

# **Appendix F** Floodplain Mitigation Option Information

OPTION P4 – Flood Mapping for the SES

OPTION P6 - Flood Mitigation Basin in North Boambee Valley

OPTION P7 - Lakes Estate Flood Mapping and Mitigation Basin Option Assessment Mapping

OPTION P9- Barcoo Court Levee

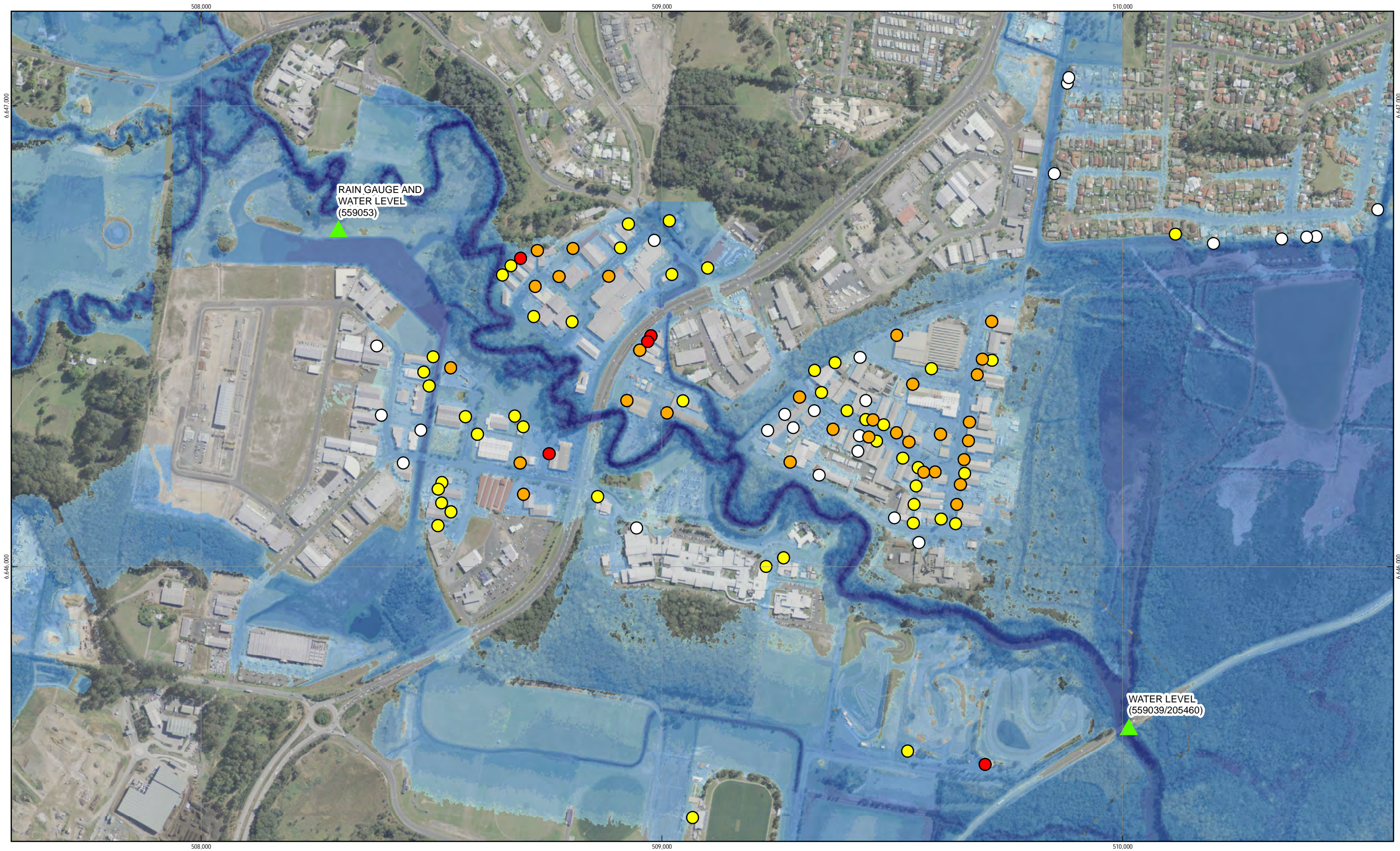
OPTION P10 - Isle Drive Bypass Option

OPTION PC24 - Remove Newports bridge gabion constriction (P14), increasing the Coffs Harbour Health Campus floodway (P13) plus Isles Drive Bypass improvements (P10)

OPTION P27 - Conveyance improvements at North Boambee Road to reduce the risk of isolation and frequency of road inundation

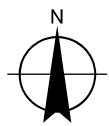
***OPTION P4***  
***Flood Mapping for the SES***





Paper Size A3  
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Metres

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



LEGEND



1% AEP Flood Extents

Rainfall and Water Level Gauges

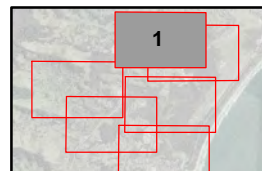
Floor Level  
Inundation

20% AEP

5% AEP

1% AEP

0.5% AEP



Coffs Harbour City Council  
Boambee newports Creek  
Floodplain Risk Management Study

Job Number	22-16407
Revision	0
Date	14 Jul 2016

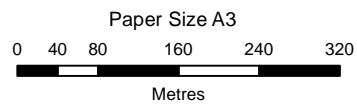
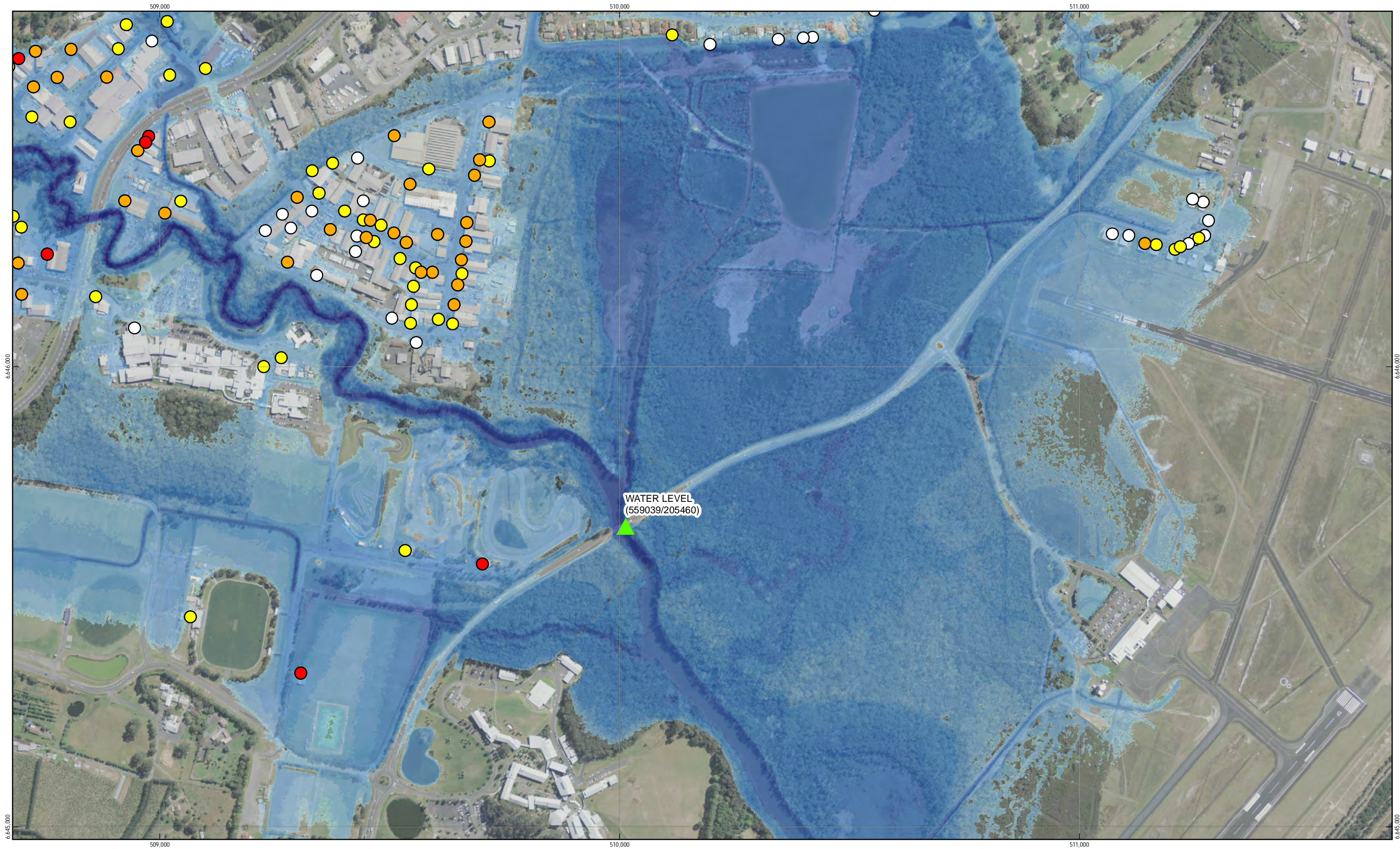
## Floor Level Inundation Appendix F.1

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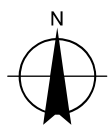
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Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



LEGEND



1% AEP Flood Extents

Rainfall and Water Level Gauges

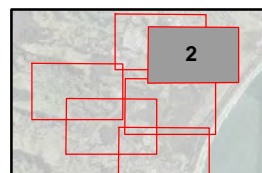
Floor Level  
Inundation

20% AEP

5% AEP

1% AEP

0.5% AEP



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Boambee newports Creek  
Floodplain Risk Management Study

