

SCHEDULE 3 – Flood Impact Assessment

Built
Level 4, 185 Clarence Street
SYDNEY NSW 2000

Job No. GC554.001

Attn: Mr Paul Nelson

25 November 2022

Re: Wee Waa High School Construction Staging Flood Impact Assessment

Dear Sir,

This letter sets out the findings of an investigation that has been undertaken to assess the impact that the staged construction of the proposed Wee Waa High School would have on flood behaviour. **Figure 1** attached is a location plan showing the location of the construction site which is bounded by George Street to the east, Mitchell Street to the south, Charles Street to the west and existing residential development to the north.

This letter has been prepared to address the requirements set out under Condition B24 (f) (i) and (ii) of the Development Consent (Application No. SSD 21854025), which read:

“B24. The Applicant must prepare a Construction Soil and Water Management Sub-Plan (CSWMSP) and the plan must address, but not be limited to the following:

- (f) provide a construction methodology to address management of flood related impacts, supported by a Flood Impact Assessment prepared by a suitably qualified practising Engineer, addressing the following (but not limited to):*
 - (i) describe the measures that must be implemented to manage stormwater and flood flows for small and large sized events, including, but not limited to 1 in 5-year ARI and 1 in 100-year ARI;*
 - (ii) detailed construction staging plans and additional flood modelling to confirm that the construction would not result in unacceptable flooding conditions on adjoining properties and infrastructure, as certified by a suitably qualified practising Engineer; and”*

1. Background

For planning approval purposes, the construction of the Wee Waa High School and associated drainage improvement works has been divided into the following two separate packages of works:

- Construction of flood mitigation works, which include a large channel within the construction site, as well as upgrades to the existing drainage system downstream of its location (denoted herein as **“the REF works”**).
- Construction of the high school facilities, which includes the filling of the construction site to finished levels, as well as the erection of a number of buildings and fences (denoted herein as **“the SSD works”**). **Figure 2** attached to this letter shows the key features of the SSD works.

While Condition B24 directly relates to the SSD works, reference is made to the REF works as both sets of works form part of the overall project. We are also advised that Built are undertaking both the SSD and REF works as the Main Contractor and are able to coordinate across both sets of works as needed.

Level 6 Suite 601 8 West Street North Sydney NSW 2060

Principal: **S A Button** BE(Hons) MEngSc

p: 02 9929 4466 email: lacewater@bigpond.com.au

Lyall & Associates Consulting Water Engineers ABN 93 257 653 251 trading as Lyall & Associates

The bulk earthworks associated with the construction of the SSD works will be undertaken in the following three (3) key stages:

- **Stage 1 SSD Works**– Completion of the open drainage swale works which were commenced as part of the REF works internal to the construction site, including the stockpiling of excess fill material in its north-west corner.
- **Stage 2 SSD Works** – The formation of a borrow pit in the western portion of the construction site, the material from which will be used to raise natural surface levels in its eastern portion. The borrow pit will be drained via a temporary channel which will link to the open drainage swale which was built as part of the REF works. A swale will also be constructed along the common boundary of the construction site and No. 41 George Street to control surface runoff which discharges from the adjacent property. George Street will also be widened to facilitate the provision of the proposed Kiss and Drop area, requiring the need for the extension of the existing transverse drainage structure into the construction site, as well as the installation of a new stormwater drainage system along the western kerb line of the widened road.
- **Stage 3 SSD Works** – The importation of fill material to enable natural surface levels to be raised across the remainder of the construction site to final design levels. It is understood that the commencement of the Stage 3 works will not occur until such time as the REF works have been completed.

It is noted that a temporary pump was installed by Built in the north-west corner of the construction site at the commencement of the REF works (**temporary pump**). Built advised that the temporary pump is capable of evacuating stormwater runoff which would otherwise pond across the surface of the construction site to the inlet of twin 600 mm diameter pipes which are located beneath the eastern kerb line of Charles Street at a rate of about 0.36 m³/s. Built also advised that the temporary pump will remain in operation until such time as the REF works are completed (i.e. up until the commencement of the Stage 3 SSD works).

2. Construction Staging Flood Impact Assessment

The hydraulic (TUFLOW) model that has been relied upon for assessing the impact that both the REF and SSD works would have on flood behaviour following their completion has been used for the purpose of the present assessment.

The hydraulic (TUFLOW) model representing pre-REF and SSD works conditions was run for a design storm of one (1) Exceedance per Year (**EY**), as well as design storms with Annual Exceedance Probabilities (**AEPs**) of 20% (1 in 5), 5% (1 in 20) and 1% (1 in 100). **Figures 3, 4, 5 and 6** (2 sheets each) show the indicative extent and depth of inundation internal to the existing ring levee which protects the township of Wee Waa from riverine type flooding and more specifically in the immediate vicinity of the construction site for the four aforementioned design storm events.

The structure of the hydraulic (TUFLOW) model was then updated to reflect finished surface levels at the completion of the abovementioned construction stages. Finished surface levels within the hydraulic (TUFLOW) model were defined based on 3D design models that were provided by Built. Modifications were also made to the existing drainage system to reflect the changes that would be made during each stage of construction, noting that the temporary pump was assumed to switch on when the water level in the north-west corner of the construction site surcharged the low flow channel that forms part of the recently constructed REF works.

Figures 7, 8, 9 and 10 (2 sheets each) show the impact that the Stage 1 SSD works would have on flood behaviour for the four abovementioned design storm events. Similar information is shown on **Figures 11 to 18** (2 sheets each) for the Stage 2 and 3 SSD works.

The key findings of the flood impact assessment were as follows:

- i. There will be a general reduction in peak flood levels external to the construction site under Stage 1 SSD works conditions across the full range of assessed design storm events.
- ii. While there will be a general reduction in peak flood levels external to the construction site under Stage 2 SSD works conditions across the full range of assessed design storm events, there will be minor increases in the road reserve of George Street immediately fronting the construction site and No. 41 George Street during a 5% AEP storm event, and in the road reserve of Mitchell Street immediately fronting the construction site and the Wee Waa Public School in a 1% AEP storm event. It is noted that the areas where peak flood levels would be increased by the Stage 2 SSD works is confined to the adjacent road reserves of George Street and Mitchell Street (i.e. the impacts do not extend into either No. 41 George Street or the Wee Waa Public School).
- iii. The impacts attributable to the Stage 3 SSD works external to the construction site would be similar to those described above for the Stage 2 SSD works.

We trust that the findings of the flood impact assessment will assist Built in completing the *Construction Soil and Water Management Sub-Plan* as is required under Condition B24 of the Development Consent. However, please do not hesitate to contact the undersigned should you wish to discuss any aspect of our letter report.

Yours faithfully

Lyll & Associates Consulting Water Engineers



Scott Button
Principal

LIST OF FIGURES

Figure 1 - Location Plan

Figure 2 - Key Features of the SSD Works

Figure 3 - Indicative Extent and Depth of Inundation Internal to Town Levee - Pre-REF and SSD Conditions - 1 EY (2 Sheets)

Figure 4 - Indicative Extent and Depth of Inundation Internal to Town Levee - Pre-REF and SSD Conditions - 20% AEP (2 Sheets)

Figure 5 - Indicative Extent and Depth of Inundation Internal to Town Levee - Pre-REF and SSD Conditions - 5% AEP (2 Sheets)

Figure 6 - Indicative Extent and Depth of Inundation Internal to Town Levee - Pre-REF and SSD Conditions - 1% AEP (2 Sheets)

Figure 7 - Impact of Stage 1 SSD Works on Flood Behaviour Internal to Town Levee - 1 EY (2 Sheets)

Figure 8 - Impact of Stage 1 SSD Works on Flood Behaviour Internal to Town Levee - 20% AEP (2 Sheets)

Figure 9 - Impact of Stage 1 SSD Works on Flood Behaviour Internal to Town Levee - 5% AEP (2 Sheets)

Figure 10 - Impact of Stage 1 SSD Works on Flood Behaviour Internal to Town Levee - 1% AEP (2 Sheets)

Figure 11 - Impact of Stage 2 SSD Works on Flood Behaviour Internal to Town Levee - 1 EY (2 Sheets)

Figure 12 - Impact of Stage 2 SSD Works on Flood Behaviour Internal to Town Levee - 20% AEP (2 Sheets)

Figure 13 - Impact of Stage 2 SSD Works on Flood Behaviour Internal to Town Levee - 5% AEP (2 Sheets)

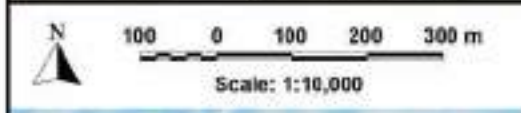
Figure 14 - Impact of Stage 2 SSD Works on Flood Behaviour Internal to Town Levee - 1% AEP (2 Sheets)

Figure 15 - Impact of Stage 3 SSD Works on Flood Behaviour Internal to Town Levee - 1 EY (2 Sheets)

Figure 16 - Impact of Stage 3 SSD Works on Flood Behaviour Internal to Town Levee - 20% AEP (2 Sheets)

Figure 17 - Impact of Stage 3 SSD Works on Flood Behaviour Internal to Town Levee - 5% AEP (2 Sheets)

Figure 18 - Impact of Stage 3 SSD Works on Flood Behaviour Internal to Town Levee - 1% AEP (2 Sheets)

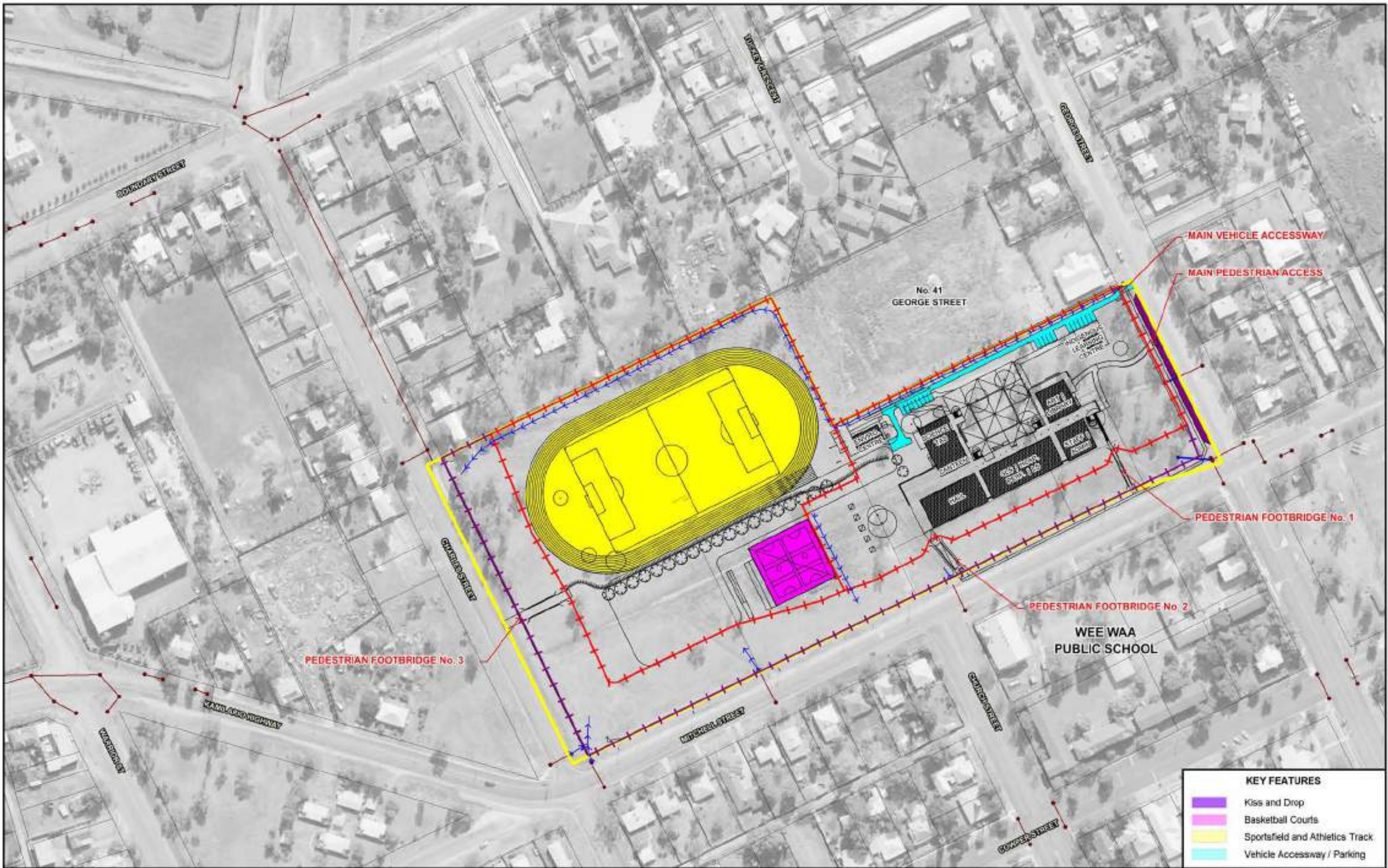


- Existing Levee Centre Line and Chainage
- Existing Flood Gate Location and Identifier
- Existing Pump Location and Identifier

