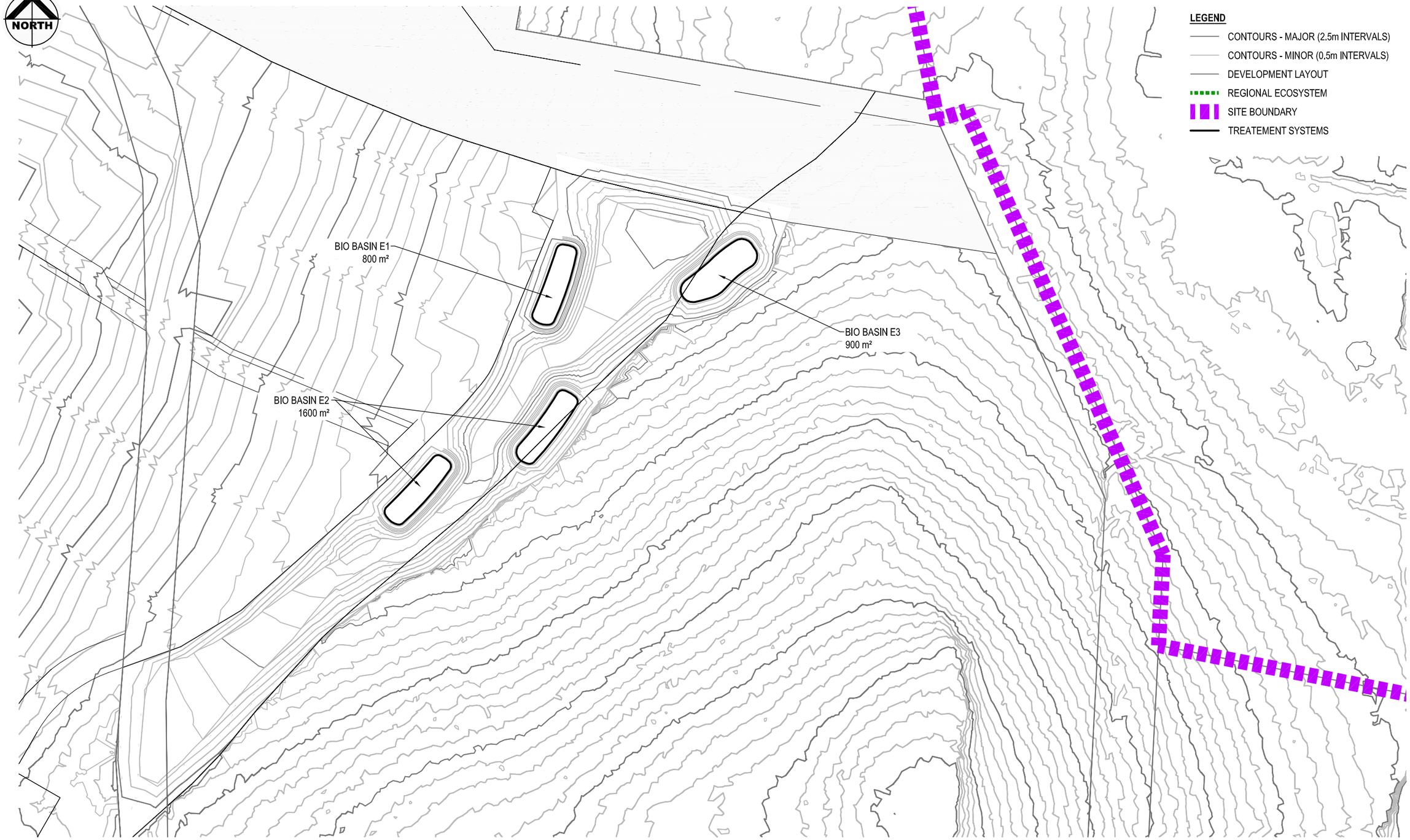

LAYOUT 4

SCALE 1:2,500

1:2,500 0 50 100 150m

REVISION	DESCRIPTION	DRAFTED INITS	DRAFTED DATE	APPROVED INITS	APPROVED DATE
A	PRELIMINARY ISSUE	SL	26.02.14	SL	26.02.14

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DesignFlow
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CLIENT	LEND LEASE
PROJECT	YARRABILBA
DRAWN	MJM
DATE	26.02.14
DRAWING TITLE	CONCEPTUAL EARTHWORKS LAYOUT 4
DESIGNED	SL
DATE	26.02.14
SCALE	1:2,500
A3	
PROJECT No	4205
DRAWING No	D0005
REVISION	A

XREF: XREF4205_P02_Des_131024_Applin; XREF4205_7952-BOY-Proposed-20131024; P1_Base Plans (25-10-13); x11=15'base; x11=12'base; x11=142base; 4205_Trees_All_Local; x13-106nalcont; MUSIC Catchments (15-05-13); SURF4205_CONTOURS_ALL
FILE: S:\PROJECTS\QLD ACTIVE\4205 YARRABILBA PRECINCT 2\DRAFTING\DRAWINGS\4205_D0000_A_WIP.DWG

V03A

NORTH

CHANNEL HAS BEEN ISOLATED FROM NORMAL FLOW BY HISTORIC UPSTREAM EROSION/SCOUR. NATURAL FLOW DIVERSION OCCURS SOUTH TOWARD MAIN DRAINAGE LINE

POWER LINE EASEMENT

FUTURE ROAD CONNECTION

Tony-Gordon

INTERIM FLOOD DETENTION BASIN 11

DETENTION BASIN NATURAL BATTERS TO BE LAID BACK AT 1 IN 6 OR BASIN TO BE FENCED (TO BE RESOLVED AT DETAILED DESIGN)

PROPOSED INTERIM FLOOD DETENTION BUND
TOP OF BUND RL 37.50 (3m WIDE)
1 IN 6 BATTERS (UPSTREAM), 1 IN 4 (DOWNSTREAM)

MAIN DRAINAGE LINE

LEGEND

- CONTOURS - MAJOR (1.0m INTERVALS)
- CONTOURS - MINOR (0.5m INTERVALS)
- DEVELOPMENT LAYOUT
- REGIONAL ECOSYSTEM
- TREATMENT SYSTEMS

KEYMAP
SCALE 1:2,000

1:2,000

0 40 80 120m

REVISION	DESCRIPTION	DRAFTED INITS	DRAFTED DATE	APPROVED INITS	APPROVED DATE
A	PRELIMINARY ISSUE	NS	26.02.14	NS	26.02.14

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CLIENT	LEND LEASE
DRAWN	MJM
DATE	26.02.14
DESIGNED	NS
DATE	26.02.14
SCALE	1:2000
A3	
PROJECT	YARRABILBA
DRAWING TITLE	CONCEPTUAL EARTHWORKS LAYOUT 5
PROJECT No	4205
DRAWING No	D0006
REVISION	A

XREF:
FILE: S:\PROJECTS\QLD ACTIVE\4205 YARRABILBA PRECINCT 2\ACAD\DESIGN\FLOW\RFI PLANS_4205_D0006_A.WP_1_1_3938.DWG

APPENDIX B: RATIONAL METHOD COMPARISON

The XPSWMM hydrologic modelling for the site was compared against the peak flows estimated from the application of the Rational Method. This was undertaken for the existing site conditions (broadly zero imperviousness) and for an unmitigated developed case (by simply assigning % impervious and loss parameters to the existing case model).

The Rational Method assessment was carried out on 5 main discharge locations at the subject development boundary plus an internal catchment location (approximately mid-way up the major catchment). This represents a range of catchment sizes, slopes and main drainage path lengths.

Key data and components of the Rational Method applied to the site are discussed below.

Catchments

Pre-development catchment data (and grouping of catchments) is based on the data provided in Table 15 in the main report. The discharge location and corresponding catchments draining to these locations are shown in provided in Figure B1 and details provided in Table B1.

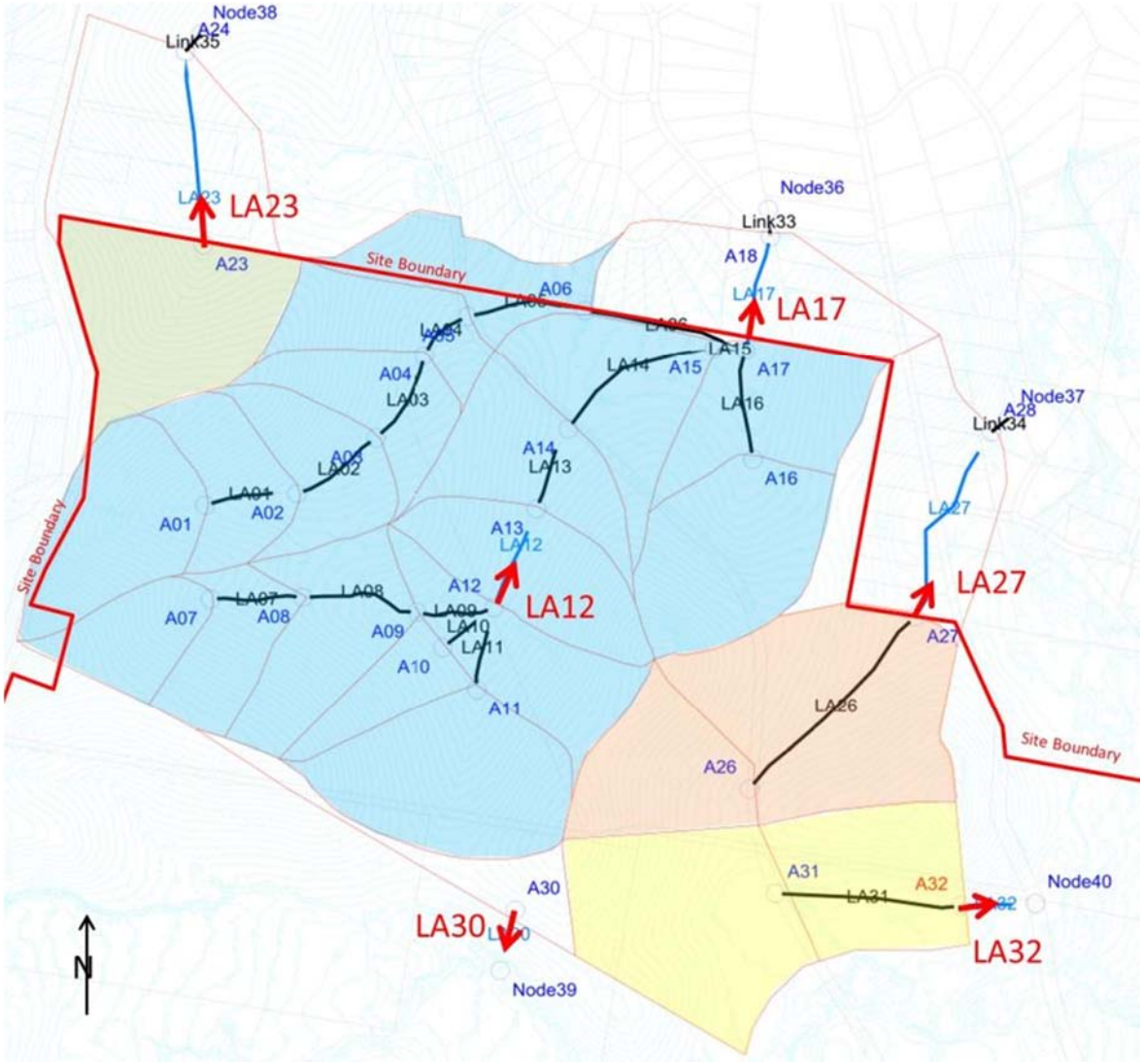


Figure B1: Grouped catchments for Rational Method comparison

Table B1: Discharge comparison locations

Catchment	Contributing Area (ha)	XPSWMM Discharge Location	Total flow length to catchment outlet
A01 - A17	229.43	LA17	2380
A07 - A12	76.5	LA12	1250
A23	22.76	LA23	600
A26-A27	45.53	LA27	1150
A30	7.54	LA30	230
A31- A32	43.75	LA32	1100

Time of Concentration

The pre-development time of concentration for each reporting location was determined considering both sheet flow and concentrated flow in accordance with QUDM (2013) for bushland catchments without a defined creek with bed and banks. Sheet flow travel time is based on Friends Equation using a maximum sheet flow length of 100m (for medium gradient Bushland). Concentrated flow travel time was determined from review of actual flow velocities derived from the hydraulic model. An average velocity was derived from the varying reach velocities within the model to provide a comparable travel time down the main flow path.

It should be recognised that the velocity assumption was based on the 1 in 100 year AEP event and thus, it can be expected that smaller and more frequent design storms would show a reduction in flow velocity through the natural channels. As the focus of this comparison was on the major events to ensure peak flows were satisfactory, it is inevitable that the smaller ARIs will be over-estimated by the Rational Method.

Table B2 provides the calculation summary for the existing (undeveloped) site time of concentration to the respective discharge locations.

