



Appendix T

Memorandum



DATE: 9 April 2020
SUBJECT: North Byron FRMS – Topographical model updates
PROJECT NUMBER: 117098

1. INTRODUCTION

The Draft North Byron Floodplain Risk Management Study and Plan was released for community consultation in January 2020 with comments provided in February 2020. As part of this consultation phase, a number of additional recent developments were identified that occurred post the completion of the North Byron Shire Flood Study model. To ensure the model reflects current development as best as possible, Byron Shire Council commissioned WMA Water to update the model to include these developments.

This memorandum details the developments that have now been included, how the model has been changed to reflect these developments and discussed the impacts on design results. Section 4 provides recommendations for how these results should be incorporated further.

2. LIST OF MODEL CHANGES

Recent developments identified for inclusion in the model update are:

- 115 and 127 Station Street Mullumbimby (filling and box culverts, 2018/2019)
- Manns Road (opposite Smith Street) Mullumbimby (filling, 2014)
- Towers Drive (south side) Mullumbimby (filling, 2015)
- 56 – 80 Redgate Road, South Golden Beach (filling, 2016)
- 3A – 3C Byron Street, New Brighton (filling, 2014),
- Additional changes to Tallowood Subdivision, and
- Topographical changes to Orchid Place.

3. MODEL UPDATES

The model has been updated to incorporate the topographical changes from the above developments. Revised peak flood depths have been produced for the 1% AEP design event and the 1% AEP event including 2100 sea level rise and 20% rainfall increase (herein 2100 1% AEP event) and is shown in Figure T 1 and Figure T 2. Hydraulic hazard mapping has also been produced for both events, as shown in Figure T 3 and Figure T 4.

The updated the Flood Hazard Overlay, Flood Planning Levels and the Flood Planning Area are provided in Figure T 5 through to Figure T 9.

Figure T 10 and Figure T 11 show where the model has been changed and the impacts for the study area. The impact is relatively minor across the region with only localised impacts. The following section discusses how the model has been altered to incorporate each of the developments and discusses the resulting impact.

3.1. Orchid Place

As part of the initial model update (Section 4.2 of the FRMS), the Orchid Place subdivision topographical changes were not available and as such the Manning's 'n' values were altered from 0.04 to 0.1 to reflect this. Topographical changes have now been made available and the model has been updated to include this.

The previous ground level for Orchid Place ranged from 3.0 mAHD to 3.5 mAHD and provided plans show current fill levels range from 4.0 mAHD to 4.2 mAHD and 4.6 mAHD in a small area. Fill pads have been included in the model to increase the topography to this level.

3.1.1. Impact on Design Results

Figure T 12 and Figure T 13 provide the peak flood level difference mapping for the 1% AEP and 2100 1% AEP design events.

The current 1% AEP design flood level at this location is 4.23 mAHD so while Orchid Place is still flooded, it is now only flooded by approximately 0.1 m to 0.2 m. Orchid Place filling increases the peak flood levels at the site by approximately 0.01 m for the 1% AEP design event and 0.05 m for the 2100 1% AEP event.

3.2. Station Street

Two areas were included in the model, at 115 Station Street and 127 Station Street. For 115 Station Street, the original model ground level was 4.0 m AHD to 4.6 m AHD, which is similar to the ground level shown on the provided plan. The model was updated to match the provided plans however this did not have a substantial impact on the topography in this area.

For 127 Station Street, the model was updated to represent the changed material (e.g. from grass to concrete and buildings) through a reduction in Manning's 'n' values from 0.04 to 0.1. The new stormwater pipes from the development plans were not included in the model, as the model cell size is too large to accurately represent local drainage structures.

3.2.1. Impact on Design Results

Figure T 12 and Figure T 13 provide the peak flood level difference mapping for the 1% AEP and 2100 1% AEP events.

Orchid Place subdivision filling is located just upstream of Station Street and has a minor but widespread impact on peak flood levels. Thus most of the impact in Station Street and the surrounding area can be attributed to Orchid Place filling. The modelling doesn't show a significant impact caused by Station Street alterations.

3.3. Manns Road and Towers Drive

Recent development at Manns Road and Towers Drive were included in the model. While these are separate developments, they are in close proximity and therefore are being discussed together.

For the development at Manns Road, the topography has been updated from approximately 2.1 mAHD across the site to 3.6 mAHD where the buildings are and 3.1 mAHD to represent the roads and filled land. Manning's 'n' has been increased from 0.2 to 1.0 in Manns Road and from 0.04 to 1.0 in Towers Drive to reflect the roughness introduced from the building.

The original ground level on the Towers Drive site ranged from 2.2 mAHD to 2.5 mAHD across the site. This has been updated in the model to approximately 3.4 mAHD. Manning's 'n' has also been updated to reflect the roughness introduced from the building.

3.3.1. Impact on Design Results

Impacts on the design results can be seen in Figure T 14 to Figure T 15. For the 1% AEP design event, the development has increased flood levels upstream by approximately 0.02 m for up to 200m upstream, notably along Manns Road and Mullumbimby Road. For the 2100 1% AEP event, similar magnitude impacts extend for approximately 1km upstream.

3.4. Tallowood Subdivision Stage 4B

Tallowood Subdivision Stage 4A was included in the model updates outlined in Section 4.2 off the FRMS. This model update includes the topographical changes from Tallowood Subdivision Stage 4B work as executed (WAE) drawings. The original ground level in the model ranged from 6.5 mAHD to 7.5 mAHD across the site and the fill pads increased the ground level to 7.9 mAHD to 8.2 mAHD across the site. Manning's 'n' has been increased from 0.04 to 0.1 in the area to reflect the roughness introduced from the building.

3.4.1. Impact on Design Results

Impacts on the design results are shown in Figure T 16 through to Figure T 17. Impacts are primarily localised and have negligible impact on the original design results.

3.5. Redgate Road

The development at 56 – 80 Redgate Road, South Golden Beach, has been included in the model. The original ground level for this site was approximately 1.7 mAHD and has been retained at 1.7 mAHD to represent the roads and filled land, and increased to 3.8 mAHD for the building fill pad. Manning's 'n' has been increased from 0.08 to 0.3 to represent the increased roughness introduced by the building.

3.5.1. Impact on Design Results

Redgate Road is on the border of two model domains with different cell sizes of 5 m and 12.5 m. This model configuration creates some minor instabilities as seen in the impact mapping for this area. Impacts shown in Figure T 18 and Figure T 19 are likely only artefacts of the modelling and not representative of actual impacts from development.

3.6. Byron Street – New Brighton

The development at 3A – 3C Byron Street, New Brighton, has now been included in the model. A fill pad has been included in the model to represent an increase in ground level and the Manning's 'n' value has been increased from 0.1 to 0.3 to reflect the added building roughness.

The original ground level ranged from 1.4 mAHD to 2.0 mAHD and has been updated in the model topography to 2.3 mAHD where the buildings are and 1.8 mAHD to represent the roads and filled land.

3.6.1. Impact on Design Results

The inclusion of additional development at Byron Street in New Brighton has had negligible impact on design results for either the 1% AEP or 2100 1% AEP design events. Figure T 20 and Figure T 21 shows the peak flood level difference and illustrates where the model has been changed.

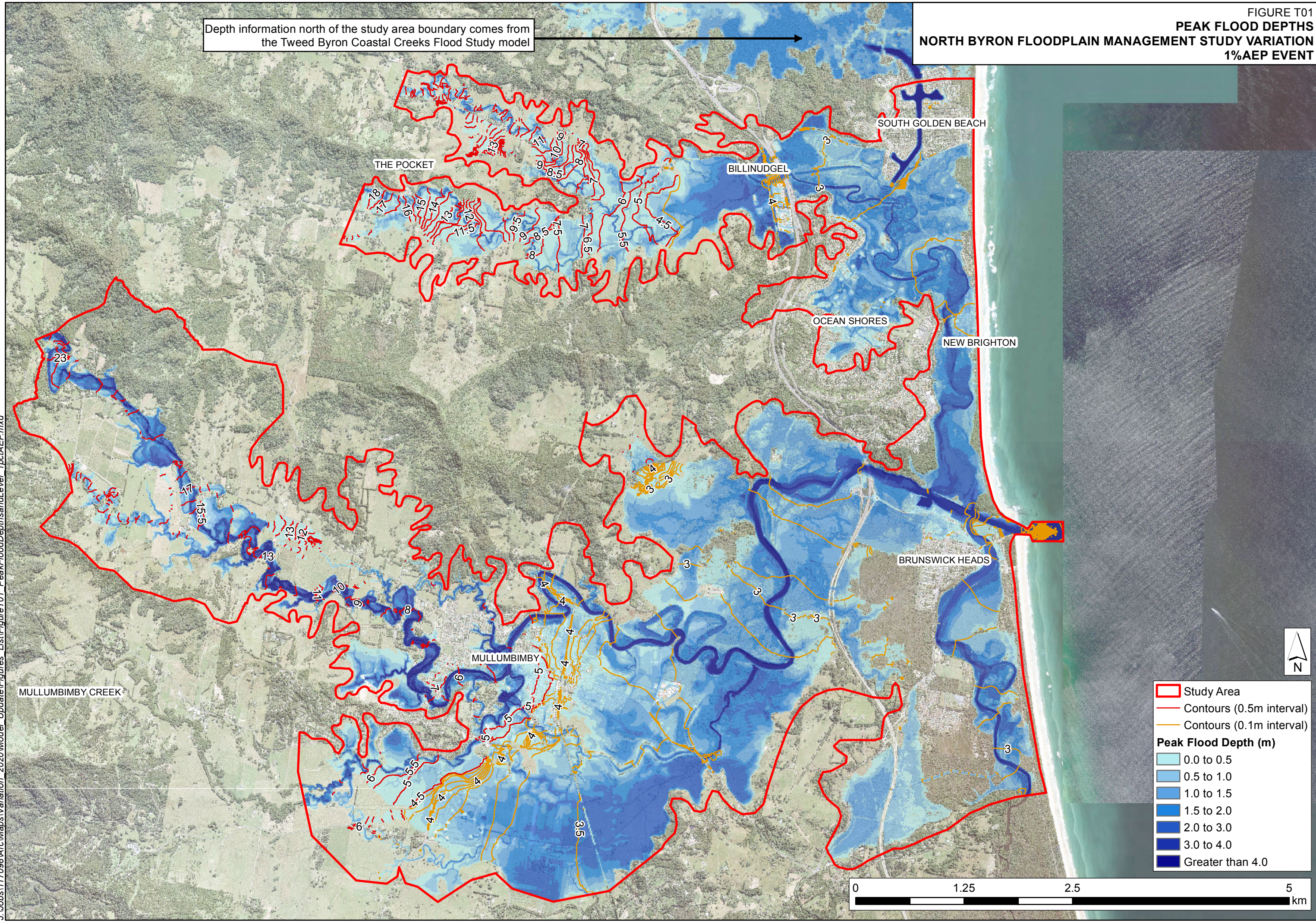
4. RECOMMENDATIONS

The model update described above has resulted in primarily localised impacts. These impacts are minor with most peak level differences being less than 0.02m. Subsequently, the modelling results in the FRMS still remain fit for the purpose of assessing current and future flood risk across the catchment and assessing mitigation options.

It is not expected that inclusion of these updates would have changed the options considered or recommended. However, the following recommendations are made:

- The updated model be used as the current model moving forward and that any further modelling be done using this version,
- FPLs and FPAs recommended in the FRMS use the results of this modelling, as the most current and representative of the catchment, and the
- Flood Hazard Overlay recommended in the FRMS use the results of this modelling.