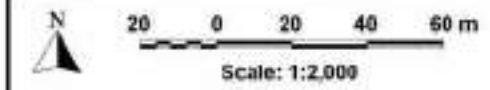
- LEGEND**
- Existing Drainage System
 - Construction Site Boundary

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CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**

Figure 1



KEY FEATURES	
	Kiss and Drop
	Basketball Courts
	Sportsfield and Athletics Track
	Vehicle Accessway / Parking



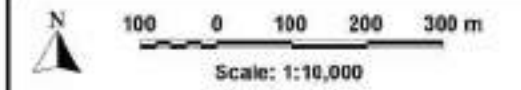
LEGEND			
	Existing Drainage System		Construction Site Boundary
	Proposed Drainage System		Proposal Design Strings
	Proposed 1.2 m High Perimeter Fence		Proposal Building Footprint
	Proposed 2.1 m High Perimeter Fence		
	Proposed Grassed Catch Drain / Swale		

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Figure 2



Note:
 The ground surface model incorporated in TUFLOW is based on LiDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.



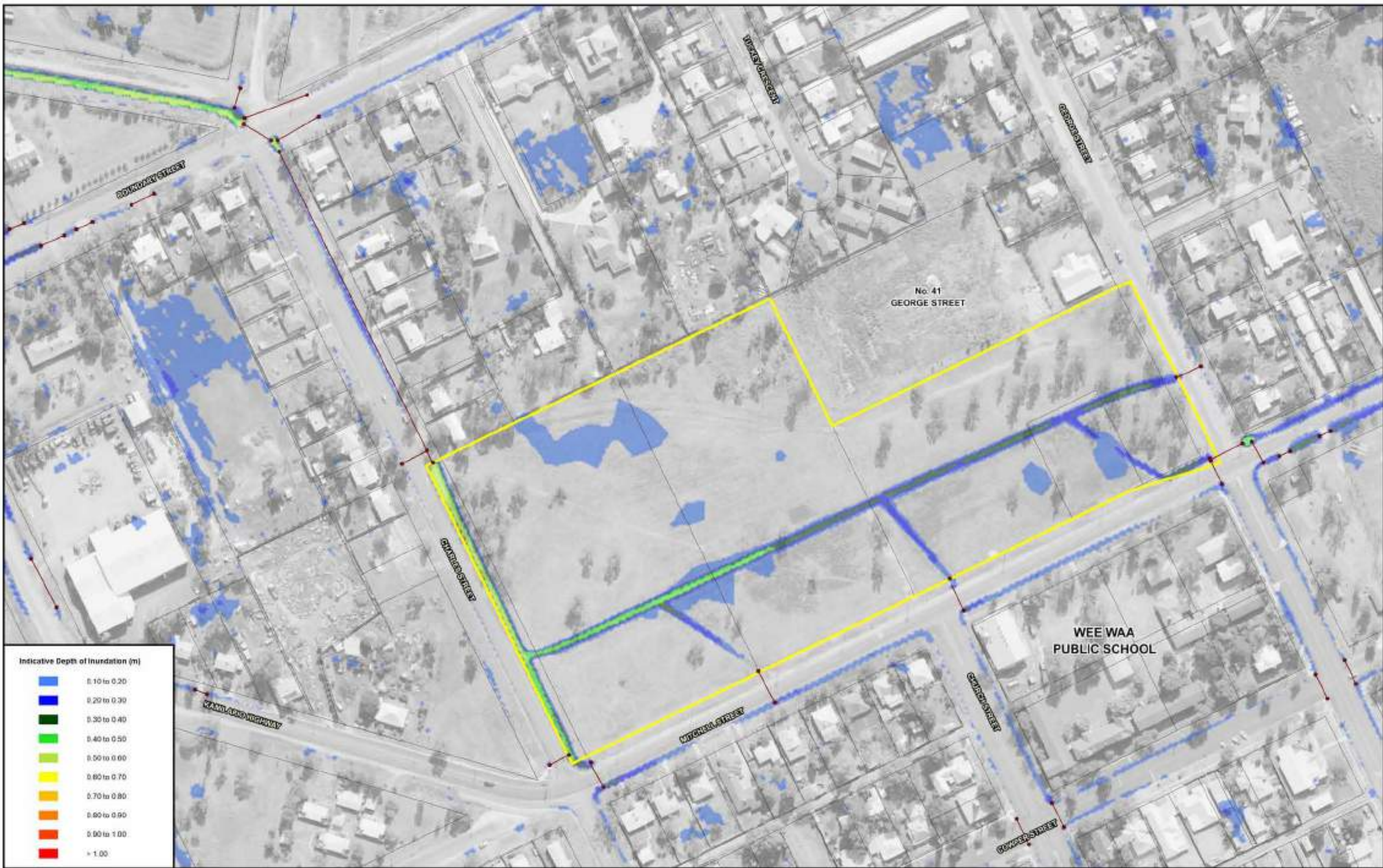
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- LEGEND**
- Existing Levee Centre Line and Chainage
 - Existing Rural Levees on Namoi River Floodplain
 - Existing Flood Gate Location and Identifier
 - Existing Pump Location and Identifier
 - Two-Dimensional Model Extent
 - Modelled Stormwater Network
 - Construction Site Boundary

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INDICATIVE EXTENT AND DEPTH OF INUNDATION INTERNAL TO TOWN LEVEE
 PRE-REF AND SSD CONDITIONS - 1 EY

Figure 3
 (Sheet 1 of 2)



Indicative Depth of Inundation (m)

Light Blue	0.10 to 0.20
Blue	0.20 to 0.30
Dark Blue	0.30 to 0.40
Green	0.40 to 0.50
Light Green	0.50 to 0.60
Yellow	0.60 to 0.70
Orange	0.70 to 0.80
Red-Orange	0.80 to 0.90
Red	0.90 to 1.00
Dark Red	> 1.00

Scale: 1:2,000
 0 20 40 60 m

Note:
 The ground surface model incorporated in TUFLOW is based on LIDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.

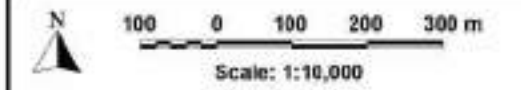
LEGEND
 — Modelled Stormwater Network
 [Yellow Outline] Construction Site Boundary

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INDICATIVE EXTENT AND DEPTH OF INUNDATION INTERNAL TO TOWN LEVEL
 PRE-REF AND SSD CONDITIONS - 1 EY



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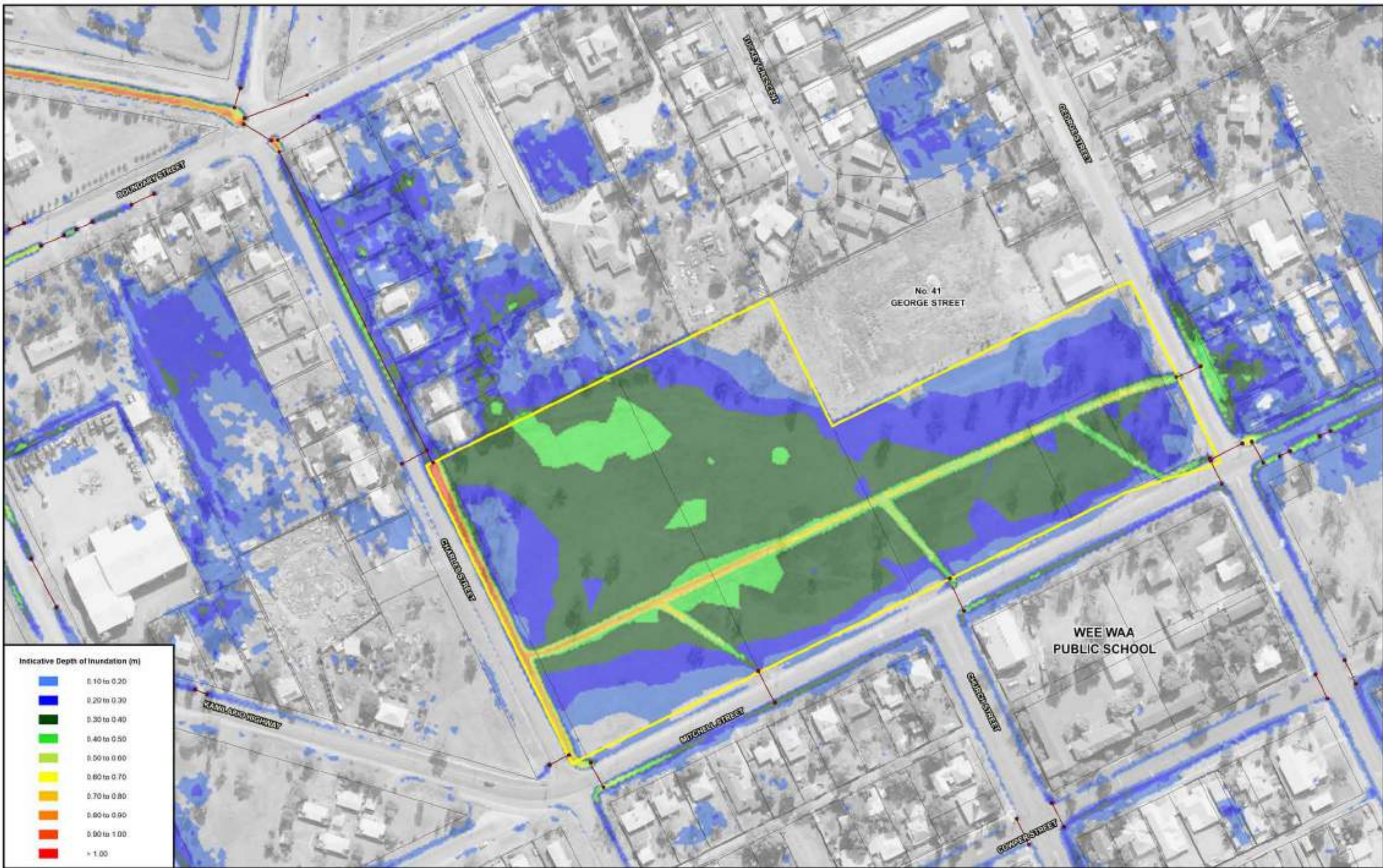
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- LEGEND**
- Existing Levee Centre Line and Chainage
 - Existing Rural Levees on Namoi River Floodplain
 - Existing Flood Gate Location and Identifier
 - Existing Pump Location and Identifier
 - Two-Dimensional Model Extent
 - Modelled Stormwater Network
 - Construction Site Boundary

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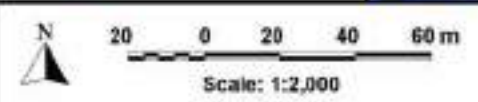
INDICATIVE EXTENT AND DEPTH OF INUNDATION INTERNAL TO TOWN LEVEE
 PRE-REF AND SSD CONDITIONS - 20% AEP

Figure 4
 (Sheet 1 of 2)



Indicative Depth of Inundation (m)

Blue	0.10 to 0.20
Dark Blue	0.20 to 0.30
Green	0.30 to 0.40
Light Green	0.40 to 0.50
Yellow-Green	0.50 to 0.60
Yellow	0.60 to 0.70
Orange	0.70 to 0.80
Red-Orange	0.80 to 0.90
Red	0.90 to 1.00
Dark Red	> 1.00