Table B2: Pre-development time of concentration

CATCHMENT						SHEET FLOW				CONCENTRATED FLOW			TOTAL
						L	n	S	t	l	v	t	Tc
Catchment	D/S Reach ID (Link)	Area	Land Use	Total catchment % Impervious	Total flow length to catchment outlet	Sheet Flow Length	Hortons Roughness 'n'	Surface Slope	Sheet flow time	Concentrated/ channel flow length	Average velocity	Channel flow time	Total Time of Concentration
		ha		%	m	m		%	min		m/s	min	
A01 - A17	LA17	229.43	Grass/forest	0.0%	2380	100	0.06	5.5	21.2	2280	0.60	63.3	84.5
A07 - A12	LA12	76.5	Grass/forest	0.0%	1250	100	0.06	6	20.8	1150	0.60	31.9	52.7
A23	LA23	22.76	Grass/forest	0.0%	600	100	0.06	3.5	23.2	500	0.30	27.8	50.9
A26-A27	LA27	45.53	Grass/forest	0.0%	1150	100	0.06	6	20.8	1050	0.50	35.0	55.8
A30	LA30	7.54	Grass/forest	0.0%	230	100	0.06	4.5	22.0	130	0.20	10.8	32.9
A31- A32	LA32	43.75	Grass/forest	0.0%	1100	100	0.06	5.5	21.2	1000	0.20	83.3	104.5

The interim developed case (unmitigated) time of concentration is derived from a combination of standard inlet time, pipe flow and concentrated flow through drainage lines to discharge locations. Standard inlet times were applied in accordance with QUDM based on developed gradients. Approximate pipe drainage lengths were derived from the preliminary development plan with an assumed velocity of 3 m/s in accordance with QUDM (2013). The balance of drainage through open natural drainage lines was again based on actual flow velocities derived from the hydraulic model which were taken as an overage over the length of the channel.

Table B3 provides the calculation summary for the post developed (unmitigated) site time of concentration to the respective discharge locations.

Table B3: Post-development (unmitigated) time of concentration

CATCHMENT						Inlet Time		Pipe Flow time			CONCENTRATED FLOW			TOTAL
						50	13	400	3		450			
						L	n	L	v	t	l	v	t	Tc
Catchment	D/S Reach ID (Link)	Area	Land Use	Total catchment % Impervious	Total flow length to catchment outlet	Upper catchment slope	Standard Inlet time	Pipe length	Est. Pipe Vel.	Pipe flow time	Concentrated/ channel flow length	Average velocity	Channel flow time	Total Time of Concentration
		ha		%	m	%	min	m	m/s	min.		m/s	min	
A01 - A17	LA17	229.43	DEV	50%	2380	3-6%	13	500	3	2.8	1830	0.80	38.1	53.9
A07 - A12	LA12	76.5	DEV	50%	1250	3-6%	13	500	3	2.8	700	0.80	14.6	30.4
A23	LA23	22.76	DEV	50%	600	3-6%	13	50	3	0.3	500	0.40	20.8	34.1
A26-A27	LA27	45.53	DEV	50%	1150	3-6%	13	400	3	2.2	700	0.60	19.4	34.7
A30	LA30	7.54	DEV	50%	230	3-6%	13	300	3	1.7				14.7
A31- A32	LA32	43.75	DEV	50%	1100	3-6%	13	500	3	2.8	550	0.20	45.8	61.6

Runoff Coefficient

Based on historical aerial photography, site inspections and the limited geotechnical data available, the site is considered to represent a mix of medium density bushland (partial regrowth pine plantation with localised regrowth vegetation) and good grass cover with medium permeability soils. The 1 hour rainfall intensity for the 1 in 10 year ARI (10% AEP) event is 64.5 mm/hr. From Table 4.5.4 (QUDM, 2013), a C10 runoff coefficient of **0.59** applies to the site.

(Note: the Intensity groups provided in QUDM table 4.5.4 inadvertently exclude the upper/lower limits from the ranges presents. Thus, 64.5 mm/hr lies between 60-64 and 65-69 mm/hr groupings. Conservatively for this assessment, the lower band was adopted which results in lower pre-development runoff).

Developed (unmitigated) case is based on the overall average impervious fraction of 50% across the developed catchments. From QUDM Table 4.5.3, C10 is interpolated as **0.78**. In this instance, the conservative post development approach of adopting the upper band (65-69mm/hr) for C10 was selected. Simple sensitivity testing of this C10 value between 0.75 and 0.8 for the post development (unmitigated) assessment showed minimal impact on the overall peak flow estimation (<5% variation from the selected C10 value).

The results of the Rational Method calculations are provided in Table B4 and Table B5 for the respective cases.

Table B4: Pre-development Rational Method peak flow comparison

		ARI	1			ARI	2			ARI	5			ARI	10			ARI	20			ARI	50			ARI	100		
		FFy	0.8			FFy	0.85			FFy	0.95			FFy	1			FFy	1.05			FFy	1.15			FFy	1.2		
		C10	0.59			C10	0.59			C10	0.59			C10	0.59			C10	0.59			C10	0.59			C10	0.59		
CATCHMENT	TOTAL																												
	Tc	I	C	Q		I	C	Q		I	C	Q		I	C	Q		I	C	Q		I	C	Q		I	C	Q	
Catchment/ Discharge Location	Total Time of Conc.	Rainfall Intensity	C	Discharge	XPSWMM	Rainfall Intensity	C	Discharge	XPSWMM	Rainfall Intensity	C	Discharge	XPSWMM	Rainfall Intensity	C	Discharge	XPSWMM	Rainfall Intensity	C	Discharge	XPSWMM	Rainfall Intensity	C	Discharge	XPSWMM	Rainfall Intensity	C	Discharge	XPSWMM
		mm/hr	-	m3/s		mm/hr	-	m3/s		mm/hr	-	m3/s		mm/hr	-	m3/s		mm/hr	-	m3/s		mm/hr	-	m3/s		mm/hr	-	m3/s	
A01 - A17(LA17)	84.5	30.16	0.472	9.07	4.93	38.54	0.502	12.32	9.13	48.29	0.561	17.25	14.90	53.95	0.590	20.28	18.90	61.66	0.620	24.34	24.58	71.82	0.679	31.06	31.71	79.65	0.708	35.94	37.97
A07 - A12(LA12)	52.7	40.37	0.472	4.05	1.95	51.52	0.502	5.49	3.50	64.37	0.561	7.67	5.84	71.82	0.590	9.00	7.32	82.02	0.620	10.80	9.58	95.40	0.679	13.76	12.32	105.66	0.708	15.90	14.73
A23(LA23)	50.9	40.37	0.472	1.20	0.52	51.52	0.502	1.63	0.96	64.37	0.561	2.28	1.64	71.82	0.590	2.68	2.05	82.02	0.620	3.21	2.66	95.40	0.679	4.09	3.45	105.66	0.708	4.73	4.10
A26-A27(LA27)	55.8	38.13	0.472	2.28	0.88	48.67	0.502	3.09	1.66	60.86	0.561	4.31	2.72	67.92	0.590	5.07	3.42	77.58	0.620	6.08	4.38	90.26	0.679	7.75	5.63	100.00	0.708	8.95	6.70
A30(LA30)	32.9	53.79	0.472	0.53	0.24	68.52	0.502	0.72	0.40	85.32	0.561	1.00	0.64	95.02	0.590	1.17	0.81	108.38	0.620	1.41	1.07	125.85	0.679	1.79	1.38	139.14	0.708	2.06	1.65
A31- A32(LA32)	104.5	26.05	0.472	1.49	0.63	33.30	0.502	2.03	1.13	41.77	0.561	2.85	1.83	46.69	0.590	3.35	2.27	53.38	0.620	4.02	2.94	62.20	0.679	5.13	3.85	69.02	0.708	5.94	4.95

Table B5: Interim developed (unmitigated) Rational Method peak flow comparison

		ARI	1			ARI	2			ARI	5			ARI	10			ARI	20			ARI	50			ARI	100		
		FFy	0.8			FFy	0.85			FFy	0.95			FFy	1			FFy	1.05			FFy	1.15			FFy	1.2		
		C10	0.78			C10	0.78			C10	0.78			C10	0.78			C10	0.78			C10	0.78			C10	0.78		
CATCHMENT	TOTAL																												
	Tc	I	C	Q		I	C	Q		I	C	Q		I	C	Q		I	C	Q		I	C	Q		I	C	Q	
Catchment/ Discharge Location	Tim of Conc.	Rainfall Intensity	C	Discharge	XPSWMM	Rainfall Intensity	C	Discharge	XPSWMM	Rainfall Intensity	C	Discharge	XPSWMM	Rainfall Intensity	C	Discharge	XPSWMM	Rainfall Intensity	C	Discharge	XPSWMM	Rainfall Intensity	C	Discharge	XPSWMM	Rainfall Intensity	C	Discharge	XPSWMM
		mm/hr	-	m3/s		mm/hr	-	m3/s		mm/hr	-	m3/s		mm/hr	-	m3/s		mm/hr	-	m3/s		mm/hr	-	m3/s		mm/hr	-	m3/s	
A01 - A17(LA17)	53.9	40.37	0.624	16.05	16.20	51.52	0.663	21.77	23.32	64.37	0.741	30.40	32.24	71.82	0.780	35.70	37.78	82.02	0.819	42.81	45.73	95.40	0.897	54.54	60.80	105.66	0.936	63.03	69.67
A07 - A12(LA12)	30.4	53.79	0.624	7.13	7.75	68.52	0.663	9.65	10.82	85.32	0.741	13.44	14.81	95.02	0.780	15.75	17.16	108.38	0.819	18.86	20.39	125.85	0.897	23.99	26.00	139.14	0.936	27.67	29.50
A23(LA23)	34.1	53.79	0.624	2.12	2.73	68.52	0.663	2.87	3.68	85.32	0.741	4.00	4.74	95.02	0.780	4.69	5.42	108.38	0.819	5.61	6.43	125.85	0.897	7.14	8.17	139.14	0.936	8.23	9.21
A26-A27(LA27)	34.7	53.79	0.624	4.24	3.74	68.52	0.663	5.75	4.99	85.32	0.741	8.00	6.51	95.02	0.780	9.37	7.47	108.38	0.819	11.23	8.89	125.85	0.897	14.28	11.64	139.14	0.936	16.47	13.23
A30(LA30)	14.7	77.80	0.624	1.02	1.17	98.94	0.663	1.37	1.59	122.65	0.741	1.90	2.10	136.18	0.780	2.22	2.41	155.17	0.819	2.66	2.84	179.77	0.897	3.38	3.54	198.28	0.936	3.89	3.98
A31- A32(LA32)	61.6	36.16	0.624	2.74	2.89	46.17	0.663	3.72	3.85	57.76	0.741	5.20	5.00	64.48	0.780	6.11	5.69	73.66	0.819	7.33	6.66	85.73	0.897	9.35	8.11	95.00	0.936	10.81	9.13

Discussion

The results indicate that for the existing case, the Rational Method appears to be greatly over-estimating peak flows for the smaller 1 and 2 year ARI events with better agreement moving into the larger ARIs. This is expected as the average velocity assumptions for the natural channel flow time (and therefore time of concentration) have been derived directly the 100 year ARI event hydraulic model, and thus, under minor events, the flow depth and therefore velocity through the natural channel can be expected to be lower (leading to increased time of concentration for minor ARIs). The derivation of differing time of concentration for every ARI was not undertaken as this comparison was intended as a broad comparison only. Further, it is recognised that the Rational Method may be sensitive to runoff coefficient for 0% impervious catchments for low ARI events.

The XPSWMM model can therefore be seen to show satisfactory agreement with the Rational Method for the mid to high ARIs under existing conditions. Under the very minor ARIs, XPSWMM results in more conservative peak flows and is therefore adopted in the site analysis.

The interim developed case shows satisfactory agreement of peak flows between XPSWMM and Rational Method across all ARIs at all locations.

The relevant XPSWMM parameters adjusted in the comparison have been based on those identified in the *Quinzeh Creek Design Discharge Estimation* (WRM, 2013, for Logan City Council) with the exception of % impervious which was retained as measured values for the Yarrabilba site. Specifically, the initial and continuing losses, catchment Manning's, and Storage Coefficient 'Bx' were adjusted. The resulting parameters adopted in the XPSWMM modelling are in Table B6.