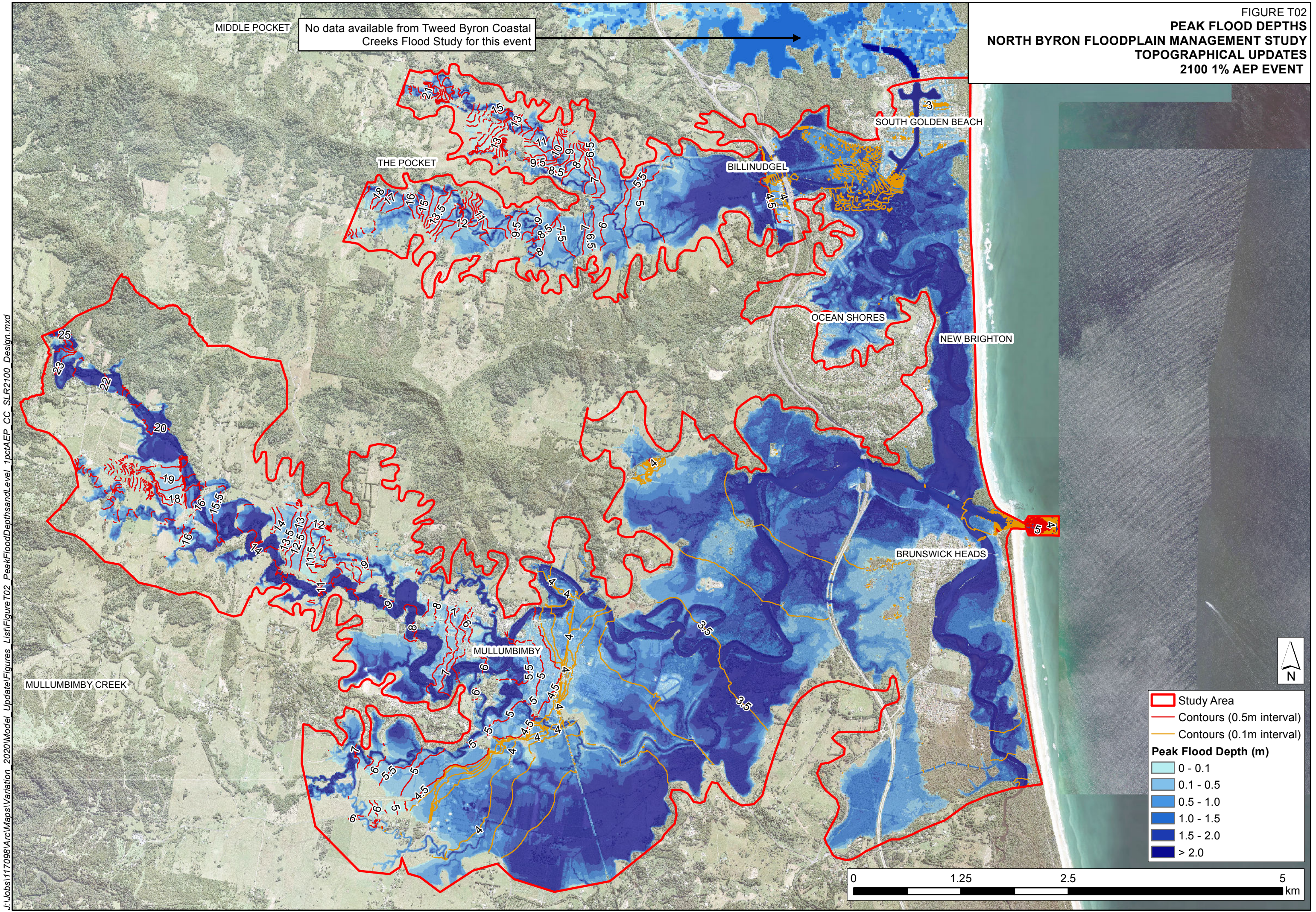
Depth information north of the study area boundary comes from the Tweed Byron Coastal Creeks Flood Study model



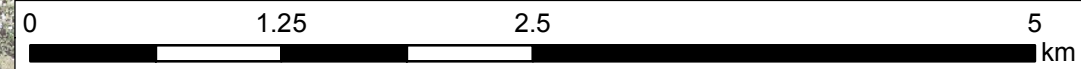
J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT01_PeakFloodDepthsandLevel_1pctAEP.mxd

**PEAK FLOOD DEPTHS
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES
2100 1% AEP EVENT**

MIDDLE POCKET
No data available from Tweed Byron Coastal
Creeks Flood Study for this event

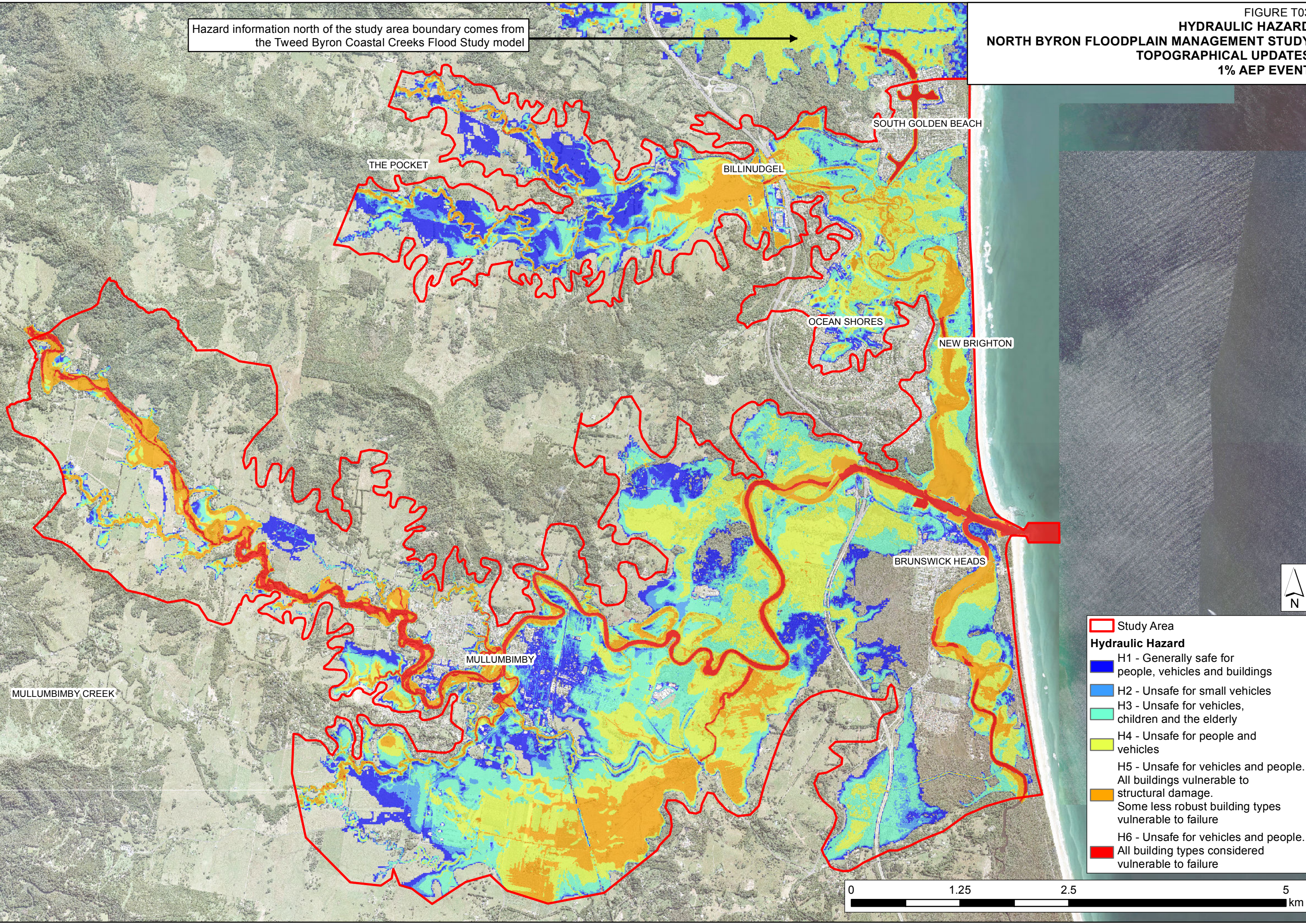


- Study Area
- Contours (0.5m interval)
- Contours (0.1m interval)
- Peak Flood Depth (m)**
- 0 - 0.1
- 0.1 - 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- > 2.0



**HYDRAULIC HAZARD
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES
1% AEP EVENT**

Hazard information north of the study area boundary comes from the Tweed Byron Coastal Creeks Flood Study model



Study Area

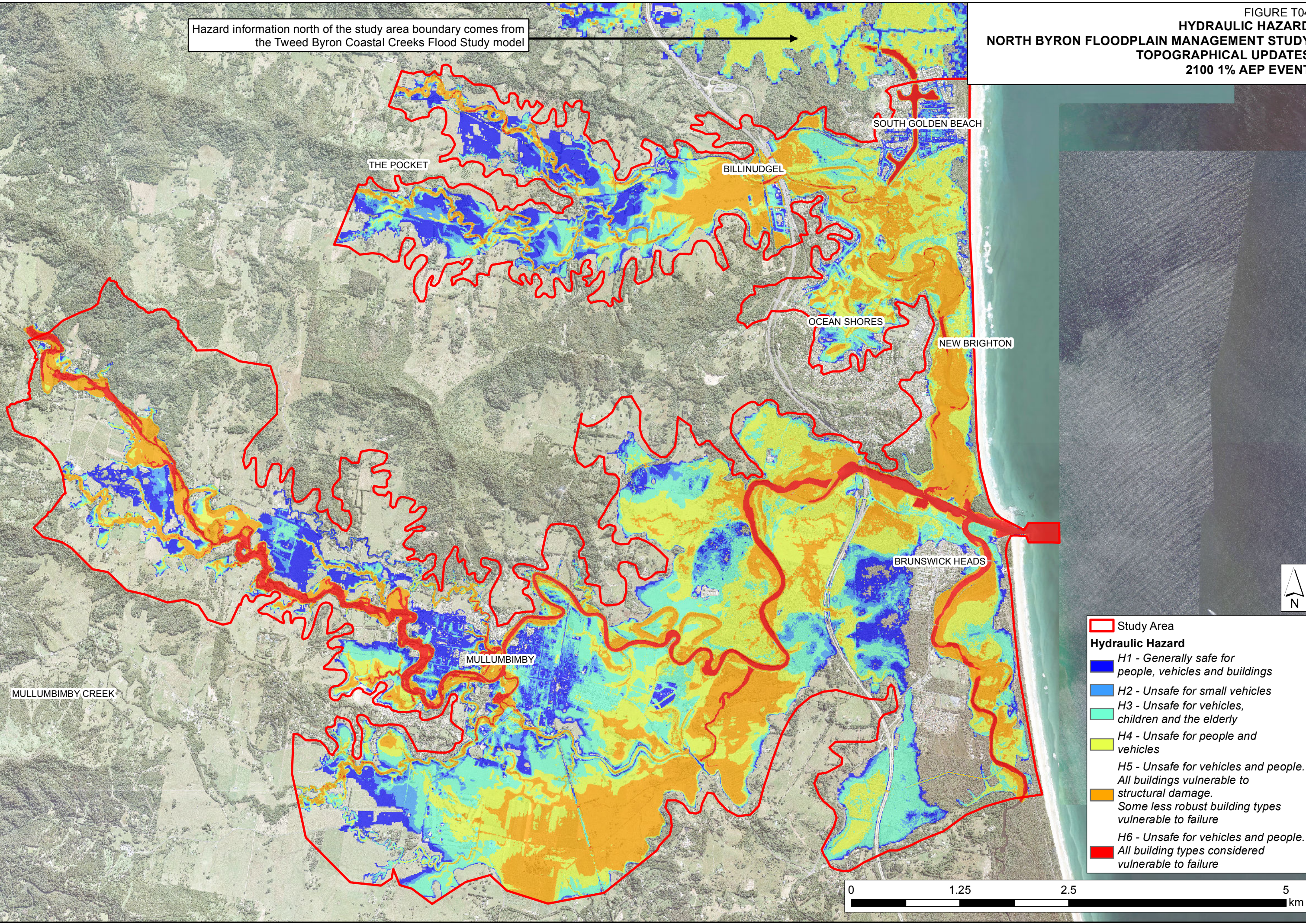
Hydraulic Hazard

- H1 - Generally safe for people, vehicles and buildings
- H2 - Unsafe for small vehicles
- H3 - Unsafe for vehicles, children and the elderly
- H4 - Unsafe for people and vehicles
- 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

