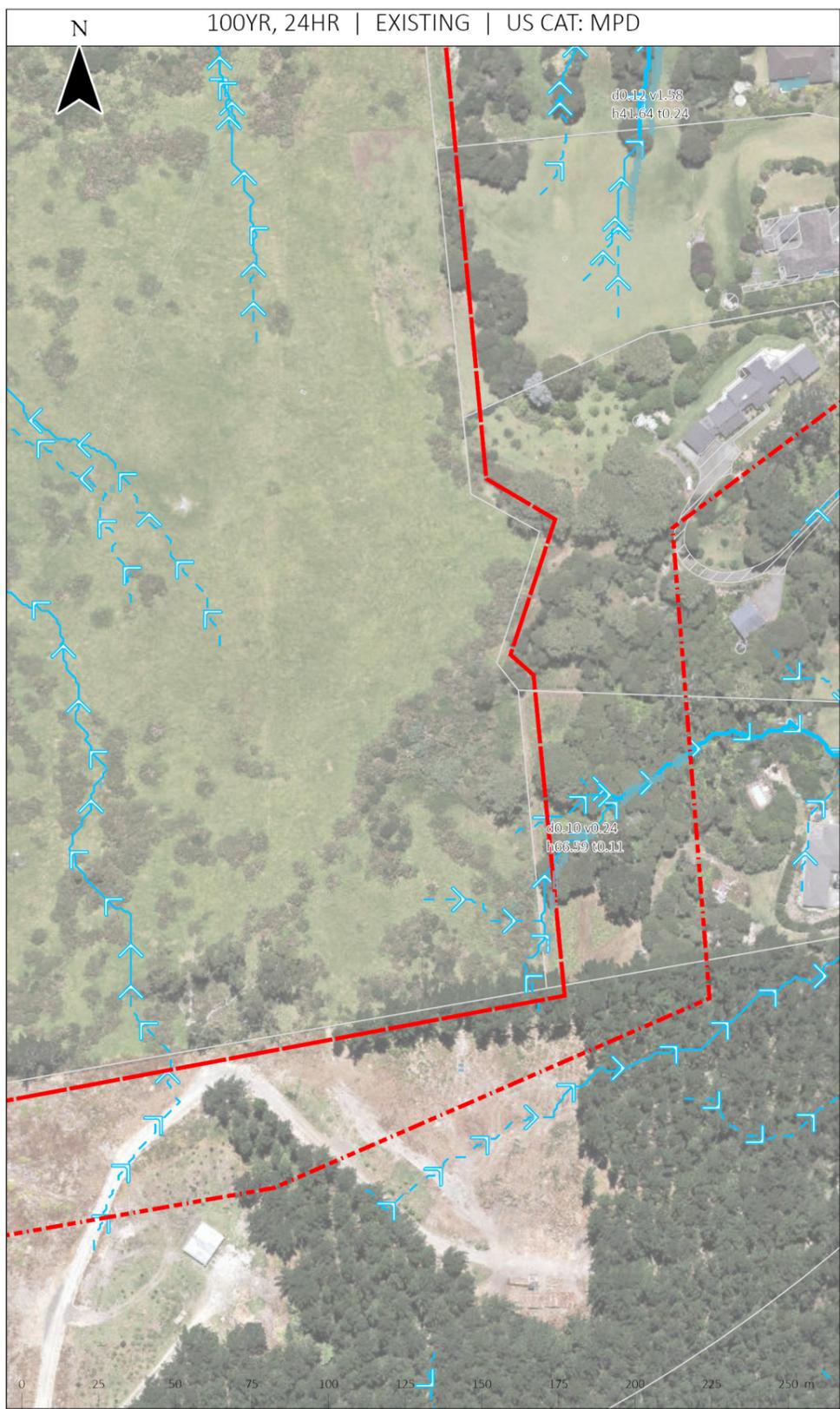


40 MAHI ROAD HELENSVILLE

FLOODING MODEL RESULTS
SCENARIO A1

STATUS: PRELIMINARY DESIGN			
DRAWING NO: 58016			
SCALE: 1:2,000	SHEET: A3	DATE: 02/10/24	DATE: 02/10/24

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IMAGERY CREDITS:
 AUCKLAND COUNCIL, MAXAR

LEGEND:

MODEL IN & OUT	OLFP	O2_Pr100yr SECTIONS	O2_Pr100yr SAFETY HAZARDS	O2_Pr100yr REVIEW	MAX DEPTH CHANGE (m)	O2_Pr100yr AFFLUX LABELS
Auto_QvsH	2000m2 to 4000m2	02_Pr100yr DEPTH	1.00-1.50m	REV_TYPE	-0.40--0.20m	0.05-0.20m
TP108_QvsT	4000m2 to 1ha	MAX DEPTH (m)	1.50-2.00m	LOW	-0.05--0.20m	0.20-0.40m
MODEL EXTENT	1ha to 3ha	0.00-0.05m	2.00-2.50m	MEDIUM	-0.05-0.05m	
TuFlow Catchment Lengths	EX. PARCELS	0.05-0.50m	2.50-3.00m	HIGH		
PR. PARCELS	O2_Pr100yr LINKS	0.50-1.00m	3.00-3.50m			
			3.50-4.00m			

REV	DATE	DESCRIPTION	DES	REV	REL	LOGG

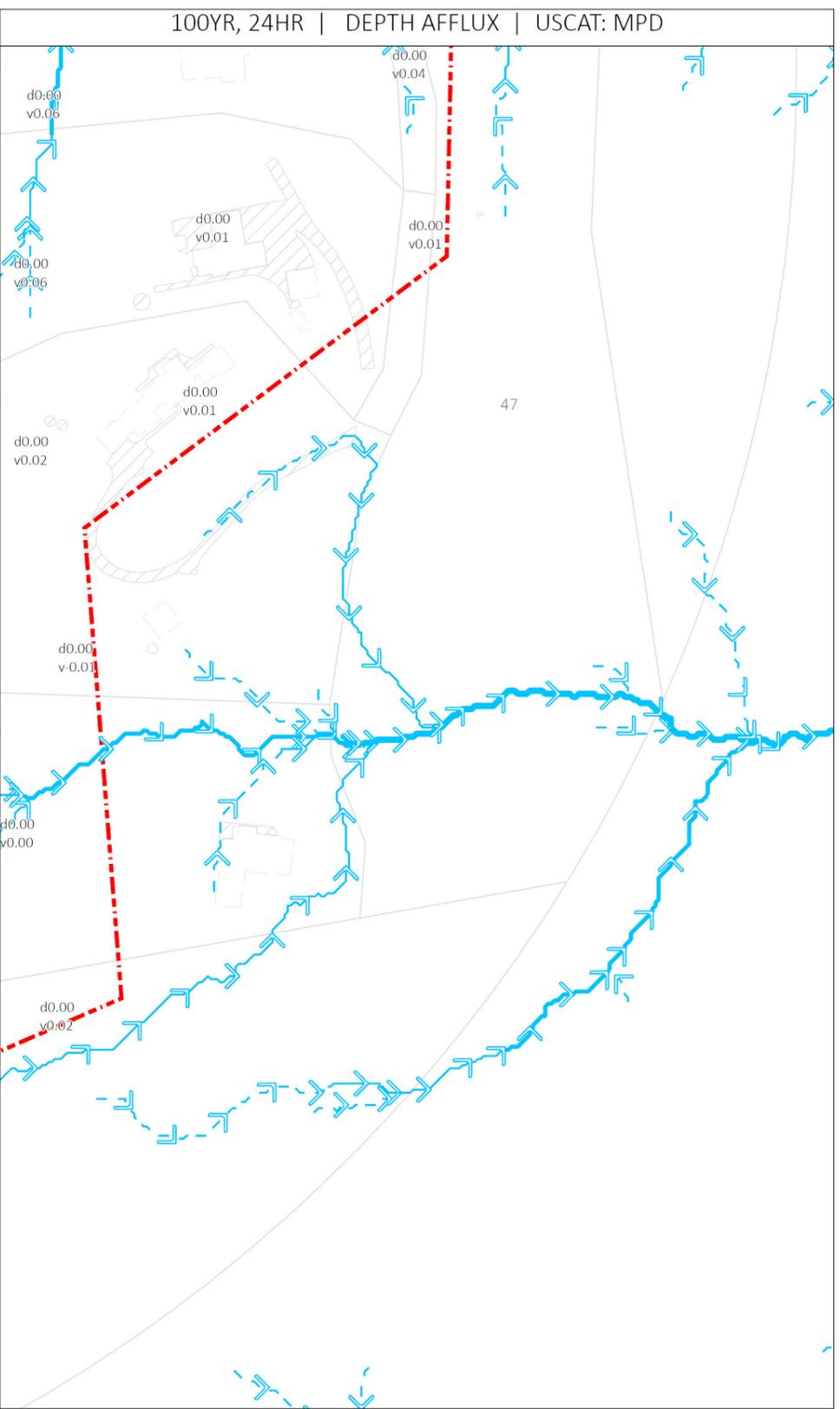
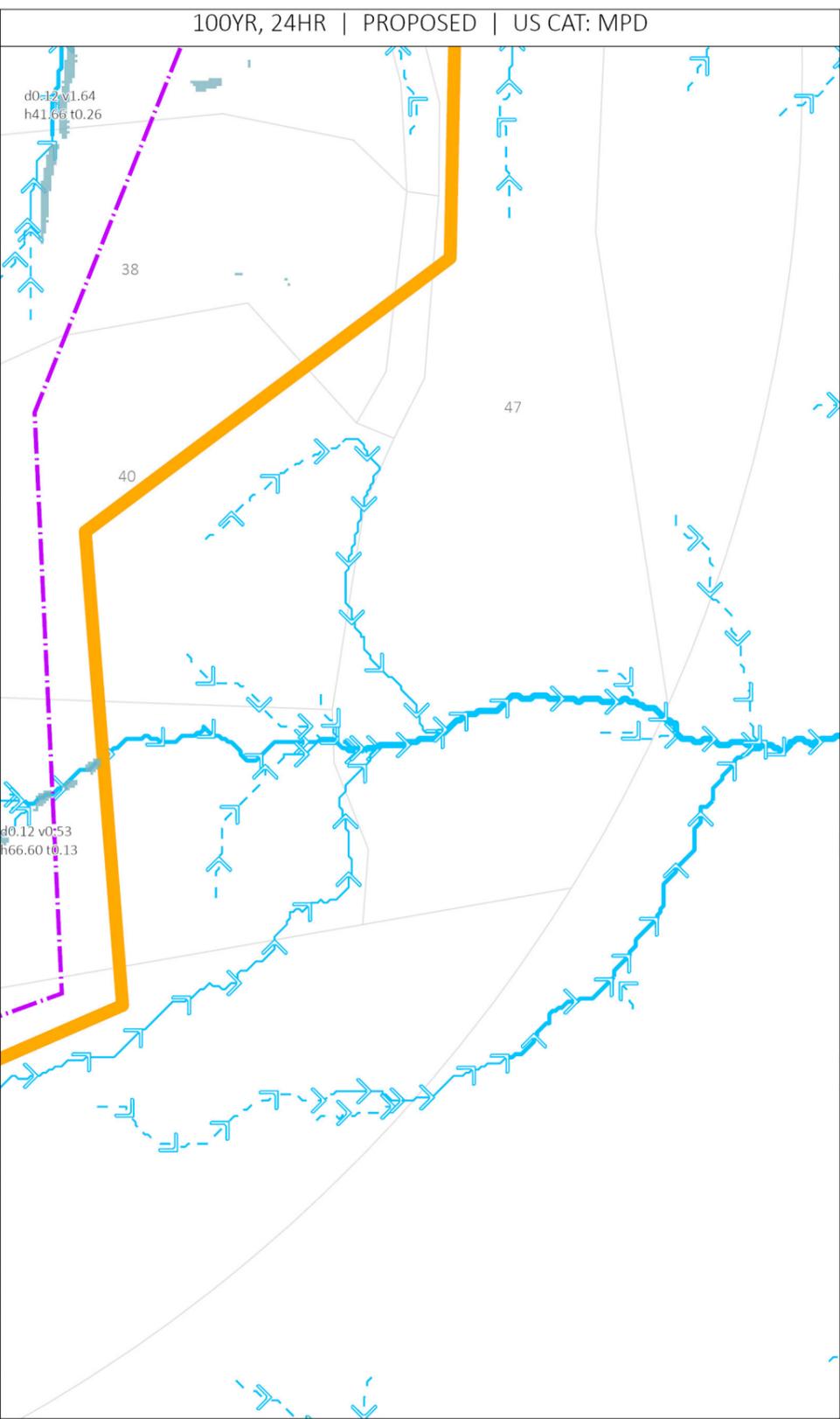
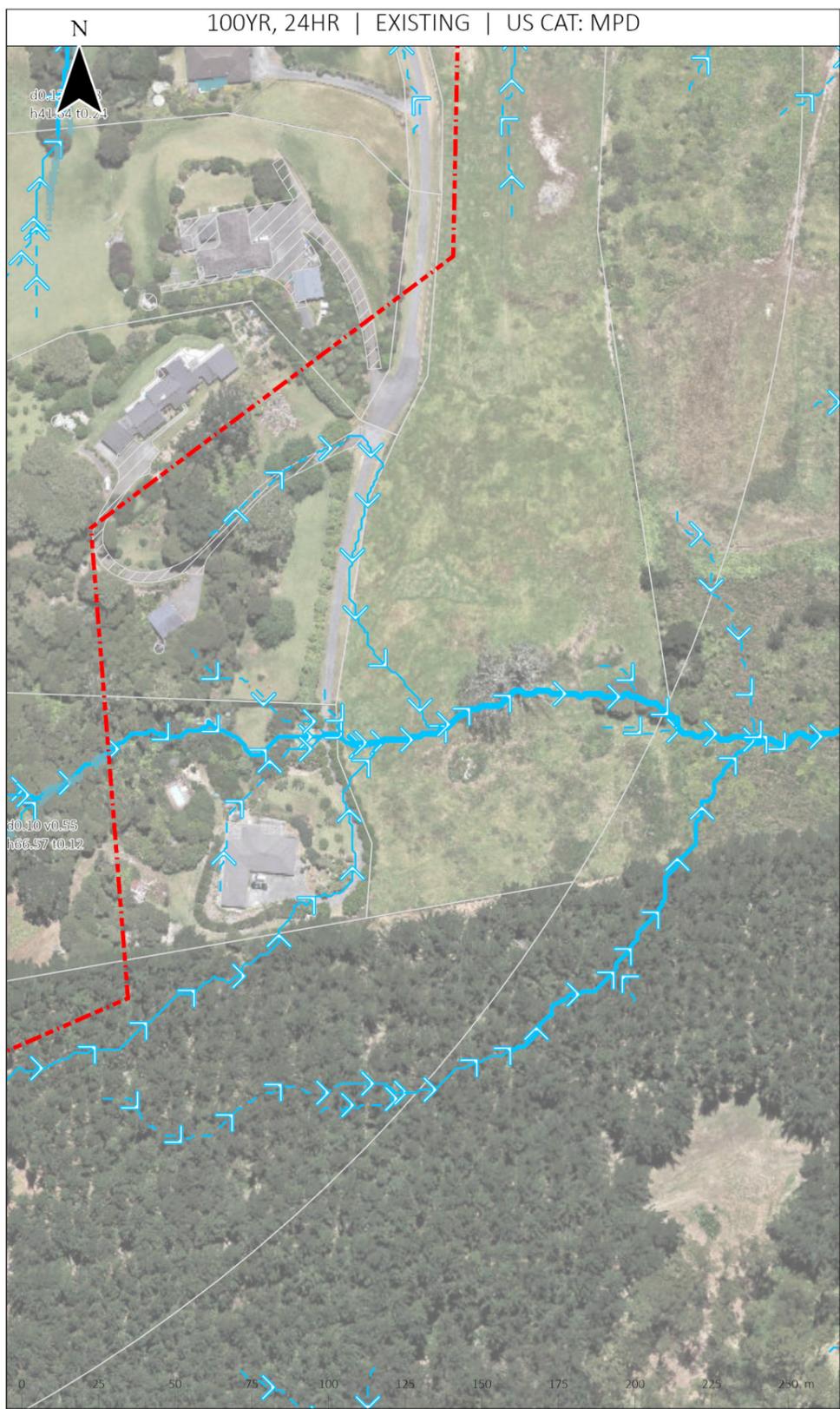