Table B6: XPSWMM parameters adopted from Rational Method comparison

	Existing/ Undeveloped Site	Developed Pervious	Developed Impervious
Catchment Manning's n	0.05	0.035	0.015
Initial Loss (mm)			
1 – 20 yr ARI	30	10	0
50 – 100 yr ARI	30	0	0
Continuing Loss (mm/h)			
1 – 20 yr ARI	2.5	2.5	0
50 – 100 yr ARI	2.5	1.0	0
Storage Coefficient 'Bx'	1.2	1.2	1.2

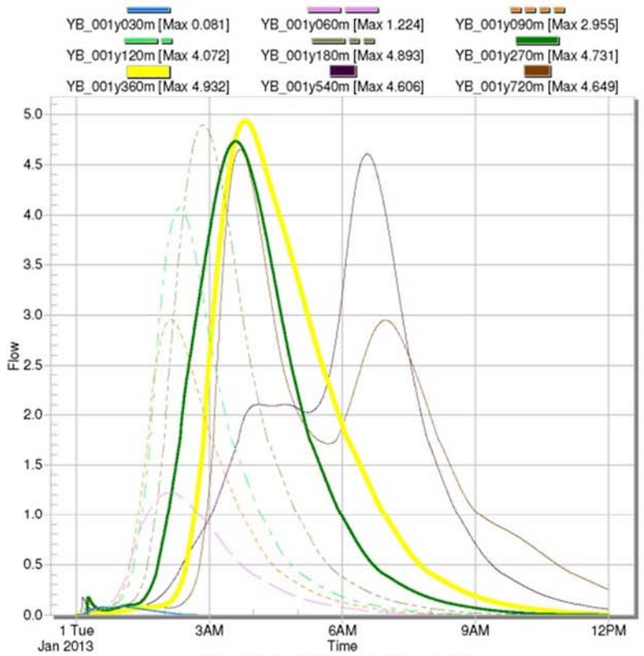
Summary

The comparison of Rational Method peak flow estimation with XPWMM indicates generally good agreement between peak flows with the exception of very minor ARIs under existing (fully pervious) catchment conditions. In these cases, the XPSWMM model results in lower peaks and has therefore been adopted for the existing case (which defines the no-worsening basis). The developed (unmitigated) case Rational Method peak flows compare well with those from XPSWMM across the full range of ARIs.

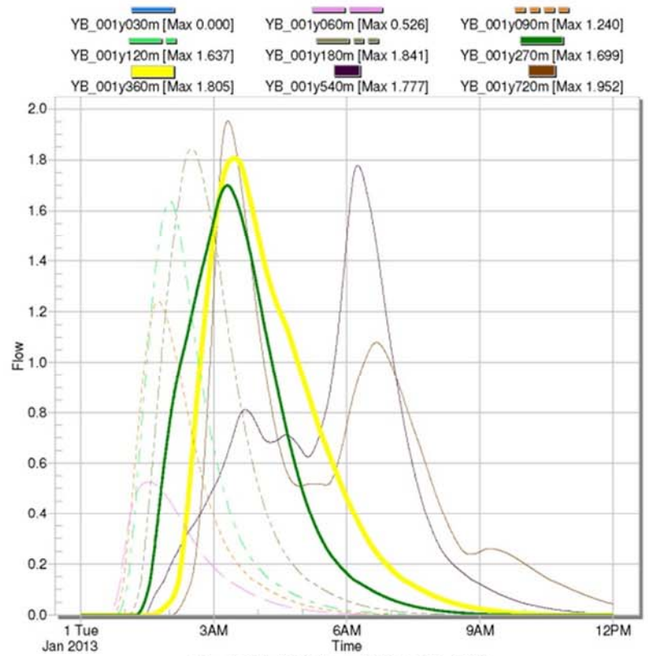
Therefore, the parameters adopted for the XPSWMM modelling of pre and post development are considered to be satisfactory for the modelling of the site.

