



Map G301

Catchment Flood Extents

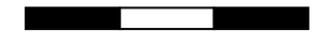
Davistown

Peak Overtopping Depths				
ID	Location	20% AEP	1% AEP	PMF
DT-01	Malynia Road (North)	0.2m	0.3m	0.3m
DT-02	Malynia Road (South)	0.1m	0.2m	0.5m
DT-03	Emora Avenue	0.2m	0.3m	0.6m
DT-04	Grevilla Avenue	0.2m	0.3m	0.6m
DT-05	Kincumber Cresc	0.2m	0.3m	0.4m

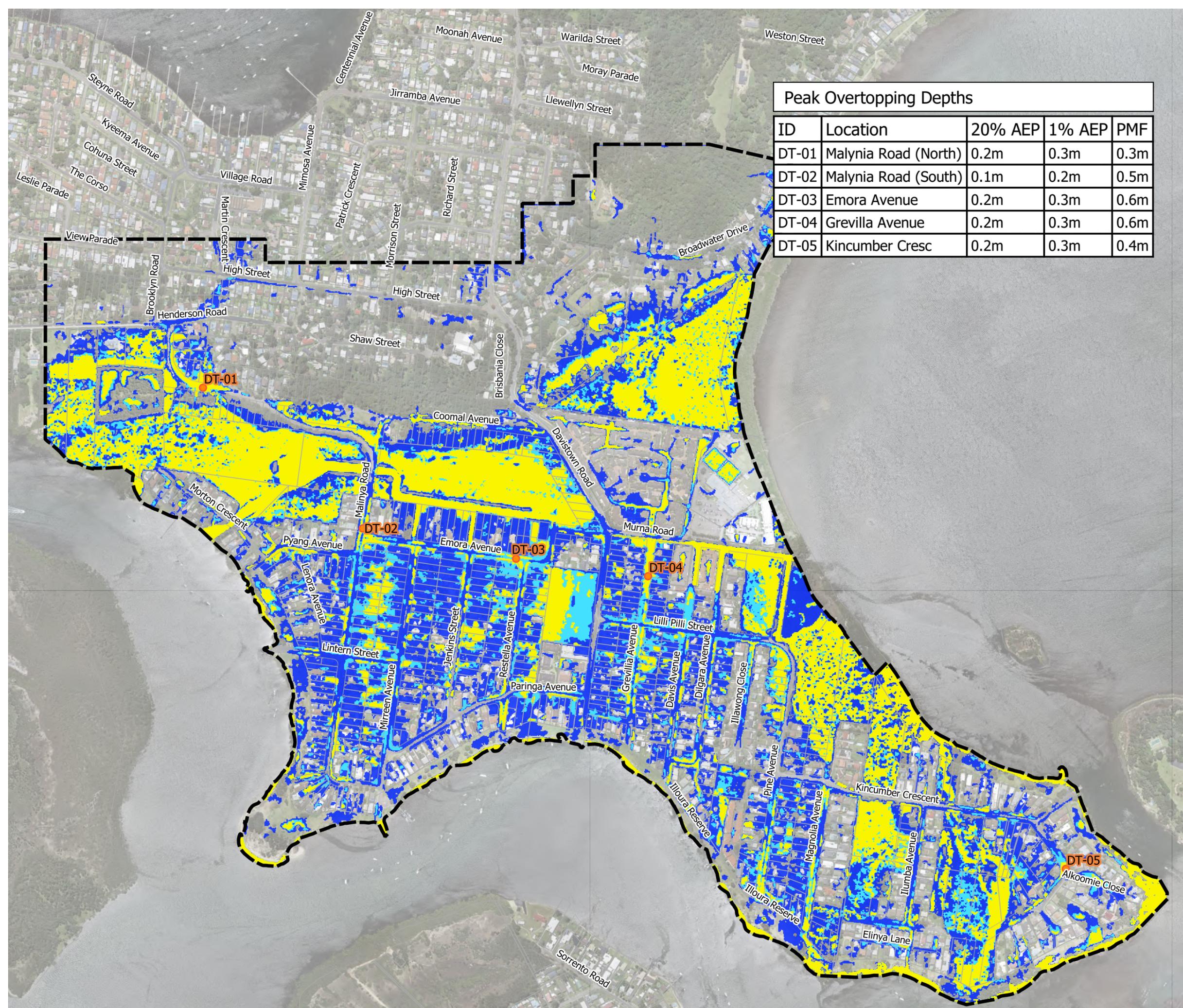
Legend

- Cadastre
 - Study Area
 - Road Locations
- Flood Extents (0.1 m filter)
- 20% AEP
 - 1% AEP
 - PMF

0 100 200 300 m



Scale : 1:7500@A3
 Date : 18 Aug 2020
 Revision : A
 Created by : JS
 Coordinate System : MGA 56





Map G302

Catchment Flood Extents Empire Bay/Bensville

Legend

- Cadastre
 - Study Area
 - Road Locations
- Flood Extents (0.1 m filter)
- 20% AEP
 - 1% AEP
 - PMF

Peak Overtopping Depths

ID	Location	20% AEP	1% AEP	PMF
EB-01	Gordon Road	0.2m	0.3m	0.6m
EB-02	Boongala Avenue	0.5m	0.6m	0.9m
EB-03	Sorrento Road	0.1m	0.2m	0.5m
EB-04	Shelly Beach Road	0.1m	0.2m	0.3m
EB-05	Rickard Road	0.4m	0.5m	0.8m
EB-06	Greenfield Road	0.4m	0.5m	0.7m
EB-07	Rosella Road	-	0.1m	0.4m
EB-08	Palmer's Lane	0.3m	0.5m	0.9m
EB-09	Empire Bay Drive	0.2m	0.3m	0.6m
EB-10	Pomona Road (1)	0.2m	0.3m	0.6m
EB-11	Pomona Road (2)	0.3m	0.4m	0.7m
EB-12	Pomona Road (3)	0.2m	0.2m	0.5m

0 100 200 300 m



Scale : 1:12000@A3
 Date : 18 Aug 2020
 Revision : A
 Created by : JS
 Coordinate System : MGA 56





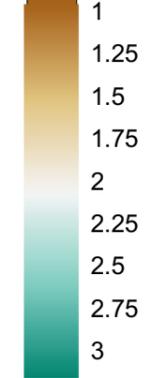
Map G303 Proposed Landform Davistown

Legend

— Contours (0.2m)