J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT03_Hydraulic_Hazard_1pctAEP.mxd

**HYDRAULIC HAZARD
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES
2100 1% AEP EVENT**

Hazard information north of the study area boundary comes from the Tweed Byron Coastal Creeks Flood Study model

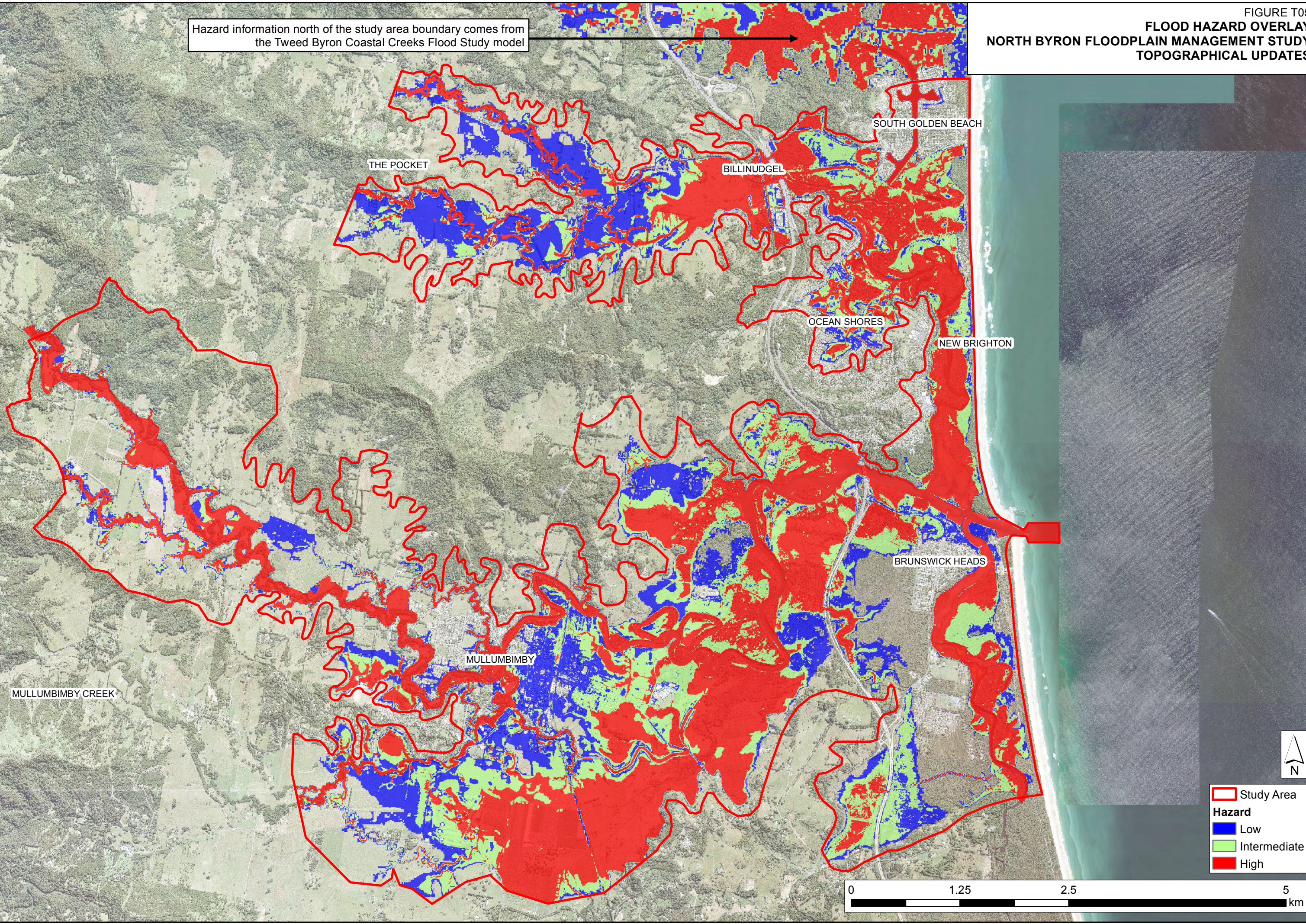


- Study Area
- Hydraulic Hazard**
- H1 - Generally safe for people, vehicles and buildings
- H2 - Unsafe for small vehicles
- H3 - Unsafe for vehicles, children and the elderly
- H4 - Unsafe for people and vehicles
- H5 - Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust building types vulnerable to failure
- H6 - Unsafe for vehicles and people. All building types considered vulnerable to failure

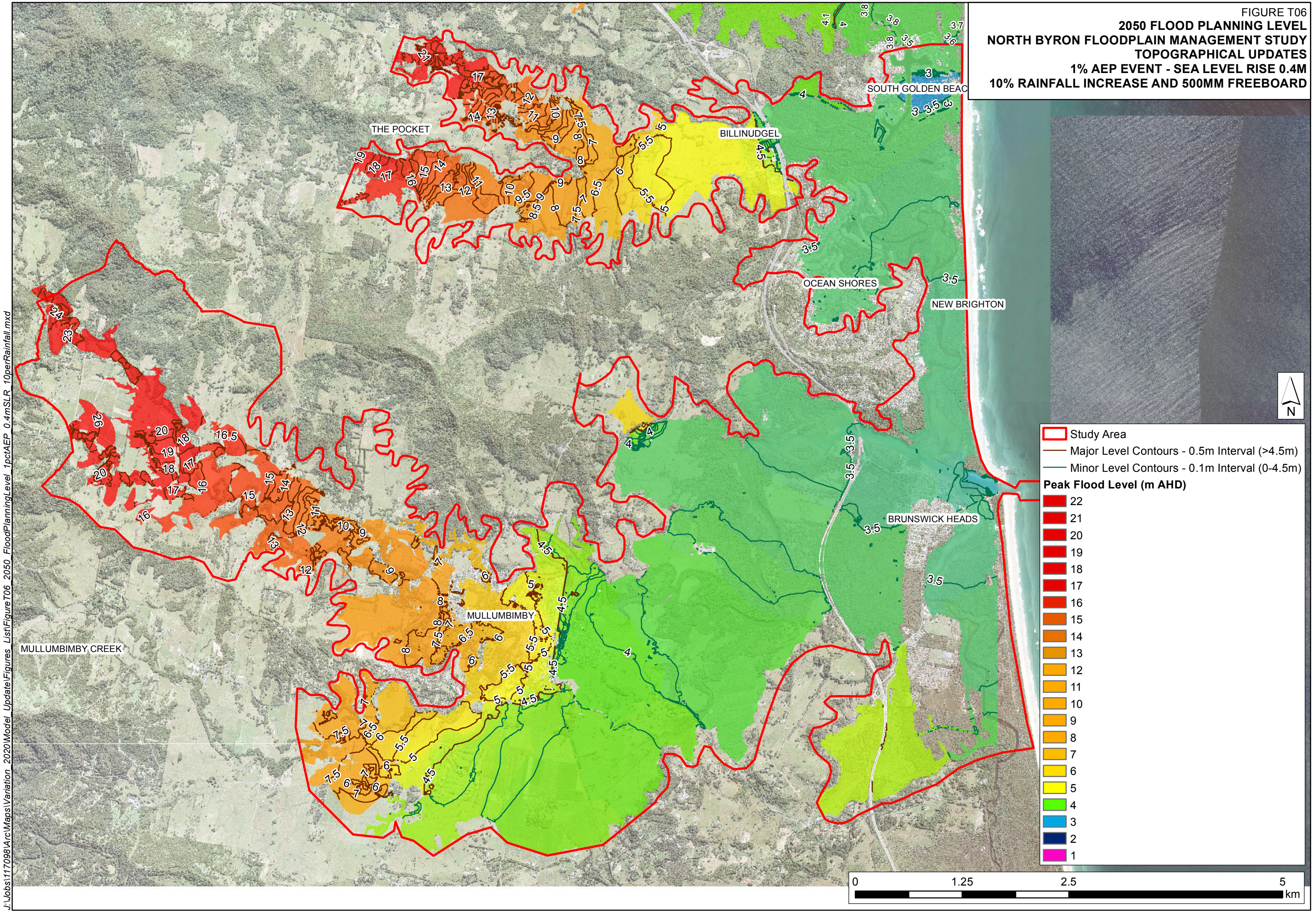
J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT04_Hydraulic_Hazard_1pctAEP_CC20_SLR2100.mxd

**FLOOD HAZARD OVERLAY
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES**

Hazard information north of the study area boundary comes from the Tweed Byron Coastal Creeks Flood Study model



2050 FLOOD PLANNING LEVEL
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES
1% AEP EVENT - SEA LEVEL RISE 0.4M
10% RAINFALL INCREASE AND 500MM FREEBOARD



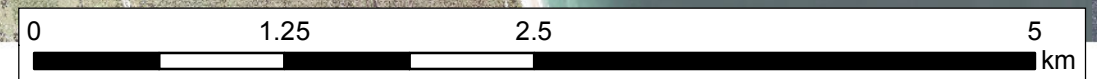
J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT06_2050_FloodPlanningLevel_1pctAEP_0.4mSLR_10perRainfall.mxd

Study Area

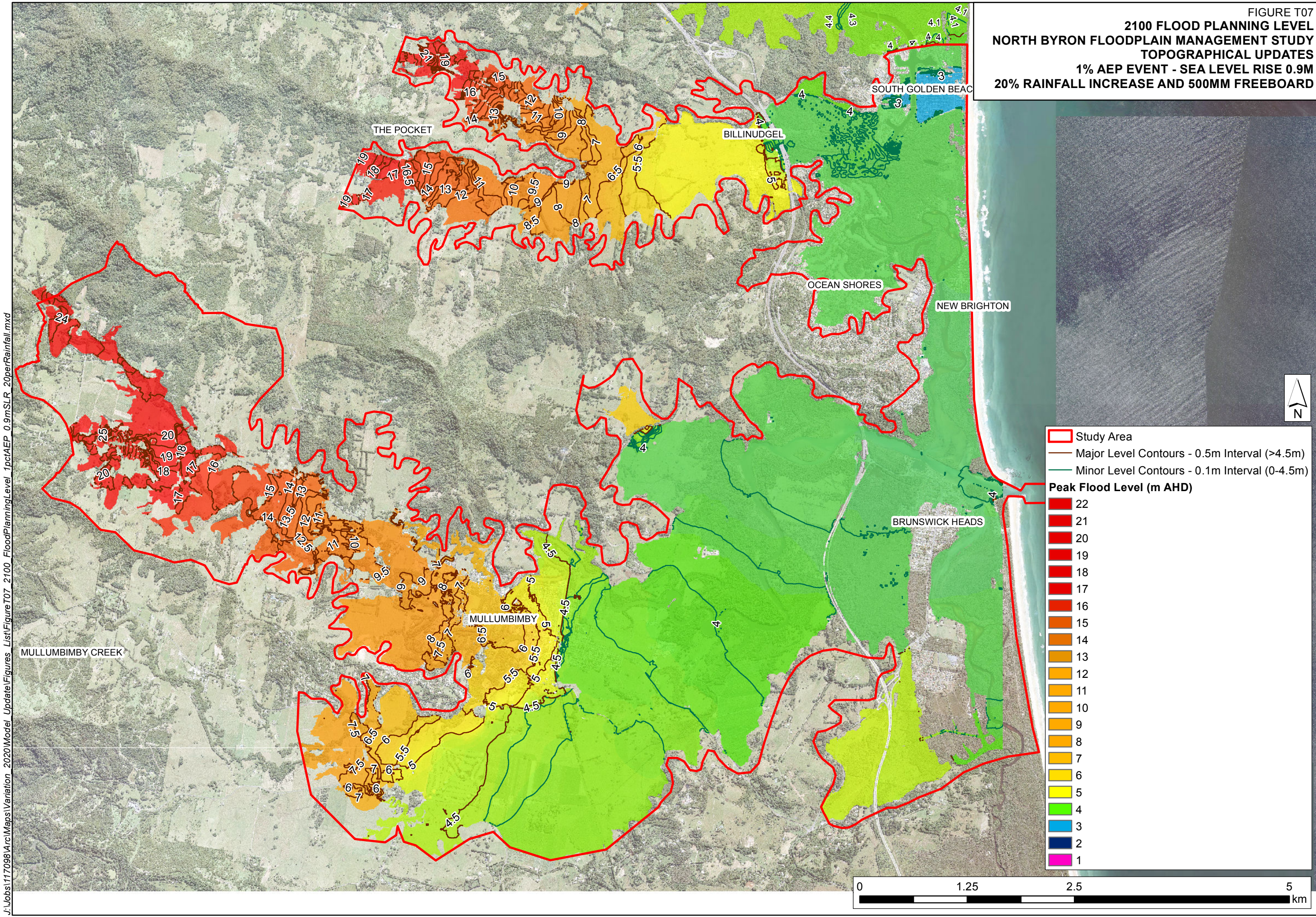
- Major Level Contours - 0.5m Interval (>4.5m)
- Minor Level Contours - 0.1m Interval (0-4.5m)