APPENDIX C: CRITICAL STORM DURATION RESULTS

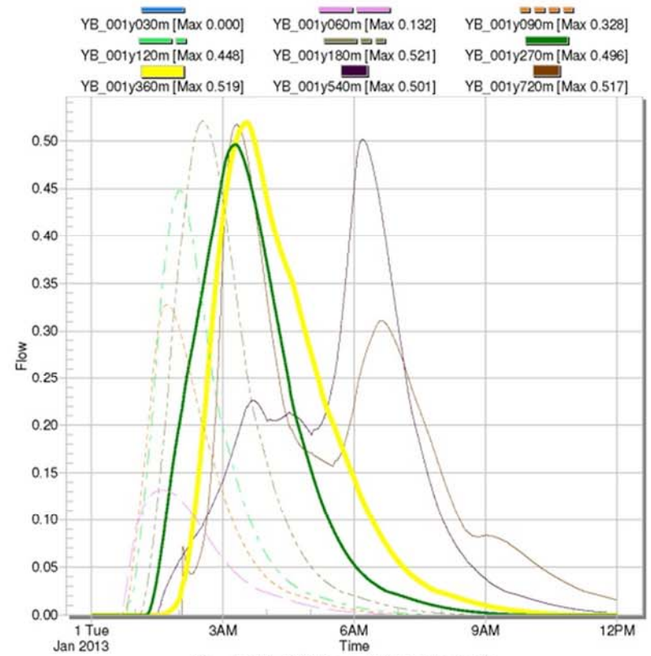
Conduit LA17 from A17 to A18



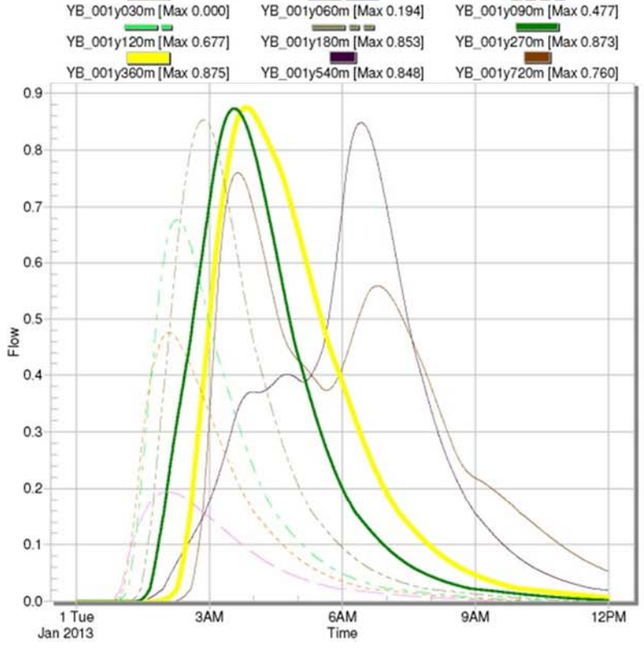
Conduit LA12 from A12 to A13



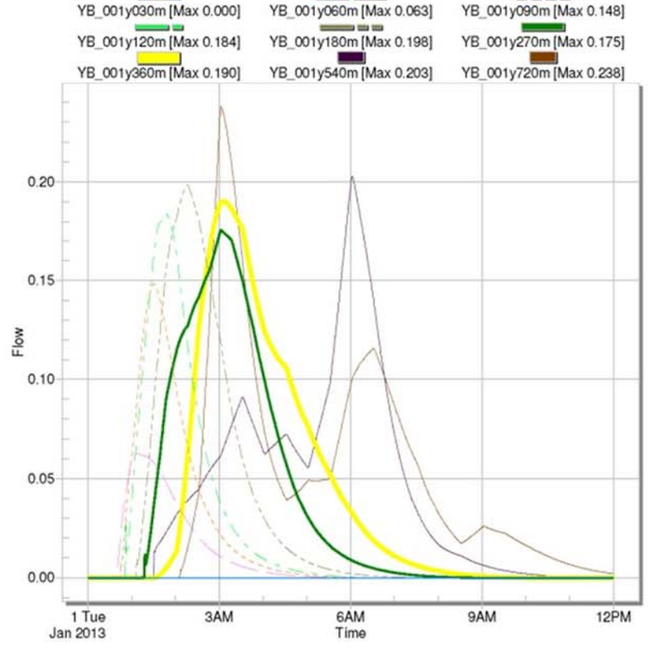
Conduit LA23 from A23 to A24



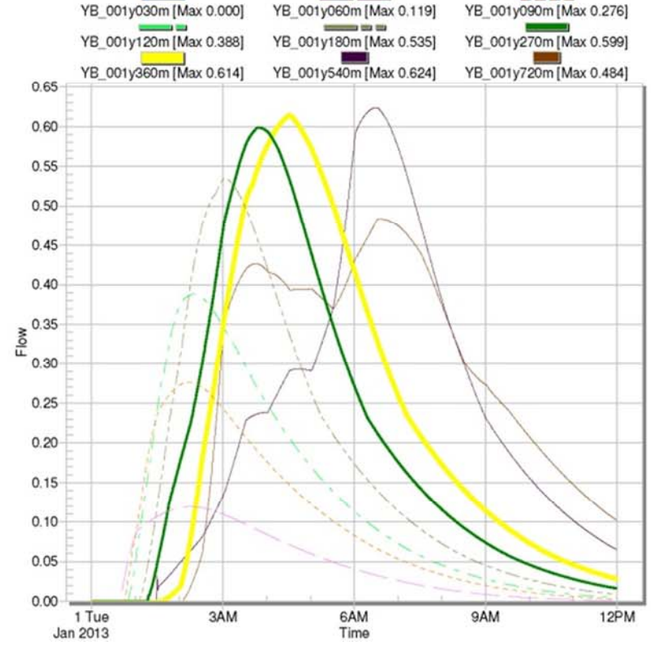
Conduit LA27 from A27 to A28



Conduit LA30 from A30 to Node39

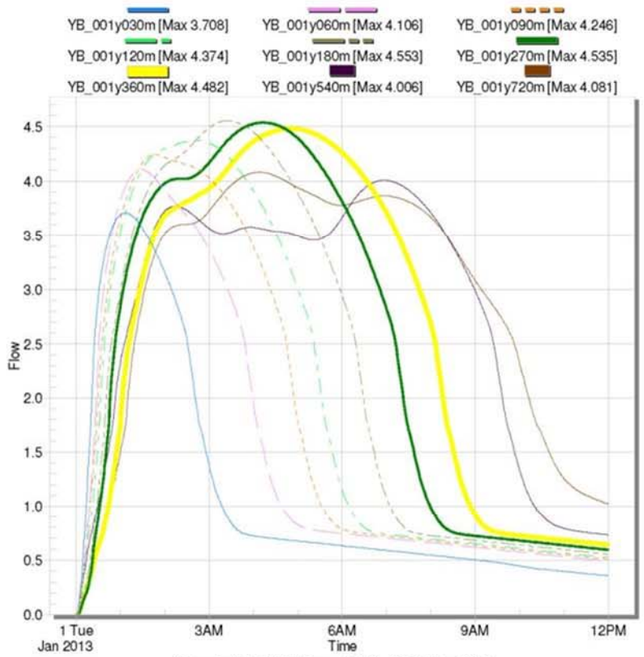


Conduit LA32 from A32 to Node40

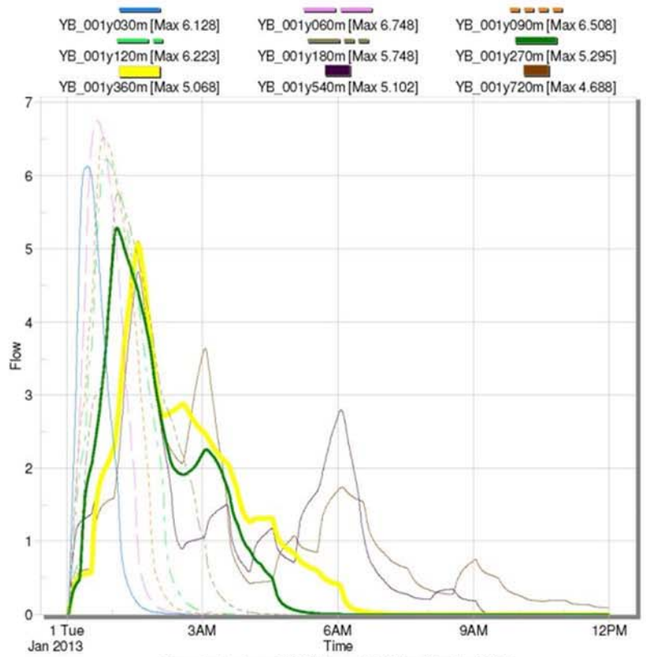


Predevelopment 1 yr ARI

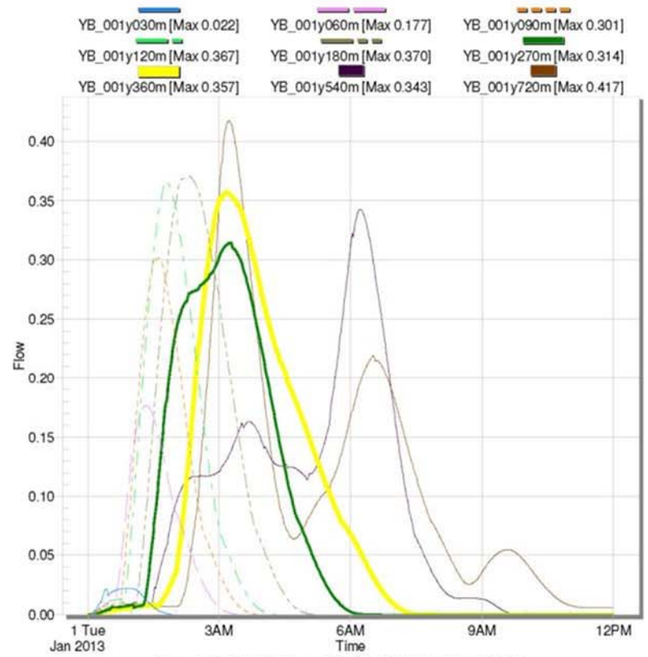
Conduit LX17 from FL6_OUT to X18



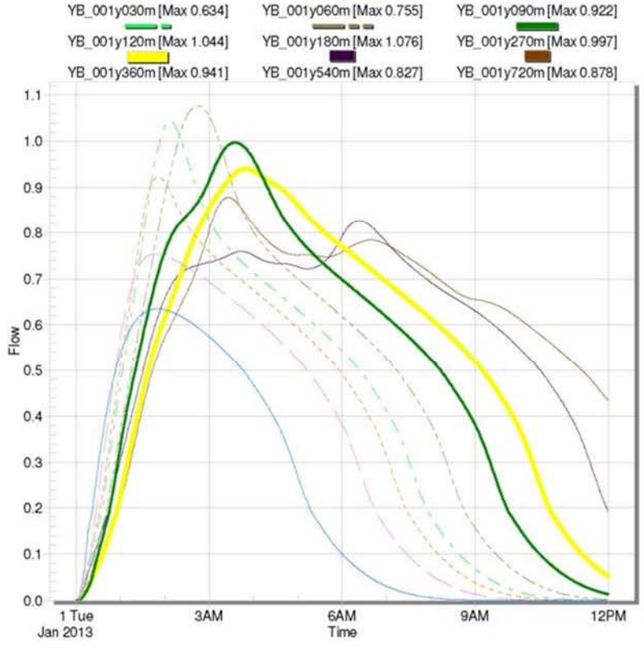
Conduit LX12 from FL2_OUT to X13



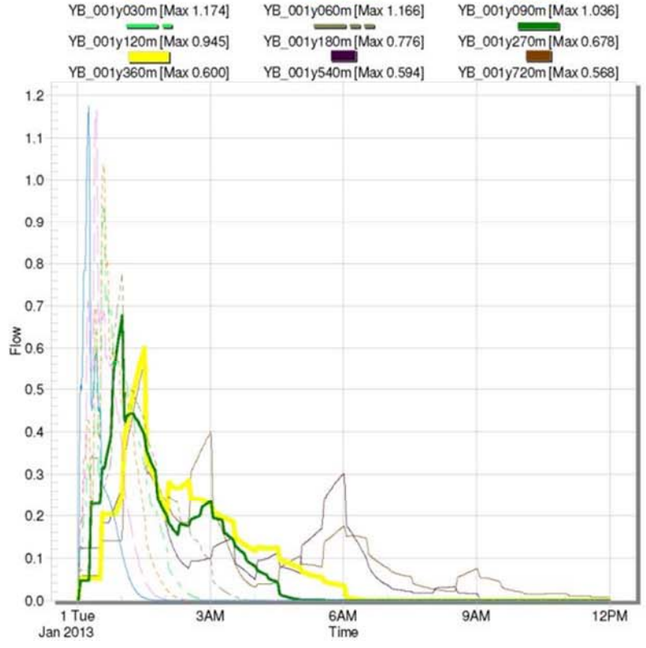
Conduit LX23b from X23b to X24



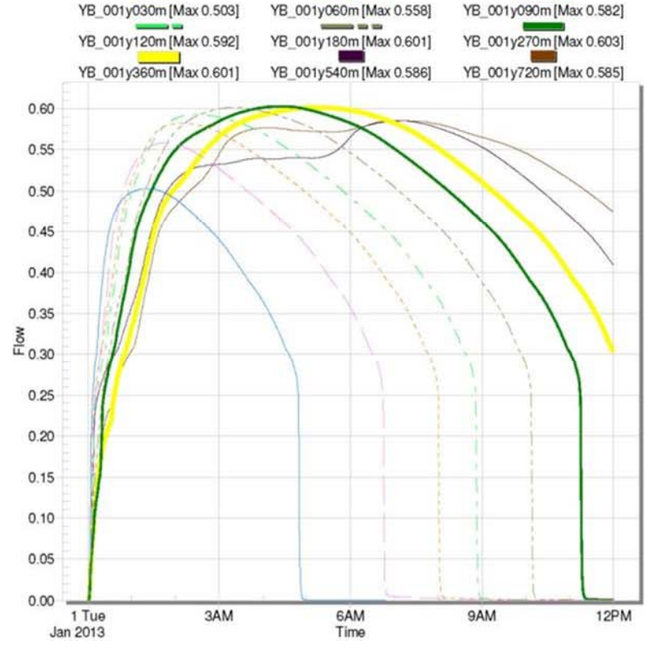
Conduit LX27 from FL9_OUT to X28



Conduit pipe_X30 from X30 to Node_257

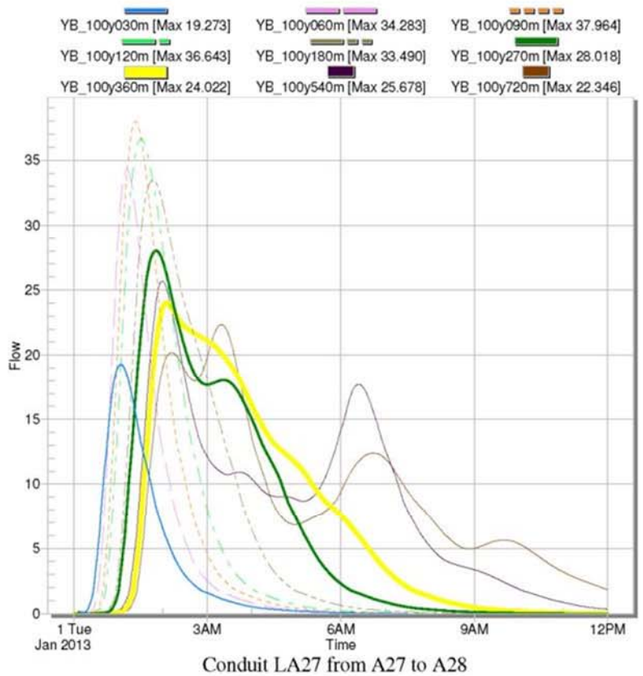


Conduit LX32 from FL10_OUT to Node256

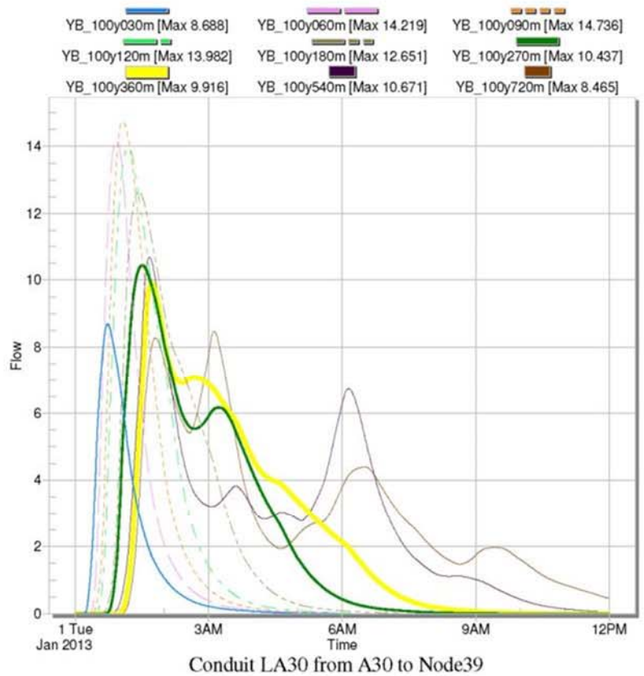


Post development mitigated 1 yr ARI

