



Kully Bay Overland Flow Study

Volume 2 - Maps



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G101

Study Area Location

 Catchment Area



Scale : 1:60000@A3
Date : 16 August 2019
Revision : B
Created by : LRE
Coordinate System : MGA 56

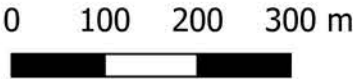




G201

Catchment Area
Features

 Catchment Area




Scale : 1:5000@A3
Date : 16 August 2019
Revision : B
Created by : LRE
Coordinate System : MGA 56






G301

Additional Survey

 2d_code_KullyBay_001_R

 Outlet / Structure

 Pit

 Council Survey

Scale : 1:4000@A3
Date : 16 August 2019
Revision : B
Created by : LRE
Coordinate System : MGA 56



Map G302

Historic Flood Marks

Legend

Historic Flood Marks

- March 1975
- February 1984
- 1% AEP Flood Extent

Scale : 1:3,500@A3
Date : 16 August 2019
Revision : B
Created by : LRE
Coordinate System : MGA 56



G303

Rainfall Gauges

- Catchment Area
- BoM Rain Gauges
- MHL Rain Gauges
- SWC Rain Gauges



Scale : 1:60000@A3
Date : 16 August 2019
Revision : B
Created by : LRE
Coordinate System : MGA 56

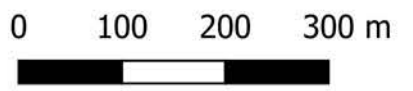




G501

Tuflow Model

- Model Area
- Downstream Boundary
- Outlets
- Pits
- Pipes
- Culverts
- Buildings
- 2d_code_KullyBay_001_R



Scale : 1:4500@A3
Date :16 August 2019
Revision : B
Created by : LRE
Coordinate System : MGA 56



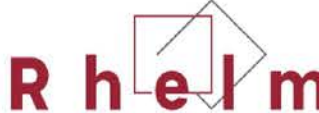


G502

Roughness

- Development
- Carparks
- Open Space
- Road
- Vegetation
- Water

Scale : 1:4500@A3
Date : 16 August 2019
Revision : B
Created by : LRE
Coordinate System : MGA 56





Map G601

**Historical Flood
Data Points**

Legend

Historical Flood Marks

- February 1984
- March 1975
- 50% AEP Extent
- 20% AEP Extent
- 5% AEP Extent
- 1% AEP Extent
- Cadastre

Scale : 1:6,000@A3
Date : 24 September 2018
Revision : A
Created by : LRE
Coordinate System : MGA 56





Map G602

SOBEK Model Comparison

Legend

Building Polygons

Cadastre

Depth Difference (m)

