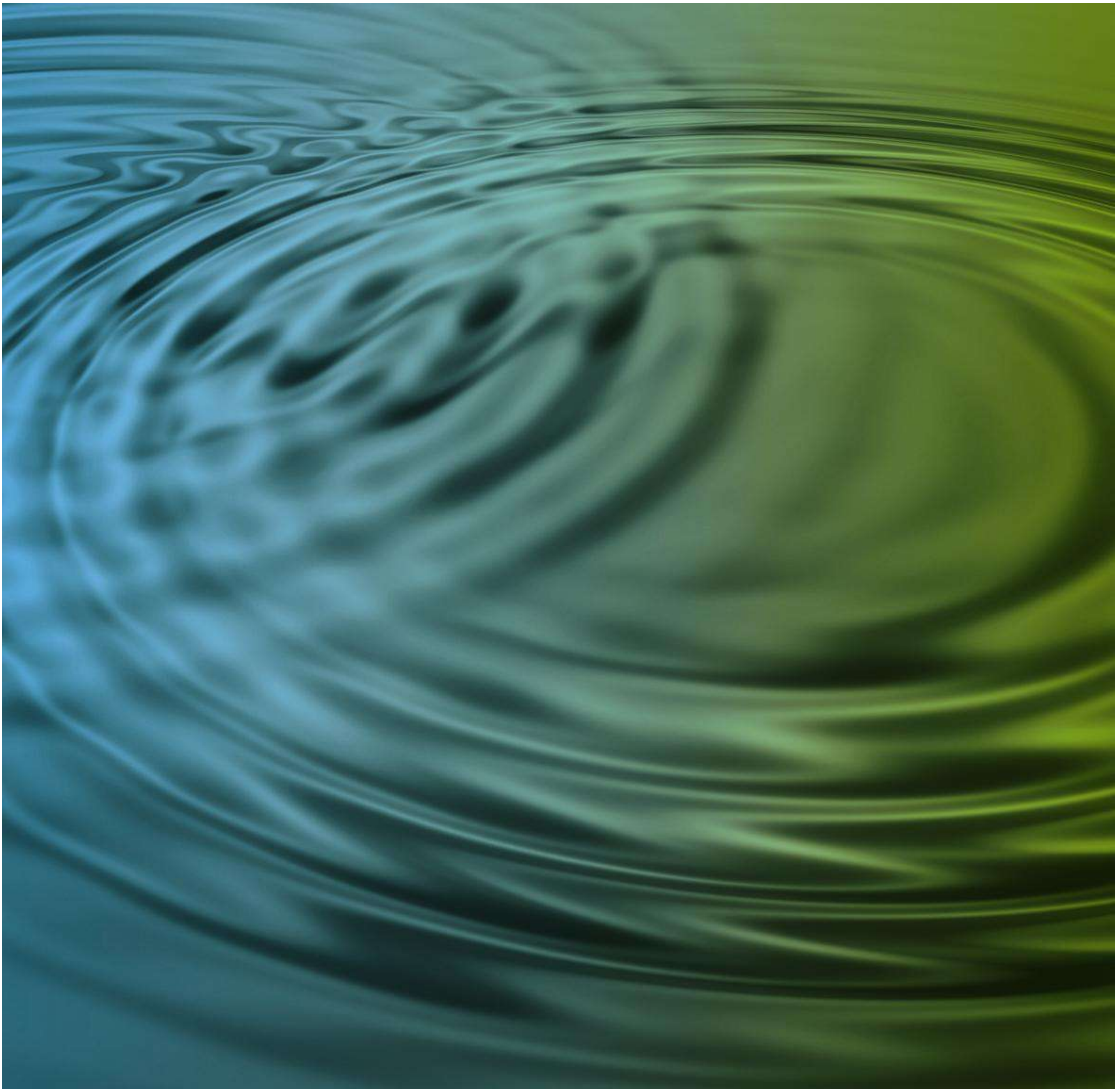
Proserpine Flood Study Update
Whitsunday Regional Council
26 October 2011

Proserpine Flood and Drainage Study

2011 Update Report



Proserpine Flood and Drainage Study

2011 Update Report

Prepared for

Whitsunday Regional Council

Prepared by

AECOM Australia Pty Ltd
250 Quay Street, PO Box 1049, Rockhampton QLD 4700, Australia
T +61 7 4927 5541 F +61 7 4927 1333 www.aecom.com
ABN 20 093 846 925

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Quality Information

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Reviewed by Leanne Wilkinson / Paul Glenn

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Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
0	16-June-2011	Draft for Client Review	Stephen Downes Technical Director - Water	Original Signed
A	26-Oct-2011	Final Issue	Stephen Downes Technical Director - Water	Original Signed

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Executive Summary

A detailed update to the original Proserpine Flood and Drainage Study completed in 2007 has been undertaken in order to:

- Update the baseline hydraulic models to better reflect the existing conditions (notably the incorporation of any drainage upgrades and utilisation of the new aerial survey).
- Provide revised flood maps for the township.

The previous model was updated as follows:

- The sub-catchment delineation for the southern catchment area was updated.
- The southern catchment hydrologic model was revised based on the updated sub-catchment characteristics and calibrated to two flood events.
- The updated hydrologic model for the southern catchment was run and discharge hydrographs for the 2, 10, 50 and 100 year ARI design events were obtained.
- The LIDAR data was used to update the surface bathymetry of the southern catchment hydraulic model.
- The updated southern catchment hydraulic model was run for the 2, 10, 50 and 100 year ARI design events.
- From the southern catchment hydraulic model results, the tail water levels for Lagoon Creek were obtained for use as boundary condition in the township model.
- All plans and information provided by WRC with regards to the Proserpine drainage network were reviewed and the MOUSE component of the township hydraulic model was updated.
- The previous sub-catchment delineation for the township area was updated.
- The MOUSE / XP-RAFTS hydrologic models for the township were updated with the revised sub-catchment characteristics.
- The LIDAR data was used to revise the surface bathymetry for the township hydraulic model.
- The boundary conditions for the township hydraulic model were revised.
- The updated southern catchment and township hydraulic models were calibrated to the March 2011 flood event. The model results were found to compare well with observed flood levels.
- The updated township hydraulic model was run for the 2, 10, 50 and 100 year ARI design events.

The updated baseline flood maps were compared to the most recent flood maps produced as part of the Lagoon Gardens, Glen Isla and Lurline Drive Flooding Assessment. The main areas of difference between the previous and updated model results have been detailed as follows:

- The flood extents and overall representation of Lagoon Creek is more refined in the updated model due to more detailed topographic data being utilised.
- The updated model shows that overland flow through the Lagoon Gardens development is conveyed by the roadways and drainage easements. It is noted that the updated model represents the ground conditions for all three stages of the Lagoon Gardens development and as a result, it was expected that the updated model would represent the baseline flooding within the Lagoon Gardens area more appropriately.
- The construction of Horsford Place is represented within the topographic grid for the updated model. The updated model shows flows in this area have been redirected to the roadway and through the drainage easement until reaching the Glen Isla conveyance channel.
- Conveyance through Pig Creek is represented in the updated model due to revised topography in the area south of Proserpine.
- The Telford Street development and associated embankment is included within the updated model. Overland flow from the Telford Street area has been represented in the updated model.

Detailed water level difference maps were produced along with maps showing differences in flood extents between the updated and previous model results.

Several recommendations have been made and are detailed below:

- In order to improve confidence in the results of the township model, calibration to other flood events of varying magnitude is required. As a result, it is recommended that WRC staff continue to record data from the recently installed peak flood height recorders to assist in this regard.
- WRC have indicated that they wish to improve management of flooding and drainage within Proserpine. It is recommended that WRC ensure all new works undertaken within Proserpine are provided for inclusion in the hydraulic model. This will ensure that the model represents current conditions within the township.

1.0 Introduction

1.1 Background

In 2007, AECOM developed a hydraulic model for Whitsunday Regional Council (WRC) that represented Proserpine's town drainage system. The model was intended to be used to assess the existing flooding issues within the town extents and to identify potential drainage improvement works. The model was used in 2008 to assist with the detailed design of drainage upgrade works in Main Street.

Further works were undertaken in 2010 by AECOM. This entailed more detailed flooding assessments in the areas of Lagoon Gardens, Glen Isla and Lurline Drive (within the Proserpine Township). Drainage improvement works undertaken post 2007 were also incorporated into the model along with several other minor refinements.

WRC has recently obtained new aerial survey data (as LIDAR) for the Proserpine region from the Department of Environment and Resource Management (DERM).

AECOM has now been engaged by WRC to undertake a detailed update to the original Proserpine Flood and Drainage Study completed in 2007. This update was to also incorporate the subsequent model revisions undertaken by AECOM in 2010.

1.2 Update Objectives

The objectives of this study are to:

- Update the baseline hydraulic models to better reflect the existing on-ground conditions (notably the incorporation of any drainage upgrades and utilisation of the new aerial survey); and
- Provide revised flood maps for the township.

1.3 Update Approach

This study has used the MIKE FLOOD software to investigate flood impacts within the Proserpine Township. The investigation has involved updates to and refinement of the previous MIKE FLOOD base case models for the southern catchment and township areas.

The model update was broken down into two distinct work packages:

- Work Package 1 – Southern Catchment Model Update.
    - Obtain available LIDAR data and utilise the data to review and update the previous sub-catchment delineation for the southern catchment area.
    - Update the southern catchment hydrologic model (XP-RAFTS) with revised sub-catchment characteristics. Obtain historical stream gauging and rainfall data and calibrate the updated model.
    - Run hydrologic model and obtain discharge hydrographs for the 2, 10, 50 and 100 year ARI design events. Prepare design hydrographs for input into the hydraulic model.
    - Revise the surface bathymetry in the southern catchment hydraulic model using the LIDAR data provided. Undertake a critical review of the bathymetry and carry out verification (where possible).
    - Calibrate the hydraulic model using any historical flood heights (if available).
    - Run the updated hydraulic model for the 2, 10, 50 and 100 year ARI design events. Compare flood heights with those obtained in the 2007 study.
    - From the results, obtain the maximum water levels in Lagoon Creek immediately south of Dudley Road. These levels are required for boundary conditions in the updated township model.
- Work Package 2 – Township Model Update.
    - Obtain and review all plans and information regarding changes made to the Proserpine drainage network since the original PFDS model study in 2007.
    - Update the MOUSE component of the hydraulic model to represent the current drainage network.

- Obtain available LIDAR data and utilise the data to review and update the previous sub-catchment delineation for the township area.
- Update the MOUSE / XP-RAFTS hydrologic models with revised sub-catchment characteristics.
- Revise the surface bathymetry in the township hydraulic model using the LIDAR data provided. Undertake a critical review of the bathymetry and carry out verification.
- Update the hydraulic model boundary conditions and roughness values, where necessary.
- Calibrate the hydraulic model using any historical flood heights (if available).
- Run the updated hydraulic model for the 2, 10, 50 and 100 year ARI design events. Compare flood heights with those obtained during the 2010 updates.
- Provide revised baseline flood heights for the township.

2.0 Previous Investigations

2.1 Proserpine Flood and Drainage Study (Maunsell Australia Pty Ltd, 2007)

Whitsunday Shire Council commissioned Maunsell Australia Pty Ltd to model the Proserpine town drainage system and examine the response of the town drainage system to short duration, high intensity storms.

The objective of this study was to assess existing flooding mechanism within the town. To achieve this objective, AECOM developed a combined MIKE FLOOD model that represented the Proserpine Drainage system and allowed for simultaneous modelling of both the underground and overland flow components.

This model represented the town's catchment hydrology (rainfall-runoff), the underground pipe drainage network (one-dimensional hydraulics) and overland flow paths (two-dimensional hydraulics). The Proserpine stormwater system was modelled for the 2, 10, 50 and 100 year 1 hour ARI storms. Flood maps were produced showing the model results.

The model was used to determine capacity limitations and flooding problems within the area. Six options for drainage improvement works were identified. Each of these identified a number of areas of improvement within the town and demonstrated the effectiveness of the proposed works on surface inundation levels.

2.2 Lagoon Gardens, Glen Isla and Lurline Drive Flooding Assessment (AECOM, 2010)

AECOM were engaged by the Whitsunday Regional Council to undertake a flooding assessment in the areas of Lagoon Gardens, Glen Isla and Lurline Drive.

Proserpine had been experiencing significant growth in recent years and development was progressing in vacant areas to the south of the township.

Flooding had historically occurred in this area and the Council was concerned that this could be exacerbated by development and associated filling, particularly in Lagoon Gardens. Other areas susceptible to flooding which were of concern to council are the Glen Isla area located in the north east of the township and the immediate area surrounding Lot 18 in Lurline Drive.

AECOM utilised the original MIKE FLOOD model developed for the 2007 PFDS which was updated with the following:

- Drainage constructed since 2007, including Marathon-Hinschen Street drainage and the early works for Main Street drainage.
- Detailed survey data within the study area (post 2007) including the commercial developments in Lagoon Gardens and in Glen Isla, north of the Bruce Highway.
- Roughness values which better reflect the existing conditions within open drainage channels outside the urban area.

The MIKE FLOOD model was used for both the underground and overland flow components which were represented simultaneously to determine flows, hydraulic grade lines and water depths in Proserpine for the 2, 10, 50 and 100 year ARI storms.

Capacity and flooding problems within the system were identified and necessary drainage improvement strategies were developed. Drainage upgrades were proposed in the following areas:

- Dudley Road, downstream of the Fuller Street intersection (increased capacity of open channel along west side of Dudley Road and increase capacity of underground drainage).
- Downstream of Bruce Highway culvert crossing (Glen Isla) and along the open channel through agricultural land to McCormack Road (additional culvert under cane railway as well as widen and deepen the open channel).
- Dodd Street and Lurline Drive running parallel to Anzac Road (increase underground drainage capacity and increase capacity and grade of open channels).

These measures were shown to have the following effects:

- The 100 Year ARI flooding caused by the development fill in Lagoon Gardens was contained within the drainage system.
- There was a significant reduction in the inundation of residential lots and agricultural land downstream of the Bruce Highway in Glen Isla for the 10 Year ARI storm.
- The 2 Year ARI flooding was contained within the drainage system in the residential lots within Lurline Drive and Anzac Road.

2.3 Catholic College Flooding Assessment (AECOM, 2010)

The Townsville Catholic Education office engaged AECOM to undertake a flooding impact assessment at a potential school site south of the Lagoon Gardens area in Proserpine, using the MIKE FLOOD township model developed for the PFDS. Some changes were made to the 2007 model, including:

- Revising the hydrologic model used to provide flow inputs to the MIKEFLOOD model to refine flow path details near the site and to reflect the urbanisation of the catchments since 2007.
- Updating the existing MOUSE model to include details of underground drainage constructed for the Lagoon Gardens development as well as any other drainage upgrades.
- Revising the bathymetry and roughness values of the model to include filling due to the recent developments in several locations within the township particularly Lagoon Gardens.
- Quantifying the flood levels for the 100 Year ARI events pre-development using the updated baseline flood model.

The baseline results indicated that the site was inundated for a 100 Year ARI event with an approximate flood level of 7.65mAHD and an average depth of 0.87m. The site mainly acted as flood storage for flows from the Proserpine Township and the area to the east of Dudley Road draining into Lagoon Creek.

The baseline MIKE FLOOD model was then updated to include fill levels above the 100 Year ARI flood levels for the proposed site, a proposed open channel to the west of the development and revised embankment levels for Dudley Road providing access to the site.

Flood levels were found to increase immediately north of the development site and within the residential area to the east of Dudley Road by 0.02m and 0.035m, respectively.

The raised embankment levels at Dudley Road were found to impede west to east flow. Insufficient drainage capacity along Dudley Road and along the development boundary as well as the loss of storage area in the development site increased flood levels.

It was recommended that flood mitigation works be included as part of the engineering design of the civil works for the site to mitigate the flood impacts associated with the proposed development.

3.0 Data Available for the Update

3.1 Topographic Data

3.1.1 LIDAR Survey

Topographic data was provided by WRC in the form of LIDAR survey completed in 2009. Figure 1 shows the extent of the LIDAR data.

The LIDAR points were used by DERM to generate a 'bare earth' Digital Elevation Model (DEM) with a grid spacing of 1 metre.

DERM state that the DEM represents the ground with a vertical accuracy of ± 0.15 metre on clear, hard surfaces at the 1 sigma confidence level. The absolute horizontal accuracy will be ± 0.45 metre at the 1 sigma confidence level.

In order to decrease computational run time in the models, the LIDAR DEM was filtered to produce a 20 metre and 5 metre gridded Digital Terrain Models (DTM). The extents of the DTM's were then 'trimmed' to match the extents of the two hydraulic models (the southern catchment model and township model).

The 20 metre grid was used for the southern catchment model and the 5 metre grid was used for the township model.

3.1.2 SRTM Contour Data

5 metre topographic contours were generated by interpolating the DEM data obtained from the Shuttle Radar Topography Mission (SRTM).

The SRTM was an international research effort that obtained DEM's on a near global scale to generate the most complete high resolution digital topographic database of Earth. The SRTM DEM data used to generate the 5 metre contours was obtained by Space Shuttle Endeavour in February 2000.

These 5 metre contours were used for areas of interest outside of the LIDAR data extent (i.e. to represent the broader southern catchment area). The contour data was primarily used to delineate sub-catchments within the southern catchment area and to determine other sub-catchment characteristics for input into the southern catchment hydrologic model (i.e. mainstream lengths, sub-catchment slopes and sub-catchment areas).

It should be noted that the contour data was not used to generate surface bathymetry within the southern catchment and township hydraulic models as the available LIDAR data represented a more accurate and more recent data topographic data set.

3.2 Detailed Survey

As part of the 2007 PFDS, WRC commissioned detailed survey of the Proserpine drainage system, including the underground drainage infrastructure.

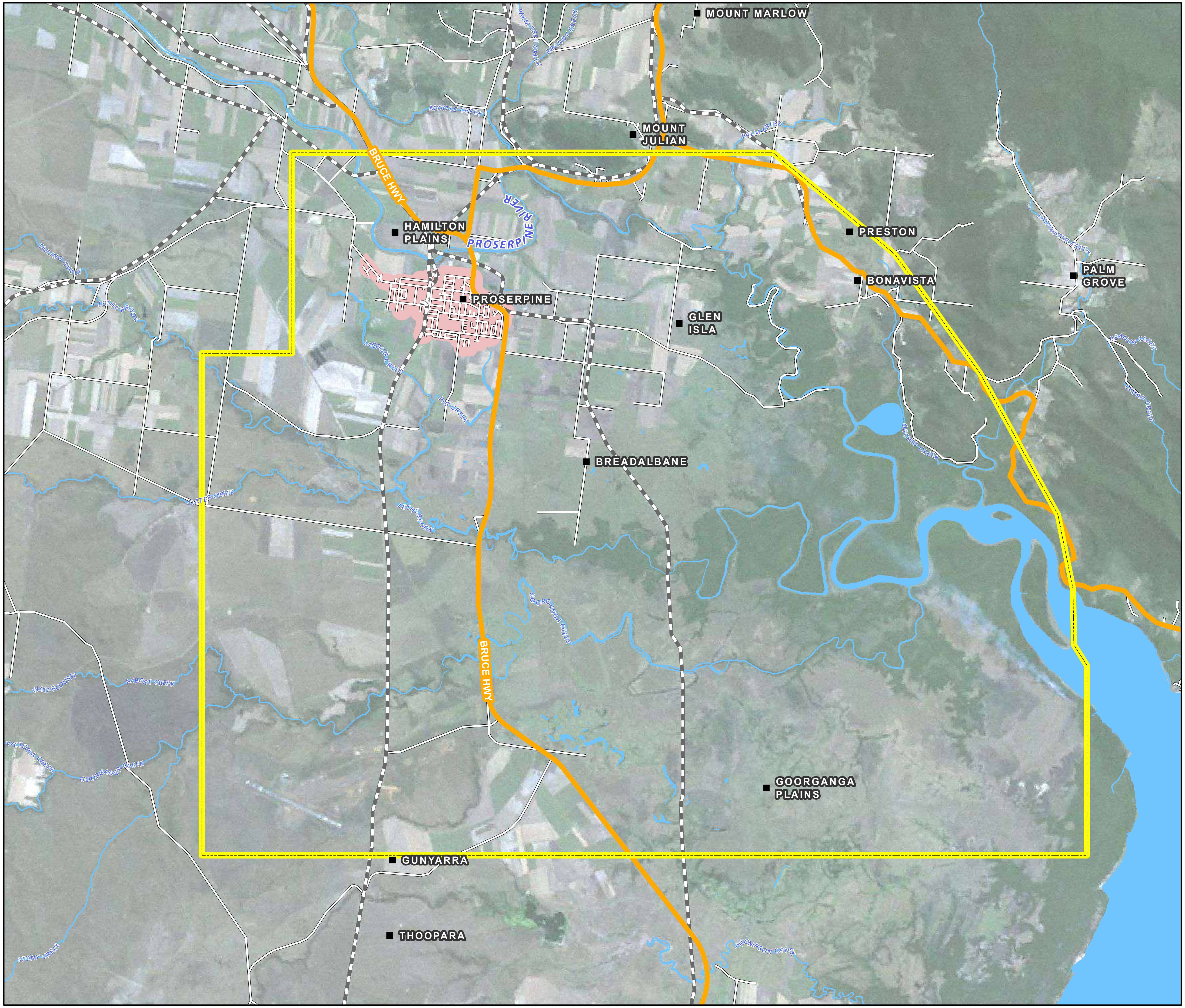
The survey data previously supplied by Cardinal Surveys was used in the updated model only where more recent data was unavailable.

Other survey data was available from the updates undertaken in 2010. This survey data was generally used to verify LIDAR survey levels within the township model extents.

3.3 Aerial Imagery

Aerial imagery was provided by WRC for the PFDS in 2007. However, given the developments which have occurred within the Proserpine region in recent years, it was deemed necessary to obtain more recent aerial imagery.

WRC obtained 25 centimetre aerial imagery of the Proserpine region from DERM. This imagery was captured in 2009 and was used for the updated flood maps.



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Extent of LIDAR Data Provided

Figure 01

Legend

- Locality
- Highway
- Road
- Railway Line
- Watercourse
- Waterbody
- Builtup Area
- Extent of LIDAR

N

Scale: 1:70,000 (when printed at A3)

0 750 1,500 3,000

Metres

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3.4 GIS Layers

WRC previously provided the following Geographic Information System (GIS) layers of Proserpine:

- Township contours (5m interval).
- Cadastral boundaries.
- Stormwater drainage (incomplete).
- Creek lines.
- Soil types.
- Easement boundaries.
- Railway lines.

This data was used during the 2011 update, with the exception of the superseded cadastral boundary layer.

3.5 Drainage Infrastructure Plans

Drainage works undertaken since the 2007 PFDS were collated by WRC and provided in hard copy and electronic formats.

The plans and information provided by WRC were associated with the following areas within the Proserpine Township:

- Horsford Place
  - As-Constructed survey plans of culverts and underground stormwater drainage infrastructure were provided. These plans also included lot boundaries, spot levels and details of overland flow channels (open drains) within the development.
- Lagoon Gardens
  - As-Constructed survey plans of culverts and underground stormwater drainage infrastructure were provided for the Lagoon Gardens development Stage 1, Stage 1A, Stage 2A and Stage 3A. All plans included lot boundaries, spot levels and details of overland flow channels within the development areas.
- Telford Street
  - As-Constructed survey plans of culverts and underground stormwater drainage infrastructure were provided. All plans provided also included lot boundaries, spot levels and details of overland flow channels within the development.
- Blair Street (adjacent to the service station)
  - WRC provided screenshots from their GIS system as well as photos and information which showed an additional 1200 x 375mm RCBC discharging to the open field to the east of the area. Information was also provided for the associated gully inlet pits.
- Hinschen Street
  - WRC design plans were provided for the Hinschen Street Road Reconstruction Project. These plans provided details of upgraded stormwater infrastructure within the extents of work. Confirmation of the accuracy of the plans was provided by WRC.
- Dodd Street
  - WRC provided updated information for the Dodd Street drain.
- Dobbins Lane
  - WRC provided screenshots from their GIS system as well as photos and information which showed connection between the Dobbins Lane and Marathon Street drainage systems.

- Main Street
    - AECOM design plans were provided for the Main Street Drainage Upgrade Project. WRC confirmed that Stage 1 of the upgrades have been constructed in accordance with the original design plans.

3.6 Rainfall Data

Historical rainfall data was acquired from the Bureau of Meteorology (BOM) in the form of daily rainfall data and pluviograph data. Data was obtained for each applicable rainfall gauging station within the Proserpine region (Figure 2).

There are a limited number of rainfall data sources available within the area. Therefore, only three stations were selected as the primary data sources based on the length of record available and geographic location (Table 1).

Table 1 Summary of BOM Rainfall Stations within the Proserpine Region used in this Study

Station Number	Site Name	Data Type Available	Latitude (˚S)	Longitude (˚E)	Start of Record	End of Record
033061	Proserpine Post Office	Daily Rainfall	-20.4000	148.5833	December 1969	December 1989
		Pluviograph Rainfall			July 1969	December 1988
033247	Proserpine Airport	Daily Rainfall	-20.4925	148.5550	January 1978	Current
		Pluviograph Rainfall			December 1988	Current
033254	Crystal Brook	Daily Rainfall	-20.3436	148.5000	April 1993	July 2010

3.7 Stream Gauging Data

Stream gauging data within the Proserpine region was sourced from DERM. The location of past and present stream gauging stations is shown on Figure 2. Two stations were selected based on the length of record available and geographic location (Table 2).

Table 2 Summary of Stream Gauging Stations within the Proserpine Region

Station Number	Site Name	Upstream Catchment Area (km^2)	Latitude (˚S)	Longitude (˚E)	Start of Record	End of Record
122011A	Kelsey Creek at Thorogoods	28.0	-20.4253	148.4506	January 1996	Current
122012A	Lethe Brook at Hadlow Road	89.0	-20.4133	148.5247	January 1996	Current

Both stations are controlled by crump weirs and were installed for the Kelsey Creek Water Board to monitor water use and pipeline releases from the Peter Faust Dam. These stations are located in close proximity to each other and are positioned in the upper catchment of Lethe Brook (west of Proserpine). Liaison with DERM hydrologists has confirmed the following:

- The maximum verified gauged flow for Kelsey Ck is 9.35 m^3/s. Recordings above 9.35 m^3/s are based on a rating curve determined using the Manning's Equation.
- The maximum verified gauged flow for Lethe Brook is 2.5 m^3/s. Recordings above 2.5 m^3/s are based on a rating curve determined using the Manning's Equation.

Continuous discharge data was available from these particular stations and was obtained from DERM for the February 2002 and January 2005 flood events. The continuous discharge data obtained was used to produce historical flood hydrographs for the two events.

These events represent the two largest flood events that have been recorded at the two stations during their periods of record. These events were of interest as they could be used to calibrate the southern catchment hydrologic model.

DERM have advised that the peak water level for the February 2002 and January 2005 events were within the gauged cross section for both stations. However, the recorded peak discharges were greater than the verified discharges for both stations. Therefore there is a degree of uncertainty regarding the accuracy of the records for the two events.

PROSERPINE FLOOD MODEL UPDATE

Rainfall and Stream Gauge Locations

- Localities
- Rainfall Guage
- Pluviograph Gauge
- Water Monitoring Station
- Main Road
- Minor Road
- Railway Lines
- Watercourse

0 1 2 Kilometers

Scale: 1:100,000 (when printed at A3)

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LAST MODIFIED CFS 14-Feb-2011

FILE NAME 60142613G_WIS_22

AECOM

4.0 Southern Catchment Model Update

4.1 Overview

The southern catchment encompasses an area of approximately 450km^2 and is bound by the Proserpine River to the north; forested ranges to the west; the mouth of the Proserpine River to the east; and raised landforms to the south (Figure 3). Surface water flow in the catchment is from the ranges in the west to the coastal plain to the east via three creek systems: Lethe Brook, Goorganga Creek and Deadman Creek.

The lower catchment is virtually flat with shallow meandering watercourses. Consequently, in times of flood, water generally overtops the banks of the creeks and is conveyed by the floodplain to the sea as sheet flow over the cleared grassland and mangrove flats.

The majority of Proserpine's drainage infrastructure outlets to the south of the town, with the flows ultimately conveyed to Lagoon Creek or Pig Creek. Both of these creeks are tributaries to Lethe Brook and as a result, any concurrent flooding in the southern catchment area can have an influence on flood levels with the Proserpine Township.

4.2 Hydrologic Modelling

4.2.1 Model Details

An XP-RAFTS model was originally developed as part of the 2007 PFDS. This model quantified the surface water flows within the southern catchment by modelling catchment flows using Laurenson's non-linear routing method.

XP-RAFTS has been widely used throughout Queensland and is an accepted model to quantify flood flows. The model predicts flows for rural catchments and is well suited to modelling the southern catchment.

The original XP-RAFTS model was updated to match current catchment conditions determined from more accurate topographic data and recent aerial imagery.

4.2.2 Catchment Refinement

Sub-catchment delineation undertaken in 2007 was based on the available topographic data at the time. This original delineation was reviewed using new topographic data provided.

The southern catchment was divided into 26 sub-catchments according to the tributary network, catchment topography, land use, and locations where hydrographs were to be applied in the hydraulic model. Each sub-catchment conveys runoff via the local tributaries and each has varying sub-catchment parameters.

Figure 4 shows the extents of the southern catchment and sub-catchment delineation.

Comparison of the newly delineated sub-catchments with the 2007 PFDS highlighted two main differences:

- The updated catchment extent was found to extend further south (along the Deadman Creek sub-catchment) than the original delineation.
- Three Mile Creek, Five Mile Creek and Hidden Valley sub-catchments drain to the north and join the Proserpine River. As a result, runoff from these sub-catchments does not enter the southern catchment area. The north-western southern catchment boundary was modified to exclude these sub-catchments.

The total area of the southern catchment was updated to 440km^2 from the 469.9 km^2 area originally determined in the 2007 PFDS.

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Southern Catchment Area

Figure 03

Legend

- Locality
- Highway
- Railway Line
- Watercourse
- Waterbody
- Builtup Area

N

Scale: 1:150,000 (when printed at A3)

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Metres

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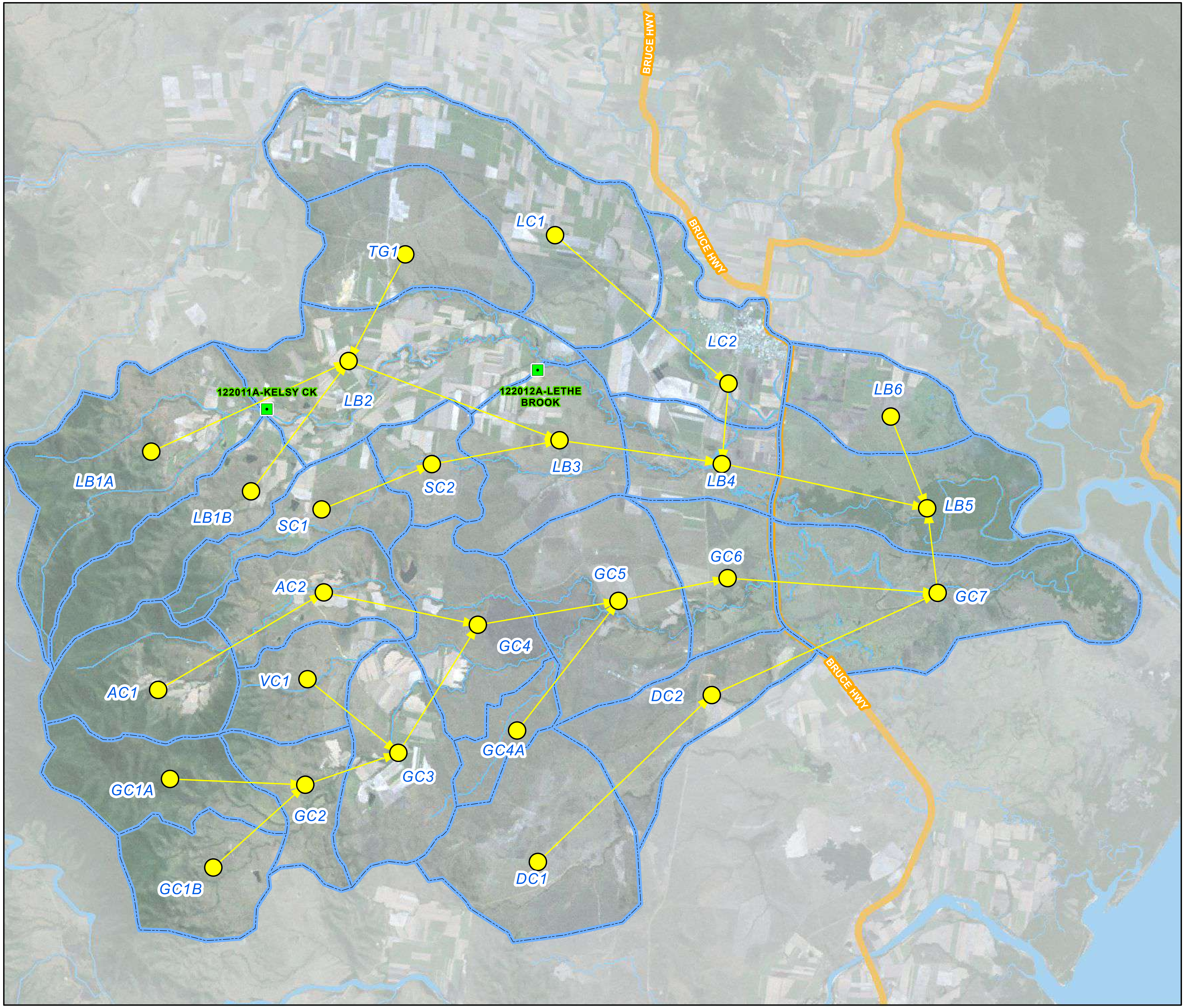

PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Southern Catchment XP-RAFTS Set-Up

Figure 04

Legend

- DERM Stream Gauges
- Nodes
- Links
- Highway
- Catchment Boundary
- Watercourse
- Waterbody

Scale: 1:100,000 (when printed at A3)

0 1,100 2,200 4,400

Metres

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4.2.3 Sub-Catchment Parameters

Each sub-catchment was described in the XP-RAFTS model by specifying:

- Area
- Slope
- Roughness
- Impervious fraction.

Individual sub-catchment values for area and slope parameters were defined using the 1m contours generated from the LIDAR data and supplemented with the 5 metre SRTM topographic contour data where required. The roughness and impervious fraction were determined based on the aerial imagery provided.

Table 3 summarises the parameters adopted for each of the sub-catchments.

Table 3 Southern Catchment XP-RAFTS Model Parameters

Catchment	Land Use Description	Area (km^2)	Manning's 'n'	Fraction Impervious (%)	Catchment Slope (%)
GC1A	Mountain Bushland	13.90	0.08	0.0	9.93
GC1B	Mountain Bushland	12.80	0.08	0.0	10.93
VC1	Mountain Bushland and Rural Pastures	10.18	0.08	0.0	6.10
GC2	Bushland and Rural Pastures	9.06	0.06	0.0	4.85
GC3	Bushland and Rural Pastures	17.00	0.06	0.0	0.89
GC4	Bushland and Rural Pastures	16.63	0.06	0.0	0.88
GC4A	Bushland and Rural Pastures	5.49	0.06	0.0	1.81
GC5	Bushland and Rural Pastures (includes Airstrip)	22.24	0.06	1.0	0.70
GC6	Rural Pastures and Floodplain	11.54	0.06	0.0	0.50
GC7	Floodplain	29.34	0.06	0.0	0.20
AC1	Mountain Bushland and Rural Pastures	16.30	0.08	0.0	13.73
AC2	Bushland and Rural Pastures	12.91	0.06	0.0	4.62
SC1	Mountain Bushland and Rural Pastures	11.96	0.08	0.0	4.13
SC2	Bushland and Rural Pastures	7.70	0.06	0.0	1.74
DC1	Bushland and Rural Pastures	24.51	0.06	0.0	2.17
DC2	Bushland and Rural Pastures (includes Airstrip)	14.73	0.05	1.0	0.62
LB1A	Mountain Bushland and Rural Pastures	28.03	0.08	0.0	7.81
LB1B	Mountain Bushland and Rural Pastures	14.88	0.08	0.0	5.17
LB2	Rural Pastures	27.40	0.06	0.0	0.59
LB3	Bushland and Rural Pastures	17.97	0.06	0.0	0.50
LB4	Bushland and Rural Pastures	11.37	0.06	0.0	0.20
LB5	Floodplain	21.21	0.06	0.0	0.20
LB6	Rural Pastures and Floodplain	11.40	0.06	0.0	0.20
TG1	Bushland and Rural Pastures	18.60	0.06	0.0	1.28

Catchment	Land Use Description	Area (km^2)	Manning's 'n'	Fraction Impervious (%)	Catchment Slope (%)
LC1	Rural Pastures	35.79	0.06	0.0	0.69
LC2 – Sub Area 1	Undeveloped Area	15.50	0.05	65.0	0.20
LC2 – Sub Area 2	Developed Area	1.67	0.018	100.0	0.20

4.2.4 Channel Routing

The Muskingum-Cunge routing method was used to route hydrographs between sub-catchments. This method requires a defined reach length, slope, channel geometry, and roughness to determine appropriate hydrograph routing.

Cross sections, link lengths and slopes were determined based on the available topographic data.

4.2.5 Design Rainfall

4.2.5.1 Intensity Frequency Duration Rainfall Data

Site specific Intensity Frequency Duration (IFD) data was determined using the design rainfall isopleths from Volume 2 of Australian Rainfall and Runoff (AR&R, 1987). The IFD input data set obtained for Proserpine is shown in Table 4.

Table 4 Adopted IFD Input Parameters

Parameter	Value
Longitude (˚E)	148.5833
Latitude (˚S)	-20.4000
1 hour, 2 year intensity (mm/hr)	58.7
12 hour, 2 year intensity (mm/hr)	12.8
72 hour, 2 year intensity (mm/hr)	4.76
1 hour, 50 year intensity (mm/hr)	109
12 hour, 50 year intensity (mm/hr)	28.7
72 hour, 50 year intensity (mm/hr)	12.8
Average Regional Skewness	0.13
Geographic Factor, F2	4.04
Geographic Factor, F50	17.65

Standard techniques from AR&R were used to determine rainfall intensities up to 72 hours for the 2, 10, 50 and 100 year ARI events. The calculated IFD data is shown in Table 5.

Table 5 IFD Rainfall Data for Proserpine (prior to applying areal factors)

Duration	2 Year ARI (mm/hr)	10 Year ARI (mm/hr)	50 Year ARI (mm/hr)	100 Year ARI (mm/hr)
1 hour	58	83	112	124
2 hours	38.4	56	78	87
3 hours	29.9	44.8	62	70
4.5 hours	23.2	35.5	50	57
6 hours	19.4	30.2	42.9	48.7
9 hours	15.1	23.9	34.5	39.4
12 hours	12.7	20.3	29.6	33.8
18 hours	10.3	16.9	24.9	28.7

Duration	2 Year ARI (mm/hr)	10 Year ARI (mm/hr)	50 Year ARI (mm/hr)	100 Year ARI (mm/hr)
24 hours	8.83	14.8	22	25.5
48 hours	6.02	10.5	16.2	18.9
72 hours	4.7	8.47	13.2	15.5

4.2.5.2 Areal Reduction Factors Adopted for Southern Catchment

The rainfall IFD values derived in Section 4.2.5.1 are applicable strictly only to one point; however AR&R state that they may be taken to represent IFD values over a small area (up to 4 km^2). For larger areas (as is the case for the southern catchment) it is not realistic to assume that the same rainfall intensity can be maintained over the entire area, thus some reduction must be made.

The areal reduction factors presented in AR&R Book II are based on an analysis of a limited number of rainfall stations in the Chicago and Arizona areas. The 1998 update of AR&R (Book VI) states that a number of recent Australian studies have yielded appreciably different areal reduction factors and there is evidence to suggest that the areal reduction factors originally published in Book II of AR&R are conservative. Book VI of AR&R state that practitioners should use their own judgement as to whether the factors derived for other regions of Australia are more appropriate than the values presented in Book II of AR&R.

Book VI of AR&R further states that one of the most extensive studies undertaken in Australia was completed by Siriwardena and Weinmann (1996) on behalf of the Cooperative Research Centre for Catchment Hydrology. They used daily rainfall data from over 2000 rain gauges located across Victoria. They derived areal reduction factors for durations of 18 to 120 hours, catchment areas between 1 and 10,000 km^2 and for AEP's from 1 in 2 to 1 in 2000.

In reference to the hydrologic assessment of the southern catchment, the factors derived by Siriwardena and Weinmann were considered more applicable to Proserpine and were therefore used in preference to the values presented in Book II of AR&R for this assessment.

For durations of 18 hours and longer, Siriwardena and Weinmann provide an equation for the estimation of the areal reduction factors as a function of rainfall duration, catchment area and the AEP of the event. For durations of less than 18 hours, Siriwardena and Weinmann propose a relationship that is not dependent upon AEP.

The computed areal reduction factors have been included within Appendix A. These areal reduction factors were applied to the IFD rainfall data to produce the design rainfall applied to the total catchment in the hydrologic model. The final design rainfall is shown in Table 6.

Table 6 Design Rainfall Data (after applying the Areal Reduction Factors)

Duration	2 Year ARI (mm/hr)	10 Year ARI (mm/hr)	50 Year ARI (mm/hr)	100 Year ARI (mm/hr)
1 hour	41	58	79	87
2 hours	28	41	58	64
3 hours	23	34	47	53
4.5 hours	18.1	27.7	39.1	44.5
6 hours	15.4	24.0	34.2	38.8
9 hours	12.3	19.5	28.2	32.2
12 hours	10.6	16.9	24.6	28.1
18 hours	8.8	14.3	21.0	24.1
24 hours	7.8	12.9	19.1	22.1
48 hours	5.6	9.7	14.8	17.2
72 hours	4.45	7.94	12.25	14.32

4.2.6 Calibration

4.2.6.1 Overview

Calibration of the XP-RAFTS model was undertaken by applying historical rainfall event data to sub-catchments LB1A and LB2 and comparing the resulting hydrographs to the corresponding gauge records at Kelsey Creek (122011A) and Lethe Brook (122012A). Rainfall losses within the XP-RAFTS model were altered until the modelled hydrographs closely matched the gauged hydrographs.