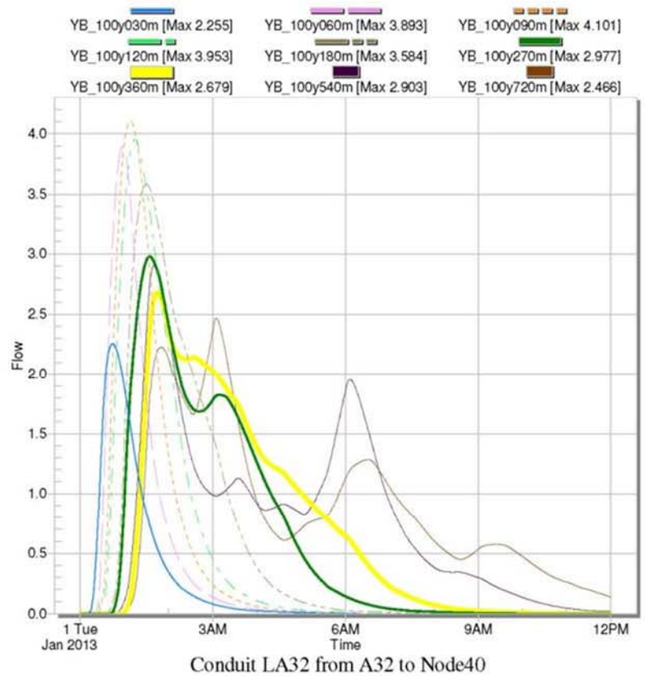
Conduit LA17 from A17 to A18



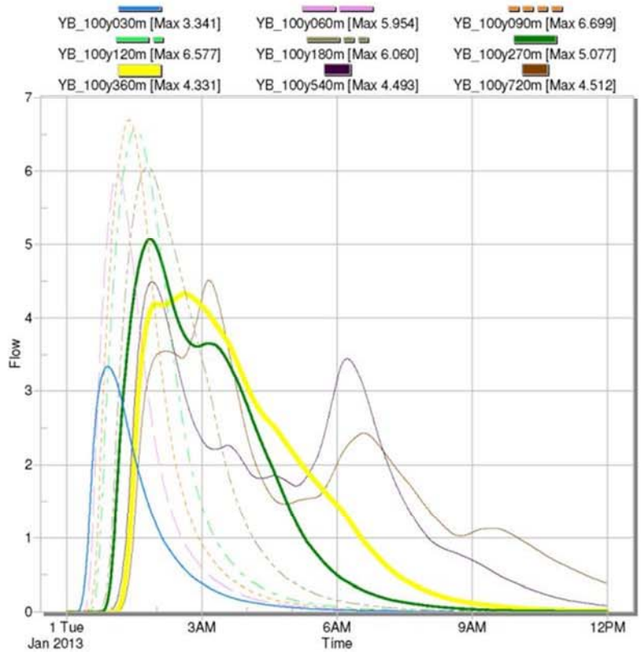
Conduit LA12 from A12 to A13



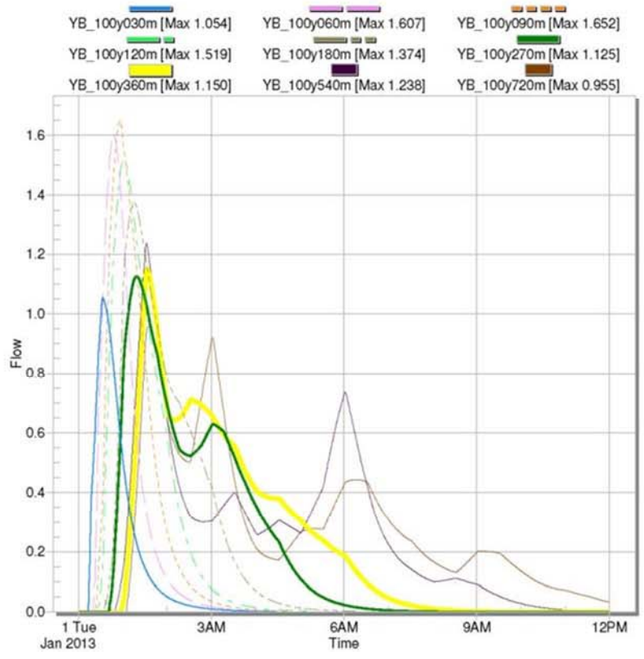
Conduit LA23 from A23 to A24



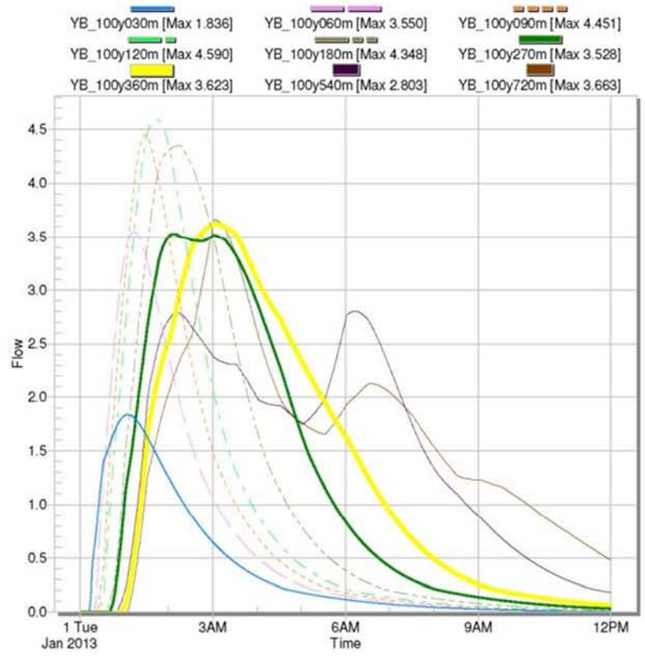
Conduit LA27 from A27 to A28



Conduit LA30 from A30 to Node39

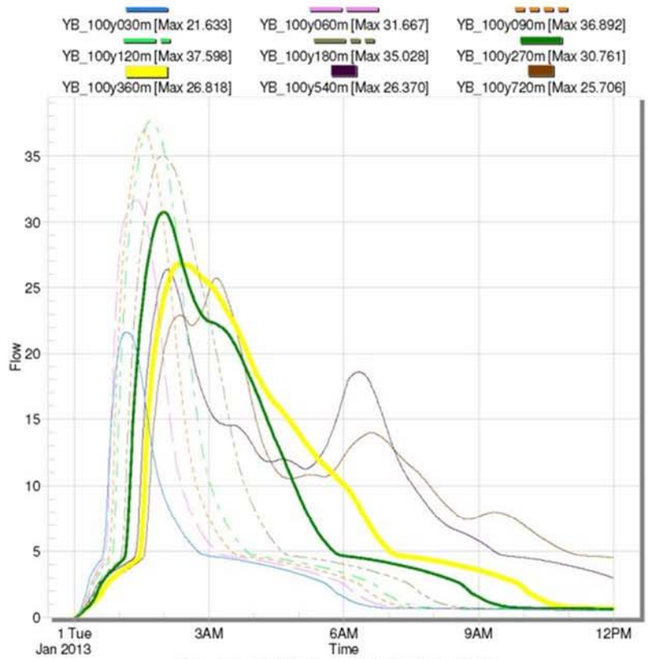


Conduit LA32 from A32 to Node40

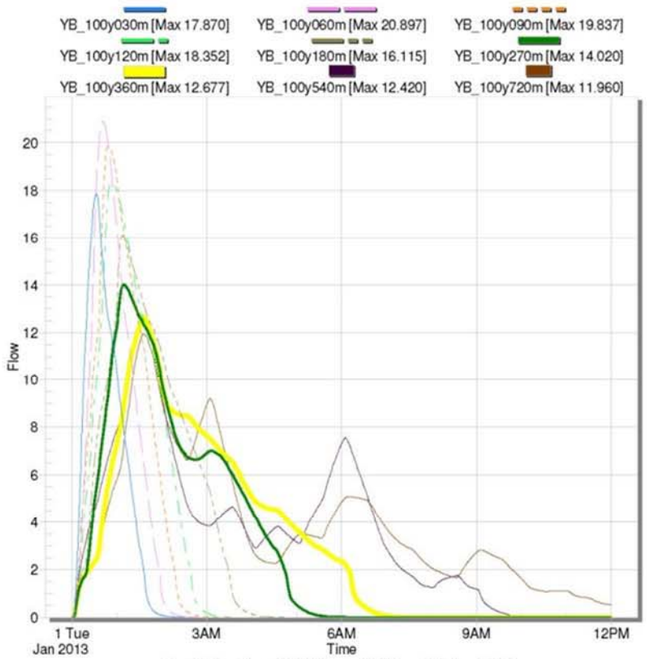


Predevelopment 100 yr ARI

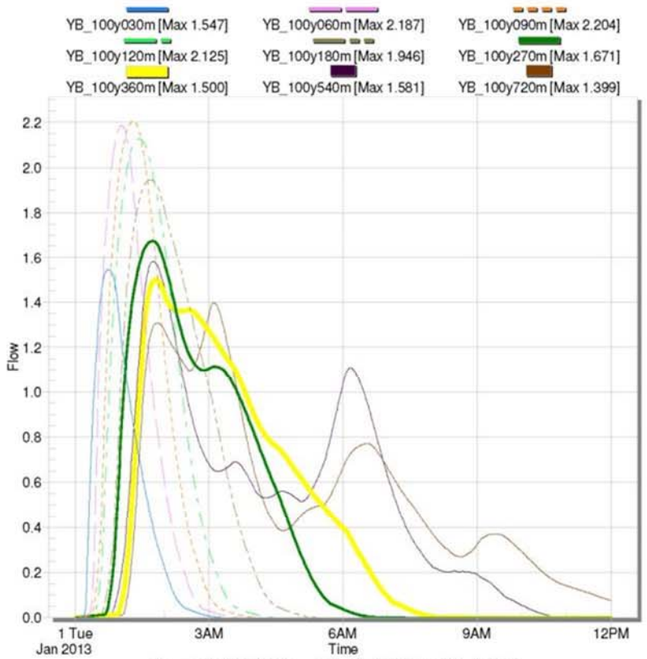
Conduit LX17 from FL6_OUT to X18



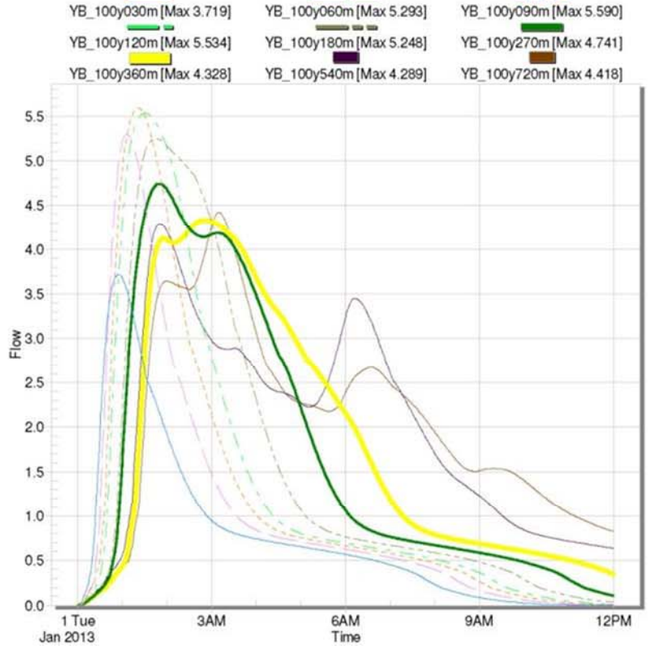
Conduit LX12 from FL2_OUT to X13



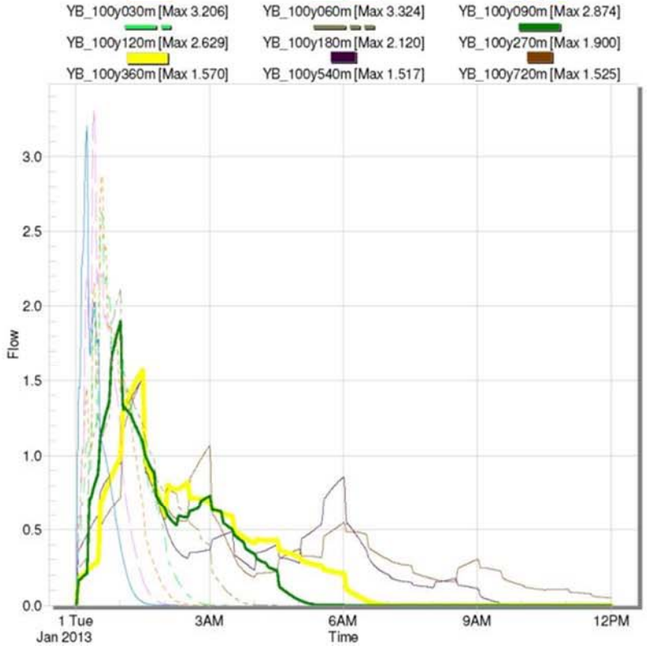
Conduit LX23b from X23b to X24



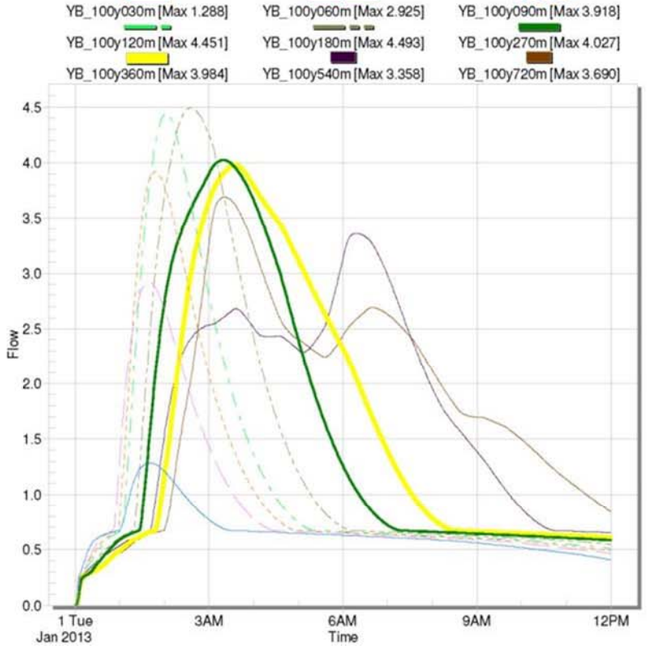
Conduit LX27 from FL9_OUT to X28



Conduit pipe_X30 from X30 to Node_257

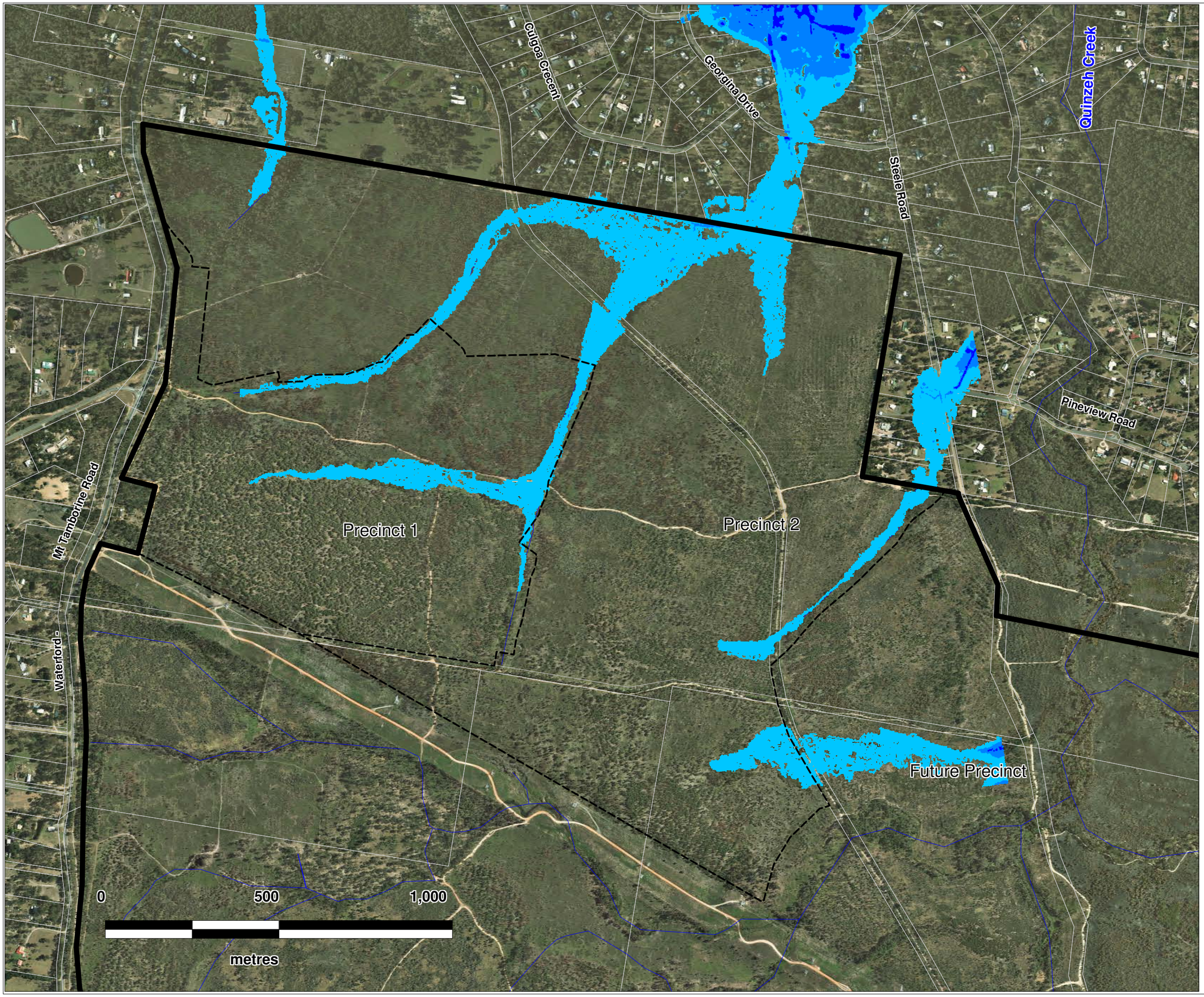


Conduit LX32 from FL10_OUT to Node256



Post development mitigated 100 yr ARI

APPENDIX D: FLOOD MAPPING



DesignFlow

LEGEND

Boundaries

- Yarrabilba Site
- Precinct

Depth (m)

