

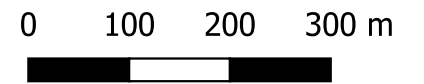
Map G140

Flood Planning Area (FPA)

Davistown

Legend

- Model Area
- Cadastre
- FPA - 1% AEP + 30% rainfall increase
- FPA - PMF
- FPA - 1% AEP + 0.5 m freeboard



Scale : 1:7500@A3
 Date : December 2019
 Revision : A
 Created by : JS
 Coordinate System : MGA 56



OBS: The flood extent for the 1% AEP + 0.5 m scenario was modified in locations where mapping inconsistencies were identified. The primary cause of these inconsistencies was the presence of discontinuous flow paths (localised ponding) on higher elevations.



Map G141

Flood Planning Area (FPA)

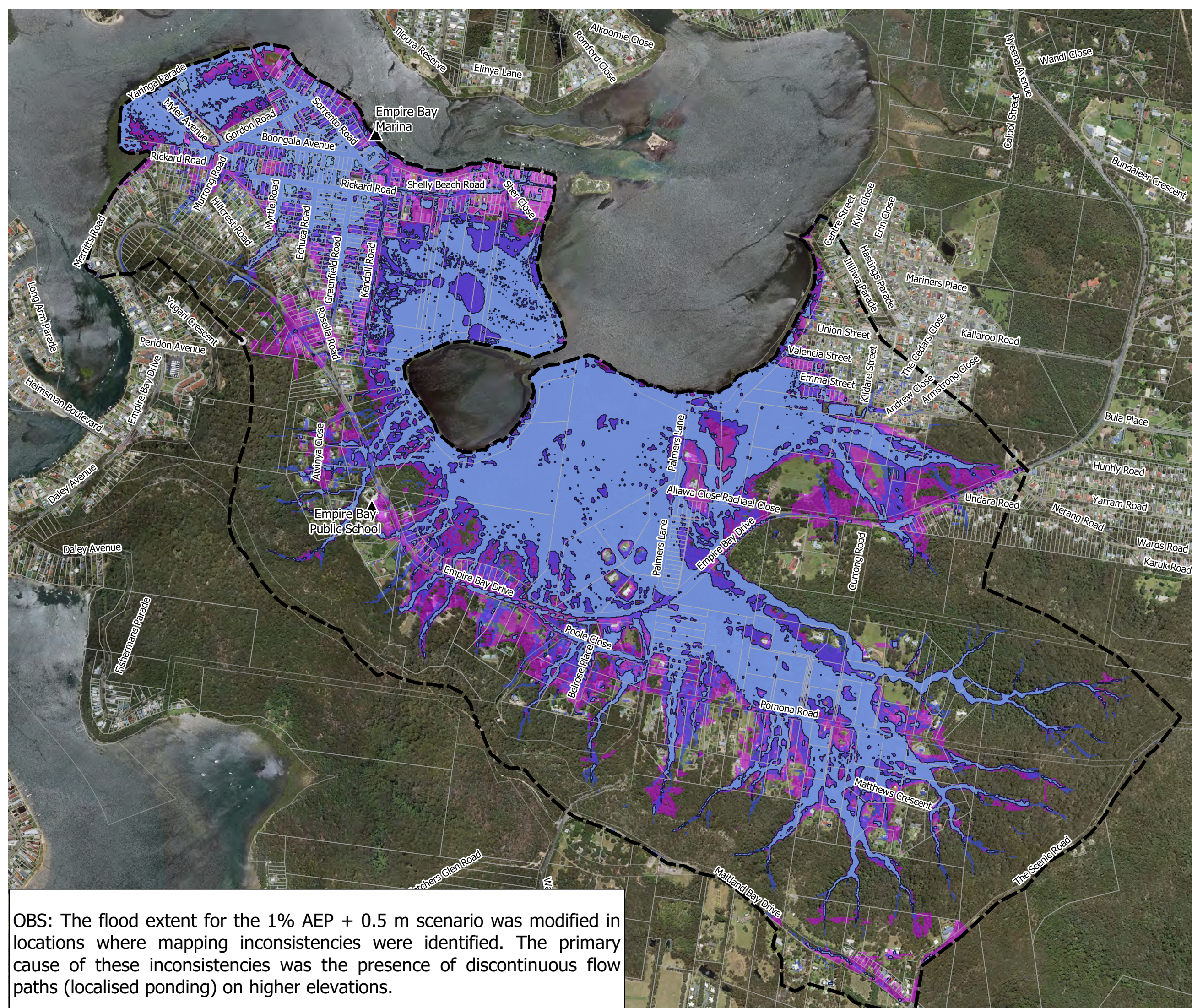
Empire Bay/Bensville

Legend

- Model Area
- Cadastre
- FPA - 1% AEP + 30% rainfall increase
- FPA - PMF
- FPA - 1% AEP + 0.5 m freeboard



Scale : 1:12000@A3
Date : December 2019
Revision : A
Created by : JS
Coordinate System : MGA 56



OBS: The flood extent for the 1% AEP + 0.5 m scenario was modified in locations where mapping inconsistencies were identified. The primary cause of these inconsistencies was the presence of discontinuous flow paths (localised ponding) on higher elevations.

Peak Overtopping Depths / Duration

ID	Location	20% AEP	1% AEP
DT-01	Malynia Road (North)	0.2m / 1hr	0.3m / 1.5hr
DT-03	Emora Avenue	0.2m / 2hr	0.3m / 4hr+
DT-02	Malynia Road (South)	0.1m / 1hr	0.2m / 3.5hr
DT-04	Kincumber Cresc	0.2m / 1.5hr	0.3m / 2.5hr



Map G150

Road Overtopping

Davistown

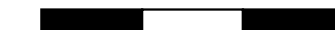
Legend

- Model Area
- Cadastre
- Infrastructure Locations

1% AEP Depth

- 0.10 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- 1 - 1.2
- > 1.2

0 100 200 300 m



Scale : 1:7500@A3
 Date : December 2019
 Revision : A
 Created by : JS
 Coordinate System : MGA 56





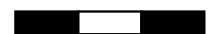
Map G151

Road Overtopping Empire Bay/Bensville

Legend

- Model Area
- Cadastre
- Infrastructure Locations
- 1% AEP Depth
 - 0.10 - 0.2
 - 0.2 - 0.3
 - 0.3 - 0.4
 - 0.4 - 0.5
 - 0.5 - 0.75
 - 0.75 - 1
 - 1 - 1.2
 - > 1.2

0 100 200 300 m

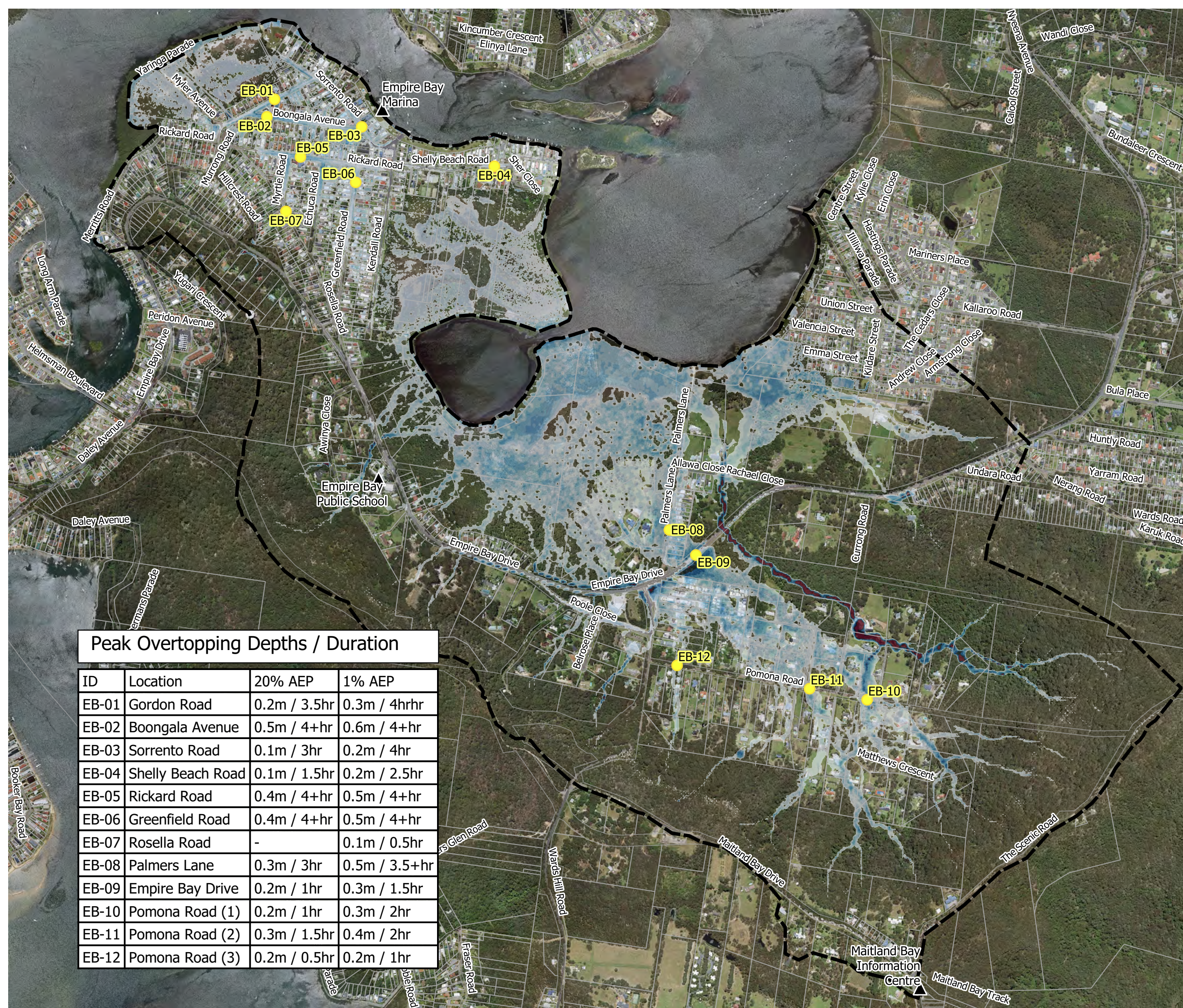


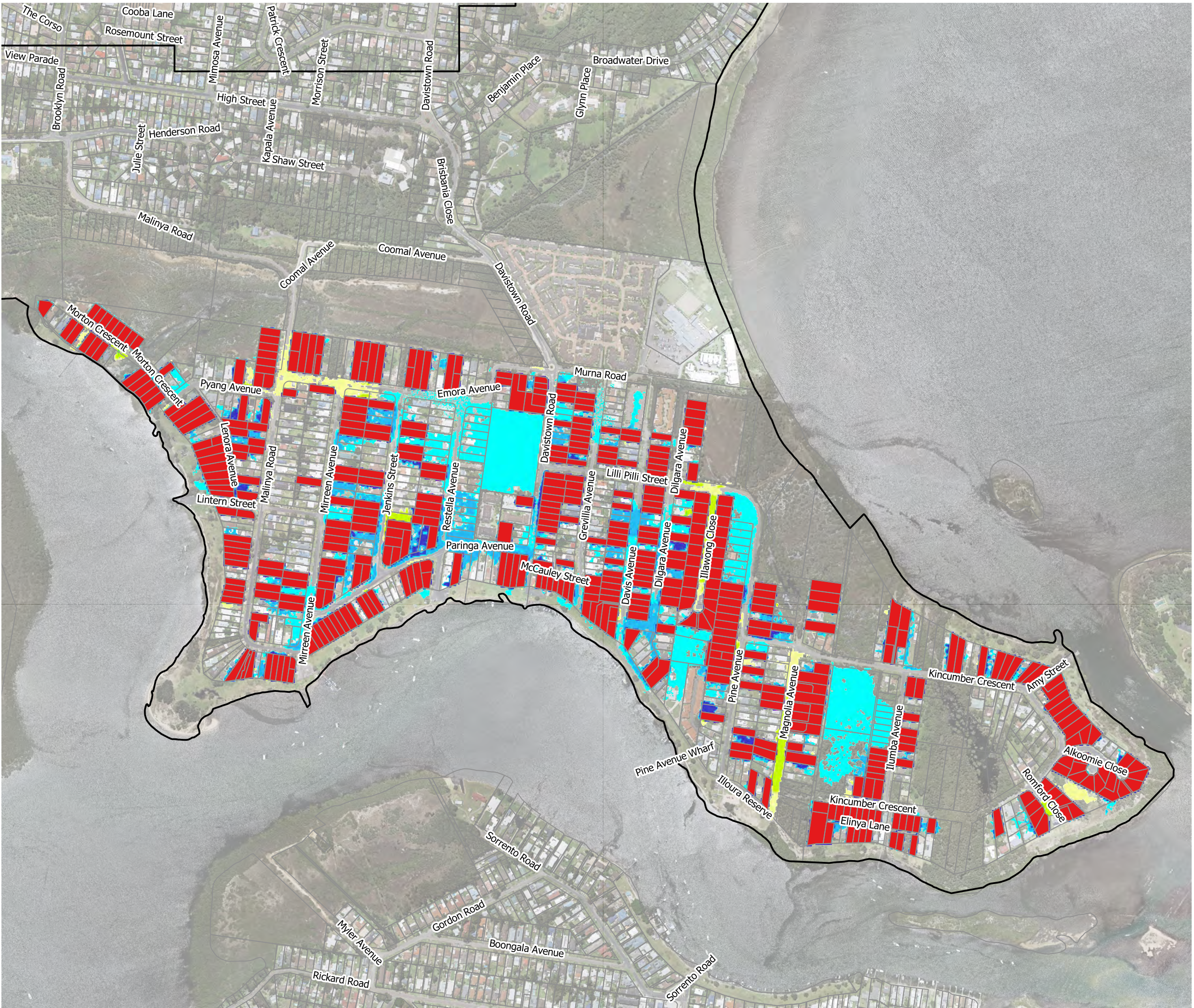
Scale : 1:12000@A3
 Date : December 2019
 Revision : A
 Created by : JS
 Coordinate System : MGA 56



Peak Overtopping Depths / Duration

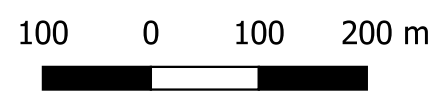
ID	Location	20% AEP	1% AEP
EB-01	Gordon Road	0.2m / 3.5hr	0.3m / 4hr
EB-02	Boongala Avenue	0.5m / 4+hr	0.6m / 4+hr
EB-03	Sorrento Road	0.1m / 3hr	0.2m / 4hr
EB-04	Shelly Beach Road	0.1m / 1.5hr	0.2m / 2.5hr
EB-05	Rickard Road	0.4m / 4+hr	0.5m / 4+hr
EB-06	Greenfield Road	0.4m / 4+hr	0.5m / 4+hr
EB-07	Rosella Road	-	0.1m / 0.5hr
EB-08	Palmers Lane	0.3m / 3hr	0.5m / 3.5+hr
EB-09	Empire Bay Drive	0.2m / 1hr	0.3m / 1.5hr
EB-10	Pomona Road (1)	0.2m / 1hr	0.3m / 2hr
EB-11	Pomona Road (2)	0.3m / 1.5hr	0.4m / 2hr
EB-12	Pomona Road (3)	0.2m / 0.5hr	0.2m / 1hr