≤ -0.5

$-0.5 - -0.3$

$-0.3 - -0.2$

$-0.2 - -0.1$

$-0.1 - 0.1$

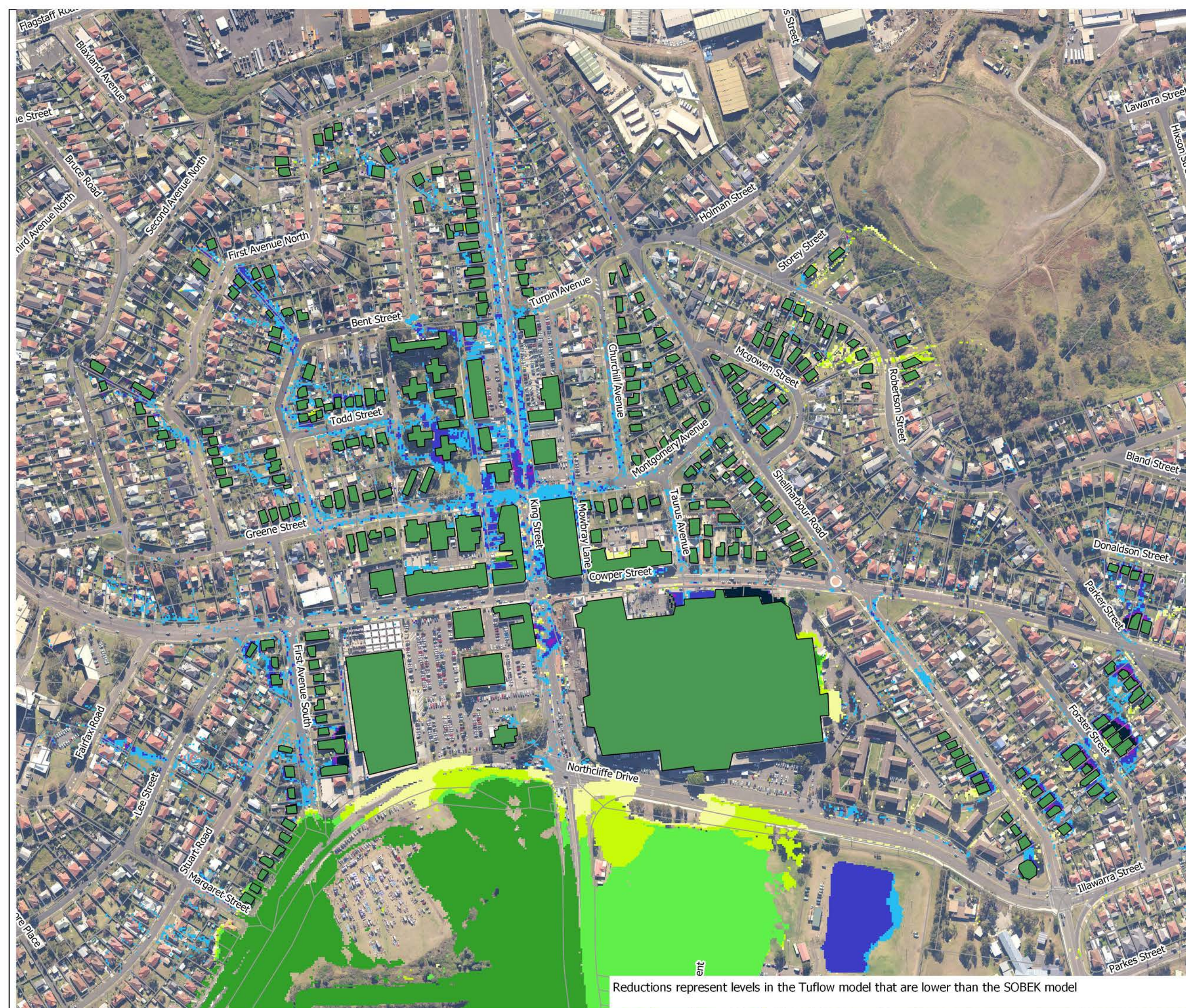
$0.1 - 0.2$

$0.2 - 0.3$

$0.3 - 0.5$

> 0.5

Scale : 1:6,000@A3
Date : 24 September 2018
Revision : A
Created by : LRE
Coordinate System : MGA 56



Map G602

SOBEK Model Comparison

Legend

- Building Polygons
- Cadastre
- Depth Difference (m)
 - ≤ -0.3
 - $-0.3 - -0.2$
 - $-0.2 - -0.1$
 - $-0.1 - -0.05$
 - $-0.05 - 0.05$
 - $0.05 - 0.1$
 - $0.1 - 0.2$
 - $0.2 - 0.3$
 - > 0.3

Scale : 1:4,000@A4
Date : 19 December 2018
Revision : B
Created by : LRE
Coordinate System : MGA 56



G701-1

**Peak Depth & Water
Level
PMF**

- Cadastre
- ▭ Model Extent
- Buildings
- Depth (m)
 - 0 - 0.15
 - 0.15 - 0.3
 - 0.3 - 0.5
 - 0.5 - 1
 - 1 - 2
 - 2 - 3
 - 3 - 4
 - >4

Scale : 1:5000@A3
Date : 14 August 2019
Revision : C
Created by : LRE
Coordinate System : MGA 56