The XP-RAFTS model uses and initial and continuing loss model to represent infiltration and storage of runoff in surface depressions.

Two rainfall events in February 2002 and January 2005 were used for calibration.

Pluviographs for the sub-catchments LB1A and LB2 for the two events were derived from the data at the nearest recorded site, Proserpine Airport, by:

1) Obtaining daily rainfall data from BOM in the form of high resolution rainfall grids. The analyses (grids) are computer generated by BOM using an optimised Barnes successive correction technique that applies a weighted averaging process to the station data. Topographical information is included by the use of rainfall ratio (actual rainfall divided by monthly average) in the analysis process; and

2) Converting the daily rainfall totals to rainfall depths at six minute intervals using the temporal distribution from the pluviograph data measured at the Proserpine Airport.

The resulting rainfall depths were applied to the model for each of the calibration events.

4.2.6.2 Calibration – February 2002 Event

A single storm representing the February 2002 event was applied to the XP-RAFTS model. The event commenced at midnight on 14 February 2002 and continued for 48 hours. The rainfall depths that were applied to the LB1A and LB2 sub-catchments are shown in Figure 5 and Figure 6, respectively.

The model was calibrated to the Kelsey Creek and Lethe Brook stream gauges. Initial and continuing loss values which achieved the best fit between the model and gauge data are shown in Table 7.

Table 7 Calibrated Model Loss Values for February 2002 Event

Event	Impervious Sub Areas		Pervious Sub Areas	
	Initial Loss (mm)	Continuing Loss (mm/hr)	Initial Loss (mm)	Continuing Loss (mm/hr)
Calibration Run (February 2002)	15	8	1.5	0

A comparison between the gauged hydrographs and the calibrated model hydrographs are shown in Figure 7 and Figure 8.

4.2.6.3 Calibration – January 2005 Event

A single storm representing the January 2005 event was applied to the XP-RAFTS model. The event commenced at 9.00am on 22 January 2005 and continued for 87 hours. The rainfall depths that were applied to the LB1A and LB2 sub-catchments are shown in Figure 9 and Figure 10, respectively.

The model was calibrated to the Kelsey Creek and Lethe Brook stream gauges. Initial and continuing loss values which achieved the best fit between the model and gauge data are shown in Table 8.

Table 8 Calibrated Model Loss Values for January 2005 Event

Event	Impervious Sub Areas		Pervious Sub Areas	
	Initial Loss (mm)	Continuing Loss (mm/hr)	Initial Loss (mm)	Continuing Loss (mm/hr)
Calibration Run (January 2005)	15	2.5	1.5	0

A comparison between the gauged hydrographs and the calibrated model hydrographs are shown in Figure 11 and Figure 12.

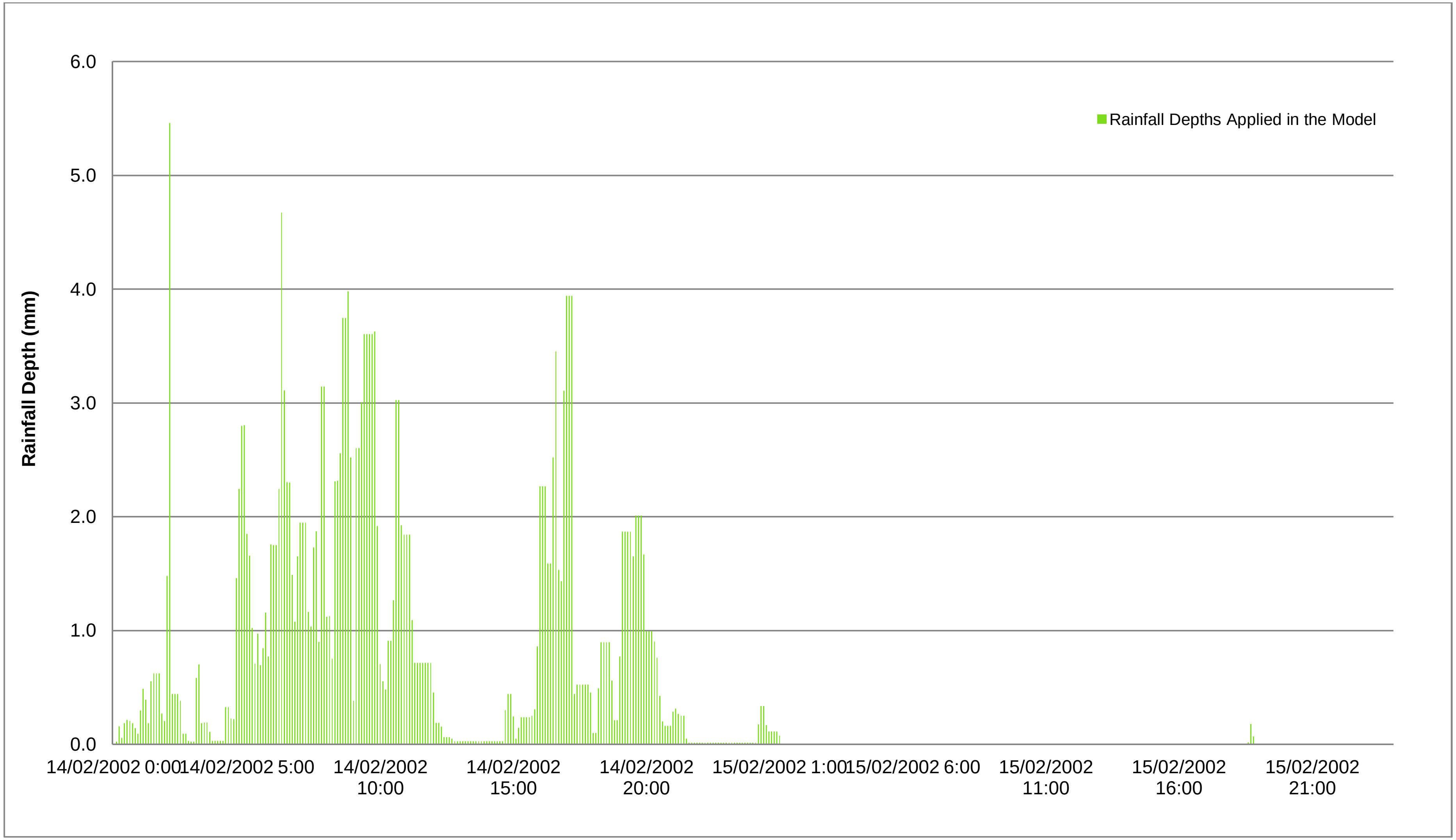


Figure 5 **Rainfall Hyetograph Applied to LB1A – February 2002 Event**

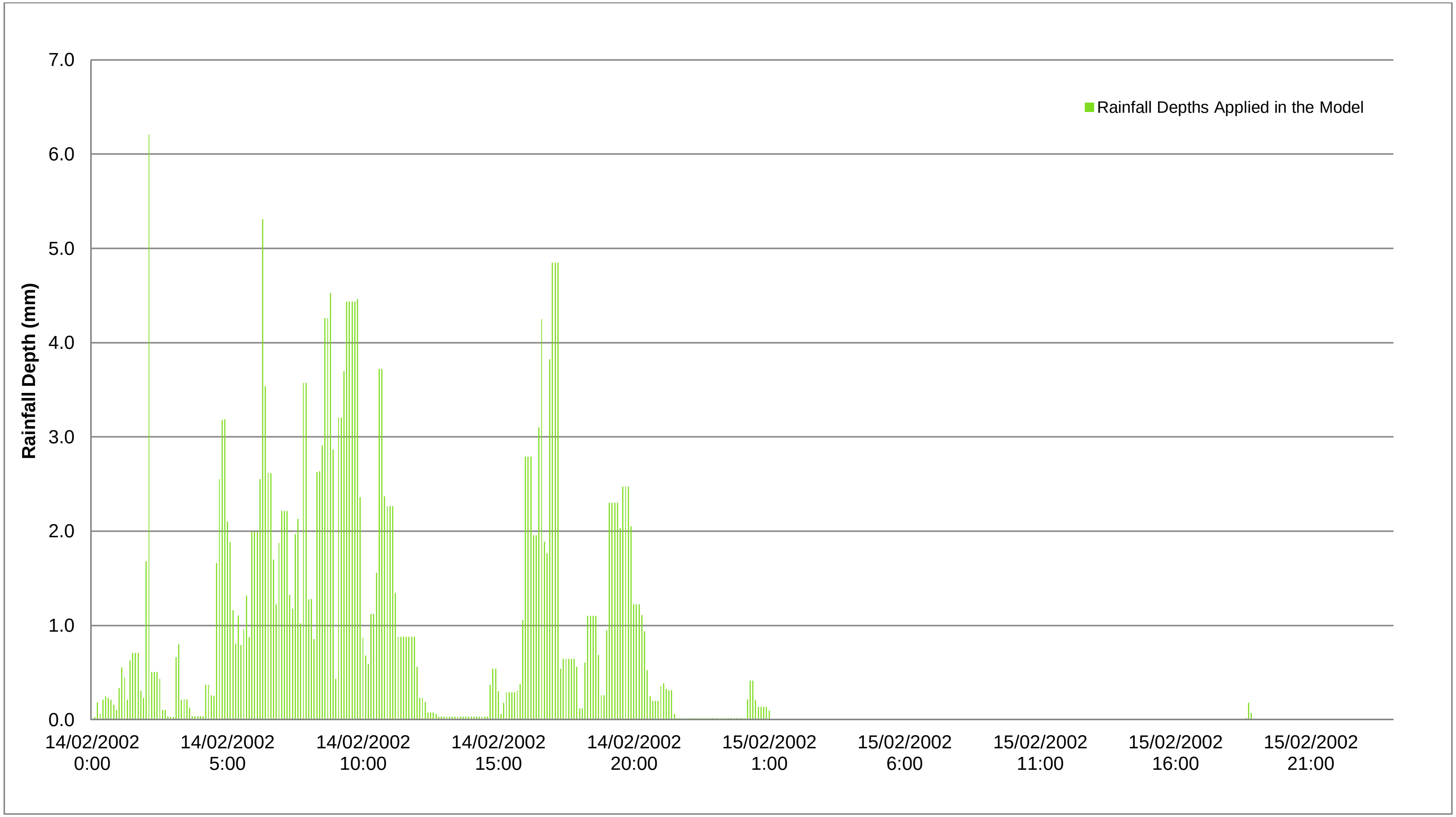


Figure 6 Rainfall Hyetograph Applied to LB2 – February 2002 Event

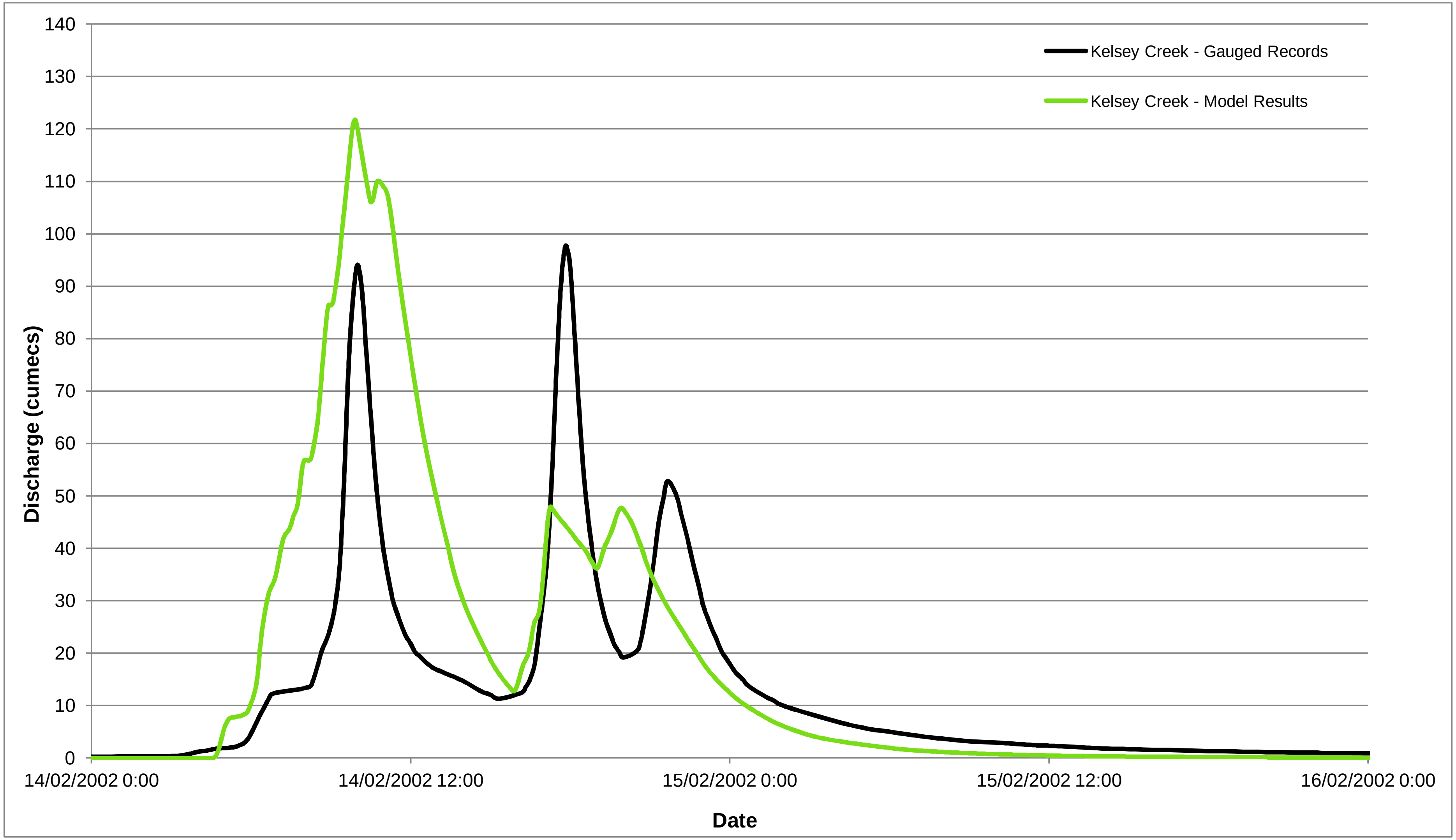


Figure 7 Calibration to Kelsey Creek Gauge (LB1A Sub-Catchment) – February 2002 Event.

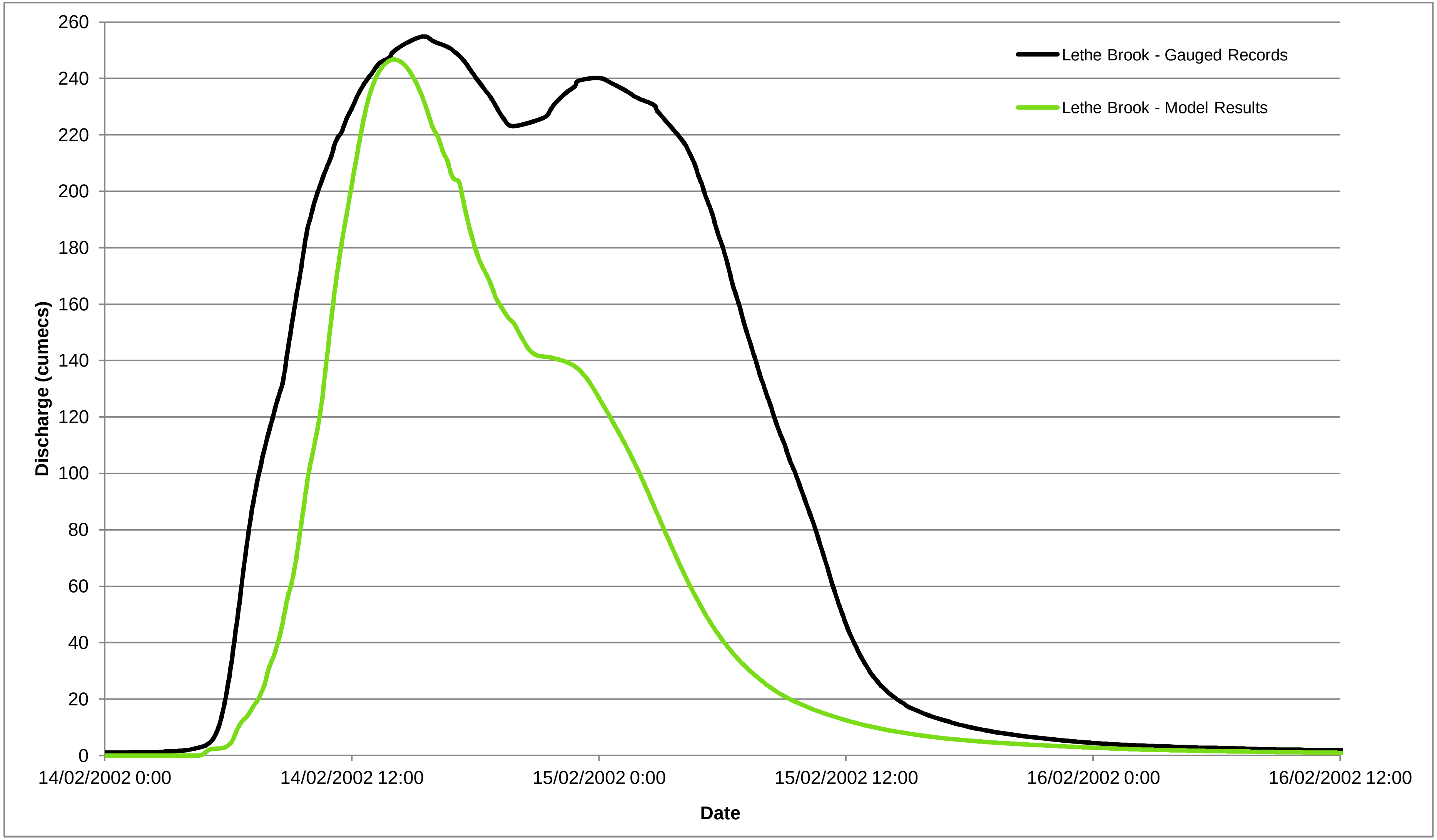


Figure 8 Calibration to Lethe Brook Gauge (LB2 Sub-Catchment) – February 2002 Event.

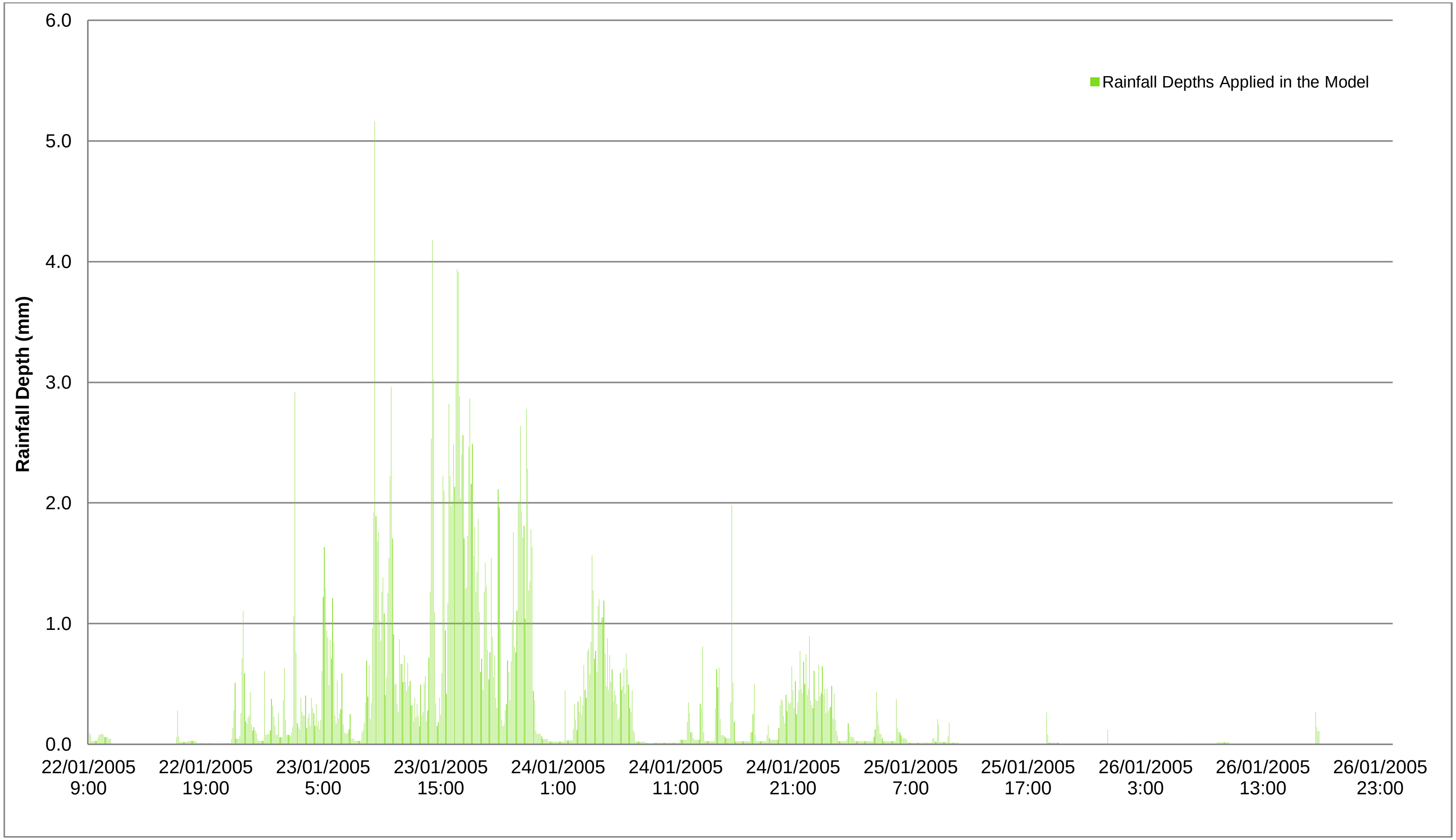


Figure 9 Rainfall Hyetograph Applied to LB1A – January 2005 Event

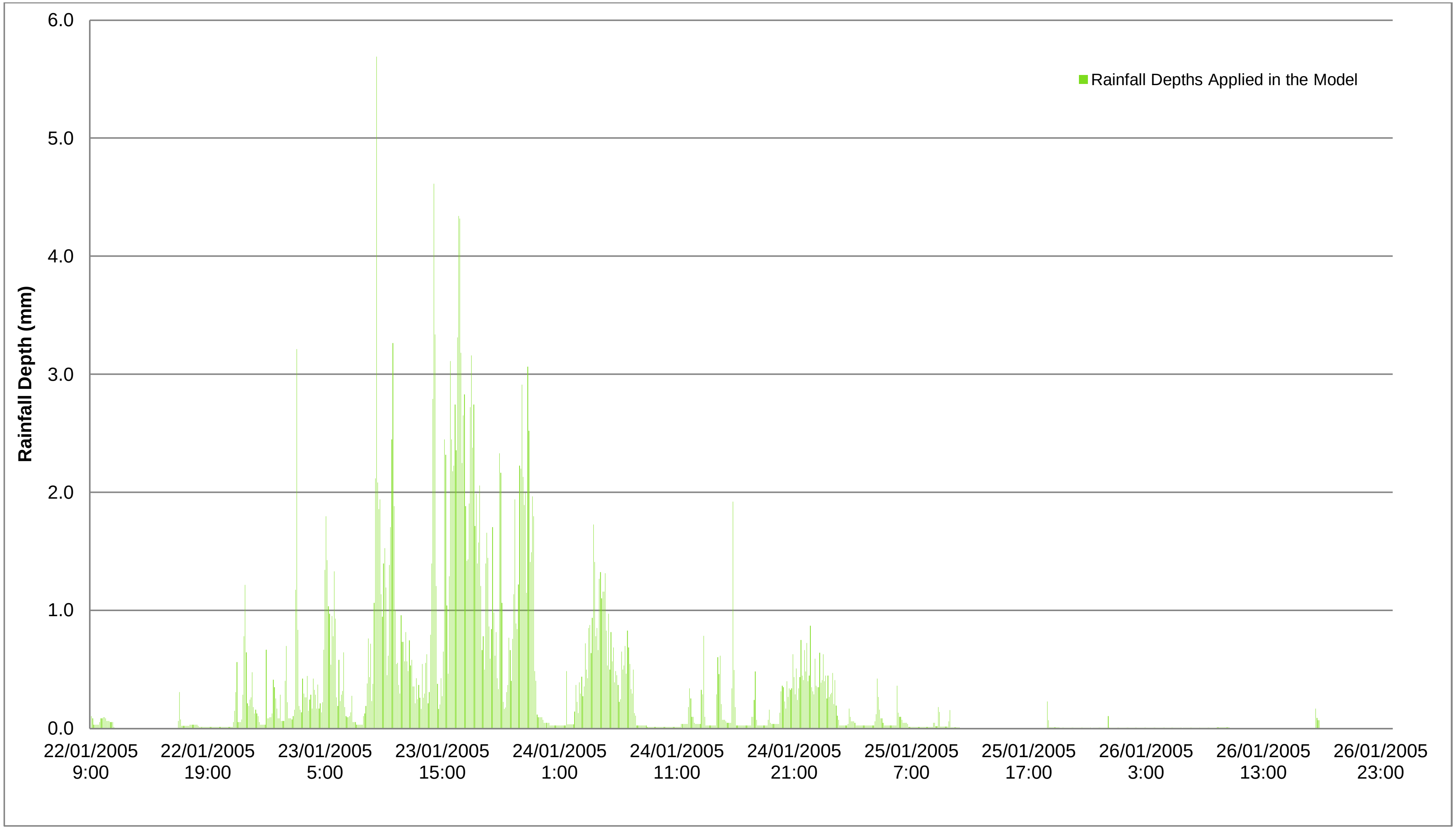


Figure 10 Rainfall Hyetograph Applied to LB2 – January 2005 Event

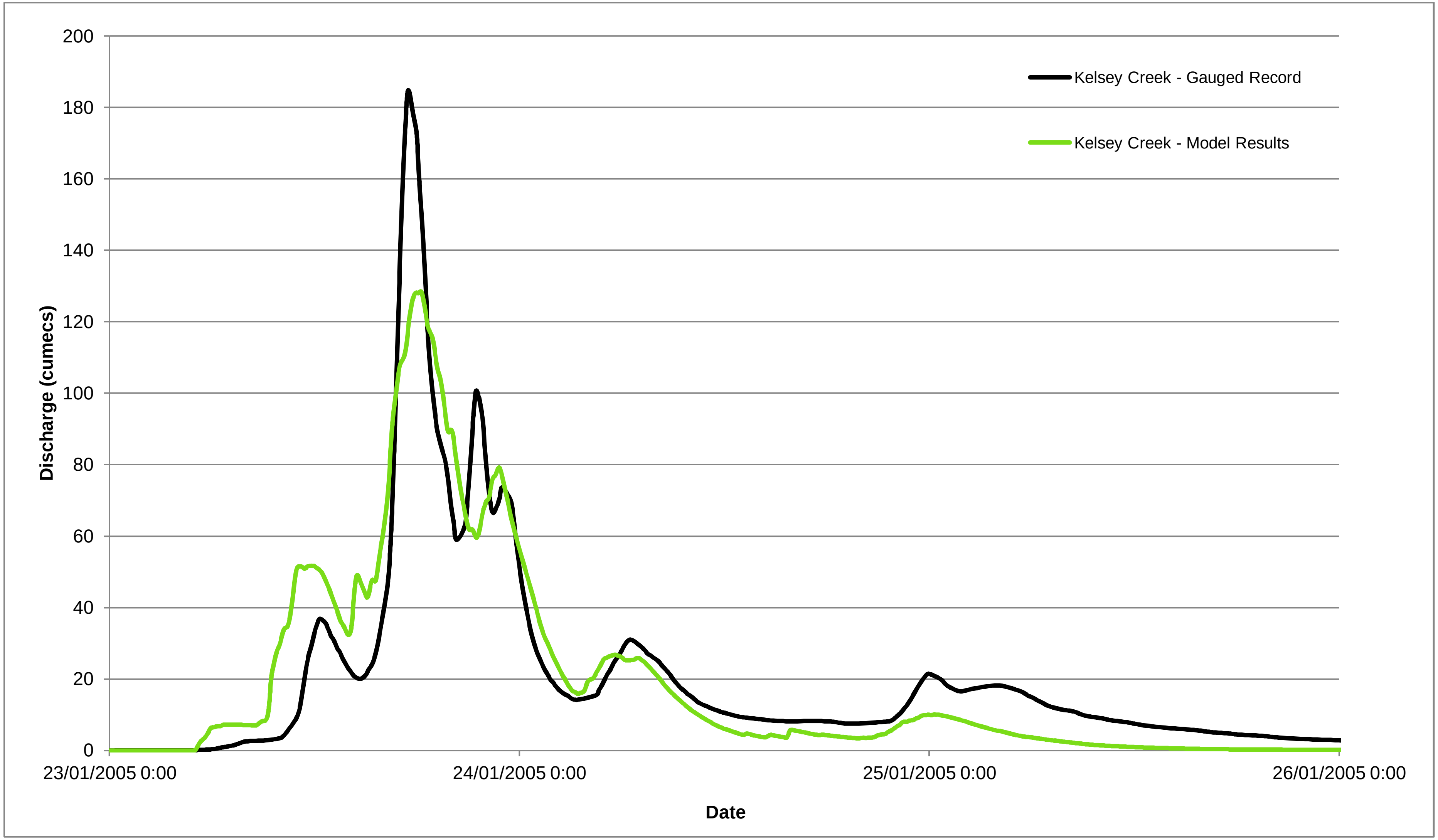


Figure 11 Calibration to Kelsey Creek Gauge (LB1A Sub-Catchment) – January 2005 Event.

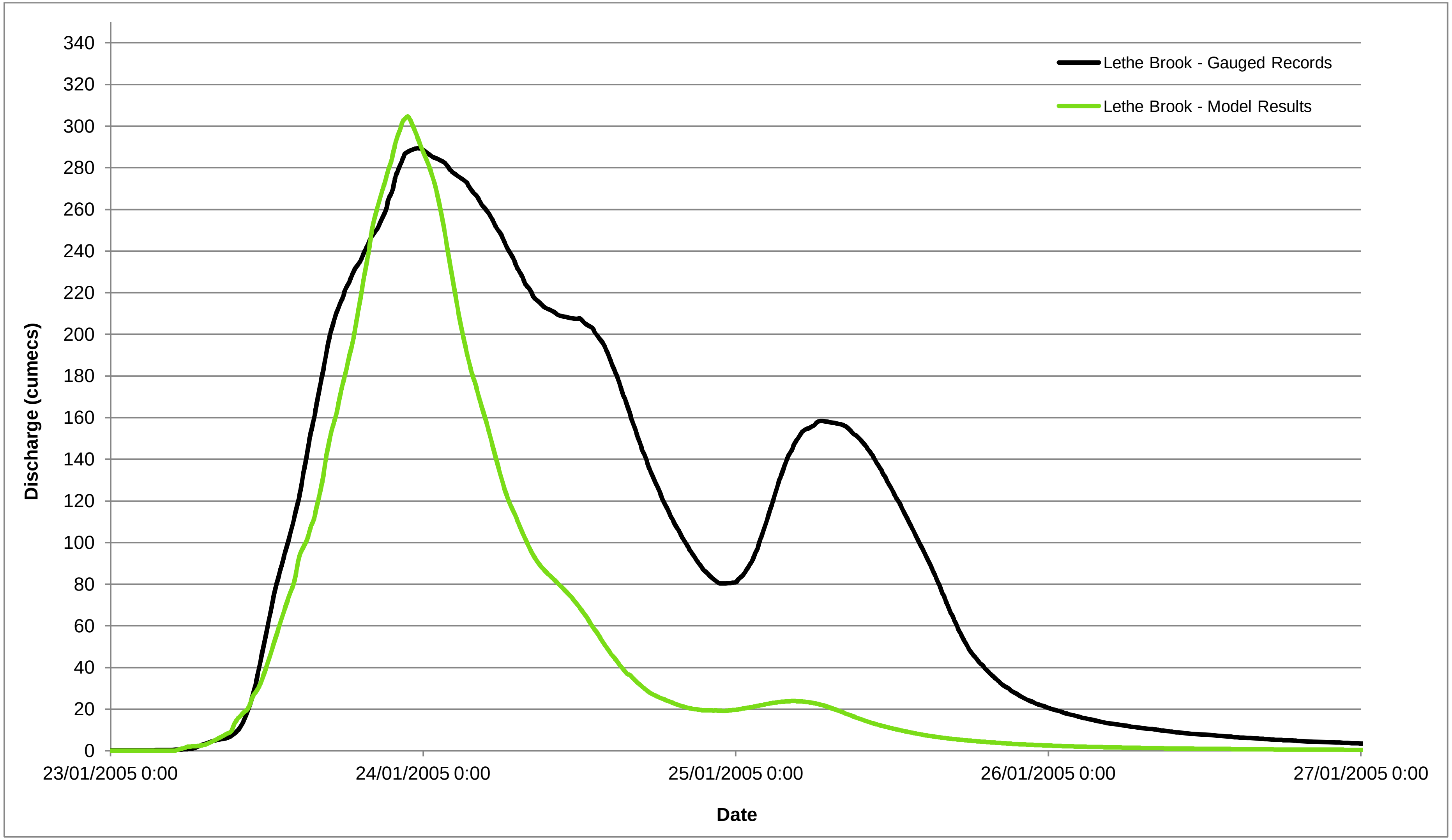


Figure 12 Calibration to Lethe Brook Gauge (LB2 Sub-Catchment) – January 2005 Event.

4.2.7 Selection of Rainfall Loss Values for Design Rainfall Events

Table 9 summarises the loss values determined for each of the two calibrations described above and compares them to those adopted in the original 2007 PFDS. Calibration of the loss values for the 2007 PFDS was not undertaken due to a lack of calibration data at the time.

Table 9 Initial and Continuing Loss Values

Event	Impervious Sub Areas		Pervious Sub Areas	
	Initial Loss (mm)	Continuing Loss (mm/hr)	Initial Loss (mm)	Continuing Loss (mm/hr)
Calibration Run (February 2002)	15	8	1.5	0
Calibration Run (January 2005)	15	2.5	1.5	0
2007 PFDS	20	10	1.5	0

Review of antecedent conditions for both calibration events suggested that the losses determined for the January 2005 event best matched the conditions likely to occur within the catchment and are within the range recommended by AR&R for Queensland.

It is noted that the updated losses result in more conservative runoff estimates than the 2007 PFDS, however it was deemed appropriate based on the calibration undertaken.

The final loss values adopted for the hydrologic model have been shown in Table 10.

Table 10 Final Rainfall Losses Adopted

Surface Type	Initial Loss (mm)	Continuing Loss (mm/hr)
Pervious	15	2.5
Impervious	1.5	0

4.2.8 Verification

Once the hydrologic model had been calibrated for the selected events, a process of verification was undertaken. The rational method is used to estimate the peak design discharge for small rural and urban catchments. As outlined in AR&R, the rational method is applicable to simple rural catchments up to 25 km^2.

For the purposes of the hydrologic assessment, four sub-catchments were selected (VC1, GC4A, TG1 and LC2) as these sub-catchments had areas less than 25 km^2. The rational method was used to calculate the 10, 50 and 100 year ARI peak design discharges and these were compared to the XP-RAFTS peak discharge as a means of verification.

The comparison showed that the XPRAFTS results are within the expected range and are a reasonable match to the rational method results.

4.2.9 Design Hydrographs

The calibrated hydrologic model was run for the 2 year, 10 year, 50 year and 100 year ARI's for a range of standard duration storms to determine the critical duration storm.

The critical durations are summarised in Table 11. The 72 hour duration storm was observed to be the critical duration event for the majority of local sub-catchments in the model.

Table 11 Critical Duration Assessment.

ARI	Critical Duration for the Southern Catchment
2 Year	24 hours
10 Year	72 hours
50 Year	72 hours
100 Year	72 hours

XP-RAFTS was used to generate runoff hydrographs for the 2, 10, 50 and 100 year ARI's for the critical durations. These hydrographs were applied to the MIKE FLOOD southern catchment hydraulic model as boundary conditions and source points.

4.3 Hydraulic Modelling

4.3.1 Model Set-Up

A MIKE FLOOD model of the southern catchment floodplain was developed as part of the 2007 PFDS to determine flood levels for design rainfall events. The primary objective of the southern catchment hydraulic model was to provide boundary conditions for the township hydraulic model.

The MIKE FLOOD model combines the two dimensional MIKE 21, used for representing complex overland flow paths, with the one dimensional MIKE 11, used for representing pipes, culverts, and open channels smaller than the resolution of the two dimensional grid. A description of the model is provided in the sections below.

4.3.2 MIKE11 Components

The location of the one dimensional MIKE11 model components is shown in Figure 14. The 1D model components are used to represent flow through hydraulic structures. There are 30 MIKE11 components within the updated model. These components match the MIKE11 components used in the 2007 PFDS.

4.3.3 MIKE 21 Model

The two-dimensional MIKE 21 model represents the overland flow within the southern catchment floodplain. The flood behaviour within the lower southern catchment area is largely two dimensional due to the flat, low lying nature of the area. The 2D model extents shown in Figure 13 are based on the available LIDAR data provided by WRC.

4.3.3.1 Topography

As detailed in Section 3.1.1, the LIDAR data was re-sampled to a horizontal resolution of 20m and the 2D computational mesh for the MIKE21 model was created based on this DTM. The DTM used for the 2D model was reviewed for any inconsistencies or possible errors introduced by the re-sampling technique.

The review showed that the bed levels for several of the tributaries within the southern catchment area (Lagoon Creek, Lethe Brook, Slater Creek and Goorganga Creek) were significantly higher than represented in the previous model. Based on aerial imagery and site inspections, it was considered that the LIDAR data, specifically in the vicinity of the creeks, could be affected by dense riparian vegetation and standing water within the channels.

A brief for additional survey was issued to WRC and the survey works were carried out and provided in July 2011. The survey data was reviewed and it was found that the bed levels of the southern creeks were lower than those provided by the original LIDAR data, as expected. It was noted that levels from the survey cross sections generally matched well with the LIDAR data outside of the riparian zones of the creeks.

The additional survey data was used to refine the 2D computational grid within the creek extents. The remainder of the 2D grid was produced using the original LIDAR data provided. The final grid and model set-up is shown in Figure 14.

4.3.3.2 Roughness

The roughness is a spatially varying MIKE21 model parameter represented in MIKE21 as Manning's M, the inverse of the more commonly used Manning's n.

The model roughness generally reflects the types of development and vegetation within the floodplain. Consequently it is appropriate to develop roughness maps that reflect the land use zoning within the model area.

The roughness distributions adopted for this study was the same as what was adopted for the 2007 PFDS. The variation in hydraulic roughness within the study area has been schematised as a hydraulic roughness grid which has been shown in Figure 15.

4.3.3.3 Eddy Viscosity

Eddy viscosity is associated with the assumptions of sub grid scale turbulence. The eddy viscosity parameter describes the degree of turbulence that exists at scales smaller than the model grid scale.

The eddy viscosity parameter is critical for describing the simulated transverse distribution of flow velocities in the creeks and is also important in describing the bifurcation of flows at junctions. The eddy viscosity parameter is generally adopted based on experience from previous modelling studies.

For the updated southern catchment hydraulic model, a constant flux based eddy viscosity of 3.2 was adopted. The viscosity value was based on the model time step and grid cell size.

4.3.4 Boundary Conditions

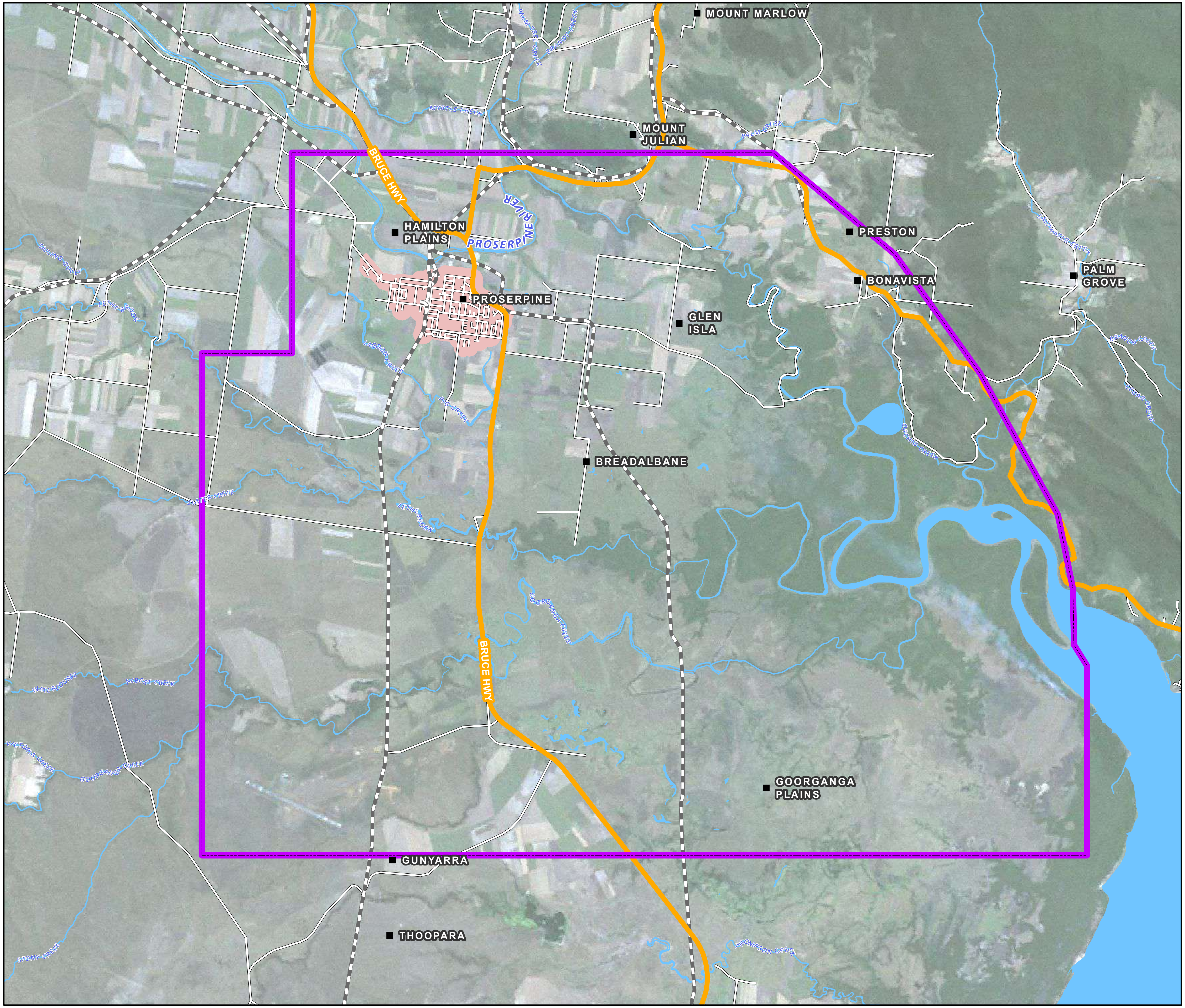
Four boundaries were applied along the western extent of the MIKE FLOOD model. These boundaries were specified as discharge hydrographs and represent the flow of water into the MIKE FLOOD model being conveyed by the four major southern catchment watercourses:

- Lagoon Creek;
- Goorganga Creek;
- Lethe Brook; and
- Deadman Creek.