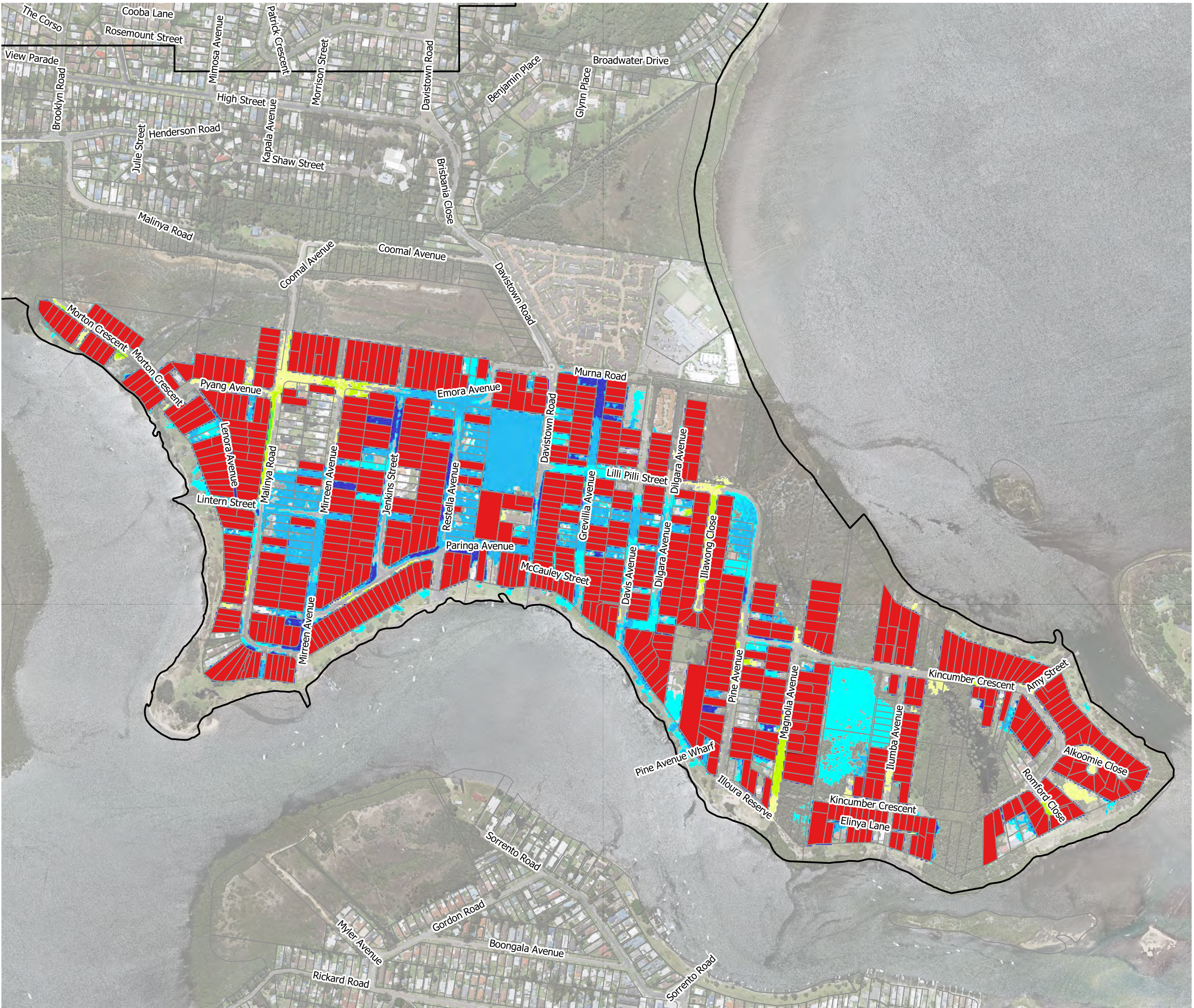
Map G160
Filling Impacts
Davistown - 1% AEP
Scenario 1

- Legend**
- Cadastre
 - Study Area
 - Properties with Ground Raised
 - Impact on Existing Flood Levels (m)
 - <= -0.2
 - 0.2 - -0.05
 - 0.05 - -0.02
 - 0.02 - -0.01
 - 0.01 - 0.02
 - 0.02 - 0.05
 - 0.05 - 0.2
 - > 0.2



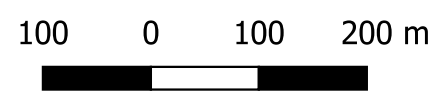
Scale : 1:7000@A3
 Date : 28 May 2020
 Revision : A
 Created by : JRF
 Coordinate System : Map Grid of Australia 94





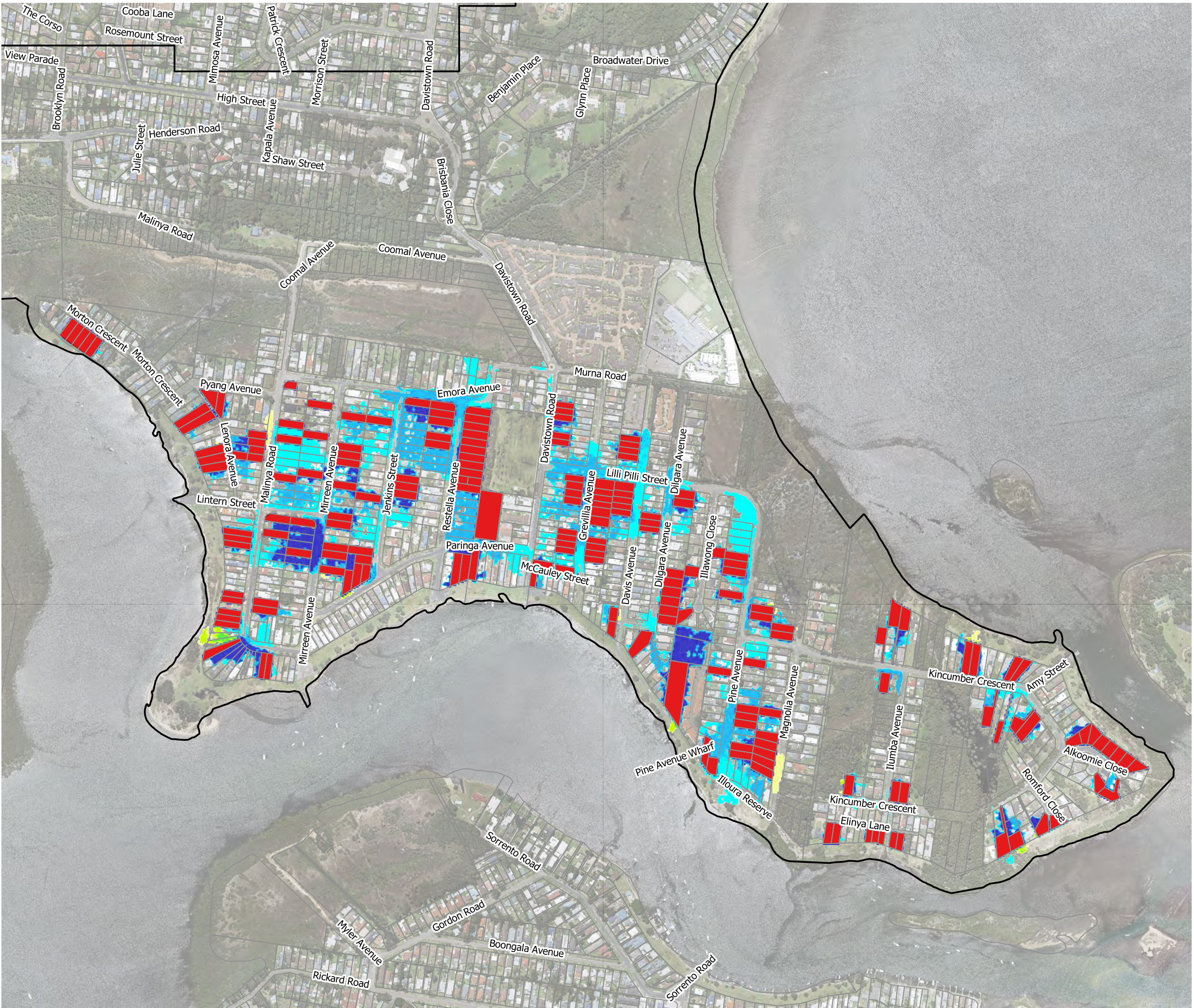
Map G161
Filling Impacts
Davistown - 1% AEP
Scenario 2

- Legend**
- Cadastre
 - Study Area
 - Properties with Ground Raised
 - Impact on Existing Flood Levels (m)
 - <= -0.2
 - 0.2 - -0.05
 - 0.05 - -0.02
 - 0.02 - -0.01
 - 0.01 - 0.02
 - 0.02 - 0.05
 - 0.05 - 0.2
 - > 0.2



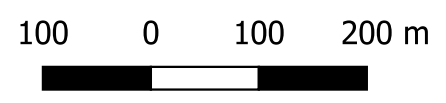
Scale : 1:7000@A3
 Date : 28 May 2020
 Revision : A
 Created by : JRF
 Coordinate System : Map Grid of Australia 94





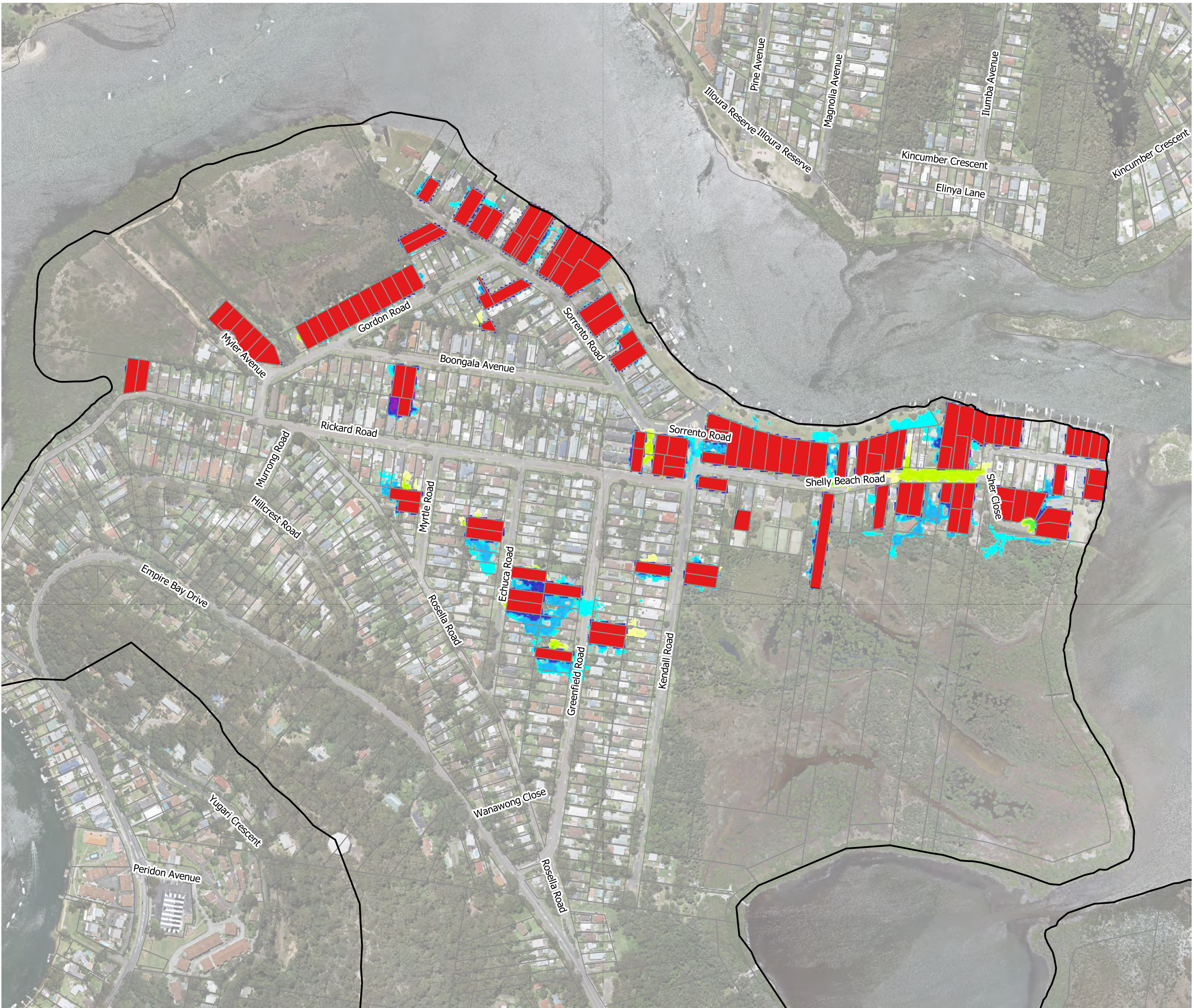
Map G162
Filling Impacts
Davistown - 1% AEP
Scenario 3

- Legend**
- Cadastre
 - Study Area
 - Properties with Ground Raised
 - Impact on Existing Flood Levels (m)
 - <= -0.2
 - 0.2 - -0.05
 - 0.05 - -0.02
 - 0.02 - -0.01
 - 0.01 - 0.02
 - 0.02 - 0.05
 - 0.05 - 0.2
 - > 0.2



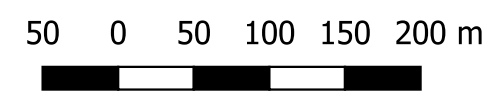
Scale : 1:7000@A3
 Date : 28 May 2020
 Revision : A
 Created by : JRF
 Coordinate System : Map Grid of Australia 94





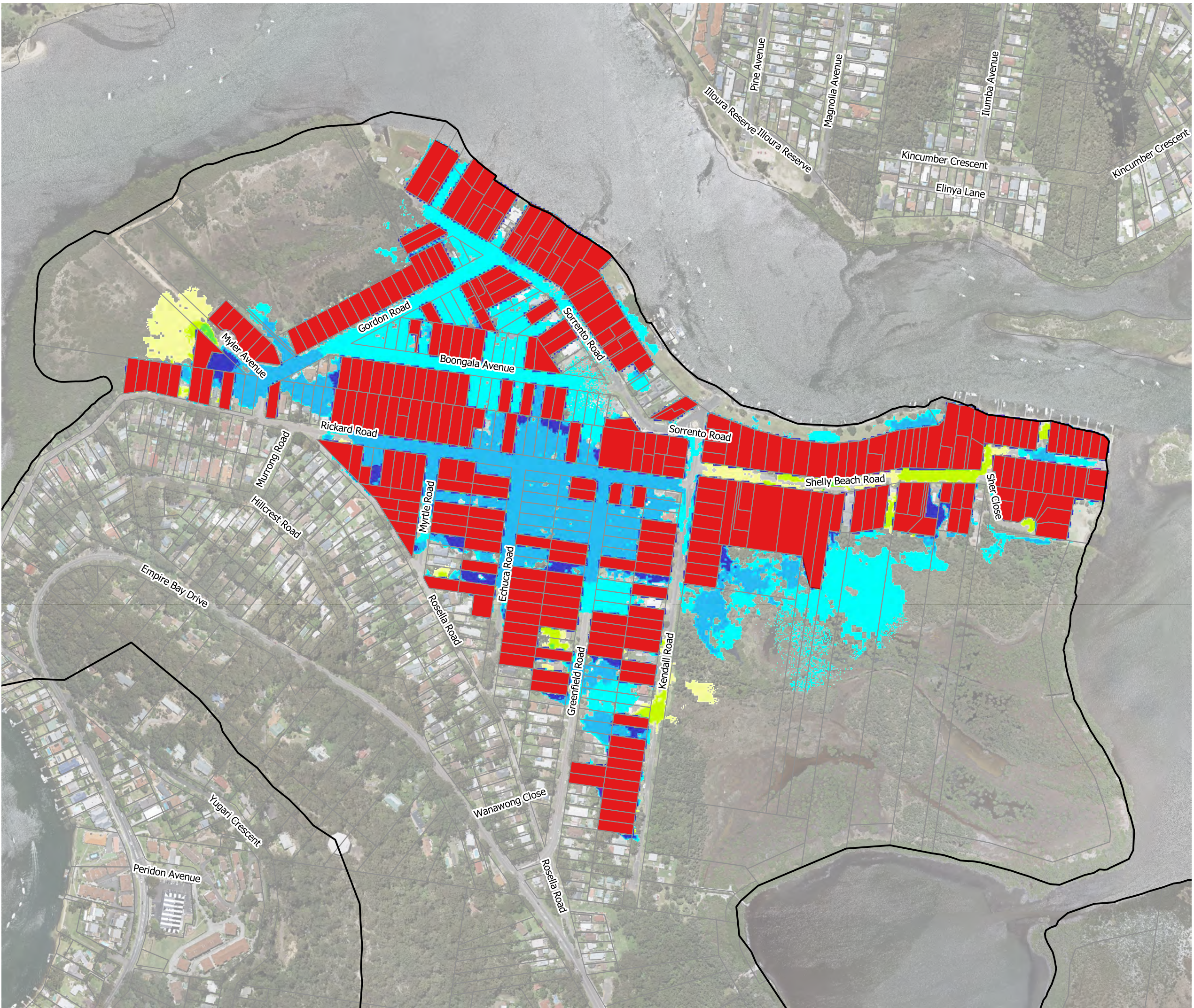
Map G163
Filling Impacts
Empire Bay - 1% AEP
Scenario 1