□ Cadastre

Terrain (m AHD)



Scale : 1:7000@A3
 Date : 18 August 2020
 Revision : A
 Created by : JRF
 Coordinate System : Map Grid of
 Australia 94





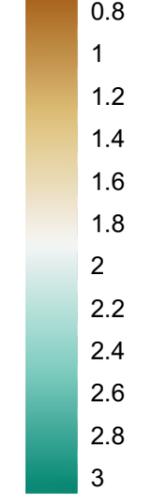
Map G304 Proposed Landform Empire Bay

Legend

— Contours (0.2m)

□ Cadastre

Terrain (m AHD)



50 0 50 100 150 200 m



Scale : 1:5000@A3
 Date : 18 August 2020
 Revision : A
 Created by : JRF
 Coordinate System : Map of Grid
 Australia 94





Map G305 Recommended Options Davistown

Legend

- Cadastre
- Study Area
- FM DT02 - Davistown foreshore barrier
- EM01 - Review of evacuation centres - Potential Locations
- EM03 - Provide Data to Inform Future Road Drainage Improvements - Road Locations



Scale : 1:7500@A3
 Date : 6 December 2021
 Revision : B
 Created by : JS
 Coordinate System : Map Grid of Australia 94



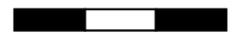


Map G306 Recommended Options Empire Bay

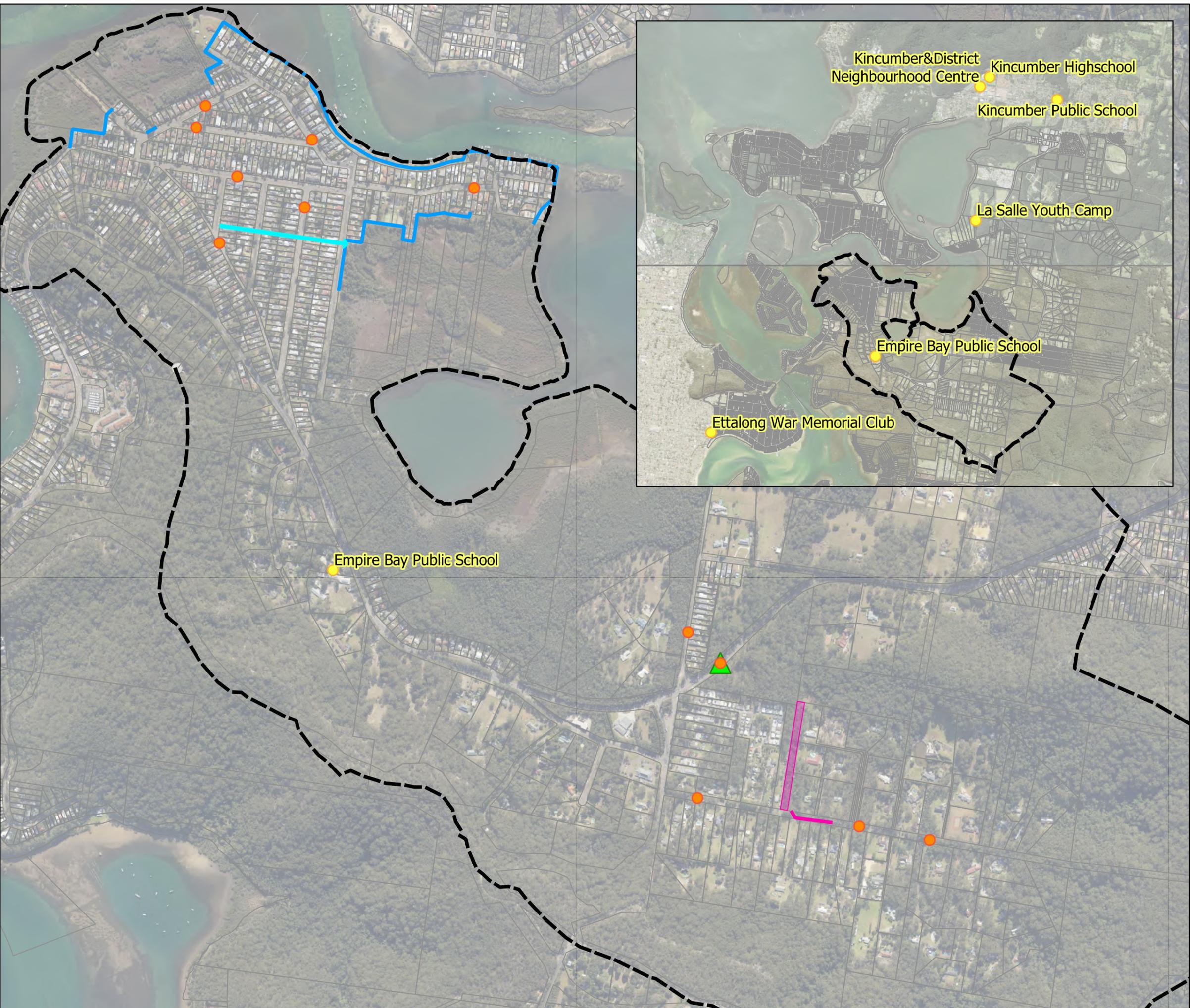
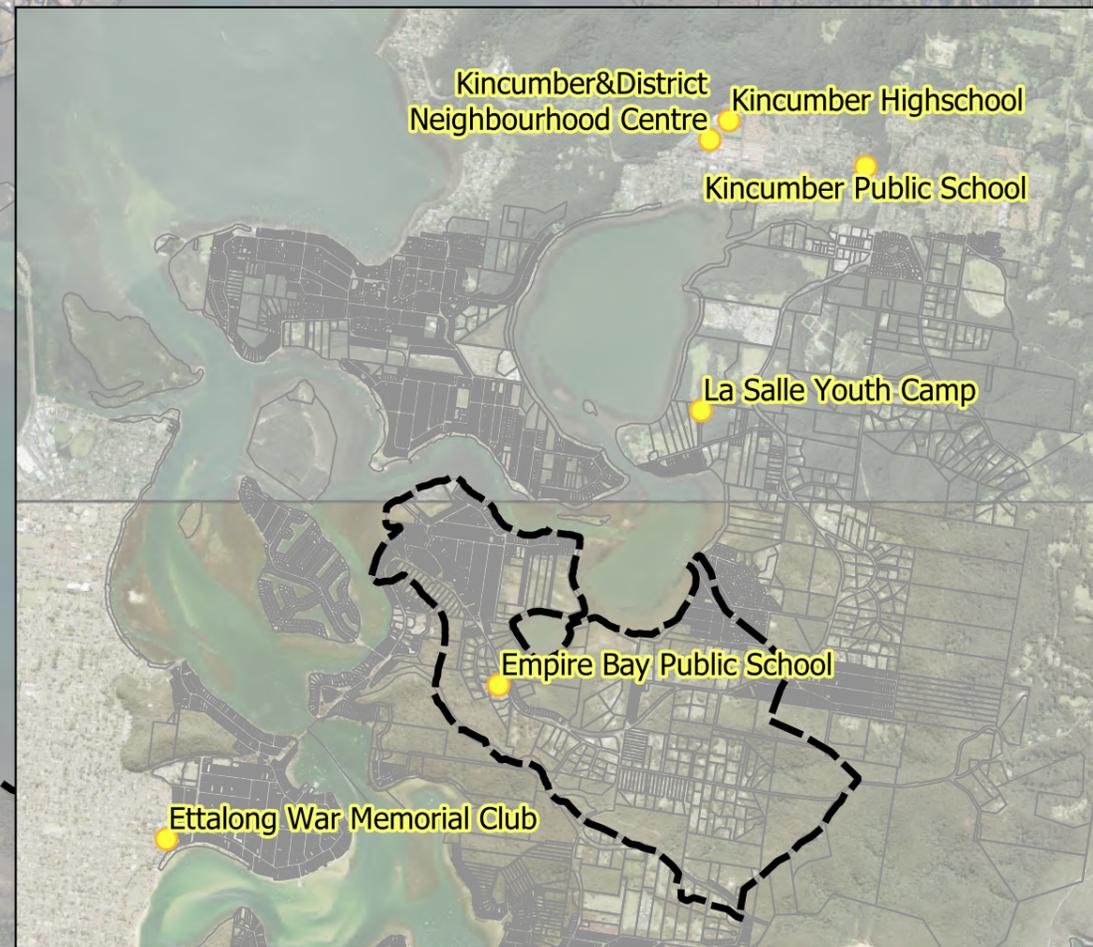
Legend