The design discharge hydrographs were determined from the XP-RAFTS hydrologic model, as detailed in Section 4.2.8.

One downstream boundary was also applied along a portion of the eastern extent of the MIKE21 model to represent the sea level (where the Proserpine River and southern catchment creek systems discharge to the ocean).

For the baseline runs, a constant water surface level was applied as the downstream boundary condition. This level represented the water level associated with the Mean High Water Springs (MHWS) tide. At the downstream boundary, the MHWS is approximately equal to 1.75m AHD (Maritime Safety Queensland, 2011).



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Southern Catchment Hydraulic Model Extents

Figure 13

Legend

- Locality
- Highway
- Road
- Railway Line
- Watercourse
- Waterbody
- Builtup Area
- Hydraulic Model Extents

N

Scale: 1:70,000 (when printed at A3)

0 750 1,500 3,000

Metres

PROJECT ID 60188587
LAST MODIFIED CFS 27-May-2011
FILE NAME 60188587G_WIS_09

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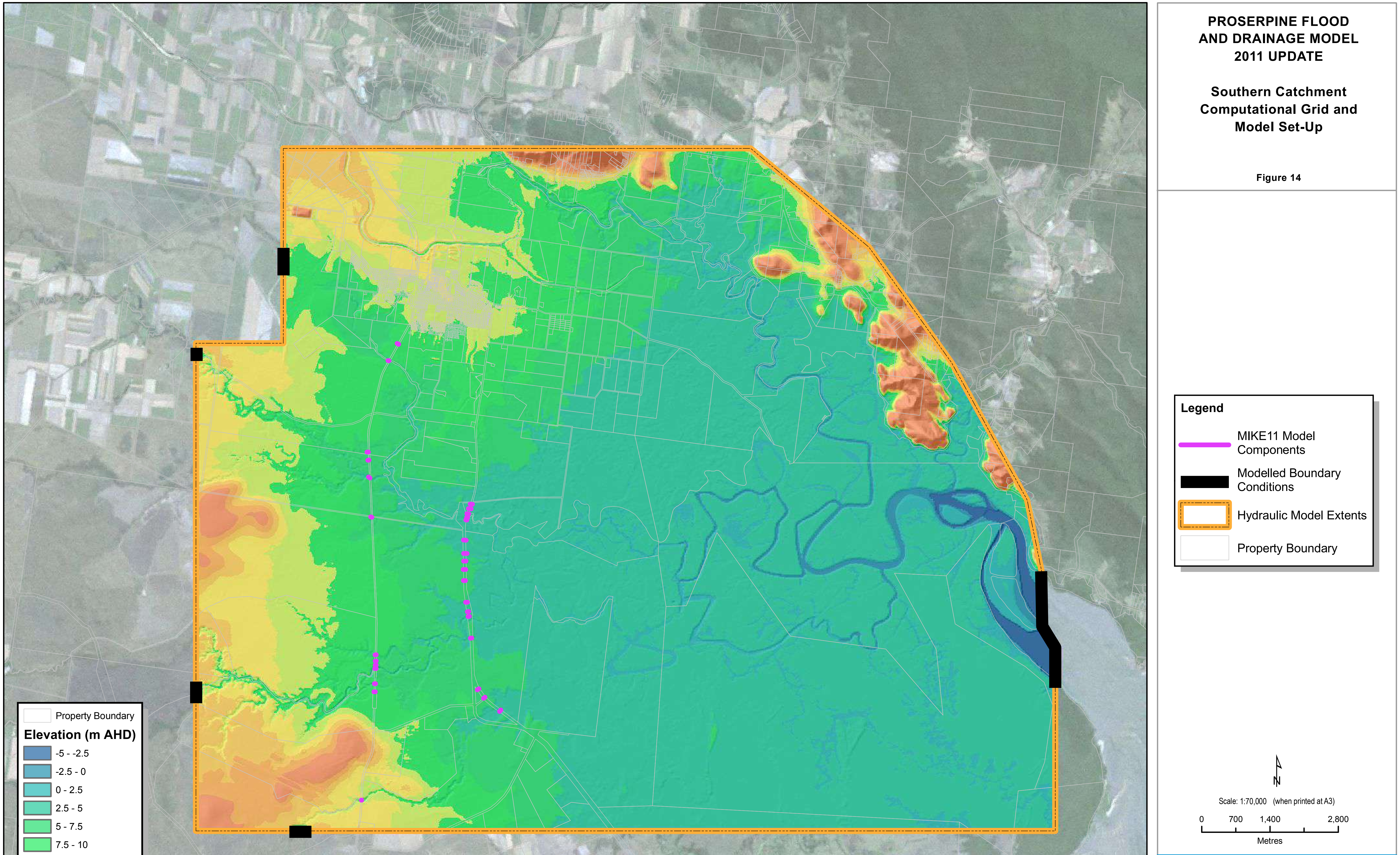
PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Southern Catchment Computational Grid and Model Set-Up

Figure 14



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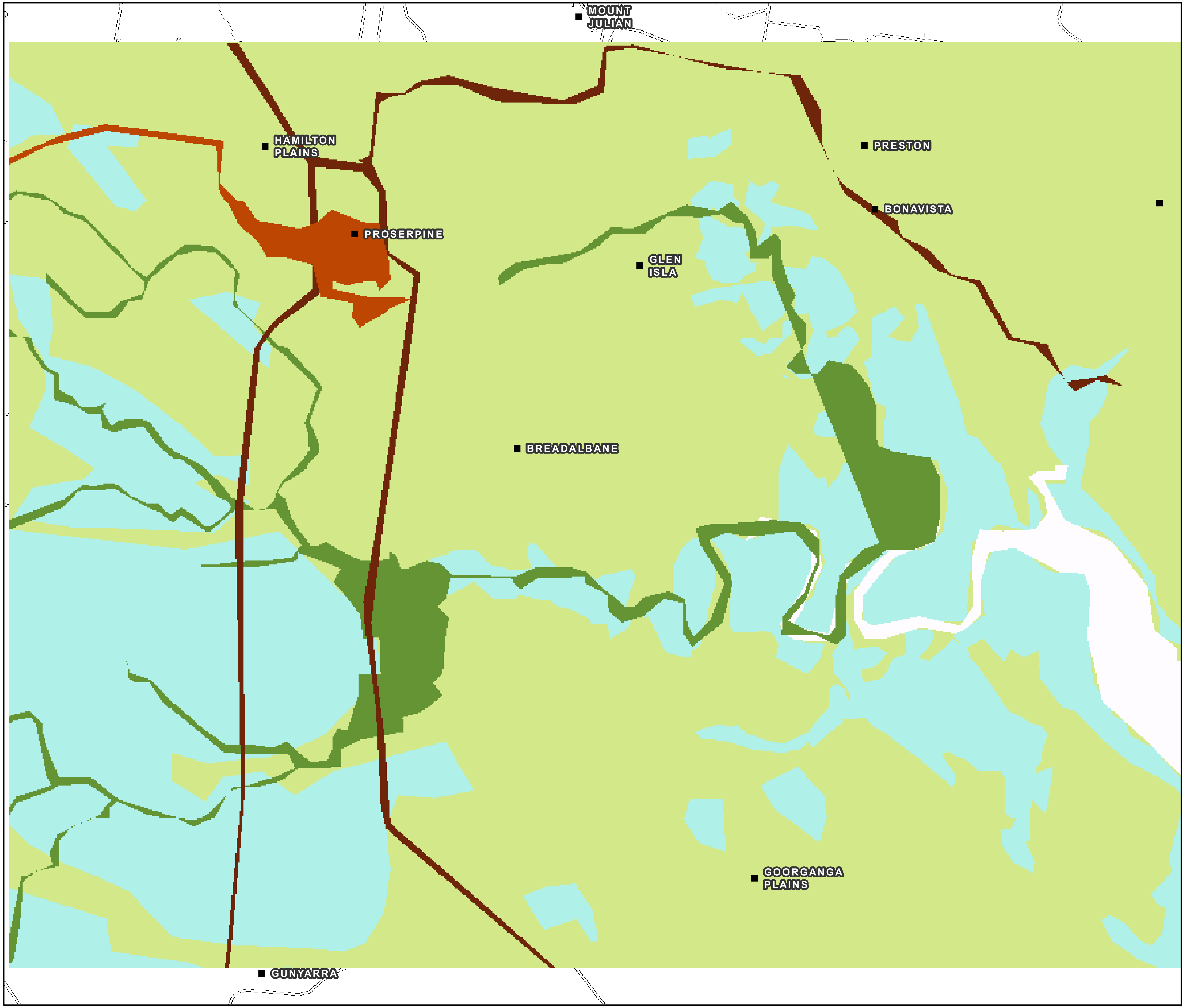
FILE NAME 60188587G_WIS_10

PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Southern Catchment Roughness Grid

Figure 15



Mannings M	
10 - 15	
15 - 25	
25 - 30	
30 - 35	
35 - 40	
40 - 45	
Above 45	

N

Scale: 1:53,109 (when printed at A3)

0 550 1,100 2,200

Metres

PROJECT ID 60188587

LAST MODIFIED CFS 27-May-2011

FILE NAME 60188587G_WIS_11

4.3.5 Model Calibration

4.3.5.1 Background

During the 2007 PFDS, suitable historical flood data was not available for calibrating the southern catchment hydraulic model. To improve confidence in the results from the hydraulic model it was recommended that suitable flood data be collected and calibration be undertaken as part of this update.

Continuous water level data is currently not available as there are no stream gauges located within the southern catchment hydraulic model extent. As a result, it was recommended that WRC construct inexpensive peak height recorders to obtain water level data (for further details, refer to Appendix B). WRC subsequently installed 35 peak flow recorders within the Proserpine region in late 2010 (Figure 19).

4.3.5.2 March 2011 Event

Water surface levels were recorded for the period 29 – 31 March 2011. During this period the Proserpine region received approximately 630mm of precipitation associated with strong La Nina conditions across most of Queensland. The Whitsunday Coast Airport at Proserpine was closed as a result of the extensive flooding which occurred within the southern catchment. Flooding also resulted in closure of the Bruce Highway, south of Proserpine.

Localised flooding within the Proserpine Township was also reported, with Figure 16 showing flooding which occurred at Horsford Place.

Figure 16 March 2011 Event – Flooding at Horsford Place

The compiled peak flood level data from the majority of the gauges installed within the southern catchment and Proserpine Township areas was provided by WRC and is included in Appendix C.

Rainfall data was obtained for the southern catchment hydrologic model extents by:

1. Obtaining daily rainfall data from BOM in the form of high resolution rainfall grids which covered the spatial extents of the southern catchments. These grids are produced by BOM and show the rainfall values across Australia in the form of two-dimensional array data. The analyses (grids) are computer generated using a successive Barnes analysis technique.

2. Converting the daily rainfall grid totals to rainfall depths at hourly intervals using the temporal distribution from the data measured at the Proserpine Airport.

The hourly rainfall depths provided by BOM were converted to five minute intervals using a linear interpolation technique. This allowed the data to be compared with IFD curves for Proserpine to determine the approximate average recurrence interval for the rainfall event (Figure 17).

It should be noted that interpolation of the hourly rainfall data may induce some inaccuracies but was necessary in the absence of pluviograph data for the rainfall event (not yet available from BOM).

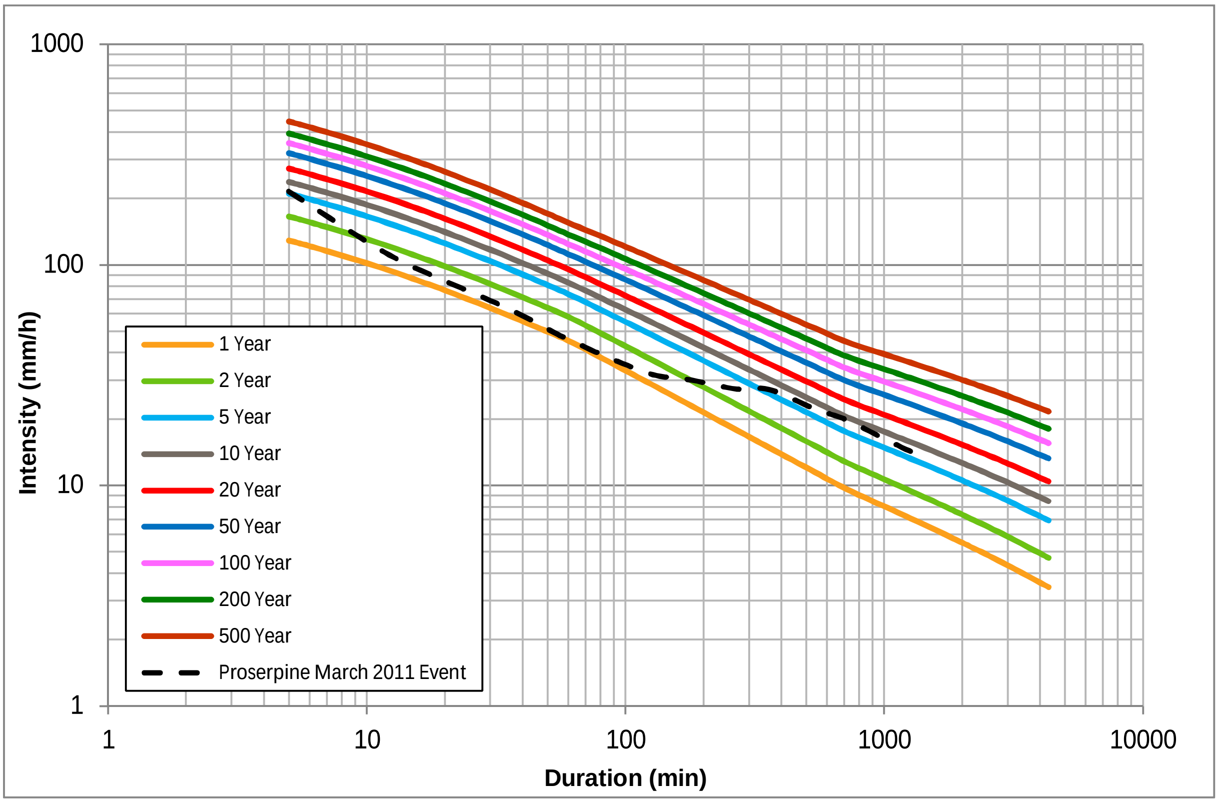


Figure 17 March 2011 Event – Comparison between Observed Rainfall and IFD Curves

The rainfall depths from each applicable rainfall grid were applied to each of the sub-catchments within the XP-RAFTS hydrologic model in order to best represent the spatial variability of the rainfall event. Figure 18 shows the spatial extents of the rainfall grids with reference to the XP-RAFTS sub-catchments.

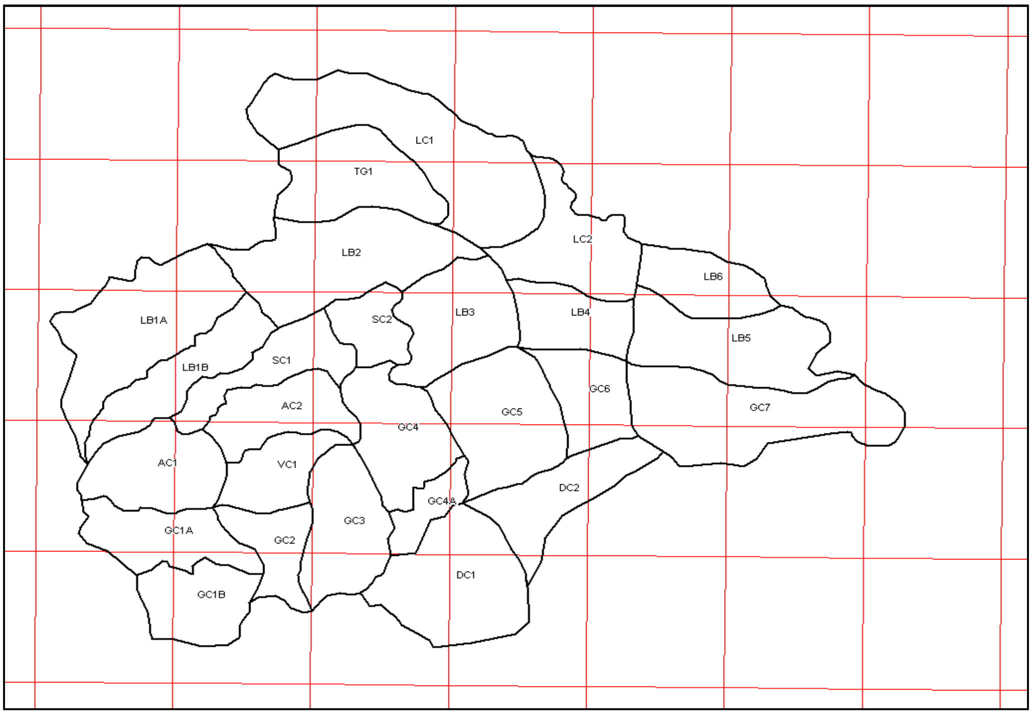


Figure 18 Rainfall Grids (shown in red) Applied to the Sub-Catchments

The hydrologic model was run and the resultant hydrographs were applied to the southern catchment hydraulic model. Peak discharges were calculated and are summarised in Table 12.

The peak discharges were compared to the design ARI hydrographs to check the approximate ARI of the flood event. The comparison suggests that the March 2011 flood event was approximately equivalent to a 10 year ARI flood event. This compares favourably to the rainfall comparison.

Table 12 Summary of March 2011 Hydrologic Results

Sub-Catchment Reference	Creek System	Calculated Peak Discharge (m^3/s)	Equivalent ARI Event (Based on Peak Discharges)
LC1	Lagoon Creek	200	10 – 20 year ARI
LB3	Lethe Brook	570	2 – 10 year ARI
GC5	Goorganga Creek	615	2 – 10 year ARI
DC2	Deadman Creek	215	~ 10 year ARI

Tidal levels for the month of March 2011 were obtained from Maritime Safety Queensland for the Laguna Quay gauge and the tidal signal was applied as the downstream boundary of the southern catchment hydraulic model for the calibration run.

The March 2011 flood event was simulated using the southern catchment hydraulic model for the period between midnight on 29 March 2011 to midnight on 5 April 2011. The results of the hydraulic model were reviewed and compared to recorded levels within the model extents. A summary of the results are shown in Table 13.

Table 13 Comparison between Modelled and Observed Flood Levels for the March 2011 Event (Southern Catchments)

Gauge No.	Recorded Level (m AHD)	Modelled Level (m AHD)	Difference (m)
1	Not Inundated	Not Inundated	
2	8.33	9.06	- 0.73
3	> 8.24	9.08	
4	Not Inundated	Not Inundated	
6	9.09	9.06	0.03
7	> 7.57	9.05	
8	> 8.29	9.05	
13	> 7.70	8.89	
14	> 7.74	8.80	
23	N/A	7.70	
28	> 7.22	7.19	
29	>7.05	7.28	
30	> 6.86	7.20	
31	N/A	7.57	
32	5.43	5.38	0.05
33	5.04	5.31	-0.27
34	4.80	5.19	-0.39
35	> 5.06	5.22	

1. Where depths are 'greater than' a value, the flood recorder was fully submerged and the value given is the RL of the top of the gauge.
2. 'N/A' denotes that the recorded level was not provided due to poor ground conditions, accessibility or other such issues.

Overall, the southern catchment hydraulic model results compared well with the recorded flood levels for the March 2011 event, with an average difference of 0.26m where a direct comparison could be made. The model results are spread above and below the recorded values which suggests that the model is not over or under predicting.

The difference between simulated and recorded levels is deemed adequate given the fact that the southern catchment hydraulic model is a broad scale model with a coarse scale grid which provides tail water levels for the Township model.

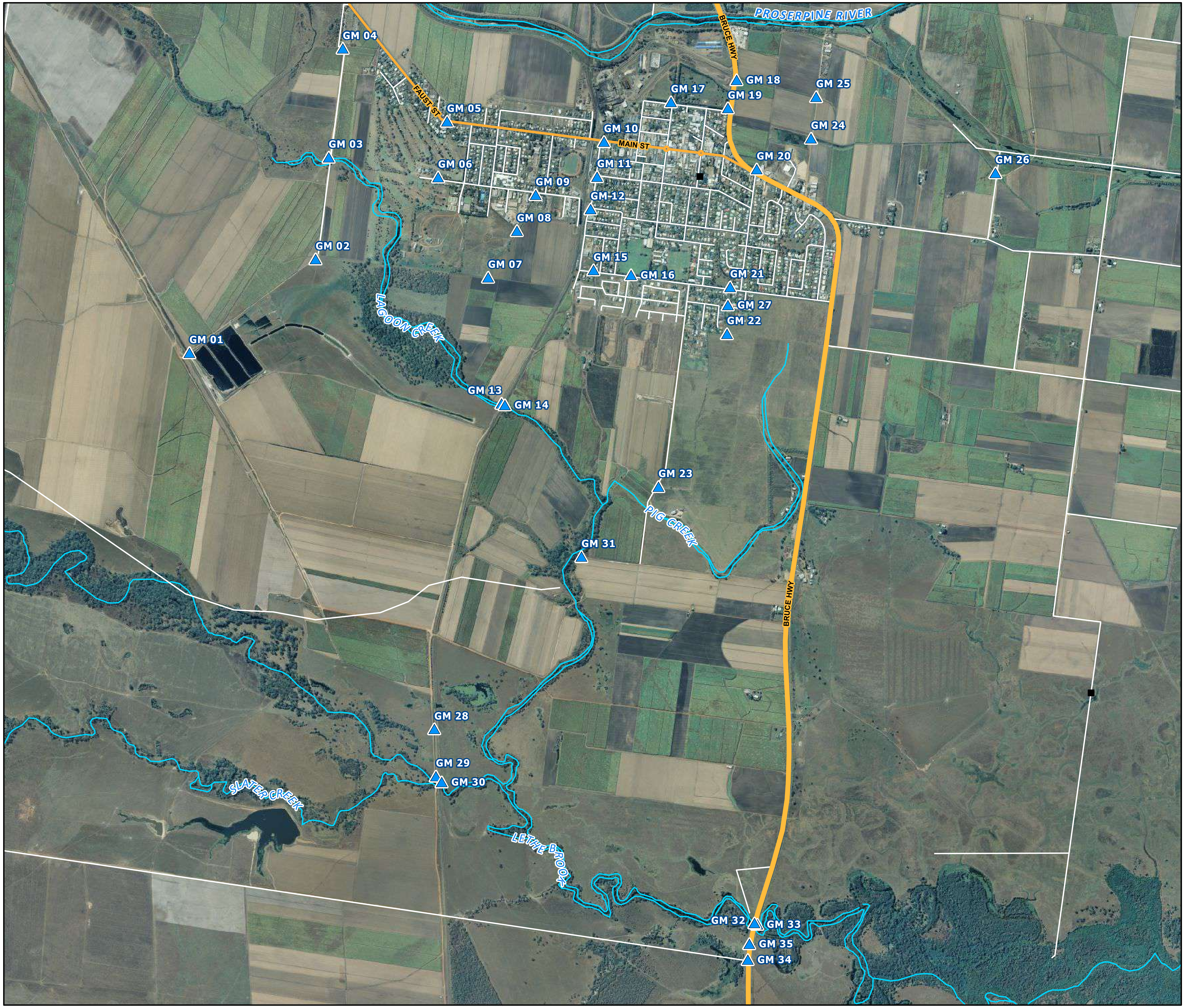
4.3.6 Model Results for Design Events

The MIKE FLOOD model was run for the critical duration events for the 2 year, 10 year, 50 year and 100 year ARI storm events to determine the surface water level at the southern boundary of the township model, for use as a boundary condition in the Township model.

Table 14 shows the flood levels determined from the southern catchment hydraulic model at the southern boundary of the township model as well as the levels determined in the 2007 PFDS.

Table 14 Adopted Southern Catchment Flood Levels at Southern Boundary of Township Model

Town Drainage Event	Southern Catchment Tail Water	2007 PFDS Tail Water Level (m AHD)	Updated Tail Water Level (m AHD)
2 Year ARI	Peak 2 Year ARI Level	4.30	6.93
10 Year ARI	Peak 2 Year ARI Level	4.30	6.93
50 Year ARI	Peak 10 Year ARI Level	7.41	7.42
100 Year ARI	Peak 10 Year ARI Level	7.41	7.42



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Locations of Peak Flood Height Recorders

Figure 19

PROJECT ID 60188587
LAST MODIFIED DXE 13-OCT-2011
FILE NAME 60188587G_WIS_12

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5.0 Proserpine Town Drainage Model Update

5.1 Overview

The town of Proserpine predominantly drains to the south towards the floodplain of Lagoon Creek and Lethe Brook. The tail water effects from Lagoon Creek have a major effect on drainage to the south of Proserpine.

The north-east portion of the town drains to a lagoon opposite the Bruce Highway, which is connected to the Proserpine River. Proserpine is relatively flat with elevations ranging from 14.0 m AHD adjacent to the Proserpine River levees to 6.0 m AHD at the Lagoon Creek floodplain.

The current town drainage system is made up of an underground pipe network in combination with large open drains throughout the town. Localised runoff from Proserpine has a critical duration of one hour.

The township hydraulic model consists of a MIKE21 component (two dimensional model) coupled with a MOUSE component (one dimensional model).

5.2 Hydrologic Modelling

5.2.1 Model Details

The MOUSE model was used to simulate the catchment hydrology for the urbanised catchments using the time-area hydrologic method, denoted as 'Model A.' The time-area method is well suited to networked urban catchments as is the case for the urbanised areas within Proserpine. Runoff hydrographs for the urban catchments were dynamically applied to the underground drainage nodes in the MOUSE model.

Hydrographs for rural catchments located within the township model extent were determined using XP-RAFTS. Runoff hydrographs for the rural catchments were applied as a source points within the MIKE21 component of the township model.

5.2.2 Catchment Refinement

A total of 272 sub-catchments were delineated during the 2007 PFDS based on the catchment conditions and drainage network at the time. A number of these original sub-catchments were refined and sub-divided as part of the updates made in 2009 and 2010 to better reflect overland drainage paths within areas that had been developed.

As part of this update, the sub-catchments refined in 2010 were adopted for this study. There are a total of 343 sub-catchments within the township model and are shown in Appendix D.

5.2.3 Sub-Catchment Parameters

Each sub-catchment was defined with the parameters necessary to determine the runoff hydrograph. These parameters included:

- Area
- Slope
- Roughness
- Impervious fraction
- Time of Concentration

Appendix E shows the applicable catchment parameters that were input into the MOUSE / XP-RAFTS hydrologic models.

5.2.4 Design Rainfall

5.2.4.1 Intensity Frequency Duration (IFD) Rainfall Data

The IFD input data set was obtained for Proserpine, and is shown in Table 4. It is noted that Areal Reduction Factors were not applied to the township sub-catchments as the total area is less than 4km^2 (as per AR&R).

5.2.5 Calibration

Calibration of the township hydrologic models was not undertaken due to the lack of stream flow records within the township extents. Verification of peak hydrographs from randomly selected catchments in Proserpine was undertaken using the Rational Method.

5.2.6 Rainfall Losses for Design Rainfall Events

The rainfall loss values adopted for the 2007 PFDS were adopted as there was no calibration data available to determine loss values contrary to those originally adopted. The final loss values adopted for the hydrologic models are shown in Table 15. These losses are within the range recommended by AR&R for Queensland.

Table 15 Rainfall Losses Adopted

Surface Type	Initial Loss (mm)	Continuing Loss (mm/hr)
Pervious	20	10
Impervious	1.5	0

5.2.7 Model Results

The hydrologic models were run for the 2, 10, 50 and 100 year ARI's 1 hour critical duration storm event (determined in the 2007 PFDS).

5.3 Hydraulic Modelling

5.3.1 Model Set-Up

The coupled township hydraulic model (MIKE21 and MOUSE components) is fully dynamic and effectively simulates overland and underground pipe flow.

5.3.2 MOUSE Model

The 2007 version of the MOUSE model was developed to represent the underground drainage system within the Proserpine Township and was based on data provided by Cardinal Surveys. The model is comprised of nodes representing manholes, inlet pits and outlets as well as links representing pipes. The model contained 530 nodes and 594 links to represent the drainage system.

There have been a number of upgrades made to the Proserpine underground drainage network since 2007. As a result, the MOUSE model drainage network was extensively reviewed and updated in consultation with WRC. The updated drainage network is shown in Appendix F. Details of the updated nodes and links are included in within Appendix G. The updated MOUSE model contains 587 nodes and 648 links to represent the Proserpine drainage system.

5.3.3 MIKE 21 Model

5.3.3.1 Model Extent

Overland flows within the Proserpine town drainage model are modelled with the two-dimensional MIKE21 model. The model describes the town's topography and hydraulic roughness with inflows from underground drainage system surcharge, rural sub-catchment source points and Lagoon Creek.

As part of this update, the southern extent of the original township MIKE21 model was extended further south to obtain flood levels in the areas of possible future development. The extent of the 2D model is shown in Figure 20.

5.3.3.2 Topography

As detailed in Section 3.1.1, the LIDAR data was re-sampled to a horizontal resolution of 5m and the 2D computational mesh for the MIKE21 township model was created based on this DTM.

The DTM used for the 2D model was reviewed for any inconsistencies or possible errors introduced by the re-sampling technique. The DTM was also checked against as-constructed survey levels obtained for recent developments within Proserpine (Lagoon Gardens, Telford Street, and Horsford Place) to ensure the ground levels were accurately represented by the LIDAR. The LIDAR data was found to accurately represent levels for all of the recent developments.

The difference between the original topographic grid adopted for the 2007 PFDS and the LIDAR DTM was found to be in the order of ± 0.1m within the urban area. Larger differences of up to 0.75m were evident in the areas to the south of Proserpine, where contour information from DERM's 1:100,000 orthophotos was originally used to produce the 2007 grid.

Based on the detailed review undertaken, the LIDAR DTM was adopted for the updated township model. Figure 21 shows the finalised topographic grid and model set-up adopted for the township model.

5.3.3.3 Roughness

The roughness values for the MIKE21 model were based on the latest aerial imagery supplied. Figure 22 shows the distribution of roughness across the model grid. The values adopted for specific land use types are presented in Table 16.

Table 16 Township Hydraulic Roughness Values

Land Use	Manning's *n* Value
Cane	0.07
Open Space	0.05
Riparian Zone	0.08
Urban	0.06
Industrial	0.04
Roads/Rail	0.025
Open Channel	0.03

5.3.3.4 Eddy Viscosity

For the township hydraulic model, a constant flux based eddy viscosity of 4.0 was adopted based on the time step and grid cell size of the model.

PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Township Hydraulic Model Extent

Figure 20

Legend

- Highway
- Road
- Railway Line
- Watercourse
- Township Hydraulic Model Extent

N

Scale: 1:25,000 (when printed at A3)

0 250 500 1,000

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 13-OCT-2011

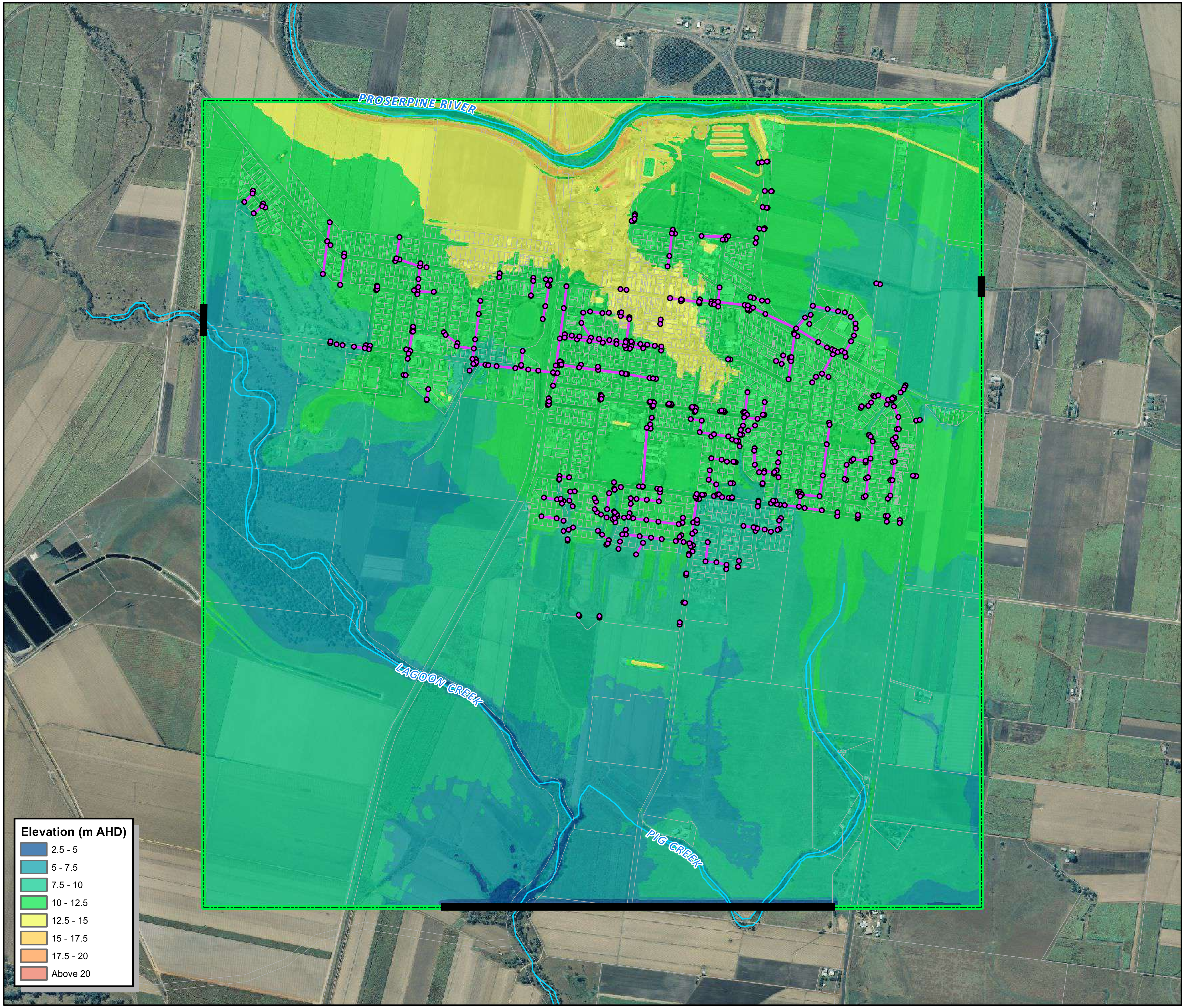
FILE NAME 60188587G_WIS_14

AECOM

PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Township Computational Grid and Model Set-Up

Figure 21



Legend

- MOUSE Model Nodes
- MOUSE Model Links
- Watercourse
- Modelled Boundary Conditions
- Property Boundary
- Township Hydraulic Model Extent

N

Scale: 1:15,000 (when printed at A3)

0 150 300 600

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-OCT-2011

FILE NAME 60188587G_WIS_15

PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Township Roughness Grid

Figure 22

Manning's M	
10 - 15	
15 - 20	
20 - 25	
25 - 30	
30 - 35	
35 - 40	
40 - 45	
Above 45	

N

Scale: 1:12,000 (when printed at A3)

0 120 240 480

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-OCT-2011

FILE NAME 60188587G_WIS_17

AECOM

5.3.4 Boundary Conditions

Three boundaries conditions were applied to the township MIKE FLOOD model:

- Lagoon Creek inflows
- Proserpine River tail water level (via the Glen Isla conveyance channel)
- Southern catchment tail water level.

The boundary condition used for Lagoon Creek was determined from the hydrological analysis using XP-RAFTS for the southern catchment. This analysis showed the critical duration for Lagoon Creek to be 72 hours. The town drainage model however has a critical duration of 60 minutes. There was sufficient information for specific storm events to determine whether the peak discharge from rainfall events occurring in each area matched. Therefore, to represent the worst case inflow scenario, the peak for the Lagoon Creek flow was matched to the peak for the town drainage model.

The Lagoon Creek flooding conditions that were adopted for the township model (Table 17) are as per the 2007 PFDS as there is no additional information to suggest otherwise.

Table 17 Adopted Lagoon Creek Flooding Conditions

Town Drainage Event	Lagoon Creek Inflow
2 Year ARI	2 Year Hydrograph
10 Year ARI	2 Year Hydrograph
50 Year ARI	10 Year Hydrograph
100 Year ARI	10 Year Hydrograph

The southern catchment tail water level was set as the downstream boundary condition based on the results obtained from the updated southern catchment hydraulic model (refer to Table 14).

The north east portion of the town drains to a channel that runs parallel to Glen Isla Road downstream of the Bruce Highway, and discharges into the Proserpine River via the by wash. As a result, the Proserpine River flood levels were used to determine tail water levels for adoption as a boundary condition. This is further detailed in the 2007 PFDS report and reproduced in Table 18.

Table 18 Adopted Proserpine River Flooding Conditions

Town Drainage Event	Proserpine River Tail water Condition	Proserpine River Tail water Level (m AHD)
2 Year ARI	Peak 2 Year ARI Level	8.5
10 Year ARI	Peak 2 Year ARI Level	8.5
50 Year ARI	Peak 5 Year ARI Level	9.0
100 Year ARI	Peak 5 Year ARI Level	9.0

5.3.5 Coupling MOUSE and MIKE21

MOUSE and MIKE21 are coupled at locations that represent the inlet and outlets to the underground drainage system. Additionally culverts are represented by coupling pipes/boxes in MOUSE to the MIKE21 grid. The couple is applied between a node in MOUSE and a grid cell in MIKE21. When the grid cell is wet in MIKE21, then water will pass from MIKE21 to MOUSE based on relative water levels (heads) in MOUSE and MIKE21. When the head at the node in MOUSE is above the water level in the coupled grid cell of MKE21, then water will flow from MOUSE to MIKE21. The hydraulics of the couple are described by the orifice equation.

In the 2007 township model there were a total of 376 couples between MIKE STORM and MIKE21. As part of this update, the original couple points were reviewed and additional couple points were added where necessary.

The updated model has 488 couple locations as shown in Appendix H.

5.3.6 Calibration

The Township model was calibrated to the March 2011 flood event using rainfall data developed (Section 4.3.5.2).The rainfall depths were applied to the XP-RAFTS and MOUSE hydrologic models and the models were run and the resultant hydrographs were applied to the Township hydraulic model.

Time varying tail water levels determined from the southern catchment calibration run were obtained and adopted for the southern boundary of the township hydraulic model. Figure 23 shows the southern catchment tail water levels adopted.

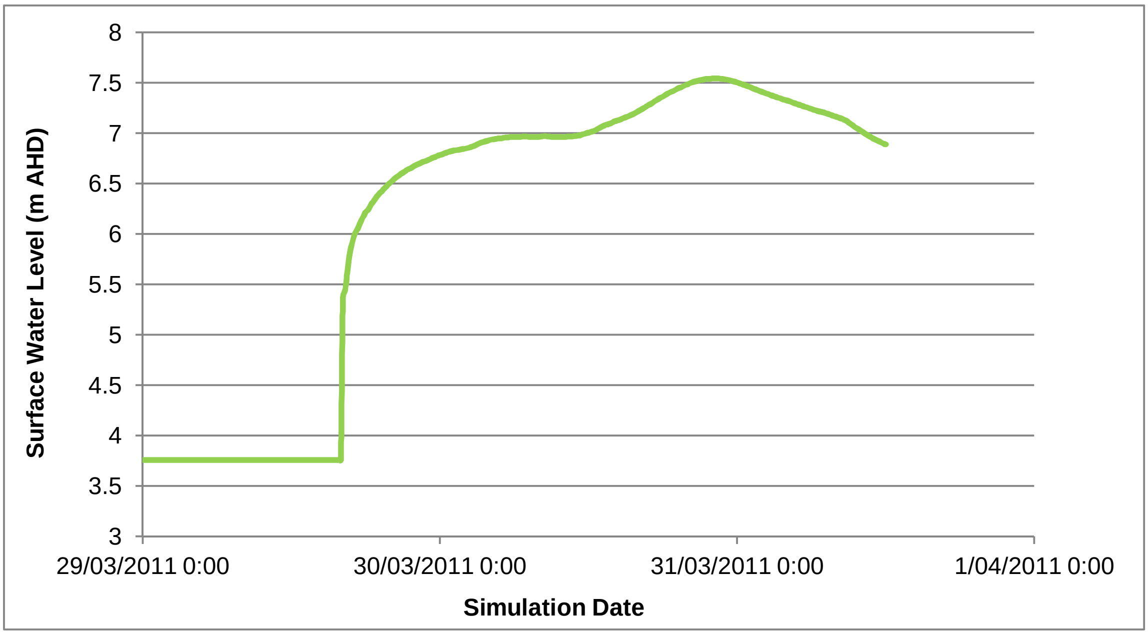


Figure 23 Southern Catchment Tail Water Levels Determined for March 2011 Event

The discharge hydrograph for Lagoon Creek was determined from the southern catchment hydrologic model and applied as an inflow to the township model's western boundary. Figure 24 shows the Lagoon Creek inflow hydrograph applied to the model.