- Legend**
- DtownEBay-Cadastre-20180525
 - EmpireBay_Boundary
 - Properties with Ground Raised
 - Impact on Existing Flood Levels**
 - <= -0.2
 - 0.2 - -0.05
 - 0.05 - -0.02
 - 0.02 - -0.01
 - 0.01 - 0.02
 - 0.02 - 0.05
 - 0.05 - 0.2
 - > 0.2



Scale : 1:5000@A3
 Date : 28 May 2020
 Revision : A
 Created by : JRF
 Coordinate System : Map of Grid
 Australia 94

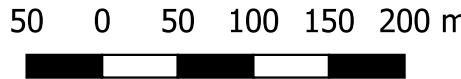




Map G164
Filling Impacts
Empire Bay - 1% AEP
Scenario 2

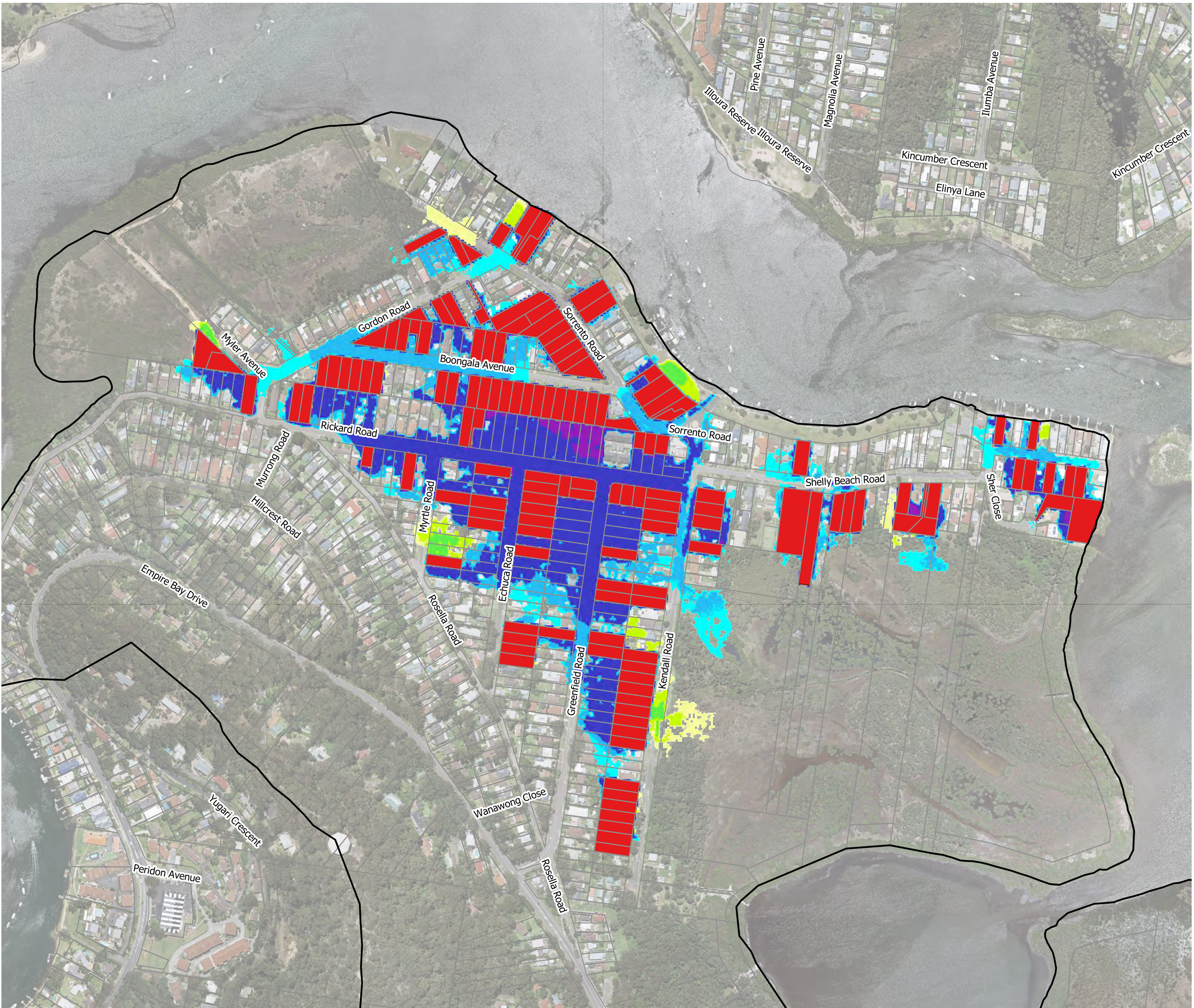
Legend

- DtownEBay-Cadastre-20180525
- EmpireBay_Boundary
- Properties with Ground Raised
- Impact on Existing Flood Levels
- ≤ -0.2
- $-0.2 - -0.05$
- $-0.05 - -0.02$
- $-0.02 - -0.01$
- $0.01 - 0.02$
- $0.02 - 0.05$
- $0.05 - 0.2$
- > 0.2



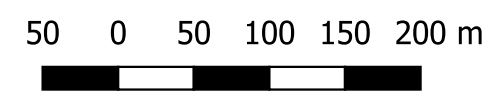
Scale : 1:5000@A3
 Date : 28 May 2020
 Revision : A
 Created by : JRF
 Coordinate System : Map of Grid
 Australia 94





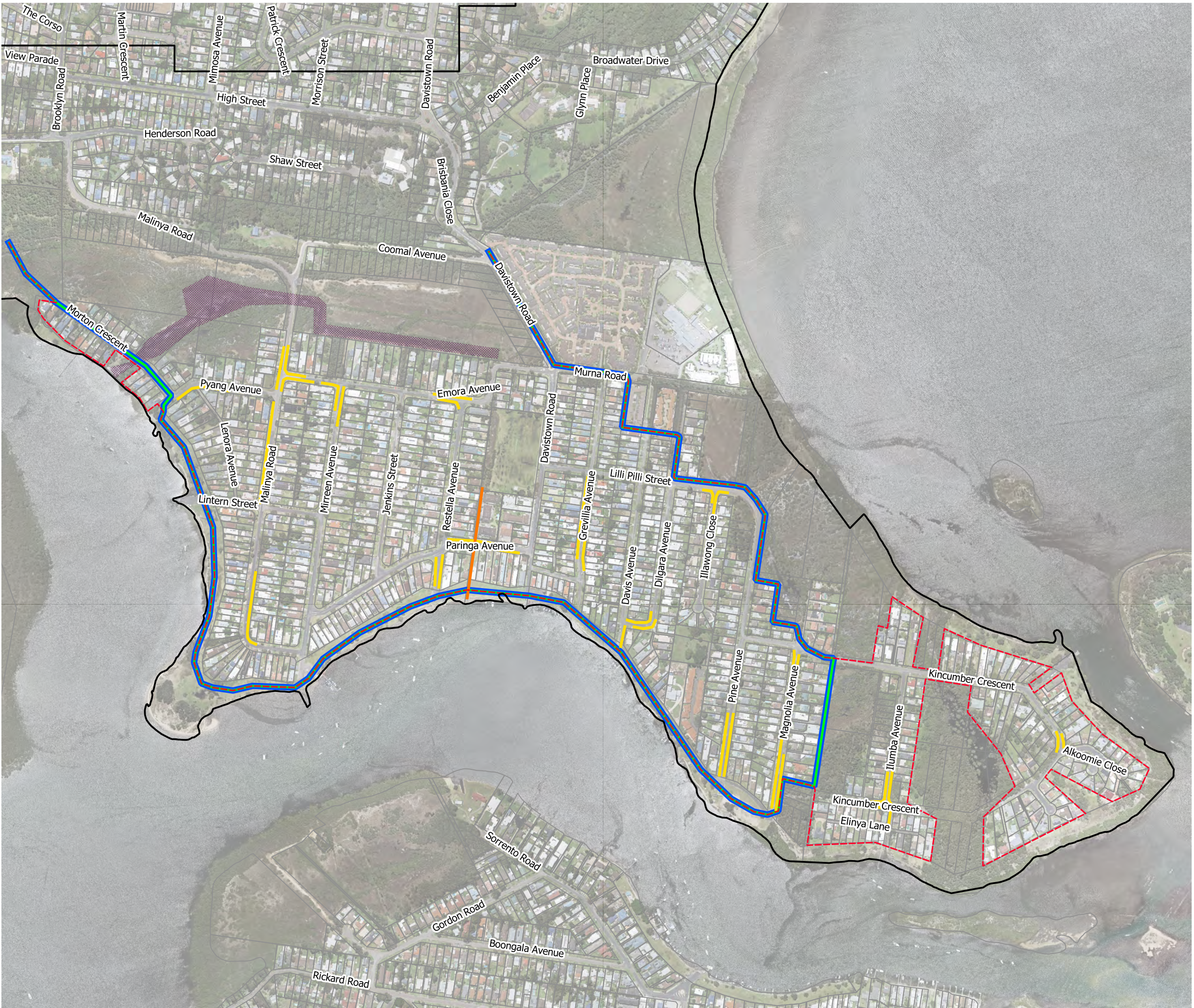
Map G165
Filling Impacts
Empire Bay - 1% AEP
Scenario 3

- Legend**
- DtownEBay-Cadastre-20180525
 - EmpireBay_Boundary
 - Properties with Ground Raised
 - Impact on Existing Flood Levels
 - ≤ -0.2
 - $-0.2 - -0.05$
 - $-0.05 - -0.02$
 - $-0.02 - -0.01$
 - $0.01 - 0.02$
 - $0.02 - 0.05$
 - $0.05 - 0.2$
 - > 0.2



Scale : 1:5000@A3
 Date : 28 May 2020
 Revision : A
 Created by : JRF
 Coordinate System : Map of Grid
 Australia 94

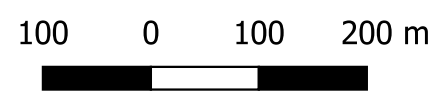




Map G201 Preliminary Options Davistown

Legend

- Option DT1
- - - Option DT2
- Option DT3
- Option DT4
- Option DT5
- Option DT6
- Cadastre
- Study Area











Scale : 1:7000@A3
 Date : 02 June 2020
 Revision : B
 Created by : JS
 Coordinate System : Map Grid of Australia 94

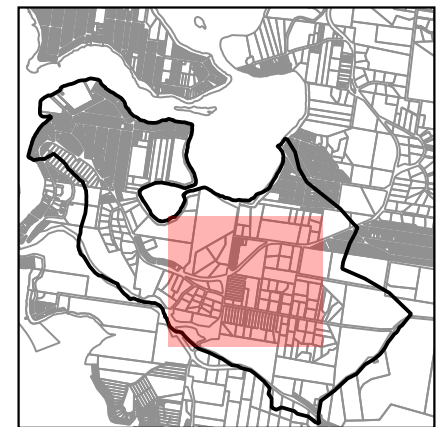




Map G202 Preliminary Options Empire Bay 1

Legend

-  Option EB1
-  Option EB2 & EB3
-  Option EB4
-  Option EB5
-  Option EB6
-  Option EB7
-  Cadastre
-  Study Area



50 0 50 100 m



Scale : 1:4500@A3
Date : 02 June 2020
Revision : B
Created by : JS
Coordinate System : MGA 56





Map G203 Preliminary Options Empire Bay 2

Legend

- Option EB1
- Option EB2 & EB3
- Option EB4
- Option EB5
- Option EB6
- Option EB7
- Cadastre
- Study Area



50 0 50 100 m



Scale : 1:5000@A3
Date : 02 June 2020
Revision : B
Created by : JS
Coordinate System : MGA 56





Map G210 Flood Modification Options

FM DT1 Foreshore barrier around Davistown (excluding properties east of Magnolia Ave and the south of Morton Crescent)

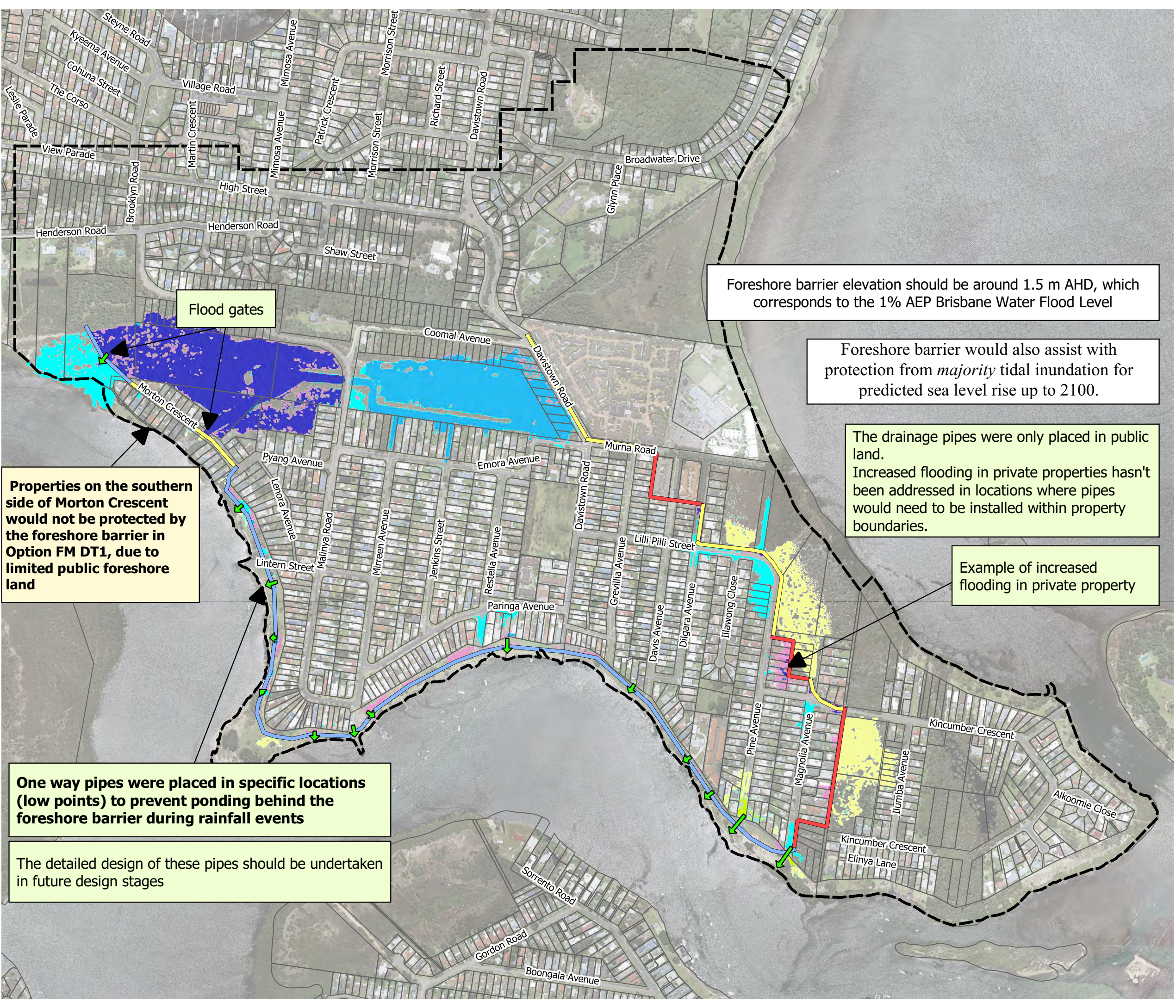
1% AEP Depth Difference (Option FM DT1 less Existing)

Legend

- Cadastre
- Levee
 - Shared Path
 - Roadside Berm
 - Retaining Wall
 - One way pipes through foreshore barrier
- Wet/Dry
 - Was wet, now dry
 - Was dry, now wet
- 1% AEP - Depth Difference (m)
 - <= -0.2
 - 0.2 - -0.1
 - 0.1 - -0.05
 - 0.05 - -0.01
 - 0.01 - 0.05
 - 0.05 - 0.1
 - 0.1 - 0.2
 - > 0.2

0 100 200 300 m

Scale : 1:7500@A3
Date : 02 June 2020
Revision : B
Created by : JS
Coordinate System : Map of Grid Australia 94



Flood gates

Foreshore barrier elevation should be around 1.5 m AHD, which corresponds to the 1% AEP Brisbane Water Flood Level

Foreshore barrier would also assist with protection from majority tidal inundation for predicted sea level rise up to 2100.