-  Cadastre
-  Study Area
-  EM01 - Review of evacuation centres - Potential Locations
-  EM03 - Provide Data to Inform Future Road Drainage Improvements - Road Locations
-  EM05 - Flood Warning Signs - Depth Marker Location
-  FM EB06 - Pomona Road Easement and Drainage Upgrades
-  FM EB01 - Pomona Road Easement and Drainage Upgrades
-  FM EB04 - Empire Bay foreshore barrier
-  FM EB05 - Drainage Easement (Myrtle Road to Kendall Road)

0 100 200 300 m



Scale : 1:10000@A3
Date : 29 March 2022
Revision : D
Created by : JRF
Coordinate System : MGA 56



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)



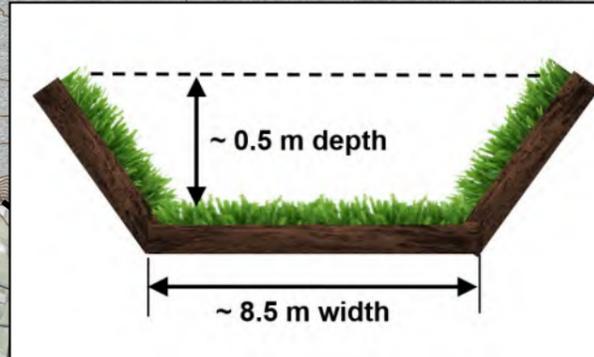
Source: https://www.westsuffolk.gov.uk/planning/Planning_Policies/upload/Adopted-Masterplan-LOWRES.pdf



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

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.



Any property purchases would be undertaken in consultation with owners, and would be voluntarily sold to Council at market value.



**Map G307
FM EB5 Drainage
easement from Myrtle
Road to Kendall Road
1% AEP**

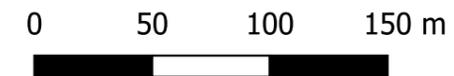
**Depth Difference
(FM EB5 less Existing)**

Legend

- Cadastre
- Schematic representation of existing runoff direction
- Direction of flows conveyed by the easement
- Existing Terrain Contours (0.5m)