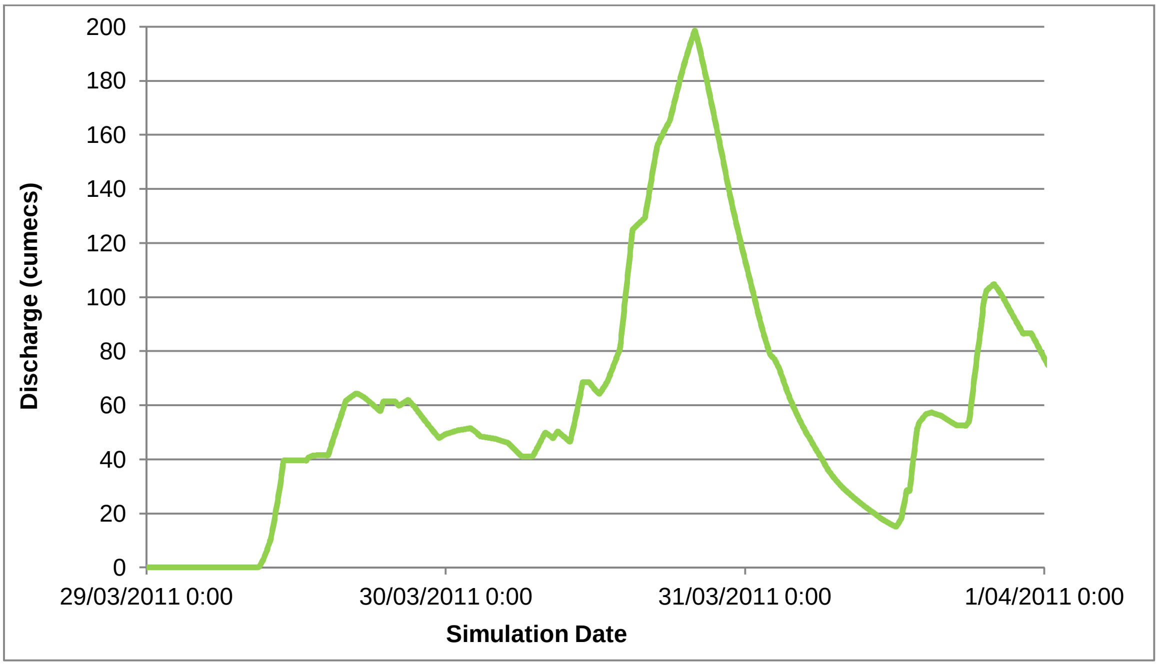


Figure 24 Lagoon Creek Inflow Hydrograph for the March 2011 Event

A constant surface water level was adopted for the eastern boundary of the Township model to represent the Proserpine River backwater affect that occurred during the March 2011 flood event. A peak water level of 9.3m AHD was surveyed by WRC in the vicinity of the eastern model boundary for the event. This level was adopted as the boundary condition for the calibration event.

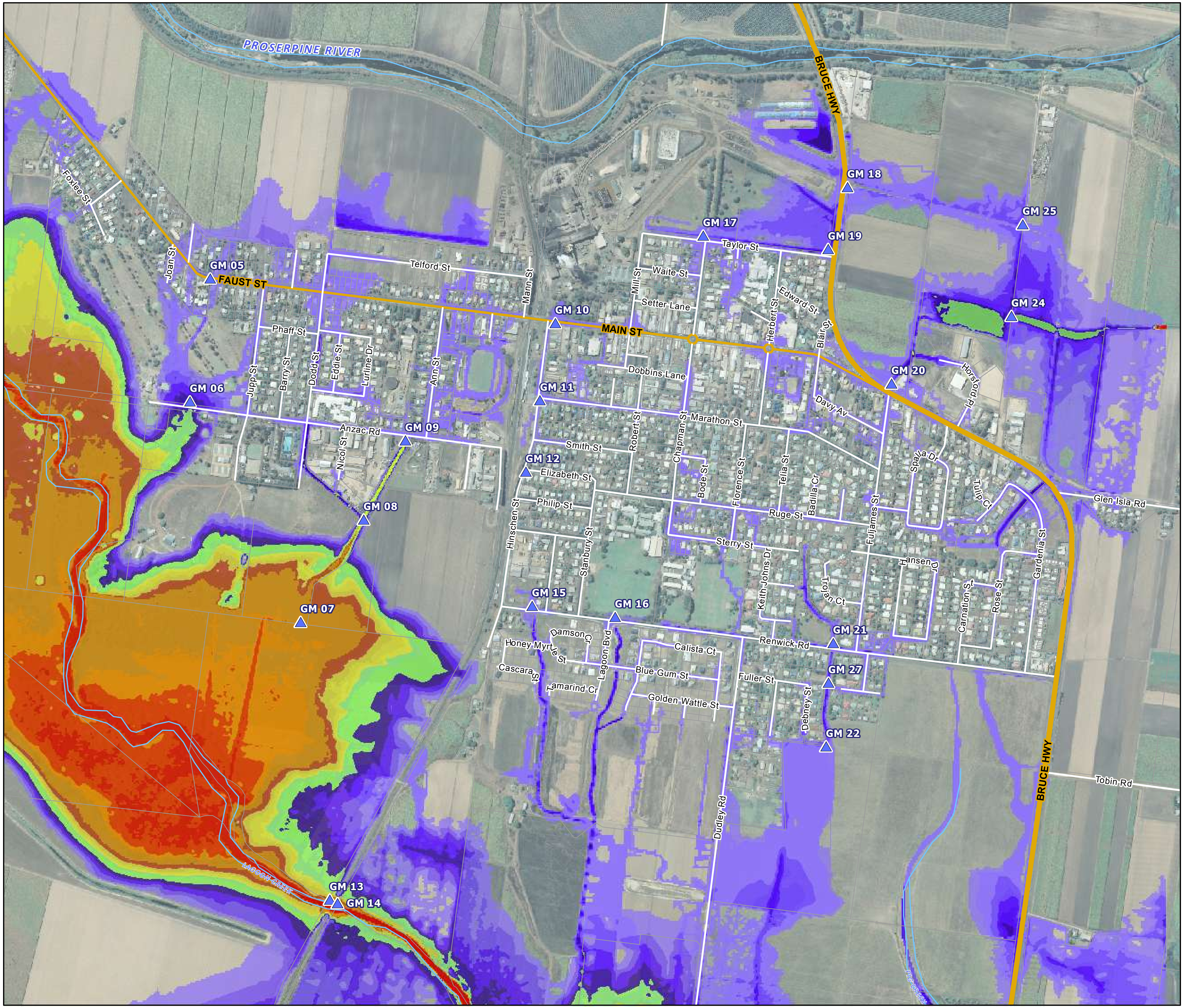
The March 2011 flood event was simulated using the Township hydraulic model for a period between midnight on 29 March 2011 to midnight on 31 March 2011. The results from the hydraulic model were reviewed and compared to recorded levels.

A flood map showing the maximum water depths and extents of inundation for the March 2011 flood event are shown in Figure 25. A summary of the calibration results are shown in Table 19 and a plot of the discrepancy between the Township hydraulic model and surveyed flood levels are shown in Figure 26.

Table 19 Comparison between Modelled and Observed Flood Levels for the March 2011 Event (Township)

Gauge No.	Recorded Level (m AHD)	Modelled Level (m AHD)	Difference (m)
5	Not Inundated	Not Inundated	
6	9.09	9.22	-0.13
7	> 7.57	9.19	
8	> 8.29	9.21	
9	8.98	9.36	-0.38
10	12.10	12.09	0.01
11	10.71	10.61	0.10
12	10.28	10.24	0.04
13	> 7.70	8.95	
14	> 7.74	8.93	
15	10.33	10.39	-0.06
16	10.79	10.59	0.20
17	11.61	11.48	0.13
18	10.95	10.97	-0.02
19	11.37	11.46	-0.09
20	10.26	10.18	0.08
21	9.55	9.43	0.12
22	9.06	8.77	0.29
23	N/A	7.69	
24	9.81	9.81	0.00
25	10.07	9.88	0.19
26	Gauge Used to Determine Eastern Boundary Levels – Not Within Model Extents		
27	9.25	9.07	0.18
31	N/A	7.53	

1. Where depths are 'greater than' a value, the flood recorder was fully submerged and the value given is the RL of the top of the gauge.
2. 'N/A' denotes that the recorded level was not provided due to poor ground conditions, accessibility or other such issues.



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Maximum Water Depths and Inundation for March 2011 Calibration Event

Figure 25

Legend

- Peak Flood Height Recorders
- Railway Line
- Watercourse
- Property Boundary

Water Depth (m)

- 0 - 0.3
- 0.3 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- > 3

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_35

AECOM

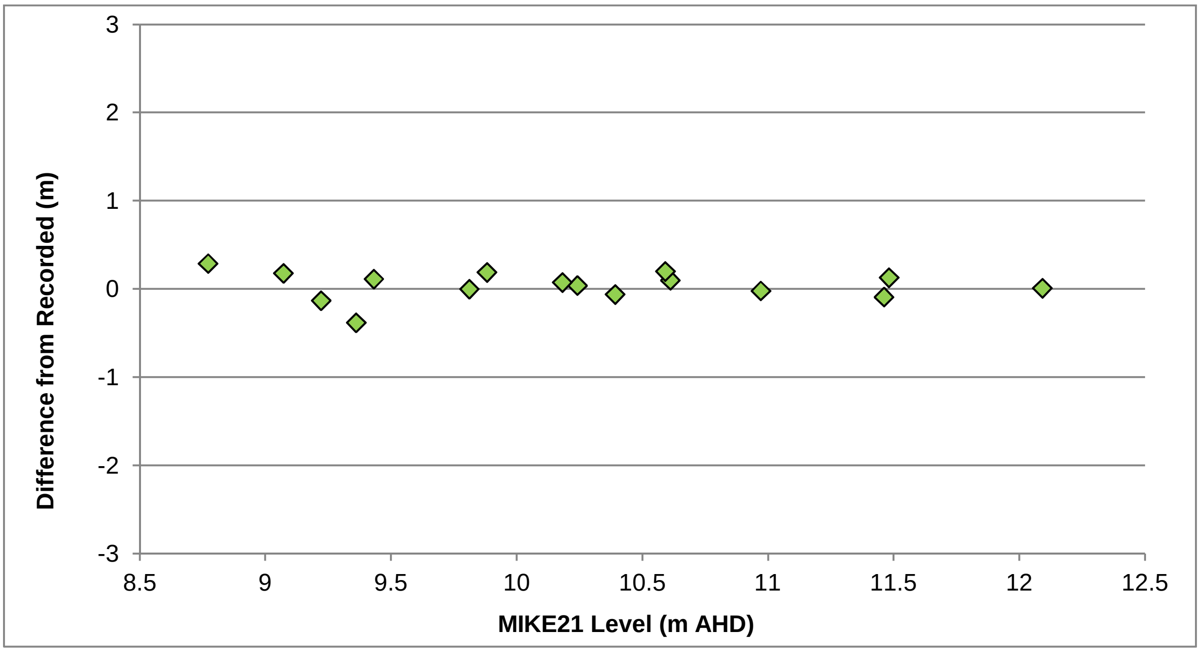


Figure 26 March 2011 Calibration – Comparison of Surveyed Flood Levels

Results from the March 2011 calibration generally show a good fit with observed data with the results within +/- 0.38m and with an average difference of 0.04m. The model results are spread above and below the recorded values which suggests that the model is not over or under predicting.

The largest variation to the recorded height was seen at gauge 9, which showed a difference of -0.38m. Gauge 9 is located at the upstream end of the Anzac Road drainage channel and is immediately downstream of the culvert outlets on the southern side of Anzac Road. Given that the calibration has shown a good fit with observed data at all other gauges, it is thought that the reliability of the recorded level at gauge 9 may have been affected by local flow conditions such as a flow blockage. This is likely, given the close proximity of the gauge to the outlet of the existing culverts.

The model results presented above indicate the MIKEFLOOD model provides a good representation of the peak flood levels within the Proserpine Township area. The calibration run has provided confidence in the results of the township model, however it is noted that further calibration should be undertaken in the future for several other floods of differing magnitudes.

5.3.7 Model Results for Design Events

The updated township model was used to simulate the 2, 10, 50 and 100 year ARI storm events. Flood maps showing depths, extents of inundation and water surface levels are given in Appendix I.

A summary of the results include:

- The Hinschen Street / Smith Street area is affected by flooding in all events modelled.
- Lots around the area of the intersection of Fuljames Street and the Bruce Highway are subject to flooding in all events modelled.
- Les Stagg oval and immediate surrounding areas are subject to inundation in all events modelled with local flows as well as overflows from Faust Street and Ann Street.
- Access chambers within the area between Ruge Street, Sterry Street and Chapman Street surcharge in all events modelled and flood several lots in the area.
- Flooding occurs on the eastern end of Main Street, adjacent to the Bruce Highway, with overland flow in a south easterly direction until reaching the conveyance channel adjacent to Horsford Place. This will be rectified when the second stage of the Main Street drainage works (Maunsell AECOM, 2009) are constructed.

- In all modelled events, flow surcharges from the Dodd Street Drain and runs down Lurline Drive through residential lots towards Anzac Road. This could be rectified by implementing the recommended mitigation options from AECOM's 2010 study (AECOM, 2010).
- Runoff from the western end of the Telford Street development tends in a southerly direction but overtops the drainage channel and flows across Faust Street and towards Les Stagg Oval. Two lots on Faust Street, adjacent to the drainage channel, are inundated in all events modelled.
- Runoff from the eastern end of the Telford Street development tends in a south westerly direction, crossing Main Street and enters the Dodd Street Drain. Overland flow from the development inundates several lots on the corner of Main Street and Dodd Street for all events modelled.
- A raised embankment has been constructed along the northern perimeter of the Telford Street development. This has created a detention basin to the north of the development. Flows for events greater than the 10 year ARI overtop the eastern section of the embankment and results in flows being redirected to the west, crossing Faust Street adjacent to the golf course. Several lots on Doherty Street are inundated.
- Some residential lots are inundated from Hansen Drive to Renwick Road.
- Several lots adjacent to the drain crossing Gardenia Street are inundated in all events modelled.
- Some lots in Fuller Street East are subject to inundation in the 100 Year ARI event.
- The stormwater pit to the west of Atkinson Street surcharges and results in overland flow tending towards Dudley Street. Three lots on Dudley Street are inundated for the all events modelled.

It should be noted that the inundation modelled away from the township may not be representative of the worst case inundation for the events modelled. Flooding in these areas is controlled by the major creeks (e.g. Lagoon Creek) and long duration storms, rather than the short high intensities storms modelled for the town.

5.3.7.1 Comparison with Previous Studies

The updated baseline flood maps were compared to the most recent flood maps produced as part of the Lagoon Gardens, Glen Isla and Lurline Drive Flooding Assessment (AECOM, 2011). A copy of the previous baseline flood maps has been included within Appendix J. A comparison between the flood maps shows the following differences:

- The flood extents and overall representation of Lagoon Creek is more refined in the updated model due to more detailed topographic data.
- The updated model shows that overland flow through the Lagoon Gardens development is conveyed by the roadways and drainage easements. It is noted that the updated model represents the ground conditions for all three stages of the Lagoon Gardens development and as a result, it was expected that the updated model would represent the baseline flooding within the Lagoon Gardens area more appropriately.
- The construction of Horsford Place is represented within the topographic grid for the updated model. The updated model shows flows in this area have been redirected to the roadway and through the drainage easement until reaching the conveyance channel.
- Conveyance through Pig Creek is represented in the updated model due to revised topography in the area south of Proserpine.
- The Telford Street development and associated northern embankment is included within the updated model. Overland flow from the Telford Street area has been represented in the updated model.

A difference map for the 2 year, 10 year, 50 year and 100 year ARI flood events has been produced to show detailed water level differences between the updated and previous model results (refer to Appendix K). The results show that the updated model is generally within ± 0.1m of the previous model for a large portion of the urban area. Larger differences are seen within main drainage channels to the south and east of the township, where the updated model predicts water levels lower than previously modelled. A review of the topographic data at the drainage channels showed that the new LIDAR data more accurately represents these channels than the previous model.

The most significant differences between water levels can be seen through the Lagoon Creek system. This was expected, as the overall representation of Lagoon Creek is more refined in the updated model due to more detailed topographic data being utilised as well as additional creek survey undertaken by WRC.

Changes in flood extents between the updated and previous model has also been undertaken for the 2 year, 10 year, 50 year and 100 year ARI flood events (refer to Appendix L). Differences in flood extent are most pronounced at the areas which have been developed since the finalisation of the previous modelling (Telford Street, Horsford Place and Lagoon Gardens). Differences in flood extents within the urban area are also the result of the detailed updates made to the MOUSE model based on liaison with WRC. Minor differences in flood extents and flow paths are the result of changes to topographic levels based on the adoption of the LIDAR data.

6.0 Recommendations

6.1 Calibration Data

To improve confidence in the results of the township model, calibration to several floods of varying magnitude is recommended.

It is recommended that WRC staff continue to record data from the recently installed peak flood height recorders. It is also recommended that, where peak flood height recorders were fully submerged by the March 2011 event, additional recorders are installed in the immediate vicinity of the original gauge to record flood levels from the top of the current gauges to a height at least 0.5m above the March 2011 flood level. Details of any new gauges installed should be recorded and sent to AECOM for updating in the centralised spreadsheet.

Recordings should continue to be documented in a centralised spreadsheet along with the approximate date and time that the water level peaked. Maintenance of the recorders will also be necessary and it is recommended that this is undertaken at least once per year.

6.2 Future Township Model Updates

WRC have indicated that they wish to improve management of flooding and drainage within Proserpine by using the township hydraulic model pro-actively as a tool to assess the impacts of all proposed development and drainage works. WRC also wish to incorporate all significant ground works into the model as they occur.

Based on these objectives, it is recommended WRC develop an internal procedure to ensure that ‘as constructed’ plans and information are provided for any of the following works that occur within the Proserpine region:

- Lot filling.
- Upgrades and/or alterations to the existing underground drainage network.
- Alterations to existing overland flow paths.
- New underground drainage systems constructed as part of future developments.
- New overland flow paths constructed as part of future developments.
- Land use changes.

An update register may also be beneficial for WRC to track associated plans and information that has been provided for inclusion in the hydraulic model. This would ensure that the baseline hydraulic model is representative of current conditions within the township.

7.0 References

AECOM Australia Pty Ltd (2010) *Proserpine Catholic College Flooding Assessment*, Prepared for Whitsunday Shire Council

AECOM Australia Pty Ltd (2010) *Proserpine – Lagoon Gardens, Glen Isla & Lurline Drive Flooding Assessment*, Prepared for Whitsunday Shire Council

DHI Software (2009), *MIKE FLOOD 1D-2D Modelling User Manual*

DHI Software (2004), *MOUSE User Manual*

Institution of Engineers, Australia (1998), *Australian Rainfall and Runoff*

Jenkins, G. A. (2001) *AUS-IFD Version 2.0*

Maritime Safety Queensland (2011) *Queensland Tide Tables - 2011*

Maunsell Australia Pty Ltd (2007) *Proserpine Flood and Drainage Study*, Prepared for Whitsunday Shire Council

Maunsell AECOM Pty Ltd (2009) Letter to WRC, T213-09 dated 12 March 2009, *Main Street Drainage Checks*

Queensland Water Resources Commission, 1987, *Flooding Downstream of Proserpine River Dam*

WP Software (1994) *RAFTS-XP User's Manual*, *Version 4.0*

Appendix A

Southern Catchment Areal Reduction Factors

Local Catchment Areal Reduction Factors

The following tables outline the Areal Reduction Factors used when determining the design discharges. These factors were applied to the design rainfall for Proserpine for all Southern sub-catchments.

100 Year ARI - Total Catchment Design Rainfall			
Duration (hr)	100 Year ARI Intensity - from Proserpine IFD (mm/hr)	Reduction Factor (Siriwardena and Weinmann, 1996)	Reduced 100 Year ARI Intensity (mm/hr)
1	124	0.703	87
2	87	0.739	64
3	70	0.760	53
4.5	57	0.781	44.5
6	48.7	0.796	38.8
9	39.4	0.817	32.2
12	33.8	0.832	28.1
18	28.7	0.841	24.1
24	25.5	0.866	22.1
48	18.9	0.908	17.2
72	15.5	0.924	14.32

50 Year ARI - Total Catchment Design Rainfall			
Duration (hr)	50 Year ARI Intensity - from Proserpine IFD (mm/hr)	Reduction Factor (Siriwardena and Weinmann, 1996)	Reduced 50 Year ARI Intensity (mm/hr)
1	112	0.703	79
2	78	0.739	58
3	62	0.760	47
4.5	50	0.781	39.1
6	42.9	0.796	34.2
9	34.5	0.817	28.2
12	29.6	0.832	24.6
18	24.9	0.843	21.0
24	22	0.868	19.1
48	16.2	0.912	14.8
72	13.2	0.928	12.25

10 Year ARI - Total Catchment Design Rainfall			
Duration (hr)	10 Year ARI Intensity - from Proserpine IFD (mm/hr)	Reduction Factor (Siriwardena and Weinmann, 1996)	Reduced 10 Year ARI Intensity (mm/hr)
1	83	0.703	58
2	56	0.739	41
3	44.8	0.760	34
4.5	35.5	0.781	27.7
6	30.2	0.796	24.0
9	23.9	0.817	19.5
12	20.3	0.832	16.9
18	16.9	0.848	14.3
24	14.8	0.874	12.9
48	10.5	0.919	9.7
72	8.47	0.937	7.94

2 Year ARI - Total Catchment Design Rainfall			
Duration (hr)	2 Year ARI Intensity - from Proserpine IFD (mm/hr)	Reduction Factor (Siriwardena and Weinmann, 1996)	Reduced 2 Year ARI Intensity (mm/hr)
1	58	0.703	41
2	38.4	0.739	28
3	29.9	0.760	23
4.5	23.2	0.781	18.1
6	19.4	0.796	15.4
9	15.1	0.817	12.3
12	12.7	0.832	10.6
18	10.3	0.854	8.8
24	8.83	0.880	7.8
48	6.02	0.927	5.6
72	4.7	0.946	4.45

Appendix B

Peak Flood Height Recorders

AECOM

Memorandum

To	Mark Killian	Page	1
CC			
Subject	Proserpine Flood and Drainage Study Update - Calibration Set-Up		
From	Ashley Astorquia		
File/Ref No.	60188587	Date	17-Nov-2010

1.0 Background

As discussed during your visit to the Townsville AECOM office (20 October 2010), a limitation of the current Proserpine Flood and Drainage model is the lack of calibration data. To improve confidence in the results from the hydraulic model we recommend collecting suitable flood data to calibrate the model.

To improve confidence in the levels estimated by the model, it is recommended to calibrate it using several historical flood events.

2.0 Calibration Data Required

Two types of data are needed to calibrate the model: **water levels** and **rainfall data**.

Rainfall data can be sourced from rain gauges found around the Proserpine region. We believe that there are sufficient rainfall stations in the area to use for calibration.

Continuous water level data is currently not available within the model extent as there are no stream gauges within the Proserpine region. As a result, the construction of stream level gauges within the region is recommended and gauges should be installed prior to the commencement of the 2010 / 2011 wet season, if possible.

To accurately measure future flood events and allow for more accurate calibration, it has been estimated that 27 flood gauges should be installed at strategic locations within the Proserpine region.

3.0 Stream Gauge Construction, Installation and Maintenance

Although stage recorders of varying sophistication have been developed to measure peak water levels, the gauges can be quite expensive. Other inexpensive gauges have other drawbacks (debris obstruction, etc).

As a result, we recommend an easily constructed gauge for unattended measurement of peak water levels. **Table 1** lists the materials needed to construct the gauge and a diagram of the gauge is shown in **Figure 1**.

Table 1 – Materials List (per gauge).

Quantity	Item
1	100mm (4”) PVC Well Screen or PVC Slotted Pipe (length 1.0m)
2	100mm (4”) PVC Access Coupling with Threaded End
2	100mm (4”) PVC Screw Cap
1	20mm Diameter Timber Dowel Rod (length 1.0m)
1	PVC Pipe Priming Fluid
1	Solvent PVC Cement
1	Phosphorous Based Paint or Equivalent
1	100mm Pipe Bracket or other Appropriate Materials for Securely Fixing the Gauge

The main cylinder body consists of a 100mm slotted PVC well screen, 1.0m long with access couplings and screw caps at each end. A well screen is a filtering device attached to a well intake that allows water to enter the well, but excludes sediment. A slotted PVC pipe can also be used as a substitute if required.

The timber dowel rod is painted with a phosphorous based paint and allowed to dry. A check should be undertaken to ensure that phosphorous paint that comes into contact with water remains a different shade than the original paint. Other paints with the same characteristics can also be used.

The 100mm access couplings are fixed to either end of the PVC well screen using PVC priming fluid and PVC solvent / cement. The manufacturer's instructions should be followed when using the priming fluid and solvent / cement.

The 100mm PVC bottom cap is screwed securely onto the bottom access coupling and then the painted timber rod is inserted through the top opening of the PVC well screen and placed inside. The 100mm PVC top cap is then securely screwed onto the top access coupling. The rod should be sized to fit inside the PVC well screen with minimal clearance between the top and bottom screw caps (i.e. the rod should not be free to move around inside the PVC well screen).

Clearly number each gauge for easy identification (refer to **Table 2**).

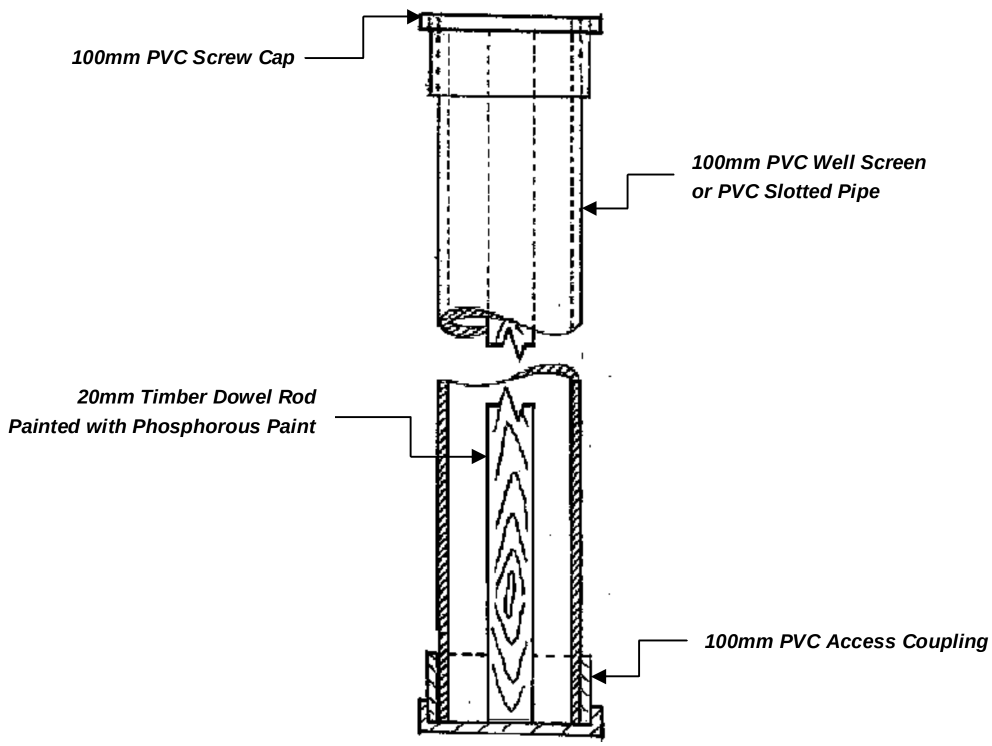


Figure 1 – Indicative Diagram of Gauge.

4.0 Stream Gauge Installation

The gauges should be located where future erosion and deposition will be minimal. The gauge should also be located where wave action and turbulence is minimised, and where it will be protected from damage by boats, vandals and flood-borne debris. The gauges can be fixed to walls, posts, fences, star pickets, etc. The gauges can then be fixed using 100mm pipe brackets, steel wire or any other means necessary.

Gauge locations have been recorded on the attached maps. The selected locations will allow major flow paths to be measured by at least one flood gauge. It should be noted that the locations selected are indicative only and site investigation will be required to confirm the actual location of the gauges. Special care should be taken to ensure that each flood gauge is easy to access and to maintain.

Further information with regards to the selected locations, has been included in **Table 2**.

Table 2 – Gauge Details.

Gauge No.	Description	Approximate Location *		Additional Comments
		Easting	Northing	
1	Property Access Road	662231	7741982	Optional gauge – dependent on accessibility and property owners approval
2	Southern End of Boundary Road	663026	7742580	Nil
3	Boundary Road – adjacent to Lagoon Creek Crossing	663104	7743240	Position gauge on the creek overbank – not required within the creek channel
4	Northern end of Boundary Road	663189	7743892	Nil
5	Faust Street	663840	7743422	Nil
6	Anzac Road – at Cross Drainage Structure	663783	7743056	Locate gauge within drainage channel, upstream of the cross drainage structure
7	Southern end of Drainage Channel	664115	7742443	Locate gauge within the drainage channel – gauge may require additional anchorage
8	Drainage Channel	664262	7742708	Locate gauge within the drainage channel – gauge may require additional anchorage
9	Drainage Channel	664401	7742970	Locate gauge within the drainage channel, downstream of the cross drainage structure – gauge may require additional anchorage
10	Corner of Main Street and Hinschen Street	664785	7743299	Locate gauge on the southern side of Main Street
11	Corner of Marathon Street and Hinschen Street	664785	7743093	Nil
12	Corner of Elizabeth Street and Hinschen Street	664726	7742884	Nil
13	Rail Line Cross Drainage Structure	664192	7741664	Position gauge within the drainage channel, immediately upstream of the cross drainage structure
14	Rail Line Cross Drainage Structure	664201	7741658	Position gauge within the drainage channel, immediately downstream of the cross drainage structure
15	Southern Side of Renwick Street	664757	7742474	Locate gauge adjacent to drainage channel / concrete pathway
16	Northern Side of Renwick Street and Lagoon Boulevard Intersection	664992	7742438	Locate gauge at pathway cross drainage structure
17	Northern Side of the Taylor Street and Chapman Street Intersection	665242	7743536	Nil
18	Eastern Side of the Bruce Highway	665667	7743697	Locate gauge on the eastern side of Bruce Highway, within the table drain
19	North Eastern Side of the Bruce Highway	665584	7743502	Locate gauge within the table drain, upstream of the cross drainage structure
20	Northern Side of the Bruce Highway and Fuljames Street Intersection	665768	7743106	Locate gauge within the drainage channel, downstream of the cross drainage structure – gauge may require additional anchorage
21	Northern Side of Renwick Street	665610	7742384	Position gauge within the drainage channel, immediately upstream of the cross drainage structure

Gauge No.	Description	Approximate Location *		Additional Comments
		Easting	Northing	
22	Drainage Channel	665592	7742116	Locate within the drainage channel – gauge may require additional anchorage
23	Dudley Road adjacent to Pig Creek Crossing	665090	7741009	Nil
24	Drainage Channel	666128	7743315	Position gauge so that the bottom of the gauge at least 300mm above invert of the drain – gauge may require additional anchorage
25	Access Track	666161	7743573	Nil
26	Drainage Channel at the Northern End of McCormack Road	667117	7743292	Position gauge so that the bottom of the gauge at least 300mm above invert of the drain
27	Southern Side of Renwick Street	665607	7742357	Position gauge within the drainage channel, immediately downstream of the cross drainage structure

** Datum = GDA 94*

Once the gauge has been installed, an accurate spot height measurement of the bottom of the gauge (m AHD) and position (easting and northing in MGA) should be recorded. These details should be referenced against the gauge number and documented in a central spreadsheet.

5.0 Stream Gauge Maintenance

Maintenance of the gauges should be undertaken at least once per year and should involve cleaning, re-painting the timber rods, checking the spot height of the gauge and replacement of the gauge (where necessary).

6.0 Recording Data

The peak levels should be obtained at each of the gauges following a flood event. The top cap can be un-screwed and the timber rod removed from the main cylinder body. The rod should be inspected for signs of a difference in paint shade which signifies the peak water level.

The distance from the bottom of the rod to the peak water level should be measured. This measurement can then be added to the surveyed spot height for the bottom of the gauge, thereby giving a peak water level in m AHD.

This water level should be recorded in a central spreadsheet along with the date and time (if known) that the water level peaked.

7.0 Data Transfer and Use

A copy of the central spreadsheet should be sent to AECOM for our records. Recorded data can then be sent to us for updating.

We will compile the data and be able to undertake calibration. A new base-case hydraulic model with calibrated roughness will then be available to provide updated water level, velocity and depth for each design storm (2,10,50 and 100 year ARI's).

If you have any questions regarding this memorandum, feel free to contact Ben McMaster or the undersigned on 4729 5500.

Ashley Astorquia
Senior Engineer
ashley.astorquia@aecom.com

Appendix C

March 2011 Flood Event Levels

AECOM

March 2011 Flood Data

Gauge No.	Gauge Invert Level	Depth of Water (m)	Water Surface Level (m)
1	11.30	0.000	NA
2	7.87	0.460	8.33
3	7.24	Fully Submerged	> 8.24
4	10.45	0.000	10.45
5	11.10	0.000	11.10
6	8.48	0.610	9.09
7	6.57	Fully Submerged	> 7.57
8	7.29	Fully Submerged	> 8.29
9	8.20	0.780	8.98
10	12.10	0.000	12.10
11	10.68	0.030	10.71
12	10.24	0.040	10.28
13	6.70	Fully Submerged	> 7.7
14	6.74	Fully Submerged	> 7.74
15	10.33	0.000	10.33
16	10.53	0.260	10.79
17	10.86	0.750	11.61
18	10.37	0.580	10.95
19	10.45	0.920	11.37
20	9.32	0.935	10.26
21	8.91	0.635	9.55
22	8.22	0.840	9.06
23	6.80	NA	NA
24	8.93	0.880	9.81
25	9.35	0.720	10.07
26	7.90	0.750	8.65
27	8.46	0.790	9.25
28	6.22	Fully Submerged	> 7.22
29	6.05	Fully Submerged	> 7.05
30	5.86	Fully Submerged	> 6.86
31	7.09	NA	NA
32	4.65	0.780	5.43
33	4.12	0.920	5.04
34	3.94	0.860	4.80
35	4.06	Fully Submerged	> 5.06

Appendix D

Township Sub-Catchments

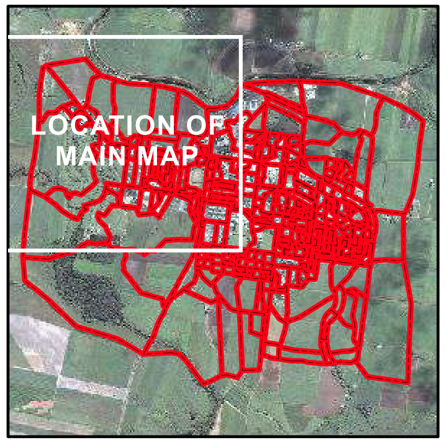
PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Township Sub-Catchments

Figure D1

Legend

Township Catchments



N

Scale: 1:7,000 (when printed at A3)

0 62.5 125 250

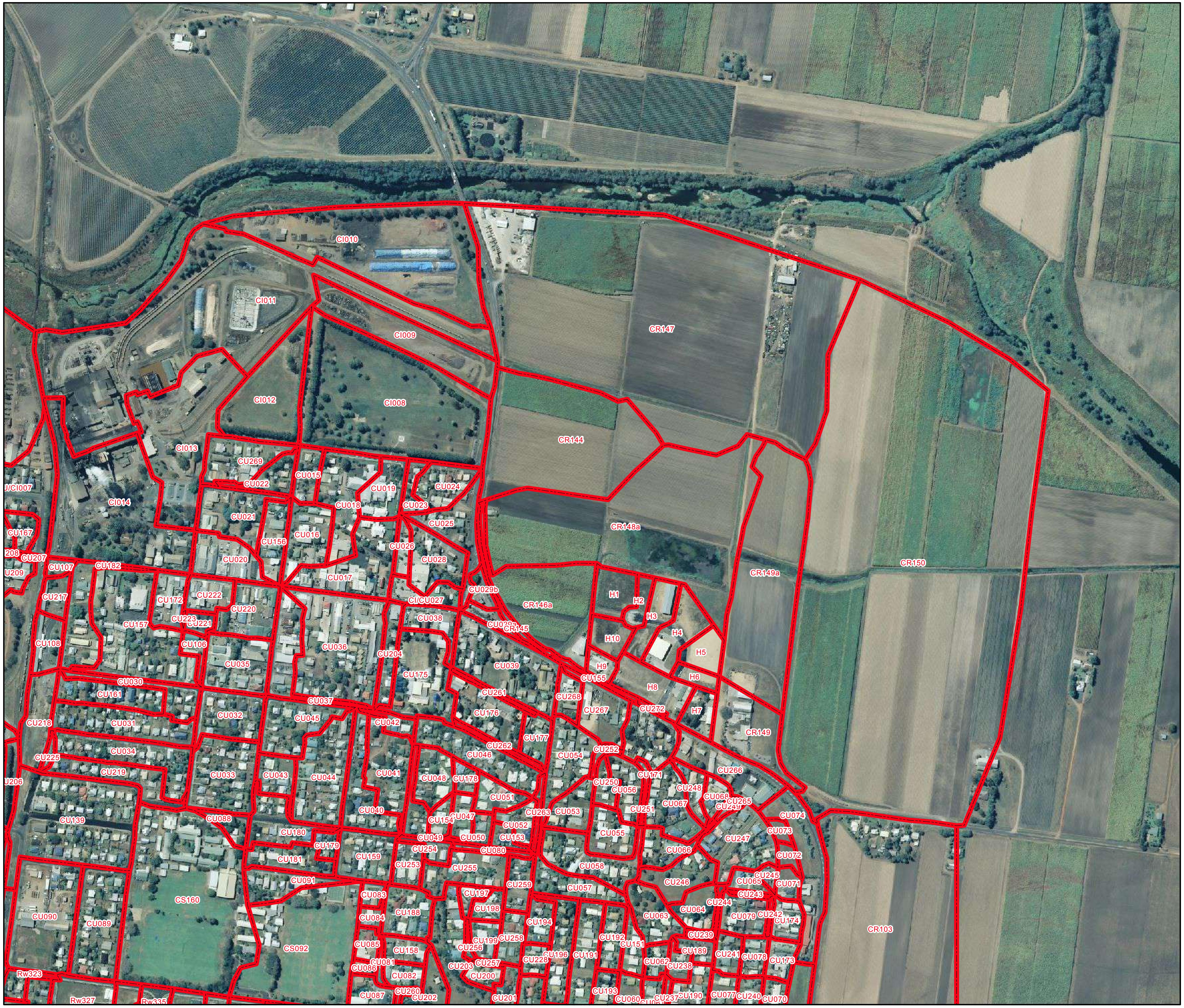
Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-OCT-2011

FILE NAME 60188587G_WIS_13

AECOM



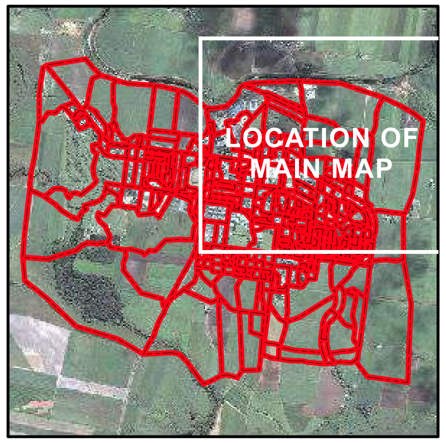
PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Township Sub-Catchments

Figure D2

Legend

Township Catchments



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Scale: 1:7,000 (when printed at A3)

0 65 130 260

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_13_2

AECOM

Imagery provided by Proserpine City Council
StreetPro © 2010 Pitney Bowes Software Pty Ltd
Roads, Rail, Rivers - © 2010 PSMA Australia Pty Ltd

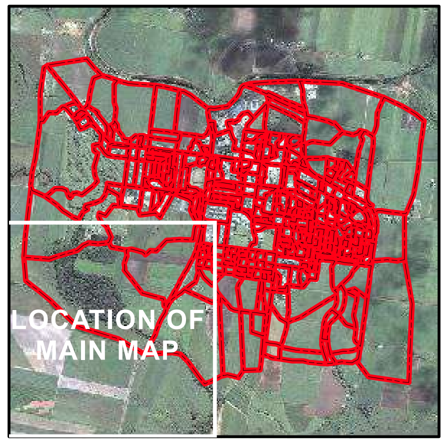
PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Township Sub-Catchments

Figure D3

Legend

Township Catchments



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Scale: 1:7,000 (when printed at A3)

0 65 130 260

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_13_4

AECOM

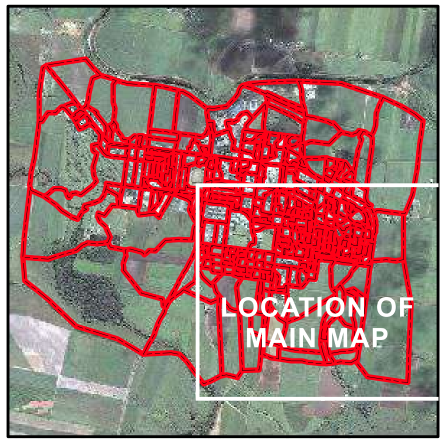
PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Revised Township Sub-Catchments

Figure D4

Legend

Township Catchments



N

Scale: 1:7,000 (when printed at A3)