The drainage pipes were only placed in public land. Increased flooding in private properties hasn't been addressed in locations where pipes would need to be installed within property boundaries.

Example of increased flooding in private property

Properties on the southern side of Morton Crescent would not be protected by the foreshore barrier in Option FM DT1, due to limited public foreshore land

One way pipes were placed in specific locations (low points) to prevent ponding behind the foreshore barrier during rainfall events

The detailed design of these pipes should be undertaken in future design stages



Map G211 Flood Modification Options

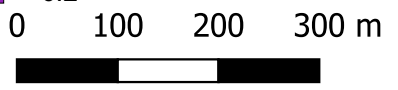
Option FM DT2 Foreshore barrier around Davistown (including all properties)

1% AEP Depth Difference (Option FM DT2 less Existing)

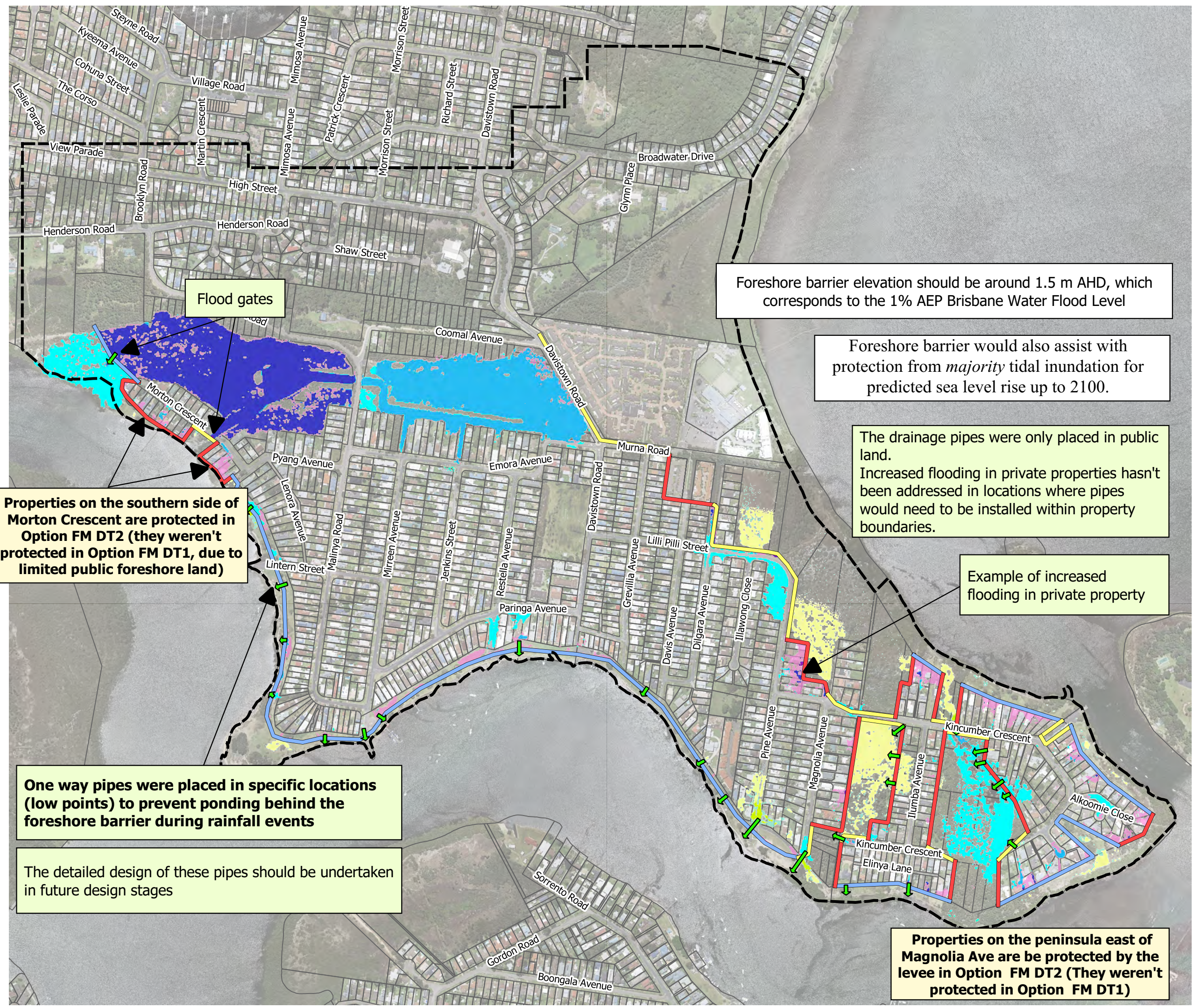
Legend

- Cadastre
- One way pipes through foreshore barrier
- Wet/Dry
 - Was wet, now dry
 - Was dry, now wet

- Levee
 - Shared Path
 - Roadside Bund
 - Retaining Wall
- 1% AEP - Depth Difference (m)
 - <= -0.2
 - 0.2 - -0.1
 - 0.1 - -0.05
 - 0.05 - -0.01
 - 0.01 - 0.05
 - 0.05 - 0.1
 - 0.1 - 0.2
 - > 0.2



Scale : 1:7500@A3
 Date : 02 June 2020
 Revision : B
 Created by : JS
 Coordinate System : Map of Grid
 Australia 94



Flood gates

Foreshore barrier elevation should be around 1.5 m AHD, which corresponds to the 1% AEP Brisbane Water Flood Level

Foreshore barrier would also assist with protection from majority tidal inundation for predicted sea level rise up to 2100.

The drainage pipes were only placed in public land. Increased flooding in private properties hasn't been addressed in locations where pipes would need to be installed within property boundaries.

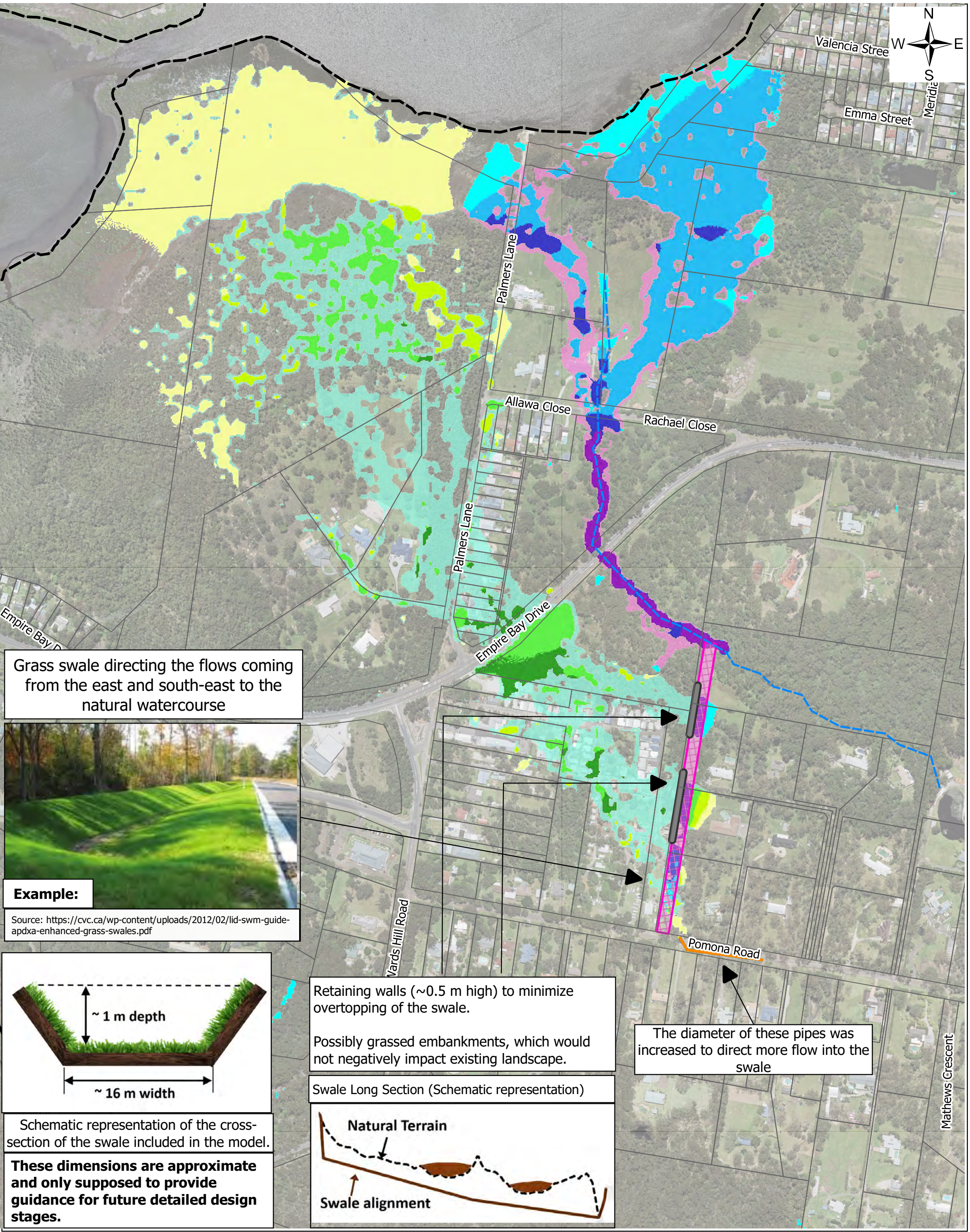
Example of increased flooding in private property

Properties on the southern side of Morton Crescent are protected in Option FM DT2 (they weren't protected in Option FM DT1, due to limited public foreshore land)

One way pipes were placed in specific locations (low points) to prevent ponding behind the foreshore barrier during rainfall events

The detailed design of these pipes should be undertaken in future design stages

Properties on the peninsula east of Magnolia Ave are protected by the levee in Option FM DT2 (They weren't protected in Option FM DT1)

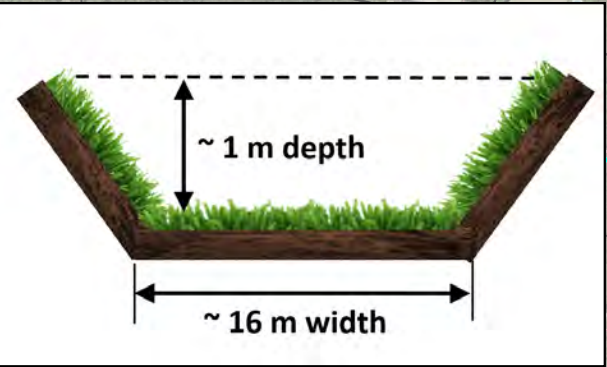


Grass swale directing the flows coming from the east and south-east to the natural watercourse



Example:

Source: <https://cvc.ca/wp-content/uploads/2012/02/lid-swm-guide-apdxa-enhanced-grass-swales.pdf>



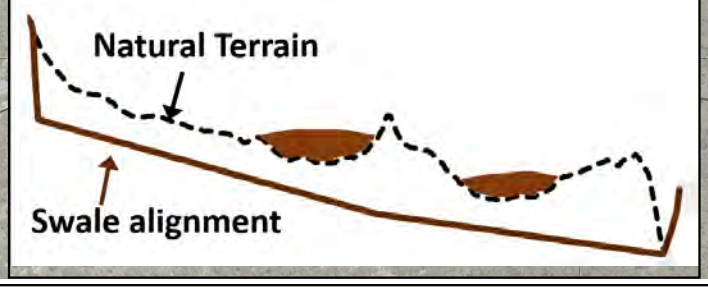
Schematic representation of the cross-section of the swale included in the model.

These dimensions are approximate and only supposed to provide guidance for future detailed design stages.

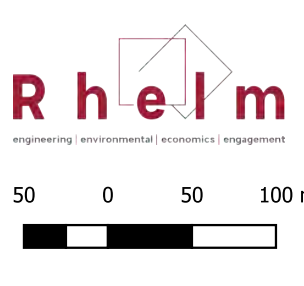
Retaining walls (~0.5 m high) to minimize overtopping of the swale.

Possibly grassed embankments, which would not negatively impact existing landscape.

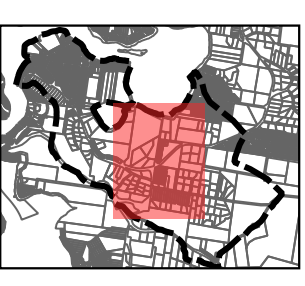
Swale Long Section (Schematic representation)



The diameter of these pipes was increased to direct more flow into the swale



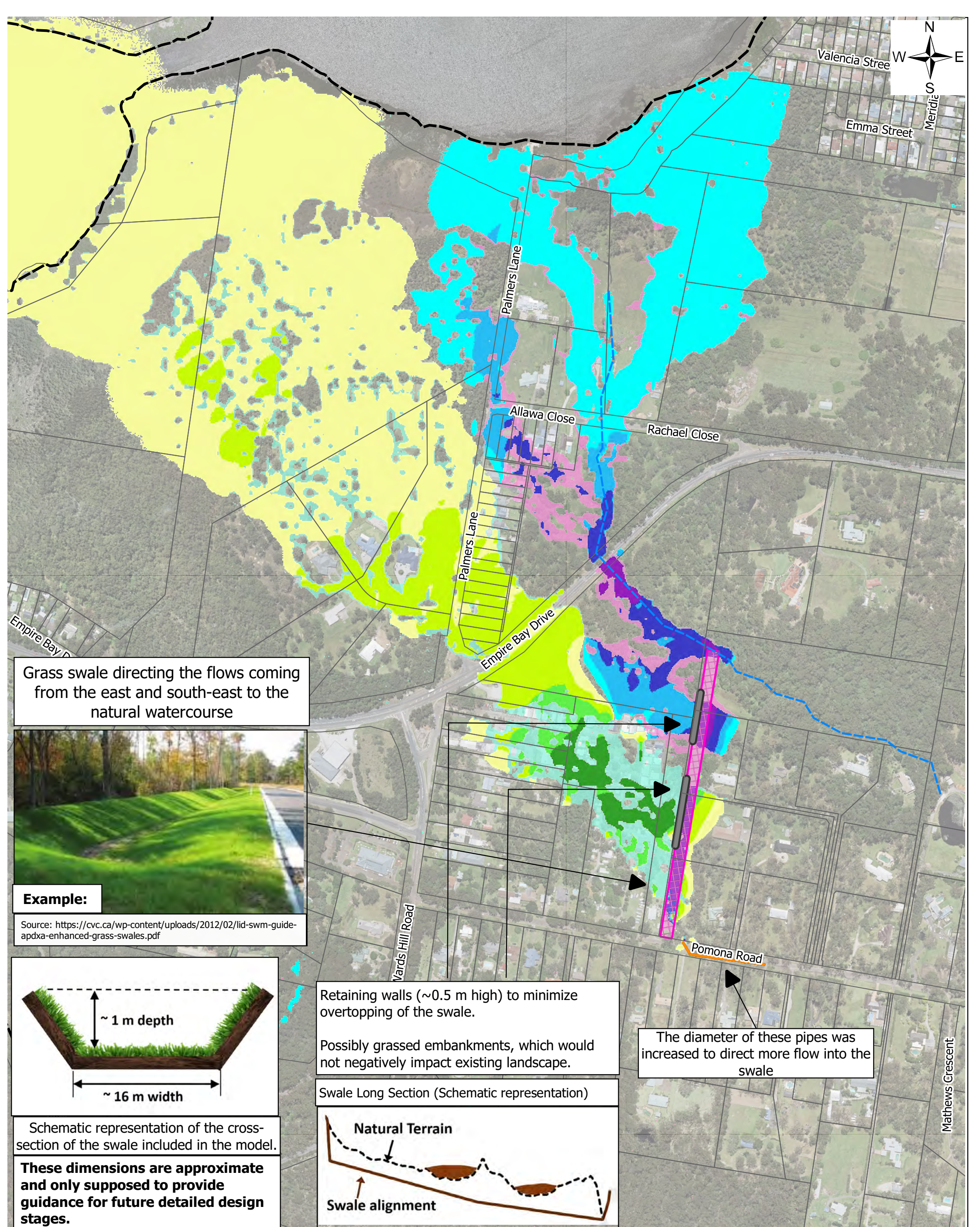
Scale : 1:4500@A3
Date : 02 June 2020
Revision : A
Created by : JS
Coordinate System : Map Grid of Australia 94