40 MAHI ROAD HELENSVILLE

FLOODING MODEL RESULTS
 SCENARIO A1

STATUS: PRELIMINARY DESIGN			
DRAWING NO: 58017			
SCALE: 1:2,000	SHEET: A3	REVISION: 02/10/24	DATE: 02/10/24

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IMAGERY CREDITS:
 AUCKLAND COUNCIL, MAXAR

LEGEND		MODEL IN & OUT		O2_Pr100yr DEPTH		O2_Pr100yr SAFETY HAZARDS		O2_Pr100yr REVIEW		MAX DEPTH CHANGE (m)	
	Auto_QvsH		4000m2 to 1ha		1.50-2.00m		PEDESTRIAN		LOW		0.05-0.20m
	MODEL EXTENT		1ha to 3ha		2.00-2.50m		VEHICLE+PEDESTRIAN		MEDIUM		-0.05--0.20m
	TuFlow Catchment Lengths		3ha to 100ha		0.05-0.50m				HIGH		-0.05-0.05m
	OLFP		2000m2 to 4000m2		0.50-1.00m						0.20-0.40m
	O2_Pr100yr LINKS				1.00-1.50m						O2_Pr100yr AFFLUX LABELS
	O2_Pr100yr SECTIONS										

REV#	DATE	DESCRIPTION	DES.	REV#	REL.	LOGG#



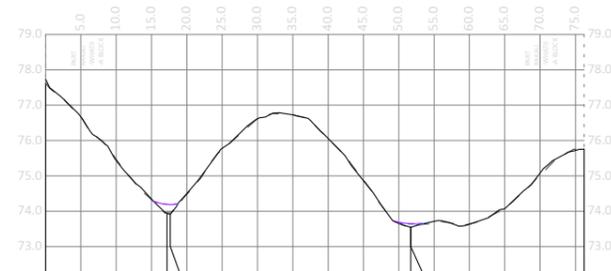
PROJECT: 40 MAHI ROAD HELENSVILLE

TITLE: FLOODING MODEL RESULTS SCENARIO A1

STATUS: PRELIMINARY DESIGN			
DRAWING NO: 58018			
SCALE: 1:2,000	SIZE: A3	REVISION: 02/10/24	DATE: 02/10/24

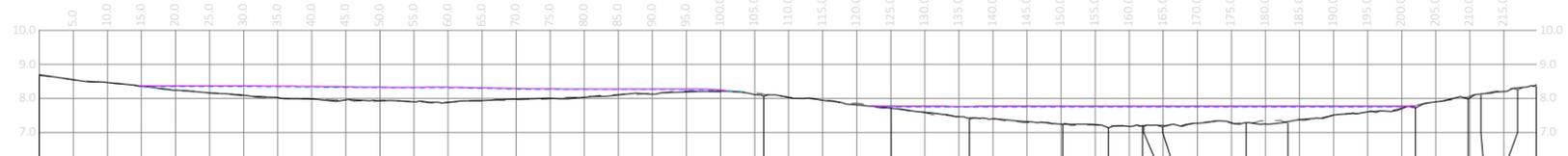
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LEGEND:
 EXISTING SURFACE 
 PROPOSED SURFACE 
 EXISTING WATER LEVEL 
 PROPOSED WATER LEVEL 



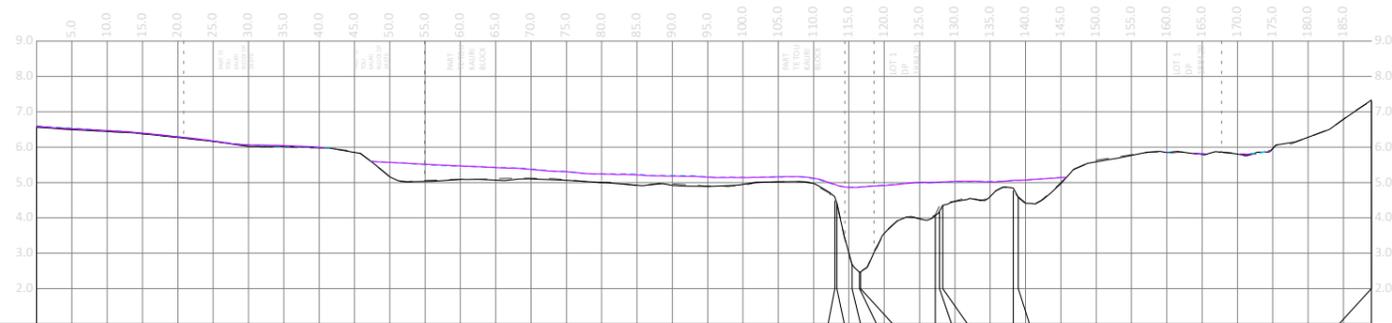
CHAINAGE	0.00	17.18	17.65	51.68	51.69	76.25
EXISTING GROUND LEVEL	77.63	73.96	73.97	73.54	73.54	75.76
EXISTING WATER DEPTH	0.00	0.23	0.22	0.10	0.10	0.00
EXISTING WATER LEVEL		74.20	74.19	73.64	73.64	
PROPOSED GROUND LEVEL	77.73	73.94	73.91	73.54	73.54	75.76
PROPOSED WATER DEPTH	0.00	0.25	0.28	0.10	0.10	0.00
PROPOSED WATER LEVEL		74.20	74.19	73.65	73.65	

XS01 A1 01_ Ex100yr, 02_Pr100yr
 SCALE H1:1000 V1:200



CHAINAGE	0.00	106.36	125.06	136.55	150.23	156.94	161.96	162.12	164.90	177.16	183.29	202.04	209.75	211.64	217.01	219.76
EXISTING GROUND LEVEL	8.68	8.12	7.70	7.39	7.27	7.20	7.20	7.19	7.16	7.28	7.27	7.80	8.04	8.10	8.26	8.35
EXISTING WATER DEPTH	0.00	0.00	0.06	0.36	0.49	0.55	0.55	0.55	0.59	0.48	0.48	0.00	0.00	0.00	0.00	0.00
EXISTING WATER LEVEL			7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.75					
PROPOSED GROUND LEVEL	8.69	8.06	7.71	7.43	7.24	7.14	7.14	7.19	7.20	7.29	7.32	7.72	7.99	8.13	8.31	8.40
PROPOSED WATER DEPTH	0.00	0.00	0.06	0.34	0.53	0.63	0.63	0.58	0.57	0.48	0.45	0.06	0.00	0.00	0.00	0.00
PROPOSED WATER LEVEL			7.77	7.77	7.77	7.77	7.77	7.77	7.77	7.77	7.77					