Job Number	22-16407
Revision	0
Date	14 Jul 2016

## Floor Level Inundation Appendix F.2

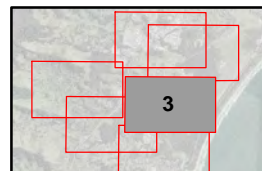
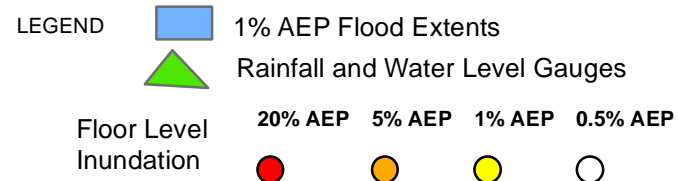
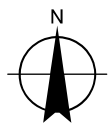
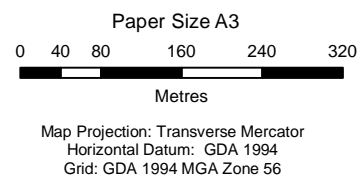
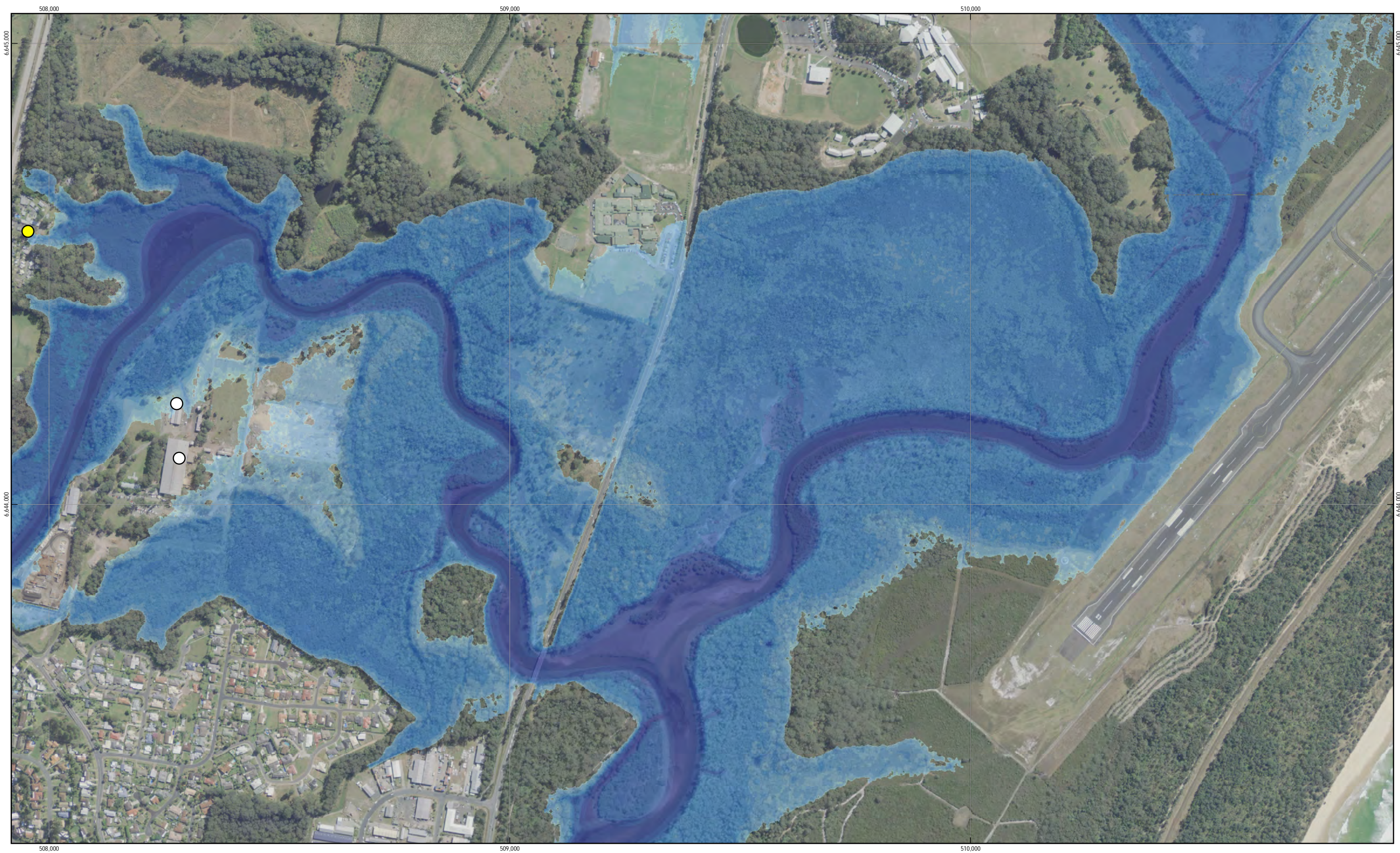
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Revision	0
Date	14 Jul 2016

## Floor Level Inundation Appendix F.3

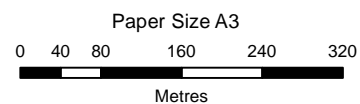
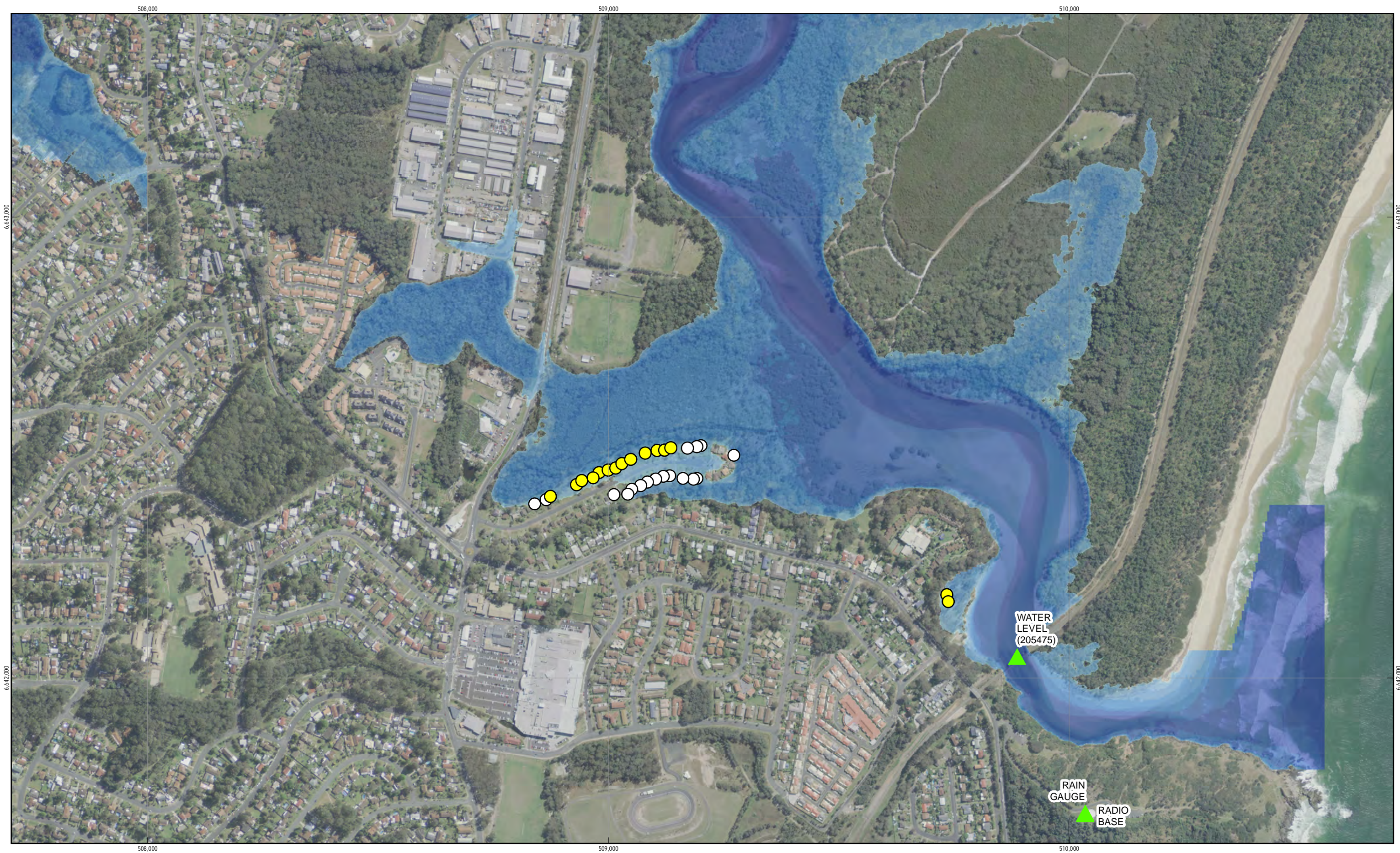
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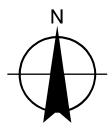
Data source: LPI (2012), LPI Lot Boundaries, 2012. Created by:sldouglas

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Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



LEGEND



1% AEP Flood Extents



Rainfall and Water Level Gauges

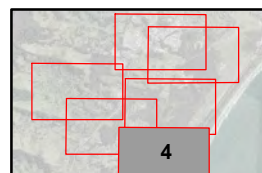
Floor Level  
Inundation

20% AEP

5% AEP

1% AEP

0.5% AEP



Coffs Harbour City Council  
Boambee newports Creek  
Floodplain Risk Management Study