- Legend**
- Cadastre
 - ▬ Retaining Wall
 - ▬ Swale
 - ▬ Natural Watercourse
 - ▬ Drainage Pipes with Increased Diameter

- Wet/Dry**
- Was wet, now dry
 - Was dry, now wet
- Depth Difference (m)**
- <= -0.2
 - 0.2 - -0.1
 - 0.1 - -0.05
 - 0.05 - -0.01
 - 0.01 - 0.05
 - 0.05 - 0.1
 - 0.1 - 0.2
 - > 0.2

Map G212
Flood Modification Options
FM EB6 Pomona Road easement
and drainage upgrades
20% AEP
Depth Difference (Option FM
EB6 less Existing)

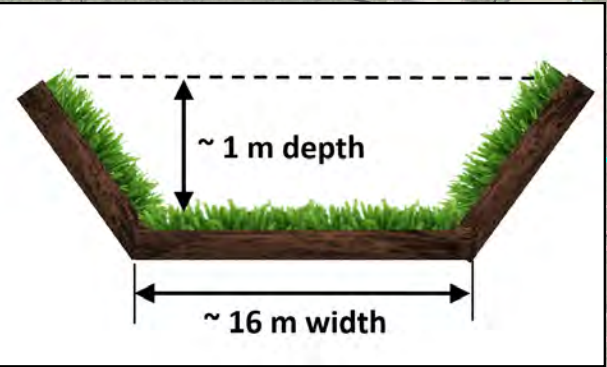


Grass swale directing the flows coming from the east and south-east to the natural watercourse



Example:

Source: <https://cvc.ca/wp-content/uploads/2012/02/lid-swm-guide-apdxa-enhanced-grass-swales.pdf>



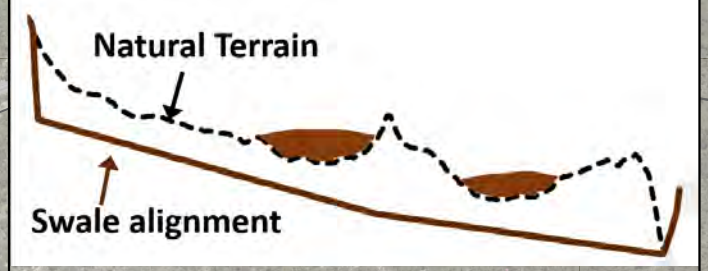
Schematic representation of the cross-section of the swale included in the model.

These dimensions are approximate and only supposed to provide guidance for future detailed design stages.

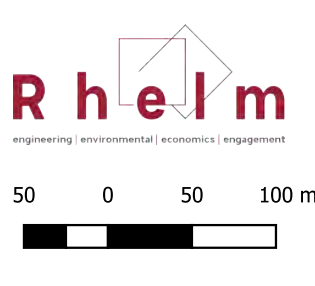
Retaining walls (~0.5 m high) to minimize overtopping of the swale.

Possibly grassed embankments, which would not negatively impact existing landscape.

Swale Long Section (Schematic representation)



The diameter of these pipes was increased to direct more flow into the swale



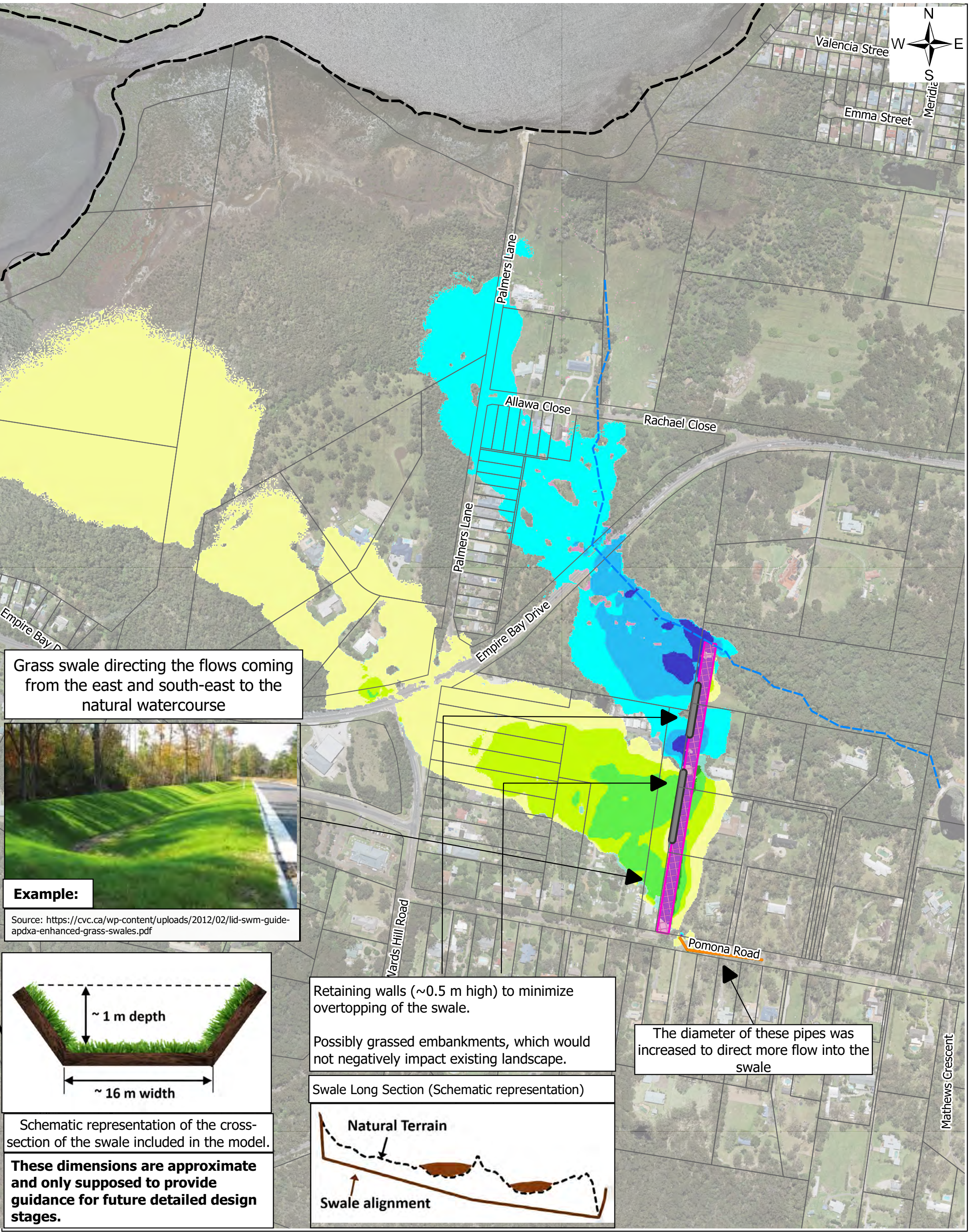
Scale : 1:4500@A3
Date : 02 June 2020
Revision : A
Created by : JS
Coordinate System : Map Grid of Australia 94



- Legend**
- Cadastre
 - Retaining Wall
 - Swale
 - Natural Watercourse
 - Drainage Pipes with Increased Diameter

- Wet/Dry**
- Was wet, now dry
 - Was dry, now wet
- Depth Difference (m)**
- <= -0.2
 - 0.2 - -0.1
 - 0.1 - -0.05
 - 0.05 - -0.01
 - 0.01 - 0.05
 - 0.05 - 0.1
 - 0.1 - 0.2
 - > 0.2

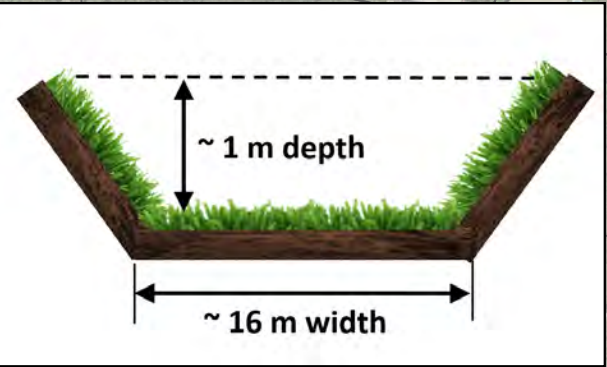
Map G213
Flood Modification Options
FM EB6 Pomona Road easement
and drainage upgrades
1% AEP
Depth Difference (Option FM
EB6 less Existing)



Grass swale directing the flows coming from the east and south-east to the natural watercourse



Example:
Source: <https://cvc.ca/wp-content/uploads/2012/02/lid-swm-guide-apdxa-enhanced-grass-swales.pdf>



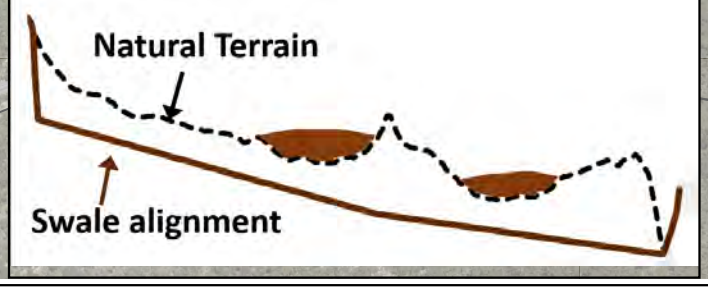
Schematic representation of the cross-section of the swale included in the model.

These dimensions are approximate and only supposed to provide guidance for future detailed design stages.

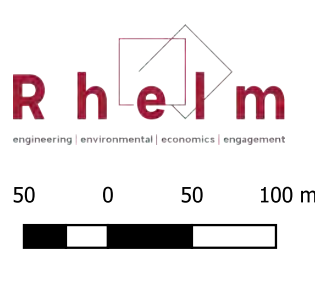
Retaining walls (~0.5 m high) to minimize overtopping of the swale.

Possibly grassed embankments, which would not negatively impact existing landscape.

Swale Long Section (Schematic representation)



The diameter of these pipes was increased to direct more flow into the swale



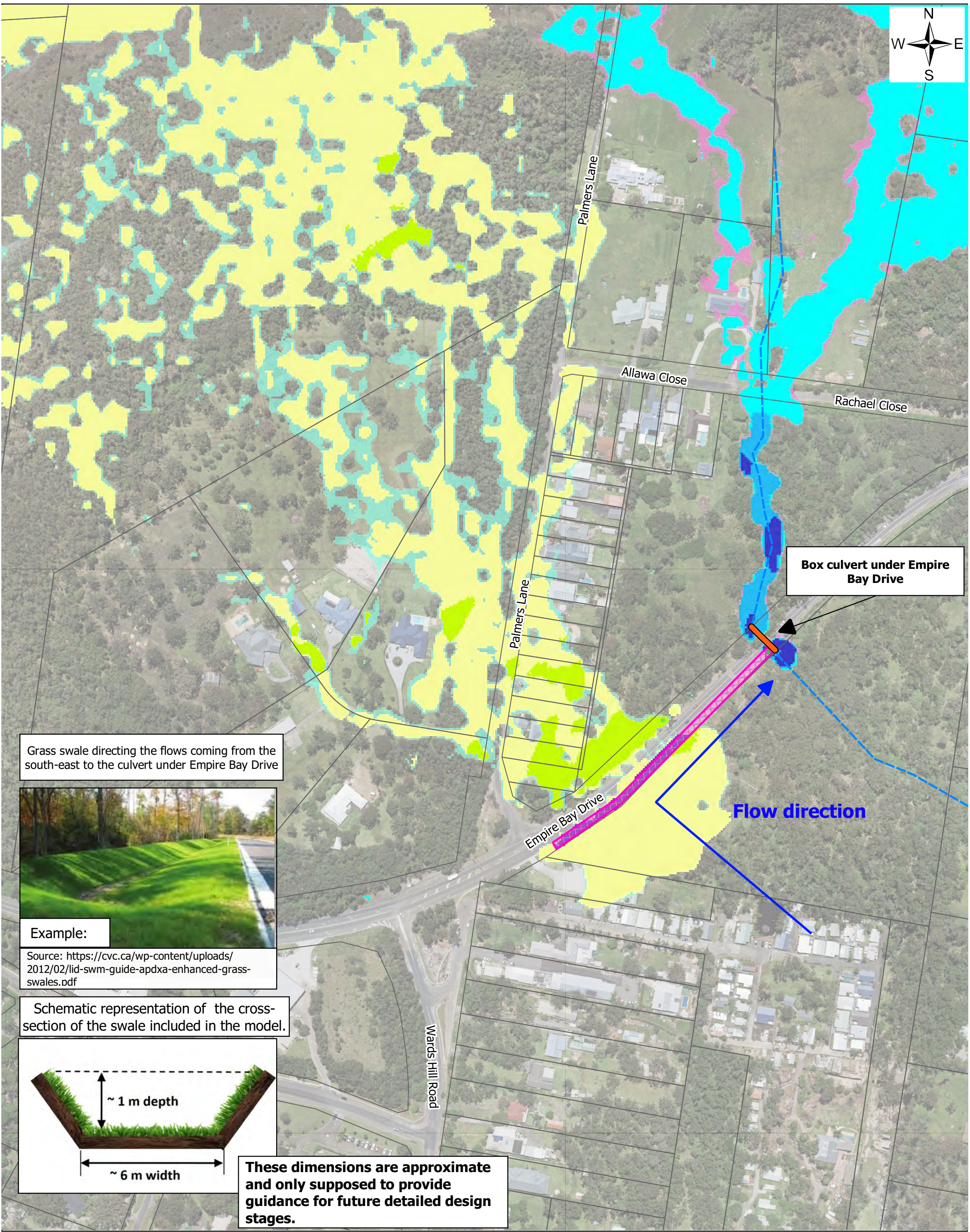
Scale : 1:4500@A3
Date : 02 June 2020
Revision : A
Created by : JS
Coordinate System : Map Grid of Australia 94



- Legend**
- Cadastre
 - Retaining Wall
 - Swale
 - Natural Watercourse
 - Drainage Pipes with Increased Diameter

- Wet/Dry**
- Was wet, now dry
 - Was dry, now wet
- Depth Difference (m)**
- <= -0.2
 - 0.2 - -0.1
 - 0.1 - -0.05
 - 0.05 - -0.01
 - 0.01 - 0.05
 - 0.05 - 0.1
 - 0.1 - 0.2
 - > 0.2

Map G214
Flood Modification Options
FM EB6 Pomona Road easement
and drainage upgrades
PMF
Depth Difference (Option FM
EB6 less Existing)

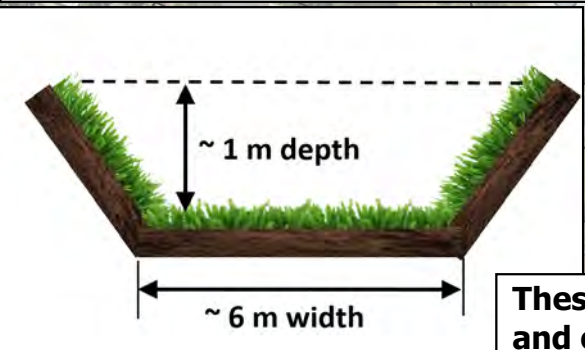


Grass swale directing the flows coming from the south-east to the culvert under Empire Bay Drive

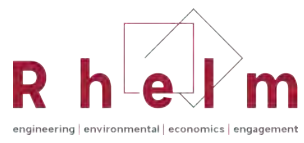


Example:
Source: <https://cvc.ca/wp-content/uploads/2012/02/lid-swm-guide-apdxa-enhanced-grass-swales.pdf>

Schematic representation of the cross-section of the swale included in the model.