XS02 A1 01_ Ex100yr, 02_Pr100yr
 SCALE H1:1000 V1:200



CHAINAGE	0.00	112.99	113.29	115.44	116.51	116.63	127.23	127.81	128.30	138.28	138.97	188.97
EXISTING GROUND LEVEL	6.57	4.48	4.41	4.86	4.87	4.87	4.09	4.34	4.35	4.77	4.58	7.31
EXISTING WATER DEPTH	0.03	0.46	0.51	2.18	2.41	2.39	0.91	0.67	0.66	0.29	0.47	0.00
EXISTING WATER LEVEL	6.60	4.94	4.92	4.86	4.87	4.88	5.00	5.00	5.01	5.05	5.06	7.31
PROPOSED GROUND LEVEL	6.57	4.60	4.42	4.86	4.87	4.87	4.06	4.18	4.35	4.84	4.59	7.33
PROPOSED WATER DEPTH	0.02	0.35	0.50	2.57	2.47	2.41	0.94	0.83	0.66	0.22	0.47	0.00
PROPOSED WATER LEVEL	6.59	4.95	4.92	4.86	4.87	4.87	5.01	5.01	5.02	5.06	5.06	7.33

XS03 A1 01_ Ex100yr, 02_Pr100yr
 SCALE H1:1000 V1:200

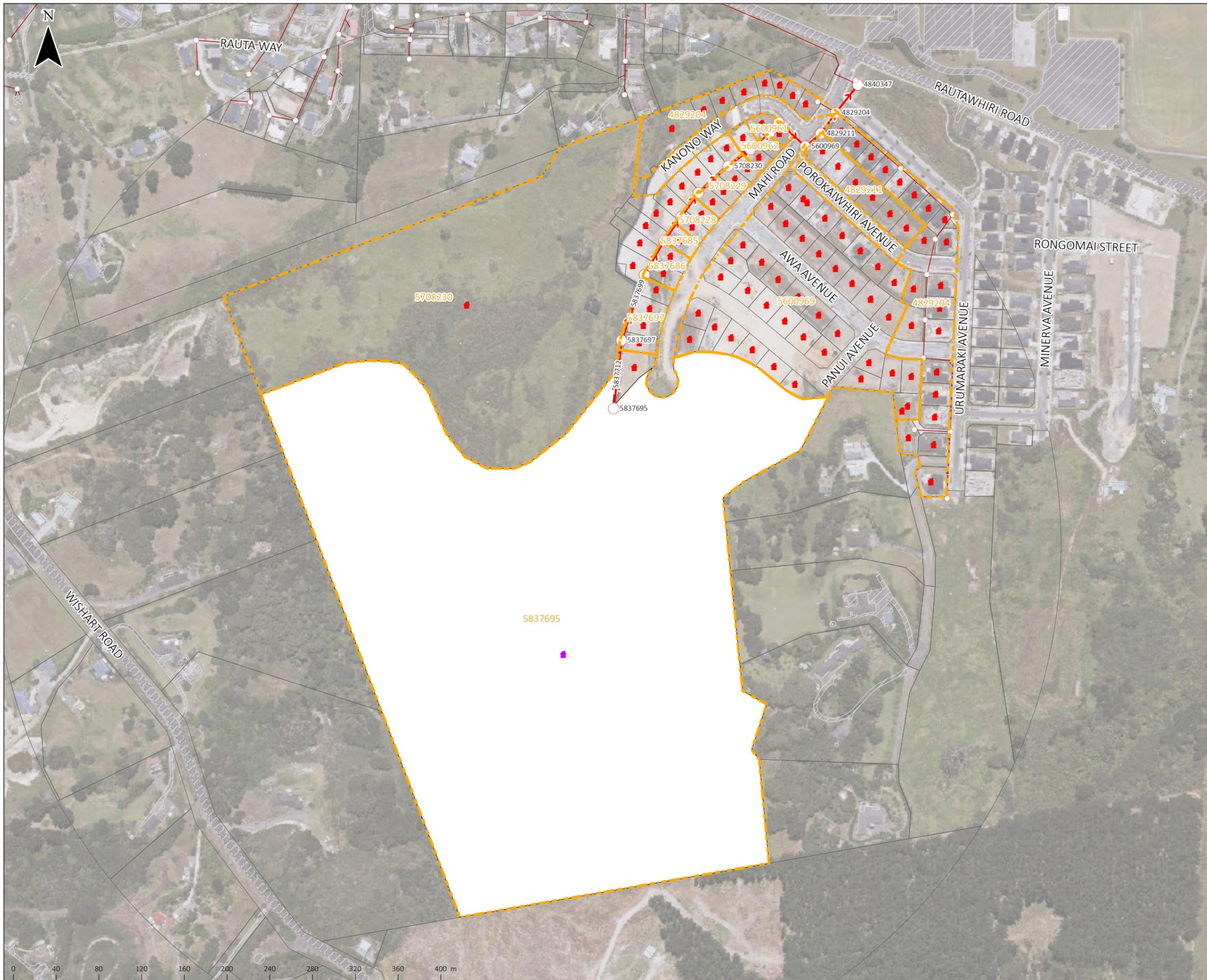
REV. A	DATE: 02/10/24	DESCRIPTION: FOR PRIVATE PLAN CHANGE	DES. KG	REV. GC	REL. GC	LOGG.