G701-2

**Peak Depth & Water
Level
1% AEP**

- Cadastre
- ▭ Model Extent
- Buildings

- Depth (m)
- 0 - 0.15
 - 0.15 - 0.3
 - 0.3 - 0.5
 - 0.5 - 1
 - 1 - 2
 - 2 - 3
 - 3 - 4
 - >4

Scale : 1:5000@A3
Date : 14 August 2019
Revision : C
Created by : LRE
Coordinate System : MGA 56





G701-3

**Peak Depth & Water Level
2% AEP**

- Cadastre
- Model Extent
- Buildings

- Depth (m)
- 0 - 0.15
 - 0.15 - 0.3
 - 0.3 - 0.5
 - 0.5 - 1
 - 1 - 2
 - 2 - 3
 - 3 - 4
 - >4

Scale : 1:5000@A3
Date : 14 August 2019
Revision : C
Created by : LRE
Coordinate System : MGA 56





G701-4

**Peak Depth & Water
Level
5% AEP**

- Cadastre
- ▭ Model Extent
- Buildings

- Depth (m)
- 0 - 0.15
 - 0.15 - 0.3
 - 0.3 - 0.5
 - 0.5 - 1
 - 1 - 2
 - 2 - 3
 - 3 - 4
 - >4

Scale : 1:5000@A3
Date : 14 August 2019
Revision : C
Created by : LRE
Coordinate System : MGA 56





G701-5

**Peak Depth & Water
Level
10% AEP**

- Cadastre
- Model Extent
- Buildings

- Depth (m)
- 0 - 0.15
 - 0.15 - 0.3
 - 0.3 - 0.5
 - 0.5 - 1
 - 1 - 2
 - 2 - 3
 - 3 - 4
 - >4

Scale : 1:5000@A3
Date : 14 August 2019
Revision : C
Created by : LRE
Coordinate System : MGA 56





G701-6

**Peak Depth & Water
Level
20% AEP**

- Cadastre
- Model Extent
- Buildings

- Depth (m)
- 0 - 0.15
 - 0.15 - 0.3
 - 0.3 - 0.5
 - 0.5 - 1
 - 1 - 2
 - 2 - 3
 - 3 - 4
 - >4

Scale : 1:5000@A3
Date : 14 August 2019
Revision : C
Created by : LRE
Coordinate System : MGA 56





G702-1

**Peak Velocity
PMF**

- Cadastre
- ▭ Model Extent
- Buildings
- Velocity (m/s)
 - ≤ 0.01
 - 0.01 - 0.5
 - 0.5 - 1
 - 1 - 2
 - 2 - 3
 - 3 - 4
 - > 4

Scale : 1:5000@A3
Date : 14 August 2019
Revision : C
Created by : LRE
Coordinate System : MGA 56





G702-2

**Peak Velocity
1% AEP**

— Cadastre

▭ Model Extent

■ Buildings

Velocity (m/s)

□ ≤0.01

□ 0.01 - 0.5

□ 0.5 - 1

□ 1 - 2

□ 2 - 3

□ 3 - 4

□ > 4

Scale : 1:5000@A3

Date : 14 August 2019

Revision : C

Created by : LRE

Coordinate System : MGA 56

R h e l m



G702-3

**Peak Velocity
2% AEP**

- Cadastre
▭ Model Extent
■ Buildings
- Velocity (m/s)
- ≤ 0.01
 - 0.01 - 0.5
 - 0.5 - 1
 - 1 - 2
 - 2 - 3
 - 3 - 4
 - > 4

Scale : 1:5000@A3
Date : 14 August 2019
Revision : C
Created by : LRE
Coordinate System : MGA 56



G702-4

**Peak Velocity
5% AEP**

— Cadastre

▭ Model Extent

■ Buildings

Velocity (m/s)