These dimensions are approximate and only supposed to provide guidance for future detailed design stages.



Scale : 1:2500@A3
Date :02 June 2020
Revision : A
Created by : JS
Coordinate System : Map Grid of Australia 94

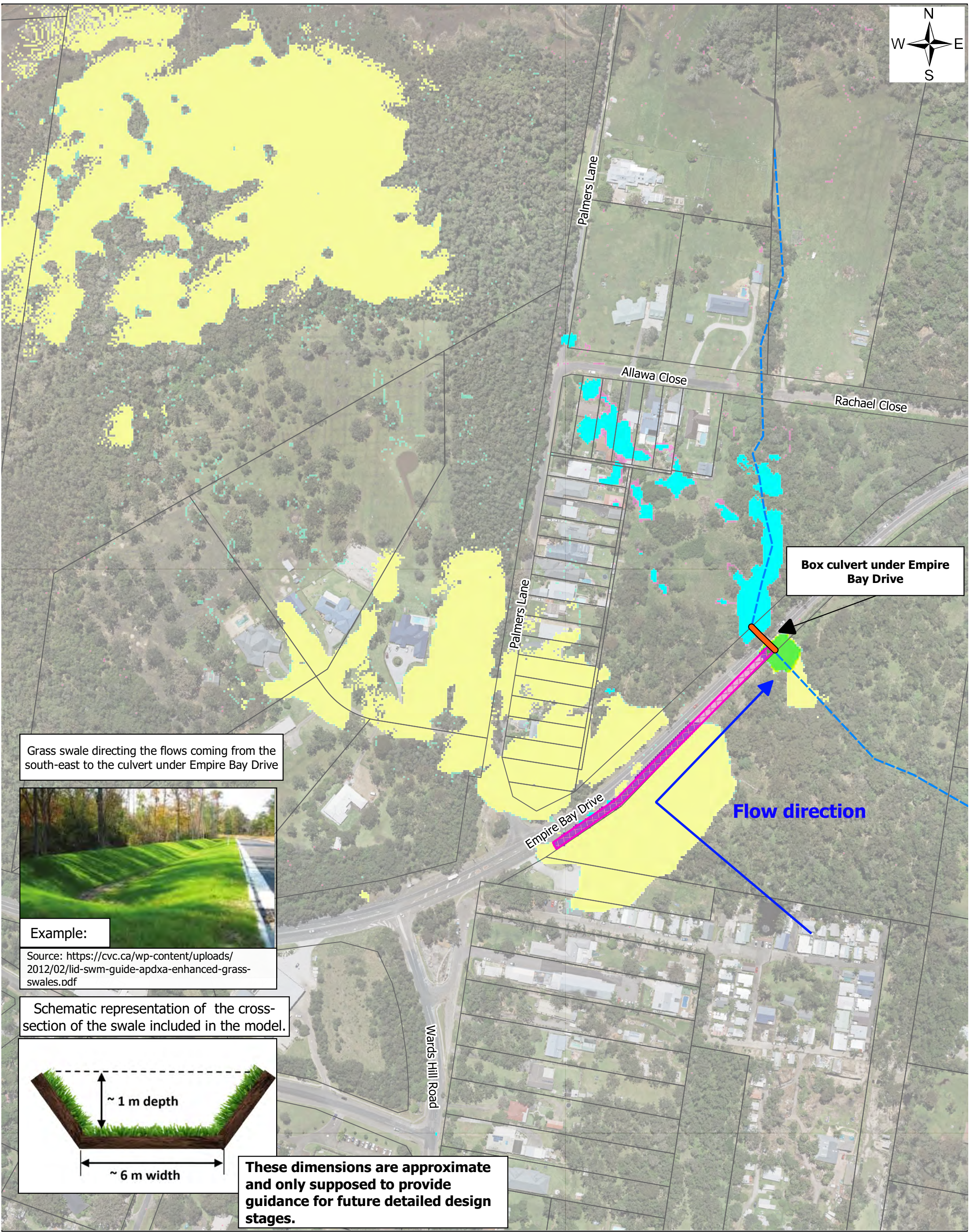
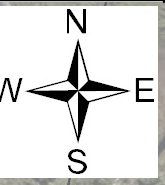


- Legend
- Cadastre
 - Swale
 - Natural Watercourse
 - Wet/Dry
 - Was wet, now dry

- Was dry, now wet
- Depth Difference (m) <= -0.2
- 0.2 - -0.1
- 0.1 - -0.05
- 0.05 - -0.01
- 0.01 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- > 0.2

Map G215
Flood Modification Options
FM EB7 Empire Bay Drive
Easement and drainage
upgrades
20% AEP
Depth Difference (Option FM
EB7 less Existing)



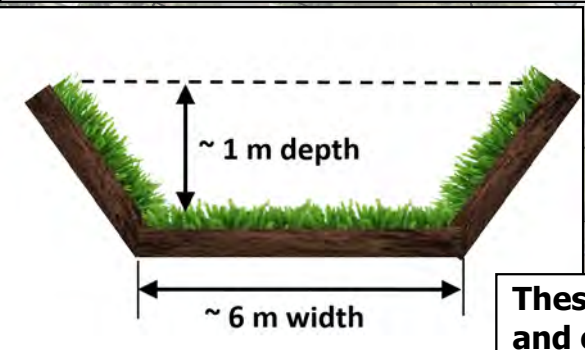


Grass swale directing the flows coming from the south-east to the culvert under Empire Bay Drive



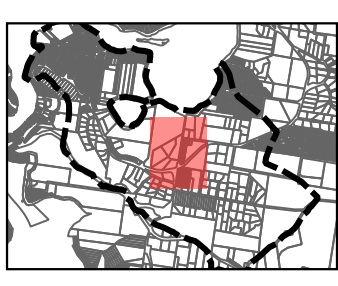
Example:
Source: <https://cvc.ca/wp-content/uploads/2012/02/lid-swm-guide-apdxa-enhanced-grass-swales.pdf>

Schematic representation of the cross-section of the swale included in the model.



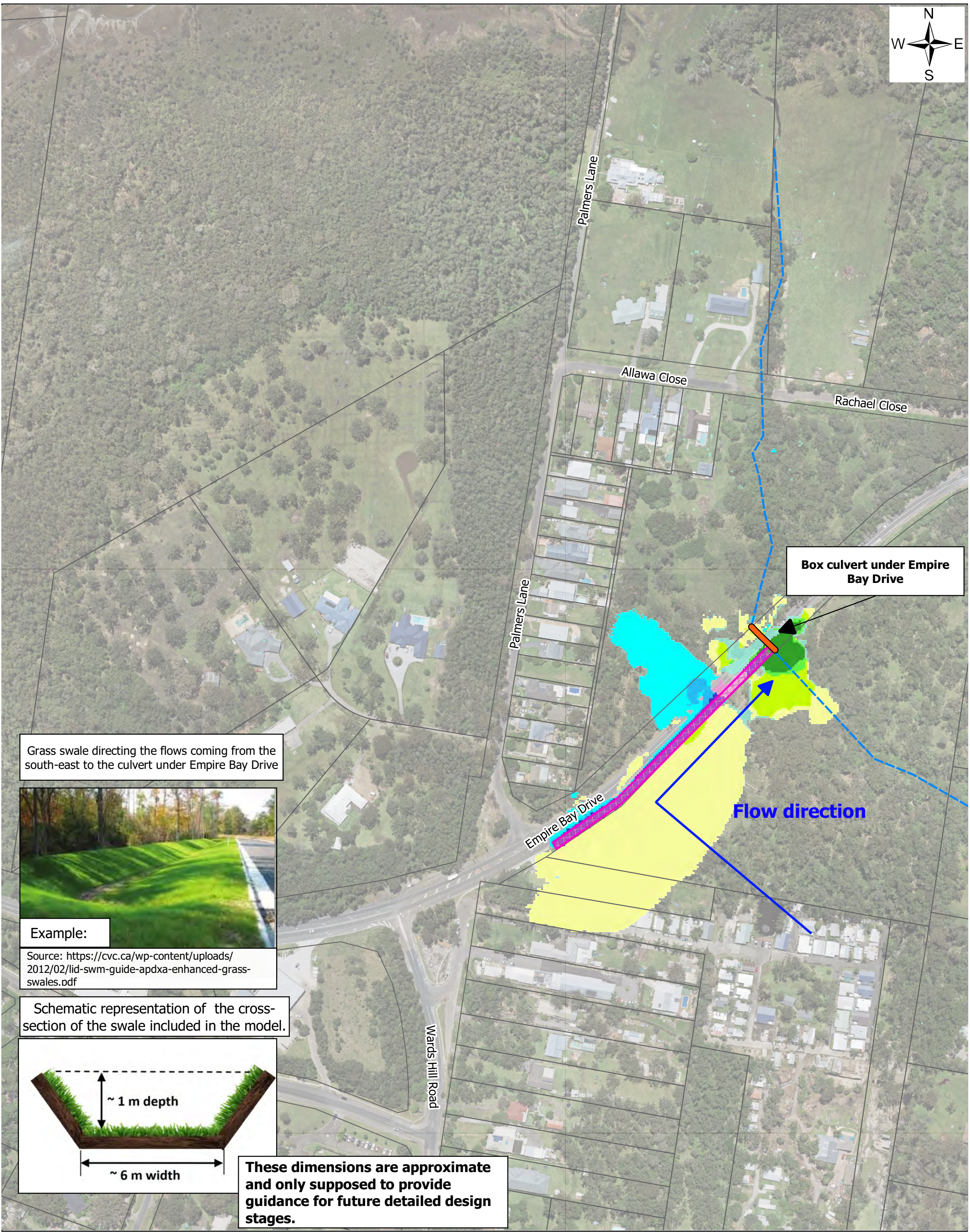
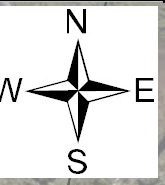
These dimensions are approximate and only supposed to provide guidance for future detailed design stages.

Scale : 1:2500@A3
Date :02 June 2020
Revision : A
Created by : JS
Coordinate System : Map Grid of Australia 94



Legend	
	Cadastre
	Swale
	Natural Watercourse
	Wet/Dry
	Was wet, now dry
	Was dry, now wet
	Depth Difference (m) ≤ -0.2
	-0.2 - -0.1
	-0.1 - -0.05
	-0.05 - -0.01
	0.01 - 0.05
	0.05 - 0.1
	0.1 - 0.2
	> 0.2

Map G216
Flood Modification Options
FM EB7 Empire Bay Drive
Easement and drainage
upgrades
1% AEP
Depth Difference (Option FM
EB7 less Existing)



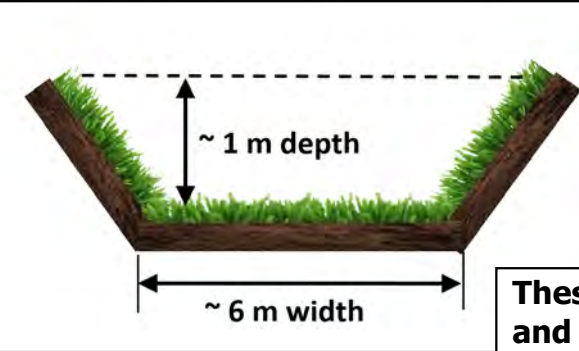
Grass swale directing the flows coming from the south-east to the culvert under Empire Bay Drive



Example:

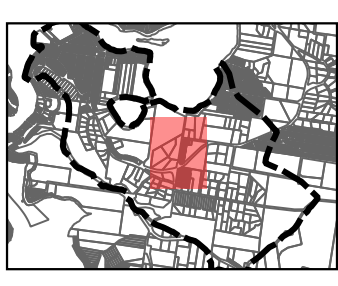
Source: <https://cvc.ca/wp-content/uploads/2012/02/lid-swm-guide-apdxa-enhanced-grass-swales.pdf>

Schematic representation of the cross-section of the swale included in the model.



These dimensions are approximate and only supposed to provide guidance for future detailed design stages.

Scale : 1:2500@A3
 Date :02 June 2020
 Revision : A
 Created by : JS
 Coordinate System : Map Grid of Australia 94



Legend	
Cadastre	Was dry, now wet
Swale	-0.05 - -0.01
Natural Watercourse	0.01 - 0.05
Wet/Dry	0.05 - 0.1
Was wet, now dry	0.1 - 0.2
	> 0.2
	<= -0.2
	-0.2 - -0.1
	-0.1 - -0.05

Map G217
Flood Modification Options
FM EB7 Empire Bay Drive
Easement and drainage
upgrades
PMF
Depth Difference (Option FM
EB7 less Existing)



Map G218
Flood Modification
Options
FM EB4 Foreshore
barrier around Empire
Bay

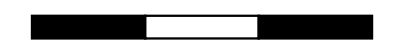
1% AEP - Depth
Difference (FM EB4
less Existing)

Legend

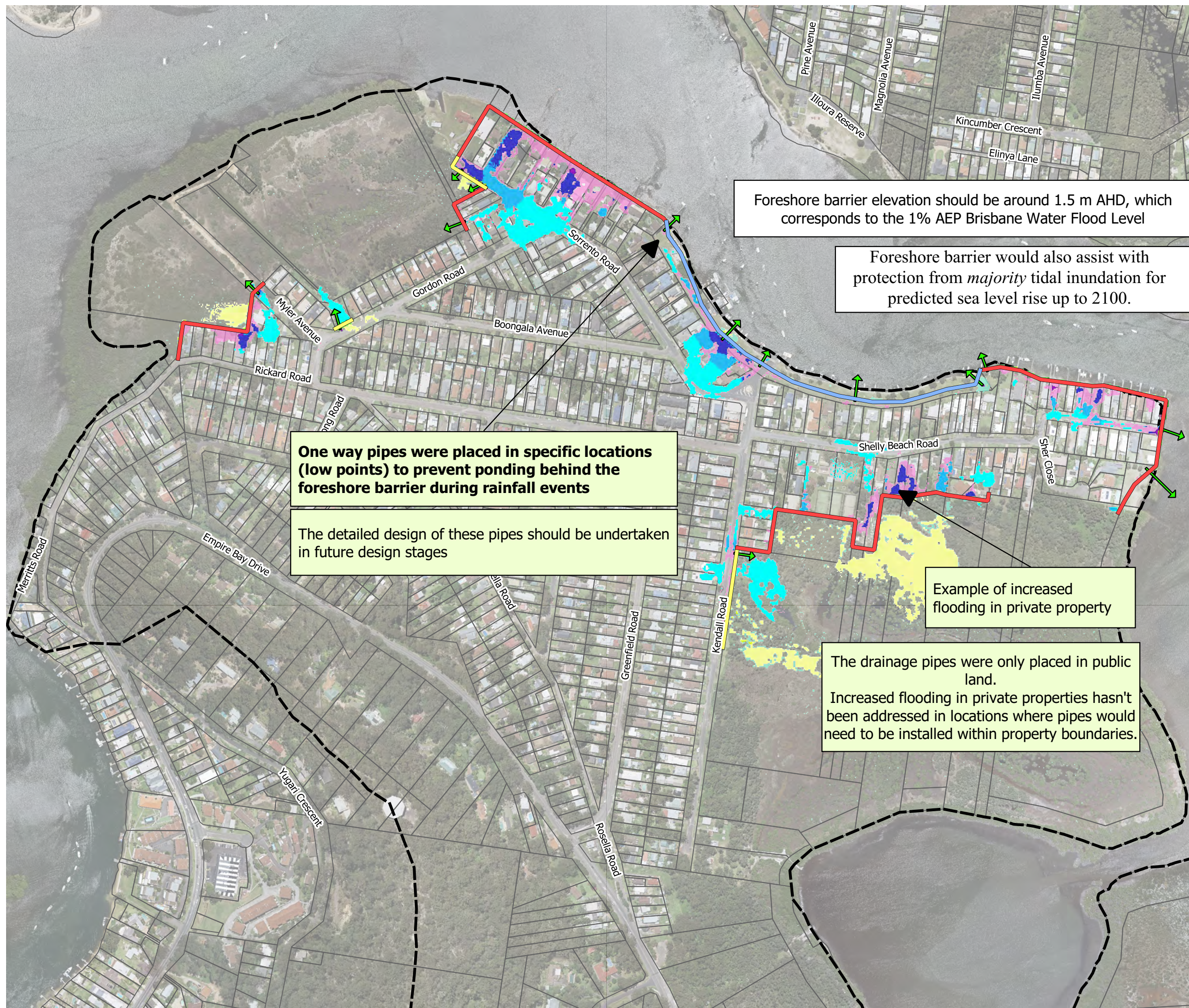
- Cadastre
- One way pipes through foreshore barrier
- EB_Levee_FMMDT4_V01
 - Shared Path
 - Roadside Berm
 - Retaining Wall
- Wet/Dry
 - Was wet, now dry
 - Was dry, now wet
- Depth Difference (m)
 - <= -0.2
 - 0.2 - -0.1
 - 0.1 - -0.05
 - 0.05 - -0.01
 - 0.01 - 0.05
 - 0.05 - 0.1
 - 0.1 - 0.2
 - > 0.2



0 75 150 225 m



Scale : 1:7500@A3
Date : 2 June 2020
Revision : A
Created by : JS
Coordinate System : Map of Grid
Australia 94



Foreshore barrier elevation should be around 1.5 m AHD, which corresponds to the 1% AEP Brisbane Water Flood Level

Foreshore barrier would also assist with protection from *majority* tidal inundation for predicted sea level rise up to 2100.