0 70 140 280

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_13_1

Appendix E

Township Catchment Parameters

AECOM

Township Catchment Data

Catchment ID	Discharge Location (Node)	Catchment Area (ha)	Percentage Impervious (%)	Time of Concentration (min)
C1	N/A - MIKE21 Input	5.036	-	-
C2	N/A - MIKE21 Input	4.184	-	-
C2a	N/A - MIKE21 Input	3.434	-	-
C3	N/A - MIKE21 Input	7.236	-	-
C4	N/A - MIKE21 Input	2.561	-	-
CI/CR121	i1/26a	1.185	70.0	9.0
CI/CR125	N/A - MIKE21 Input	1.335	-	-
CI/CU027	4/87	0.590	20.0	9.0
CI008	N/A - MIKE21 Input	7.953	-	-
CI009	N/A - MIKE21 Input	2.495	-	-
CI010	N/A - MIKE21 Input	6.969	-	-
CI011	N/A - MIKE21 Input	13.139	-	-
CI012	N/A - MIKE21 Input	2.678	-	-
CI013	2/95	4.184	95.0	14.0
CI014	6/26	5.744	90.0	17.0
CI118	1/16	2.733	60.0	13.0
CI119	2/16	1.022	90.0	8.0
CI120	N/A - MIKE21 Input	1.774	-	-
CI122	i1/23	0.388	95.0	7.0
CI123	1/18	0.337	80.0	9.0
CI124	2/7	3.480	30.0	13.0
CR001	N/A - MIKE21 Input	17.329	-	-
CR003	N/A - MIKE21 Input	8.855	-	-
CR102	N/A - MIKE21 Input	46.686	-	-
CR103	N/A - MIKE21 Input	12.530	-	-
CR104b	N/A - MIKE21 Input	0.839	-	-
CR104c	N/A - MIKE21 Input	1.262	-	-
CR133	N/A - MIKE21 Input	9.126	-	-
CR136	N/A - MIKE21 Input	39.497	-	-
CR137	N/A - MIKE21 Input	17.427	-	-
CR138	N/A - MIKE21 Input	30.544	-	-
CR139	N/A - MIKE21 Input	4.717	-	-
CR140	N/A - MIKE21 Input	75.543	-	-
CR141a	N/A - MIKE21 Input	1.987	-	-
CR141b	N/A - MIKE21 Input	4.537	-	-
CR141c	N/A - MIKE21 Input	37.940	-	-
CR142a	N/A - MIKE21 Input	8.169	-	-
CR142a1	N/A - MIKE21 Input	5.752	-	-
CR142b	N/A - MIKE21 Input	2.289	-	-
CR142b1	N/A - MIKE21 Input	1.530	-	-
CR142c	N/A - MIKE21 Input	12.653	-	-
CR142c1	N/A - MIKE21 Input	5.866	-	-
CR143	N/A - MIKE21 Input	11.596	-	-
CR144	N/A - MIKE21 Input	6.751	-	-
CR145	N/A - MIKE21 Input	0.313	-	-
CR146a	N/A - MIKE21 Input	3.111	-	-
CR147	N/A - MIKE21 Input	26.832	-	-
CR148a	N/A - MIKE21 Input	10.838	-	-
CR149	N/A - MIKE21 Input	1.855	-	-
CR149a	N/A - MIKE21 Input	6.122	-	-
CR150	N/A - MIKE21 Input	42.526	-	-
CR187	N/A - MIKE21 Input	35.170	-	-
CS092	13a	4.836	15.0	13.0
CS160	14a	8.290	60.0	33.0
CU/CI007	13/23	2.075	45.0	11.0
CU005	3/24	1.188	35.0	10.0
CU015	1/99	0.552	75.0	7.0
CU016	N/A - MIKE21 Input	1.162	-	-
CU017	P6/3	1.969	90.0	16.0
CU018	2/97	1.633	70.0	13.0
CU019	3/96	0.883	90.0	7.0
CU020	2/33	1.104	100.0	7.0
CU021	59a	1.378	80.0	7.0
CU022	2/98	0.609	80.0	7.0
CU023	2/96	0.344	80.0	7.0
CU024	??4	0.855	80.0	10.0
CU025	3/92	1.216	70.0	8.0
CU026	1/91	0.317	90.0	7.0
CU028	3/92	1.154	70.0	8.0

Township Catchment Data

Catchment ID	Discharge Location (Node)	Catchment Area (ha)	Percentage Impervious (%)	Time of Concentration (min)
CU029a	1/88	0.314	95.0	7.0
CU029b	2/92	0.279	95.0	7.0
CU030	GP26	0.748	70.0	18.0
CU031	?36	1.651	70.0	17.0
CU032	GP21	1.256	75.0	8.0
CU033	2/109	1.915	45.0	16.0
CU034	?35	1.662	65.0	15.0
CU035	GP4	1.456	95.0	13.0
CU036	1/90	3.570	85.0	13.0
CU037	GP2	1.218	100.0	7.0
CU038	109a	0.662	70.0	7.0
CU039	1/85	2.508	60.0	11.0
CU040	37a	1.253	60.0	13.0
CU041	?21	1.416	50.0	9.0
CU042	52a	0.292	75.0	7.0
CU043	4/109	0.624	50.0	7.0
CU044	?26	2.011	75.0	17.0
CU045	N/A - MIKE21 Input	1.345	-	-
CU046	4/78	1.563	60.0	15.0
CU047	8/40	0.388	80.0	7.0
CU048	9/40	0.816	75.0	7.0
CU049	7/40	0.504	65.0	7.0
CU050	2/42	0.288	60.0	7.0
CU051	3/42	0.554	65.0	7.0
CU052	N/A - MIKE21 Input	0.451	-	-
CU053	12/75	0.724	50.0	10.0
CU054	2/78	1.290	60.0	12.0
CU055	8/58	0.822	60.0	9.0
CU056	1/77	0.690	70.0	7.0
CU057	6/58	0.946	70.0	17.0
CU058	7/58	1.387	70.0	12.0
CU059	2/107	0.604	50.0	7.0
CU060	4/58	0.492	60.0	7.0
CU061	5/67	0.437	60.0	7.0
CU062	4/67	0.321	60.0	7.0
CU063	2/67	0.921	35.0	7.0
CU064	4/66	0.628	40.0	9.0
CU065	7/70	0.302	20.0	7.0
CU066	6/73	0.660	50.0	10.0
CU067	8/73	1.160	40.0	8.0
CU068	1/74	0.347	50.0	7.0
CU069	14/70	0.307	40.0	7.0
CU070	12/70	0.375	80.0	7.0
CU071	4/70	0.290	30.0	7.0
CU072	3/70	0.201	30.0	7.0
CU073	2/70	0.164	40.0	7.0
CU074	79d	1.814	50.0	22.0
CU075	9/66	0.315	60.0	7.0
CU076	2/63	0.844	80.0	7.0
CU077	8/66	0.437	50.0	7.0
CU078	1/71	0.402	60.0	7.0
CU079	6/66	0.751	60.0	7.0
CU080	1/42	0.198	95.0	7.0
CU081	4/44	0.126	90.0	7.0
CU082	2/46	0.395	70.0	7.0
CU083	1/49	0.227	80.0	7.0
CU084	5/47	0.223	60.0	7.0
CU085	6/44	0.310	75.0	7.0
CU086	5/44	0.132	65.0	7.0
CU087	1/45	0.646	80.0	7.0
CU088	2/38	0.394	80.0	7.0
CU089	4/34	2.082	60.0	12.0
CU090	3/34	2.819	90.0	14.0
CU091	1/37	0.866	70.0	8.0
CU093	2/40	0.809	70.0	14.0
CU094	16a	2.504	60.0	18.0
CU095	5/115	0.158	50.0	7.0
CU096	2/117	1.590	60.0	10.0
CU097	3/115	0.640	50.0	7.0

Township Catchment Data

Catchment ID	Discharge Location (Node)	Catchment Area (ha)	Percentage Impervious (%)	Time of Concentration (min)
CU098	6/115	0.328	56.0	7.0
CU099	1/116	0.254	55.0	7.0
CU100	2/108	2.244	50.0	15.0
CU106	MH10	0.283	80.0	7.0
CU107	6/26	0.184	40.0	5.0
CU108	3/26	0.648	60.0	10.0
CU109	N/A - MIKE21 Input	1.361	-	-
CU110	i286	1.553	50.0	16.0
CU111	2/23	0.251	97.0	7.0
CU112	3/23	4.658	20.0	14.0
CU113	1/11	1.046	45.0	7.0
CU114	1/9	2.051	70.0	12.0
CU115	2/131	2.324	75.0	11.0
CU116	97a	1.033	47.0	7.0
CU117	2/18	2.252	60.0	21.0
CU126	i223	0.659	40.0	7.0
CU127	3/14	0.721	40.0	7.0
CU128	3/6	1.896	7.0	8.0
CU129	1/5	0.724	15.0	7.0
CU130	2/4	2.401	35.0	18.0
CU131	1/3	1.014	45.0	7.0
CU132	3/1	1.219	30.0	7.0
CU134	N/A - MIKE21 Input	1.833	-	-
CU135	N/A - MIKE21 Input	1.339	-	-
CU139	i300	4.418	40.0	24.0
CU151	5/58	0.447	70.0	7.0
CU152	2/62	0.300	45.0	7.0
CU153	1/43	0.272	55.0	7.0
CU154	1/41	0.298	95.0	7.0
CU155	3/75	0.188	95.0	5.0
CU156	3/98	0.806	90.0	7.0
CU157	2010/P2	3.367	70.0	25.0
CU158	3/47	0.447	80.0	7.0
CU159	5/48	1.134	70.0	11.0
CU161	GP28	1.064	70.0	7.0
CU162	i1/26a	0.742	80.0	9.0
CU163	2/19	0.687	50.0	7.0
CU164	3/19	0.807	50.0	7.0
CU165	1/10	1.095	70.0	8.0
CU166	i351	0.346	40.0	7.0
CU167	12/23	0.384	60.0	7.0
CU168	1/12	0.501	60.0	7.0
CU169	7/8	0.336	65.0	7.0
CU170	8/8	1.225	60.0	7.0
CU171	6/75	1.069	60.0	7.0
CU172	4/29	0.718	100.0	9.0
CU173	11/70	0.447	70.0	7.0
CU174	10/70	0.493	50.0	7.0
CU175	N/A - MIKE21 Input	1.969	-	-
CU176	5/80	1.272	70.0	7.0
CU177	3/78	0.537	50.0	7.0
CU178	9/40	0.277	70.0	7.0
CU179	8/48	0.252	65.0	7.0
CU180	2/38	1.056	65.0	12.0
CU181	1/38	0.850	50.0	9.0
CU182	GP17	1.301	70.0	7.0
CU183	2/19	1.237	50.0	10.0
CU184	3/8	0.507	95.0	7.0
CU185	2/17	1.627	70.0	10.0
CU186	4/2	0.564	50.0	7.0
CU188	3/48	0.954	45.0	7.0
CU189	1/68	0.325	50.0	7.0
CU190	1/69	0.727	50.0	7.0
CU191	1/59	1.108	60.0	12.0
CU192	5/58	0.608	55.0	7.0
CU193	4/58	0.393	50.0	7.0
CU194	2/54	0.474	60.0	7.0
CU195	3/56	0.617	50.0	7.0
CU196	3/59	1.034	70.0	16.0

Township Catchment Data

Catchment ID	Discharge Location (Node)	Catchment Area (ha)	Percentage Impervious (%)	Time of Concentration (min)
CU197	6/50	0.237	60.0	7.0
CU198	6/50	0.337	50.0	7.0
CU199	1/53	0.427	50.0	7.0
CU200	1/50	0.313	70.0	7.0
CU201	2/56	0.585	40.0	8.0
CU202	2b	0.813	20.0	8.0
CU203	3/40	1.856	15.0	18.0
CU204	Main10	0.647	70.0	7.0
CU205	2/6	0.257	70.0	7.0
CU206	i284	0.474	20.0	7.0
CU207	11/23	0.050	90.0	7.0
CU208	2/24	0.071	90.0	7.0
CU209	1/24	0.601	60.0	7.0
CU210	i1/23a	0.764	40.0	10.0
CU211	1/13	0.340	80.0	13.0
CU212	7/17	0.500	50.0	7.0
CU213	6/17	0.218	95.0	7.0
CU214	i5/17	0.172	90.0	7.0
CU215	3/17	0.161	90.0	7.0
CU216	P1/1	1.215	90.0	11.0
CU217	5/26	0.437	70.0	7.0
CU218	1/26	1.054	60.0	9.0
CU219	i300a	1.127	60.0	10.0
CU220	40b	1.145	100.0	13.0
CU221	3/31	0.247	100.0	7.0
CU222	??6	0.643	100.0	8.0
CU223	2010/P8	0.015	100.0	7.0
CU224	N/A - MIKE21 Input	0.446	-	-
CU225	2/27	0.115	95.0	7.0
CU226	2/115	0.217	50.0	7.0
CU227	4/115	0.110	40.0	7.0
CU228	2/54	0.335	50.0	7.0
CU229	1/107	0.287	60.0	7.0
CU230	2/58	0.114	95.0	7.0
CU231	3/58	0.075	40.0	7.0
CU232	2/64	0.099	40.0	7.0
CU233	2/65	0.137	5.0	7.0
CU234	3/64	0.071	90.0	7.0
CU235	76a	1.142	15.0	9.0
CU236	10/66	0.151	40.0	7.0
CU237	6/67	0.115	80.0	7.0
CU238	3/67	0.291	50.0	7.0
CU239	1/67	0.094	60.0	7.0
CU240	1/72	0.389	50.0	7.0
CU241	7/66	0.432	60.0	7.0
CU242	9/70	0.073	10.0	7.0
CU243	8/70	0.078	100.0	7.0
CU244	5/66	0.103	5.0	7.0
CU245	5/70	0.155	60.0	7.0
CU246	N/A - MIKE21 Input	0.946	-	-
CU247	3/66	1.550	40.0	11.0
CU248	7/73	0.438	45.0	7.0
CU249	4/73	0.093	50.0	7.0
CU250	11/75	0.356	70.0	7.0
CU251	1/77	0.156	70.0	5.0
CU252	10/75	0.146	20.0	7.0
CU253	4/48	0.509	70.0	7.0
CU254	5/40	0.314	60.0	7.0
CU255	??34a	1.142	40.0	9.0
CU256	4/50	0.092	30.0	7.0
CU257	1/50	0.048	90.0	7.0
CU258	3/53	0.536	60.0	7.0
CU259	5/53	0.559	60.0	7.0
CU260	2/44	0.127	80.0	7.0
CU261	3/80	0.134	90.0	5.0
CU262	4/78	0.206	90.0	5.0
CU263	N/A - MIKE21 Input	0.179	-	-
CU265	3/73	0.031	60.0	7.0
CU266	2/73	1.469	90.0	16.0

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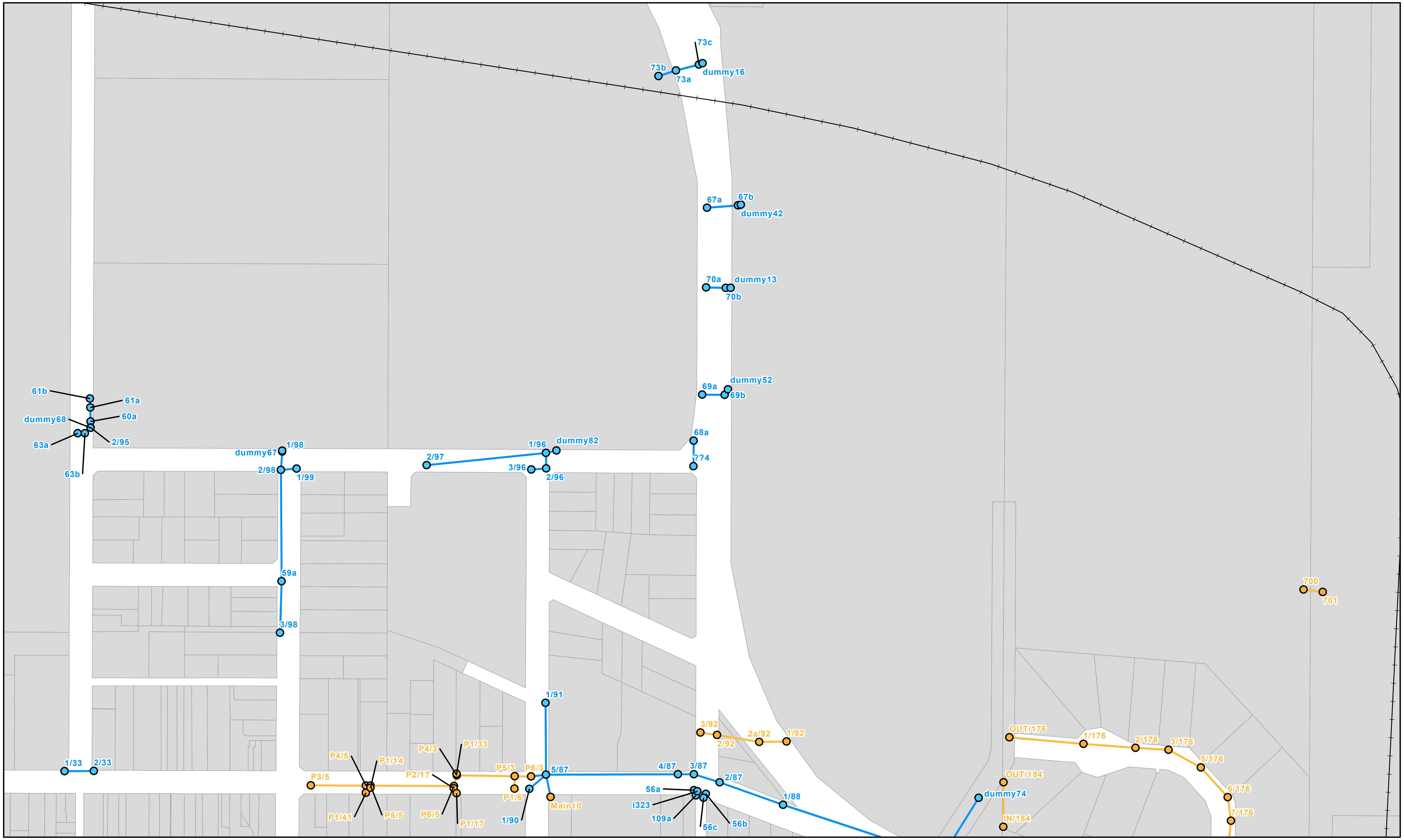
Township Catchment Data

Catchment ID	Discharge Location (Node)	Catchment Area (ha)	Percentage Impervious (%)	Time of Concentration (min)
CU267	N/A - MIKE21 Input	1.056	-	-
CU268	1/84	0.424	60.0	7.0
CU269	2/98	1.209	80.0	7.0
CU270	1/115	0.239	50.0	7.0
CU271	N/A - MIKE21 Input	1.200	-	-
CU272	5/75	0.067	80.0	5.0
CU273	N/A - MIKE21 Input	26.024	-	-
D1a	N/A - MIKE21 Input	13.774	-	-
D1b	N/A - MIKE21 Input	3.754	-	-
D2a	N/A - MIKE21 Input	13.782	-	-
D2b	N/A - MIKE21 Input	4.742	-	-
D3a	N/A - MIKE21 Input	4.455	-	-
D3b	N/A - MIKE21 Input	1.848	-	-
Gap catchment	25a	1.179	50.0	5.0
H1	N/A - MIKE21 Input	0.769	-	-
H10	N/A - MIKE21 Input	0.552	-	-
H2	1/176	0.357	80.0	5.0
H3	3/176	0.772	80.0	5.0
H4	5/176	1.071	80.0	5.0
H5	7/176	0.568	80.0	5.0
H6	8/176	0.317	80.0	5.0
H7	1/183	0.542	80.0	5.0
H8	1/175	1.111	80.0	5.0
H9	IN/184	0.295	80.0	5.0
P1	N/A - MIKE21 Input	9.347	-	-
P2	N/A - MIKE21 Input	10.223	-	-
P3	N/A - MIKE21 Input	2.005	-	-
P4	N/A - MIKE21 Input	2.620	-	-
P5	N/A - MIKE21 Input	2.305	-	-
PC1	N/A - MIKE21 Input	3.977	-	-
PC2	N/A - MIKE21 Input	1.874	-	-
PC3	N/A - MIKE21 Input	1.615	-	-
PC4	N/A - MIKE21 Input	1.290	-	-
R8	1/201	0.245	20.0	5.0
R9	1/202	0.077	20.0	5.0
Rw103	2/197	0.228	10.0	5.0
Rw323	2/34	0.358	50.0	5.0
Rw324	PSW-136-3	0.489	80.0	5.0
Rw325	PSW-136-2	0.660	80.0	5.0
Rw326	2/185	0.473	80.0	5.0
Rw327	PSW-135-5	1.148	70.0	5.0
Rw328	1/185	0.600	80.0	5.0
Rw329	PSW-138-1	0.797	70.0	5.0
Rw330	3/188	0.795	70.0	5.0
Rw331	3/189	0.773	80.0	5.0
Rw332	N/A - MIKE21 Input	0.142	-	-
Rw333	PSW-134-2	0.753	80.0	5.0
Rw334	1/165	0.428	10.0	5.0
Rw335	PSW-133-2	0.383	80.0	5.0
Rw336	PSW-133-3	0.258	80.0	5.0
Rw337	PSW-134-5	0.471	80.0	5.0
Rw338	IN/166	0.276	10.0	5.0
Rw339	5/156	0.475	80.0	5.0
Rw340	7/156	0.645	80.0	5.0
Rw341	1/190	0.425	80.0	5.0
Rw342	2/203	0.300	80.0	5.0
Rw343	5/155	0.651	80.0	5.0
Rw344	4/190	0.361	80.0	5.0
Rw345	3/156	0.617	80.0	5.0
Rw346	2/156	0.745	80.0	5.0
Rw347	1/155	0.923	80.0	5.0
Rw348	2/155	0.520	80.0	5.0
Rw349	4/155	0.528	80.0	5.0
Rw350	6/190	0.673	80.0	5.0
Rw351	1/198	0.351	80.0	5.0
Rw352	3/197	0.216	80.0	5.0
Rw353	1/191	0.373	80.0	5.0

Appendix F

Updated MOUSE Network



PROJECT ID 60188587
LAST MODIFIED CFS 03-June-2011
FILE NAME 60188587G_WIS_01

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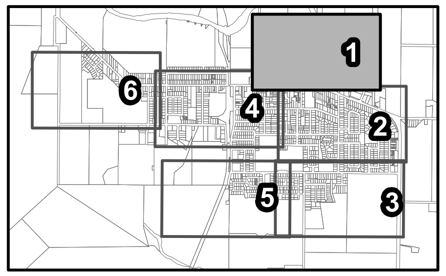


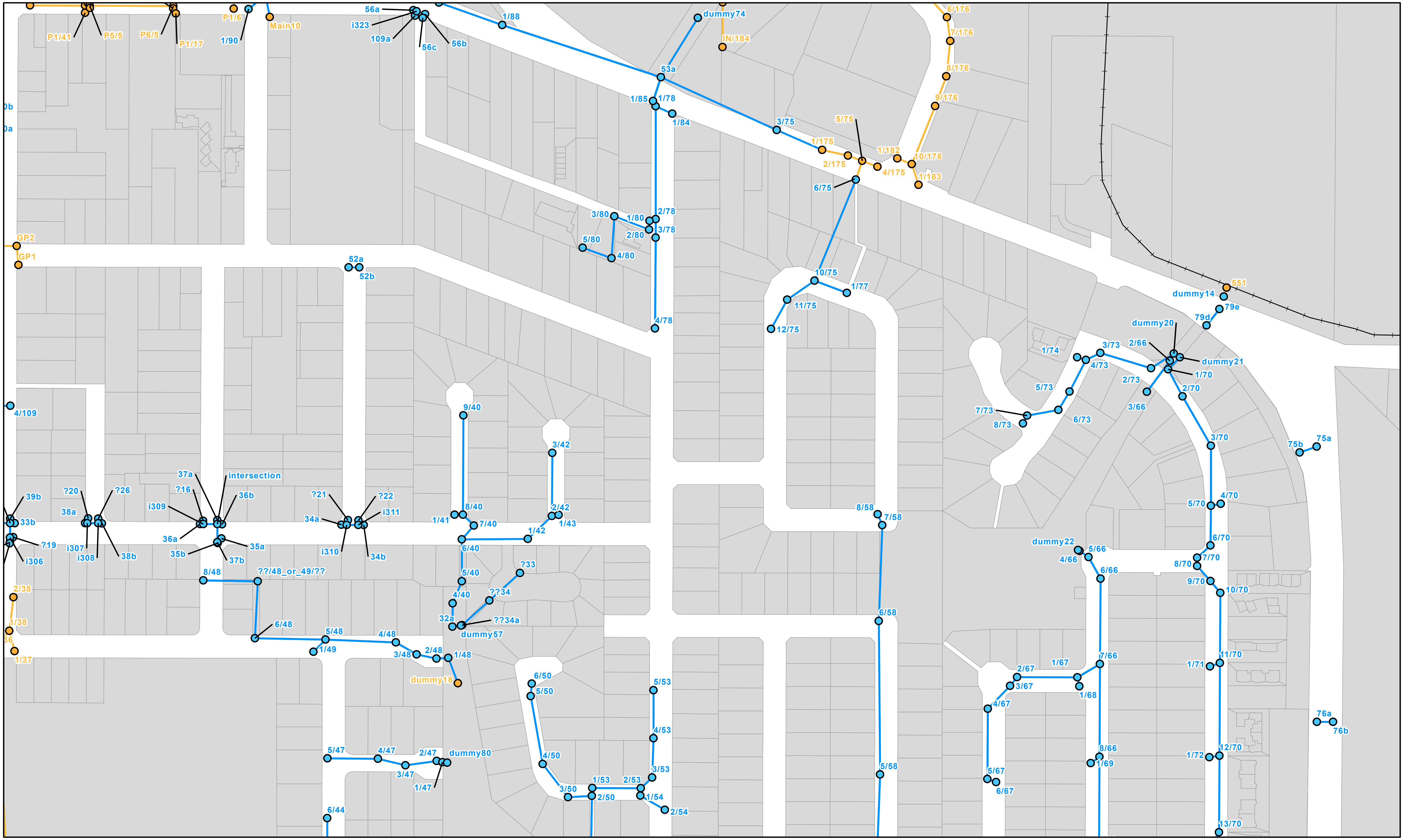
Legend

- Nodes for Existing Model Network
- Nodes for Updated Model Network
- Links for Existing Model Network
- Links for Updated Model Network

2010 PROSERPINE FLOOD AND DRAINAGE MODEL UPDATE

MOUSE Model Network Plan

Figure F1



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FILE NAME	60188587G_WIS_01

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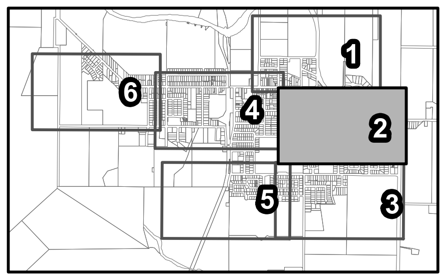


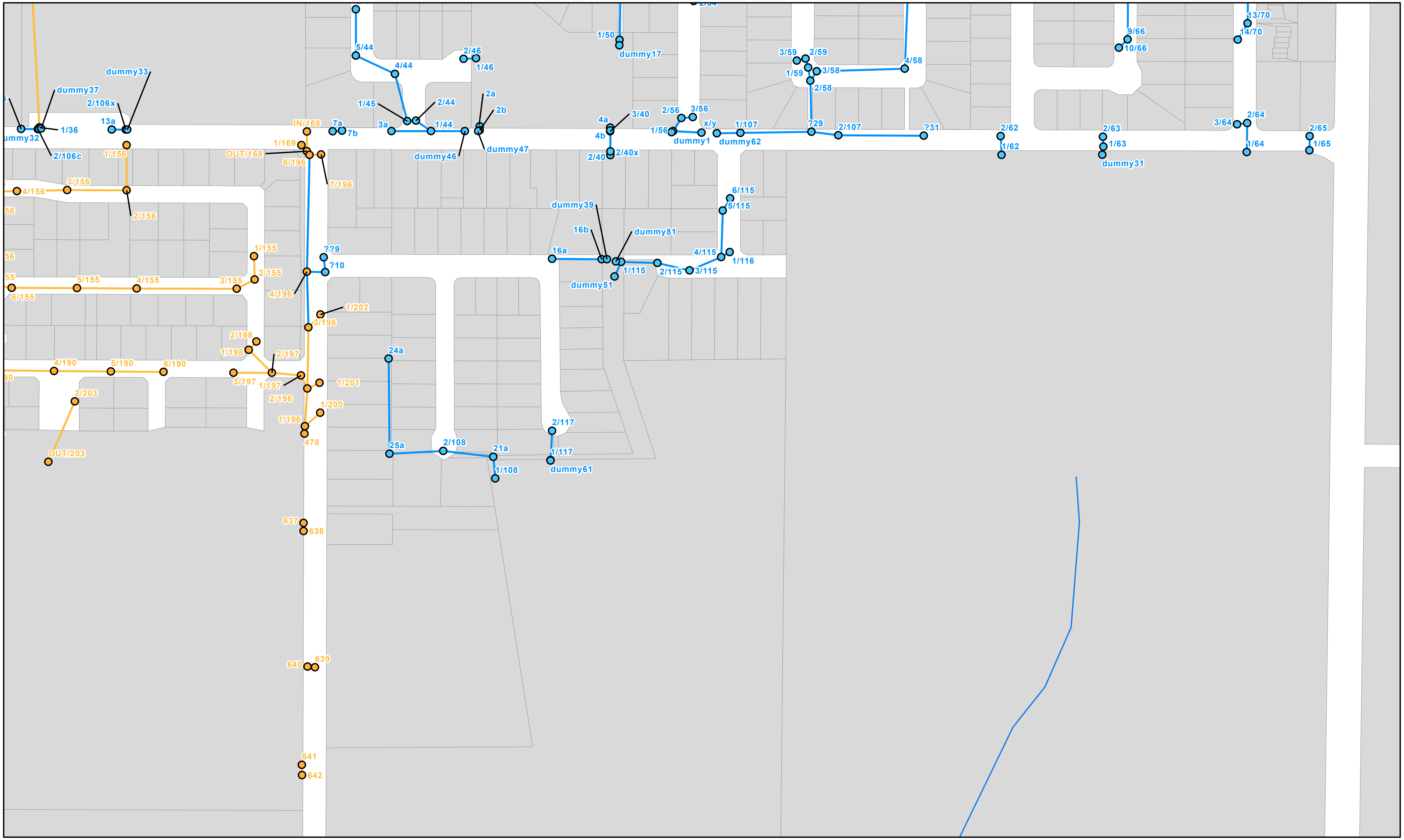
Legend

- Nodes for Existing Model Network
- Nodes for Updated Model Network
- Links for Existing Model Network
- Links for Updated Model Network

2010 PROSERPINE FLOOD AND DRAINAGE MODEL UPDATE

MOUSE Model Network Plan

Figure F2



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LAST MODIFIED	CFS 03-June-2011
FILE NAME	60188587G_WIS_01

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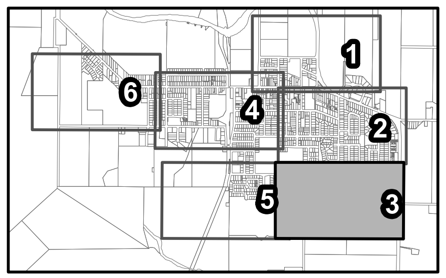


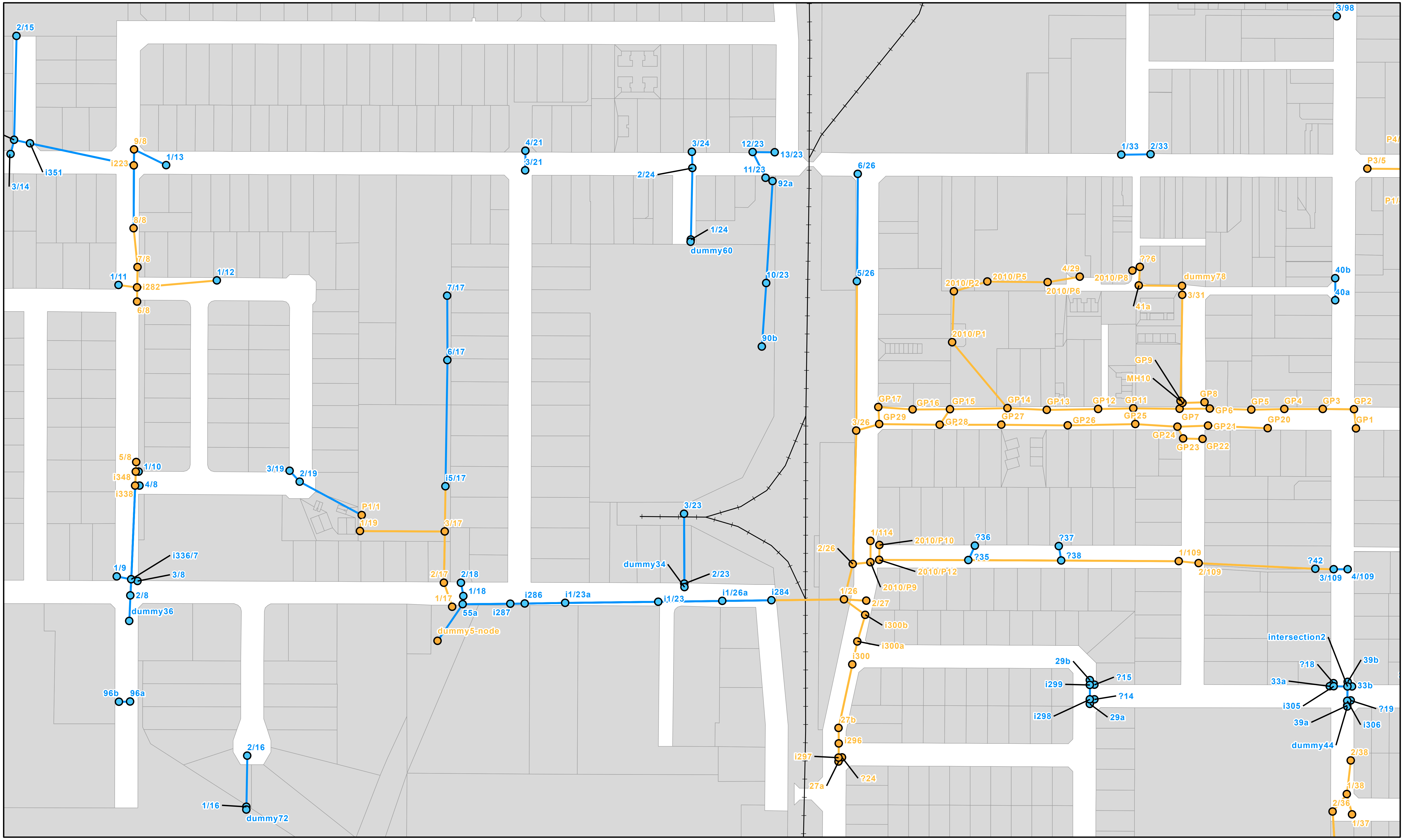
Legend

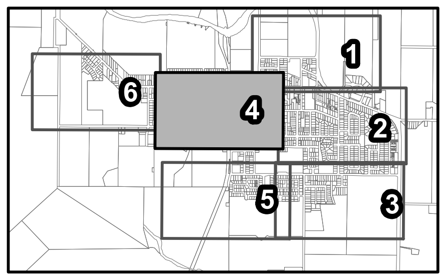
- Nodes for Existing Model Network
- Nodes for Updated Model Network
- Links for Existing Model Network
- Links for Updated Model Network

2010 PROSERPINE FLOOD AND DRAINAGE MODEL UPDATE

MOUSE Model Network Plan

Figure F3





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LAST MODIFIED CFS 03-June-2011

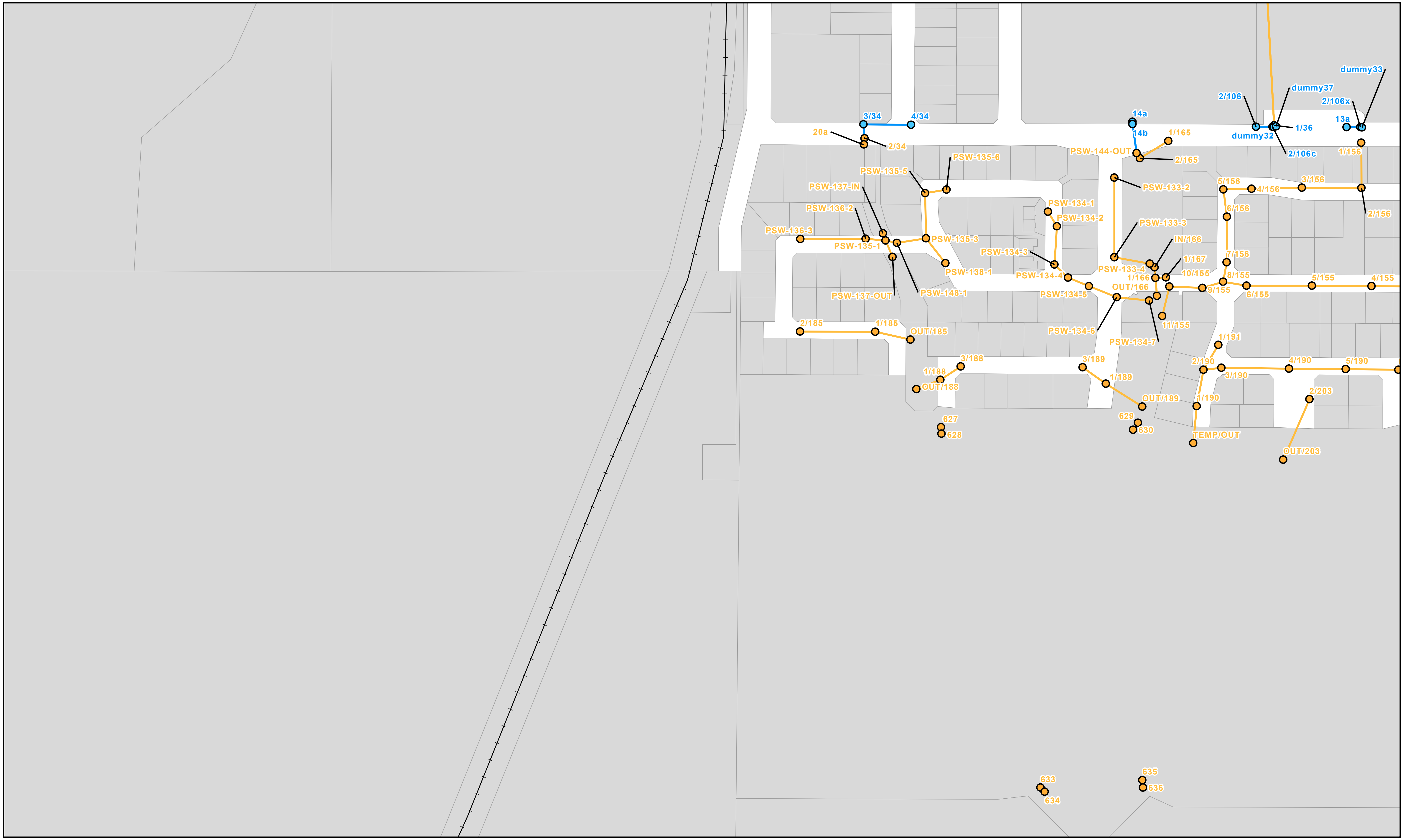
FILE NAME 60188587G_WIS_01

AECOM

2010 PROSERPINE FLOOD AND DRAINAGE MODEL UPDATE

MOUSE Model Network Plan

Figure F4



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FILE NAME 60188587G_WIS_01

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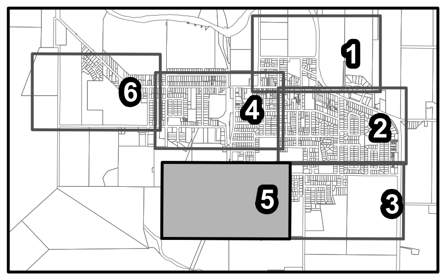


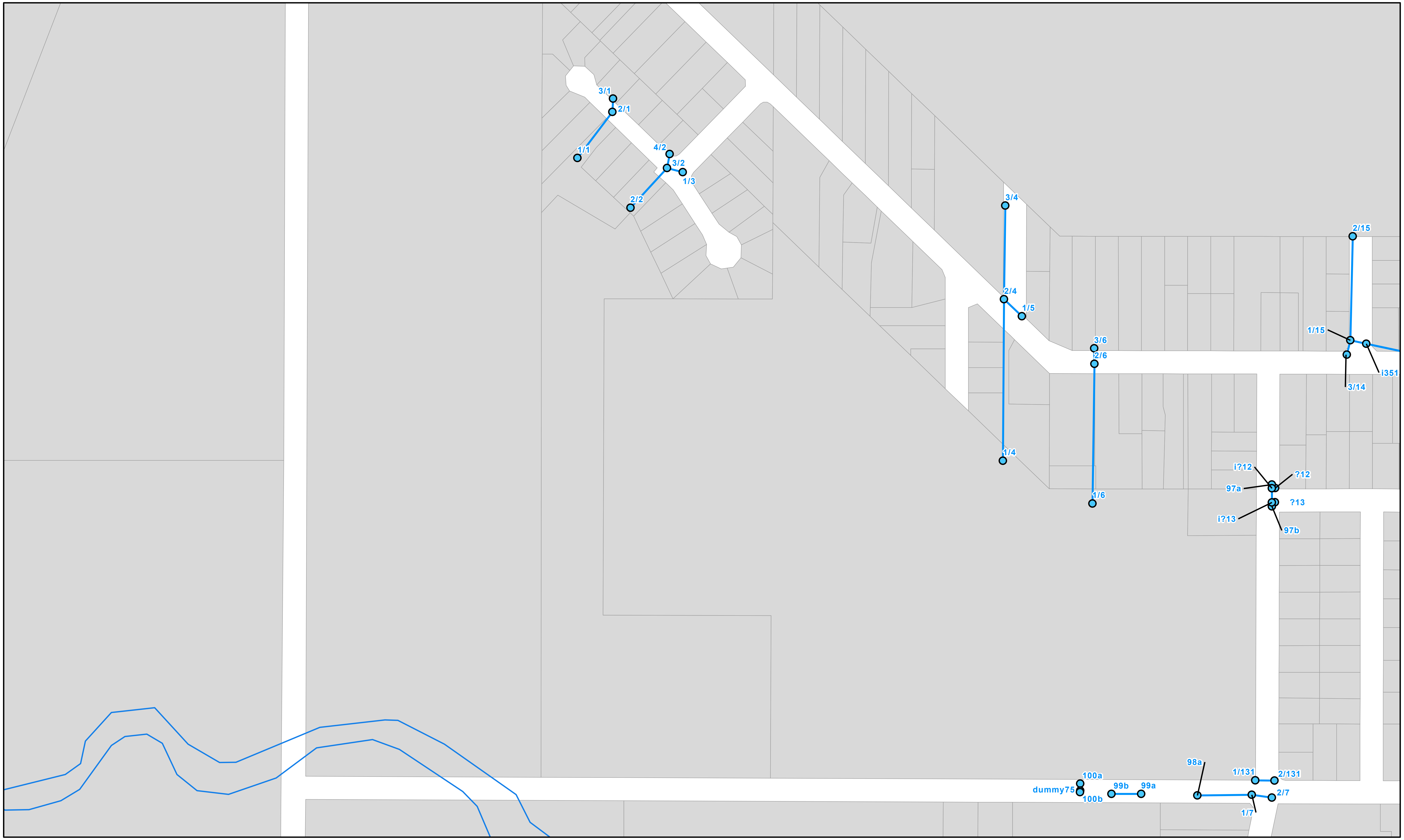
Legend

- Nodes for Existing Model Network
- Nodes for Updated Model Network
- Links for Existing Model Network
- Links for Updated Model Network