PROJECT: 40 MAHI ROAD HELENSVILLE

TITLE: FLOODING MODEL SECTION

STATUS: PRELIMINARY DESIGN			
DRAWING NO: 58500			
SCALE: 1:1,000	SIZE: A3	REVISION: A	DATE: 02/10/24



- WW NODE
- WW NODE ASSESSED
- WW LINK
- WW LINK ASSESSED
- PROPOSED
- EXISTING
- CATCHMENT
- BUILDINGS
- NEW PARCELS
- EXISTING PARCELS
- - - EXISTING KERBLINES
- EXISTING IMPERVIOUS
- EXISTING BUILDINGS



IMAGERY CREDITS:
 AUCKLAND COUNCIL, MAXAR, EAGLE TECHNOLOGY, LAND INFORMATION NEW ZEALAND,
 GEBCO, COMMUNITY MAPS CONTRIBUTORS, LINZ, STATS NZ, ESRI, TOMTOM, GARMIN,

REV.	DATE	DESCRIPTION	DES.	REV.	REL.	LOGG.



40 MAHI ROAD HELENSVILLE

WASTEWATER INFRASTRUCTURE
ASSESSMENT

STATUS: FOR INFORMATION ONLY			
DRAWING NO: 62000			
SCALE: 1:3,500	SIZE: A3	REVISION: 03/07/24	DATE: 03/07/24

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INFRASTRUCTURE DETAILS

LINK ID		5837712	5837699	5837688	5837689	5708251	5708252	5708255	5600989	5600990	5600991	5600993	4829212
DWG PLAN		-	-	-	-	-	-	-	-	-	-	-	-
DWG LONGSECTION		-	-	-	-	-	-	-	-	-	-	-	-
STATUS		IN											
OWNER		PUBLIC											
UPSTREAM NODE ID		5837695	5837697	5837686	5837685	5708228	5708229	5708230	5600962	5600961	5600955	5600969	4829211
DOWNSTREAM NODE ID		5837697	5837686	5837685	5708228	5708229	5708230	5600962	5600961	5600955	5600969	4829211	4829204
UPSTREAM GROUND LEVEL	RL (m)	29.84	23.79	23.55	23.59	22.05	20.33	17.34	14.90	12.58	12.20	11.02	10.24
UPSTREAM INVERT LEVEL	RL (m)	27.98	23.30	22.76	21.01	19.71	16.88	13.31	11.57	10.11	9.21	8.77	7.49
DOWNSTREAM GROUND LEVEL	RL (m)	23.79	23.55	23.59	22.05	20.33	17.34	14.90	12.58	12.20	11.02	10.24	7.92
DOWNSTREAM INVERT LEVEL	RL (m)	23.30	22.76	21.01	19.71	16.88	13.31	11.57	10.11	9.21	8.77	7.49	5.90
PIPE TYPE		PIPE											
PIPE SLOPE	m/m	7.29%	0.84%	4.76%	4.70%	10.22%	9.54%	6.73%	6.27%	6.55%	1.31%	6.77%	6.62%
PIPE LENGTH	m	64.2	64.6	36.7	27.7	27.7	37.4	25.9	23.3	13.7	33.6	18.9	24.0
PIPE BARRELS		1	1	1	1	1	1	1	1	1	1	1	1
PIPE INTERNAL DIAMETER	mm	150.000	150.000	150.000	150.000	150.000	150.000	150.000	150.000	150.000	150.000	150.000	150.000
PIPE MATERIAL		PVC	PVC	PVC	PVC	PVC	PVC	uPVC	PVC	uPVC	PVC	PVC	PVC

CATCHMENT DETAILS

RES3BED_UNITS EXISTING		1	5	7	8	10	14	83	86	88	88	131	137
RES3BED_UNITS PROPOSED		102	102	102	102	102	102	102	102	102	102	102	102
RES3BED_UNITS TOTAL		103	107	109	110	112	116	185	188	190	190	233	239