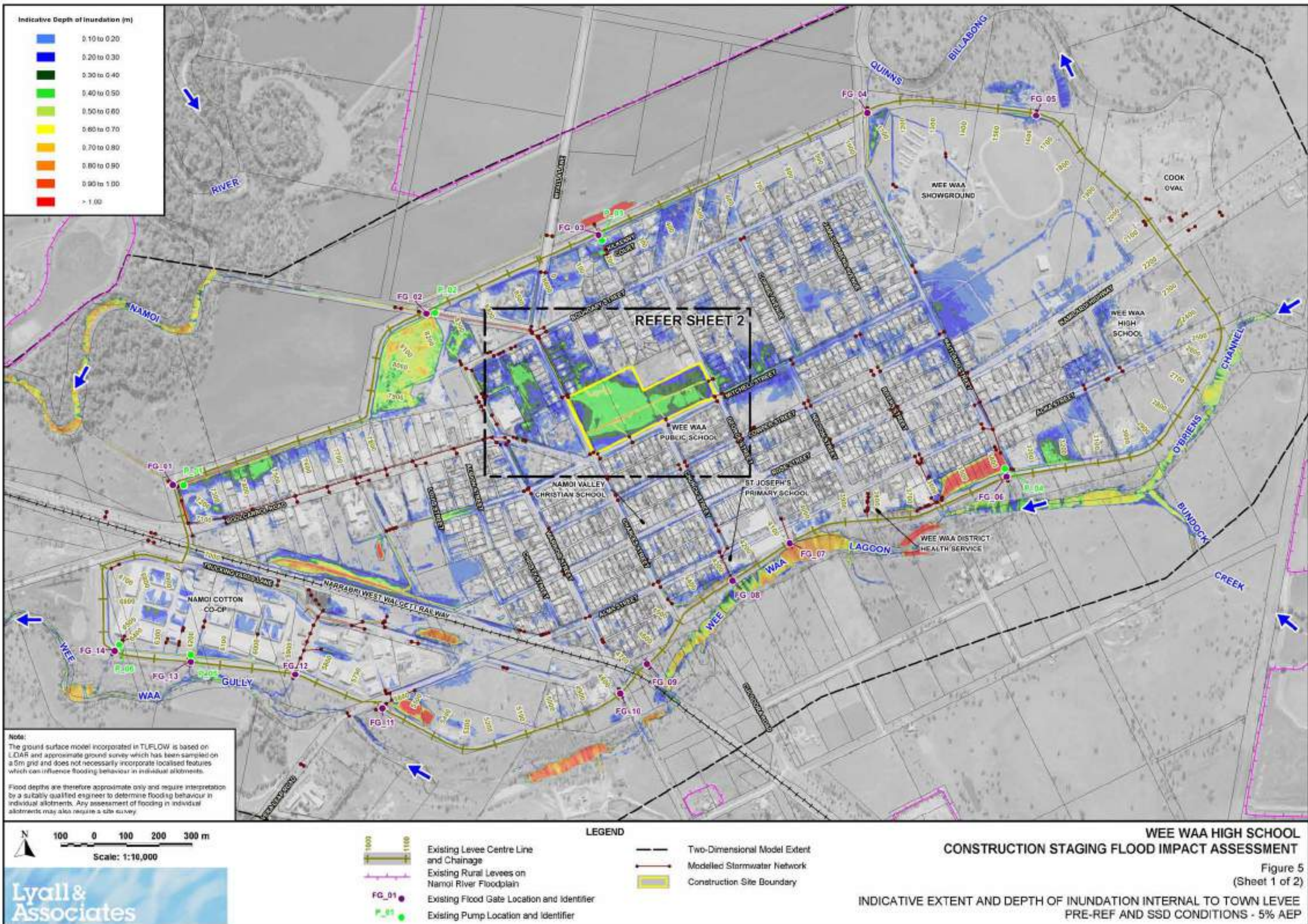
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- LEGEND**
- Modelled Stormwater Network
 - Construction Site Boundary

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 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**

INDICATIVE EXTENT AND DEPTH OF INUNDATION INTERNAL TO TOWN LEVEL
 PRE-REF AND SSD CONDITIONS - 20% AEP

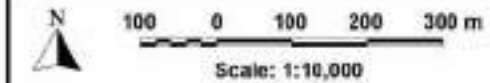
Figure 4
 (Sheet 2 of 2)



Indicative Depth of Inundation (m)

Light Blue	0.10 to 0.20
Blue	0.20 to 0.30
Dark Blue	0.30 to 0.40
Green	0.40 to 0.50
Light Green	0.50 to 0.60
Yellow	0.60 to 0.70
Orange	0.70 to 0.80
Dark Orange	0.80 to 0.90
Red	0.90 to 1.00
Dark Red	> 1.00

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LEGEND

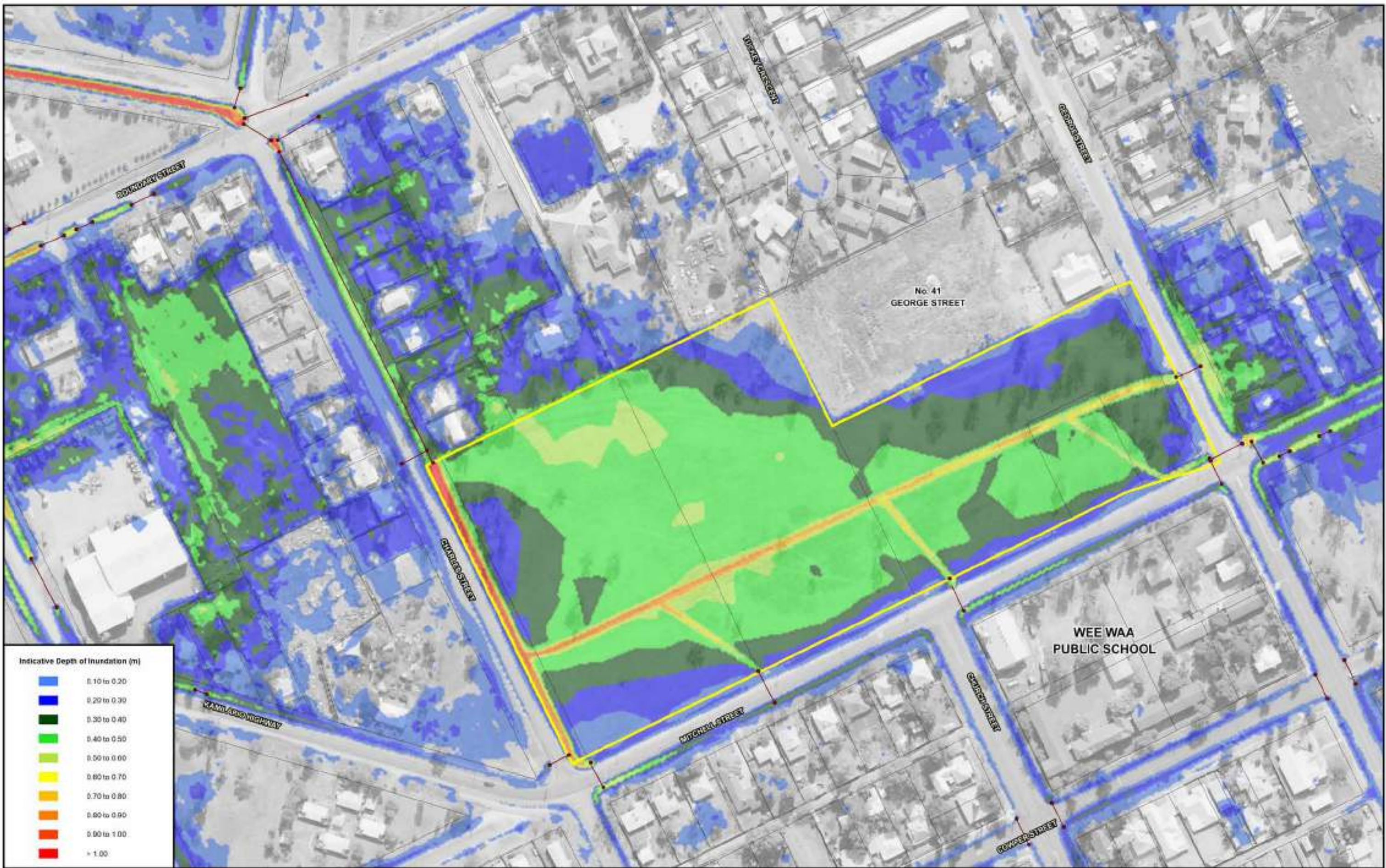
Blue line	Existing Levee Centre Line and Chainage
Pink dashed line	Existing Rural Levees on Namoi River Floodplain
Red dot	Existing Flood Gate Location and Identifier (e.g., FG_01)
Green dot	Existing Pump Location and Identifier (e.g., P_01)

Black dashed line	Two-Dimensional Model Extent
Black line with arrows	Modelled Stormwater Network
Yellow outline	Construction Site Boundary

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Figure 5 (Sheet 1 of 2)

INDICATIVE EXTENT AND DEPTH OF INUNDATION INTERNAL TO TOWN LEVEE PRE-REF AND SSD CONDITIONS - 5% AEP



Indicative Depth of Inundation (m)

Blue	0.10 to 0.20
Dark Blue	0.20 to 0.30
Green	0.30 to 0.40
Light Green	0.40 to 0.50
Yellow-Green	0.50 to 0.60
Yellow	0.60 to 0.70
Orange	0.70 to 0.80
Red-Orange	0.80 to 0.90
Red	0.90 to 1.00
Dark Red	> 1.00

- LEGEND**
- Modelled Stormwater Network
 - Construction Site Boundary

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 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**

Figure 5
 (Sheet 2 of 2)
 INDICATIVE EXTENT AND DEPTH OF INUNDATION INTERNAL TO TOWN LEVEL
 PRE-REF AND SSD CONDITIONS - 5% AEP