Job Number	22-16407
Revision	0
Date	14 Jul 2016

## Floor Level Inundation Appendix F.4

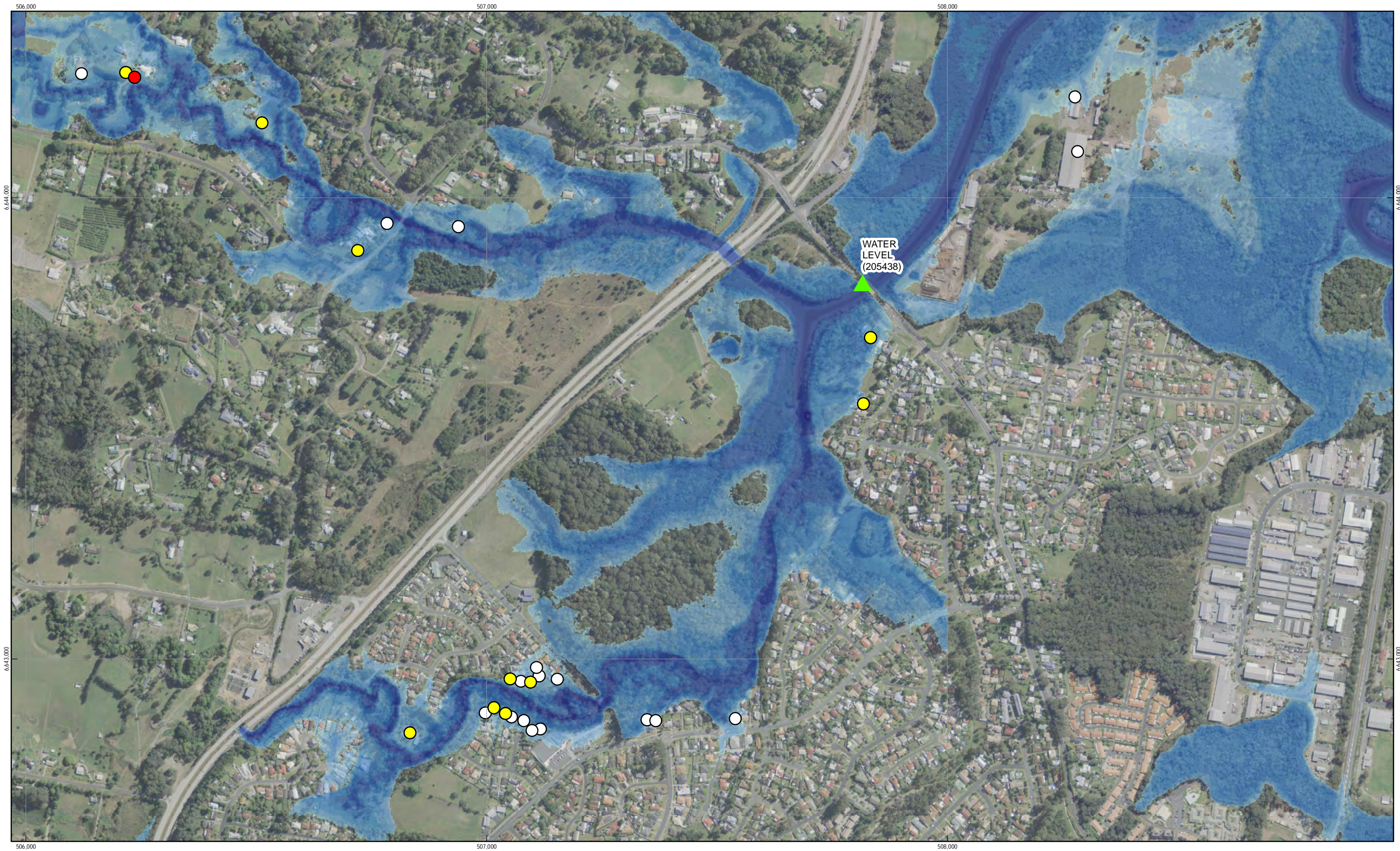
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Data source: LPI (2012), LPI Lot Boundaries, 2012. Created by:sldouglas

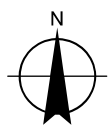
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Metres

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



LEGEND



1% AEP Flood Extents

Rainfall and Water Level Gauges

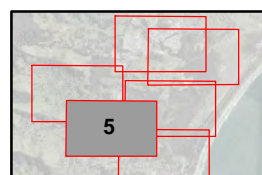
Floor Level  
Inundation

20% AEP

5% AEP

1% AEP

0.5% AEP



Coffs Harbour City Council  
Boambee newports Creek  
Floodplain Risk Management Study

Job Number	22-16407
Revision	0
Date	14 Jul 2016

## Floor Level Inundation Appendix F.5

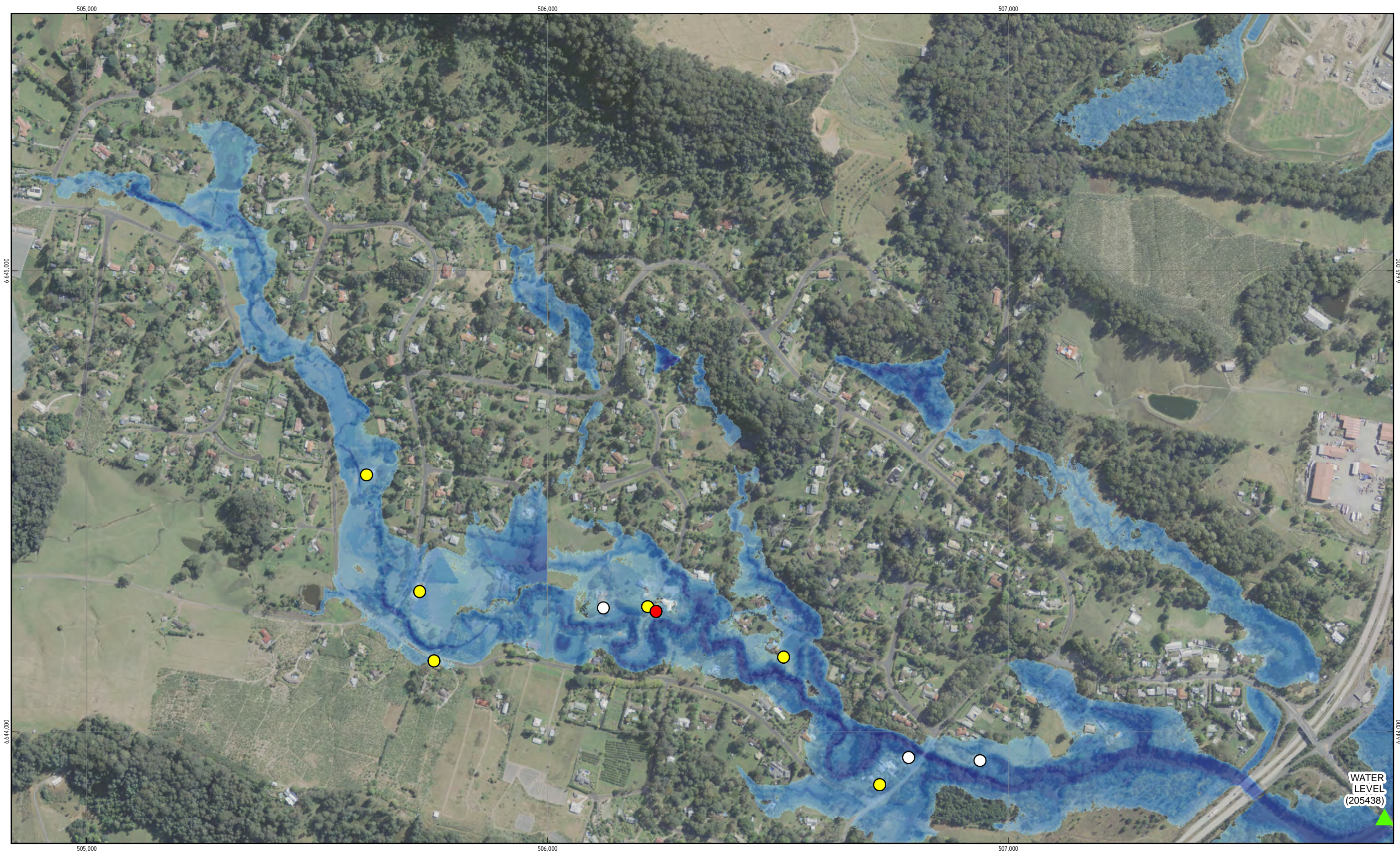
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Data source: LPI (2012), LPI Lot Boundaries, 2012. Created by:sldouglas

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Paper Size A3

0 40 80 160 240 320

Metres

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56

N

LEGEND

1% AEP Flood Extents

Rainfall and Water Level Gauges

Floor Level Inundation

20% AEP 5% AEP 1% AEP 0.5% AEP

20% AEP 5% AEP 1% AEP 0.5% AEP

Coffs Harbour City Council  
Boambee newports Creek  
Floodplain Risk Management Study

Job Number 22-16407  
Revision 0  
Date 14 Jul 2016

Floor Level Inundation Appendix F.6

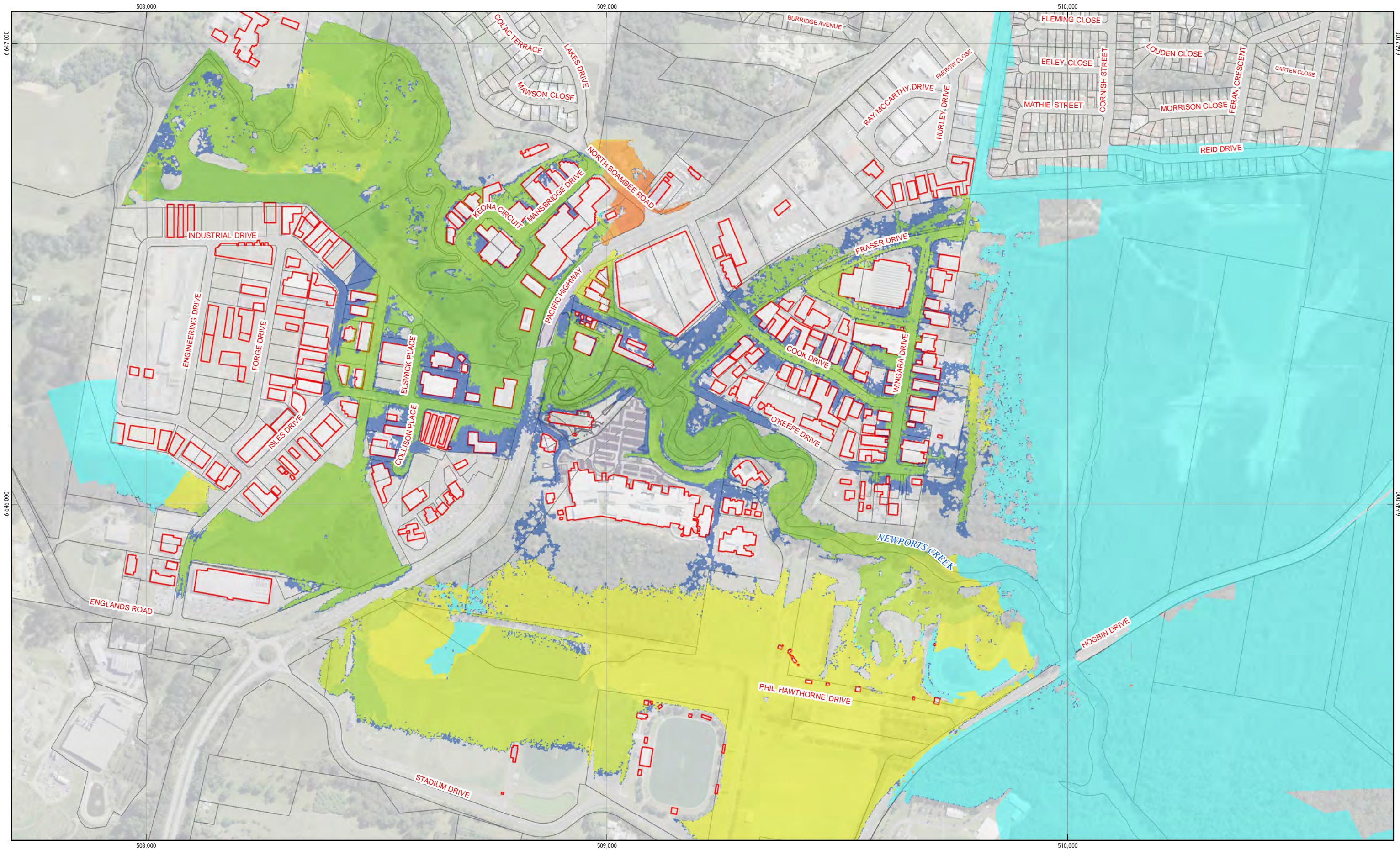
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Data source: LPI (2012), LPI Lot Boundaries, 2012. Created by:sldouglas