Peak Flood Level (m AHD)

22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1



**2100 FLOOD PLANNING LEVEL
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES
1% AEP EVENT - SEA LEVEL RISE 0.9M
20% RAINFALL INCREASE AND 500MM FREEBOARD**



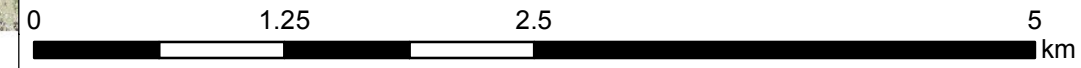
J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT07_2100_FloodPlanningLevel_1pctAEP_0.9mSLR_20perRainfall.mxd

Study Area

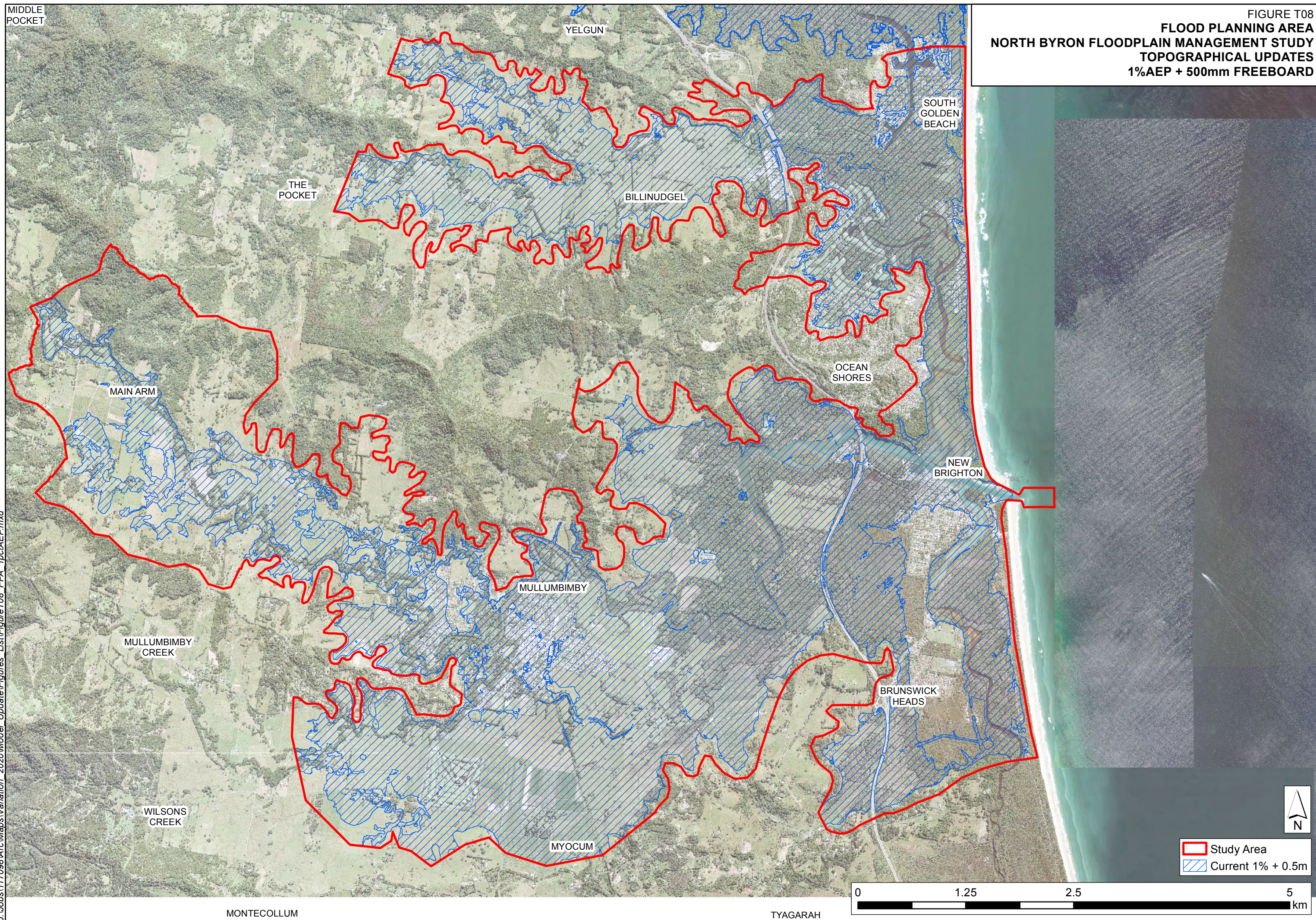
- Major Level Contours - 0.5m Interval (>4.5m)
- Minor Level Contours - 0.1m Interval (0-4.5m)

Peak Flood Level (m AHD)

22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1



**FLOOD PLANNING AREA
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES
1%AEP + 500mm FREEBOARD**



J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT08_FPA_1pctAEP.mxd

MONTECOLLUM

TYAGARAH

Study Area
Current 1% + 0.5m

0 1.25 2.5 5 km

MIDDLE
POCKET

YELGUN

FIGURE T09
2100 FLOOD PLANNING AREA
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES
1% AEP EVENT - SEA LEVEL RISE 0.9M
20% RAINFALL INCREASE AND 500MM FREEBOARD

SOUTH
GOLDEN
BEACH

THE
POCKET

BILLINUDGEL

OCEAN
SHORES

MAIN
ARM

NEW
BRIGHTON

MULLUMBIMBY

MULLUMBIMBY
CREEK

BRUNSWICK
HEADS

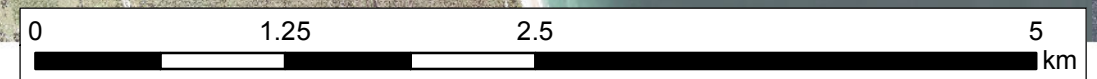
WILSONS
CREEK

MYOCUM

J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\ss2\FigureT09_2100_FPA_1pctAEP_0.9mSLR_20perRainfall.mxd

MONTECOLLUM

TYAGARAH



- Study Area
- Flood Planning Area

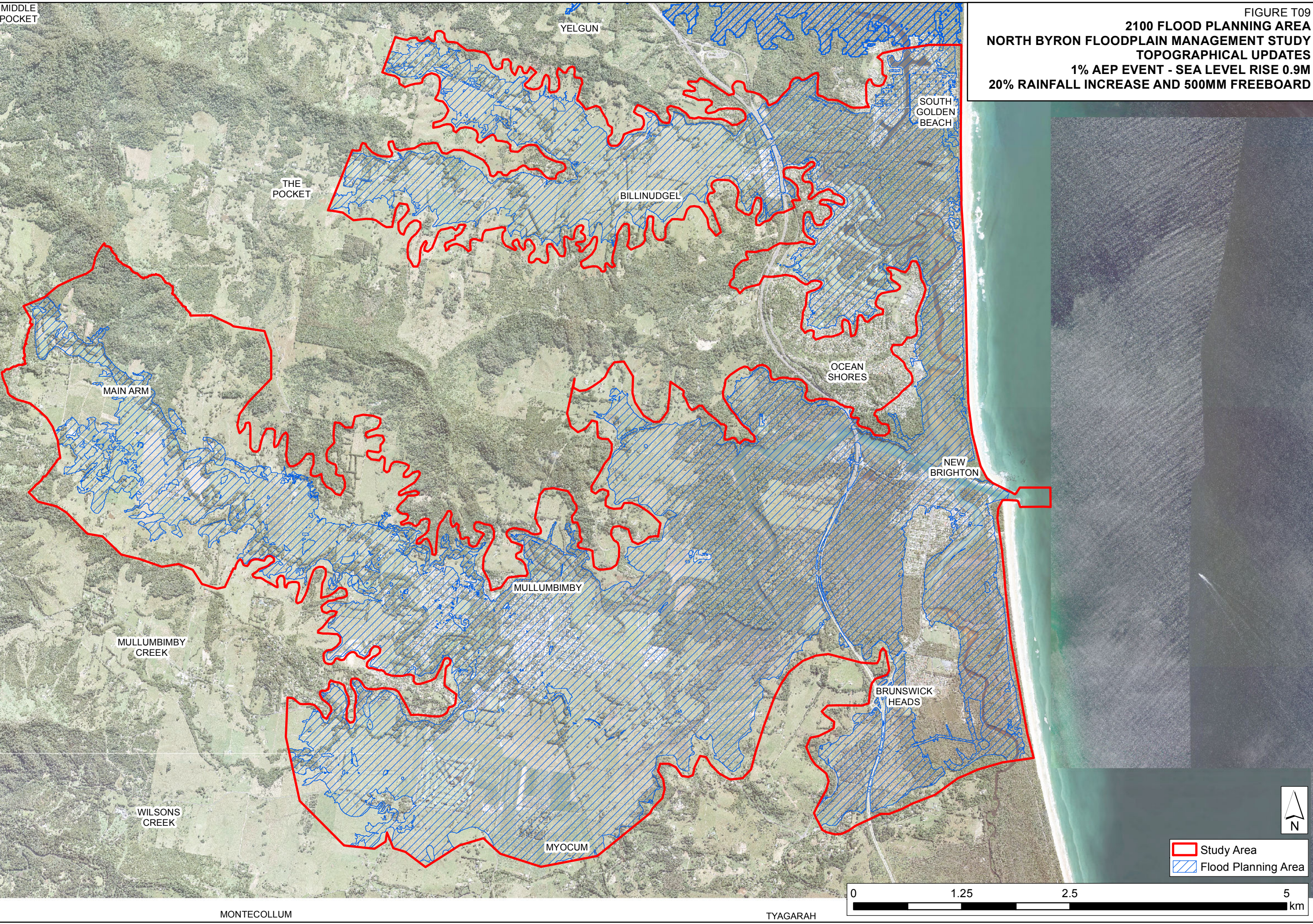
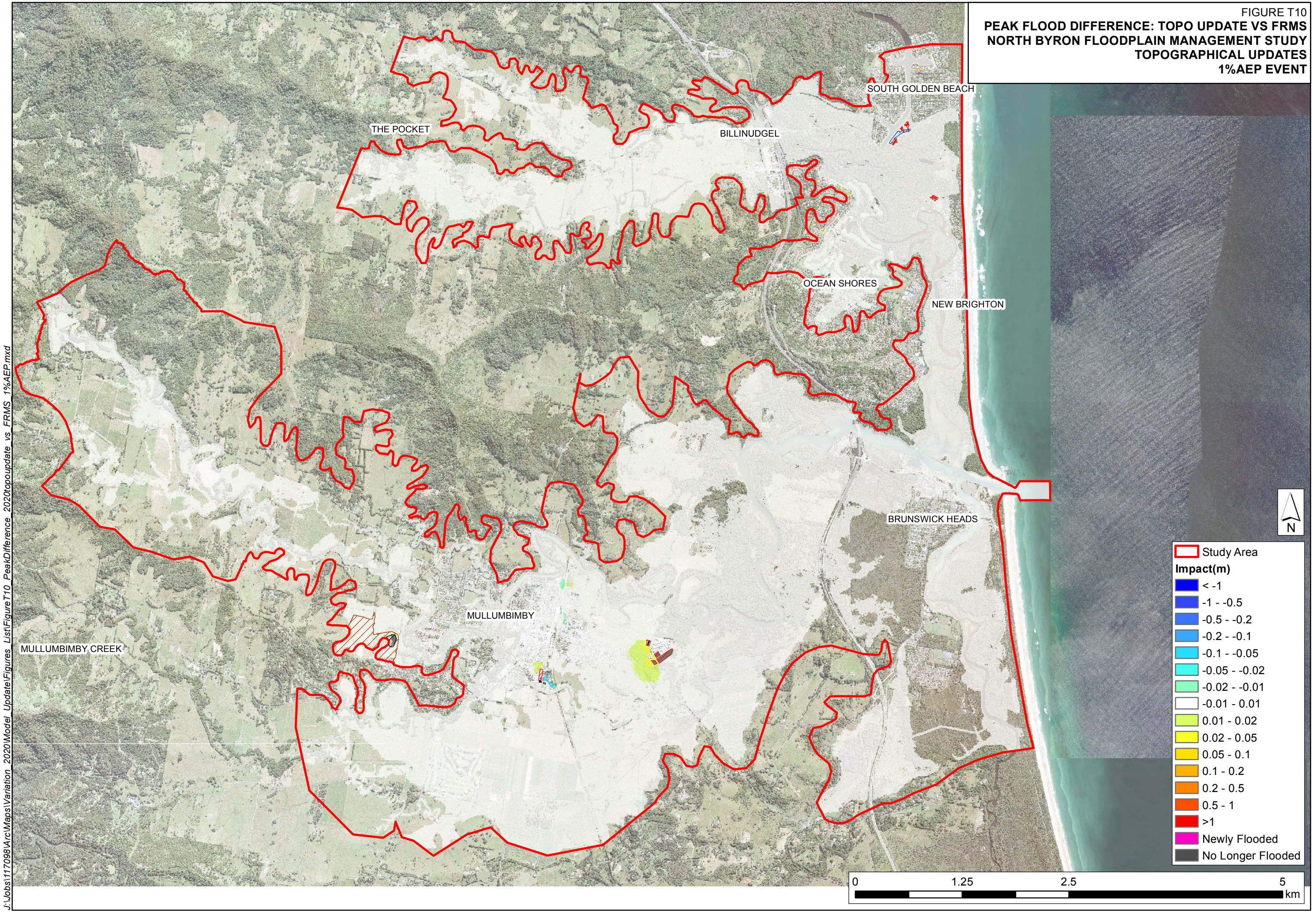