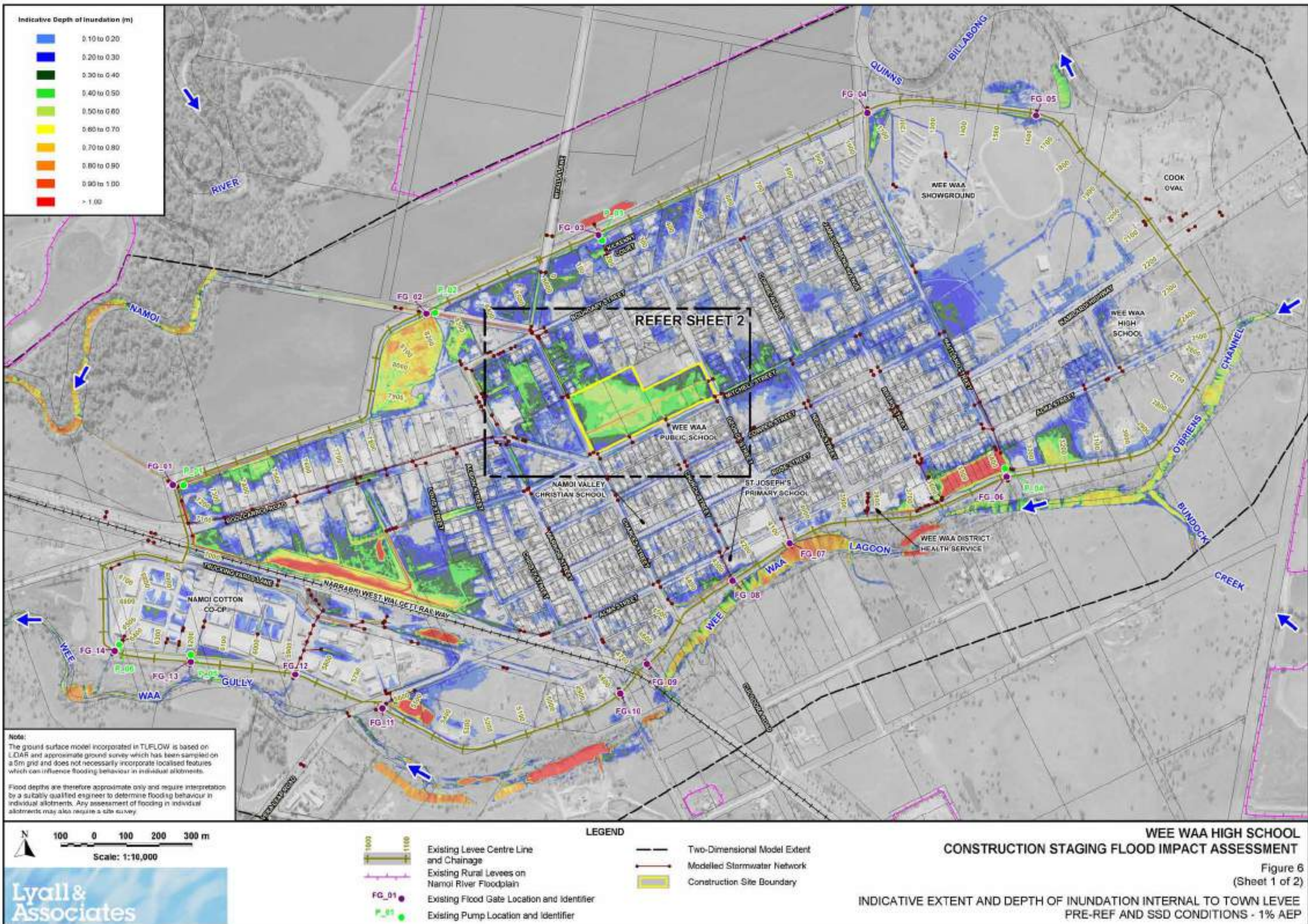
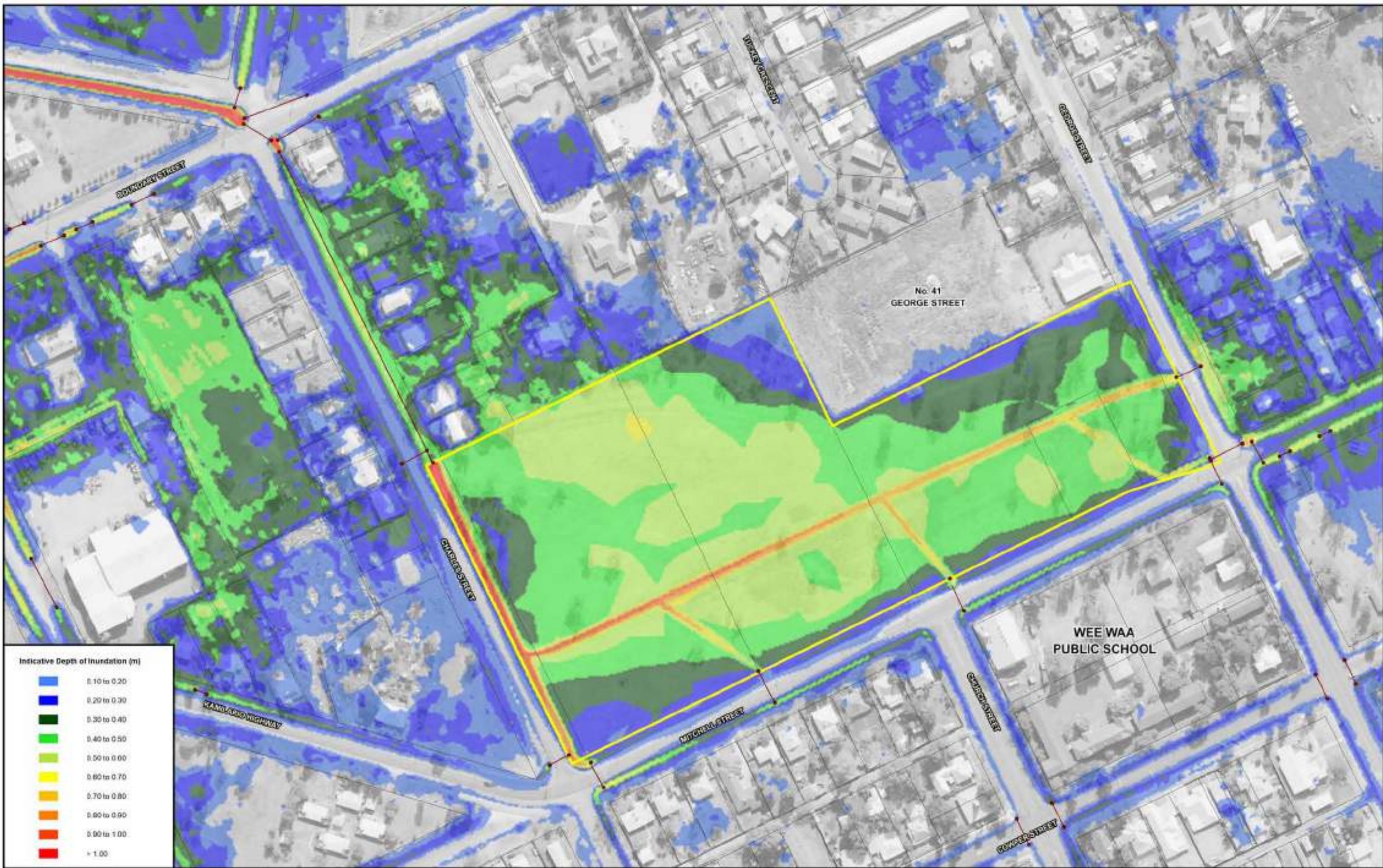
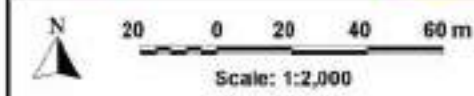


Figure 6 (Sheet 1 of 2)



Indicative Depth of Inundation (m)

Blue	0.10 to 0.20
Dark Blue	0.20 to 0.30
Green	0.30 to 0.40
Light Green	0.40 to 0.50
Yellow-Green	0.50 to 0.60
Yellow	0.60 to 0.70
Orange	0.70 to 0.80
Red-Orange	0.80 to 0.90
Red	0.90 to 1.00
Dark Red	> 1.00



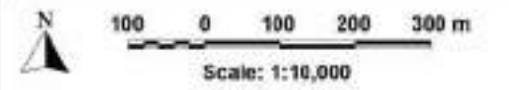
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- LEGEND**
- Modelled Stormwater Network
 - Construction Site Boundary

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 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**



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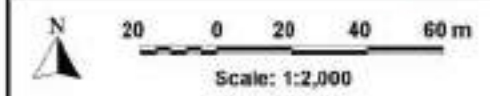
- LEGEND**
- Existing Levee Centre Line and Chainage
 - Existing Drainage System
 - Construction Site Boundary
 - Finished Surface Contours
 - Existing Flood Gate Location and Identifier
 - Existing Pump Location and Identifier
 - Proposed Pump Location

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 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**



Afflux (m)

Blue	< -0.2
Light Blue	-0.20 to -0.10
Cyan	-0.10 to -0.01
Light Green	-0.01 to 0.01
Green	0.01 to 0.02
Light Yellow	0.02 to 0.05
Yellow	0.05 to 0.10
Orange	0.10 to 0.20
Red-Orange	0.20 to 0.30
Red	0.30 to 0.50
Dark Red	> 0.50
Magenta	Land Rendered Flood Free as a Result of Change
Purple	Additional Area of Land Flooded as a Result of Change



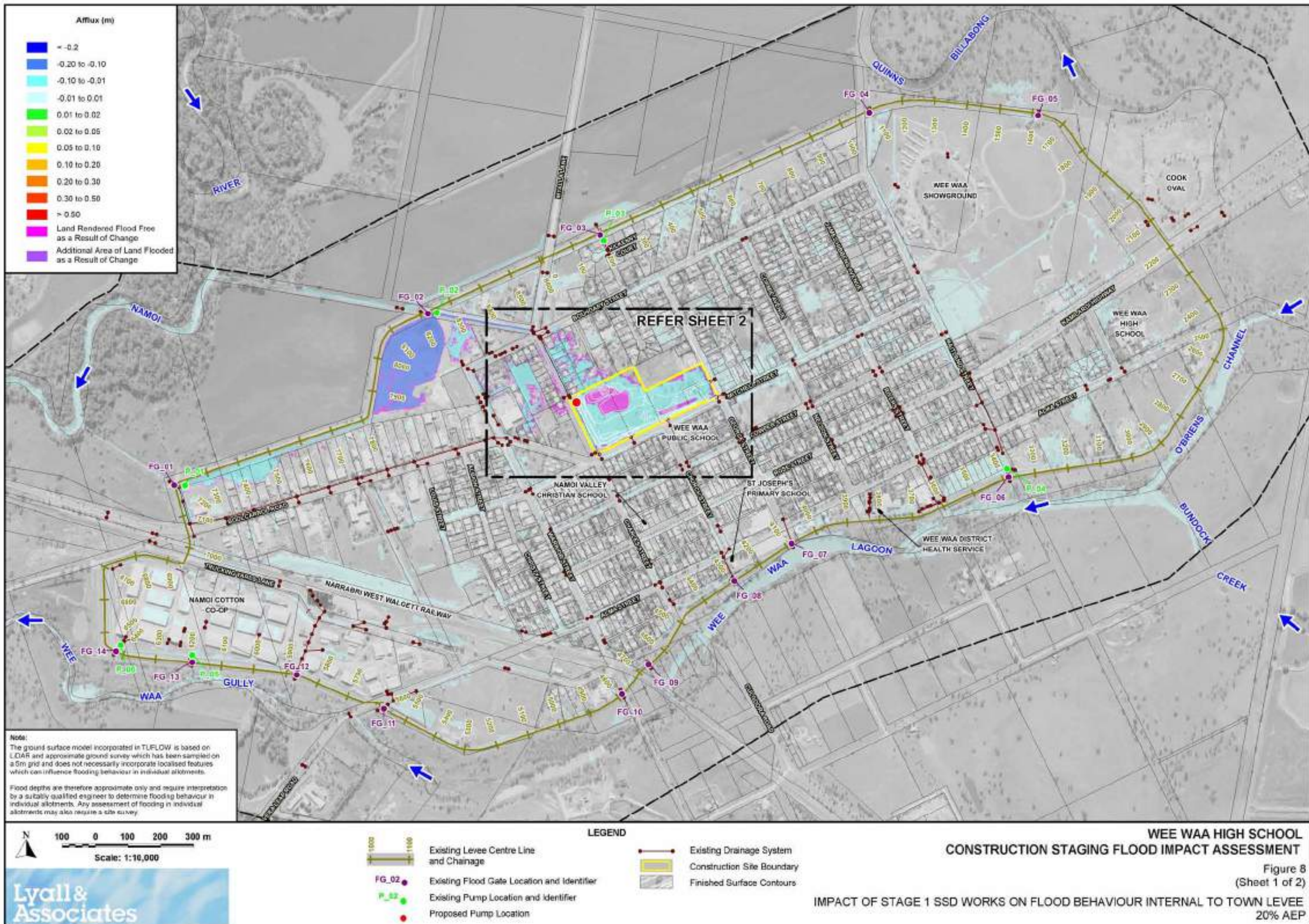
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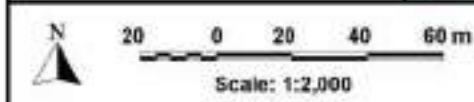
- LEGEND**
- Existing Drainage System
 - Construction Site Boundary
 - Finished Surface Contours
 - Proposed Pump Location

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 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**

IMPACT OF STAGE 1 SSD WORKS ON FLOOD BEHAVIOUR INTERNAL TO TOWN LEVELLE 1 EY

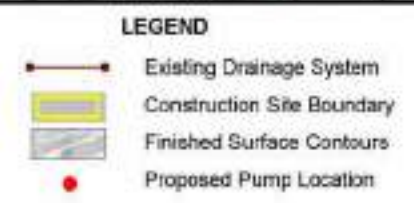
Figure 7
 (Sheet 2 of 2)