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***OPTION P6***  
***Flood Mitigation Basin in***  
***North Boambee Valley***



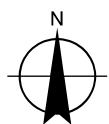






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Metres

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



### Legend

#### Change In Flood Level (mm)

-500mm	-250mm - -100mm	-30mm - -15mm	+30mm - +50mm	+250mm - +500mm
-500mm - -250mm	-100mm - -50mm	-15mm - +15mm	+50mm - +100mm	No Longer Flooded
	-50mm - -30mm	+15mm - +30mm	+100mm - +250mm	



Coffs Harbour City Council  
Boambee newports Creek  
Floodplain Risk Management Study

Job Number | 22-16407  
Revision | 0  
Date | 14 Jul 2016

Existing vs P6  
1% AEP

Appendix F.P6.2

N:\AU\Coffs Harbour\Projects\22\16407\GIS\Maps\Deliverables\22\_16407\_F\_P\_6\_2\_NBV\_Basin\_100yr\_Flood\_Diff\_Rev0.mxd

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Data source: LPI (2012), LPI Lot Boundaries, 2012. Created by:sldouglas

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## Boambee Newport Floodplain Risk Management Plan



## Mitigation Options

NBV Basin Works (GHD Option 4)

purpose. They cannot be used for budget-setting purposes as common elements between options may have been omitted and/or the works not fully scoped. A functional design is recommended if a budget estimate is required.

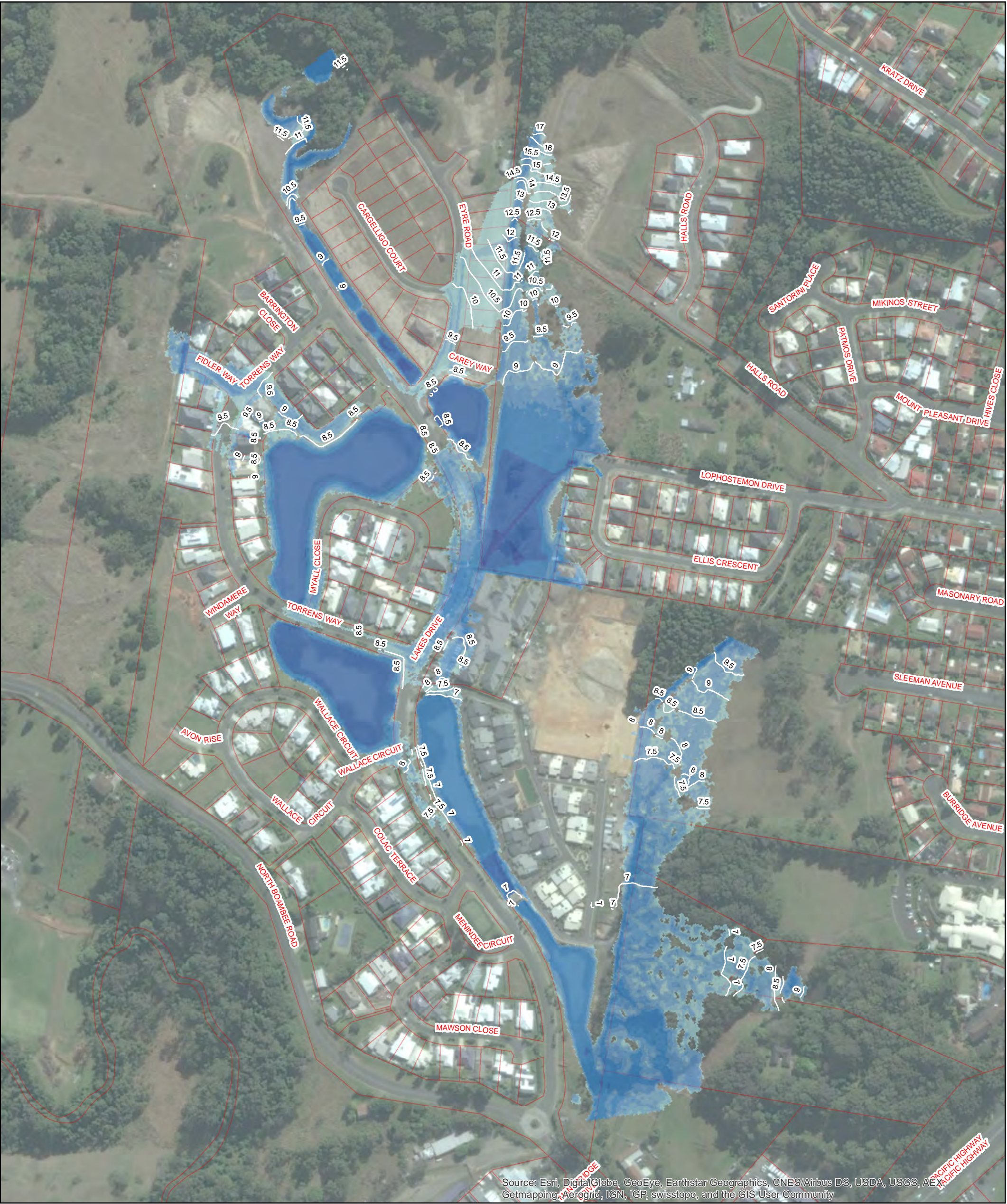
SCHEDULE OF ESTIMATED QUANTITIES						
PAY ITEM	DESCRIPTION OF WORK	QTY	UNIT	RATE	AMOUNT	NOTES
<b>1</b>	<b>NBV Basin Works</b>					
1.1	NBV Basin Works	1	item	2992500.00	\$ 2,992,500	63% of NBV Basin works costed by DGB
	<b>SUBTOTAL</b>				<b>\$ 2,992,500</b>	
	<b>SUBTOTAL</b>				<b>\$ 2,992,500</b>	
	<b>TOTAL (Ex-GST)</b>				<b>\$ 2,992,500</b>	63% of NBV Basin works costed by DGB



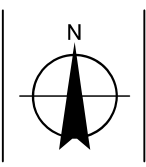
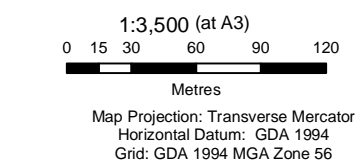
## ***OPTION P7***