2010 PROSERPINE FLOOD AND DRAINAGE MODEL UPDATE

MOUSE Model Network Plan

Figure F5



PROJECT ID 60188587

LAST MODIFIED CFS 03-June-2011

FILE NAME 60188587G_WIS_01

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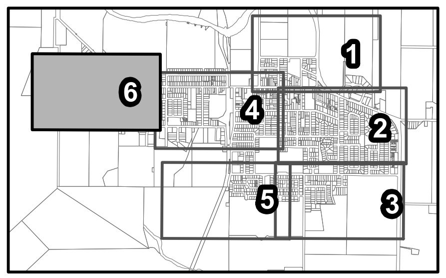
Scale: 1:3,000
(when printed at A3)

0 50 100 Metres



Legend

- Nodes for Existing Model Network
- Nodes for Updated Model Network
- Links for Existing Model Network
- Links for Updated Model Network

2010 PROSERPINE FLOOD AND DRAINAGE MODEL UPDATE

MOUSE Model Network Plan

Figure F6

Appendix G

MOUSE Nodes and Links

MOUSE Model Update - Links

Link ID	Upstream Node	Downstream Node	Link Shape Type	Pipe Details	Box Culvert Details		Link Length (m)	Material Type	Upstream IVL (m AHD)	Downstream IVL (m AHD)	Updated	Comment
				Diameter	Width	Height						
352	9/8	i223	Rectangular		1.2	0.6	13.96	User Specified (n = 0.02)	11.030	10.360	Yes	*Included in model as per plans provided by WRC.*
?12l1	?12	i?12	Rectangular		0.45	0.3	2.73	User Specified (n = 0.02)	10.780	10.730		
?13l1	?13	i?13	Rectangular		0.45	0.3	2.70	User Specified (n = 0.02)	10.720	10.660		
?42l1	?42	2/109	Circular	0.525			101.90	Smooth Concrete (n = 0.0118)	11.290	9.920	Yes	*Included in model as per plans provided by WRC.*
?42l2	?42	2/109	Circular	0.525			101.90	Smooth Concrete (n = 0.0118)	11.290	9.920		
05a	1/67	7/66	Rectangular		0.9	0.3	22.92	User Specified (n = 0.02)	9.752	9.676		
05b	1/67	7/66	Rectangular		0.9	0.3	22.92	User Specified (n = 0.02)	9.752	9.676		
06a	3/78	2/78	Circular	0.525			16.19	User Specified (n = 0.02)	9.528	9.462		
06b	3/78	2/78	Circular	0.525			16.19	User Specified (n = 0.02)	9.528	9.462		
09a	2/80	1/80	Circular	0.525			7.68	User Specified (n = 0.02)	9.652	9.505		
09b	2/80	1/80	Circular	0.525			7.68	User Specified (n = 0.02)	9.652	9.505		
1/106l1	IN/168	OUT/168	Rectangular		0.6	0.3	17.13	Smooth Concrete (n = 0.0118)	9.390	9.330	Yes	*Included in model as per plans provided by WRC.*
1/106l1a	IN/168	OUT/168	Rectangular		0.6	0.3	17.13	Smooth Concrete (n = 0.0118)	9.390	9.330	Yes	*Included in model as per plans provided by WRC.*
1/114l1	1/114	2010/P9	Rectangular		0.9	0.3	18.50	Smooth Concrete (n = 0.0118)	9.540	9.350	Yes	*Included in model as per plans provided by WRC.*
1/155l1	1/155	2/155	Rectangular		0.6	0.3	20.28	Smooth Concrete (n = 0.0118)	9.240	9.190	Yes	*Included in model as per plans provided by WRC.*
1/156l1	1/156	2/156	Circular	0.375			39.49	Smooth Concrete (n = 0.0118)	9.410	9.310	Yes	*Included in model as per plans provided by WRC.*
1/165l1	1/165	2/165	Circular	0.375			28.92	Smooth Concrete (n = 0.0118)	9.330	8.900	Yes	*Included in model as per plans provided by WRC.*
1/166l1	1/166	OUT/166	Rectangular		0.9	0.75	15.89	Smooth Concrete (n = 0.0118)	8.640	8.630	Yes	*Included in model as per plans provided by WRC.*
1/166l1a	1/166	OUT/166	Rectangular		0.9	0.75	15.89	Smooth Concrete (n = 0.0118)	8.640	8.630	Yes	*Included in model as per plans provided by WRC.*
1/167l1	1/167	1/166	Circular	0.375			9.24	Smooth Concrete (n = 0.0118)	8.890	8.640	Yes	*Included in model as per plans provided by WRC.*
1/169l1	1/169	OUT/168	Circular	0.375			7.29	Smooth Concrete (n = 0.0118)	9.430	9.320	Yes	*Included in model as per plans provided by WRC.*
1/191l1	1/191	2/190	Circular	0.375			25.21	Smooth Concrete (n = 0.0118)	8.450	8.170	Yes	*Included in model as per plans provided by WRC.*
1/19l1	1/19	3/17	Circular	0.6			73.96	Smooth Concrete (n = 0.0118)	8.900	8.630	Yes	*Included in model as per plans provided by WRC.*
1/19l1a	1/19	3/17	Circular	0.6			73.96	Smooth Concrete (n = 0.0118)	8.900	8.630	Yes	*Included in model as per plans provided by WRC.*
1/26|2	1/26	i284	Rectangular		3.6	0.9	63.34	User Specified (n = 0.02)	9.230	8.920		
1/26l1	1/26	i284	Rectangular		2.4	0.9	63.34	User Specified (n = 0.02)	9.230	8.920		
1/96l1	1/96	dummy82	Rectangular		0.745	0.375	9.23	Smooth Concrete (n = 0.0118)	10.510	10.510		
10/155l1	10/155	11/155	Circular	0.75			26.42	Smooth Concrete (n = 0.0118)	8.360	8.250	Yes	*Included in model as per plans provided by WRC.*
100x	4/44	1/45	Rectangular		0.6	0.225	45.52	User Specified (n = 0.02)	9.285	9.210		
101x	38b	i308	Rectangular		0.9	0.225	3.17	User Specified (n = 0.02)	11.592	11.559		
102a	39b	intersection2	Rectangular		0.45	0.225	3.97	User Specified (n = 0.02)	11.502	11.448		
102aii	intersection2	i306	Rectangular		0.45	0.225	12.61	User Specified (n = 0.02)	11.448	11.284		
102b	39b	intersection2	Rectangular		0.9	0.3	3.97	User Specified (n = 0.02)	11.502	11.448		
102bii	intersection2	i306	Rectangular		0.9	0.3	12.61	User Specified (n = 0.02)	11.448	11.284		
104x	?33	??34	Circular	0.375			35.91	User Specified (n = 0.02)	10.656	10.433		
107x	2/42	1/42	Circular	0.45			28.96	User Specified (n = 0.02)	10.599	10.507		
10x	??34	??34a	Circular	0.675			32.10	User Specified (n = 0.02)	10.124	9.904		
110x	1/43	2/42	Circular	0.375			6.03	User Specified (n = 0.02)	10.682	10.599		
111a	2/109	1/109	Circular	0.525			17.43	User Specified (n = 0.02)	9.923	9.865		
112a	1/109	?38	Circular	0.525			102.38	User Specified (n = 0.02)	9.866	9.698		
112b	1/109	?38	Circular	0.525			102.38	User Specified (n = 0.02)	9.866	9.698		
114a	?42	3/109	Rectangular		0.9	0.228	16.11	User Specified (n = 0.02)	11.291	11.258		
114b	?42	3/109	Rectangular		0.9	0.229	16.11	User Specified (n = 0.02)	11.291	11.258		
115x	?37	?38	Circular	0.45			12.75	User Specified (n = 0.02)	9.700	9.698		
116a	?38	?35	Circular	0.525			80.99	User Specified (n = 0.02)	9.700	9.514		
116b	?38	?35	Circular	0.525			80.99	User Specified (n = 0.02)	9.696	9.514		
116c	?38	?35	Circular	0.525			80.99	User Specified (n = 0.02)	9.696	9.514		
117x	?36	?35	Circular	0.45			13.79	User Specified (n = 0.02)	9.618	9.512		
118x	40b	40a	Rectangular		0.375	0.225	19.31	User Specified (n = 0.02)	12.679	12.612		
11x	3/56	2/56	Rectangular		0.6	0.3	9.88	User Specified (n = 0.02)	8.773	8.761		
128x	??6	41a	Circular	0.3			16.10	User Specified (n = 0.02)	12.245	12.099		
12x	2/54	1/54	Circular	0.45			24.73	User Specified (n = 0.02)	9.210	9.113		
136a	3/23	2/23	Circular	0.75			60.94	User Specified (n = 0.02)	9.062	8.931		
136b	3/23	2/23	Circular	0.75			60.94	User Specified (n = 0.02)	9.062	8.931		
136c	3/23	2/23	Circular	0.75			60.94	User Specified (n = 0.02)	9.062	8.931		

MOUSE Model Update - Links

Link ID	Upstream Node	Downstream Node	Link Shape Type	Pipe Details	Box Culvert Details		Link Length (m)	Material Type	Upstream IVL (m AHD)	Downstream IVL (m AHD)	Updated	Comment
				Diameter	Width	Height						
13x	1/54	2/53	Circular	0.45			6.57	User Specified (n = 0.02)	9.113	9.074		
144a	3/26	2/26	Rectangular		1.2	0.6	116.39	User Specified (n = 0.02)	9.679	9.402	Yes	*Included in model as per plans provided by WRC.*
144b	3/26	2/26	Rectangular		1.2	0.6	116.39	User Specified (n = 0.02)	9.679	9.402	Yes	*Included in model as per plans provided by WRC.*
144c	3/26	2/26	Rectangular		1.5	0.75	116.39	User Specified (n = 0.02)	9.500	9.360	Yes	*Included in model as per plans provided by WRC.*
149x	52a	52b	Rectangular		0.45	0.15	9.32	User Specified (n = 0.02)	11.957	11.884		
14bl1	14b	PSW-144-OUT	Rectangular		1.2	0.3	25.66	Smooth Concrete (n = 0.0118)	9.890	9.340		
14bl1a	14b	PSW-144-OUT	Rectangular		1.2	0.3	25.66	Smooth Concrete (n = 0.0118)	9.890	9.340		
14x	4/53	3/53	Circular	0.6			34.33	User Specified (n = 0.02)	9.395	9.097		
150x	1/78	1/85	Rectangular		1.2	0.45	5.06	User Specified (n = 0.02)	9.450	9.440		
156x	2/18	1/18	Rectangular		1.2	0.45	11.96	User Specified (n = 0.02)	8.440	7.599		
157x	56a	i323	Rectangular		0.9	0.225	3.19	User Specified (n = 0.02)	10.993	10.950		
158x	56c	56b	Rectangular		0.6	0.13	3.88	User Specified (n = 0.02)	11.048	10.952		
159x	2/98	1/98	Rectangular		0.9	0.45	16.01	User Specified (n = 0.02)	10.778	10.622		
161x	1/99	2/98	Rectangular		0.75	0.225	13.68	User Specified (n = 0.02)	10.772	10.770		
162x	3/98	59a	Circular	0.6			44.98	User Specified (n = 0.02)	11.453	11.170		
163x	59a	2/98	Circular	0.6			97.19	User Specified (n = 0.02)	11.170	10.770		
165x	60a	2/95	Circular	0.45			5.30	User Specified (n = 0.02)	11.235	11.147		
166a	61b	61a	Rectangular		0.45	0.3	7.82	User Specified (n = 0.02)	11.545	11.480		
166b	61b	61a	Rectangular		0.45	0.3	7.82	User Specified (n = 0.02)	11.545	11.480		
16x	4/50	3/50	Circular	0.525			36.40	User Specified (n = 0.02)	9.313	9.220		
175x	3/75	53a	Circular	0.6			110.96	User Specified (n = 0.02)	9.679	9.423		
176a	67a	67b	Rectangular		1.2	0.45	27.23	User Specified (n = 0.02)	10.560	10.425		
176b	67a	67b	Rectangular		1.2	0.45	27.23	User Specified (n = 0.02)	10.560	10.425		
179x	??4	68a	Rectangular		0.375	0.225	22.20	User Specified (n = 0.02)	11.070	10.631		
180x	69b	69a	Rectangular		1.2	0.45	19.52	User Specified (n = 0.02)	10.018	10.017		
181a	70a	70b	Rectangular		1.2	0.45	17.11	User Specified (n = 0.02)	10.638	10.532		
181b	70a	70b	Rectangular		1.2	0.45	17.11	User Specified (n = 0.02)	10.638	10.532		
181c	70a	70b	Rectangular		1.2	0.45	17.11	User Specified (n = 0.02)	10.638	10.532		
184b	73b	73a	Rectangular		1.2	0.9	16.18	User Specified (n = 0.02)	10.914	10.876		
184c	73b	73a	Rectangular		1.2	0.9	16.18	User Specified (n = 0.02)	10.914	10.876		
185a	73a	73c	Rectangular		1.2	0.45	20.62	User Specified (n = 0.02)	10.837	10.767		
185b	73a	73c	Rectangular		1.2	0.45	20.62	User Specified (n = 0.02)	10.837	10.767		
185c	73a	73c	Rectangular		1.2	0.45	20.62	User Specified (n = 0.02)	10.837	10.767		
188x	75b	75a	Rectangular		0.45	0.3	15.67	User Specified (n = 0.02)	9.614	9.518		
18x	2/58	?29	Circular	0.6			44.62	User Specified (n = 0.02)	9.358	8.906		
190x	76a	76b	Circular	0.375			14.21	User Specified (n = 0.02)	10.132	10.072		
194x	79d	79e	Rectangular		1.2	0.45	18.13	User Specified (n = 0.02)	9.160	9.130		
197a	79d	79e	Rectangular		1.2	0.45	18.13	User Specified (n = 0.02)	9.162	9.131		
197b	79d	79e	Rectangular		1.2	0.45	18.13	User Specified (n = 0.02)	9.162	9.131		
197c	79d	79e	Rectangular		1.2	0.45	18.13	User Specified (n = 0.02)	9.162	9.131		
19x	2/59	1/59	Circular	0.3			8.04	User Specified (n = 0.02)	9.682	9.575		
1x	10/66	9/66	Rectangular		0.45	0.3	10.55	User Specified (n = 0.02)	10.216	10.096		
2/155l1	2/155	3/155	Rectangular		0.6	0.3	17.67	Smooth Concrete (n = 0.0118)	9.180	9.140	Yes	*Included in model as per plans provided by WRC.*
2/156l1	2/156	3/156	Circular	0.375			51.84	Smooth Concrete (n = 0.0118)	9.310	9.260	Yes	*Included in model as per plans provided by WRC.*
2/190l1	2/190	1/190	Circular	0.6			32.36	Smooth Concrete (n = 0.0118)	7.840	7.660	Yes	*Included in model as per plans provided by WRC.*
2/19l1	2/19	P1/1	Circular	0.6			61.45	Smooth Concrete (n = 0.0118)	9.150	9.000	Yes	*Included in model as per plans provided by WRC.*
2/203l1	2/203	OUT/203	Circular	0.225			57.51	Plastic (n = 0.0125)	9.410	9.120	Yes	*Included in model as per plans provided by WRC.*
2/26l1	2/26	1/26	Rectangular		2.4	0.6	31.83	User Specified (n = 0.02)	9.360	9.230	Yes	*Included in model as per plans provided by WRC.*
2/92l1	2/92	2a/92	Rectangular		1.2	0.375	37.25	Smooth Concrete (n = 0.0118)	10.450	10.210	Yes	*Included in model as per plans provided by WRC.*
2/96l2	2/96	1/96	Rectangular		0.75	0.225	13.53	Smooth Concrete (n = 0.0118)	10.990	10.910		
2/97l1	2/97	1/96	Circular	0.375			104.64	Smooth Concrete (n = 0.0118)	10.530	10.510		
2010/P10l1	2010/P10	1/27	Rectangular		0.75	0.375	10.28	Smooth Concrete (n = 0.0118)	9.440	9.400	Yes	*Included in model as per plans provided by WRC.*
2010/P12l1	2010/P12	1/27	Rectangular		0.45	0.3	2.75	Smooth Concrete (n = 0.0118)	9.410	9.400	Yes	*Included in model as per plans provided by WRC.*
2010/P1l1	2010/P1	GP14	Rectangular		0.9	0.45	75.06	Smooth Concrete (n = 0.0118)	9.650	9.510	Yes	*Included in model as per plans provided by WRC.*
2010/P2l1	2010/P2	2010/P1	Rectangular		0.9	0.45	44.37	Smooth Concrete (n = 0.0118)	10.310	9.650	Yes	*Included in model as per plans provided by WRC.*

MOUSE Model Update - Links

Link ID	Upstream Node	Downstream Node	Link Shape Type	Pipe Details	Box Culvert Details		Link Length (m)	Material Type	Upstream IVL (m AHD)	Downstream IVL (m AHD)	Updated	Comment
				Diameter	Width	Height						
2010/P5l1	2010/P5	2010/P2	Circular	0.45			30.38	User Specified (n = 0.02)	10.550	10.300	Yes	*Included in model as per plans provided by WRC.*
2010/P5l1a	2010/P5	2010/P2	Circular	0.45			30.38	User Specified (n = 0.02)	10.550	10.300	Yes	*Included in model as per plans provided by WRC.*
2010/P6l1	2010/P6	2010/P5	Rectangular		0.9	0.375	52.57	User Specified (n = 0.02)	11.210	10.600	Yes	*Included in model as per plans provided by WRC.*
2010/P8l1	2010/P8	??6	Circular	0.3			7.16	User Specified (n = 0.02)	12.270	12.250	Yes	*Included in model as per plans provided by WRC.*
2010/P9l1	2010/P9	2/26	Rectangular		4.8	0.45	15.61	Smooth Concrete (n = 0.0118)	9.350	9.340	Yes	*Included in model as per plans provided by WRC.*
2010/P9l2	2010/P9	2/26	Rectangular		1.2	0.6	15.61	Smooth Concrete (n = 0.0118)	9.350	9.340		
20x	1/59	2/58	Circular	0.3			11.57	User Specified (n = 0.02)	9.575	9.358		
213x	13/23	12/23	Circular	0.45			19.32	User Specified (n = 0.02)	10.991	10.803		
216x	4/21	3/21	Rectangular		1.2	0.3	17.13	User Specified (n = 0.02)	11.849	11.769		
218x	11/23	92a	Circular	0.525			6.80	User Specified (n = 0.02)	10.610	10.570		
219x	92a	10/23	Circular	0.525			89.11	User Specified (n = 0.02)	10.574	10.301		
21x	4/58	3/58	Circular	0.525			76.89	User Specified (n = 0.02)	9.737	9.459		
220x	12/23	11/23	Circular	0.525			25.09	User Specified (n = 0.02)	10.810	10.610		
221x	3/24	2/24	Circular	0.45			14.12	User Specified (n = 0.02)	11.003	10.769		
222x	2/24	1/24	Circular	0.525			62.49	User Specified (n = 0.02)	10.769	9.000		
223b	i223	8/8	Rectangular		0.9	0.3	54.79	User Specified (n = 0.02)	10.360	10.340	Yes	*Included in model as per plans provided by WRC.*
223x	9/8	1/13	Circular	0.525			32.23	User Specified (n = 0.02)	11.062	10.361		
225x	1/15	i351	Rectangular		1.2	0.6	14.37	User Specified (n = 0.02)	11.113	11.060		
225xii	i223	8/8	Rectangular		1.2	0.6	54.79	User Specified (n = 0.02)	10.360	10.340	Yes	*Included in model as per plans provided by WRC.*
225xiii	i351	i223	Rectangular		1.2	0.6	92.55	User Specified (n = 0.02)	11.060	10.736		
22al1	4/196	3/196	Circular	0.9			48.75	Smooth Concrete (n = 0.0118)	8.190	8.030	Yes	*Included in model as per plans provided by WRC.*
22al1a	4/196	3/196	Circular	0.9			48.75	Smooth Concrete (n = 0.0118)	8.190	8.030	Yes	*Included in model as per plans provided by WRC.*
22al2	4/196	3/196	Circular	0.9			48.75	Smooth Concrete (n = 0.0118)	8.190	7.900	Yes	*Included in model as per plans provided by WRC.*
22x	3/58	2/58	Circular	0.525			9.72	User Specified (n = 0.02)	9.459	9.358		
234x	2/16	1/16	Circular	0.375			44.60	User Specified (n = 0.02)	9.316	8.906		
235a1	5/8	i348	Rectangular		1.2	0.6	8.39	User Specified (n = 0.02)	9.302	9.271	Yes	*Included in model as per plans provided by WRC.*
235a2	i348	i338	Rectangular		1.2	0.6	12.16	User Specified (n = 0.02)	9.270	9.230	Yes	*Included in model as per plans provided by WRC.*
235a3	i338	i336/7	Rectangular		1.2	0.6	81.82	User Specified (n = 0.02)	9.230	8.940	Yes	*Included in model as per plans provided by WRC.*
235a4	i336/7	2/8	Rectangular		1.2	0.6	14.15	User Specified (n = 0.02)	8.940	8.900		
235b1	5/8	i348	Rectangular		1.2	0.6	8.39	User Specified (n = 0.02)	9.302	9.271	Yes	*Included in model as per plans provided by WRC.*
235b2	i348	i338	Rectangular		1.2	0.6	12.16	User Specified (n = 0.02)	9.270	9.230	Yes	*Included in model as per plans provided by WRC.*
235b3	i338	i336/7	Rectangular		1.2	0.6	81.82	User Specified (n = 0.02)	9.230	8.940	Yes	*Included in model as per plans provided by WRC.*
235b4	i336/7	2/8	Rectangular		1.2	0.6	14.15	User Specified (n = 0.02)	8.940	8.900		
235c1	5/8	i348	Rectangular		1.2	0.6	8.39	User Specified (n = 0.02)	9.302	9.271	Yes	*Included in model as per plans provided by WRC.*
235c2	i348	i338	Rectangular		1.2	0.6	12.16	User Specified (n = 0.02)	9.270	9.230	Yes	*Included in model as per plans provided by WRC.*
235c3	i338	i336/7	Rectangular		1.2	0.6	81.82	User Specified (n = 0.02)	9.230	8.940	Yes	*Included in model as per plans provided by WRC.*
235c4	i336/7	2/8	Rectangular		1.2	0.6	14.15	User Specified (n = 0.02)	8.940	8.900		
236x	96b	96a	Rectangular		0.6	0.3	8.77	User Specified (n = 0.02)	9.319	9.114		
239x	3/19	2/19	Circular	0.525			12.94	User Specified (n = 0.02)	9.228	9.145		
240x	7/8	i282	Rectangular		1.2	0.6	17.60	User Specified (n = 0.02)	9.650	9.620	Yes	*Included in model as per plans provided by WRC.*
240xa	7/8	i282	Rectangular		1.2	0.6	17.60	User Specified (n = 0.02)	9.650	9.620	Yes	*Included in model as per plans provided by WRC.*
240xb	7/8	i282	Rectangular		1.2	0.6	17.60	User Specified (n = 0.02)	9.650	9.620	Yes	*Included in model as per plans provided by WRC.*
241x	97a	i?12	Rectangular		0.45	0.3	3.37	User Specified (n = 0.02)	10.747	10.730		
242x	2/131	1/131	Rectangular		1.2	0.3	16.74	User Specified (n = 0.02)	9.544	9.384		
243x	1/7	98a	Rectangular		0.6	0.3	47.53	User Specified (n = 0.02)	9.325	8.985		
244x	99a	99b	Rectangular		0.6	0.45	25.81	User Specified (n = 0.02)	8.490	8.239		
245a	100a	100b	Rectangular		1.2	0.6	6.19	User Specified (n = 0.02)	7.875	7.765		
245b	100a	100b	Rectangular		1.2	0.6	6.19	User Specified (n = 0.02)	7.875	7.765		
245c	100a	100b	Rectangular		1.2	0.6	6.19	User Specified (n = 0.02)	7.875	7.765		
246x	2/4	1/4	Rectangular		1.2	0.375	141.00	User Specified (n = 0.02)	10.423	9.671		
247x	1/5	2/4	Rectangular		0.6	0.225	21.51	User Specified (n = 0.02)	10.794	10.687		
248x	4/2	3/2	Rectangular		0.45	0.3	12.44	User Specified (n = 0.02)	10.562	10.348		
250x	3/2	2/2	Circular	0.525			47.10	User Specified (n = 0.02)	10.346	9.305		
251x	1/3	3/2	Rectangular		0.45	0.3	14.15	User Specified (n = 0.02)	10.585	10.350		
252x	3/4	2/4	Rectangular		1.2	0.45	81.65	User Specified (n = 0.02)	10.983	10.425		

MOUSE Model Update - Links

Link ID	Upstream Node	Downstream Node	Link Shape Type	Pipe Details	Box Culvert Details		Link Length (m)	Material Type	Upstream IVL (m AHD)	Downstream IVL (m AHD)	Updated	Comment
				Diameter	Width	Height						
255x	2/1	1/1	Circular	0.45			50.44	User Specified (n = 0.02)	9.908	9.425		
262x	2/7	1/7	Rectangular		0.6	0.3	17.72	User Specified (n = 0.02)	9.432	9.361		
27bl1	27b	i300	Circular	0.45			56.57	Smooth Concrete (n = 0.0118)	9.540	9.450	Yes	*Included in model as per plans provided by WRC.*
27bl2	27b	i300	Circular	0.45			56.57	Smooth Concrete (n = 0.0118)	9.540	9.450		
27x	x/y	1/56	Rectangular		1.2	0.45	24.79	User Specified (n = 0.02)	8.777	8.753		
282x	1/11	i282	Rectangular		0.6	0.3	16.29	User Specified (n = 0.02)	10.309	9.620		
28a	5/66	4/66	Rectangular		0.9	0.3	9.43	User Specified (n = 0.02)	9.472	9.461		
28b	5/66	4/66	Rectangular		0.9	0.3	9.43	User Specified (n = 0.02)	9.472	9.461		
297x	?24	i297	Rectangular		0.45	0.3	3.00	User Specified (n = 0.02)	10.252	10.160		
298x	?14	i298	Rectangular		0.375	0.225	3.91	User Specified (n = 0.02)	11.200	11.143		
299x	?15	i299	Rectangular		0.275	0.225	3.96	User Specified (n = 0.02)	11.127	11.156		
29a	6/66	5/66	Rectangular		0.9	0.3	21.50	User Specified (n = 0.02)	9.517	9.472		
29b	6/66	5/66	Rectangular		0.9	0.3	21.50	User Specified (n = 0.02)	9.517	9.472		
2a/92l1	2a/92	1/92	Rectangular		0.9	0.45	23.80	Smooth Concrete (n = 0.0118)	10.210	10.000	Yes	*Included in model as per plans provided by WRC.*
2x	2/67	1/67	Rectangular		1.2	0.375	52.63	User Specified (n = 0.02)	9.874	9.757		
3/155l1	3/155	4/155	Rectangular		0.6	0.3	87.20	Smooth Concrete (n = 0.0118)	9.140	8.850	Yes	*Included in model as per plans provided by WRC.*
3/156l1	3/156	4/156	Circular	0.375			43.82	Smooth Concrete (n = 0.0118)	9.260	9.230	Yes	*Included in model as per plans provided by WRC.*
3/190l1	3/190	2/190	Circular	0.525			15.68	Smooth Concrete (n = 0.0118)	7.980	7.890	Yes	*Included in model as per plans provided by WRC.*
3/1l1	3/1	2/1	Circular	0.375			11.53	User Specified (n = 0.02)	10.040	9.910		
3/31l1	3/31	MH10	Circular	0.375			92.71	Smooth Concrete (n = 0.0118)	11.810	11.220	Yes	*Included in model as per plans provided by WRC.*
3/31l1a	3/31	MH10	Circular	0.375			92.71	Smooth Concrete (n = 0.0118)	11.810	11.220	Yes	*Included in model as per plans provided by WRC.*
3/92l1	3/92	2/92	Rectangular		1.2	0.375	14.69	Smooth Concrete (n = 0.0118)	10.510	10.450	Yes	*Included in model as per plans provided by WRC.*
3/96l1	3/96	2/96	Rectangular		0.6	0.225	12.95	Smooth Concrete (n = 0.0118)	11.190	11.080		
302a	1/38	1/37	Rectangular		0.60	0.3	18.34	User Specified (n = 0.02)	10.556	10.475	Yes	*Included in model as per plans provided by WRC.*
302b	1/38	1/37	Rectangular		0.75	0.3	18.34	User Specified (n = 0.02)	10.556	10.475	Yes	*Included in model as per plans provided by WRC.*
305x	?18	i305	Rectangular		0.45	0.225	2.70	User Specified (n = 0.02)	11.411	11.390		
306x	?19	i306	Rectangular		0.45	0.225	2.99	User Specified (n = 0.02)	11.378	11.290		
307x	?20	i307	Rectangular		0.45	0.225	4.27	User Specified (n = 0.02)	11.607	11.561		
308x	?26	i308	Rectangular		0.9	0.3	4.17	User Specified (n = 0.02)	11.612	11.583		
309x	?16	i309	Rectangular		0.375	0.225	2.83	User Specified (n = 0.02)	11.719	11.713		
30x	12/70	11/70	Rectangular		0.9	0.3	81.08	User Specified (n = 0.02)	9.805	9.634		
310x	?21	i310	Rectangular		0.45	0.225	4.24	User Specified (n = 0.02)	11.942	11.803		
311x	?22	i311	Rectangular		0.45	0.225	4.05	User Specified (n = 0.02)	11.898	11.803		
31x	11/70	10/70	Rectangular		1.2	0.3	61.08	User Specified (n = 0.02)	9.637	9.531		
320a	1/88	53a	Rectangular		1.5	0.6	145.56	User Specified (n = 0.02)	10.210	9.310		
320b	1/88	53a	Rectangular		1.5	0.6	145.56	User Specified (n = 0.02)	10.210	9.310		
320c	1/88	53a	Rectangular		1.5	0.6	145.56	User Specified (n = 0.02)	10.210	9.310		
323x	109a	i323	Rectangular		0.45	0.13	3.95	User Specified (n = 0.02)	11.032	10.952		
325x	1/88	53a	Rectangular		1.2	0.6	145.56	User Specified (n = 0.02)	10.211	9.310		
327a	61a	60a	Rectangular		0.45	0.3	12.25	User Specified (n = 0.02)	11.480	11.235		
327b	61a	60a	Rectangular		0.45	0.3	12.25	User Specified (n = 0.02)	11.480	11.235		
32a	9/70	8/70	Rectangular		0.75	0.3	17.50	User Specified (n = 0.02)	9.539	9.471		
32b	9/70	8/70	Rectangular		0.75	0.3	17.50	User Specified (n = 0.02)	9.539	9.471		
335x	1/18	55a	Rectangular		1.2	0.45	7.07	User Specified (n = 0.02)	7.590	7.610		
336x	3/8	i336/7	Circular	0.375			5.84	User Specified (n = 0.02)	9.474	8.940		
337x	1/9	i336/7	Rectangular		1.2	0.375	12.77	User Specified (n = 0.02)	9.493	8.940		
33a	7/70	6/70	Rectangular		0.75	0.3	15.89	User Specified (n = 0.02)	9.487	9.424		
33b	7/70	6/70	Rectangular		0.75	0.3	15.89	User Specified (n = 0.02)	9.487	9.424		
348x	1/10	i348	Rectangular		1.2	0.4	2.43	User Specified (n = 0.02)	9.690	9.271		
34a	6/70	5/70	Rectangular		0.75	0.3	34.79	User Specified (n = 0.02)	9.429	9.402		
34b	6/70	5/70	Rectangular		0.75	0.3	24.79	User Specified (n = 0.02)	9.429	9.402		
351a	i351	i223	Circular	0.375			92.55	User Specified (n = 0.02)	11.060	10.360		
351b	i223	8/8	Circular	0.375			54.79	User Specified (n = 0.02)	10.360	10.340	Yes	*Included in model as per plans provided by WRC.*
352b	i223	8/8	Rectangular		1.2	0.6	54.79	User Specified (n = 0.02)	10.360	10.340	Yes	*Included in model as per plans provided by WRC.*
353x	9/8	i223	Rectangular		1.2	0.6	13.96	User Specified (n = 0.02)	11.034	10.360	Yes	*Included in model as per plans provided by WRC.*

MOUSE Model Update - Links

Link ID	Upstream Node	Downstream Node	Link Shape Type	Pipe Details Diameter	Box Culvert Details Width	Box Culvert Details Height	Link Length (m)	Material Type	Upstream IVL (m AHD)	Downstream IVL (m AHD)	Updated	Comment
354x	1/84	1/78	Circular	0.45			15.85	User Specified (n = 0.02)	9.922	9.500		
356x	2/107	?29	Circular	0.45			23.70	User Specified (n = 0.02)	9.055	8.909		
35a	5/70	3/70	Rectangular		0.9	0.3	52.25	User Specified (n = 0.02)	9.399	9.300		
35b	5/70	3/70	Rectangular		0.9	0.3	52.25	User Specified (n = 0.02)	9.399	9.300		
364x	?31	2/107	Circular	0.375			74.43	User Specified (n = 0.02)	9.880	9.060		
36a	2/70	1/70	Rectangular		0.9	0.3	26.86	User Specified (n = 0.02)	9.191	9.132		
36b	2/70	1/70	Rectangular		0.9	0.3	26.86	User Specified (n = 0.02)	9.191	9.132		
37a	3/66	2/66	Rectangular		1.2	0.3	33.69	User Specified (n = 0.02)	9.136	9.097		
37b	3/66	2/66	Rectangular		1.2	0.3	33.69	User Specified (n = 0.02)	9.136	9.097		
37c	3/66	2/66	Rectangular		1.2	0.3	33.69	User Specified (n = 0.02)	9.136	9.097		
37d	3/66	2/66	Rectangular		1.2	0.3	33.69	User Specified (n = 0.02)	9.136	9.097		
38a+b	2/73	dummy20	Rectangular		1.5	0.3	23.66	User Specified (n = 0.02)	9.150	9.130		
39a	3/73	2/73	Rectangular		0.75	0.3	46.12	User Specified (n = 0.02)	9.246	9.154		
39b	3/73	2/73	Rectangular		0.75	0.3	46.12	User Specified (n = 0.02)	9.246	9.154		
4/155l1	4/155	5/155	Rectangular		0.6	0.3	52.00	Smooth Concrete (n = 0.0118)	8.850	8.740	Yes	*Included in model as per plans provided by WRC.*
4/156l1	4/156	5/156	Circular	0.375			24.65	Smooth Concrete (n = 0.0118)	9.230	9.130	Yes	*Included in model as per plans provided by WRC.*
4/190l1	4/190	3/190	Circular	0.375			58.88	Smooth Concrete (n = 0.0118)	8.260	8.050	Yes	*Included in model as per plans provided by WRC.*
4/29l3	4/29	2010/P6	Circular	0.375			28.21	User Specified (n = 0.02)	11.560	11.210	Yes	*Included in model as per plans provided by WRC.*
4/8l1	4/8	i338	Rectangular		1.2	0.4	3.78	User Specified (n = 0.02)	9.620	9.228		
40a	4/73	3/73	Rectangular		0.75	0.3	14.01	User Specified (n = 0.02)	9.234	9.231		
40b	4/73	3/73	Rectangular		0.75	0.3	14.01	User Specified (n = 0.02)	9.234	9.231		
41al1	41a	dummy78	Rectangular		0.9	0.225	37.77	Smooth Concrete (n = 0.0118)	12.090	11.840	Yes	*Included in model as per plans provided by WRC.*
41x	5/73	4/73	Rectangular		1.2	0.3	31.24	User Specified (n = 0.02)	9.330	9.230		
42x	6/73	5/73	Rectangular		1.2	0.3	18.66	User Specified (n = 0.02)	9.354	9.328		
43x	7/73	6/73	Rectangular		0.9	0.3	27.58	User Specified (n = 0.02)	9.397	9.364		
44x	12/75	11/75	Circular	0.375			29.20	User Specified (n = 0.02)	10.524	10.423		
45x	1/77	10/75	Circular	0.375			30.16	User Specified (n = 0.02)	10.230	10.200		
46x	1/77	10/75	Circular	0.375			30.16	User Specified (n = 0.02)	10.351	10.270		
49x	1/45	2/44	Rectangular		0.6	0.225	7.56	User Specified (n = 0.02)	9.210	9.214		
4x	6/67	5/67	Rectangular		0.45	0.3	7.98	User Specified (n = 0.02)	10.134	10.094		
5/155l1	5/155	6/155	Rectangular		0.6	0.3	57.00	Smooth Concrete (n = 0.0118)	8.740	8.550	Yes	*Included in model as per plans provided by WRC.*
5/156l1	5/156	6/156	Circular	0.375			23.90	Smooth Concrete (n = 0.0118)	9.120	9.060	Yes	*Included in model as per plans provided by WRC.*
5/190l1	5/190	4/190	Circular	0.375			49.49	Smooth Concrete (n = 0.0118)	8.490	8.280	Yes	*Included in model as per plans provided by WRC.*
5/26l1	5/26	3/26	Rectangular		1.2	0.6	130.34	User Specified (n = 0.02)	10.290	9.500		
5/87l1	5/87	4/87	Circular	0.525			115.02	User Specified (n = 0.02)	10.760	10.490		
51x	2/44	1/44	Rectangular		0.6	0.3	16.14	User Specified (n = 0.02)	9.213	9.223		
529l1	PSW-137-IN	PSW-135-1	Rectangular		1.2	0.6	6.66	Smooth Concrete (n = 0.0118)	8.850	8.840	Yes	*Included in model as per plans provided by WRC.*
531l1	PSW-135-1	PSW-137-OUT	Rectangular		1.2	0.6	15.62	Smooth Concrete (n = 0.0118)	8.850	8.840	Yes	*Included in model as per plans provided by WRC.*
550l1	IN/166	1/166	Rectangular		0.9	0.75	9.03	Smooth Concrete (n = 0.0118)	8.660	8.640	Yes	*Included in model as per plans provided by WRC.*
550l1a	IN/166	1/166	Rectangular		0.9	0.75	9.03	Smooth Concrete (n = 0.0118)	8.660	8.640	Yes	*Included in model as per plans provided by WRC.*
552l1	700	701	Rectangular		1.2	0.9	16.93	User Specified (n = 0.02)	8.320	8.290	Yes	*Included in model to represent open channel flow.*
552l2	700	701	Rectangular		1.2	0.9	16.93	User Specified (n = 0.02)	8.320	8.290	Yes	*Included in model to represent open channel flow.*
552l3	700	701	Rectangular		1.2	0.9	16.93	User Specified (n = 0.02)	8.320	8.290	Yes	*Included in model to represent open channel flow.*
57a	16a	16b	Rectangular		0.6	0.225	43.28	User Specified (n = 0.02)	9.079	8.876		
57b	16a	16b	Rectangular		0.75	0.225	43.28	User Specified (n = 0.02)	9.079	8.876		
58x	2/56	1/56	Rectangular		0.6	0.3	13.49	User Specified (n = 0.02)	8.761	8.768		
59x	3/53	2/53	Circular	0.6			13.59	User Specified (n = 0.02)	9.097	9.074		
6/155l1	6/155	8/155	Rectangular		0.6	0.3	20.60	Smooth Concrete (n = 0.0118)	8.550	8.480	Yes	*Included in model as per plans provided by WRC.*
6/156l1	6/156	7/156	Circular	0.375			39.87	Smooth Concrete (n = 0.0118)	9.050	8.890	Yes	*Included in model as per plans provided by WRC.*
6/190l1	6/190	5/190	Circular	0.375			45.95	Smooth Concrete (n = 0.0118)	8.700	8.520	Yes	*Included in model as per plans provided by WRC.*
6/196l1	6/196	4/196	Circular	0.75			101.94	Smooth Concrete (n = 0.0118)	8.520	8.200	Yes	*Included in model as per plans provided by WRC.*
6/196l1a	6/196	4/196	Circular	0.75			101.94	Smooth Concrete (n = 0.0118)	8.520	8.200	Yes	*Included in model as per plans provided by WRC.*
6/26l1	6/26	5/26	Rectangular		1.2	0.6	93.81	User Specified (n = 0.02)	10.780	10.290		
6/75l1	6/75	5/75	Rectangular		0.9	0.3	18.31	Smooth Concrete (n = 0.0118)	9.920	9.780		
6/75l1a	6/75	5/75	Rectangular		0.9	0.3	18.31	Smooth Concrete (n = 0.0118)	9.920	9.780		