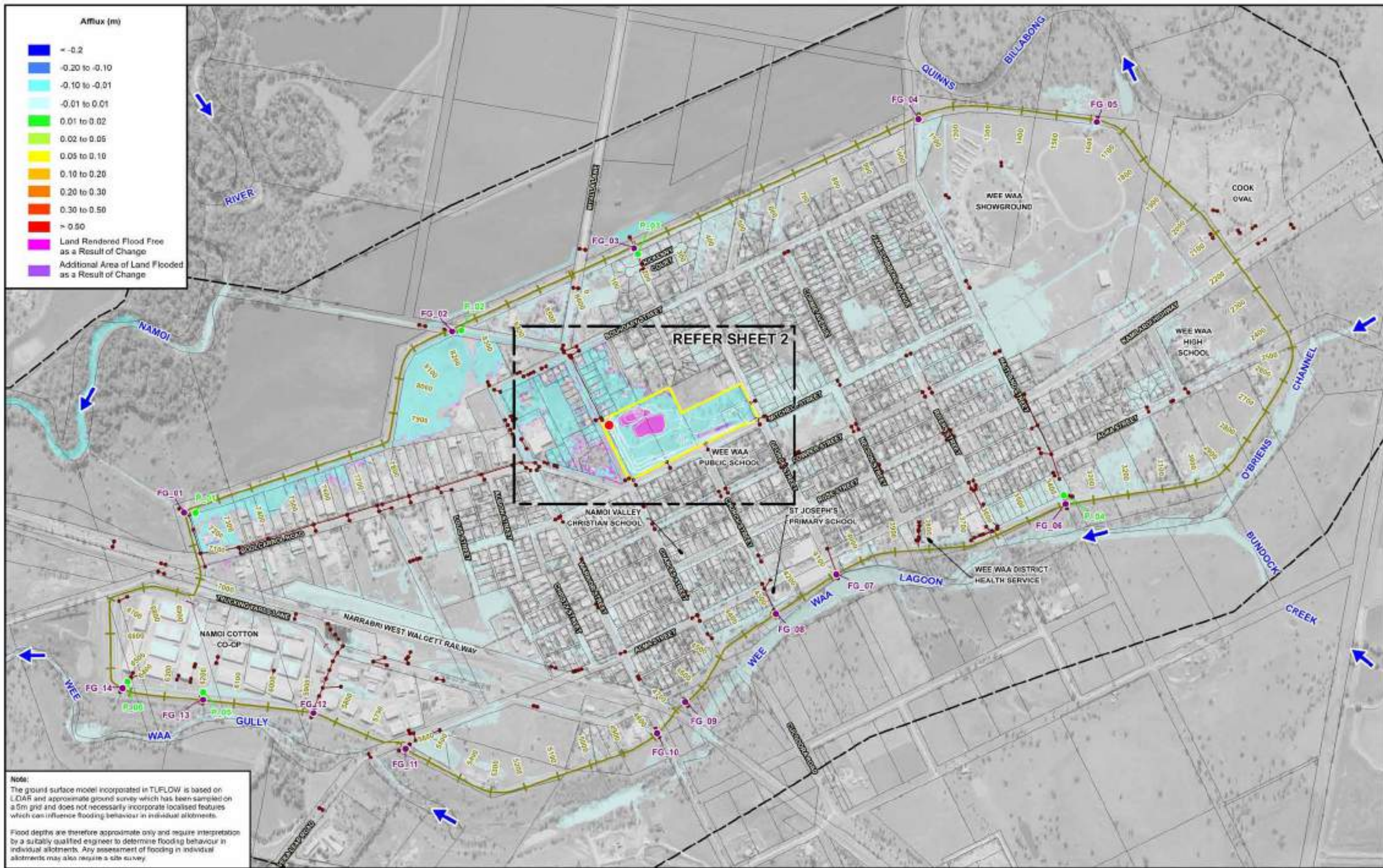
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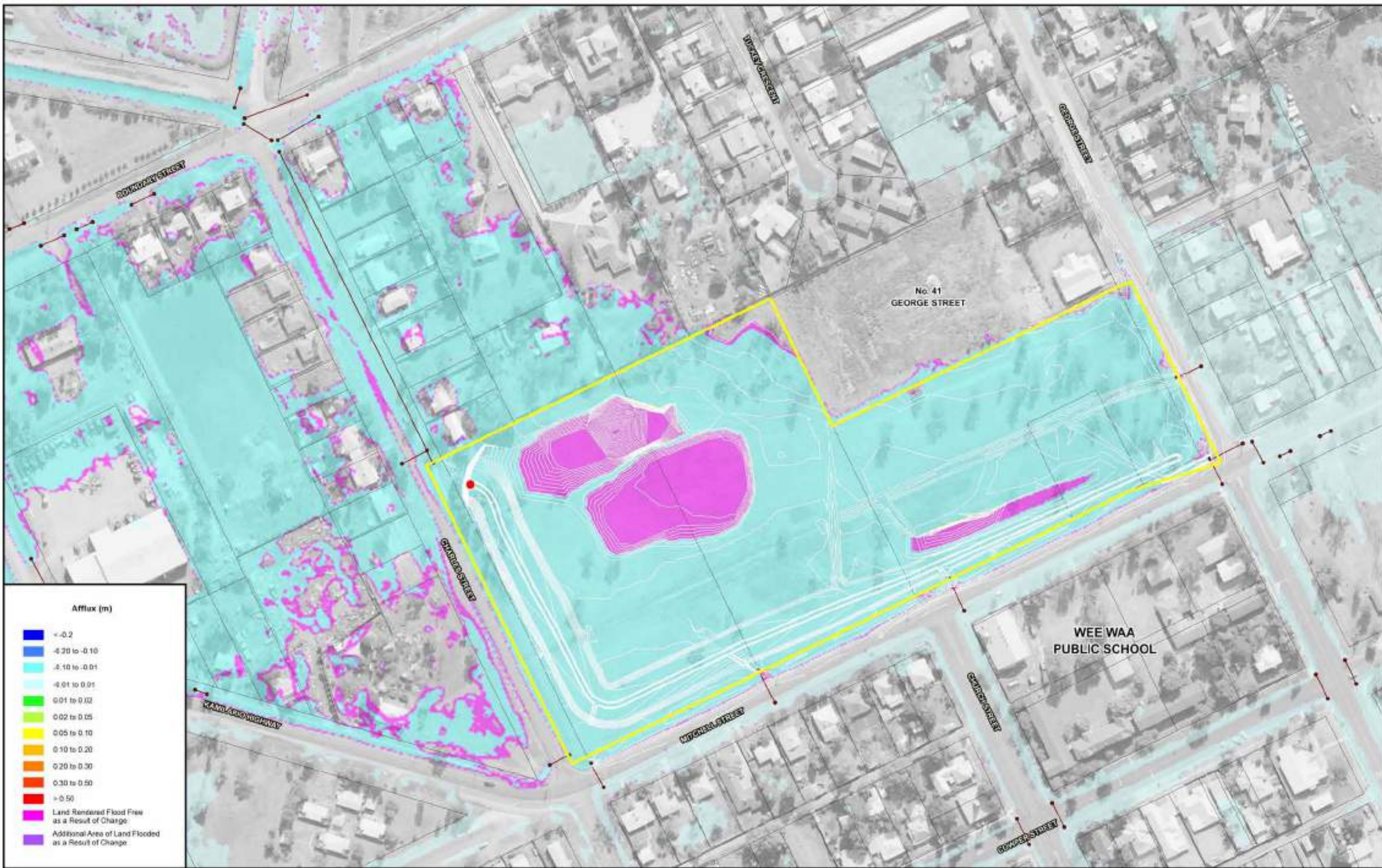
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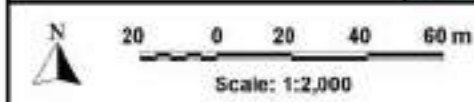
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CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT

Figure 8
 (Sheet 2 of 2)
 IMPACT OF STAGE 1 SSD WORKS ON FLOOD BEHAVIOUR INTERNAL TO TOWN LEVEE
 20% AEP





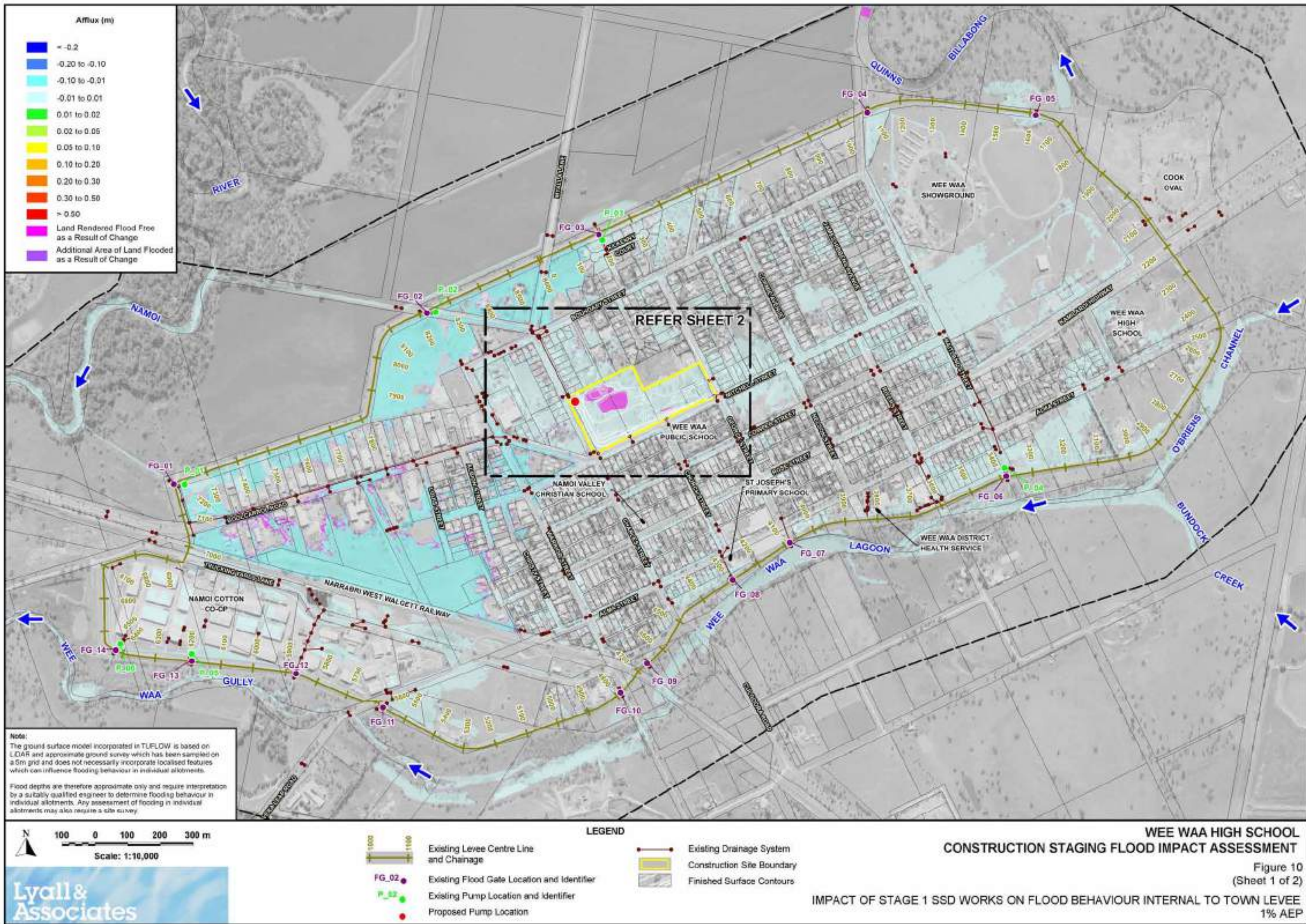
Afflux (m)	
Dark Blue	< -0.2
Blue	-0.20 to -0.10
Light Blue	-0.10 to -0.01
Very Light Blue	-0.01 to 0.01
Light Green	0.01 to 0.02
Green	0.02 to 0.05
Yellow-Green	0.05 to 0.10
Yellow	0.10 to 0.20
Orange	0.20 to 0.30
Red-Orange	0.30 to 0.50
Red	> 0.50
Magenta	Land Rendered Flood Free as a Result of Change
Purple	Additional Area of Land Flooded as a Result of Change

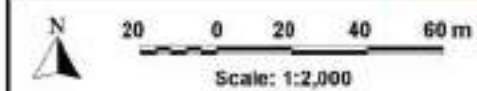


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- LEGEND**
- Existing Drainage System
 - Construction Site Boundary
 - Finished Surface Contours
 - Proposed Pump Location

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 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**





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LEGEND

- Existing Drainage System
- Construction Site Boundary
- Finished Surface Contours
- Proposed Pump Location