FIGURE T10
PEAK FLOOD DIFFERENCE: TOPO UPDATE VS FRMS
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES
1% AEP EVENT



J:\Jobs\117098\Arc\Maps\Variation_2020\Model_Update\Figures_List\FigureT10_PeakDifference_2020topupdate_vs_FRMS_1%AEPMxd

Impact(m)
< -1
-1 - -0.5
-0.5 - -0.2
-0.2 - -0.1
-0.1 - -0.05
-0.05 - -0.02
-0.02 - -0.01
-0.01 - 0.01
0.01 - 0.02
0.02 - 0.05
0.05 - 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1
>1
Newly Flooded
No Longer Flooded

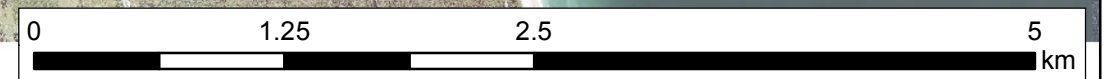
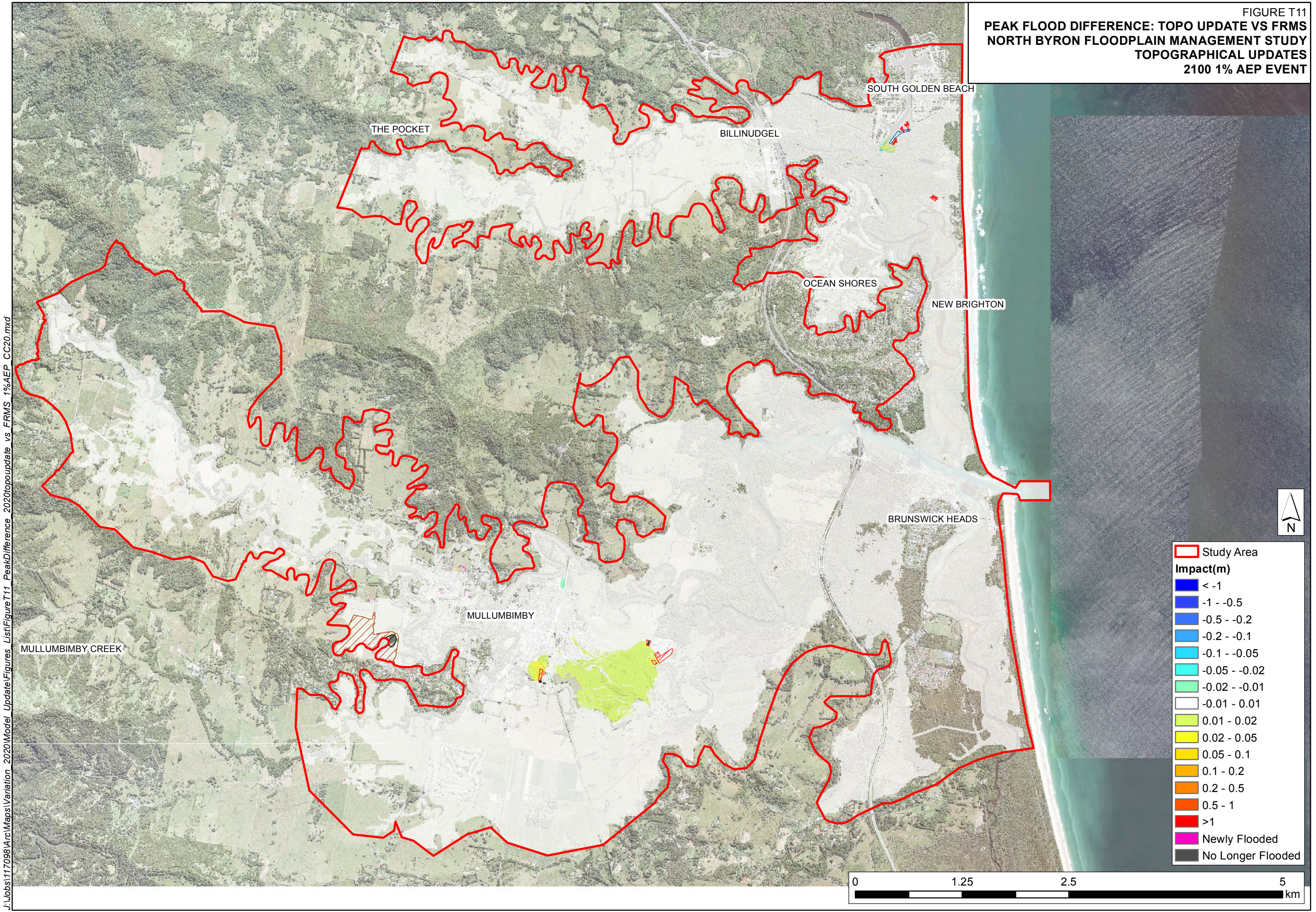


FIGURE T11
PEAK FLOOD DIFFERENCE: TOPO UPDATE VS FRMS
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES
2100 1% AEP EVENT



J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT11_PeakDifference_2020topupdate_vs_FRMS_1%AEP_CC20.mxd

	Study Area
Impact(m)	
	< -1
	-1 - -0.5
	-0.5 - -0.2
	-0.2 - -0.1
	-0.1 - -0.05
	-0.05 - -0.02
	-0.02 - -0.01
	0.01 - 0.02
	0.02 - 0.05
	0.05 - 0.1
	0.1 - 0.2
	0.2 - 0.5
	0.5 - 1
	>1
	Newly Flooded
	No Longer Flooded

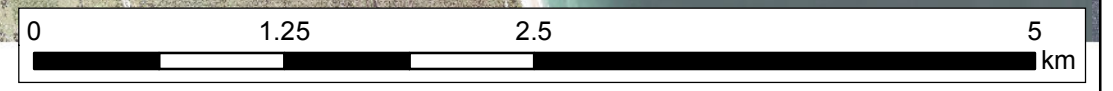


FIGURE T12
PEAK FLOOD DIFFERENCE: TOPO UPDATE VS FRMS
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES - ORCHID PLACE
1% AEP EVENT

J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT12_PeakDifference_2020topupdate_vs_FRMS_Orchid_Place_1%AEPMxd



Original Level (mAHD): 3.0 / 3.2
 Fill Level (mAHD): 4.2 to 4.6

- Orchid Place Filling
- Station Street Building
- Study Area
- Impact(m)**
- < -1
- 1 - -0.5
- 0.5 - -0.2
- 0.2 - -0.1
- 0.1 - -0.05
- 0.05 - -0.02
- 0.02 - -0.01
- 0.01 - 0.01
- 0.01 - 0.02
- 0.02 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.5
- 0.5 - 1
- >1
- Newly Flooded
- No Longer Flooded

0 0.05 0.1 0.2 km



**PEAK FLOOD DIFFERENCE: TOPO UPDATE VS FRMS
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES - ORCHID PLACE
2100 1% AEP EVENT**

J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT13_PeakDifference_2020topupdate_vs_FRMS_Orchid_Place_1%AEP_CC20.mxd



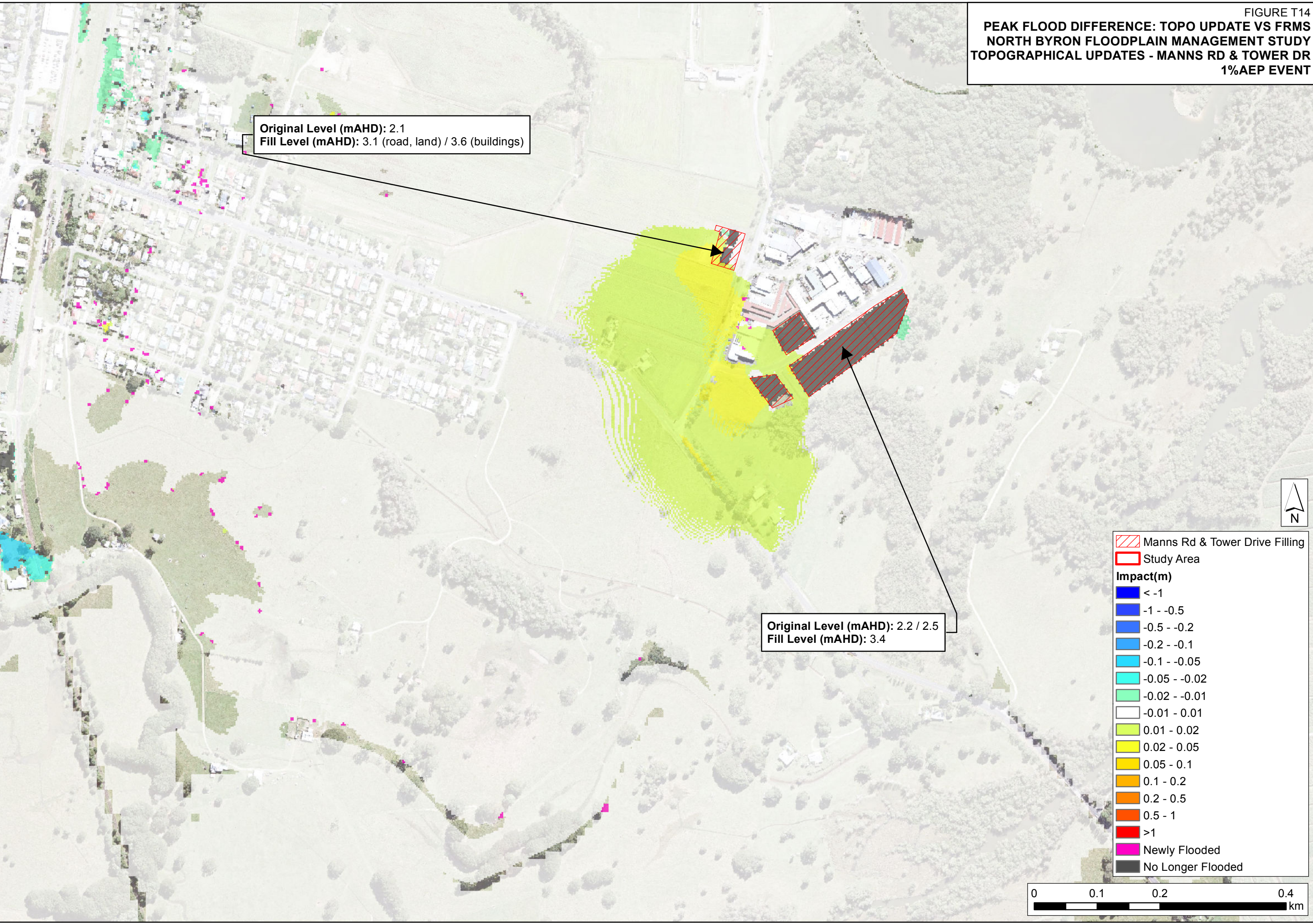
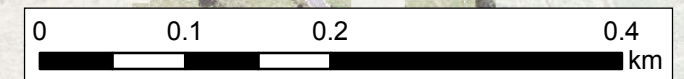
FIGURE T14
PEAK FLOOD DIFFERENCE: TOPO UPDATE VS FRMS
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES - MANN'S RD & TOWER DR
1% AEP EVENT