### ***Lakes Estate Flood Mapping and Mitigation Basin Option Assessment Mapping***





Legend



COFFS HARBOUR  
CITY COUNCIL

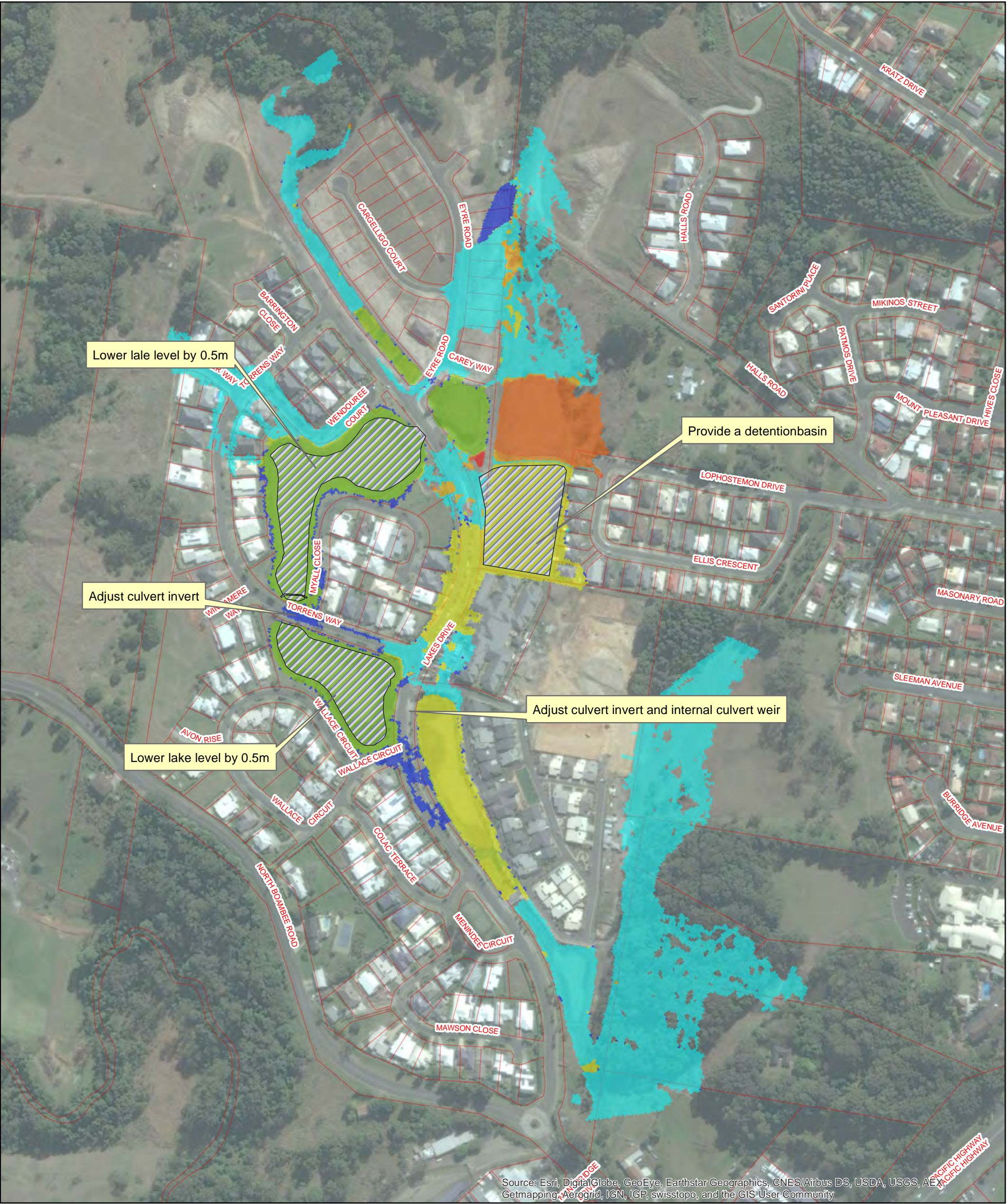


Coffs Harbour City Council  
Boambe & Newports Creek  
Floodplain Risk Management Plan  
**Flood Extent and Depth**  
**1% AEP**

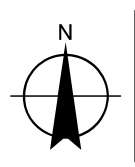
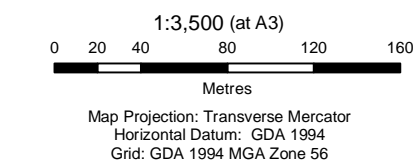
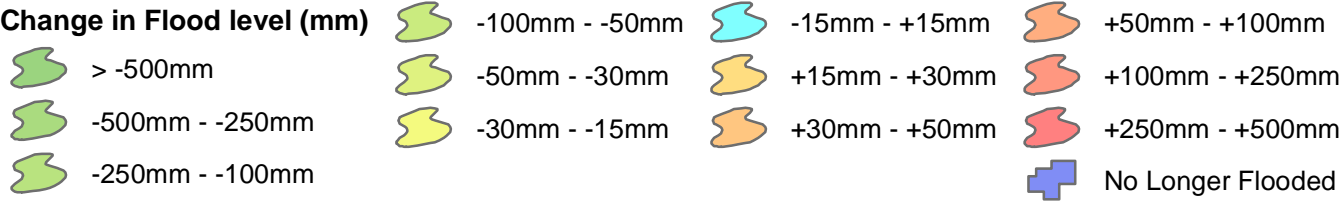
Job Number 22-16407  
Revision 0  
Date 14 Jul 2016

Appendix F.P7.1





Legend



Coffs Harbour City Council  
Boambe & Newports Creek  
Floodplain Risk Management Plan

Change in Flood Level due to Mitigation Options  
1% AEP

Job Number 22-16407  
Revision 0  
Date 14 Jul 2016

Appendix F.P7.2



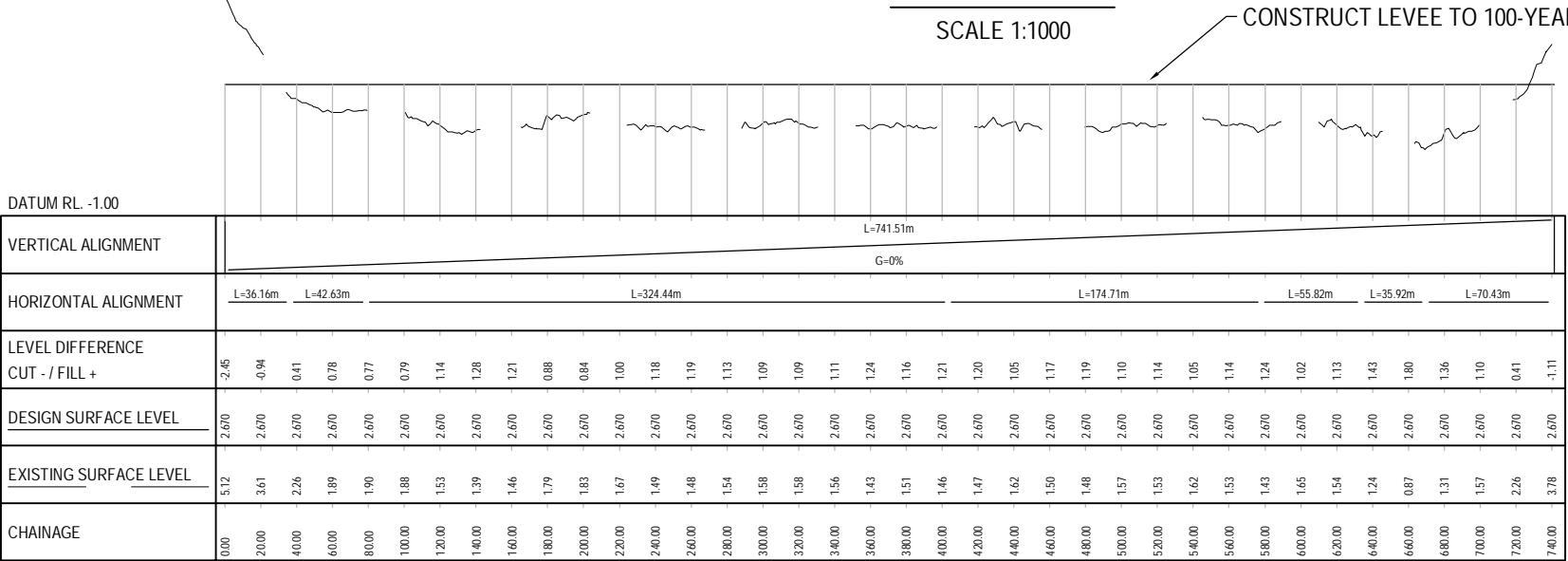
***OPTION P9***  
***Barcoo Court Levee***





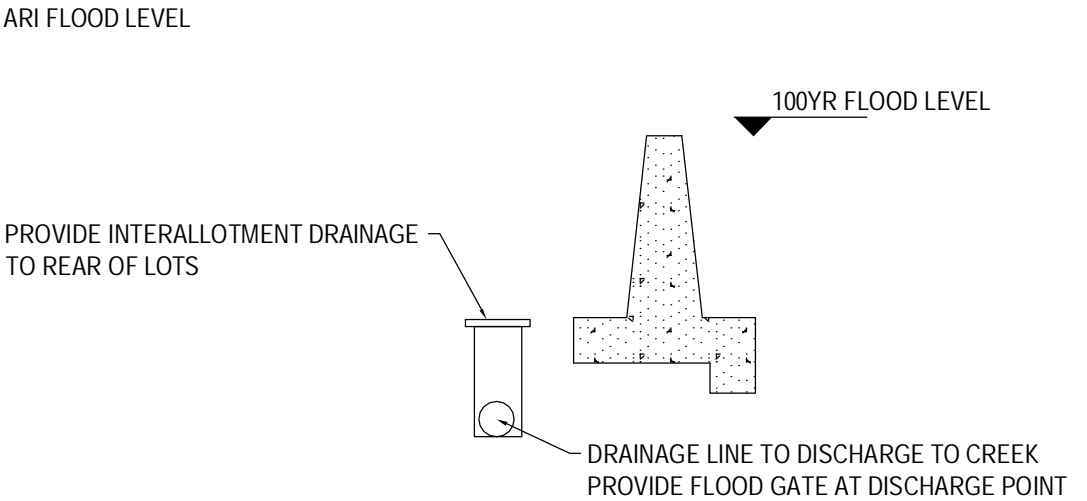
PLAN VIEW

SCALE 1:1000



LONGITUDINAL SECTION - LEVEE BANK

HORZ 1:2000 VERT 1:100



TYPICAL CONCRETE LEVEE DETAIL

SCALE: NOT TO SCALE



COFFS HARBOUR CITY COUNCIL  
BOAMBEE NEWPORTS CREEK  
FLOODPLAINS RISK MANAGEMENT STUDY AND PLAN  
MITIGATION OPTION  
BARCOO ROAD LEVEE CONCEPT