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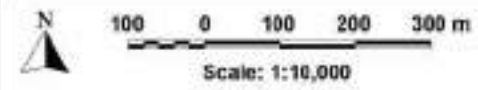
Figure 10
 (Sheet 2 of 2)
**IMPACT OF STAGE 1 SSD WORKS ON FLOOD BEHAVIOUR INTERNAL TO TOWN LEVEL
 1% AEP**



Afflux (m)

Dark Blue	< -0.2
Blue	-0.20 to -0.10
Light Blue	-0.10 to -0.01
Very Light Blue	-0.01 to 0.01
Light Green	0.01 to 0.02
Yellow-Green	0.02 to 0.05
Yellow	0.05 to 0.10
Orange	0.10 to 0.20
Red-Orange	0.20 to 0.30
Red	0.30 to 0.50
Light Purple	Land Rendered Flood Free as a Result of Change
Dark Purple	Additional Area of Land Flooded as a Result of Change

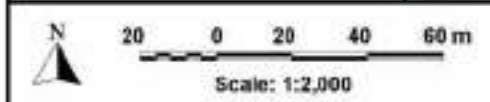
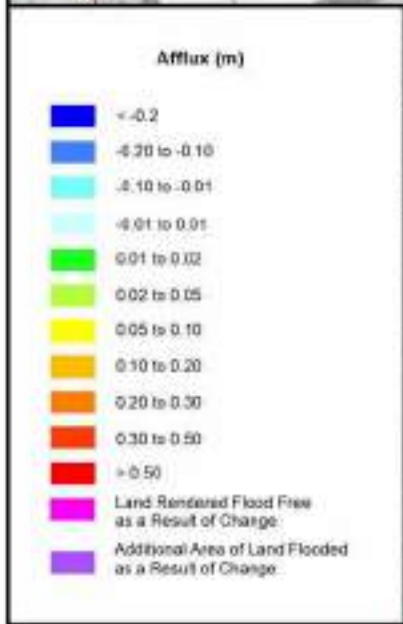
Note:
 The ground surface model incorporated in TUFLOW is based on LiDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.



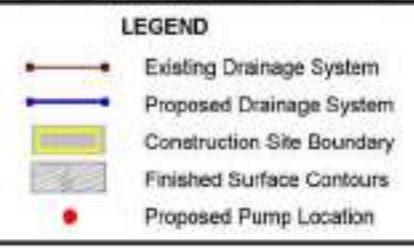
LEGEND

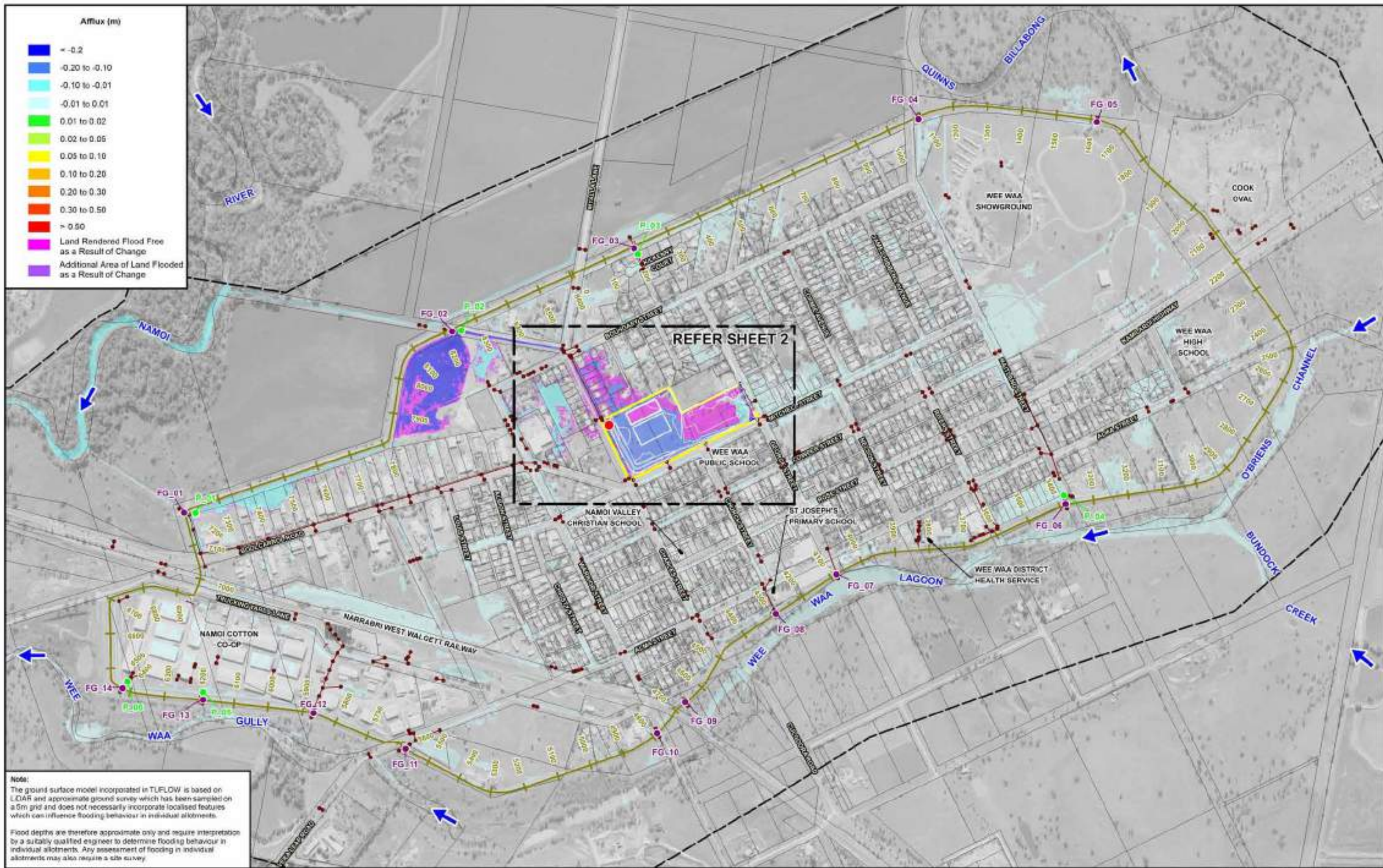
	Existing Levee Centre Line and Chainage		Existing Drainage System
	Existing Flood Gate Location and Identifier		Proposed Drainage System
	Existing Pump Location and Identifier		Construction Site Boundary
	Proposed Pump Location		Finished Surface Contours

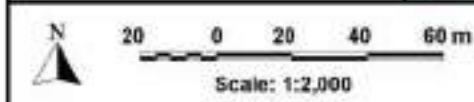
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Note:
 The ground surface model incorporated in TUFLOW is based on LIDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.







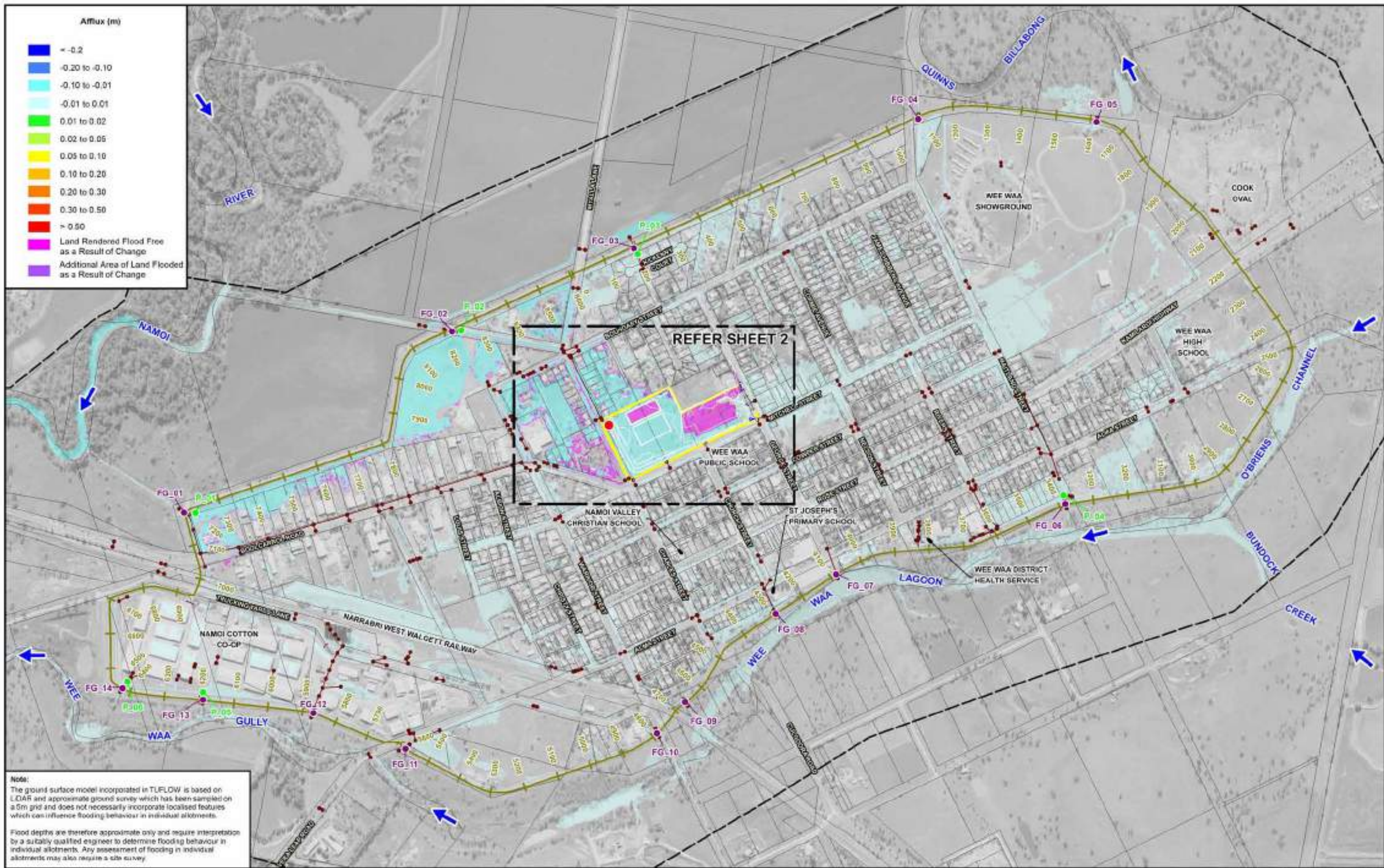
Note:
 The ground surface model incorporated in TUFLOW is based on LIDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.

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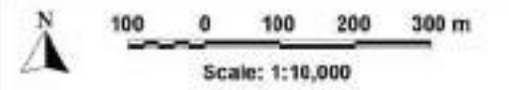
Figure 12
 (Sheet 2 of 2)
 IMPACT OF STAGE 2 SSD WORKS ON FLOOD BEHAVIOUR INTERNAL TO TOWN LEVEE
 20% AEP



Afflux (m)

Dark Blue	< -0.2
Blue	-0.20 to -0.10
Cyan	-0.10 to -0.01
Light Cyan	-0.01 to 0.01
Green	0.01 to 0.02
Light Green	0.02 to 0.05
Yellow	0.05 to 0.10
Orange	0.10 to 0.20
Red-Orange	0.20 to 0.30
Red	0.30 to 0.50
Red-Orange	> 0.50
Pink	Land Rendered Flood Free as a Result of Change
Purple	Additional Area of Land Flooded as a Result of Change

Note:
 The ground surface model incorporated in TUFLOW is based on LiDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.