J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT14_PeakDifference_2020\topupdate vs FRMS Manns Rd Towers Dr_1% AEP.mxd

Original Level (mAHD): 2.1
 Fill Level (mAHD): 3.1 (road, land) / 3.6 (buildings)

Original Level (mAHD): 2.2 / 2.5
 Fill Level (mAHD): 3.4

 Manns Rd & Tower Drive Filling
 Study Area
Impact(m)
 < -1
 -1 - -0.5
 -0.5 - -0.2
 -0.2 - -0.1
 -0.1 - -0.05
 -0.05 - -0.02
 -0.02 - -0.01
 -0.01 - 0.01
 0.01 - 0.02
 0.02 - 0.05
 0.05 - 0.1
 0.1 - 0.2
 0.2 - 0.5
 0.5 - 1
 >1
 Newly Flooded
 No Longer Flooded





**PEAK FLOOD DIFFERENCE: TOPO UPDATE VS FRMS
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES - MANN'S RD & TOWER DR
2100 1% AEP EVENT**

J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT15_PeakDifference_2020topupdate vs FRMS_Manns Rd_Towers Dr_1%AEP_CC20.mxd


















**Original Level (mAHD): 2.1
Fill Level (mAHD): 3.1 (road, land) / 3.6 (buildings)**

**Original Level (mAHD): 2.2 / 2.5
Fill Level (mAHD): 3.4**

 Manns Rd & Tower Drive Filling

 Study Area

Impact(m)

-  < -1
-  -1 - -0.5
-  -0.5 - -0.2
-  -0.2 - -0.1
-  -0.1 - -0.05
-  -0.05 - -0.02
-  -0.02 - -0.01
-  -0.01 - 0.01
-  0.01 - 0.02
-  0.02 - 0.05
-  0.05 - 0.1
-  0.1 - 0.2
-  0.2 - 0.5
-  0.5 - 1
-  >1
-  Newly Flooded
-  No Longer Flooded

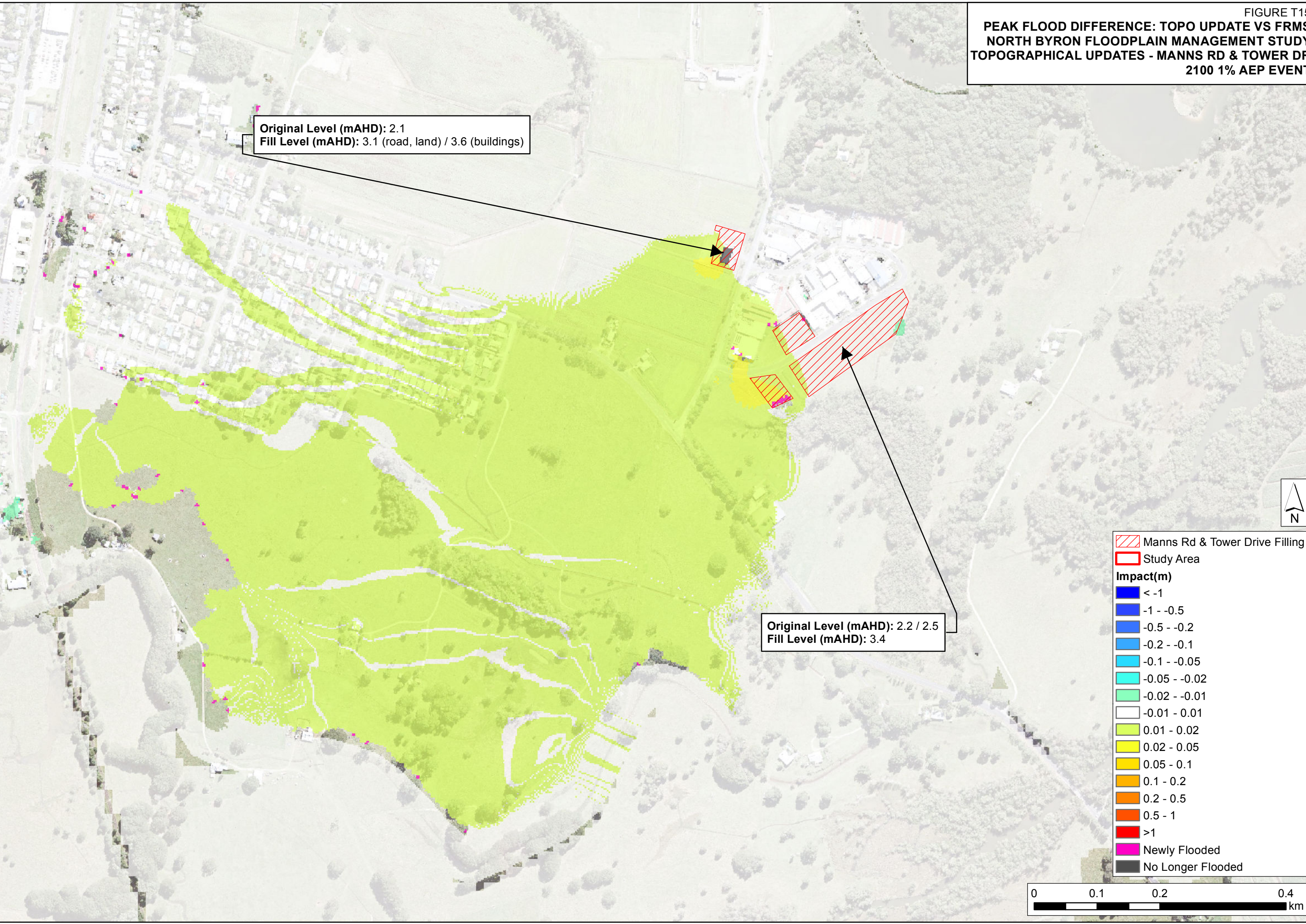
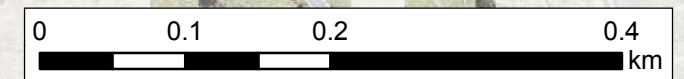
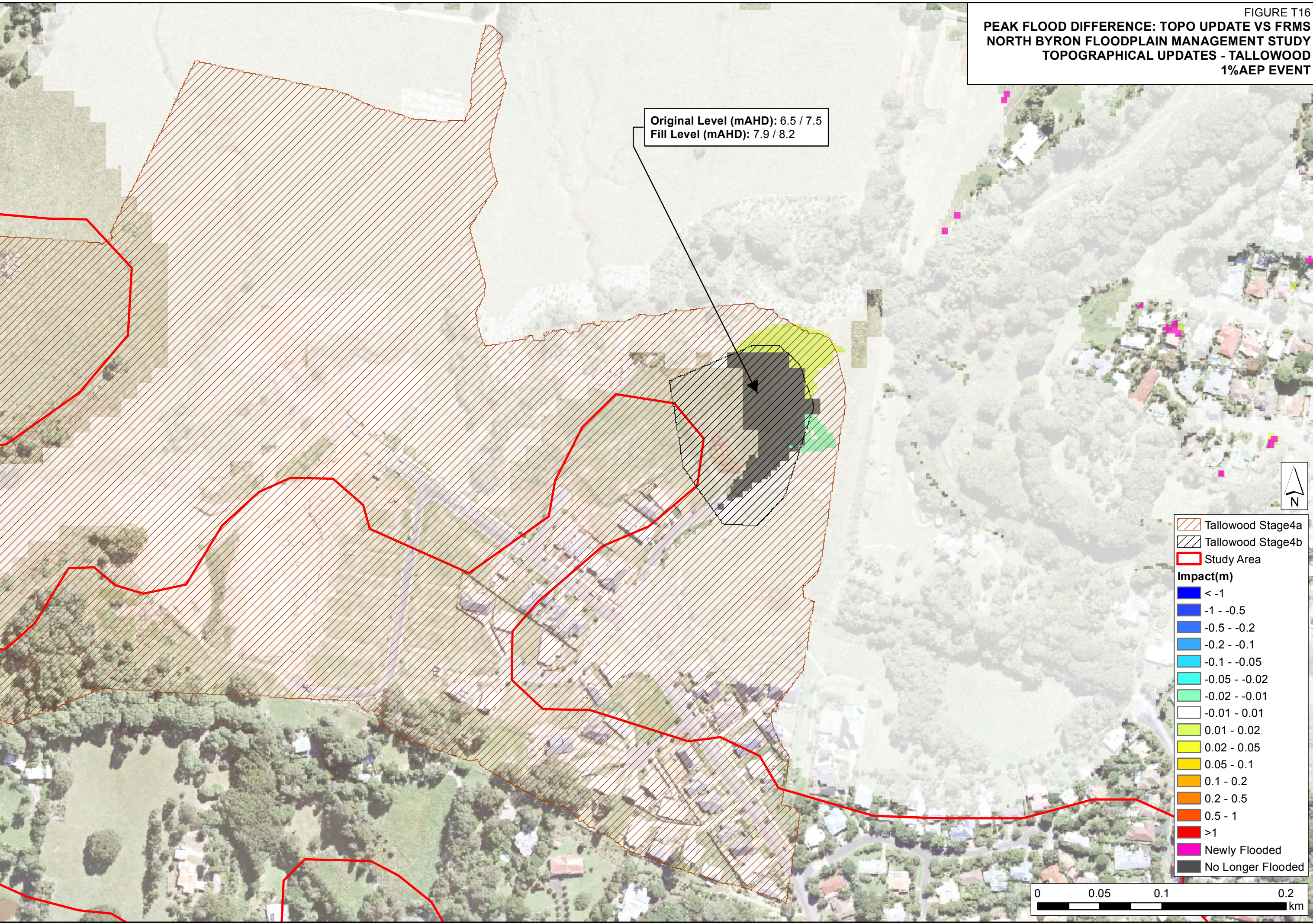


FIGURE T16
PEAK FLOOD DIFFERENCE: TOPO UPDATE VS FRMS
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES - TALLOWOOD
1% AEP EVENT

Original Level (mAHD): 6.5 / 7.5
 Fill Level (mAHD): 7.9 / 8.2

J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT16_PeakDifference_2020\topupdate vs FRMS_Tallowood_1%AEP.mxd