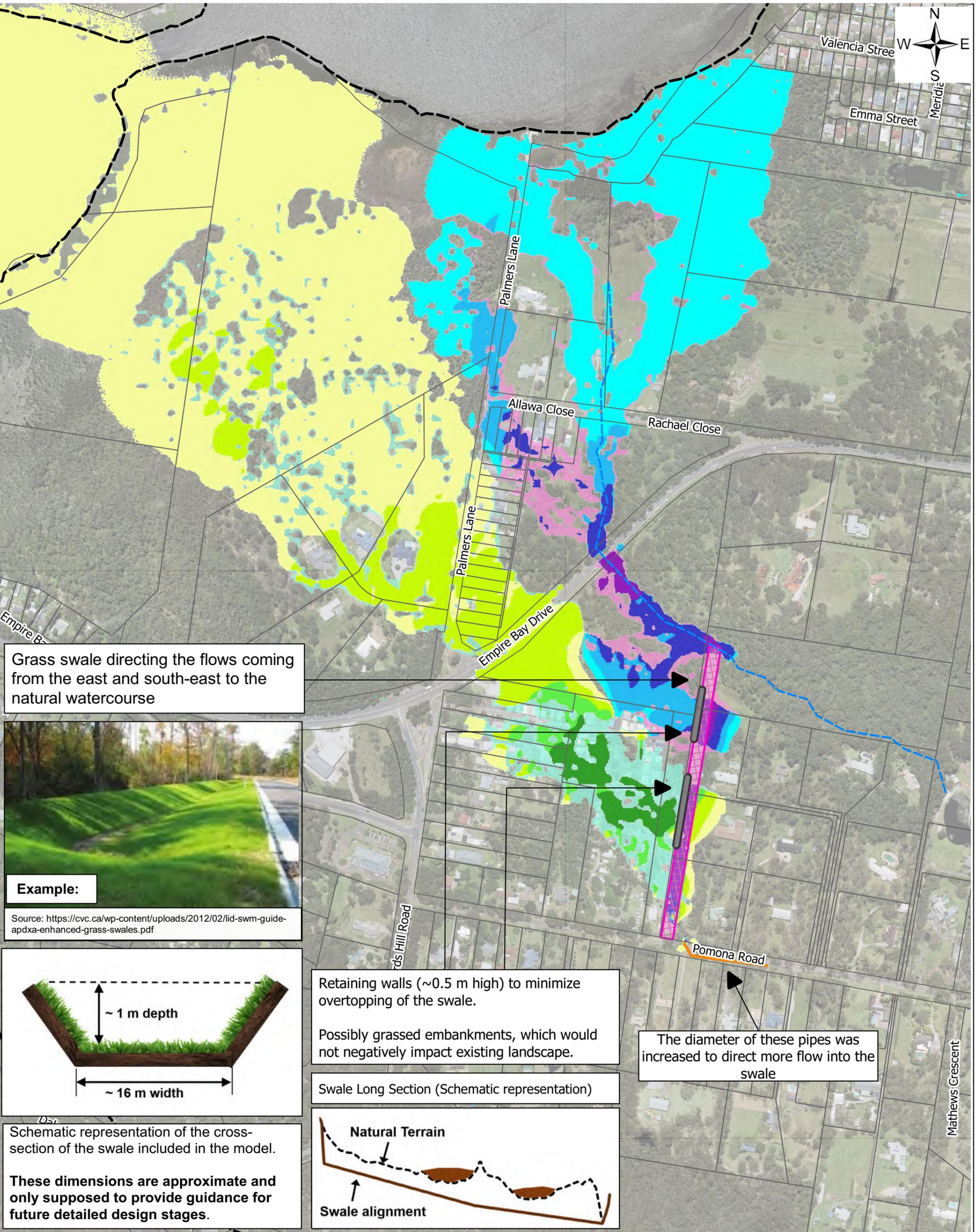
Wet/Dry

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



Scale : 1:3000@A3
Date : 23 March 2021
Revision : B
Created by : JS
Coordinate System : Map of Grid Australia 94



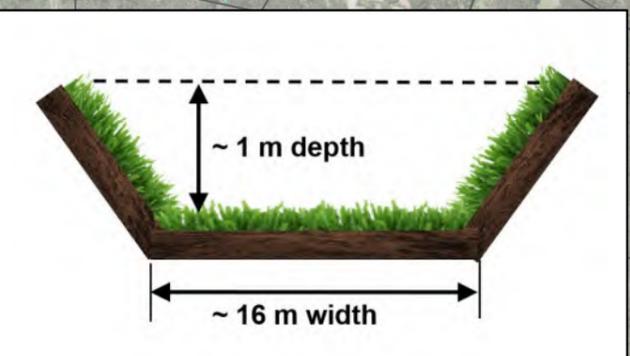


Grass swale directing the flows coming from the east and south-east to the natural watercourse



Example:

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



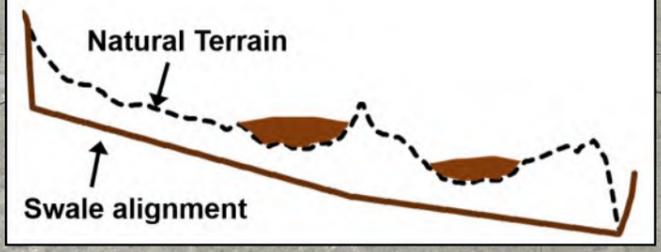
Schematic representation of the cross-section of the swale included in the model.

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

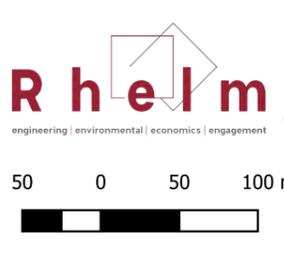
Retaining walls (~0.5 m high) to minimize overtopping of the swale.

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 : 18 August 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
- Flood Depth Difference (m)**
- 0.1 - -0.05
 - 0.05 - -0.01
 - 0.01 - 0.05
 - 0.05 - 0.1
 - 0.1 - 0.2
 - > 0.2
 - <= -0.2
 - 0.2 - -0.1

Map G308
Flood Modification Options
FM EB6 Pomona Road easement
and drainage upgrades
1% AEP
Depth Difference (Option FM
EB6 less Existing)



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 tidal inundation for predicted sea level rise up to 2100.

The Foreshore Barrier elevation corresponds to the minimum ground level in the landform design shown on map G303. Therefore, once the final landform is complete, the foreshore barrier would no longer be higher than the adjoining ground levels.

Flood gates could be used to protect properties inside the barrier during ocean storms and could also be used to 'mimic' existing tidal flows to protect wetland areas from impacts of sea level rise.

Flood barrier 'walls' along properties can be constructed in many different ways. Some examples below.



Sections of roads can be raised slightly to form part of the foreshore flood barrier.