Job Number 22-16407  
Revision A  
Date DEC 2014

Figure P9

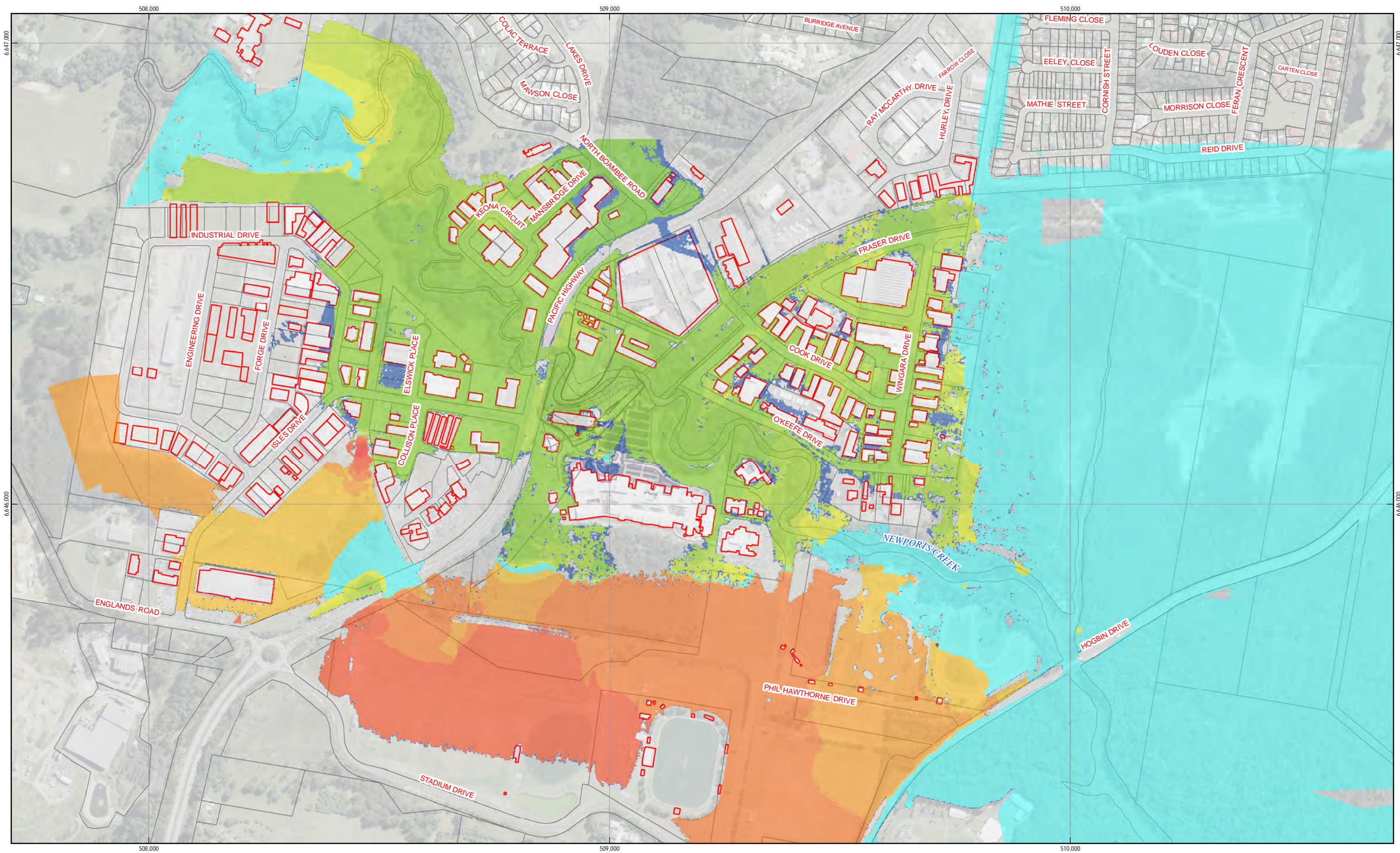


***OPTION P10***  
***Isle Drive Bypass Option***











Boambee Newport Floodplain Risk Management Plan



**Mitigation Options**

**Option P10**

**Re-Grade Isles Drive Drainage Channel, clean out, steepen batters to 1 in 2 and grass.**  
**Provide additional 8 x 1.2m Diam. RCP under highway**

They cannot be used for budget-setting purposes as common elements between options may have been omitted and/or the works not fully scoped. A functional design is recommended if a budget estimate is required.

SCHEDULE OF ESTIMATED QUANTITIES						
PAY ITEM	DESCRIPTION OF WORK	QTY	UNIT	RATE	AMOUNT	NOTES
<b>1</b>	<b>Preliminaries</b>					
1.1	Establishment	1	item	11000.00	\$ 11,000	Allowance only
1.2	Erosion and sediment control	1	item	11000.00	\$ 11,000	Allowance only
1.3	Traffic control	1	item	11000.00	\$ 11,000	Allowance only
	<b>SUBTOTAL</b>				<b>\$ 33,000</b>	
<b>2</b>	<b>Earthworks &amp; General - Isles Drive</b>					
2.1	Clear site of vegetation - light vegetation, over 500m2	4,180	m2	0.50	\$ 2,090	-
2.3	Excavate over site to reduce levels in light soil	1,150	m3	21.00	\$ 24,150	-
2.2	Landscaping - hydro mulch sprayed grass seed	4,180	m2	0.30	\$ 1,254	-
2.3	Fence - supply and erect galvanised steel welded mesh 1.2m high	700	m	72.00	\$ 50,400	
2.4	Geotextile Mat - one layer of coir fibre between two layers of polymer mesh - 15-20 mm thick	4,180	m2	8.00	\$ 33,440	product or similar
2.5	Minor Works to culvert Crossing	1	item	100000.00	\$ 100,000	
2.6	Signage - warning signage around perimeter	1	unit	11000.00	\$ 11,000	
	<b>SUBTOTAL</b>				<b>\$ 222,334</b>	
<b>3</b>	<b>Drainage</b>					
3.1	Pipe jacking - approx. 10 x 1.2m diam RCP under Pac Highway	1	item	500000.00	\$ 500,000	Allowance only
3.2	Headwall - Cast in-situ reinforced concrete to suit pipe/culvert; includes	50	m3	520.00	\$ 26,000	-
	<b>SUBTOTAL</b>				<b>\$ 526,000</b>	
	<b>SUBTOTAL ITEMS 1-3</b>				<b>\$ 781,334</b>	
<b>4</b>	<b>Supervision, Project Management &amp; Contractor On-Costs</b>					
4.1	Supervision, Project Management & Contractor On-Costs (20%)	20	%	-	\$ 156,267	-
	<b>SUBTOTAL</b>				<b>\$ 156,267</b>	
<b>5</b>	<b>Contingencies</b>					
5.1	Contingencies - General (30%)	30	%	-	\$ 234,400	-
	<b>SUBTOTAL</b>				<b>\$ 234,400</b>	
	<b>TOTAL (Ex-GST)</b>				<b>\$ 1,172,001</b>	



## Boambee Newport Floodplain Risk Management Plan



## Mitigation Options

## Option P10 (alternative configuration)

**Re-Grade Isles Drive Drainage Channel, clean out, steepen batters to 1 in 2 and grass.**  
**Remove Highway Median along overflow length**

purpose. They cannot be used for budget-setting purposes as common elements between options may have been omitted and/or the works not fully scoped. A functional design is recommended if a budget estimate is required.

SCHEDULE OF ESTIMATED QUANTITIES						
PAY ITEM	DESCRIPTION OF WORK	QTY	UNIT	RATE	AMOUNT	NOTES
<b>1</b>	<b>Preliminaries</b>					
1.1	Establishment	1	item	11000.00	\$ 11,000	Allowance only
1.2	Erosion and sediment control	1	item	11000.00	\$ 11,000	Allowance only
1.3	Traffic control	1	item	11000.00	\$ 11,000	Allowance only
	<b>SUBTOTAL</b>				<b>\$ 33,000</b>	
<b>2</b>	<b>Earthworks &amp; General - Isles Drive</b>					
2.1	Clear site of vegetation - light vegetation, over 500m2	4,180	m2	0.50	\$ 2,090	-
2.3	Excavate over site to reduce levels in light soil	1,150	m3	21.00	\$ 24,150	-
2.2	Landscaping - hydro mulch sprayed grass seed	4,180	m2	0.30	\$ 1,254	-
2.3	Fence - supply and erect galvanised steel welded mesh 1.2m high	700	m	72.00	\$ 50,400	
	Geotextile Mat - one layer of coir fibre between two layers of polymer mesh - 15-20 mm thick	4,180	m2	8.00	\$ 33,440	product or similar
2.5	Minor Works to culvert Crossing	1	item	100000.00	\$ 100,000	
2.6	Signage - warning signage around perimeter	1	unit	11000.00	\$ 11,000	
	<b>SUBTOTAL</b>				<b>\$ 222,334</b>	
<b>3</b>	<b>Remove Median along Overflow Length</b>					
3.1	Demolition - cut away 150mm thick unreinforced concrete ground slab	540	m2	62.00	\$ 33,480	assumed 2m wide by 300m length
	<b>SUBTOTAL</b>				<b>\$ 33,480</b>	
	<b>SUBTOTAL ITEMS 1-3</b>				<b>\$ 288,814</b>	
<b>4</b>	<b>Supervision, Project Management &amp; Contractor On-Costs</b>					
4.1	Supervision, Project Management & Contractor On-Costs (20%)	20	%	-	\$ 57,763	-
	<b>SUBTOTAL</b>				<b>\$ 57,763</b>	
<b>5</b>	<b>Contingencies</b>					
5.1	Contingencies - General (30%)	30	%	-	\$ 86,644	-
	<b>SUBTOTAL</b>				<b>\$ 86,644</b>	
	<b>TOTAL (Ex-GST)</b>				<b>\$ 433,221</b>	