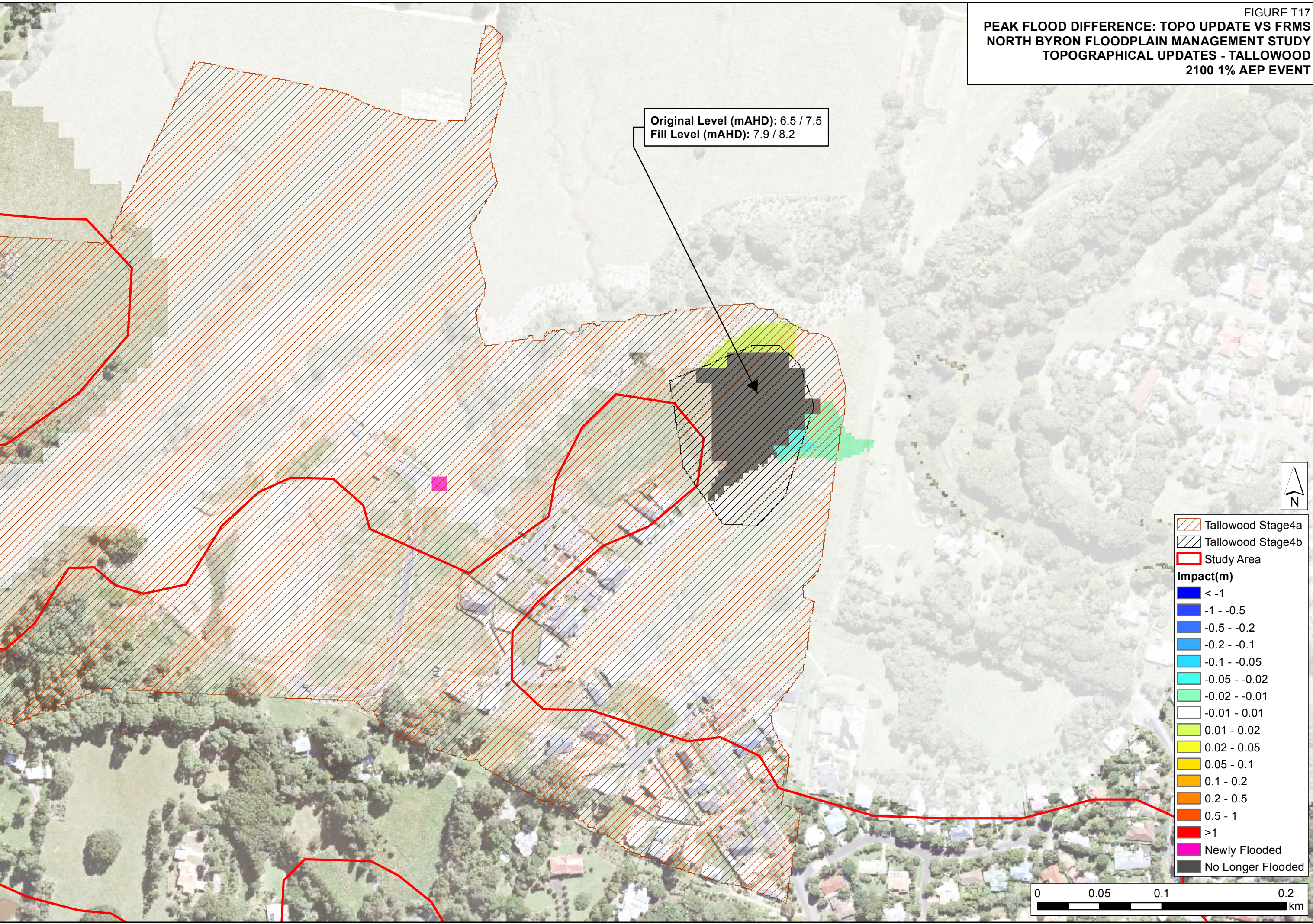
- Tallowood Stage4a
- Tallowood Stage4b
- Study Area
- Impact(m)**
- < -1
- 1 - -0.5
- 0.5 - -0.2
- 0.2 - -0.1
- 0.1 - -0.05
- 0.05 - -0.02
- 0.02 - -0.01
- 0.01 - 0.01
- 0.01 - 0.02
- 0.02 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.5
- 0.5 - 1
- >1
- Newly Flooded
- No Longer Flooded

0 0.05 0.1 0.2 km

FIGURE T17
PEAK FLOOD DIFFERENCE: TOPO UPDATE VS FRMS
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES - TALLOWOOD
2100 1% AEP EVENT

Original Level (mAHD): 6.5 / 7.5
 Fill Level (mAHD): 7.9 / 8.2

J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT17_PeakDifference_2020topupdate_vs_FRMS_Tallowood_1%AEP_CC20.mxd



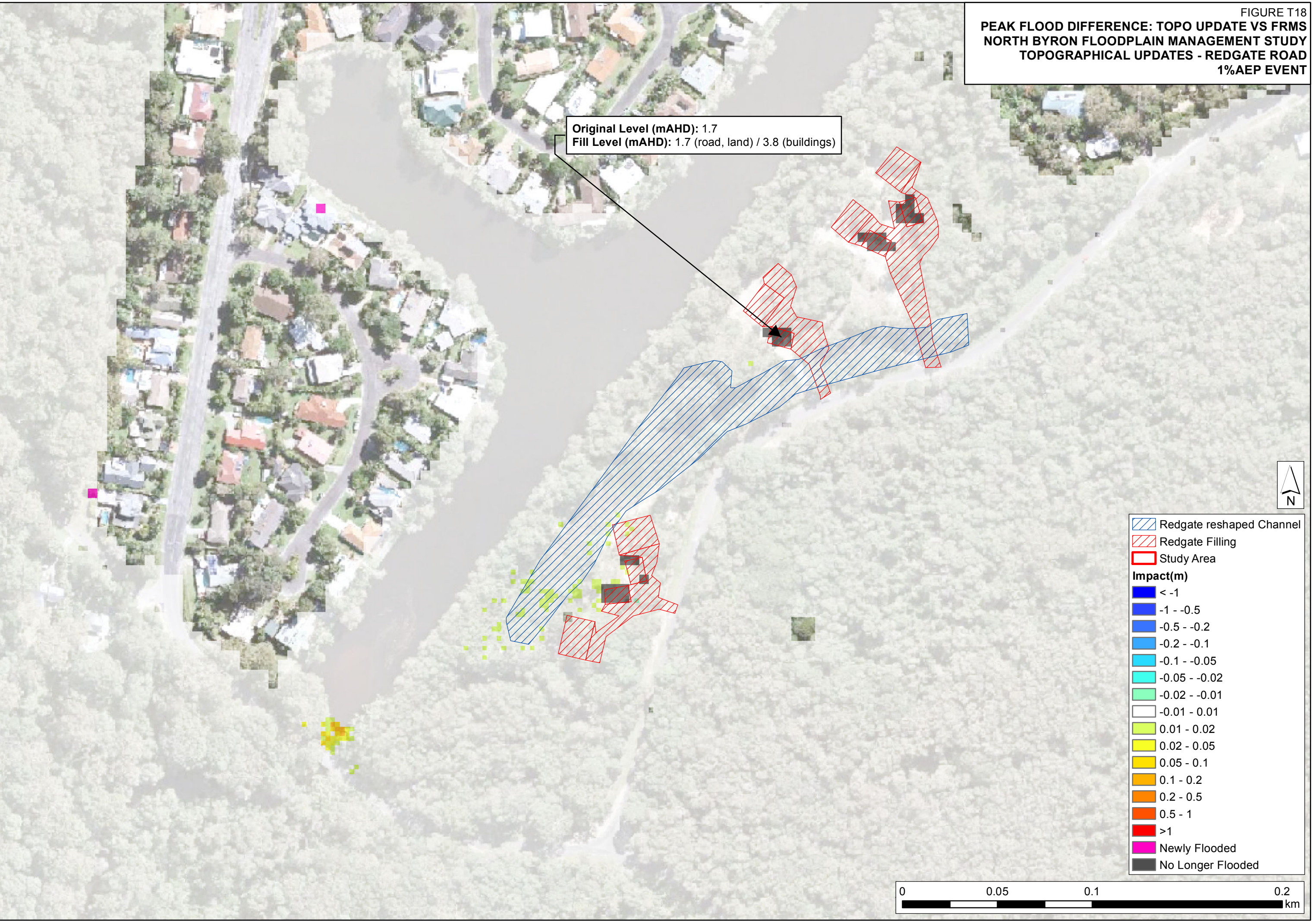
- Tallowood Stage4a
- Tallowood Stage4b
- Study Area
- Impact(m)**
- < -1
- 1 - -0.5
- 0.5 - -0.2
- 0.2 - -0.1
- 0.1 - -0.05
- 0.05 - -0.02
- 0.02 - -0.01
- 0.01 - 0.01
- 0.01 - 0.02
- 0.02 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.5
- 0.5 - 1
- >1
- Newly Flooded
- No Longer Flooded

0 0.05 0.1 0.2 km

FIGURE T18
PEAK FLOOD DIFFERENCE: TOPO UPDATE VS FRMS
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES - REDGATE ROAD
1% AEP EVENT

Original Level (mAHD): 1.7
 Fill Level (mAHD): 1.7 (road, land) / 3.8 (buildings)

J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT18_PeakDifference_2020topupdate_vs_FRMS_Redgate_Rd_1%AEPR.mxd



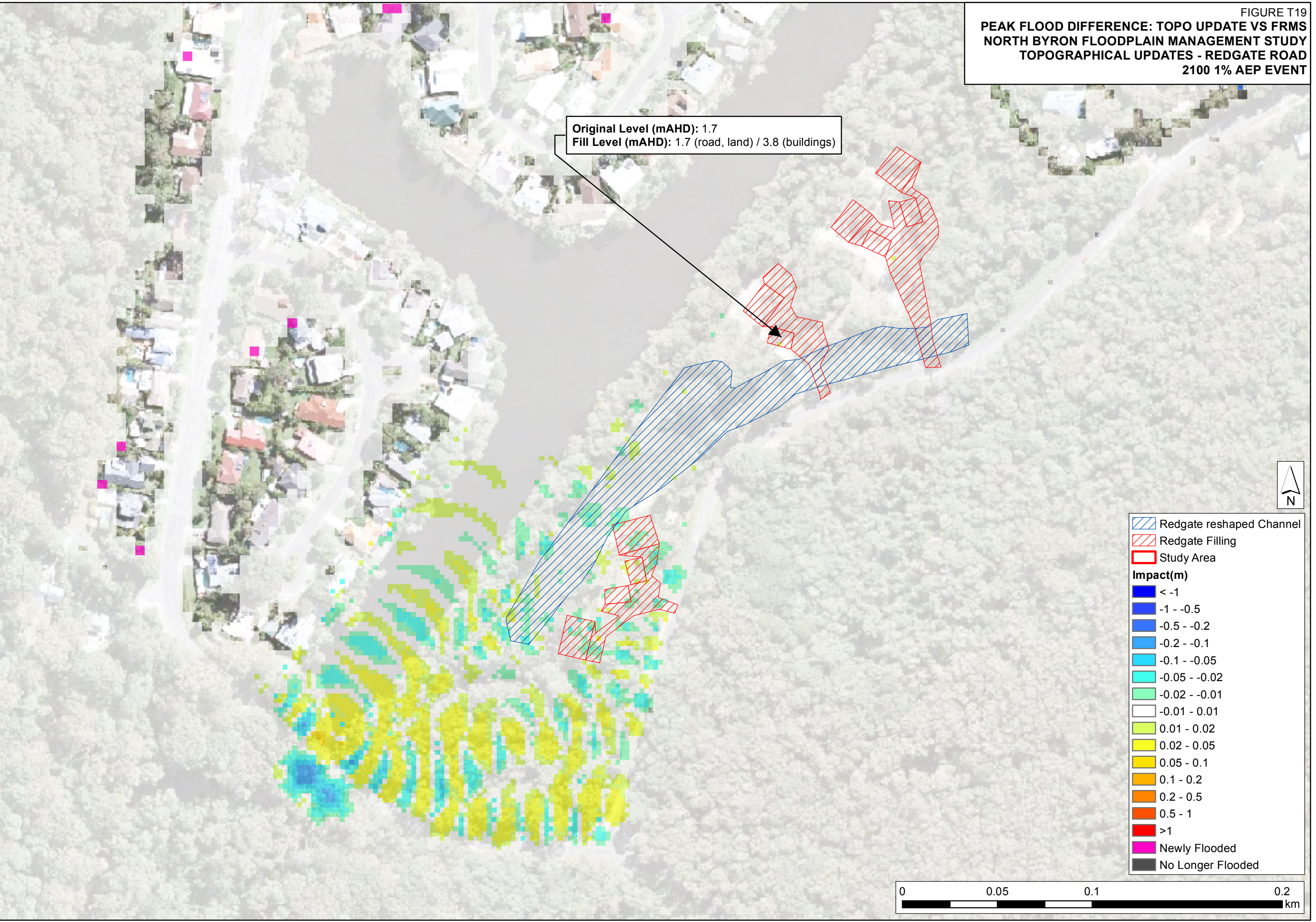
- Redgate reshaped Channel
- Redgate Filling
- Study Area
- Impact(m)**
- < -1
- 1 - -0.5
- 0.5 - -0.2
- 0.2 - -0.1
- 0.1 - -0.05
- 0.05 - -0.02
- 0.02 - -0.01
- 0.01 - 0.02
- 0.02 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.5
- 0.5 - 1
- >1
- Newly Flooded
- No Longer Flooded