One way pipes were placed in specific locations (low points) to prevent ponding behind the foreshore barrier during rainfall events

The detailed design of these pipes should be undertaken in future design stages

Example of increased flooding in private property

The drainage pipes were only placed in public land. Increased flooding in private properties hasn't been addressed in locations where pipes would need to be installed within property boundaries.

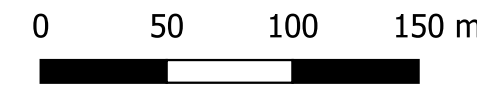


Map G219
FM EB5 Drainage
easement from Myrtle
Road to Kendall Road
20% AEP

Depth Difference
(FM EB5 less Existing)

Legend

- Cadastre
- Swale
- Wet/Dry**
 - Was wet, now dry
 - Was dry, now wet
- Depth Difference (m)**
 - <= -0.2
 - 0.2 - -0.1
 - 0.1 - -0.05
 - 0.05 - -0.01
 - 0.01 - 0.05
 - 0.05 - 0.1
 - 0.1 - 0.2
 - > 0.2

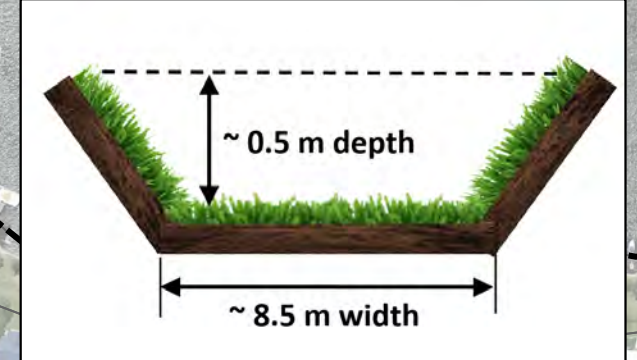


Scale : 1:3000@A3
 Date : 02 June 2020
 Revision : A
 Created by : JS
 Coordinate System : Map of Grid
 Australia 94



Schematic representation of the cross-section of the swale included in the model.

These dimensions are approximate and only supposed to provide guidance for future detailed design stages.



Culverts would be constructed under roads

Easement directing flows coming from the south to wetland area

The easement could convey flows via a channel, overland flow (with minor flows in underground pipes), or a large underground culvert. The composition of the easement design will determine if, and how many voluntary property purchases would be required.

The location of the easement could also be modified slightly to accommodate voluntary purchase options

If the easement were to be a full property (or even two) wide, this would provide a significant green corridor for the community, which could incorporate shared pathways, parkland, landscaping, as well as a 'natural channel'

Examples of drainage easement:



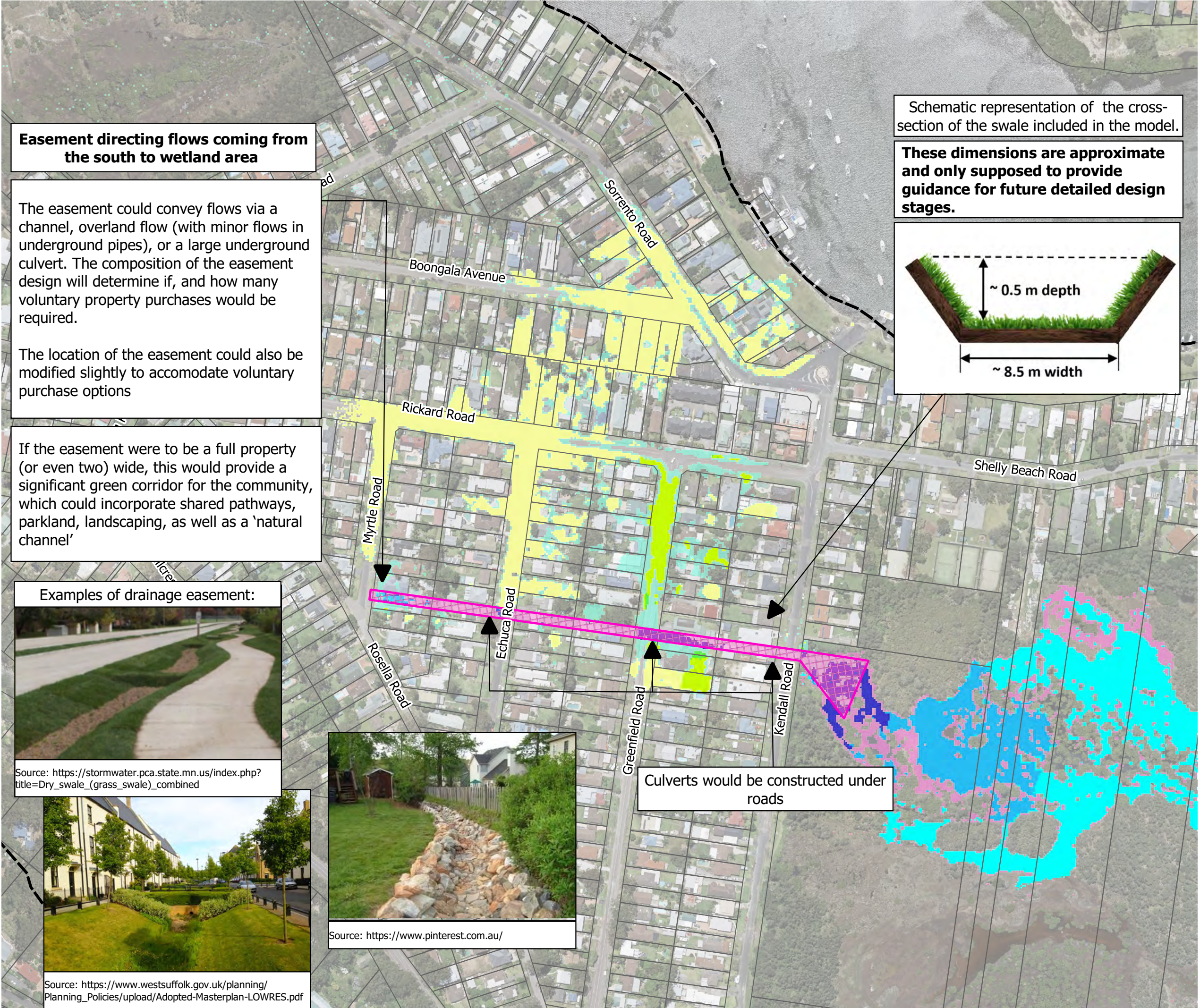
Source: [https://stormwater.pca.state.mn.us/index.php?title=Dry_swale_\(grass_swale\)_combined](https://stormwater.pca.state.mn.us/index.php?title=Dry_swale_(grass_swale)_combined)



Source: https://www.westsuffolk.gov.uk/planning/Planning_Policies/upload/Adopted-Masterplan-LOWRES.pdf



Source: <https://www.pinterest.com.au/>



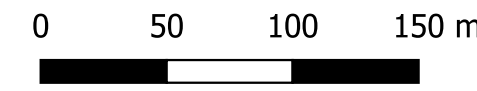


Map G220
FM EB5 Drainage
easement from Myrtle
Road to Kendall Road
1% AEP

Depth Difference
(FM EB5 less Existing)

Legend

- Cadastre
- Swale
- Wet/Dry**
 - Was wet, now dry
 - Was dry, now wet
- Depth Difference (m)**
 - <= -0.2
 - 0.2 - -0.1
 - 0.1 - -0.05
 - 0.05 - -0.01
 - 0.01 - 0.05
 - 0.05 - 0.1
 - 0.1 - 0.2
 - > 0.2

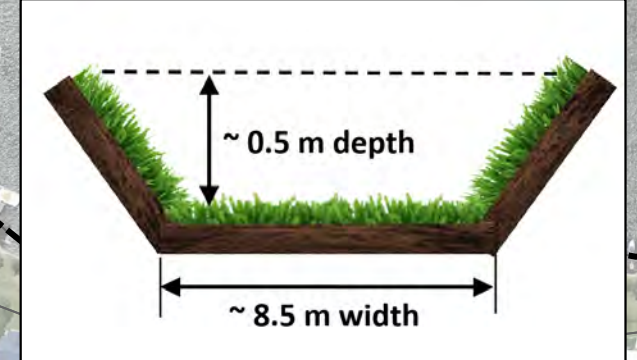


Scale : 1:3000@A3
 Date : 02 June 2020
 Revision : A
 Created by : JS
 Coordinate System : Map of Grid
 Australia 94



Schematic representation of the cross-section of the swale included in the model.

These dimensions are approximate and only supposed to provide guidance for future detailed design stages.



Culverts would be constructed under roads

Easement directing flows coming from the south to wetland area

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The location of the easement could also be modified slightly to accommodate voluntary purchase options

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Examples of drainage easement:



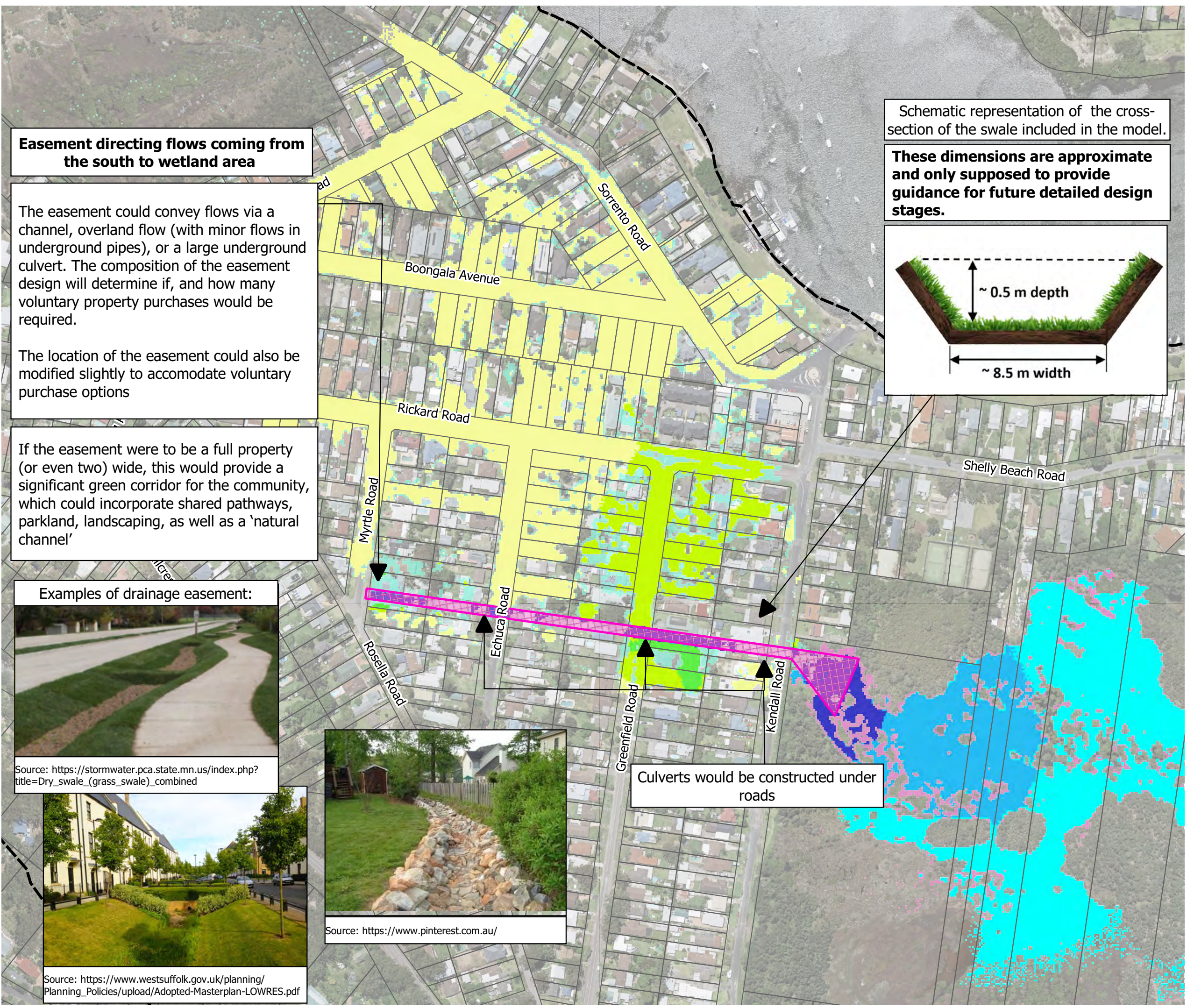
Source: [https://stormwater.pca.state.mn.us/index.php?title=Dry_swale_\(grass_swale\)_combined](https://stormwater.pca.state.mn.us/index.php?title=Dry_swale_(grass_swale)_combined)



Source: https://www.westsuffolk.gov.uk/planning/Planning_Policies/upload/Adopted-Masterplan-LOWRES.pdf



Source: <https://www.pinterest.com.au/>



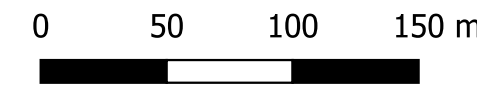


Map G221
FM EB5 Drainage
easement from Myrtle
Road to Kendall Road
PMF

Depth Difference
(FM EB5 less Existing)

Legend

- Cadastre
- Swale
- Wet/Dry**
 - Was wet, now dry
 - Was dry, now wet
- Depth Difference (m)**
 - <= -0.2
 - 0.2 - -0.1
 - 0.1 - -0.05
 - 0.05 - -0.01
 - 0.01 - 0.05
 - 0.05 - 0.1
 - 0.1 - 0.2
 - > 0.2

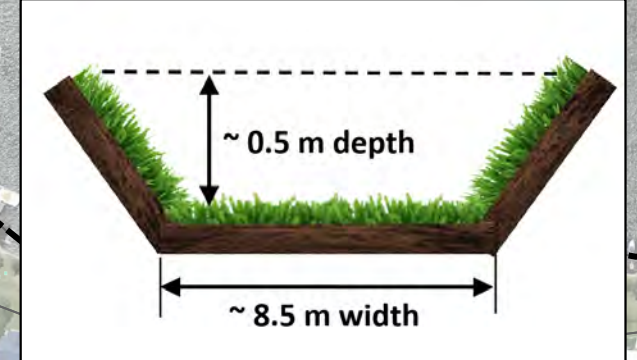


Scale : 1:3000@A3
 Date : 02 June 2020
 Revision : A
 Created by : JS
 Coordinate System : Map of Grid
 Australia 94



Schematic representation of the cross-section of the swale included in the model.