- < 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- > 1.5

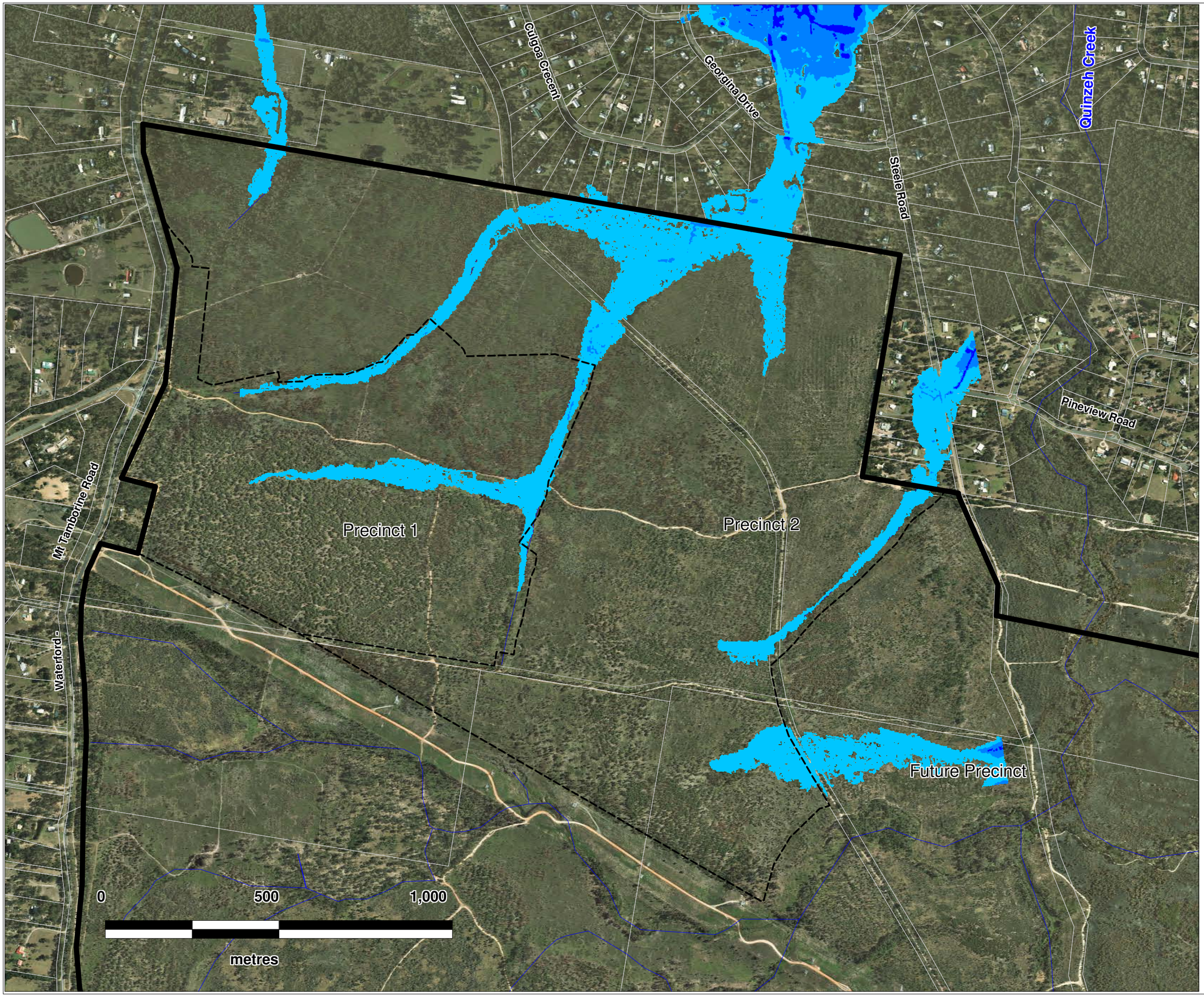
Pre-development 1yr ARI Flood Inundation

Yarrabilba Precinct 1 and 2 Stormwater Management Plan

SCALE: 1 : 1000

Date: 1 November 2013

Client: Lend Lease



DesignFlow

LEGEND

Boundaries

- Yarrabilba Site
- Precinct

Depth (m)

- < 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- > 1.5

Pre-development 2yr ARI Flood Inundation

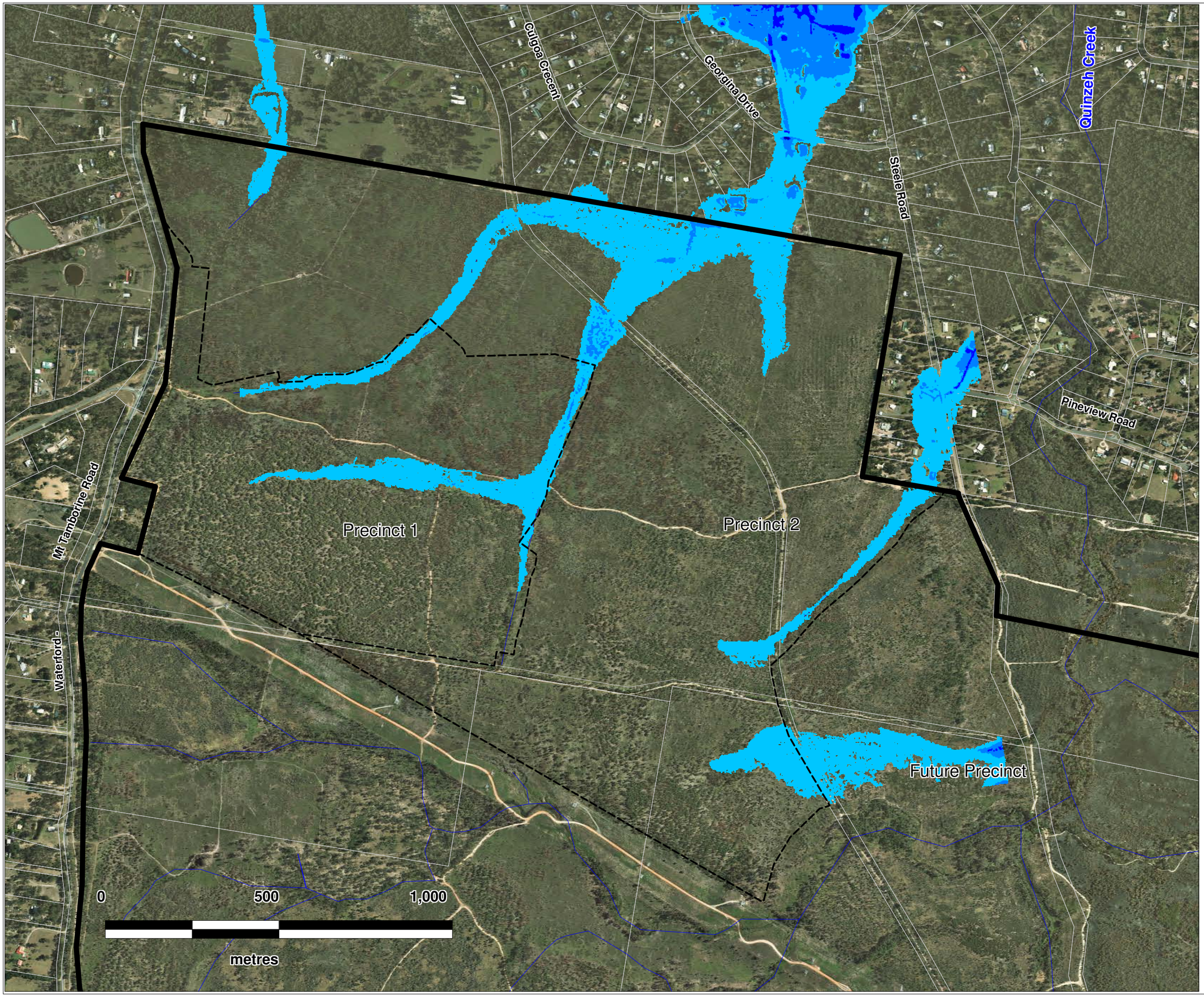
Yarrabilba Precinct 1 and 2 Stormwater Management Plan

N W E S

SCALE: 1 : 1000

Date: 1 November 2013

Client: Lend Lease



DesignFlow

LEGEND

Boundaries

- Yarrabilba Site
- Precinct

Depth (m)

- < 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- > 1.5

Pre-development 5yr ARI Flood Inundation

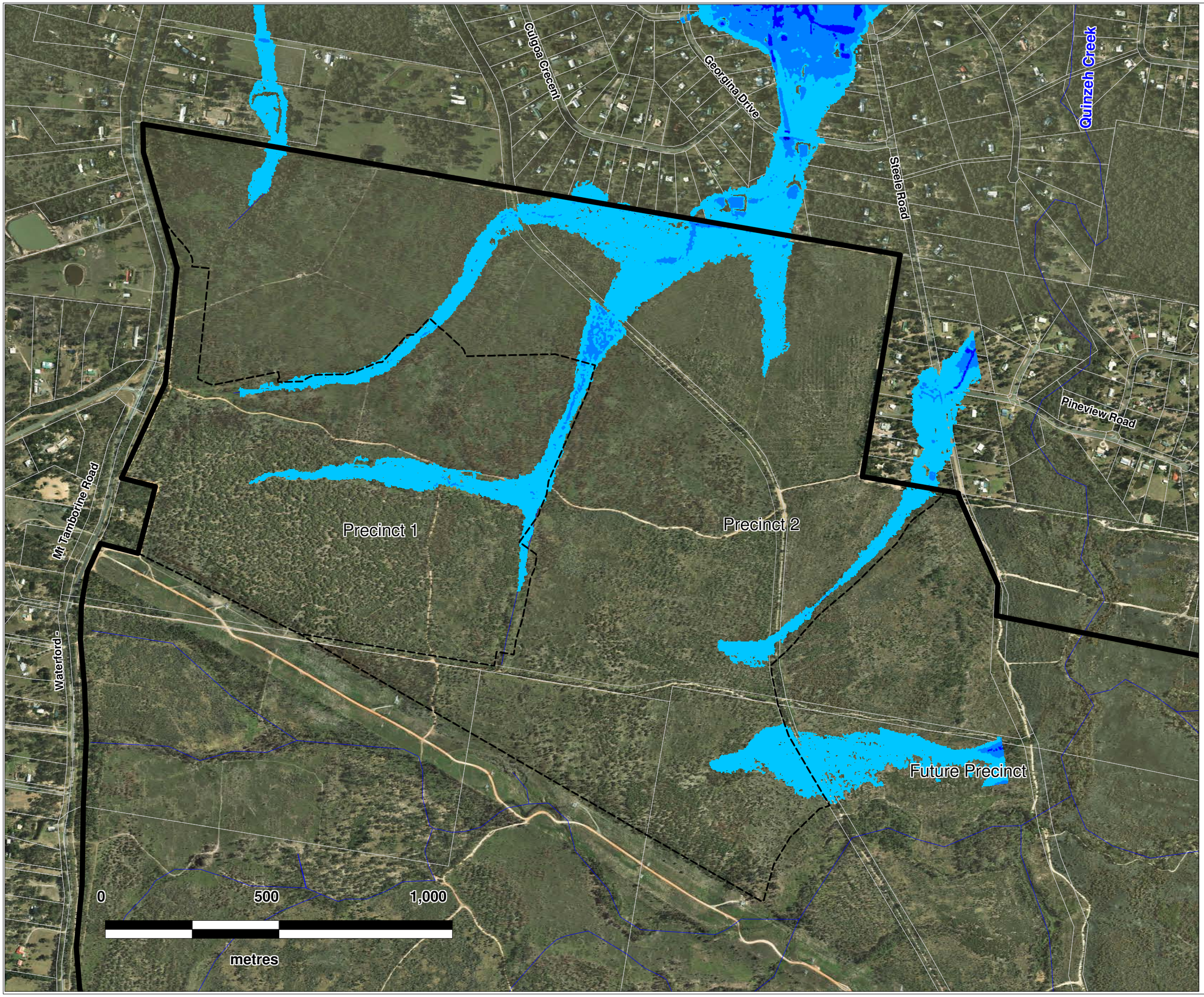
Yarrabilba Precinct 1 and 2
Stormwater Management Plan