LEGEND

	Existing Levee Centre Line and Chainage		Existing Drainage System
	Existing Flood Gate Location and Identifier		Proposed Drainage System
	Existing Pump Location and Identifier		Construction Site Boundary
	Proposed Pump Location		Finished Surface Contours

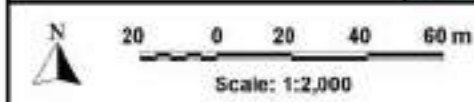
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 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**



Figure 13
 (Sheet 1 of 2)
**IMPACT OF STAGE 2 SSD WORKS ON FLOOD BEHAVIOUR INTERNAL TO TOWN LEVEE
 5% AEP**



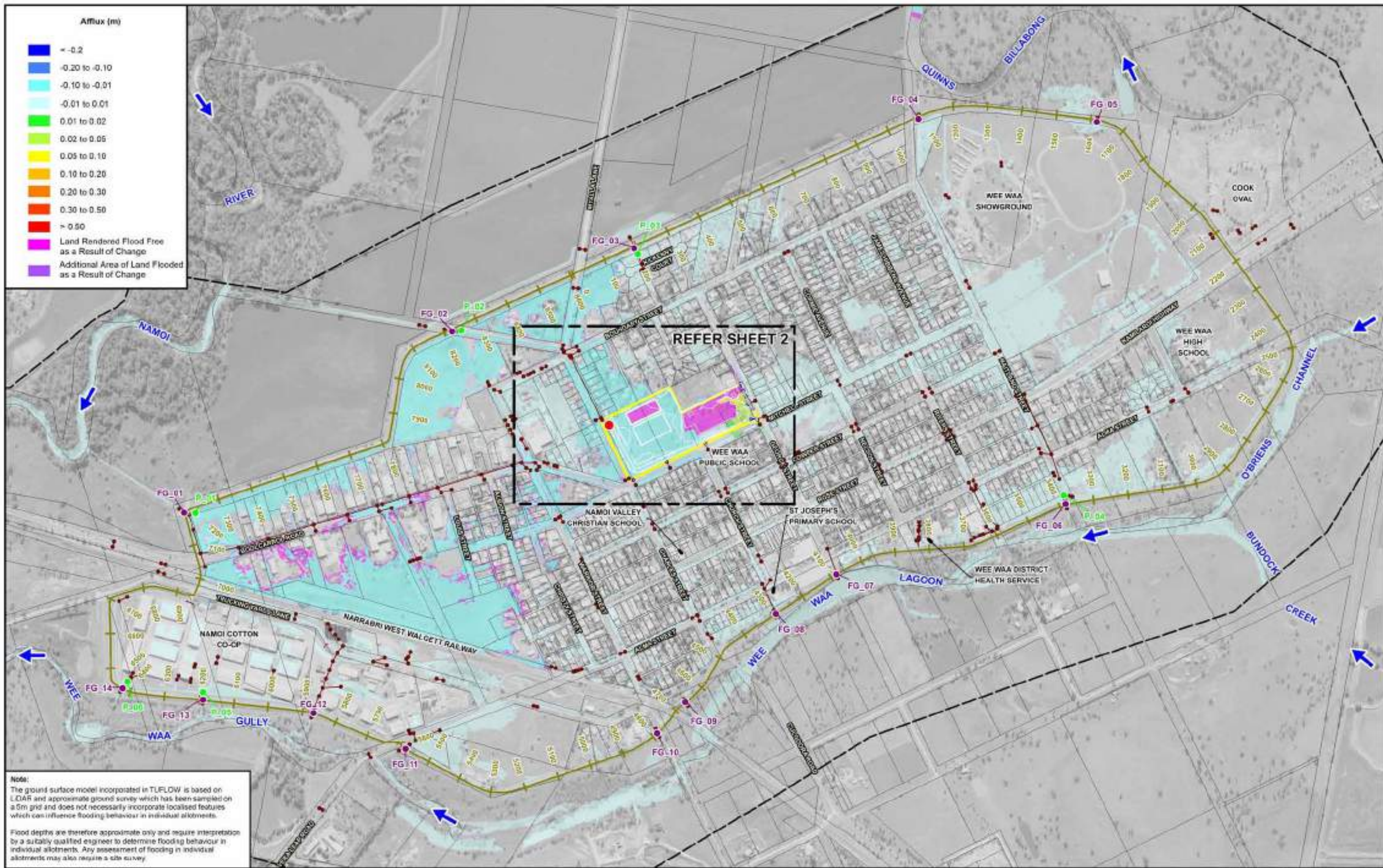
Afflux (m)	
■	-0.2
■	-0.20 to -0.10
■	-0.10 to -0.01
■	-0.01 to 0.01
■	0.01 to 0.02
■	0.02 to 0.05
■	0.05 to 0.10
■	0.10 to 0.20
■	0.20 to 0.30
■	0.30 to 0.50
■	> 0.50
■	Land Rendered Flood Free as a Result of Change
■	Additional Area of Land Flooded as a Result of Change



Note:
 The ground surface model incorporated in TUFLOW is based on LIDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.

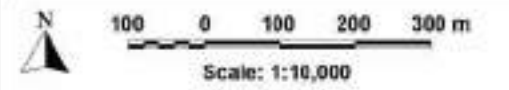
- LEGEND**
- Existing Drainage System
 - Proposed Drainage System
 - Construction Site Boundary
 - Finished Surface Contours
 - Proposed Pump Location

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 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**



- Afflux (m)**
- ≤ -0.2
 - 0.20 to -0.10
 - 0.10 to -0.01
 - 0.01 to 0.01
 - 0.01 to 0.02
 - 0.02 to 0.05
 - 0.05 to 0.10
 - 0.10 to 0.20
 - 0.20 to 0.30
 - 0.30 to 0.50
 - > 0.50
 - Land Rendered Flood Free as a Result of Change
 - Additional Area of Land Flooded as a Result of Change

Note:
 The ground surface model incorporated in TUFLOW is based on LiDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.

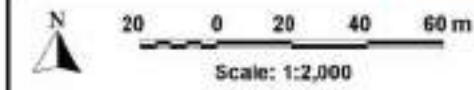


- LEGEND**
- Existing Levee Centre Line and Chainage
 - Existing Drainage System
 - Proposed Drainage System
 - Construction Site Boundary
 - Finished Surface Contours
 - Existing Flood Gate Location and Identifier (e.g., FG_02)
 - Existing Pump Location and Identifier (e.g., P_02)
 - Proposed Pump Location

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 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**



Afflux (m)	
Dark Blue	< -0.2
Blue	-0.20 to -0.10
Light Blue	-0.10 to -0.01
Very Light Blue	-0.01 to 0.01
Light Green	0.01 to 0.02
Green	0.02 to 0.05
Yellow-Green	0.05 to 0.10
Yellow	0.10 to 0.20
Orange	0.20 to 0.30
Red-Orange	0.30 to 0.50
Red	> 0.50
Magenta	Land Rendered Flood Free as a Result of Change
Purple	Additional Area of Land Flooded as a Result of Change



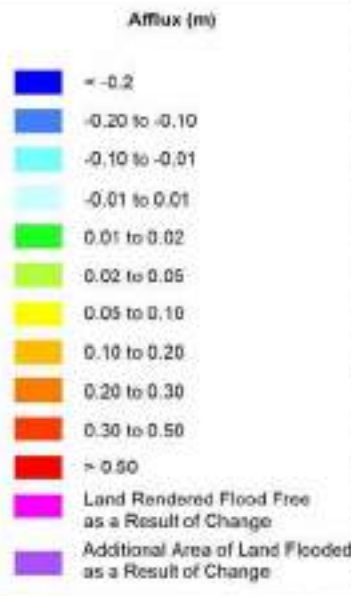
Note:
 The ground surface model incorporated in TUFLOW is based on LIDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.

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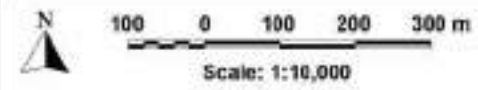
- LEGEND**
- Existing Drainage System
 - Proposed Drainage System
 - Construction Site Boundary
 - Finished Surface Contours
 - Proposed Pump Location

**WEE WAA HIGH SCHOOL
 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**

**IMPACT OF STAGE 2 SSD WORKS ON FLOOD BEHAVIOUR INTERNAL TO TOWN LEVEL
 1% AEP**



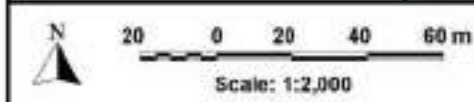
Note:
 The ground surface model incorporated in TUFLOW is based on LiDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.



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 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**



Afflux (m)	
Dark Blue	< -0.2
Blue	-0.20 to -0.10
Cyan	-0.10 to -0.01
Light Cyan	-0.01 to 0.01
Green	0.01 to 0.02
Light Green	0.02 to 0.05
Yellow	0.05 to 0.10
Orange	0.10 to 0.20
Red-Orange	0.20 to 0.30
Red	0.30 to 0.50
Dark Red	> 0.50
Magenta	Land Rendered Flood Free as a Result of Change
Purple	Additional Area of Land Flooded as a Result of Change



Note:
 The ground surface model incorporated in TUFLOW is based on LIDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.

LEGEND	
Red dashed line with dots	Existing Drainage System
Blue solid line	Proposed Drainage System
Yellow solid line	Construction Site Boundary
Grey hatched area	Finished Surface Contours

**WEE WAA HIGH SCHOOL
 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**

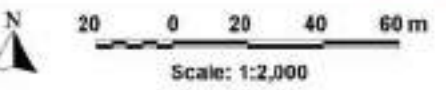
Figure 15
 (Sheet 2 of 2)
**IMPACT OF STAGE 3 SSD WORKS ON FLOOD BEHAVIOUR INTERNAL TO TOWN LEVEL
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Afflux (m)

Dark Blue	< -0.2
Blue	-0.20 to -0.10
Cyan	-0.10 to -0.01
Light Cyan	-0.01 to 0.01
Green	0.01 to 0.02
Light Green	0.02 to 0.05
Yellow	0.05 to 0.10
Orange	0.10 to 0.20
Red-Orange	0.20 to 0.30
Red	0.30 to 0.50
Dark Red	> 0.50
Magenta	Land Rendered Flood Free as a Result of Change
Purple	Additional Area of Land Flooded as a Result of Change

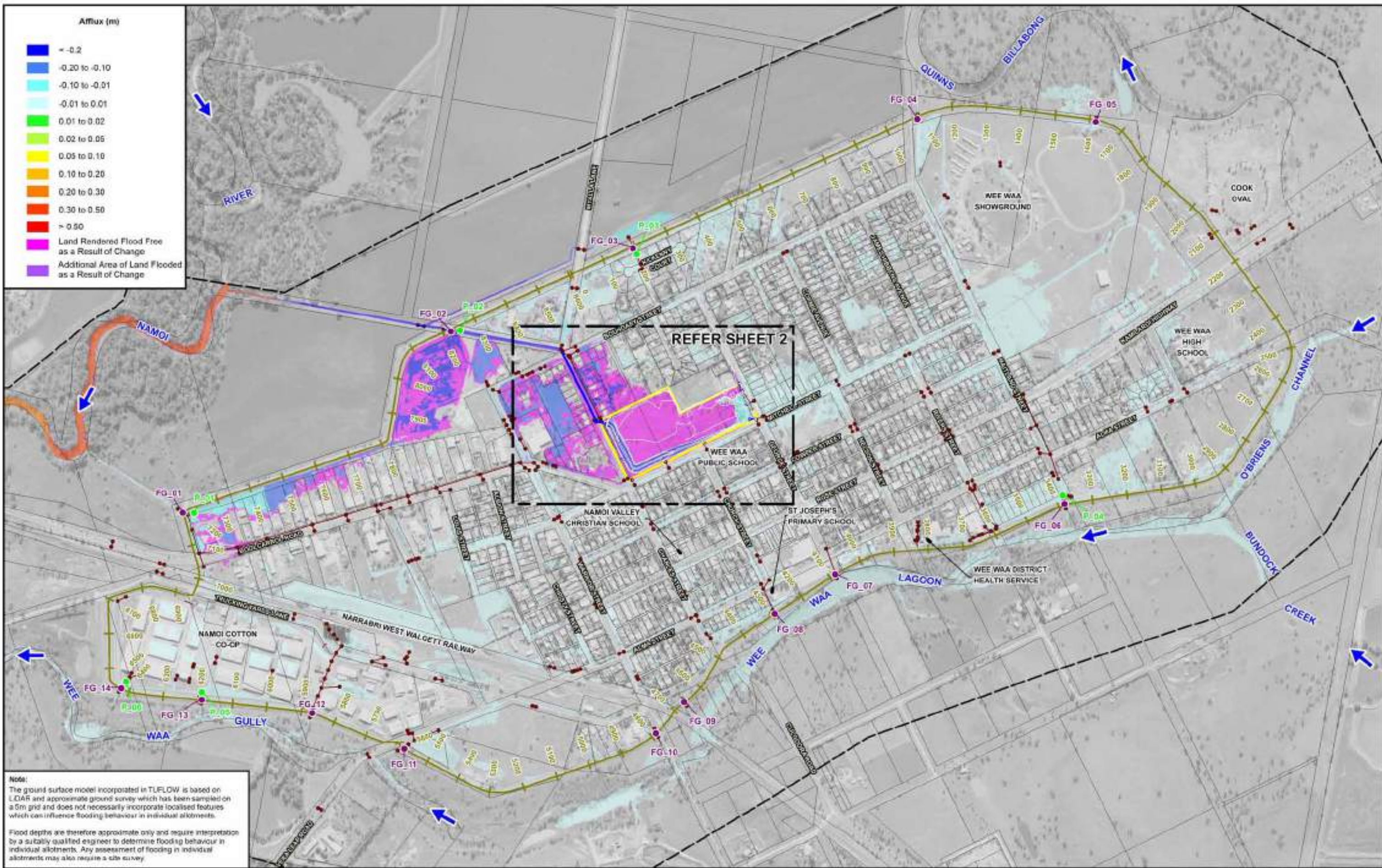


Note:
 The ground surface model incorporated in TUFLOW is based on LiDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.