These dimensions are approximate and only supposed to provide guidance for future detailed design stages.



Easement directing flows coming from the south to wetland area

The easement could convey flows via a channel, overland flow (with minor flows in underground pipes), or a large underground culvert. The composition of the easement design will determine if, and how many voluntary property purchases would be required.

The location of the easement could also be modified slightly to accommodate voluntary purchase options

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Examples of drainage easement:



Source: [https://stormwater.pca.state.mn.us/index.php?title=Dry_swale_\(grass_swale\)_combined](https://stormwater.pca.state.mn.us/index.php?title=Dry_swale_(grass_swale)_combined)



Source: https://www.westsuffolk.gov.uk/planning/Planning_Policies/upload/Adopted-Masterplan-LOWRES.pdf



Source: <https://www.pinterest.com.au/>

Culverts would be constructed under roads





Map G222 Emergency Response Modification Options

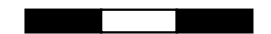
EM01 Review of Evacuation Centre Locations

Davistown/Empire Bay

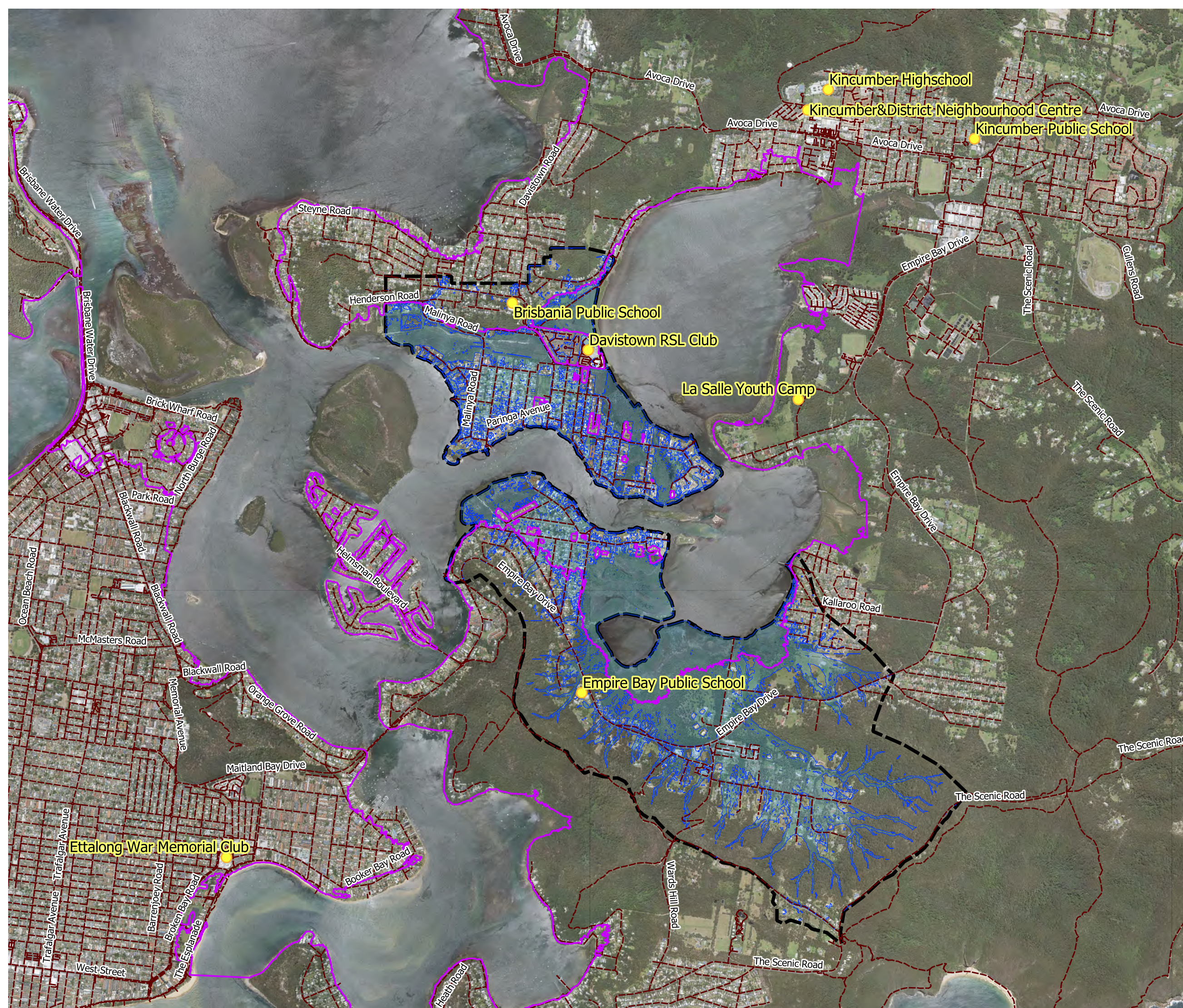
Legend

- Study Areas
- Cadastre
- Potential Evacuation Centre Locations
- Roadways
- PMF Brisbane Water Flood Extents
- PMF Catchment Flood Extents

0 250 500 750 m



Scale : 1:25,000@A3
Date : 02 June 2020
Revision : A
Created by : JS
Coordinate System : MGA 56



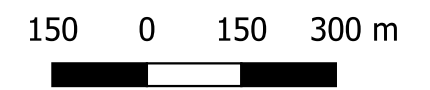


Map G223 Emergency Response Modification Options

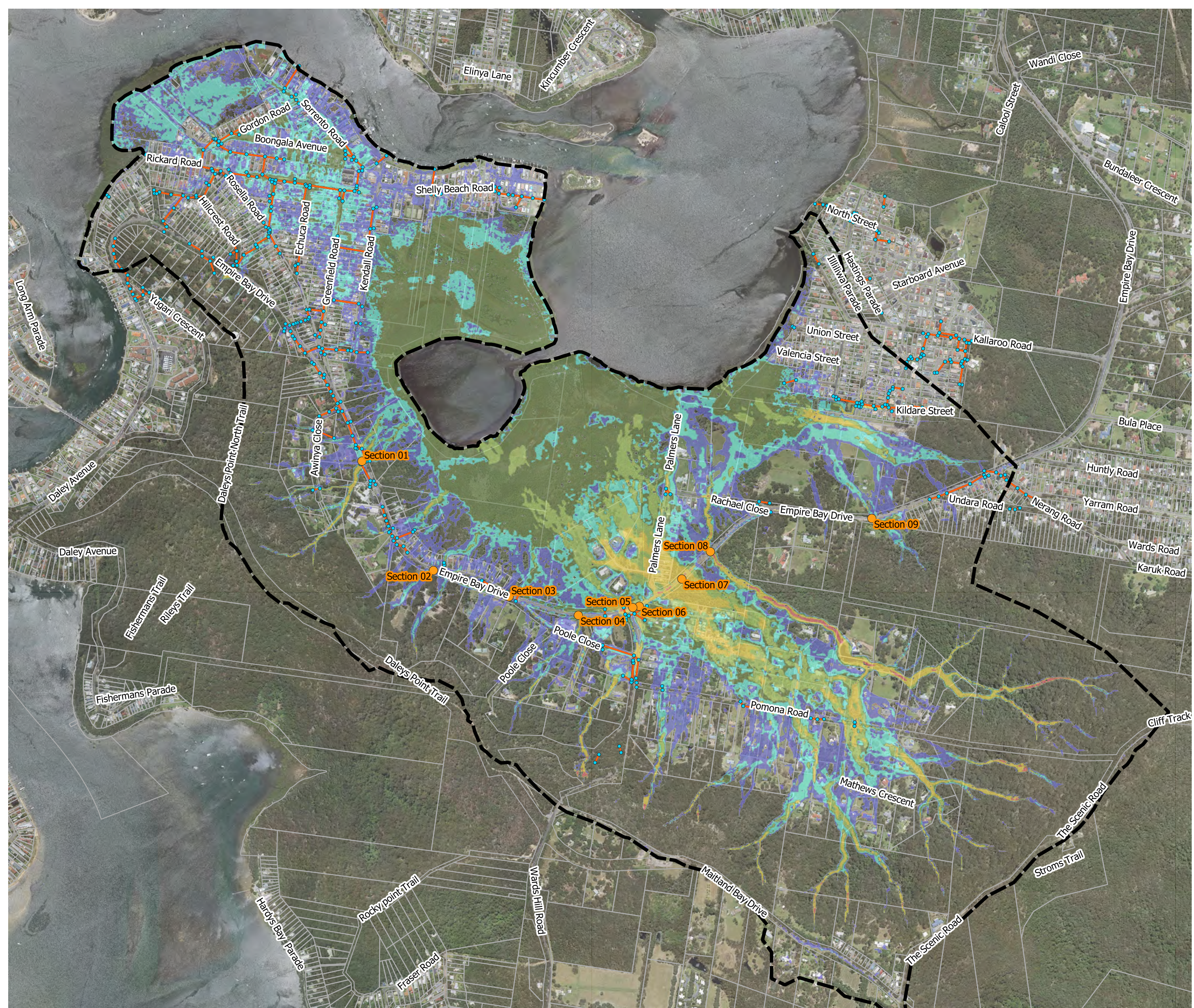
EM03 Improve Empire Bay Road Flood Immunity

Legend

- Cadastre
- Study Area
- Sections of Empire Bay Drive Subjected to High Hazard (Greater than H2)
- Pits
- Pipes/Culverts
- PMF Hazard**
 - H1 - Generally safe for vehicles, people & buildings
 - H2 - Unsafe for small vehicles
 - H3 - Unsafe for vehicles, children and the elderly
 - H4 - Unsafe for vehicles and people
 - H5 - Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust building types vulnerable to failure
 - H6 - Unsafe for vehicles and people. All building types considered vulnerable to failure



Scale : 1:12000@A3
Date : 02 June 2020
Revision : B
Created by : JS
Coordinate System : Map Grid of Australia 94





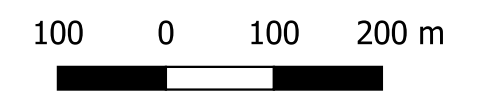
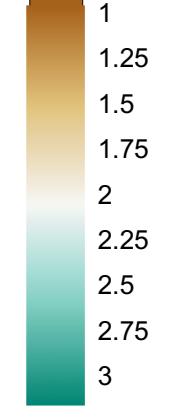
Map G230 Final Landform Davistown

Legend

— Contours (0.2m)

□ Cadastre

Terrain (m AHD)









Scale : 1:7000@A3
 Date : 02 June 2020
 Revision : A
 Created by : JRF
 Coordinate System : Map Grid of
 Australia 94





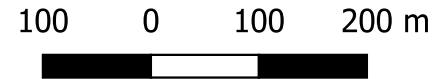
**Map G231
Interim Landform
Scenario
Davistown**

Legend

-  Cadastre
- Proposed Levee at 1.5 m AHD
-  Berm
-  Retaining Wall
-  Shared Pathway
- Landform Raised
-  Roadways
-  Properties

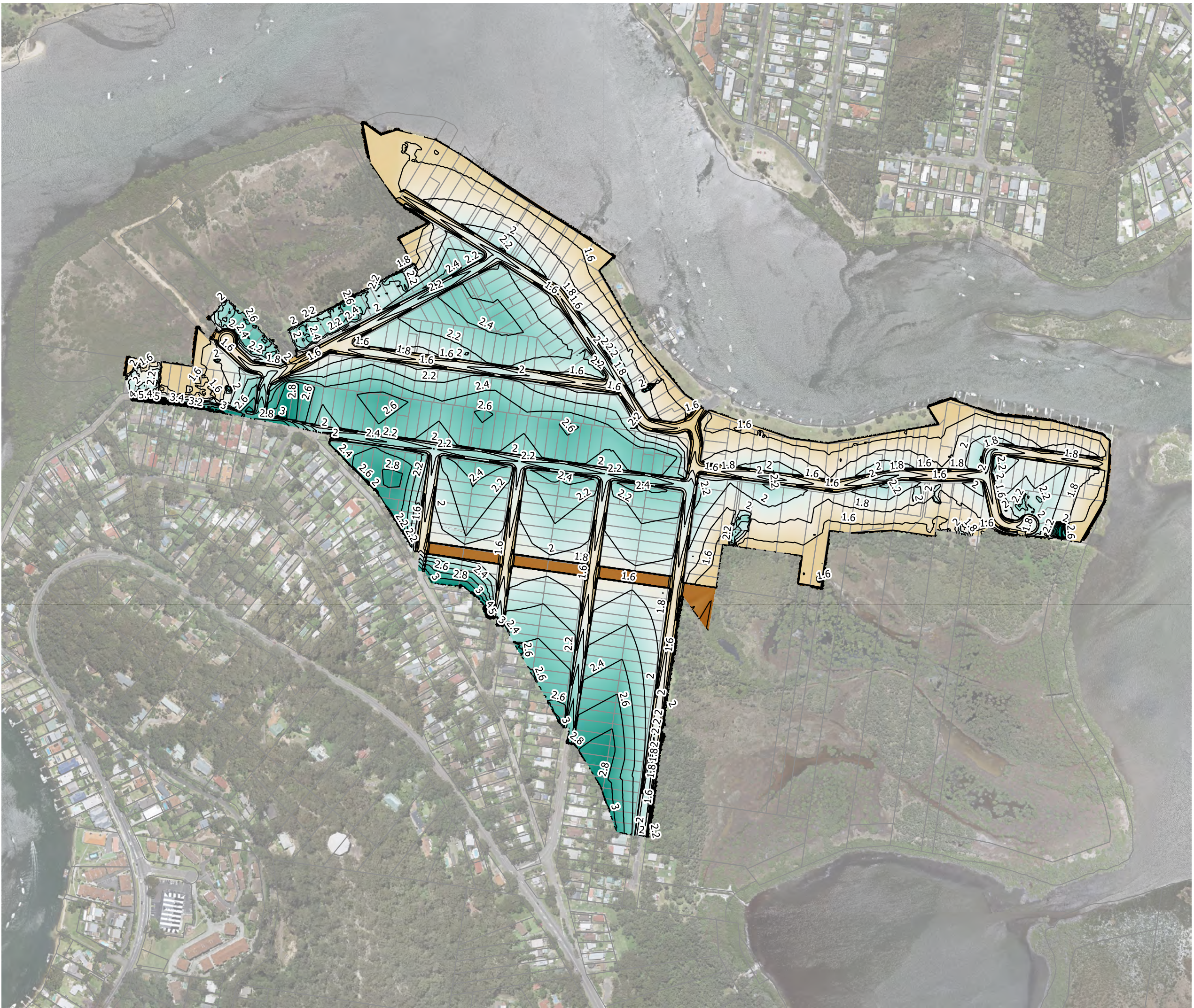
Flood gates required to control flow in an out of existing wetland

Minor ground raising as existing levels are near 1.5 m AHD



Scale : 1:7000@A3
Date : 02 June 2020
Revision : A
Created by : JRF
Coordinate System : Map Grid of Australia 94





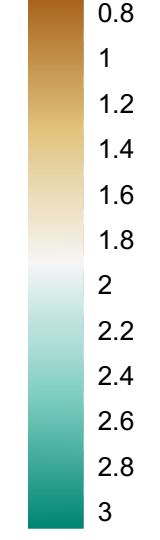
Map G232 Final Landform Empire Bay

Legend

— Contours (0.2m)

□ Cadastre

Terrain (m AHD)



50 0 50 100 150 200 m



Scale : 1:5000@A3
 Date : 02 June 2020
 Revision : A
 Created by : JRF
 Coordinate System : Map of Grid
 Australia 94