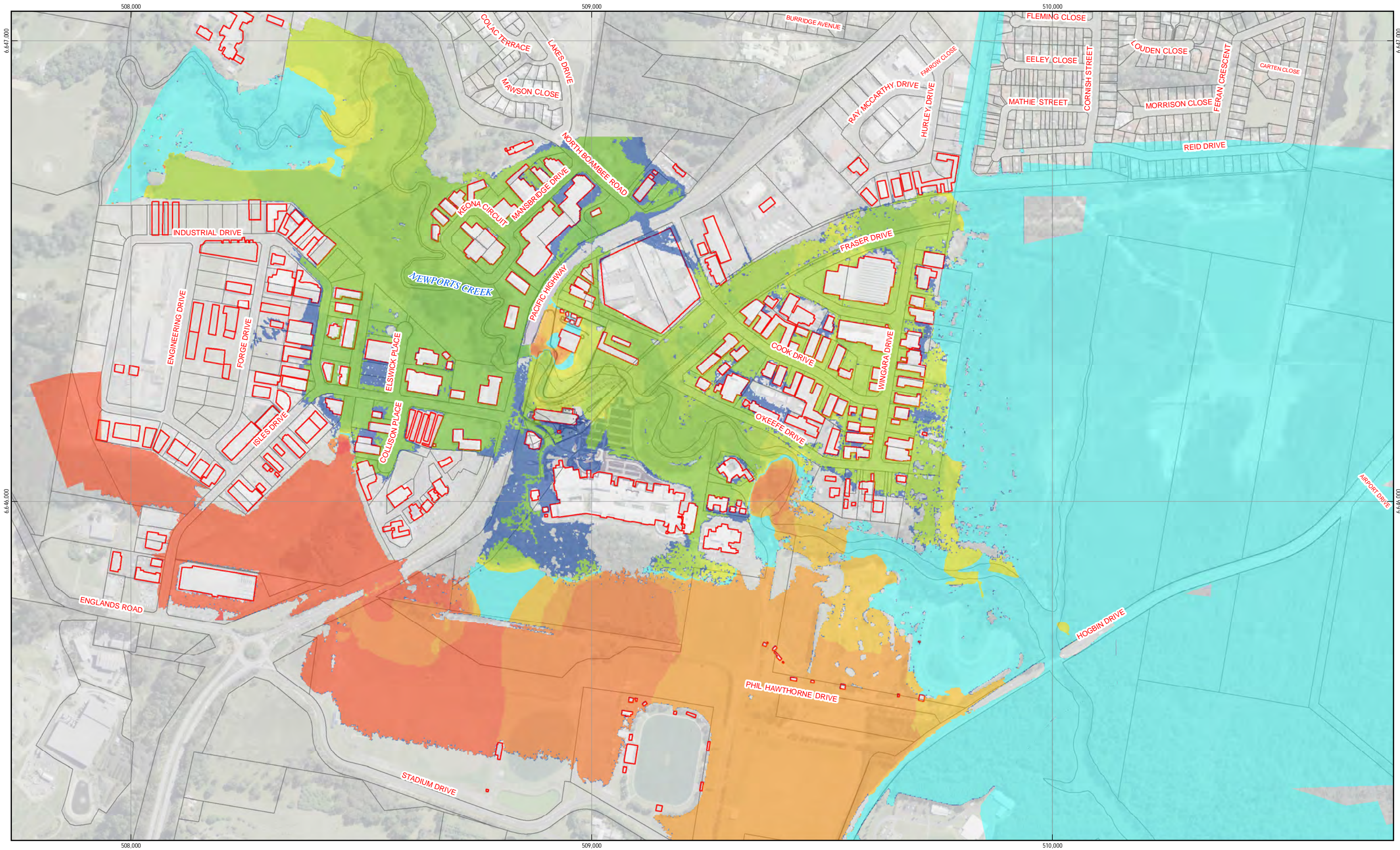




## ***OPTION PC24***

***Remove Newports bridge gabion constriction (P14), increasing the Coffs Harbour Health Campus floodway (P13) plus Isles Drive Bypass improvements (P10)***







## Boambee Newport Floodplain Risk Management Plan



## Mitigation Options

## PC24

**Re-Grade Isles Drive Drainage Channel, clean out, steepen batters to 1 in 2 and grass.**  
**Re-Grade Hospital Floodway, widen, steepen batters to 1 in 4 and grass. Relocation of Bollards**  
**Removal of obstructions under Newports Creek Bridge**

purpose. They cannot be used for budget-setting purposes as common elements between options may have been omitted and/or the works not fully scoped. A functional design is recommended if a budget estimate is required.

SCHEDULE OF ESTIMATED QUANTITIES						
PAY ITEM	DESCRIPTION OF WORK	QTY	UNIT	RATE	AMOUNT	NOTES
<b>1</b>	<b>Preliminaries</b>					
1.1	Establishment	1	item	11000.00	\$ 11,000	Allowance only
1.2	Erosion and sediment control	1	item	11000.00	\$ 11,000	Allowance only
1.3	Traffic control	1	item	11000.00	\$ 11,000	Allowance only
	<b>SUBTOTAL</b>				<b>\$ 33,000</b>	
<b>2</b>	<b>Earthworks &amp; General - Isles Drive</b>					
2.1	Clear site of vegetation - light vegetation, over 500m2	4,180	m2	0.50	\$ 2,090	-
2.3	Excavate over site to reduce levels in light soil	1,150	m3	21.00	\$ 24,150	-
	Landscaping - hydro mulch sprayed grass seed	4,180	m2	0.30	\$ 1,254	-
	Fence - supply and erect galvanised steel welded mesh 1.2m high	700	m	72.00	\$ 50,400	
	Geotextile Mat - one layer of coir fibre between two layers of polymer mesh - 15-20 mm thick	4,180	m2	8.00	\$ 33,440	product or similar
	Minor Works to culvert Crossing	1	item	100000.00	\$ 100,000	
	Signage - warning signage around perimeter	1	unit	11000.00	\$ 11,000	
	<b>SUBTOTAL</b>				<b>\$ 222,334</b>	
<b>2</b>	<b>Earthworks &amp; General - Hospital Floodway</b>					
2.1	Clear site of vegetation - light vegetation, over 500m2	13,010	m2	0.50	\$ 6,505	-
2.3	Excavate over site to reduce levels in light soil	9,450	m3	21.00	\$ 198,450	-
	Landscaping - hydro mulch sprayed grass seed	13,010	m2	0.30	\$ 3,903	-
	Fence - supply and erect galvanised steel welded mesh 1.2m high	500	m	72.00	\$ 36,000	
	Bollards - make good existing, relocate at completion of works	10,000	item	1.00	\$ 10,000	
	Signage - warning signage around perimeter	1	unit	11000.00	\$ 11,000	
	<b>SUBTOTAL</b>				<b>\$ 265,858</b>	
<b>3</b>	<b>Remove Obstructions under Pacific Highway</b>					
	Removal of gabions under Pacific Highway	1	item	100000.00	\$ 100,000	Allowance only
	<b>SUBTOTAL</b>				<b>\$ 100,000</b>	
	<b>SUBTOTAL ITEMS 1-3</b>				<b>\$ 621,192</b>	
<b>4</b>	<b>Supervision, Project Management &amp; Contractor On-Costs</b>					
4.1	Supervision, Project Management & Contractor On-Costs (20%)	20	%	-	\$ 124,238	-
	<b>SUBTOTAL</b>				<b>\$ 124,238</b>	
<b>5</b>	<b>Contingencies</b>					
5.1	Contingencies - General (30%)	30	%	-	\$ 186,358	-
	<b>SUBTOTAL</b>				<b>\$ 186,358</b>	
	<b>TOTAL (Ex-GST)</b>				<b>\$ 931,788</b>	



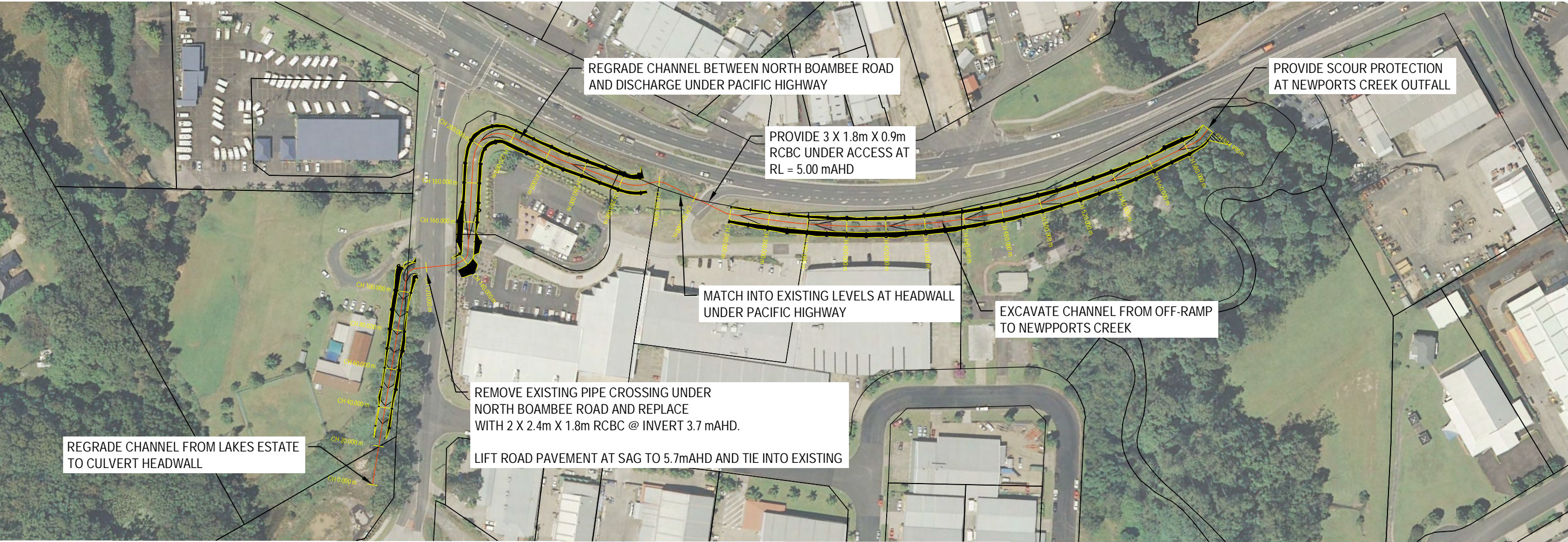




## ***OPTION P27***

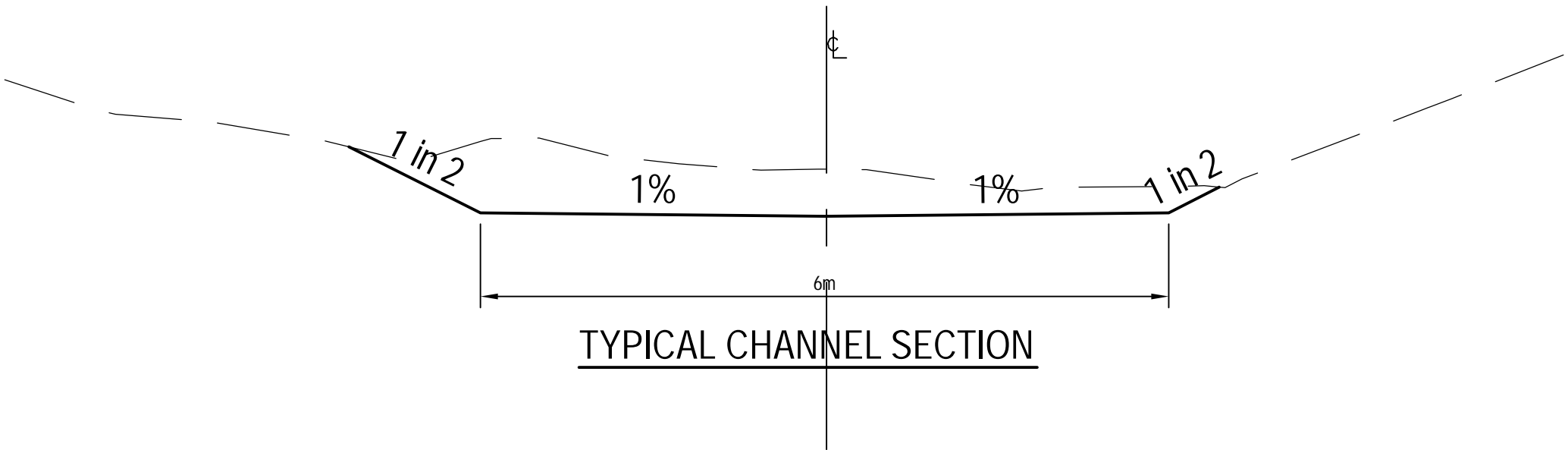
***Conveyance improvements at North Boambee Road to reduce the risk of isolation and frequency of road inundation***