N W E S

SCALE:
1 : 1000

Date:
1 November 2013

Client:
Lend Lease



DesignFlow

LEGEND

Boundaries

- Yarrabilba Site
- Precinct

Depth (m)

- < 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- > 1.5

Pre-development 10yr ARI Flood Inundation

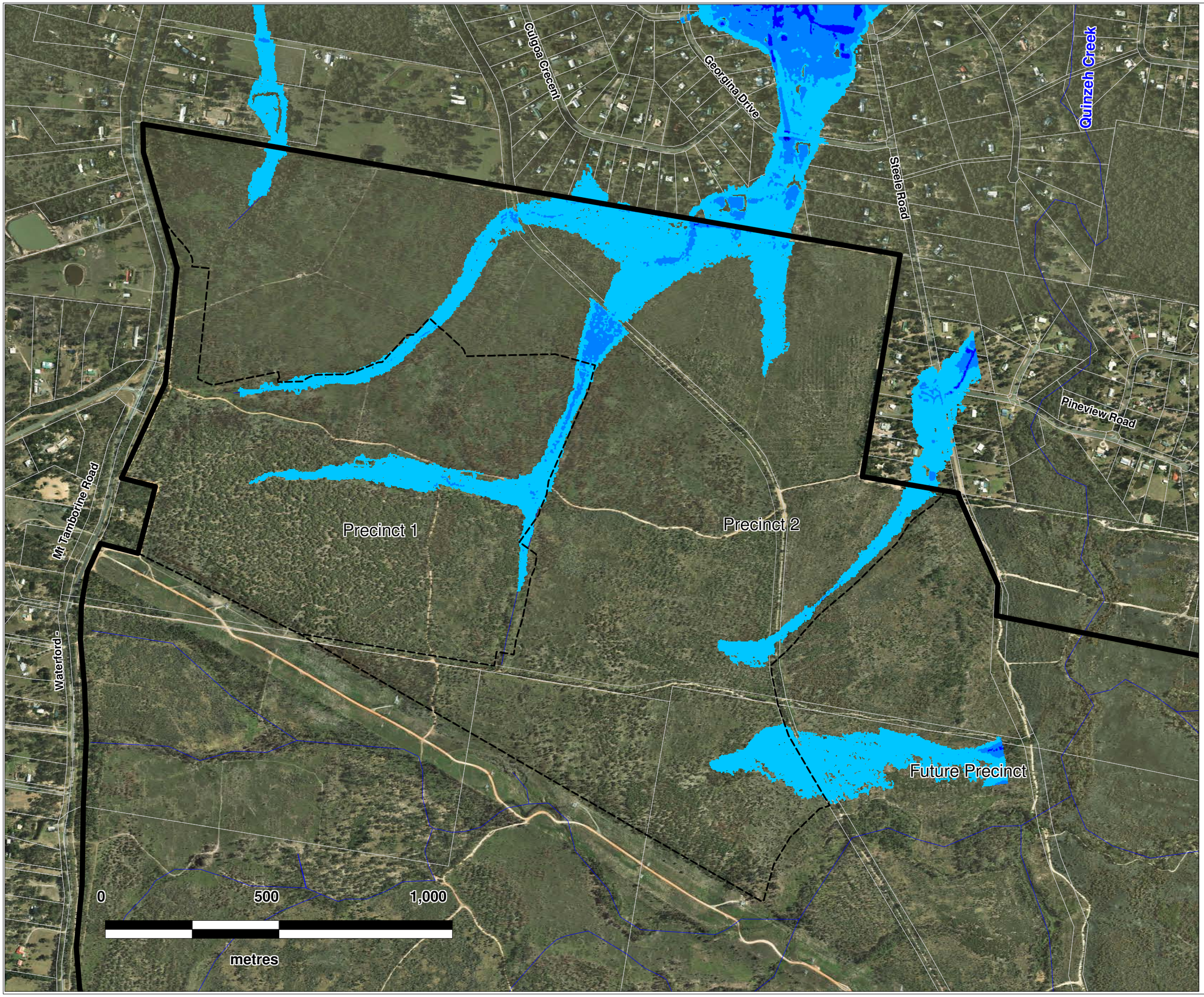
Yarrabilba Precinct 1 and 2 Stormwater Management Plan

N W E S

SCALE: 1 : 1000

Date: 1 November 2013

Client: Lend Lease



DesignFlow

LEGEND

Boundaries

- Yarrabilba Site
- Precinct

Depth (m)

- < 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- > 1.5

Pre-development 20yr ARI Flood Inundation

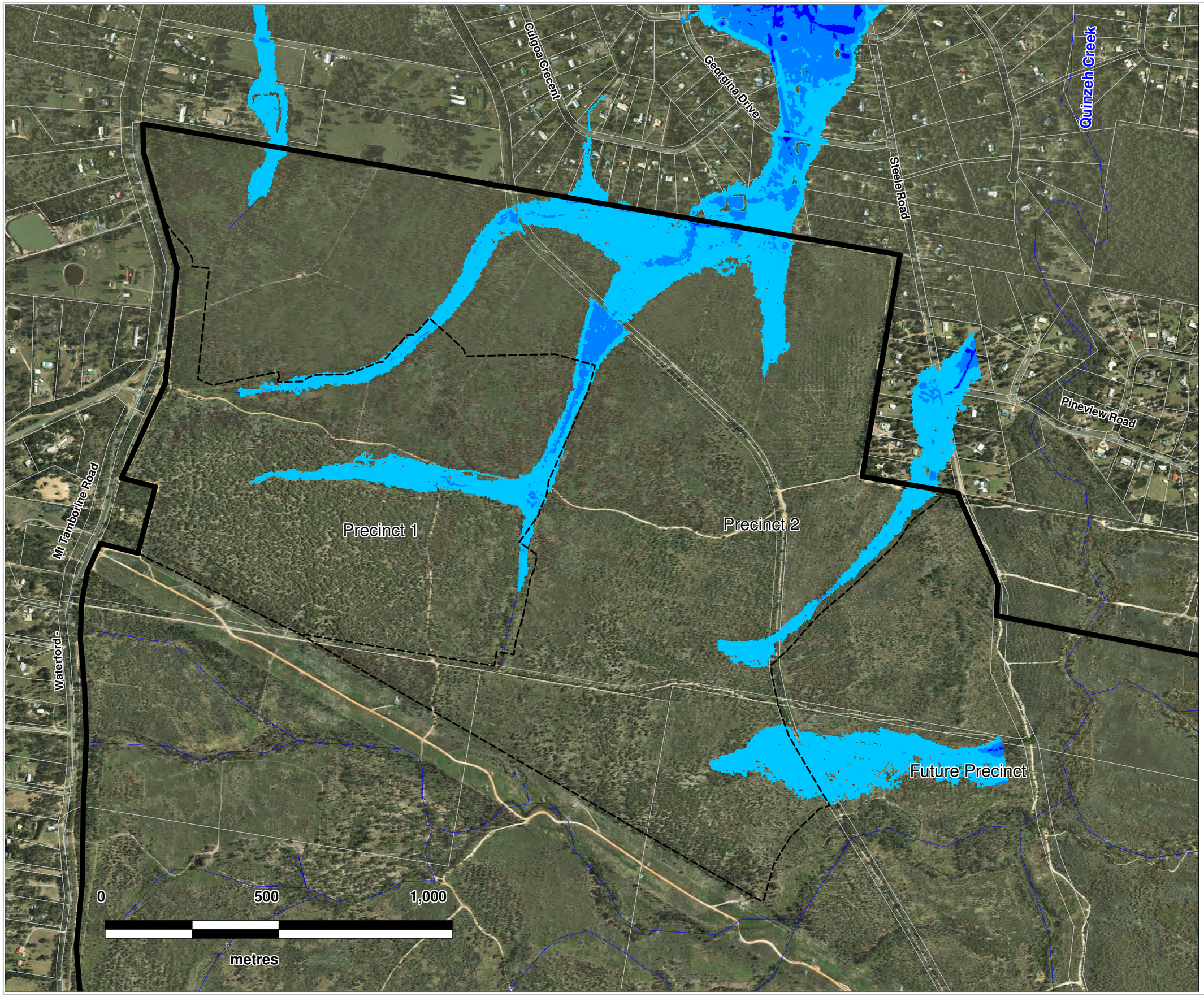
Yarrabilba Precinct 1 and 2 Stormwater Management Plan

N W E S

SCALE: 1 : 1000

Date: 1 November 2013

Client: Lend Lease



DesignFlow

LEGEND

Boundaries

- Yarrabilba Site
- Precinct

Depth (m)

- < 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- > 1.5

Pre-development 50yr ARI Flood Inundation

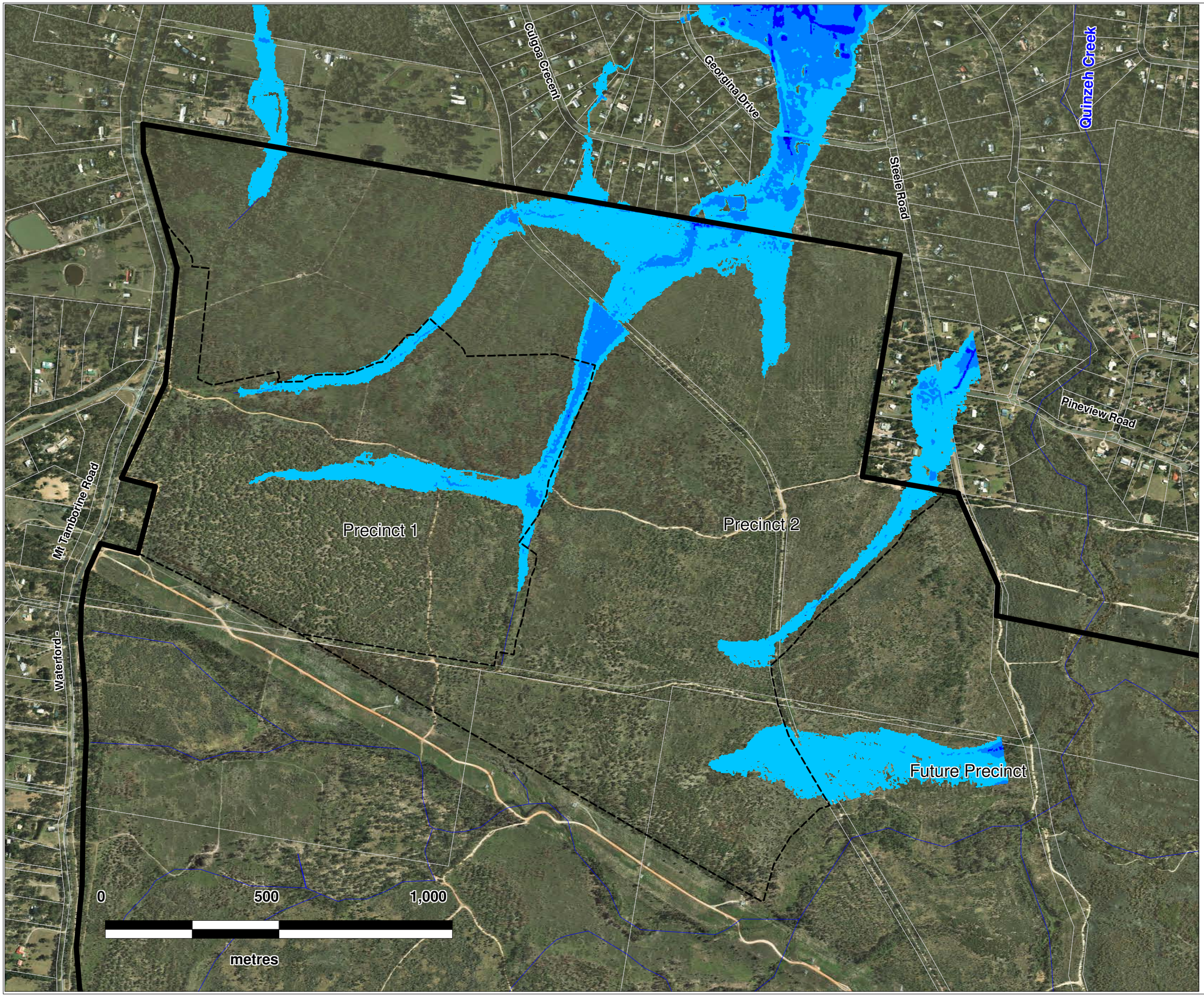
Yarrabilba Precinct 1 and 2
Stormwater Management Plan

N W E S

SCALE:
1 : 1000

Date:
1 November 2013

Client:
Lend Lease



DesignFlow

LEGEND

Boundaries

- Yarrabilba Site
- Precinct

Depth (m)