MOUSE Model Update - Links

Link ID	Upstream Node	Downstream Node	Link Shape Type	Pipe Details	Box Culvert Details		Link Length (m)	Material Type	Upstream IVL (m AHD)	Downstream IVL (m AHD)	Updated	Comment
				Diameter	Width	Height						
602l1	2/185	1/185	Circular	0.375			65.57	Smooth Concrete (n = 0.0118)	9.100	8.860	Yes	*Included in model as per plans provided by WRC.*
602l2	1/176	OUT/176	Circular	0.9			64.83	Smooth Concrete (n = 0.0118)	7.730	7.460	Yes	*Included in model as per plans provided by WRC.*
602l2a	1/176	OUT/176	Circular	0.9			64.83	Smooth Concrete (n = 0.0118)	7.730	7.460	Yes	*Included in model as per plans provided by WRC.*
603l1	1/185	OUT/185	Circular	0.375			32.44	Smooth Concrete (n = 0.0118)	8.840	8.450	Yes	*Included in model as per plans provided by WRC.*
603l2	2/176	1/176	Circular	0.9			45.45	Smooth Concrete (n = 0.0118)	8.000	7.730	Yes	*Included in model as per plans provided by WRC.*
603l2a	2/176	1/176	Circular	0.9			45.45	Smooth Concrete (n = 0.0118)	8.000	7.730	Yes	*Included in model as per plans provided by WRC.*
607l1	1/188	OUT/188	Circular	0.375			22.47	Smooth Concrete (n = 0.0118)	8.410	8.330	Yes	*Included in model as per plans provided by WRC.*
609l1	3/188	1/188	Circular	0.375			21.13	Smooth Concrete (n = 0.0118)	8.660	8.470	Yes	*Included in model as per plans provided by WRC.*
60x	3/50	2/50	Circular	0.525			20.76	User Specified (n = 0.02)	9.220	9.210		
612l1	3/189	1/189	Circular	0.375			24.79	Smooth Concrete (n = 0.0118)	8.550	8.360	Yes	*Included in model as per plans provided by WRC.*
614l1	3/197	2/197	Circular	0.375			33.50	Smooth Concrete (n = 0.0118)	8.640	8.490	Yes	*Included in model as per plans provided by WRC.*
614l2	1/189	OUT/189	Circular	0.375			37.44	Smooth Concrete (n = 0.0118)	8.360	8.210	Yes	*Included in model as per plans provided by WRC.*
615l1	1/198	2/197	Circular	0.375			28.29	Smooth Concrete (n = 0.0118)	8.600	8.490	Yes	*Included in model as per plans provided by WRC.*
616l1	2/198	1/198	Circular	0.375			9.85	Smooth Concrete (n = 0.0118)	8.870	8.760	Yes	*Included in model as per plans provided by WRC.*
617l1	2/197	1/197	Circular	0.375			25.50	Smooth Concrete (n = 0.0118)	8.420	8.300	Yes	*Included in model as per plans provided by WRC.*
618l1	1/197	2/196	Circular	0.375			12.57	Smooth Concrete (n = 0.0118)	8.250	8.100	Yes	*Included in model as per plans provided by WRC.*
619l1	2/196	1/196	Circular	0.9			33.04	Smooth Concrete (n = 0.0118)	7.730	7.640	Yes	*Included in model as per plans provided by WRC.*
619l1a	2/196	1/196	Circular	0.9			33.04	Smooth Concrete (n = 0.0118)	7.730	7.640	Yes	*Included in model as per plans provided by WRC.*
619l2	2/196	1/196	Circular	0.9			33.04	Smooth Concrete (n = 0.0118)	7.730	7.640	Yes	*Included in model as per plans provided by WRC.*
61x	6/40	5/40	Circular	0.75			36.41	User Specified (n = 0.02)	10.168	10.011		
620l1	1/201	2/196	Circular	0.375			11.71	Smooth Concrete (n = 0.0118)	7.860	7.790	Yes	*Included in model as per plans provided by WRC.*
622l1	3/196	2/196	Circular	0.9			53.18	Smooth Concrete (n = 0.0118)	8.030	7.730	Yes	*Included in model as per plans provided by WRC.*
622l1a	3/196	2/196	Circular	0.9			53.18	Smooth Concrete (n = 0.0118)	8.030	7.730	Yes	*Included in model as per plans provided by WRC.*
622l2	3/196	2/196	Circular	0.9			53.18	Smooth Concrete (n = 0.0118)	7.900	7.730	Yes	*Included in model as per plans provided by WRC.*
623l1	1/202	3/196	Circular	0.375			15.53	Smooth Concrete (n = 0.0118)	8.000	7.900	Yes	*Included in model as per plans provided by WRC.*
624l1	1/196	478	Circular	0.9			6.64	Smooth Concrete (n = 0.0118)	7.640	7.500	Yes	*Included in model as per plans provided by WRC.*
624l2	1/196	478	Circular	0.9			6.64	Smooth Concrete (n = 0.0118)	7.640	7.500	Yes	*Included in model as per plans provided by WRC.*
626l1	1/200	1/196	Circular	0.375			17.72	Smooth Concrete (n = 0.0118)	7.730	7.660	Yes	*Included in model as per plans provided by WRC.*
626l2	3/176	2/176	Circular	0.75			28.87	Smooth Concrete (n = 0.0118)	8.030	8.000	Yes	*Included in model as per plans provided by WRC.*
626l2a	3/176	2/176	Circular	0.75			28.87	Smooth Concrete (n = 0.0118)	8.030	8.000	Yes	*Included in model as per plans provided by WRC.*
627l1	627	628	Circular	0.825			5.84	User Specified (n = 0.02)	8.070	7.920	Yes	*Included in model to represent open channel flow.*
629l1	629	630	Circular	0.45			7.40	User Specified (n = 0.02)	8.070	7.960	Yes	*Included in model to represent open channel flow.*
629l2	629	630	Circular	0.45			7.40	User Specified (n = 0.02)	8.070	7.960	Yes	*Included in model to represent open channel flow.*
631l1	1/190	TEMP/OUT	Circular	0.6			32.37	Smooth Concrete (n = 0.0118)	7.580	7.520	Yes	*Included in model as per plans provided by WRC.*
631l2	5/176	3/176	Circular	0.75			32.14	Smooth Concrete (n = 0.0118)	8.330	8.030	Yes	*Included in model as per plans provided by WRC.*
631l2a	5/176	3/176	Circular	0.75			32.14	Smooth Concrete (n = 0.0118)	8.330	8.030	Yes	*Included in model as per plans provided by WRC.*
632l1	6/176	5/176	Circular	0.6			34.91	Smooth Concrete (n = 0.0118)	8.450	8.330	Yes	*Included in model as per plans provided by WRC.*
632l1a	6/176	5/176	Circular	0.6			34.91	Smooth Concrete (n = 0.0118)	8.450	8.330	Yes	*Included in model as per plans provided by WRC.*
633l1	633	634	Circular	0.75			5.20	User Specified (n = 0.02)	6.910	6.890	Yes	*Included in model to represent open channel flow.*
635l1	635	636	Circular	0.825			6.53	User Specified (n = 0.02)	7.220	6.880	Yes	*Included in model to represent open channel flow.*
637l1	637	638	Circular	0.45			7.03	User Specified (n = 0.02)	7.490	7.390	Yes	*Included in model to represent open channel flow.*
639l1	639	640	Circular	0.6			6.49	User Specified (n = 0.02)	7.760	7.430	Yes	*Included in model to represent open channel flow.*
63x	2/34	20a	Rectangular		0.9	0.45	3.34	User Specified (n = 0.02)	9.530	9.456		
641l1	641	642	Circular	0.45			8.97	User Specified (n = 0.02)	7.190	7.120	Yes	*Included in model to represent open channel flow.*
641l2	641	642	Circular	0.45			8.97	User Specified (n = 0.02)	7.190	7.120	Yes	*Included in model to represent open channel flow.*
643l1	7/176	6/176	Circular	0.6			20.88	Smooth Concrete (n = 0.0118)	8.540	8.450	Yes	*Included in model as per plans provided by WRC.*
644l1	8/176	7/176	Circular	0.6			31.04	Smooth Concrete (n = 0.0118)	8.830	8.540	Yes	*Included in model as per plans provided by WRC.*
645l1	9/176	8/176	Circular	0.525			27.70	Smooth Concrete (n = 0.0118)	8.900	8.830	Yes	*Included in model as per plans provided by WRC.*
646l1	10/176	9/176	Circular	0.45			54.71	Smooth Concrete (n = 0.0118)	9.130	8.900	Yes	*Included in model as per plans provided by WRC.*
647l1	1/183	10/176	Circular	0.375			18.99	Smooth Concrete (n = 0.0118)	9.570	9.200	Yes	*Included in model as per plans provided by WRC.*
648l1	1/182	10/176	Circular	0.375			13.62	Smooth Concrete (n = 0.0118)	9.370	9.200	Yes	*Included in model as per plans provided by WRC.*
649l1	4/175	5/75	Circular	0.375			14.25	Smooth Concrete (n = 0.0118)	10.050	9.960	Yes	*Included in model as per plans provided by WRC.*
650l1	5/75	2/175	Circular	0.6			13.28	Smooth Concrete (n = 0.0118)	9.780	9.770	Yes	*Included in model as per plans provided by WRC.*
651l1	2/175	1/175	Circular	0.6			23.06	Smooth Concrete (n = 0.0118)	9.770	9.740	Yes	*Included in model as per plans provided by WRC.*
652l1	1/175	3/75	Circular	0.6			43.24	Smooth Concrete (n = 0.0118)	9.740	9.690		

MOUSE Model Update - Links

Link ID	Upstream Node	Downstream Node	Link Shape Type	Pipe Details	Box Culvert Details		Link Length (m)	Material Type	Upstream IVL (m AHD)	Downstream IVL (m AHD)	Updated	Comment
				Diameter	Width	Height						
654l1	IN/184	OUT/184	Circular	0.45			38.94	Smooth Concrete (n = 0.0118)	9.600	9.260	Yes	*Included in model as per plans provided by WRC.*
65x	1/116	4/115	Rectangular		0.6	0.225	8.69	User Specified (n = 0.02)	8.692	8.600		
66x	4/115	3/115	Rectangular		0.6	0.23	29.95	User Specified (n = 0.02)	8.614	8.505		
67x	3/80	2/80	Rectangular		0.9	0.45	32.52	User Specified (n = 0.02)	9.711	9.652		
68x	2/117	1/117	Circular	0.375			25.59	User Specified (n = 0.02)	8.315	8.138		
69x	??9	?10	Rectangular		0.6	0.225	12.90	User Specified (n = 0.02)	8.966	8.946		
7/156l1	7/156	8/155	Circular	0.375			17.24	Smooth Concrete (n = 0.0118)	8.880	8.870	Yes	*Included in model as per plans provided by WRC.*
7/196l1	7/196	6/196	Circular	0.375			10.06	Smooth Concrete (n = 0.0118)	8.560	8.540	Yes	*Included in model as per plans provided by WRC.*
70x	?10	4/196	Rectangular		0.6	0.3	16.02	User Specified (n = 0.02)	8.946	8.200		
71x	24a	25a	Circular	0.3			82.94	User Specified (n = 0.02)	8.899	8.824		
72x	25a	2/108	Circular	0.3			46.96	User Specified (n = 0.02)	8.791	8.427		
74x	27a	i297	Rectangular		0.9	0.225	3.32	User Specified (n = 0.02)	10.268	10.161		
76x	29b	i299	Rectangular		0.45	0.225	4.20	User Specified (n = 0.02)	11.163	11.143		
7x	4/67	3/67	Rectangular		0.75	0.3	27.94	User Specified (n = 0.02)	9.961	9.918		
8/155l1	8/155	9/155	Circular	0.525			18.80	Smooth Concrete (n = 0.0118)	8.480	8.420	Yes	*Included in model as per plans provided by WRC.*
81x	3/47	2/47	Circular	0.45			27.58	User Specified (n = 0.02)	9.439	9.367		
83x	3/48	2/48	Circular	0.675			17.71	User Specified (n = 0.02)	9.596	9.458		
84x	?/48_or_49/?	6/48	Circular	0.6			49.89	User Specified (n = 0.02)	10.629	10.280		
85x	1/42	6/40	Circular	0.75			57.61	User Specified (n = 0.02)	10.507	10.168		
87x	1/38	2/36	Rectangular		0.60	0.3	19.52	User Specified (n = 0.02)	10.554	10.476	Yes	*Included in model as per plans provided by WRC.*
88x	4/40	32a	Circular	0.75			20.52	User Specified (n = 0.02)	9.974	9.862		
89a	4/48	3/48	Circular	0.6			20.96	User Specified (n = 0.02)	9.714	9.596		
89b	4/48	3/48	Circular	0.675			20.96	User Specified (n = 0.02)	9.714	9.596		
8x	8/66	7/66	Rectangular		0.9	0.3	80.88	User Specified (n = 0.02)	9.885	9.676		
9/155l1	9/155	10/155	Circular	0.6			28.90	Smooth Concrete (n = 0.0118)	8.410	8.370	Yes	*Included in model as per plans provided by WRC.*
90x	4/47	3/47	Circular	0.45			24.65	User Specified (n = 0.02)	9.476	9.439		
91x	9/40	8/40	Circular	0.375			86.64	User Specified (n = 0.02)	10.873	10.411		
92x	1/49	5/48	Rectangular		0.45	0.3	15.02	User Specified (n = 0.02)	10.396	9.979		
93x	33a	i305	Rectangular		0.6	0.3	3.34	User Specified (n = 0.02)	11.451	11.387		
94x	34b	i311	Rectangular		0.75	0.225	4.78	User Specified (n = 0.02)	11.832	11.803		
95x	1/41	8/40	Circular	0.375			7.24	User Specified (n = 0.02)	10.589	10.411		
96x	7/40	6/40	Circular	0.45			16.05	User Specified (n = 0.02)	10.379	10.168		
97x	35a	37b	Rectangular		0.6	0.225	4.81	User Specified (n = 0.02)	11.627	11.600		
98x	36a	i309	Rectangular		0.6	0.225	2.88	User Specified (n = 0.02)	11.724	11.680		
99x	37a	intersection	Rectangular		0.75	0.225	3.57	User Specified (n = 0.02)	11.661	11.648		
99xb	intersection	37b	Rectangular		0.75	0.225	15.74	User Specified (n = 0.02)	11.648	11.600		
dummy1	1/56	dummy1	Rectangular		2.4	0.45	1.71	User Specified (n = 0.02)	8.750	8.760		
dummy13	70b	dummy13	Rectangular		3.6	0.45	4.13	User Specified (n = 0.02)	10.530	10.520		
dummy14l1	dummy14	551	Rectangular		3.6	0.6	8.23	User Specified (n = 0.02)	9.120	9.000	Yes	*Included in model as per plans provided by WRC.*
dummy16	73c	dummy16	Rectangular		3.6	0.45	3.31	User Specified (n = 0.02)	10.770	10.760		
dummy17	1/50	dummy17	Rectangular		0.942478	0.6	4.73	User Specified (n = 0.02)	8.920	8.910		
dummy18	1/48	dummy18	Rectangular		1.06	0.675	23.81	User Specified (n = 0.02)	9.440	9.430	Yes	*Included in model as represent outlet.*
dummy21	1/70	dummy21	Rectangular		1.8	0.3	14.57	User Specified (n = 0.02)	9.130	9.120		
dummy22	4/66	dummy22	Rectangular		1.8	0.3	1.53	User Specified (n = 0.02)	9.460	9.460		
dummy29	8/70	7/70	Rectangular		1.5	0.3	7.26	User Specified (n = 0.02)	9.470	9.460		
dummy31	1/63	dummy31	Rectangular		2.4	0.3	7.11	User Specified (n = 0.02)	10.310	10.310		
dummy32	2/106c	dummy32	Rectangular		2.4	0.45	0.95	User Specified (n = 0.02)	10.120	10.110		
dummy33	2/106x	dummy33	Rectangular		2.4	0.45	1.30	User Specified (n = 0.02)	9.980	9.970		
dummy34	2/23	dummy34	Rectangular		1.767	0.75	3.06	User Specified (n = 0.02)	8.930	8.920		
dummy36	2/8	dummy36	Rectangular		3.6	0.9	22.24	User Specified (n = 0.02)	8.900	8.900		
dummy37	1/36	dummy37	Rectangular		1.237	0.525	1.93	User Specified (n = 0.02)	10.210	10.200		
dummy39	16b	dummy39	Rectangular		1.35	0.225	4.62	User Specified (n = 0.02)	8.880	8.870		
dummy4	7/66	6/66	Rectangular		1.8	0.3	74.50	User Specified (n = 0.02)	9.680	9.520		
dummy42	67b	dummy42	Rectangular		2.4	0.45	2.38	User Specified (n = 0.02)	10.420	10.410		
dummy44	39a	dummy44	Rectangular		1.65	0.225	0.99	User Specified (n = 0.02)	11.280	11.250		

MOUSE Model Update - Links

Link ID	Upstream Node	Downstream Node	Link Shape Type	Pipe Details Diameter	Box Culvert Details Width	Box Culvert Details Height	Link Length (m)	Material Type	Upstream IVL (m AHD)	Downstream IVL (m AHD)	Updated	Comment
dummy45	4b	3/40	Rectangular		5.4	0.6	0.79	User Specified (n = 0.02)	8.750	8.710		
dummy46	1/44	dummy46	Rectangular		3	0.3	29.40	User Specified (n = 0.02)	9.220	9.210		
dummy47	2b	dummy47	Rectangular		2.41	0.226	0.28	User Specified (n = 0.02)	9.150	9.140		
dummy5	55a	dummy5-node	Rectangular		10	0.9	38.70	User Specified (n = 0.02)	7.610	7.420	Yes	*Included in model as represent outlet.*
dummy51	1/115	dummy51	Rectangular		1.5	0.45	13.88	User Specified (n = 0.02)	8.410	8.400		
dummy52	69b	dummy52	Rectangular		1.2	0.45	5.58	User Specified (n = 0.02)	10.020	10.010		
dummy57	??34a	dummy57	Circular	0.675			1.08	User Specified (n = 0.02)	9.900	9.890		
dummy60	1/24	dummy60	Circular	0.525			1.90	User Specified (n = 0.02)	9.000	8.990		
dummy61	1/117	dummy61	Circular	0.375			0.44	User Specified (n = 0.02)	8.140	8.130		
dummy62	1/107	dummy62	Rectangular		1.8	0.9	20.65	User Specified (n = 0.02)	8.840	8.840		
dummy64	5/115	4/115	Rectangular		0.6	0.23	40.61	User Specified (n = 0.02)	8.700	8.600		
dummy67	1/98	dummy67	Rectangular		0.9	0.45	0.72	User Specified (n = 0.02)	10.620	10.610		
dummy68	2/95	dummy68	Circular	0.45			0.21	User Specified (n = 0.02)	11.150	11.140		
dummy72	1/16	dummy72	Rectangular		0.375	0.2945	2.48	User Specified (n = 0.02)	8.910	8.900		
dummy74	53a	dummy74	Rectangular		12.6	0.6	60.96	User Specified (n = 0.02)	9.310	8.900		
dummy75	100b	dummy75	Rectangular		3.6	0.6	1.36	User Specified (n = 0.02)	7.760	7.750		
dummy80	1/47	dummy80	Rectangular		0.706858	0.45	4.15	User Specified (n = 0.02)	9.300	9.290		
dummy81	dummy81	1/115	Rectangular		0.75	0.45	4.45	User Specified (n = 0.02)	8.420	8.410		
GP11l2	GP11	GP12	Rectangular		1.2	0.6	30.60	Smooth Concrete (n = 0.0118)	9.990	9.900	Yes	*Included in model as per plans provided by WRC.*
GP12l1	GP12	GP13	Rectangular		1.2	0.6	44.94	Smooth Concrete (n = 0.0118)	9.900	9.760	Yes	*Included in model as per plans provided by WRC.*
GP13l1	GP13	GP14	Rectangular		1.2	0.6	34.23	Smooth Concrete (n = 0.0118)	9.760	9.660	Yes	*Included in model as per plans provided by WRC.*
GP14l1	GP14	GP15	Rectangular		1.2	0.6	50.19	Smooth Concrete (n = 0.0118)	9.660	9.510	Yes	*Included in model as per plans provided by WRC.*
GP14l2	GP14	GP27	Rectangular		0.9	0.45	15.52	Smooth Concrete (n = 0.0118)	9.660	9.620	Yes	*Included in model as per plans provided by WRC.*
GP15l1	GP15	GP16	Rectangular		1.2	0.6	32.54	Smooth Concrete (n = 0.0118)	9.510	9.420	Yes	*Included in model as per plans provided by WRC.*
GP15l2	GP15	GP28	Rectangular		0.9	0.45	16.19	Smooth Concrete (n = 0.0118)	9.510	9.420	Yes	*Included in model as per plans provided by WRC.*
GP16l1	GP16	GP17	Rectangular		1.2	0.6	30.03	Smooth Concrete (n = 0.0118)	9.420	9.420	Yes	*Included in model as per plans provided by WRC.*
GP17l1	GP17	GP29	Rectangular		1.2	0.6	14.77	Smooth Concrete (n = 0.0118)	9.420	9.420	Yes	*Included in model as per plans provided by WRC.*
GP1l1	GP1	GP2	Circular	0.45			16.74	Smooth Concrete (n = 0.0118)	10.950	10.910	Yes	*Included in model as per plans provided by WRC.*
GP1l1a	GP1	GP2	Circular	0.45			16.74	Smooth Concrete (n = 0.0118)	10.950	10.910	Yes	*Included in model as per plans provided by WRC.*
GP20l1	GP20	GP21	Rectangular		0.6	0.45	52.07	Smooth Concrete (n = 0.0118)	10.650	10.500	Yes	*Included in model as per plans provided by WRC.*
GP21l1	GP21	GP24	Rectangular		0.6	0.45	26.73	Smooth Concrete (n = 0.0118)	10.500	10.310	Yes	*Included in model as per plans provided by WRC.*
GP22l1	GP22	GP23	Rectangular		0.45	0.3	16.80	Smooth Concrete (n = 0.0118)	10.630	10.500	Yes	*Included in model as per plans provided by WRC.*
GP23l1	GP23	GP24	Rectangular		0.45	0.3	11.58	Smooth Concrete (n = 0.0118)	10.500	10.450	Yes	*Included in model as per plans provided by WRC.*
GP24l1	GP24	GP25	Rectangular		0.6	0.45	36.74	Smooth Concrete (n = 0.0118)	10.310	10.020	Yes	*Included in model as per plans provided by WRC.*
GP25l1	GP25	GP26	Rectangular		1.2	0.45	58.80	Smooth Concrete (n = 0.0118)	10.020	9.820	Yes	*Included in model as per plans provided by WRC.*
GP25l2	GP25	GP11	Rectangular		0.9	0.45	13.79	Smooth Concrete (n = 0.0118)	10.020	9.990	Yes	*Included in model as per plans provided by WRC.*
GP26l1	GP26	GP27	Rectangular		1.2	0.45	58.02	Smooth Concrete (n = 0.0118)	9.820	9.620	Yes	*Included in model as per plans provided by WRC.*
GP27l1	GP27	GP28	Rectangular		1.2	0.45	53.65	Smooth Concrete (n = 0.0118)	9.620	9.420	Yes	*Included in model as per plans provided by WRC.*
GP28l1	GP28	GP29	Rectangular		1.2	0.6	52.78	Smooth Concrete (n = 0.0118)	9.420	9.420	Yes	*Included in model as per plans provided by WRC.*
GP29l1	GP29	3/26	Rectangular		1.2	0.6	20.77	Smooth Concrete (n = 0.0118)	9.420	9.420	Yes	*Included in model as per plans provided by WRC.*
GP29l2	GP29	3/26	Rectangular		1.2	0.6	20.77	Smooth Concrete (n = 0.0118)	9.420	9.420	Yes	*Included in model as per plans provided by WRC.*
GP2l1	GP2	GP3	Circular	0.45			27.20	Smooth Concrete (n = 0.0118)	10.910	10.830	Yes	*Included in model as per plans provided by WRC.*
GP2l1a	GP2	GP3	Circular	0.45			27.20	Smooth Concrete (n = 0.0118)	10.910	10.830	Yes	*Included in model as per plans provided by WRC.*
GP3l1	GP3	GP4	Rectangular		0.9	0.45	33.52	Smooth Concrete (n = 0.0118)	10.830	10.720	Yes	*Included in model as per plans provided by WRC.*
GP4l1	GP4	GP5	Rectangular		1.2	0.45	28.87	Smooth Concrete (n = 0.0118)	10.720	10.630	Yes	*Included in model as per plans provided by WRC.*
GP5l1	GP5	GP6	Rectangular		1.2	0.45	36.13	Smooth Concrete (n = 0.0118)	10.630	10.520	Yes	*Included in model as per plans provided by WRC.*
GP6l1	GP6	GP7	Rectangular		1.2	0.45	26.35	Smooth Concrete (n = 0.0118)	10.520	10.450	Yes	*Included in model as per plans provided by WRC.*
GP7l1	GP7	GP11	Rectangular		1.2	0.6	40.35	Smooth Concrete (n = 0.0118)	10.110	9.900	Yes	*Included in model as per plans provided by WRC.*
GP8l1	GP8	GP9	Rectangular		0.6	0.45	19.28	Smooth Concrete (n = 0.0118)	10.520	10.480	Yes	*Included in model as per plans provided by WRC.*
GP9l1	GP9	MH10	Rectangular		0.6	0.45	2.32	Smooth Concrete (n = 0.0118)	10.480	10.470	Yes	*Included in model as per plans provided by WRC.*
i?12l2	i?12	i?13	Rectangular		0.45	0.3	12.37	User Specified (n = 0.02)	10.730	10.660		
i?13l2	i?13	97b	Rectangular		0.45	0.3	3.43	User Specified (n = 0.02)	10.660	10.640		
i1/23al1	i1/23a	i286	Rectangular		2.4	0.9	35.33	User Specified (n = 0.02)	8.040	7.870		
i1/23al2	i1/23a	i286	Rectangular		2.4	0.9	35.33	User Specified (n = 0.02)	8.040	7.870		
i1/23al3	i1/23a	i286	Rectangular		3.6	0.9	35.33	User Specified (n = 0.02)	8.040	7.870		

MOUSE Model Update - Links

Link ID	Upstream Node	Downstream Node	Link Shape Type	Pipe Details	Box Culvert Details		Link Length (m)	Material Type	Upstream IVL (m AHD)	Downstream IVL (m AHD)	Updated	Comment
				Diameter	Width	Height						
i1/23l1	i1/23	i1/23a	Rectangular		2.4	0.9	81.13	User Specified (n = 0.02)	8.440	8.040		
i1/23l2	i1/23	i1/23a	Rectangular		2.4	0.9	81.13	User Specified (n = 0.02)	8.440	8.040		
i1/23l3	i1/23	i1/23a	Rectangular		3.6	0.9	81.13	User Specified (n = 0.02)	8.440	8.040		
i1/26al1	i1/26a	i1/23	Rectangular		2.4	0.9	55.82	User Specified (n = 0.02)	8.710	8.440		
i1/26al2	i1/26a	i1/23	Rectangular		2.4	0.9	55.82	User Specified (n = 0.02)	8.710	8.440		
i1/26al3	i1/26a	i1/23	Rectangular		3.6	0.9	55.82	User Specified (n = 0.02)	8.710	8.440		
i282l1	i282	6/8	Rectangular		1.2	0.6	12.39	User Specified (n = 0.02)	9.620	9.620	Yes	*Included in model as per plans provided by WRC.*
i282l1a	i282	6/8	Rectangular		1.2	0.6	12.39	User Specified (n = 0.02)	9.620	9.620	Yes	*Included in model as per plans provided by WRC.*
i282l1b	i282	6/8	Rectangular		1.2	0.6	12.39	User Specified (n = 0.02)	9.620	9.620	Yes	*Included in model as per plans provided by WRC.*
i284l1	i284	i1/26a	Rectangular		2.4	0.9	42.86	User Specified (n = 0.02)	8.920	8.710		
i284l2	i284	i1/26a	Rectangular		2.4	0.9	42.86	User Specified (n = 0.02)	8.920	8.710		
i284l3	i284	i1/26a	Rectangular		3.6	0.9	42.86	User Specified (n = 0.02)	8.920	8.710		
i286l1	i286	i287	Rectangular		2.4	0.9	12.40	User Specified (n = 0.02)	7.870	7.809		
i286l2	i286	i287	Rectangular		2.4	0.9	12.40	User Specified (n = 0.02)	7.870	7.810		
i286l3	i286	i287	Rectangular		3.6	0.9	12.40	User Specified (n = 0.02)	7.870	7.810		
i287l1	i287	55a	Rectangular		2.4	0.9	41.63	User Specified (n = 0.02)	7.809	7.605		
i287l2	i287	55a	Rectangular		2.4	0.9	41.63	User Specified (n = 0.02)	7.810	7.610		
i287l3	i287	55a	Rectangular		3.6	0.9	41.63	User Specified (n = 0.02)	7.810	7.610		
i296l1	i296	27b	Rectangular		0.9	0.225	13.54	User Specified (n = 0.02)	10.183	10.163		
i296l2	i296	27b	Circular	0.45			13.54	User Specified (n = 0.02)	9.580	9.540		
i297l1	i297	i296	Rectangular		0.9	0.225	12.48	User Specified (n = 0.02)	10.252	10.183		
i297l2	i297	i296	Circular	0.375			12.48	Smooth Concrete (n = 0.0118)	9.610	9.580	Yes	*Included in model as per plans provided by WRC.*
i298l1	i298	29a	Rectangular		0.45	0.225	4.01	User Specified (n = 0.02)	11.143	11.140		
i299l1	i299	i298	Rectangular		0.45	0.225	12.61	User Specified (n = 0.02)	11.156	11.143		
i300al1	i300a	i300b	Rectangular		1.2	0.375	24.09	Smooth Concrete (n = 0.0118)	9.400	9.380		
i300bl1	i300b	1/26	Rectangular		1.2	0.375	22.81	Smooth Concrete (n = 0.0118)	9.380	9.230		
i300l1	i300	2/27	Rectangular		1.2	0.3	56.97	User Specified (n = 0.02)	9.870	9.570		
i305l1	i305	intersection2	Rectangular		0.6	0.3	12.06	User Specified (n = 0.02)	11.439	11.404		
i305l1b	intersection2	33b	Rectangular		0.9	0.3	4.01	User Specified (n = 0.02)	11.400	11.390		
i306l1	i306	39a	Rectangular		0.45	0.225	4.02	User Specified (n = 0.02)	11.326	11.290		
i306l2	i306	39a	Rectangular		0.9	0.3	4.02	User Specified (n = 0.02)	11.326	11.284		
i307l1	i307	38a	Rectangular		0.9	0.225	1.87	User Specified (n = 0.02)	11.561	11.560		
i308l1	i308	i307	Rectangular		0.9	0.225	9.48	User Specified (n = 0.02)	11.560	11.560		
i309l1	i309	intersection	Rectangular		0.9	0.225	12.24	User Specified (n = 0.02)	11.713	11.686		
i309l1b	intersection	36b	Rectangular		0.9	0.225	4.16	User Specified (n = 0.02)	11.686	11.677		
i310l1	i310	34a	Rectangular		0.75	0.225	4.56	User Specified (n = 0.02)	11.808	11.800		
i311l1	i311	i310	Rectangular		0.75	0.225	10.02	User Specified (n = 0.02)	11.823	11.808		
i320a	2/87	1/88	Rectangular		1.2	0.6	58.58	User Specified (n = 0.02)	10.310	10.210		
i323l1	i323	56b	Rectangular		0.9	0.225	7.70	User Specified (n = 0.02)	10.978	10.950		
i5/17l1	i5/17	3/17	Circular	0.525			39.42	User Specified (n = 0.02)	8.960	8.630		
i-dummy78	dummy78	3/31	Rectangular		0.9	0.3	7.78	User Specified (n = 0.02)	11.840	11.720	Yes	*Included in model as per plans provided by WRC.*
IN/171l1	IN/171	OUT/171	Circular	0.3			25.68	Smooth Concrete (n = 0.0118)	12.230	12.080	Yes	*Included in model as per plans provided by WRC.*
Main10l1	Main10	5/87	Circular	0.375		0	19.83	User Specified (n = 0.02)	11.450	10.760	Yes	*Included in model as per plans provided by WRC.*
Main19|1	P4/3	P5/3	Circular	0.75			50.61	Smooth Concrete (n = 0.0118)	10.890	10.823	Yes	*Included in model as per plans provided by WRC.*
Main19l1	P4/3	P5/3	Circular	0.75			50.61	Smooth Concrete (n = 0.0118)	10.894	10.823	Yes	*Included in model as per plans provided by WRC.*
Main3l3	P6/5	P4/3	Circular	0.825			9.48	Smooth Concrete (n = 0.0118)	10.900	10.890	Yes	*Included in model as per plans provided by WRC.*
MH10l1	MH10	GP7	Rectangular		0.6	0.45	6.77	Smooth Concrete (n = 0.0118)	10.470	10.110	Yes	*Included in model as per plans provided by WRC.*
on PSw260	7a	7b	Rectangular		1.2	0.375	8.30	User Specified (n = 0.02)	9.479	9.474		
OUT/168l1	OUT/168	6/196	Circular	0.75			3.87	Smooth Concrete (n = 0.0118)	8.530	8.520	Yes	*Included in model as per plans provided by WRC.*
OUT/168l1a	OUT/168	6/196	Circular	0.75			3.87	Smooth Concrete (n = 0.0118)	8.530	8.520	Yes	*Included in model as per plans provided by WRC.*
P1/14l1	P1/14	P5/5	Circular	0.375			2.01	Smooth Concrete (n = 0.0118)	11.300	11.285	Yes	*Included in model as per plans provided by WRC.*
P1/17l1	P1/17	P2/17	Circular	0.375			5.02	Smooth Concrete (n = 0.0118)	11.380	11.335		
P1/1l1	P1/1	1/19	Circular	0.6			14.04	Smooth Concrete (n = 0.0118)	9.000	8.900	Yes	*Included in model as per plans provided by WRC.*
P1/1l1a	P1/1	1/19	Circular	0.6			14.04	Smooth Concrete (n = 0.0118)	9.000	8.900	Yes	*Included in model as per plans provided by WRC.*
P1/33l1	P1/33	P4/3	Circular	0.375			1.47	Smooth Concrete (n = 0.0118)	11.020	11.011	Yes	*Included in model as per plans provided by WRC.*

MOUSE Model Update - Links

Link ID	Upstream Node	Downstream Node	Link Shape Type	Pipe Details Diameter	Box Culvert Details Width	Box Culvert Details Height	Link Length (m)	Material Type	Upstream IVL (m AHD)	Downstream IVL (m AHD)	Updated	Comment
P1/41l1	P1/41	P4/5	Circular	0.225			6.36	Plastic (n = 0.0125)	11.495	11.463	Yes	*Included in model as per plans provided by WRC.*
P1/41l2	P1/41	P4/5	Circular	0.225			6.36	Plastic (n = 0.0125)	11.495	11.463	Yes	*Included in model as per plans provided by WRC.*
P1/6l1	P1/6	P5/3	Circular	0.375			10.79	Smooth Concrete (n = 0.0118)	11.106	11.050	Yes	*Included in model as per plans provided by WRC.*
P2/17l1	P2/17	P6/5	Circular	0.45			2.03	Smooth Concrete (n = 0.0118)	10.924	10.914	Yes	*Included in model as per plans provided by WRC.*
P3/5l1	P3/5	P4/5	Circular	0.525			48.02	Smooth Concrete (n = 0.0118)	11.741	11.391	Yes	*Included in model as per plans provided by WRC.*
P4/5l2	P4/5	P5/5	Circular	0.525			4.09	Smooth Concrete (n = 0.0118)	11.371	11.341	Yes	*Included in model as per plans provided by WRC.*
P5/3l1	P5/3	P6/3	Circular	0.75			14.34	Smooth Concrete (n = 0.0118)	10.800	10.790	Yes	*Included in model as per plans provided by WRC.*
P5/3l1a	P5/3	P6/3	Circular	0.75			14.34	Smooth Concrete (n = 0.0118)	10.800	10.790	Yes	*Included in model as per plans provided by WRC.*
P5/5l1	P5/5	P6/5	Circular	0.6			72.80	Smooth Concrete (n = 0.0118)	11.265	10.975	Yes	*Included in model as per plans provided by WRC.*
P6/3l1	P6/3	5/87	Circular	0.3			13.03	Plastic (n = 0.0125)	10.998	10.934	Yes	*Included in model as per plans provided by WRC.*
P6/3l1a	P6/3	5/87	Circular	0.3			13.03	Plastic (n = 0.0125)	10.998	10.934	Yes	*Included in model as per plans provided by WRC.*
PSw NH	63a	63b	Rectangular		0.45	0.3	6.21	User Specified (n = 0.02)	11.514	11.410		
PSw112a	2/17	1/17	Circular	0.525			22.24	User Specified (n = 0.02)	8.430	7.979		
PSw112b	2/17	1/17	Circular	0.525			22.24	User Specified (n = 0.02)	8.430	7.979		
PSw112c	2/17	1/17	Circular	0.525			22.24	Smooth Concrete (n = 0.0118)	8.430	7.980		
PSw123	6/17	i5/17	Circular	0.45			110.30	User Specified (n = 0.02)	9.823	8.960		
PSw123a	3/17	2/17	Circular	0.525			44.62	User Specified (n = 0.02)	8.630	8.430	Yes	*Included in model as per plans provided by WRC.*
PSw123b	3/17	2/17	Circular	0.525			44.62	User Specified (n = 0.02)	8.630	8.430	Yes	*Included in model as per plans provided by WRC.*
PSw123c	3/17	2/17	Circular	0.525			44.62	Smooth Concrete (n = 0.0118)	8.630	8.430	Yes	*Included in model as per plans provided by WRC.*
PSw126	6/50	5/50	Circular	0.375			10.87	User Specified (n = 0.02)	9.577	9.494		
PSw127	5/50	4/50	Circular	0.375			60.25	User Specified (n = 0.02)	9.494	9.313		
PSw132	2/53	1/53	Circular	0.75			42.34	User Specified (n = 0.02)	9.074	9.020		
PSW-133-2l1	PSW-133-2	PSW-133-3	Circular	0.375			69.58	Smooth Concrete (n = 0.0118)	9.060	8.790	Yes	*Included in model as per plans provided by WRC.*
PSW-133-3l1	PSW-133-3	PSW-133-4	Circular	0.45			31.48	Smooth Concrete (n = 0.0118)	8.780	8.640	Yes	*Included in model as per plans provided by WRC.*
PSW-134-1l1	PSW-134-1	PSW-134-2	Circular	0.375			14.97	Smooth Concrete (n = 0.0118)	9.470	9.280	Yes	*Included in model as per plans provided by WRC.*
PSW-134-2l1	PSW-134-2	PSW-134-3	Circular	0.375			33.43	Smooth Concrete (n = 0.0118)	9.270	9.050	Yes	*Included in model as per plans provided by WRC.*
PSW-134-3l1	PSW-134-3	PSW-134-4	Circular	0.375			16.29	Smooth Concrete (n = 0.0118)	9.050	8.980	Yes	*Included in model as per plans provided by WRC.*
PSW-134-4l1	PSW-134-4	PSW-134-5	Circular	0.375			19.82	Smooth Concrete (n = 0.0118)	8.960	8.880	Yes	*Included in model as per plans provided by WRC.*
PSW-134-5l1	PSW-134-5	PSW-134-6	Circular	0.45			26.14	Smooth Concrete (n = 0.0118)	8.860	8.770	Yes	*Included in model as per plans provided by WRC.*
PSW-134-6l1	PSW-134-6	PSW-134-7	Circular	0.45			28.16	Smooth Concrete (n = 0.0118)	8.770	8.680	Yes	*Included in model as per plans provided by WRC.*
PSW-135-1l1	PSW-148-1	PSW-135-1	Rectangular		1.2	0.3	10.13	Smooth Concrete (n = 0.0118)	8.930	8.850	Yes	*Included in model as per plans provided by WRC.*
PSW-135-3l1	PSW-135-3	PSW-148-1	Rectangular		1.2	0.3	25.77	Smooth Concrete (n = 0.0118)	8.980	8.930	Yes	*Included in model as per plans provided by WRC.*
PSW-135-5l1	PSW-135-5	PSW-135-3	Rectangular		1.2	0.3	39.45	Smooth Concrete (n = 0.0118)	9.110	8.990	Yes	*Included in model as per plans provided by WRC.*
PSW-135-6l1	PSW-135-6	PSW-135-5	Circular	0.375			18.91	Smooth Concrete (n = 0.0118)	9.280	9.110	Yes	*Included in model as per plans provided by WRC.*
PSW-136-2l1	PSW-136-2	PSW-135-1	Circular	0.45			17.38	Smooth Concrete (n = 0.0118)	9.100	8.850	Yes	*Included in model as per plans provided by WRC.*
PSW-136-3l1	PSW-136-3	PSW-136-2	Circular	0.375			56.94	Smooth Concrete (n = 0.0118)	9.270	9.150	Yes	*Included in model as per plans provided by WRC.*
PSw137	5/53	4/53	Circular	0.375			41.87	User Specified (n = 0.02)	9.765	9.365		
PSW-138-1l1	PSW-138-1	PSW-135-3	Circular	0.375			27.53	Smooth Concrete (n = 0.0118)	9.120	8.990	Yes	*Included in model as per plans provided by WRC.*
PSw139	1/53	2/50	Circular	0.75			6.90	User Specified (n = 0.02)	9.020	8.971		
PSw139a	2/50	1/50	Circular	0.6			46.03	User Specified (n = 0.02)	8.957	8.916		
PSw139b	2/50	1/50	Circular	0.6			46.03	User Specified (n = 0.02)	8.957	8.916		
PSw147	4/70	5/70	Rectangular		0.45	0.3	8.81	User Specified (n = 0.02)	9.401	9.401		
PSw14a	3/6	2/6	Circular	0.3			13.40	User Specified (n = 0.02)	10.587	10.484		
PSw14b	3/6	2/6	Circular	0.3			13.40	User Specified (n = 0.02)	10.587	10.484		
PSw14c	3/6	2/6	Circular	0.3			13.40	User Specified (n = 0.02)	10.587	10.484		
PSw14d	3/6	2/6	Circular	0.3			13.40	User Specified (n = 0.02)	10.587	10.484		
PSw15	2/6	1/6	Rectangular		1.2	0.45	121.99	User Specified (n = 0.02)	10.488	9.574		
PSw150	1/68	1/67	Rectangular		0.525	0.3	7.83	User Specified (n = 0.02)	9.792	9.759		
PSw152	1/69	8/66	Rectangular		0.45	0.3	9.51	User Specified (n = 0.02)	10.060	9.908		
PSw154a	10/70	9/70	Rectangular		0.75	0.3	13.39	User Specified (n = 0.02)	9.543	9.539		
PSw154b	10/70	9/70	Rectangular		0.75	0.3	13.39	User Specified (n = 0.02)	9.543	9.539		
PSw156	1/71	11/70	Rectangular		0.45	0.3	9.18	User Specified (n = 0.02)	9.683	9.638		
PSw158	1/72	12/70	Rectangular		0.45	0.3	8.77	User Specified (n = 0.02)	9.883	9.806		
PSw160	3/67	2/67	Rectangular		0.9	0.375	9.76	User Specified (n = 0.02)	9.918	9.884		
PSw165	8/40	7/40	Circular	0.45			13.39	User Specified (n = 0.02)	10.411	10.379		