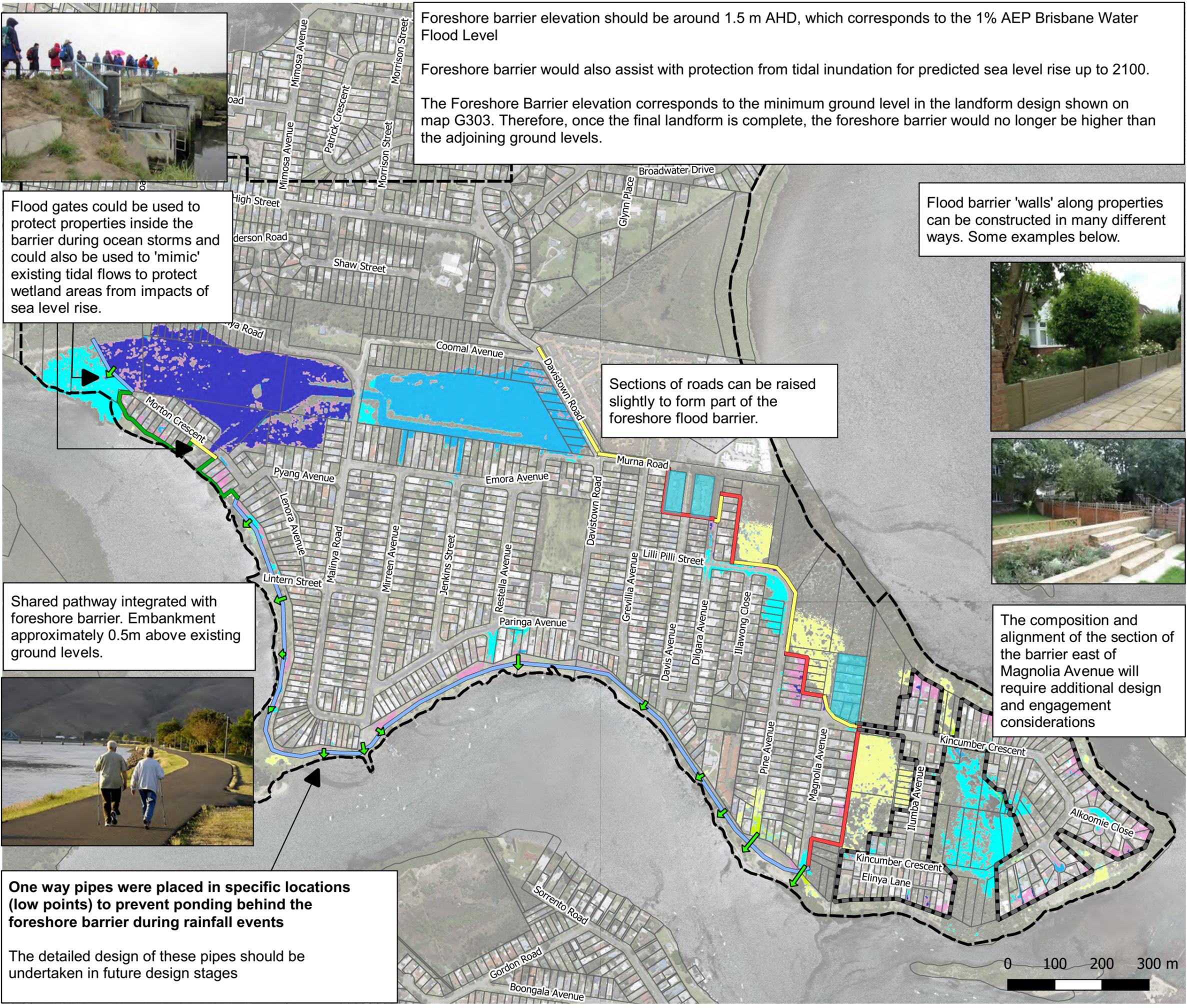
Shared pathway integrated with foreshore barrier. Embankment approximately 0.5m above existing ground levels.



The composition and alignment of the section of the barrier east of Magnolia Avenue will require additional design and engagement considerations

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 G309 Flood Modification Options

DM DT2 Davistown Foreshore Barrier

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

Legend

- Cadastre
- Properties with ground levels higher than foreshore barrier (Do not require protection)
- Foreshore Barrier**
 - Shared Path
 - Roadside Berm
 - Retaining Wall
 - Sea Wall
 - Composition and alignment to be defined
 - One way pipes through foreshore barrier
- Wet/Dry**
 - Was wet, now dry
 - Was dry now wet
- 1% AEP Flood 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 : 6 December 2021
Revision : C
Created by : JS
Coordinate System : Map of Grid Australia 94





Map G310 Flood Modification Options FM EB4 Empire Bay Foreshore Barrier

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

Legend
Cadastre
One way pipes through foreshore barrier

Levee
Shared Path
Roadside Berm
Retaining Wall

Wet/Dry
Was wet, now dry
Was dry, now wet

Flood 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 : 18 August 2020
Revision : A
Created by : JS
Coordinate System : Map of Grid
Australia 94



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

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 tidal inundation for predicted sea level rise up to 2100.

Shared pathway integrated with foreshore barrier. Embankment approximately 0.5m above existing ground levels.



Flood barrier 'walls' along properties can be constructed in many different ways. Some examples below.



Sections of roads can be raised slightly to form part of the foreshore flood barrier.

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 G311 Emergency Response Modification Options

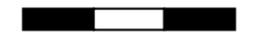
EM01 Review of Evacuation Centre Locations