- < 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- > 1.5

Pre-development 100yr ARI Flood Inundation

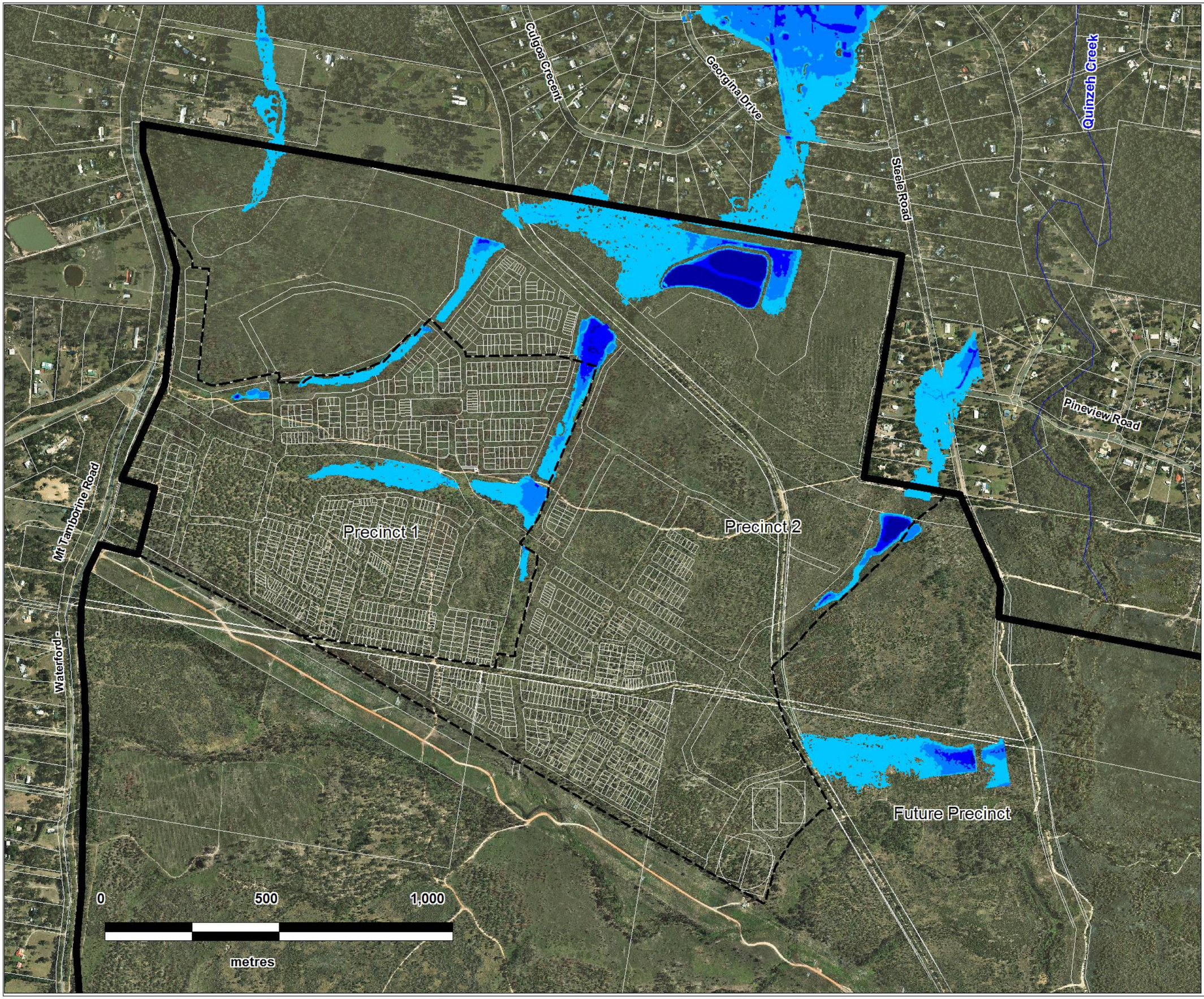
Yarrabilba Precinct 1 and 2
Stormwater Management Plan

N W E S

SCALE:
1 : 1000

Date:
1 November 2013

Client:
Lend Lease



DesignFlow

LEGEND

Boundaries

- **Yarrabilba Site**
- **Precinct**

Depth (m)

- **< 0.5**
- **0.5 - 1.0**
- **1.0 - 1.5**
- **> 1.5**

Post-development Mitigated 1yr ARI Flood Inundation

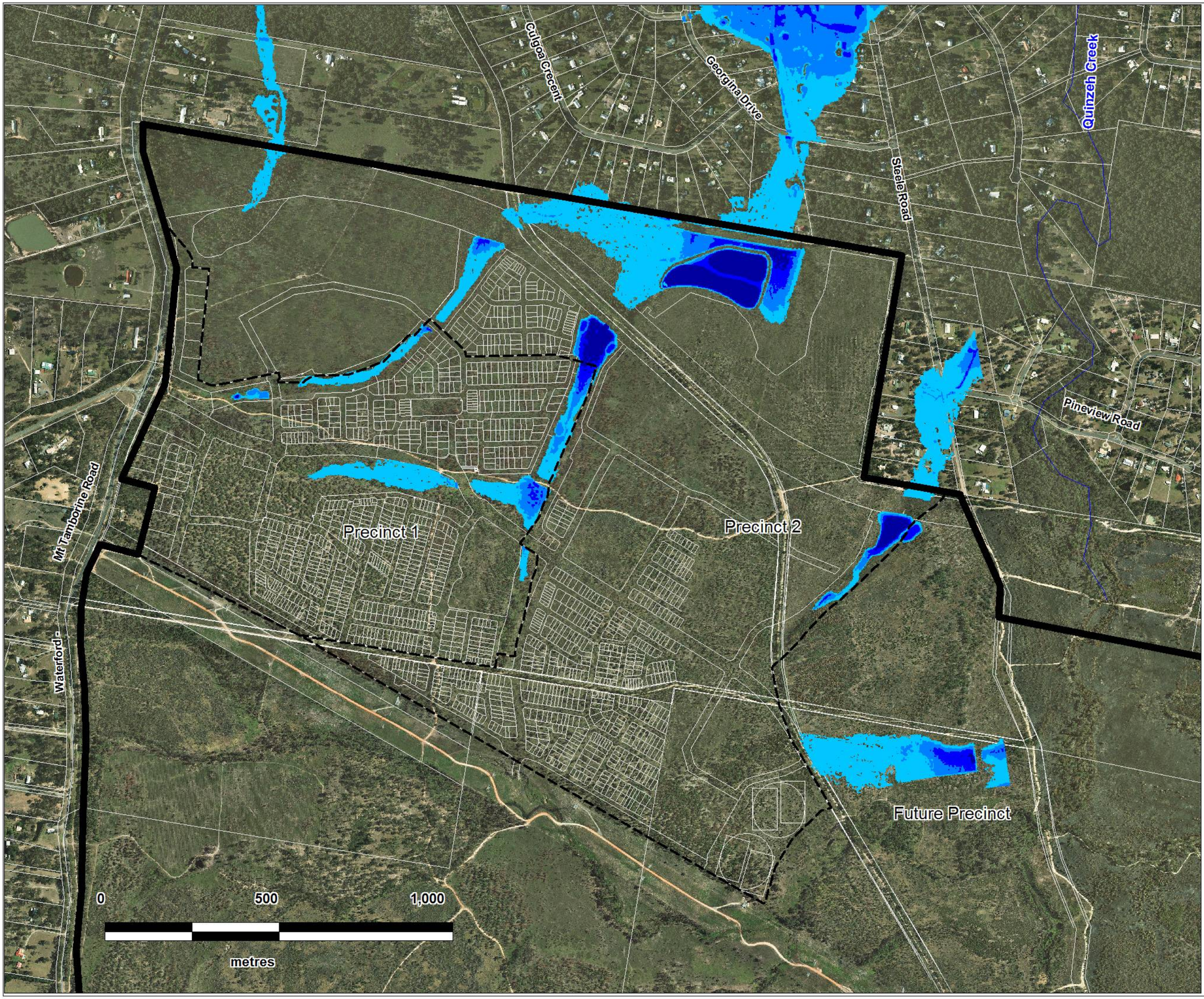
Yarrabilba Precinct 1 and 2 Stormwater Management Plan

N W E S

SCALE: 1 : 1000

Date: 2 December 2013

Client: Lend Lease



DesignFlow

LEGEND

Boundaries

- **Yarrabilba Site**
- **Precinct**

Depth (m)

- **< 0.5**
- **0.5 - 1.0**
- **1.0 - 1.5**
- **> 1.5**

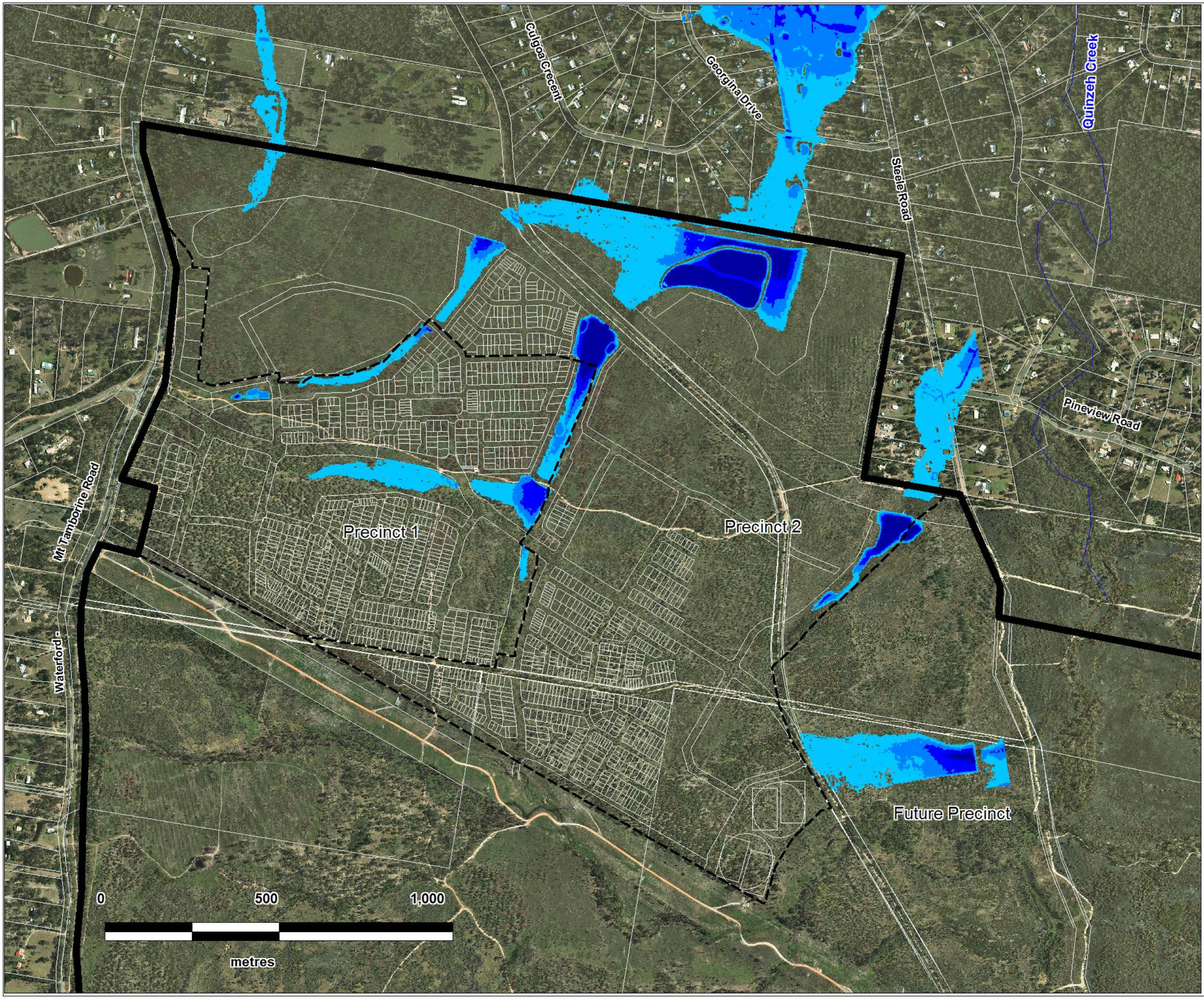
Post-development Mitigated 2yr ARI Flood Inundation

Yarrabilba Precinct 1 and 2 Stormwater Management Plan

SCALE: 1 : 1000

Date: 2 December 2013

Client: Lend Lease



DesignFlow

LEGEND

Boundaries

- **Yarrabilba Site**
- **Precinct**

Depth (m)

- **< 0.5**
- **0.5 - 1.0**
- **1.0 - 1.5**
- **> 1.5**

Post-development Mitigated 5yr ARI Flood Inundation

Yarrabilba Precinct 1 and 2 Stormwater Management Plan

SCALE: 1 : 1000

Date: 2 December 2013

Client: Lend Lease