0 0.05 0.1 0.2 km

FIGURE T19
PEAK FLOOD DIFFERENCE: TOPO UPDATE VS FRMS
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES - REDGATE ROAD
2100 1% AEP EVENT

Original Level (mAHD): 1.7
 Fill Level (mAHD): 1.7 (road, land) / 3.8 (buildings)

J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT19_PeakDifference_vs_FRMS_Redgate_Rd_1%AEP_CC20.mxd



Redgate reshaped Channel
 Redgate Filling
 Study Area
Impact(m)
 < -1
 -1 - -0.5
 -0.5 - -0.2
 -0.2 - -0.1
 -0.1 - -0.05
 -0.05 - -0.02
 -0.02 - -0.01
 0.01 - 0.02
 0.02 - 0.05
 0.05 - 0.1
 0.1 - 0.2
 0.2 - 0.5
 0.5 - 1
 >1
 No Longer Flooded
 Newly Flooded

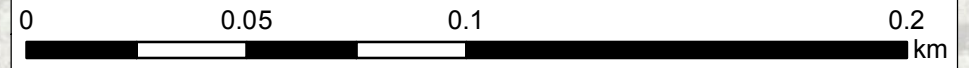
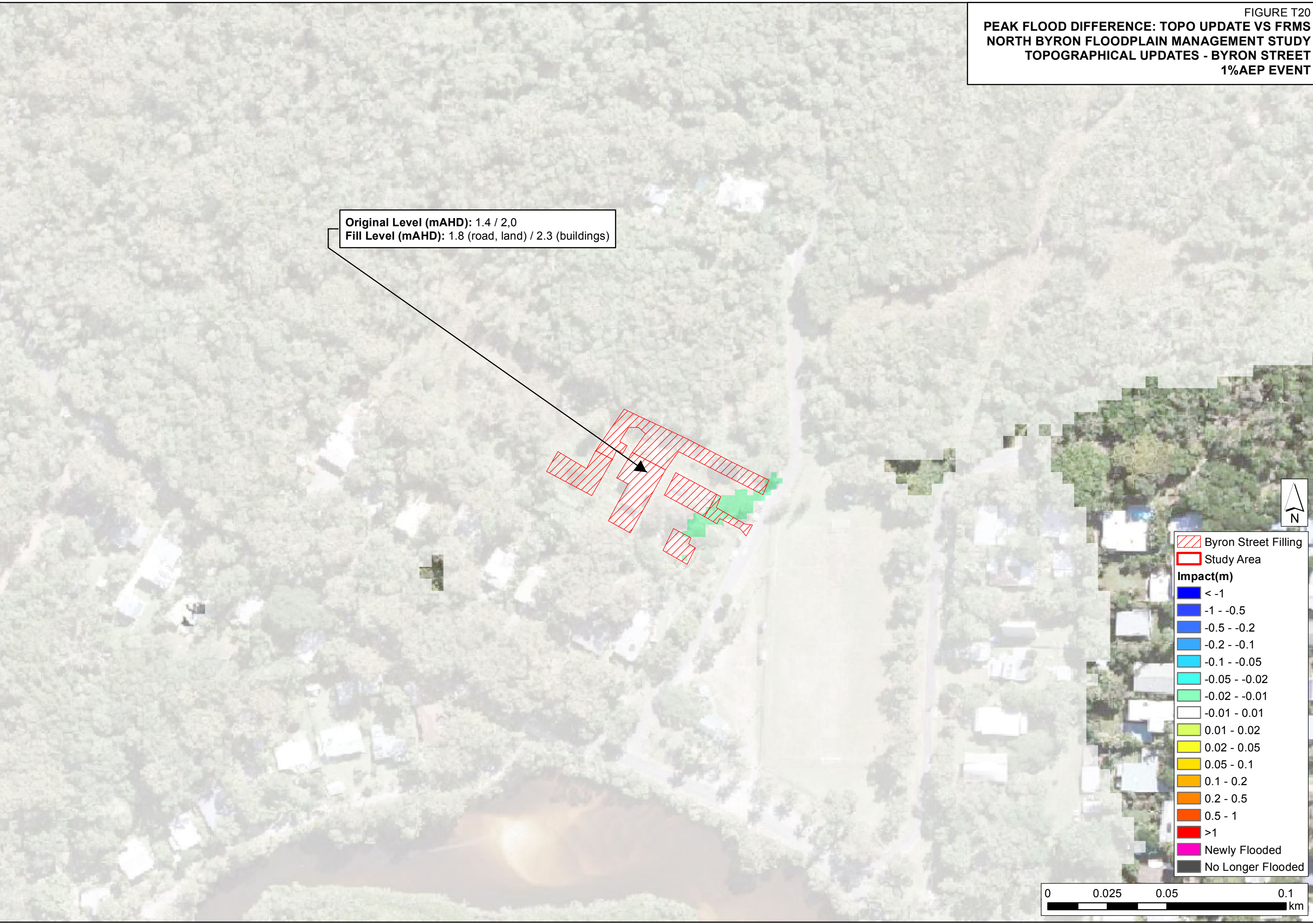


FIGURE T20
PEAK FLOOD DIFFERENCE: TOPO UPDATE VS FRMS
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES - BYRON STREET
1% AEP EVENT

Original Level (mAHD): 1.4 / 2.0
 Fill Level (mAHD): 1.8 (road, land) / 2.3 (buildings)

J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT20_PeakDifference_2020\topupdate_vs_FRMS_Byron_St_1%AEPR.mxd



	Byron Street Filling
	Study Area
Impact(m)	
	< -1
	-1 - -0.5
	-0.5 - -0.2
	-0.2 - -0.1
	-0.1 - -0.05
	-0.05 - -0.02
	-0.02 - -0.01
	-0.01 - 0.01
	0.01 - 0.02
	0.02 - 0.05
	0.05 - 0.1
	0.1 - 0.2
	0.2 - 0.5
	0.5 - 1
	>1
	Newly Flooded
	No Longer Flooded

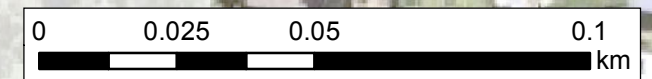
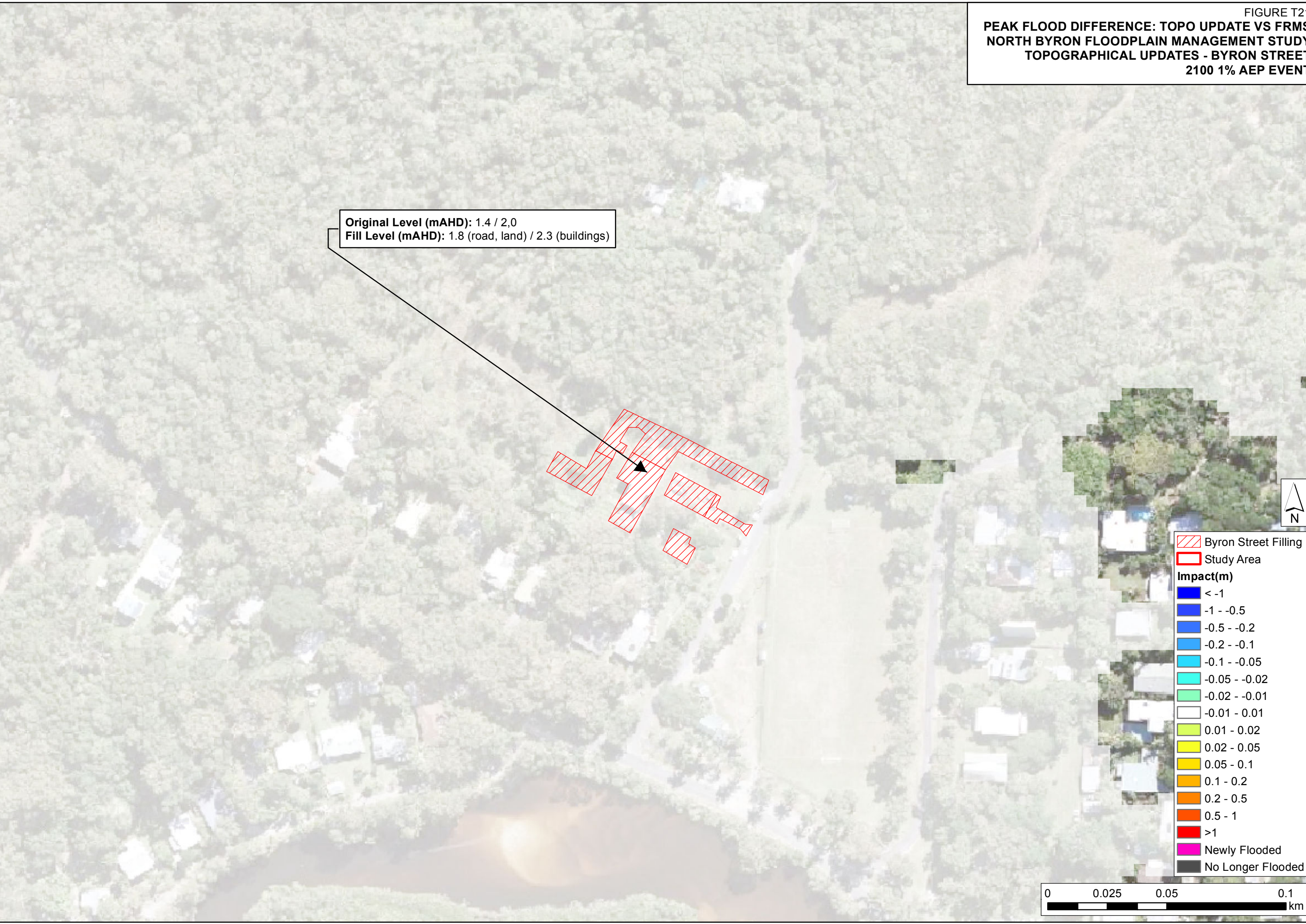





















FIGURE T21
PEAK FLOOD DIFFERENCE: TOPO UPDATE VS FRMS
NORTH BYRON FLOODPLAIN MANAGEMENT STUDY
TOPOGRAPHICAL UPDATES - BYRON STREET
2100 1% AEP EVENT

Original Level (mAHD): 1.4 / 2.0
Fill Level (mAHD): 1.8 (road, land) / 2.3 (buildings)

J:\Jobs\117098\ArcMaps\Variation_2020\Model_Update\Figures_List\FigureT21_PeakDifference_2020\topupdate_vs_FRMS_Byron_St_1%AEP_CC20.mxd



-  Byron Street Filling
-  Study Area
- Impact(m)**
-  < -1
-  -1 - -0.5
-  -0.5 - -0.2
-  -0.2 - -0.1
-  -0.1 - -0.05
-  -0.05 - -0.02
-  -0.02 - -0.01
-  -0.01 - 0.01
-  0.01 - 0.02
-  0.02 - 0.05
-  0.05 - 0.1
-  0.1 - 0.2
-  0.2 - 0.5
-  0.5 - 1
-  >1
-  Newly Flooded
-  No Longer Flooded

0 0.025 0.05 0.1 km