Davistown/Empire Bay

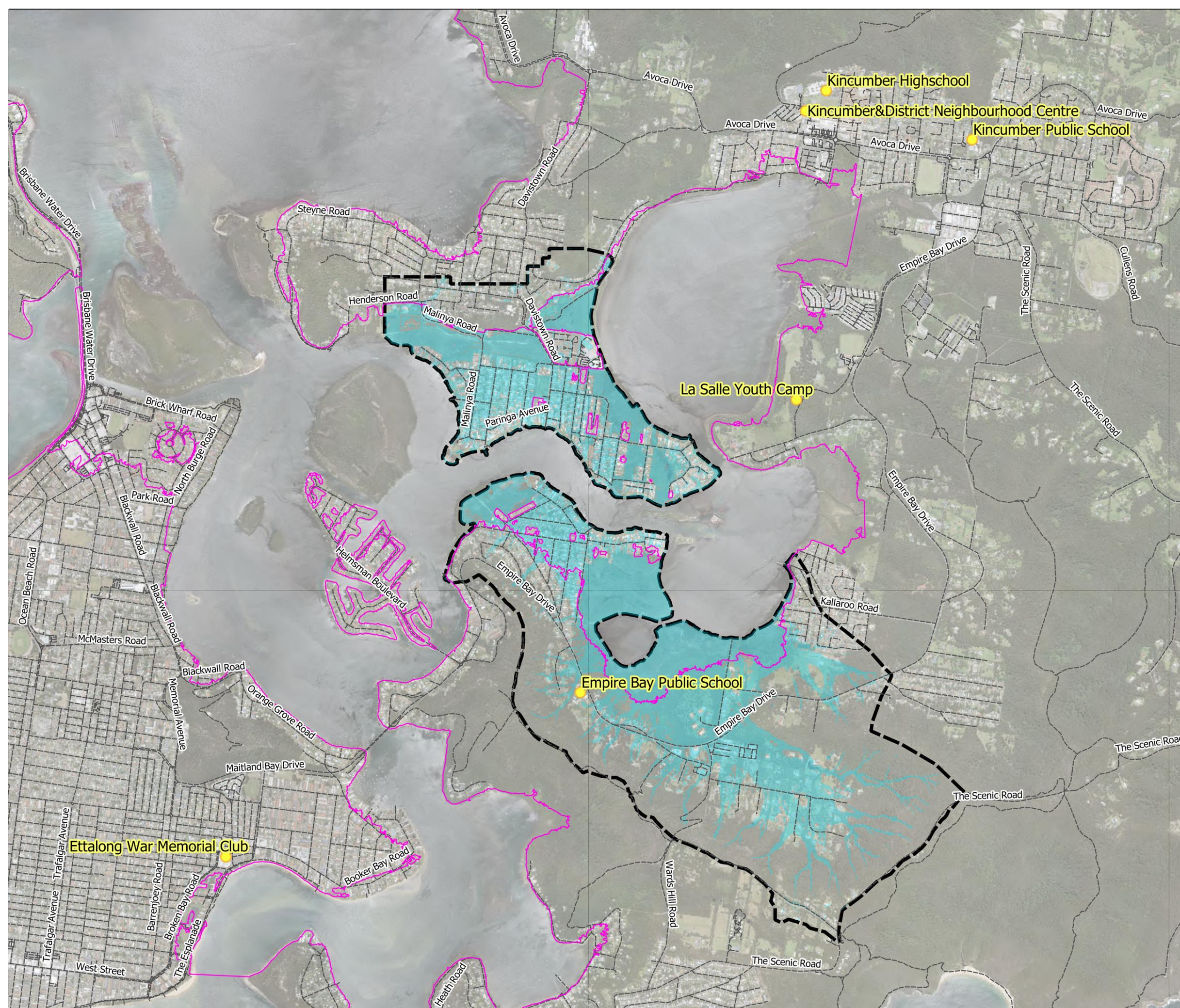
Legend

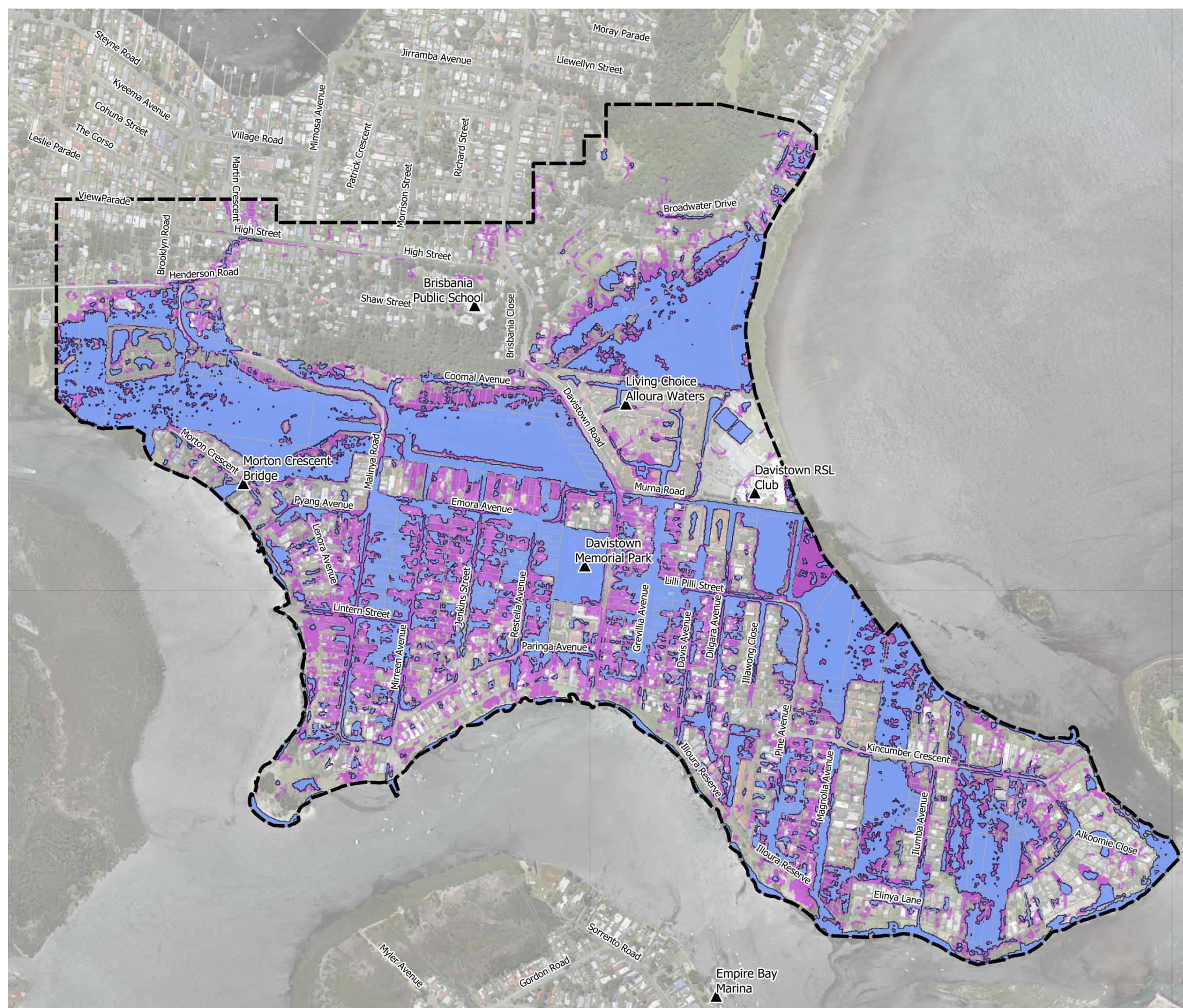
- Study Areas
- Cadastre
- Potential Evacuation Centre Locations
- Roadways
- PMF Brisbane Water Flood Extents
- PMF Catchment Flood Extents

0 250 500 750 m



Scale : 1:25,000@A3
Date : 18 August 2020
Revision : A
Created by : JS
Coordinate System : MGA 56





Map G312

Flood Planning Area (FPA)

Davistown

Legend

-  Study Area
-  Cadastre
-  FPA - 1% AEP + 30% rainfall increase
-  PMF - Catchment Flood Extent



Scale : 1:7500@A3
 Date : 18 August 2020
 Revision : A
 Created by : JS
 Coordinate System : MGA 56





Map G313

Flood Planning Area (FPA)