□ ≤0.01

□ 0.01 - 0.5

□ 0.5 - 1

□ 1 - 2

□ 2 - 3

□ 3 - 4

□ > 4

Scale : 1:5000@A3

Date : 14 August 2019

Revision : C

Created by : LRE

Coordinate System : MGA 56





G702-5

**Peak Velocity
10% AEP**

- Cadastre
- Model Extent
- Buildings
- Velocity (m/s)
 - ≤ 0.01
 - 0.01 - 0.5
 - 0.5 - 1
 - 1 - 2
 - 2 - 3
 - 3 - 4
 - > 4

Scale : 1:5000@A3
Date : 14 August 2019
Revision : C
Created by : LRE
Coordinate System : MGA 56





G702-6

**Peak Velocity
20% AEP**

— Cadastre

▭ Model Extent

■ Buildings

Velocity (m/s)

□ ≤ 0.01

□ 0.01 - 0.5

□ 0.5 - 1

□ 1 - 2

□ 2 - 3

□ 3 - 4

□ > 4

Scale : 1:5000@A3

Date : 14 August 2019

Revision : C

Created by : LRE

Coordinate System : MGA 56



G703-1

**Peak Hazard
PMF**

- Cadastre
Model Extent
Buildings
- 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 : 1:5000@A3
Date : 14 August 2019
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G703-2

**Peak Hazard
1% AEP**

- Cadastre
Model Extent
Buildings
- 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 : 1:5000@A3
Date : 14 August 2019
Revision : C
Created by : LRE
Coordinate System : MGA 56

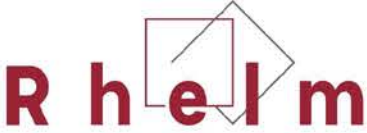


G801

Extent Comparison

- Cadastre
- Model Extent
- Buildings
- PMF Extent
- 1% AEP Extent
- 5% AEP Extent
- 20% AEP Extent

Scale : 1:5000@A3
Date : 14 August 2019
Revision : C
Created by : LRE
Coordinate System : MGA 56





G802

**Flood Planning Area
(Based on 1% AEP
+0.5m)**

- Cadastre
- Building Polygons
- Model Area
- Flood Planning Area

Scale : 1:5000@A3
Date : 15 April 2019
Revision : A
Created by : LRE
Coordinate System : MGA 56





G901-1

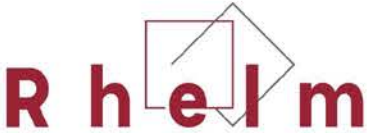
**Roughness Sensitivity
20% Increase
1% AEP**

- Cadastre
- Building Polygons
- Model Area

Difference (m)

- ≤ -0.2
- $-0.2 - -0.1$
- $-0.1 - -0.05$
- $-0.05 - -0.01$
- $-0.01 - 0.01$
- $0.01 - 0.05$
- $0.05 - 0.1$
- $0.1 - 0.2$
- > 0.2

Scale : 1:5000@A3
Date : 15 April 2019
Revision : A
Created by : LRE
Coordinate System : MGA 56





G901-2

Roughness Sensitivity
20% Decrease
1% AEP

- Cadastre
 - Building Polygons
 - Model Area
- Difference (m)
- ≤ -0.2
 - $-0.2 - -0.1$
 - $-0.1 - -0.05$
 - $-0.05 - -0.01$
 - $-0.01 - 0.01$
 - $0.01 - 0.05$
 - $0.05 - 0.1$
 - $0.1 - 0.2$
 - > 0.2

Scale : 1:5000@A3
Date : 15 April 2019
Revision : A
Created by : LRE
Coordinate System : MGA 56





G902-1

**Rainfall Sensitivity
20% Increase
1% AEP**

- Cadastre
- Building Polygons
- Model Area

Difference (m)

- ≤ -0.2
- $-0.2 - -0.1$
- $-0.1 - -0.05$
- $-0.05 - -0.01$
- $-0.01 - 0.01$
- $0.01 - 0.05$
- $0.05 - 0.1$
- $0.1 - 0.2$
- > 0.2