FLOW RESULTS

WW ADWF EXISTING	L/s	0.0	0.0	0.0	0.0	0.1	0.1	0.5	0.5	0.5	0.5	0.8	0.9
WW ADWF PROPOSED	L/s	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
WW ADWF TOTAL	L/s	0.6	0.7	0.7	0.7	0.7	0.7	1.2	1.2	1.2	1.2	1.5	1.5
WW PDWF EXISTING	L/s	0.0	0.1	0.1	0.2	0.2	0.3	1.6	1.6	1.6	1.6	2.5	2.6
WW PDWF PROPOSED	L/s	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
WW PDWF TOTAL	L/s	1.9	2.0	2.0	2.1	2.1	2.2	3.5	3.5	3.6	3.6	4.4	4.5
WW PWWF EXISTING	L/s	0.0	0.2	0.3	0.3	0.4	0.6	3.5	3.6	3.7	3.7	5.5	5.7
WW PWWF PROPOSED	L/s	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
WW PWWF TOTAL	L/s	4.3	4.5	4.6	4.6	4.7	4.9	7.7	7.9	8.0	8.0	9.8	10.0

COLEBROOKE WHITE PIPE FULL ANALYSIS AT TARGET FLOW

TARGET FLOW TYPE		PWWF											
TARGET FLOW	L/s	4.3	4.5	4.6	4.6	4.7	4.9	7.7	7.9	8.0	8.0	9.8	10.0
PIPE ROUGHNESS	mm	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
VELOCITY	m/s	0.24	0.25	0.26	0.26	0.27	0.27	0.44	0.45	0.45	0.45	0.55	0.57
HGL GRADE	%	0.06%	0.07%	0.07%	0.07%	0.08%	0.08%	0.20%	0.20%	0.21%	0.21%	0.31%	0.33%
HEADLOSS PIPE	m	0.04	0.04	0.03	0.02	0.02	0.03	0.05	0.05	0.03	0.07	0.06	0.08

COLEBROOKE WHITE PIPE FULL ANALYSIS HGL AT GRADE

VELOCITY	m/s	2.73	0.92	2.21	2.19	3.24	3.13	2.63	2.54	2.59	1.15	2.63	2.61
PIPE CAPACITY	L/s	48.3	16.2	39.0	38.7	57.3	55.3	46.4	44.8	45.8	20.3	46.6	46.0

EXISTING PIPE CAPACITY SUFFICIENT?

YES YES YES

MANNINGS ANALYSIS

DEPTH	m	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
AREA	m ²	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
WETTED PERIMETER	m	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
HYDRAULIC RADIUS	m	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045
MANNINGS N		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
VELOCITY	m/s	3.12	1.06	2.52	2.50	3.69	3.57	2.99	2.89	2.95	1.32	3.00	2.97
PWWF CAPACITY FOR NEW PIPES	L/s	44.3	15.0	35.8	35.6	52.5	50.7	42.6	41.1	42.0	18.8	42.7	42.2

IS PROPOSED PIPE CAPACITY SUFFICIENT?

- - - - - - - - - - - - - - - -

HYDRAULIC GRADE LINE RESULTS

VELOCITY	m	1.70	0.79	1.48	1.48	1.96	1.93	1.96	1.92	1.95	1.09	2.09	2.09
DOWNSTREAM HGL LEVEL	RL (m)	23.39	22.81	21.04	19.76	16.91	13.35	11.61	10.15	9.32	8.85	7.54	5.95
UPSTREAM HGL LEVEL	RL (m)	28.01	23.35	22.79	21.04	19.74	16.91	13.35	11.61	10.15	9.27	8.82	7.54
UPSTREAM FREEBOARD	m	1.83	0.44	0.76	2.55	2.31	3.42	3.99	3.29	2.43	2.93	2.20	2.70

IS US NODE SURCHARGING?

NO NO NO

IS US NODE OVERFLOWING?

NO NO NO

ESTIMATED ADDITIONAL NETWORK CAPACITY

DESIGN PIPE FLOW CAPACITY	L/s												
RESIDUAL PIPE CAPACITY POST DEVELOPMENT	L/s	44.0	11.7	34.4	34.1	52.6	50.5	38.7	36.9	37.8	12.4	36.8	36.0
RESIDUAL CAPACITY EXPRESSED AS 3BED UNITS	Units	1,051	280	822	815	1,255	1,205	923	882	903	296	879	861

SCAN FOR 3D:



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REV.	DATE	DESCRIPTION	DES.	REV.	REL.	LOGO



40 MAHI ROAD HELENSVILLE

WASTEWATER CAPACITY TABLE

FOR INFORMATION ONLY

DRAWING NO: 62100

SCALE: 1:100 SIZE: A3 REVISION: 03/07/24 DATE: 03/07/24