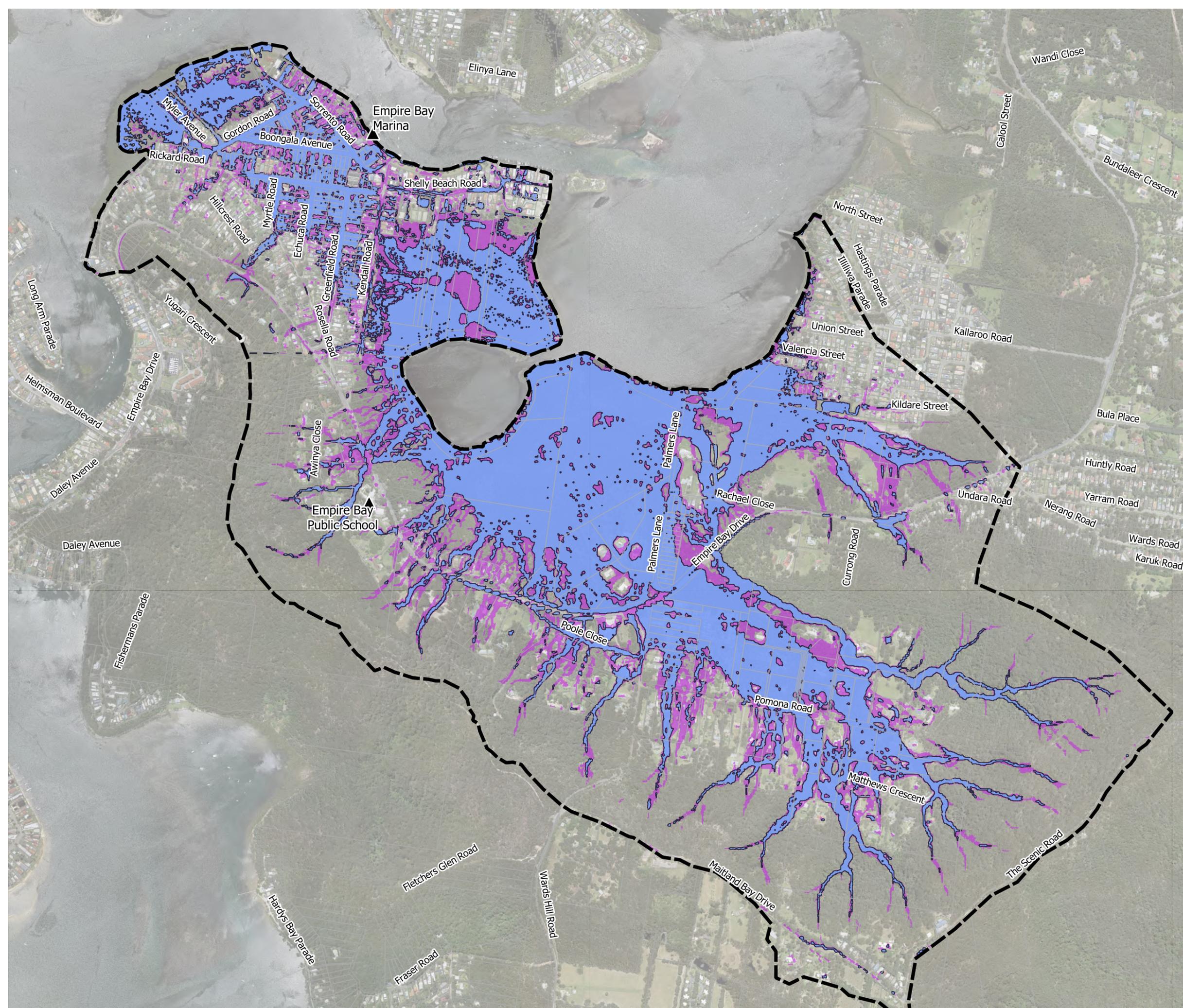
Empire Bay/Bensville

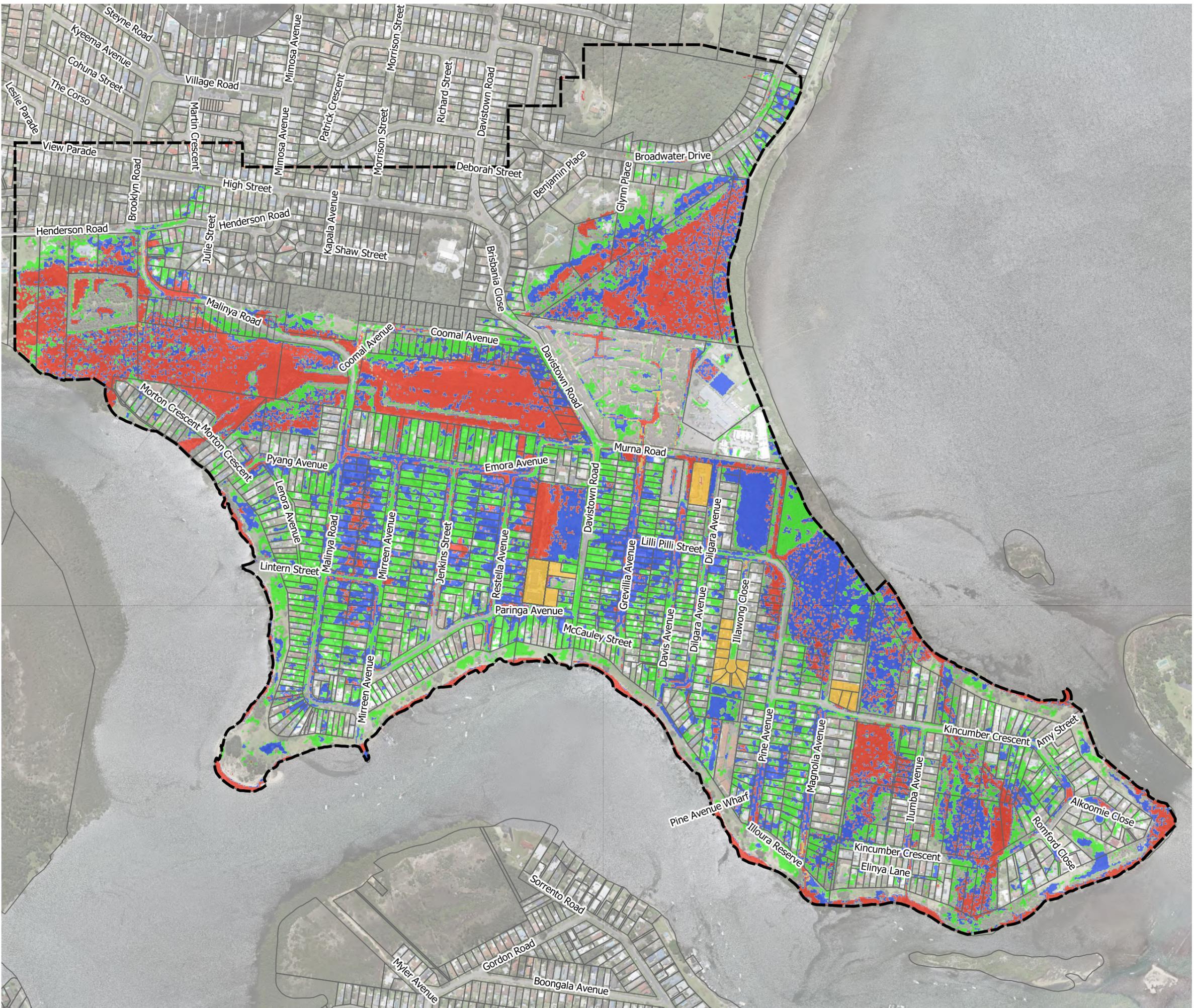
Legend

- Study Area
- Cadastre
- FPA - 1% AEP + 30% rainfall increase
- PMF - Catchment Flood Extent



Scale : 1:7500@A3
Date : 18 August 2020
Revision : A
Created by : JS
Coordinate System : MGA 56





Map G314

**Flood Planning
Constraint Categories
(FPCC)**

Davistown

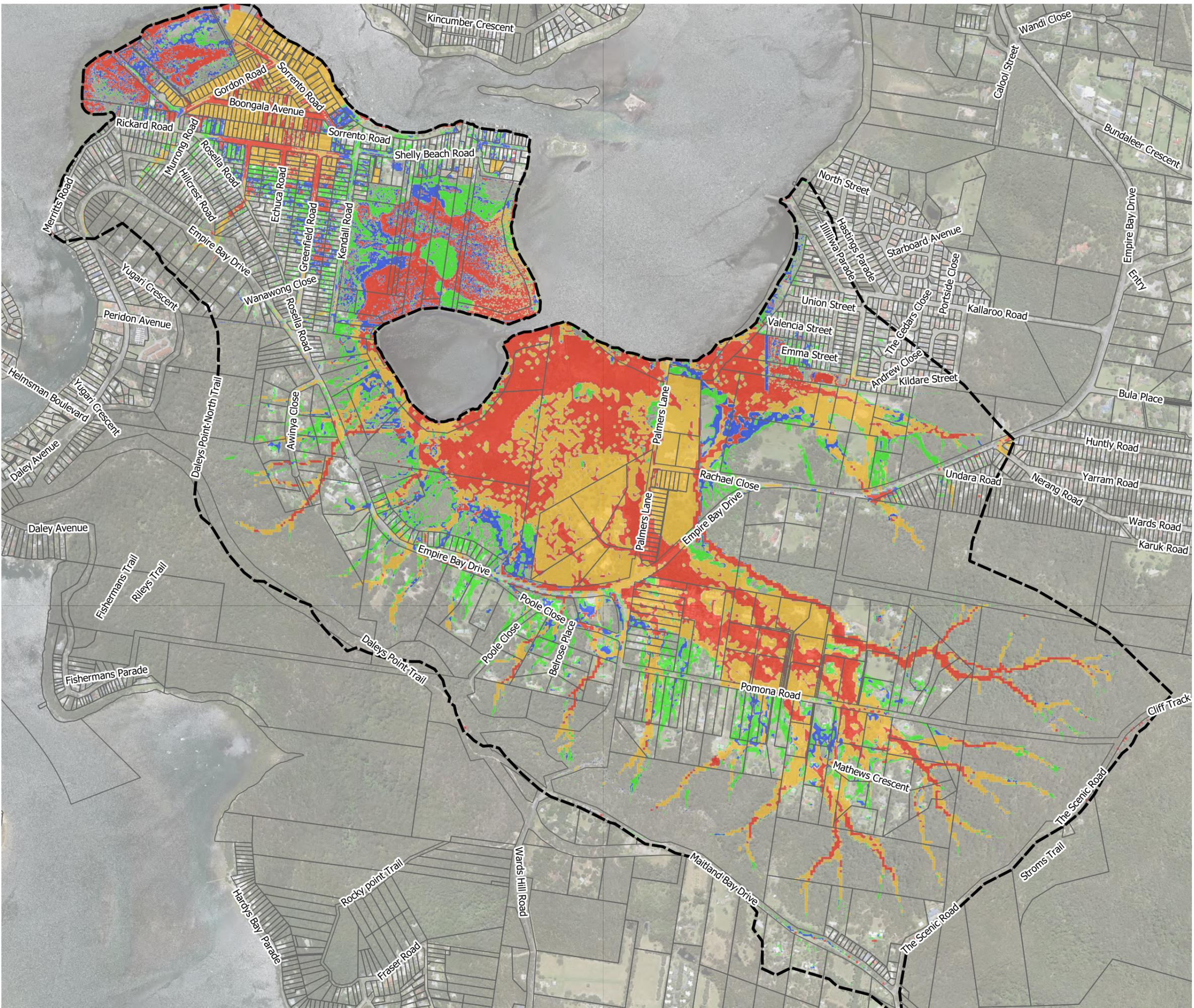
Legend

-  Cadastre
-  Study Area
- Flood Planning Constraint Categories
-  FPCC 1
-  FPCC 2
-  FPCC 3
-  FPCC 4



Scale : 1:7500@A3
 Date : 18 August 2020
 Revision : A
 Created by : JS
 Coordinate System : Map of Grid
 Australia 94





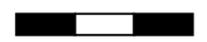
Map G315

**Flood Planning
Constraint Categories
(FPCC)**

Empire Bay/Bensville

- Legend**
- Cadastre
 - Study Area
 - Flood Planning Constraint Categories**
 - FPCC 1
 - FPCC 2
 - FPCC 3
 - FPCC 4

0 100 200 300 m



Scale : 1:12000@A3
 Date : 18 August 2020
 Revision : A
 Created by : JS
 Coordinate System : Map of Grid
 Australia 94