- LEGEND**
- Existing Drainage System
 - Proposed Drainage System
 - Construction Site Boundary
 - Finished Surface Contours

**WEE WAA HIGH SCHOOL
 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**

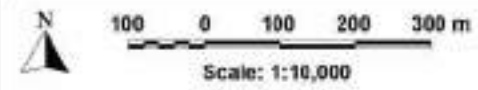
IMPACT OF STAGE 3 SSD WORKS ON FLOOD BEHAVIOUR INTERNAL TO TOWN LEVEE
 20% AEP



Afflux (m)

Dark Blue	< -0.2
Blue	-0.20 to -0.10
Light Blue	-0.10 to -0.01
Very Light Blue	-0.01 to 0.01
Light Green	0.01 to 0.02
Yellow-Green	0.02 to 0.05
Yellow	0.05 to 0.10
Orange	0.10 to 0.20
Red-Orange	0.20 to 0.30
Red	0.30 to 0.50
Dark Red	> 0.50
Pink	Land Rendered Flood Free as a Result of Change
Purple	Additional Area of Land Flooded as a Result of Change

Note:
 The ground surface model incorporated in TUFLOW is based on LiDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.



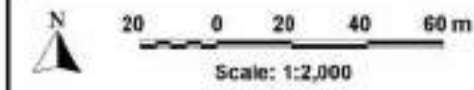
LEGEND

	Existing Levee Centre Line and Chainage		Existing Drainage System
	Existing Flood Gate Location and Identifier		Proposed Drainage System
	Existing Pump Location and Identifier		Construction Site Boundary
			Finished Surface Contours

**WEE WAA HIGH SCHOOL
 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**



Afflux (m)	
Dark Blue	< -0.2
Blue	-0.20 to -0.10
Cyan	-0.10 to -0.01
Light Cyan	-0.01 to 0.01
Green	0.01 to 0.02
Light Green	0.02 to 0.05
Yellow	0.05 to 0.10
Orange	0.10 to 0.20
Red-Orange	0.20 to 0.30
Red	0.30 to 0.50
Dark Red	> 0.50
Magenta	Land Rendered Flood Free as a Result of Change
Purple	Additional Area of Land Flooded as a Result of Change



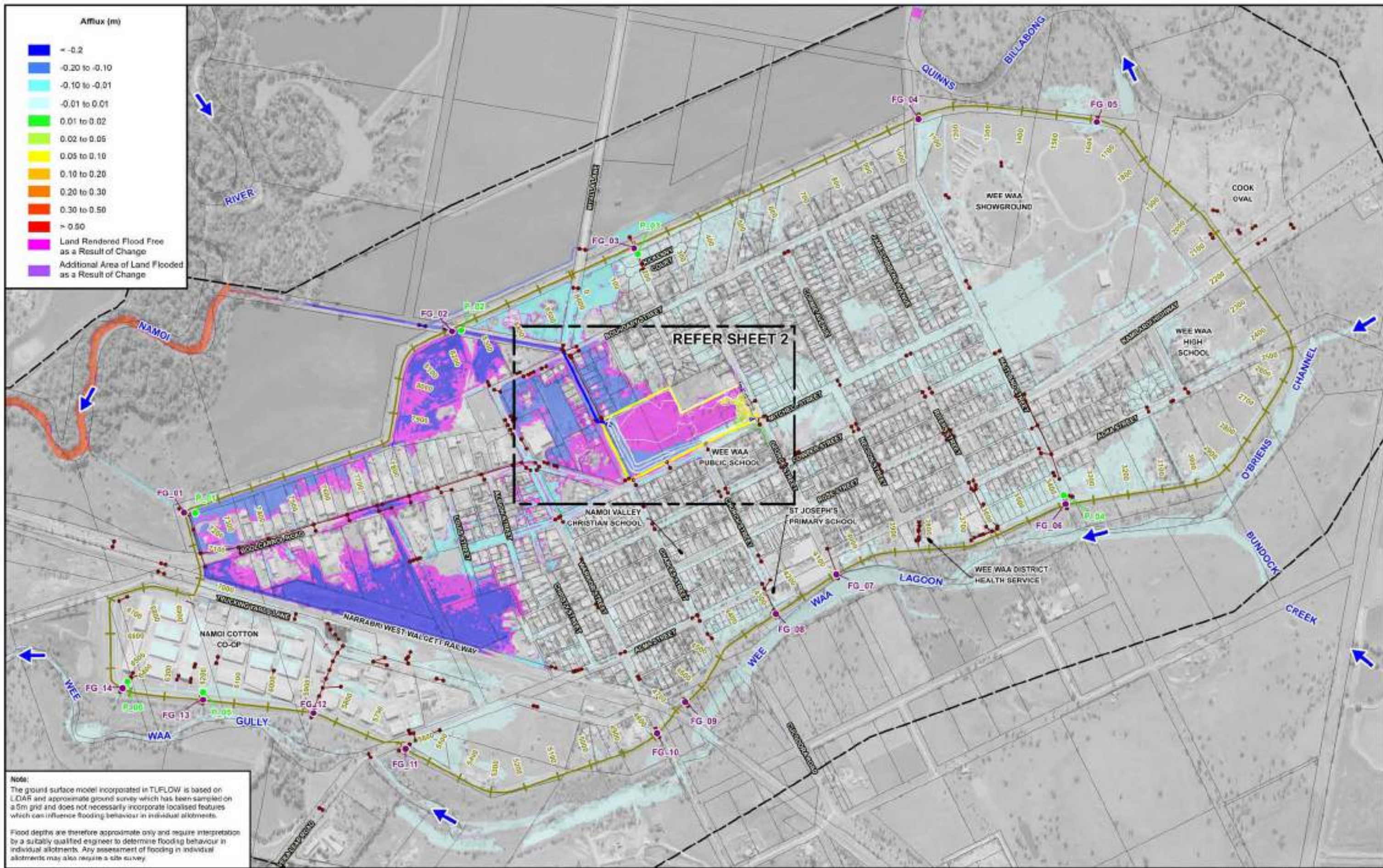
Note:
 The ground surface model incorporated in TUFLOW is based on LIDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.

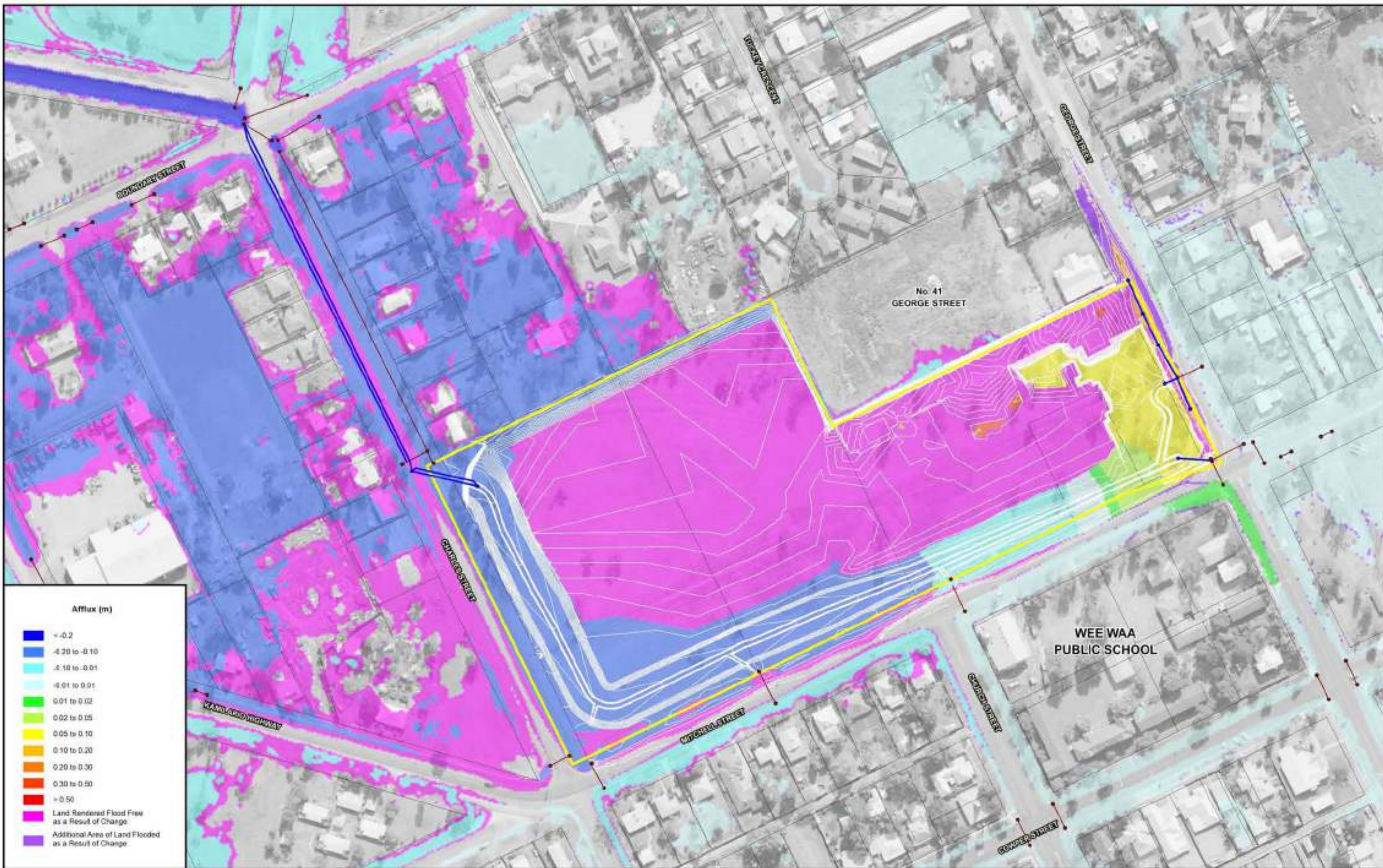
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- LEGEND**
- Existing Drainage System
 - Proposed Drainage System
 - Construction Site Boundary
 - Finished Surface Contours

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CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT

Figure 17
 (Sheet 2 of 2)
 IMPACT OF STAGE 3 SSD WORKS ON FLOOD BEHAVIOUR INTERNAL TO TOWN LEVEE
 5% AEP





Afflux (m)	
Dark Blue	< -0.2
Blue	-0.20 to -0.10
Light Blue	-0.10 to -0.01
Very Light Blue	-0.01 to 0.01
Light Green	0.01 to 0.02
Yellow-Green	0.02 to 0.05
Yellow	0.05 to 0.10
Orange	0.10 to 0.20
Red-Orange	0.20 to 0.30
Red	0.30 to 0.50
Dark Red	> 0.50
Magenta	Land Rendered Flood Free as a Result of Change
Purple	Additional Area of Land Flooded as a Result of Change

Scale: 1:2,000

Note:
 The ground surface model incorporated in TUFLOW is based on LIDAR and approximate ground survey which has been sampled on a 5m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.
 Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.

- LEGEND**
- Existing Drainage System
 - Proposed Drainage System
 - Construction Site Boundary
 - Finished Surface Contours

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 CONSTRUCTION STAGING FLOOD IMPACT ASSESSMENT**

IMPACT OF STAGE 3 SSD WORKS ON FLOOD BEHAVIOUR INTERNAL TO TOWN LEVEL
 1% AEP

Figure 18
 (Sheet 2 of 2)