Scale : 1:5000@A3
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G902-2

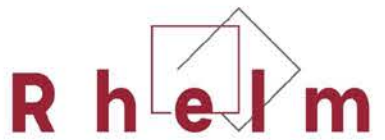
**Rainfall Sensitivity
20% Decrease
1% AEP**

- Cadastre
- Building Polygons
- Model Area

Difference (m)

- ≤ -0.2
- $-0.2 - -0.1$
- $-0.1 - -0.05$
- $-0.05 - -0.01$
- $-0.01 - 0.01$
- $0.01 - 0.05$
- $0.05 - 0.1$
- $0.1 - 0.2$
- > 0.2

Scale : 1:5000@A3
Date : 16 August 2019
Revision : A
Created by : LRE
Coordinate System : MGA 56





G903-1

Blockage Sensitivity
Blocked less Unblocked
1% AEP

- Cadastre
- Building Polygons
- Model Area

Difference (m)

- ≤ -0.2
- $-0.2 - -0.1$
- $-0.1 - -0.05$
- $-0.05 - -0.01$
- $-0.01 - 0.01$
- $0.01 - 0.05$
- $0.05 - 0.1$
- $0.1 - 0.2$
- > 0.2

Scale : 1:5000@A3
Date : 16 August 2019
Revision : B
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Coordinate System : MGA 56





G903-2

Blockage Sensitivity
Blocked less Unblocked
20% AEP

- Cadastre
- Building Polygons
- Model Area

Difference (m)

- ≤ -0.2
- $-0.2 - -0.1$
- $-0.1 - -0.05$
- $-0.05 - -0.01$
- $-0.01 - 0.01$
- $0.01 - 0.05$
- $0.05 - 0.1$
- $0.1 - 0.2$
- > 0.2

Scale : 1:5000@A3
Date : 16 August
Revision : B
Created by : LRE
Coordinate System : MGA 56





G904-1

**Climate Change 2050
PMF**

- Cadastre
- Building Polygons
- Model Area

Difference (m)

- ≤ -0.2
- $-0.2 - -0.1$
- $-0.1 - -0.05$
- $-0.05 - -0.01$
- $-0.01 - 0.01$
- $0.01 - 0.05$
- $0.05 - 0.1$
- $0.1 - 0.2$
- > 0.2

Scale : 1:5000@A3
Date : 16 August 2019
Revision : B
Created by : LRE
Coordinate System : MGA 56



G904-2

**Climate Change 2050
1% AEP**

- Cadastre
- Building Polygons
- Model Area

Difference (m)

- ≤ -0.2
- $-0.2 - -0.1$
- $-0.1 - -0.05$
- $-0.05 - -0.01$
- $-0.01 - 0.01$
- $0.01 - 0.05$
- $0.05 - 0.1$
- $0.1 - 0.2$
- > 0.2

Scale : 1:5000@A3
Date : 16 August 2019
Revision : B
Created by : LRE
Coordinate System : MGA 56



G904-3

**Climate Change 2100
PMF**

- Cadastre
- Building Polygons
- Model Area

Difference (m)

- ≤ -0.2
- $-0.2 - -0.1$
- $-0.1 - -0.05$
- $-0.05 - -0.01$
- $-0.01 - 0.01$
- $0.01 - 0.05$
- $0.05 - 0.1$
- $0.1 - 0.2$
- > 0.2

Scale : 1:5000@A3
Date : 16 August 2019
Revision : B
Created by : LRE
Coordinate System : MGA 56



G904-4

**Climate Change 2100
1% AEP**

- Cadastre
■ Building Polygons
□ Model Area
- Difference (m)
- ≤ -0.2
 - 0.2 - -0.1
 - 0.1 - -0.05
 - 0.05 - -0.01
 - 0.01 - 0.01
 - 0.01 - 0.05
 - 0.05 - 0.1
 - 0.1 - 0.2
 - > 0.2

Scale : 1:5000@A3
Date : 16 August 2019
Revision : B
Created by : LRE
Coordinate System : MGA 56