**PROPOSED CHANNEL ALIGNMENT**

SCALE 1:2000

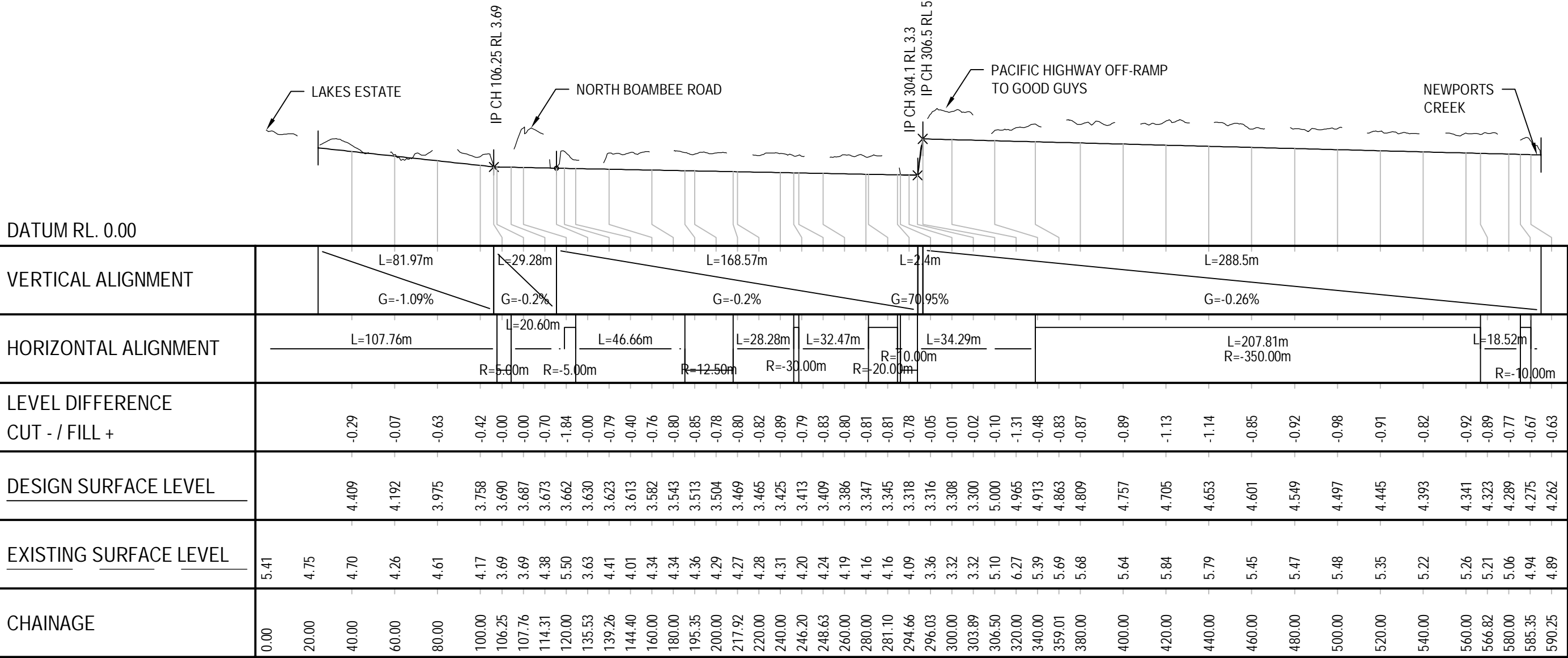


COFFS HARBOUR CITY COUNCIL  
BOAMBEE NEWPORTS CREEK  
FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN  
MITIGATION OPTION  
NORTH BOAMBEE ROAD WORKS PLAN

Job Number | 22-16407  
Revision | A  
Date | MAY 2015

**Figure P27.1**





LONGITUDINAL SECTION - CL

HORZ 1:2000      VERT 1:200

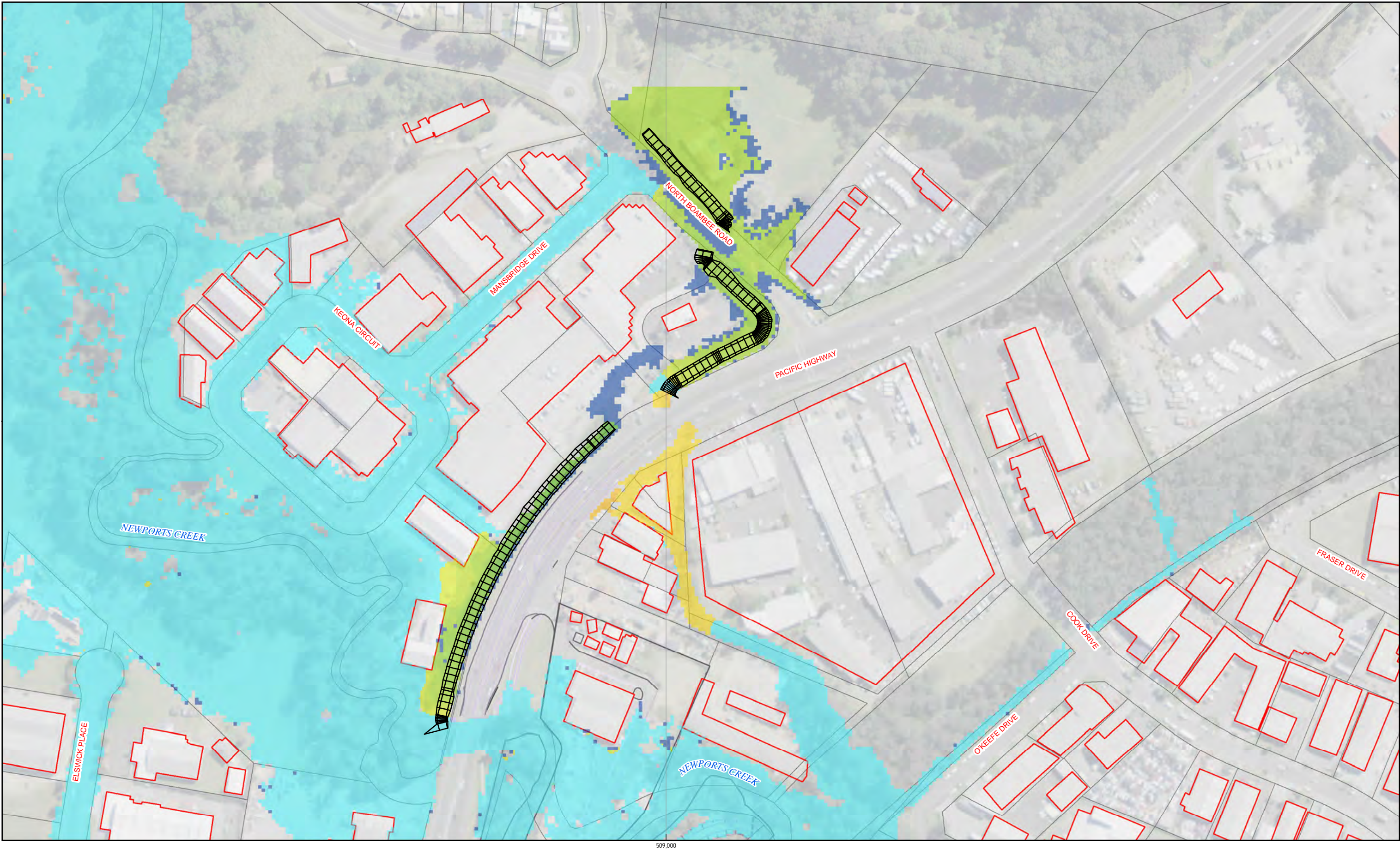


COFFS HARBOUR CITY COUNCIL  
BOAMBEE NEWPORTS CREEK  
FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN  
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NORTH BOAMBEE ROAD LONGSECTION

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Figure P27.2





Paper Size A3

0 12.5 25 50 75 100

Metres

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56

**Legend**

**Change in Flood Level(mm)**

> -500mm	-300mm - -200mm	-25mm - +25mm	+200mm - +300mm	No Longer Flooded
-500mm - -400mm	-200mm - -100mm	+25mm - +50mm	+300mm - +400mm	
-400mm - -300mm	-100mm - -50mm	+50mm - +100mm	+400mm - +500mm	
	-50mm - -25mm	+100mm - +200mm	> +500mm	

Coffs Harbour City Council  
Boambée newports Creek  
Floodplain Risk Management Study

Job Number 22-16407  
Revision 0  
Date 14 Jul 2016

**Existing vs P27  
20% AEP**

**Appendix F.P27.3**

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Data source: LPI (2012), LPI Lot Boundaries, 2012. Created by:sldouglas

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