MOUSE Model Update - Links

Link ID	Upstream Node	Downstream Node	Link Shape Type	Pipe Details	Box Culvert Details		Link Length (m)	Material Type	Upstream IVL (m AHD)	Downstream IVL (m AHD)	Updated	Comment
				Diameter	Width	Height						
PSw168	5/40	4/40	Circular	0.75			20.79	User Specified (n = 0.02)	10.011	9.974		
PSw170	3/42	2/42	Circular	0.375			55.01	User Specified (n = 0.02)	10.749	10.599		
PSw174	6/48	5/48	Circular	0.6			61.50	User Specified (n = 0.02)	10.280	9.979		
PSw175	5/48	4/48	Circular	0.6			61.43	User Specified (n = 0.02)	9.979	9.714		
PSw178a	2/48	1/48	Circular	0.675			10.25	User Specified (n = 0.02)	9.458	9.442		
PSw178b	2/48	1/48	Circular	0.675			10.25	User Specified (n = 0.02)	9.458	9.442		
PSw179	5/47	4/47	Circular	0.375			44.02	User Specified (n = 0.02)	9.498	9.476		
PSw182a	2/47	1/47	Circular	0.45			4.97	User Specified (n = 0.02)	9.366	9.302		
PSw182b	2/47	1/47	Circular	0.45			4.97	User Specified (n = 0.02)	9.366	9.302		
PSw187	2/46	1/46	Rectangular		0.6	0.3	10.87	User Specified (n = 0.02)	9.298	9.264		
PSw188	6/44	5/44	Circular	0.375			40.28	User Specified (n = 0.02)	9.564	9.390		
PSw190	5/44	4/44	Circular	0.375			37.57	User Specified (n = 0.02)	9.390	9.285		
PSw192a	5/67	4/67	Rectangular		0.6	0.3	61.34	User Specified (n = 0.02)	10.093	9.961		
PSw192b	5/67	4/67	Rectangular		0.75	0.3	61.34	User Specified (n = 0.02)	10.093	9.961		
PSw193	2/62	1/62	Rectangular		0.45	0.3	16.37	User Specified (n = 0.02)	10.260	10.211		
PSw194-1	9/66	8/66	Rectangular		0.6	0.3	79.98	User Specified (n = 0.02)	10.062	9.908		
PSw194-2	13/70	12/70	Rectangular		0.6	0.3	66.74	User Specified (n = 0.02)	9.982	9.796		
PSw196	14/70	13/70	Rectangular		0.45	0.3	16.69	User Specified (n = 0.02)	10.003	9.978		
PSw199a	2/64	1/64	Rectangular		0.6	0.3	25.42	User Specified (n = 0.02)	10.273	10.113		
PSw199b	2/64	3/64	Rectangular		0.45	0.3	8.80	User Specified (n = 0.02)	10.274	10.238		
PSw201a	3/70	2/70	Rectangular		0.9	0.3	49.65	User Specified (n = 0.02)	9.302	9.197		
PSw201b	3/70	2/70	Rectangular		0.9	0.3	49.65	User Specified (n = 0.02)	9.302	9.197		
PSw203	8/73	7/73	Rectangular		0.6	0.3	7.82	User Specified (n = 0.02)	9.412	9.410		
PSw206	1/74	4/73	Rectangular		0.6	0.3	7.86	User Specified (n = 0.02)	9.307	9.230		
PSw212	11/75	10/75	Circular	0.45			29.02	User Specified (n = 0.02)	10.442	10.392		
PSw215	10/75	6/75	Circular	0.525			94.33	User Specified (n = 0.02)	10.392	9.900		
PSw219	8/58	7/58	Circular	0.375			10.25	User Specified (n = 0.02)	10.640	10.537		
PSw220	7/58	6/58	Circular	0.45			83.71	User Specified (n = 0.02)	10.520	10.380		
PSw221	6/58	5/58	Circular	0.45			134.01	User Specified (n = 0.02)	10.379	9.941		
PSw223	5/58	4/58	Circular	0.525			89.99	User Specified (n = 0.02)	9.941	9.737		
PSw229	3/59	2/59	Circular	0.3			7.85	User Specified (n = 0.02)	9.755	9.682		
PSw231a	2/63	1/63	Rectangular		1.2	0.3	8.61	User Specified (n = 0.02)	10.312	10.271		
PSw231b	2/63	1/63	Rectangular		1.2	0.3	8.61	User Specified (n = 0.02)	10.312	10.271		
PSw232	2/65	1/65	Circular	0.3			12.28	User Specified (n = 0.02)	10.320	10.284		
PSw236	1/90	5/87	Rectangular		1	0.3	19.13	User Specified (n = 0.02)	11.450	10.760		
PSw236a	1/91	5/87	Circular	0.375			62.56	User Specified (n = 0.02)	10.900	10.756		
PSw237a	5/87	4/87	Circular	0.525			115.02	User Specified (n = 0.02)	10.756	10.489		
PSw252	5/26	3/26	Rectangular		1.2	0.6	130.34	User Specified (n = 0.02)	10.305	9.679		
PSw252a	2/26	1/26	Rectangular		2.4	0.9	31.83	User Specified (n = 0.02)	9.365	9.235	Yes	*Included in model as per plans provided by WRC.*
PSw260a	3a	1/44	Rectangular		1.2	0.3	34.51	User Specified (n = 0.02)	9.278	9.219		
PSw260b	3a	1/44	Rectangular		1.2	0.3	34.51	User Specified (n = 0.02)	9.278	9.219		
PSw261	x/y	1/56	Rectangular		1.2	0.45	24.79	User Specified (n = 0.02)	8.777	8.753		
Psw269	?29	1/107	Rectangular		1.8	0.9	61.86	User Specified (n = 0.02)	8.909	8.837		
PSw270a	2/27	1/26	Rectangular		1.2	0.45	19.36	User Specified (n = 0.02)	9.562	9.235	Yes	*Included in model as per plans provided by WRC.*
PSw270b	2/27	1/26	Rectangular		1.2	0.45	19.36	User Specified (n = 0.02)	9.562	9.235	Yes	*Included in model as per plans provided by WRC.*
PSw273	3/115	2/115	Rectangular		0.6	0.3	28.63	User Specified (n = 0.02)	8.513	8.481		
PSw276	6/115	5/115	Rectangular		0.6	0.225	12.50	User Specified (n = 0.02)	8.717	8.700		
PSw28	8/8	7/8	Rectangular		1.2	0.6	34.14	User Specified (n = 0.02)	10.340	9.665		
PSw280a	2/106	2/106c	Rectangular		1.2	0.45	14.52	User Specified (n = 0.02)	10.202	10.120		
PSw280b	2/106	2/106c	Rectangular		1.2	0.45	14.52	User Specified (n = 0.02)	10.202	10.120		
PSw285a	1/85	53a	Rectangular		1.2	0.45	21.83	User Specified (n = 0.02)	9.450	9.320		
PSw285b	1/85	53a	Rectangular		1.2	0.45	21.83	User Specified (n = 0.02)	9.450	9.320		
PSw285c	1/85	53a	Rectangular		1.2	0.45	21.83	User Specified (n = 0.02)	9.450	9.320		
PSw285d	1/85	53a	Rectangular		1.2	0.45	21.83	User Specified (n = 0.02)	9.450	9.320		
PSw285e	1/85	53a	Rectangular		1.5	0.6	21.83	User Specified (n = 0.02)	9.450	9.320		

MOUSE Model Update - Links

Link ID	Upstream Node	Downstream Node	Link Shape Type	Pipe Details	Box Culvert Details		Link Length (m)	Material Type	Upstream IVL (m AHD)	Downstream IVL (m AHD)	Updated	Comment
				Diameter	Width	Height						
PSw285f	1/85	53a	Rectangular		1.5	0.6	21.83	User Specified (n = 0.02)	9.450	9.320		
PSw285g	1/85	53a	Rectangular		1.5	0.6	21.83	User Specified (n = 0.02)	9.450	9.320		
PSw300a	2a	2b	Rectangular		1.2	0.226	2.92	User Specified (n = 0.02)	9.175	9.147		
PSw300b	2a	2b	Rectangular		1.2	0.227	2.92	User Specified (n = 0.02)	9.175	9.147		
PSw309a	3/109	4/109	Rectangular		0.9	0.225	12.17	User Specified (n = 0.02)	11.367	11.258		
PSw309b	3/109	4/109	Rectangular		0.9	0.225	12.17	User Specified (n = 0.02)	11.367	11.258		
PSw312a	13a	2/106x	Rectangular		1.2	0.45	12.15	User Specified (n = 0.02)	10.010	9.976		
PSw312b	13a	2/106x	Rectangular		1.2	0.45	12.15	User Specified (n = 0.02)	10.010	9.976		
PSw347	2/115	1/115	Rectangular		0.75	0.45	31.78	User Specified (n = 0.02)	8.488	8.414		
PSw36	6/26	5/26	Rectangular		1.2	0.6	93.81	User Specified (n = 0.02)	10.789	10.289		
PSw371	1/26	i284	Rectangular		2.4	0.9	63.34	User Specified (n = 0.02)	9.230	8.920		
PSw46	4/34	3/34	Rectangular		0.90	0.3	41.55	User Specified (n = 0.02)	9.964	9.540		
PSw47	3/34	2/34	Rectangular		0.90	0.45	12.72	User Specified (n = 0.02)	9.535	9.465		
PSw48b-1	14a	14b	Circular	0.525			1.97	User Specified (n = 0.02)	10.035	9.963		
PSw48b-2	14a	14b	Circular	0.525			1.97	User Specified (n = 0.02)	10.035	9.963		
PSw49	21a	1/108	Circular	0.375			19.03	User Specified (n = 0.02)	8.304	7.922		
PSw50a	3/40	2/40	Rectangular		1.2	0.45	17.56	User Specified (n = 0.02)	8.710	8.610		
PSw50b	3/40	2/40	Rectangular		1.2	0.45	17.56	User Specified (n = 0.02)	8.710	8.610		
PSw50c	3/40	2/40	Rectangular		1.2	0.45	17.56	User Specified (n = 0.02)	8.710	8.610		
PSw50d	3/40	2/40	Rectangular		1.2	0.45	17.56	User Specified (n = 0.02)	8.710	8.610		
PSw50e	3/40	2/40	Rectangular		1.2	0.45	17.56	User Specified (n = 0.02)	8.710	8.610		
PSw50f	3/40	2/40	Rectangular		1.2	0.45	17.56	User Specified (n = 0.02)	8.710	8.610		
PSw50xa	4a	4b	Rectangular		1.2	0.6	2.49	User Specified (n = 0.02)	8.745	8.746		
PSw50xb	4a	4b	Rectangular		1.2	0.6	2.49	User Specified (n = 0.02)	8.745	8.746		
PSw50xc	4a	4b	Rectangular		1.2	0.6	2.49	User Specified (n = 0.02)	8.745	8.746		
PSw50xd	4a	4b	Rectangular		1.2	0.6	2.49	User Specified (n = 0.02)	8.745	8.746		
PSw51	2/108	21a	Rectangular		0.75	0.225	43.81	User Specified (n = 0.02)	8.417	8.304		
PSw54a	1/80	2/78	Circular	0.525			5.62	User Specified (n = 0.02)	9.505	9.461		
PSw54b	1/80	2/78	Circular	0.525			5.62	User Specified (n = 0.02)	9.505	9.461		
PSw60a	4/78	3/78	Circular	0.525			79.37	User Specified (n = 0.02)	9.870	9.530		
PSw60b	4/78	3/78	Circular	0.525			79.37	User Specified (n = 0.02)	9.870	9.530		
PSw62	2/78	1/78	Rectangular		1.3	0.33	98.46	User Specified (n = 0.02)	9.462	9.450		
PSw63	4/80	3/80	Rectangular		0.6	0.45	36.76	User Specified (n = 0.02)	9.711	9.711		
PSw65a	8/48	??/48_or_49/??	Circular	0.525			47.51	User Specified (n = 0.02)	10.769	10.628		
PSw65b	8/48	??/48_or_49/??	Circular	0.525			47.51	User Specified (n = 0.02)	10.769	10.628		
PSw73a	2/36	1/36	Circular	0.525			251.77	User Specified (n = 0.02)	10.490	10.210		
PSw73b	2/36	1/36	Circular	0.525			251.77	User Specified (n = 0.02)	10.490	10.210		
PSw73c	2/36	1/36	Circular	0.525			251.77	User Specified (n = 0.02)	10.490	10.210		
PSw78a	4/87	3/87	Rectangular		1.2	0.6	13.94	User Specified (n = 0.02)	10.490	10.420		
PSw79	2/33	1/33	Circular	0.525			25.48	Smooth Concrete (n = 0.0118)	11.800	11.600		
PSw90	3/87	2/87	Rectangular		1.2	0.6	23.57	User Specified (n = 0.02)	10.420	10.310		
PSw91	1/88	53a	Rectangular		1.2	0.6	145.56	User Specified (n = 0.02)	10.210	9.310		
t1/12	1/12	i282	Rectangular		0.6	0.3	69.69	User Specified (n = 0.02)	10.300	9.620		
t10/23	10/23	90b	Rectangular		1.56	0.6	55.51	User Specified (n = 0.02)	10.300	10.290		
t2/15	2/15	1/15	Rectangular		1.2	0.45	90.75	User Specified (n = 0.02)	11.480	11.110		
t2/38	2/38	1/38	Rectangular		0.75	0.3	29.46	User Specified (n = 0.02)	10.900	10.550	Yes	*Included in model as per plans provided by WRC.*
t2/40x	2/40	2/40x	Rectangular		7.2	0.45	3.13	User Specified (n = 0.02)	8.610	8.600		
t3/14	3/14	1/15	Rectangular		1.2	0.45	12.84	User Specified (n = 0.02)	11.200	11.110		
t37b-35b	37b	35b	Rectangular		1.35	0.225	0.86	User Specified (n = 0.02)	11.600	11.590		
t5/80	5/80	4/80	Circular	0.525			26.82	User Specified (n = 0.02)	9.610	9.710		
t7/17	7/17	6/17	Circular	0.45			56.04	User Specified (n = 0.02)	10.560	9.820		

MOUSE Model Update - Nodes

Node ID	Easting	Northing	Representative Diameter (m)	Invert Level (m AHD)	Ground Level (m AHD)	Outlet Headloss Type	Inlet Type	Opening Width (m)	Opening Height / Breadth (m)	Updated	Comments
478	665304.521	7742152.935	5.00	7.50	8.80	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
551	666229.580	7742878.010	4.00	9.00	9.44	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
627	664787.463	7742220.806	1.00	8.07	8.71	Sharp Edged	Headwall	0.53	1.00	Yes	*Included in model to represent open channel flow.*
628	664787.222	7742214.974	1.00	7.92	9.36	No CRS Change	OL	N/A	N/A	Yes	*Included in model to represent open channel flow.*
629	664958.303	7742203.378	1.00	8.07	8.88	Sharp Edged	Headwall	0.32	1.00	Yes	*Included in model to represent open channel flow.*
630	664953.310	7742197.919	1.00	7.96	8.89	No CRS Change	OL	N/A	N/A	Yes	*Included in model to represent open channel flow.*
633	664834.831	7741897.971	1.00	6.91	8.22	Sharp Edged	Headwall	0.44	1.00	Yes	*Included in model to represent open channel flow.*
634	664838.090	7741893.925	1.00	6.89	8.30	No CRS Change	OL	N/A	N/A	Yes	*Included in model to represent open channel flow.*
635	664923.799	7741893.527	1.00	7.22	8.35	Sharp Edged	Headwall	0.53	1.00	Yes	*Included in model to represent open channel flow.*
636	664923.485	7741887.007	1.00	6.88	8.34	No CRS Change	OL	N/A	N/A	Yes	*Included in model to represent open channel flow.*
637	665294.190	7742075.728	1.00	7.49	8.95	Sharp Edged	Headwall	0.16	1.00	Yes	*Included in model to represent open channel flow.*
638	665293.297	7742068.758	1.00	7.39	8.72	No CRS Change	OL	N/A	N/A	Yes	*Included in model to represent open channel flow.*
639	665288.473	7741949.585	1.00	7.76	8.75	Sharp Edged	Headwall	0.28	1.00	Yes	*Included in model to represent open channel flow.*
640	665282.150	7741951.060	1.00	7.43	8.50	No CRS Change	OL	N/A	N/A	Yes	*Included in model to represent open channel flow.*
641	665266.802	7741866.517	1.00	7.19	8.57	Sharp Edged	Headwall	0.32	1.00	Yes	*Included in model to represent open channel flow.*
642	665265.898	7741857.595	1.00	7.12	8.23	No CRS Change	OL	N/A	N/A	Yes	*Included in model to represent open channel flow.*
700	666104.443	7743313.848	1.50	8.32	9.05	Sharp Edged	Headwall	3.60	0.90	Yes	*Included in model to represent open channel flow.*
701	666120.865	7743309.742	1.50	8.29	9.31	No CRS Change	OL	N/A	N/A	Yes	*Included in model to represent open channel flow.*
3/31	665050.829	7743161.345	1.20	11.72	12.49	Sharp Edged	Manhole	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
1/33	665013.080	7743289.267	0.90	11.60	13.03	No CRS Change	OL	0.15	0.15		
2/33	665038.403	7743286.415	0.90	11.80	13.20	Sharp Edged	Gully Inlet	1.20	0.45		
2/34	664752.020	7742478.519	1.04	9.47	10.16	Sharp Edged	Gully Inlet	1.20	0.10		
3/34	664752.779	7742491.212	1.07	9.54	10.33	Sharp Edged	Gully Inlet	1.10	0.45		
4/34	664793.980	7742485.823	1.20	9.96	10.63	Sharp Edged	Gully Inlet	1.30	0.45		
1/36	665107.991	7742446.636	1.24	10.21	10.85	No CRS Change	OL	N/A	N/A		
2/36	665125.512	7742697.794	2.40	10.48	11.44	Sharp Edged	Gully Inlet	1.30	0.45	Yes	*Updated in model as per plans provided by WRC*
1/37	665141.930	7742693.180	1.50	10.47	11.30	Sharp Edged	Gully Inlet	1.30	0.45	Yes	*Included in model as per plans provided by WRC*
1/38	665139.539	7742711.365	1.90	10.55	11.24	Sharp Edged	Gully Inlet	1.30	0.45	Yes	*Included in model as per plans provided by WRC*
2/38	665146.670	7742739.950	1.10	10.90	11.29	Sharp Edged	Gully Inlet	0.75	0.30	Yes	*Included in model as per plans provided by WRC*
2/40	665599.494	7742364.648	7.20	8.61	9.51	No CRS Change	OL	N/A	N/A		
3/40	665601.420	7742382.100	7.20	8.71	9.38	Sharp Edged	IL	0.45	0.45		
4/40	665526.118	7742687.717	1.20	9.97	11.50	Sharp Edged	IL	1.125	1.125		
5/40	665536.298	7742705.842	1.20	10.01	11.39	Sharp Edged	IL	1.125	1.125		
6/40	665540.816	7742741.975	1.20	10.17	11.38	Sharp Edged	Gully Inlet	0.75	0.75		
7/40	665552.728	7742752.735	1.20	10.38	11.45	Sharp Edged	Gully Inlet	0.45	0.45		
8/40	665544.475	7742763.284	1.20	10.41	11.59	Sharp Edged	Gully Inlet	0.45	0.45		
9/40	665555.545	7742849.217	1.20	10.87	11.79	Sharp Edged	Gully Inlet	0.38	0.29		
1/41	665537.292	7742764.222	1.20	10.59	11.58	Sharp Edged	Gully Inlet	0.38	0.38		
1/42	665598.033	7742735.281	1.02	10.51	11.49	Sharp Edged	Gully Inlet	1.10	0.10		
2/42	665621.184	7742752.673	1.02	10.60	11.57	Sharp Edged	Gully Inlet	1.00	0.10		
3/42	665628.382	7742807.211	1.02	10.75	11.75	Sharp Edged	Gully Inlet	1.00	0.10		
1/43	665627.207	7742752.886	1.02	10.68	11.55	Sharp Edged	Gully Inlet	1.10	0.10		
1/44	665446.527	7742401.451	3.00	9.22	9.90	No CRS Change	OL	N/A	N/A		
2/44	665434.468	7742412.171	0.83	9.21	9.82	Sharp Edged	Gully Inlet	1.20	0.10		
4/44	665421.294	7742454.907	1.55	9.28	10.16	Sharp Edged	Gully Inlet	1.10	0.10		
5/44	665389.563	7742475.016	1.02	9.39	10.23	Sharp Edged	Gully Inlet	1.20	0.10		
6/44	665394.418	7742515.005	1.02	9.56	10.35	Sharp Edged	Gully Inlet	2.40	0.10		
1/45	665426.935	7742412.765	1.02	9.21	9.85	Sharp Edged	Gully Inlet	1.10	0.10		
1/46	665493.241	7742459.735	5.00	9.26	9.86	No CRS Change	OL	0.30	0.30		
2/46	665482.409	7742460.573	1.59	9.30	9.92	Sharp Edged	Gully Inlet	2.30	0.10		
1/47	665500.140	7742551.164	1.20	9.30	10.56	No CRS Change	OL	N/A	N/A		
2/47	665495.439	7742552.786	1.41	9.37	10.25	Sharp Edged	Gully Inlet	2.40	0.10		
3/47	665467.862	7742552.344	1.02	9.44	10.20	Sharp Edged	Gully Inlet	1.00	0.10		
4/47	665444.785	7742561.009	1.31	9.48	10.37	Sharp Edged	Gully Inlet	1.10	0.10		
5/47	665401.153	7742566.823	1.02	9.50	10.57	Sharp Edged	Gully Inlet	2.30	0.10		
1/48	665516.460	7742640.940	1.20	9.44	10.83	No CRS Change	OL	N/A	N/A		

MOUSE Model Update - Nodes

Node ID	Easting	Northing	Representative Diameter (m)	Invert Level (m AHD)	Ground Level (m AHD)	Outlet Headloss Type	Inlet Type	Opening Width (m)	Opening Height / Breadth (m)	Updated	Comments
2/48	665506.229	7742641.489	1.66	9.46	10.68	Sharp Edged	Gully Inlet	2.60	0.10		
3/48	665489.465	7742647.193	1.17	9.60	10.72	Sharp Edged	Gully Inlet	1.10	0.10		
4/48	665472.728	7742659.812	1.31	9.71	10.74	Sharp Edged	Gully Inlet	1.10	0.10		
5/48	665412.123	7742669.860	1.02	9.98	11.09	Sharp Edged	Gully Inlet	3.60	0.10		
6/48	665351.230	7742678.509	1.02	10.28	11.34	Sharp Edged	Gully Inlet	3.60	0.10		
8/48	665312.826	7742734.212	1.03	10.77	11.79	Sharp Edged	Gully Inlet	1.30	0.45		
1/49	665400.359	7742660.518	1.02	10.40	11.20	Sharp Edged	Gully Inlet	3.60	0.10		
1/50	665619.387	7742460.352	1.20	8.92	9.72	No CRS Change	OL	N/A	N/A		
2/50	665625.767	7742505.933	1.02	8.96	10.18	Sharp Edged	Gully Inlet	2.30	0.10		
3/50	665605.053	7742507.381	1.02	9.22	10.28	Sharp Edged	Manhole	N/A	N/A		
4/50	665586.784	7742538.858	1.02	9.31	10.41	Sharp Edged	Gully Inlet	2.30	0.10		
5/50	665583.617	7742599.024	1.02	9.49	10.56	Sharp Edged	Gully Inlet	2.30	0.10		
6/50	665585.902	7742609.650	1.02	9.58	10.63	Sharp Edged	Gully Inlet	2.20	0.10		
1/53	665627.026	7742512.715	1.35	9.02	10.25	Sharp Edged	Gully Inlet	2.20	0.10		
2/53	665669.032	7742507.428	1.02	9.07	10.13	Sharp Edged	Gully Inlet	2.30	0.10		
3/53	665680.041	7742515.388	1.20	9.10	10.40	Sharp Edged	Manhole	N/A	N/A		
4/53	665685.406	7742549.292	1.17	9.36	10.33	Sharp Edged	Gully Inlet	2.30	0.10		
5/53	665690.475	7742590.851	1.07	9.77	10.77	Sharp Edged	Gully Inlet	3.60	0.10		
1/54	665667.857	7742500.966	1.02	9.11	10.08	Sharp Edged	Gully Inlet	2.30	0.10		
2/54	665687.537	7742485.985	1.02	9.21	10.04	Sharp Edged	Gully Inlet	2.30	0.10		
1/56	665655.980	7742375.466	2.40	8.75	9.68	No CRS Change	OL	N/A	N/A		
2/56	665664.527	7742385.904	1.02	8.76	9.67	Sharp Edged	Gully Inlet	2.30	0.10		
3/56	665674.400	7742385.628	1.02	8.77	9.68	Sharp Edged	Gully Inlet	2.30	0.10		
2/58	665780.115	7742404.562	0.87	9.36	10.21	Sharp Edged	Gully Inlet	2.40	0.10		
3/58	665786.490	7742411.893	0.83	9.46	10.33	Sharp Edged	Gully Inlet	1.00	0.10		
4/58	665863.049	7742404.731	0.76	9.74	10.55	Sharp Edged	Gully Inlet	0.80	0.45		
5/58	665877.427	7742493.562	0.87	9.94	10.82	Sharp Edged	Gully Inlet	1.20	0.10		
6/58	665892.903	7742626.674	0.76	10.38	11.18	Sharp Edged	Gully Inlet	2.40	0.45		
7/58	665906.081	7742709.341	1.09	10.52	11.33	Sharp Edged	Gully Inlet	1.60	0.45		
8/58	665903.309	7742719.207	0.98	10.64	11.29	Sharp Edged	Gully Inlet	1.10	0.45		
1/59	665779.657	7742416.122	1.09	9.58	10.29	Sharp Edged	Gully Inlet	1.70	0.45		
2/59	665778.317	7742424.049	1.06	9.68	10.15	Sharp Edged	Gully Inlet	1.60	0.45		
3/59	665770.495	7742423.397	0.78	9.75	10.29	Sharp Edged	Gully Inlet	1.10	0.10		
1/62	665937.562	7742319.787	5.00	10.21	10.52	No CRS Change	OL	0.30	0.30		
2/62	665938.826	7742336.111	0.96	10.26	11.05	Sharp Edged	Gully Inlet	1.30	0.45		
1/63	666026.476	7742316.093	2.40	10.27	10.95	No CRS Change	OL	N/A	N/A		
2/63	666027.083	7742324.678	2.40	10.31	10.78	Sharp Edged	Gully Inlet	0.38	0.20		
1/64	666149.971	7742295.951	5.00	10.11	10.87	No CRS Change	OL	0.30	0.30		
2/64	666153.401	7742321.142	1.07	10.27	10.97	Sharp Edged	Gully Inlet	1.30	0.45		
3/64	666144.603	7742321.022	1.05	10.24	11.03	Sharp Edged	Gully Inlet	1.30	0.45		
1/65	666204.328	7742290.761	5.00	10.28	10.96	No CRS Change	OL	0.30	0.30		
2/65	666206.082	7742302.912	1.20	10.32	11.04	Sharp Edged	Gully Inlet	0.30	0.30		
2/66	666172.522	7742820.851	5.25	9.08	9.93	No CRS Change	OL	N/A	N/A		
3/66	666149.322	7742796.418	1.20	9.09	9.45	Sharp Edged	Gully Inlet	0.60	0.45		
4/66	666074.024	7742665.774	1.80	9.46	10.05	No CRS Change	OL	N/A	N/A		
5/66	666081.121	7742659.558	1.20	9.47	10.28	Sharp Edged	Gully Inlet	1.60	0.45		
6/66	666089.156	7742639.619	1.90	9.52	10.49	Sharp Edged	Gully Inlet	1.60	0.45		
7/66	666079.600	7742565.732	2.70	9.68	10.64	Sharp Edged	Gully Inlet	2.40	0.30		
8/66	666069.238	7742485.524	1.38	9.88	10.85	Sharp Edged	Gully Inlet	1.50	0.45		
9/66	666058.986	7742406.200	1.06	10.06	10.99	Sharp Edged	Gully Inlet	1.30	0.45		
10/66	666050.510	7742399.922	1.05	10.22	11.08	Sharp Edged	Gully Inlet	1.30	0.45		
1/67	666058.589	7742556.564	1.69	9.75	10.76	Sharp Edged	Gully Inlet	1.40	0.45		
2/67	666006.399	7742563.344	1.47	9.87	10.69	Sharp Edged	Gully Inlet	1.50	0.45		
3/67	665999.460	7742556.479	1.38	9.92	10.72	Sharp Edged	Gully Inlet	1.50	0.45		
4/67	665977.724	7742538.933	1.07	9.96	10.86	Sharp Edged	Gully Inlet	1.30	0.45		
5/67	665969.852	7742478.102	1.12	10.09	10.98	Sharp Edged	Gully Inlet	1.30	0.45		

MOUSE Model Update - Nodes

Node ID	Easting	Northing	Representative Diameter (m)	Invert Level (m AHD)	Ground Level (m AHD)	Outlet Headloss Type	Inlet Type	Opening Width (m)	Opening Height / Breadth (m)	Updated	Comments
6/67	665977.063	7742474.684	1.10	10.13	11.04	Sharp Edged	Gully Inlet	1.30	0.45		
1/68	666059.282	7742548.769	1.05	9.79	10.59	Sharp Edged	Gully Inlet	1.30	0.45		
1/69	666060.961	7742480.852	1.05	10.06	10.86	Sharp Edged	Gully Inlet	1.30	0.45		
1/70	666170.163	7742813.746	1.80	9.13	10.14	No CRS Change	OL	N/A	N/A		
2/70	666179.769	7742788.664	1.84	9.19	10.02	Sharp Edged	Gully Inlet	1.60	0.45		
3/70	666198.947	7742742.864	1.84	9.30	10.18	Sharp Edged	Gully Inlet	1.60	0.45		
4/70	666201.279	7742691.589	1.07	9.40	10.27	Sharp Edged	Gully Inlet	1.60	0.45		
5/70	666192.494	7742691.012	1.90	9.40	10.26	Sharp Edged	Gully Inlet	1.60	0.45		
6/70	666187.977	7742656.519	2.12	9.42	10.46	Sharp Edged	Gully Inlet	1.60	0.45		
7/70	666174.979	7742647.384	1.50	9.46	10.37	Sharp Edged	Gully Inlet	1.60	0.45		
8/70	666174.092	7742640.175	1.50	9.47	10.29	Sharp Edged	Gully Inlet	2.70	0.30		
9/70	666184.059	7742625.786	1.19	9.54	10.44	Sharp Edged	Gully Inlet	1.60	0.45		
10/70	666191.257	7742614.501	1.80	9.53	10.44	Sharp Edged	Gully Inlet	1.60	0.45		
11/70	666183.419	7742553.922	1.38	9.63	10.57	Sharp Edged	Gully Inlet	1.60	0.45		
12/70	666173.069	7742473.503	1.19	9.80	10.76	Sharp Edged	Gully Inlet	1.60	0.45		
1/71	666174.471	7742551.879	1.07	9.68	10.61	Sharp Edged	Gully Inlet	1.60	0.45		
1/72	666164.306	7742473.220	1.05	9.88	10.77	Sharp Edged	Gully Inlet	1.40	0.45		
2/73	666155.472	7742816.428	1.66	9.15	9.98	Sharp Edged	Gully Inlet	1.50	0.45		
3/73	666113.306	7742835.104	2.26	9.23	10.16	Sharp Edged	Gully Inlet	1.60	0.45		
4/73	666100.018	7742830.673	1.61	9.23	10.19	Sharp Edged	Gully Inlet	1.60	0.45		
5/73	666082.425	7742804.861	1.46	9.33	10.28	Sharp Edged	Gully Inlet	1.50	0.45		
6/73	666070.803	7742790.260	1.49	9.35	10.24	Sharp Edged	Gully Inlet	1.60	0.45		
7/73	666043.262	7742788.726	1.00	9.40	10.13	Sharp Edged	Gully Inlet	1.50	0.45		
8/73	666038.850	7742782.274	1.05	9.41	10.23	Sharp Edged	Gully Inlet	1.60	0.45		
1/74	666092.818	7742833.827	1.05	9.31	10.34	Sharp Edged	Gully Inlet	1.60	0.45		
3/75	665857.138	7743062.800	1.20	9.68	10.64	Sharp Edged	IL	0.47	0.60		
5/75	665927.880	7743026.950	2.00	9.78	10.72	Sharp Edged	Gully Inlet	1.125	1.125	Yes	*Included in model as per plans provided by WRC*
6/75	665919.659	7743010.586	1.35	9.90	10.75	Sharp Edged	Manhole	1.00	0.12		
10/75	665873.691	7742928.216	0.93	10.20	11.21	Sharp Edged	Gully Inlet	1.00	0.10		
11/75	665847.971	7742914.786	0.76	10.42	11.31	Sharp Edged	Gully Inlet	0.80	0.45		
12/75	665830.882	7742891.109	1.09	10.52	11.34	Sharp Edged	Gully Inlet	1.60	0.45		
1/77	665900.415	7742914.239	1.07	10.23	11.14	Sharp Edged	Gully Inlet	1.60	0.45		
1/78	665755.031	7743096.417	1.30	9.45	10.40	Sharp Edged	Gully Inlet	0.80	0.10		
2/78	665742.903	7742998.710	2.83	9.46	10.41	Sharp Edged	Gully Inlet	1.30	0.45		
3/78	665740.911	7742982.642	2.33	9.53	10.55	Sharp Edged	Gully Inlet	1.30	0.45		
4/78	665730.598	7742903.950	2.50	9.87	10.92	Sharp Edged	Gully Inlet	1.30	0.45		
1/80	665737.350	7742997.839	1.11	9.51	10.45	Sharp Edged	Gully Inlet	1.30	0.45		
2/80	665736.086	7742990.262	1.19	9.65	10.48	Sharp Edged	Gully Inlet	1.30	0.45		
3/80	665707.412	7743005.596	0.99	9.71	10.51	Sharp Edged	Gully Inlet	1.30	0.45		
4/80	665700.478	7742969.498	1.13	9.71	10.79	Sharp Edged	Inlet Pit	1.30	1.20		
5/80	665676.610	7742981.730	1.20	9.61	10.83	Sharp Edged	Inlet Pit	1.20	0.30		
1/84	665768.542	7743088.128	0.76	9.92	10.54	Sharp Edged	Gully Inlet	0.90	0.10		
1/85	665753.308	7743101.175	1.91	9.44	10.41	Sharp Edged	Gully Inlet	4.10	0.45		
2/87	665578.655	7743209.391	1.50	10.31	11.33	Sharp Edged	Manhole	N/A	N/A		
3/87	665557.256	7743219.282	1.31	10.42	11.38	Sharp Edged	Manhole	N/A	N/A		
4/87	665543.415	7743220.970	1.20	10.49	11.41	Sharp Edged	Gully Inlet	0.70	0.45		
5/87	665429.228	7743234.759	2.79	10.76	12.15	Sharp Edged	Manhole	3.50	1.70		
1/88	665631.038	7743183.174	1.50	10.21	11.10	Sharp Edged	Gully Inlet	0.60	0.45		
1/90	665413.295	7743224.167	1.20	11.45	11.93	Sharp Edged	IL	1.00	0.30		
1/91	665436.441	7743296.898	0.88	10.90	11.75	Sharp Edged	Gully Inlet	1.00	0.45		
1/92	665640.779	7743237.689	5.00	10.00	10.80	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
2/92	665581.396	7743250.767	1.20	10.45	11.22	Sharp Edged	Gully Inlet	0.90	0.70	Yes	*Included in model as per plans provided by WRC. 2007 survey used for inlet size.*
3/92	665567.238	7743254.676	1.50	10.51	11.28	Sharp Edged	Gully Inlet	1.30	0.80	Yes	*Included in model as per plans provided by WRC. 2007 survey used for inlet size.*
2/95	665072.420	7743584.149	1.20	11.15	11.94	No CRS Change	OL	N/A	N/A		

MOUSE Model Update - Nodes

Node ID	Easting	Northing	Representative Diameter (m)	Invert Level (m AHD)	Ground Level (m AHD)	Outlet Headloss Type	Inlet Type	Opening Width (m)	Opening Height / Breadth (m)	Updated	Comments
1/96	665463.757	7743513.455	1.20	10.51	11.56	No CRS Change	OL	N/A	N/A		
2/96	665462.194	7743500.015	1.18	10.99	11.68	Sharp Edged	Gully Inlet	1.20	0.45		
3/96	665449.257	7743500.620	0.60	11.19	11.65	Sharp Edged	Gully Inlet	0.70	0.45		
2/97	665359.141	7743515.540	0.54	10.53	11.45	Sharp Edged	Gully Inlet	1.00	0.10		
1/98	665235.670	7743542.746	1.20	10.62	11.30	No CRS Change	OL	N/A	N/A		
2/98	665232.520	7743527.052	1.00	10.77	11.34	Sharp Edged	Gully Inlet	1.30	0.45		
3/98	665214.257	7743386.086	1.11	11.45	12.44	Sharp Edged	Gully Inlet	0.60	0.45		
1/99	665246.182	7743526.456	1.00	10.77	11.36	Sharp Edged	Gully Inlet	1.30	0.45		
1/1	663407.649	7743661.352	5.00	9.42	10.04	No CRS Change	OL	0.45	0.45		
2/1	663442.730	7743697.596	1.03	9.91	11.02	Sharp Edged	Gully Inlet	1.30	0.45		
3/1	663444.768	7743708.940	0.73	10.04	10.98	Sharp Edged	Gully Inlet	0.60	0.45		
2/2	663448.146	7743612.648	5.00	9.31	10.15	No CRS Change	OL	0.53	0.53		
3/2	663484.053	7743643.130	1.20	10.35	10.98	Sharp Edged	Gully Inlet	0.60	0.45		
4/2	663487.909	7743654.961	0.73	10.56	11.04	Sharp Edged	Gully Inlet	0.60	0.45		
1/3	663497.134	7743637.741	0.73	10.59	11.09	Sharp Edged	Gully Inlet	0.70	0.45		
1/4	663743.149	7743353.575	5.00	9.67	10.03	No CRS Change	OL	0.38	0.38		
2/4	663761.584	7743493.363	1.20	10.42	11.25	Sharp Edged	Gully Inlet	1.30	0.70		
3/4	663772.600	7743574.264	1.20	10.98	11.75	Sharp Edged	Headwall	0.45	0.45		
1/5	663775.247	7743476.746	1.20	10.79	11.11	Sharp Edged	Headwall	0.225	0.225		
1/6	663816.233	7743306.953	5.00	9.57	10.03	No CRS Change	OL	0.45	0.45		
2/6	663832.908	7743427.800	1.20	10.48	11.02	Sharp Edged	Gully Inlet	1.30	0.45		
3/6	663834.352	7743441.120	1.03	10.59	11.15	Sharp Edged	Gully Inlet	1.30	0.45		
1/7	663922.791	7743037.699	1.00	9.32	9.69	Sharp Edged	Inlet Pit	0.60	0.30		
2/7	663939.908	7743033.121	0.98	9.43	9.98	Sharp Edged	Gully Inlet	1.30	0.45		
2/8	664108.562	7743013.604	5.40	8.90	10.20	No CRS Change	OL	N/A	N/A		
3/8	664116.337	7743025.395	0.68	9.47	10.34	Sharp Edged	Gully Inlet	0.70	0.45		
4/8	664128.231	7743107.758	1.20	9.62	10.37	Sharp Edged	Gully Inlet	1.20	0.45		
5/8	664127.885	7743128.512	1.20	9.30	10.27	Sharp Edged	IL	0.60	3.60	Yes	*Included in model as per plans provided by WRC*
6/8	664145.924	7743267.469	5.00	9.62	10.04	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
7/8	664149.869	7743297.199	1.20	9.65	10.79	Sharp Edged	IL	0.60	3.60	Yes	*Included in model as per plans provided by WRC*
8/8	664150.621	7743331.330	1.52	10.34	11.21	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
9/8	664159.495	7743399.503	1.20	11.03	11.67	Sharp Edged	IL	0.60	2.40	Yes	*Included in model as per plans provided by WRC*
1/9	664098.795	7743031.613	1.20	9.49	10.25	Sharp Edged	Gully Inlet	1.30	0.45		
1/10	664128.902	7743119.930	1.20	9.69	10.26	Sharp Edged	Gully Inlet	1.20	0.45		
1/11	664131.646	7743283.870	1.03	10.31	11.07	Sharp Edged	Gully Inlet	1.30	0.45		
1/12	664217.050	7743277.280	1.20	10.30	10.78	Sharp Edged	Gully Inlet	0.60	0.30		
1/13	664185.651	7743382.434	0.96	11.05	11.62	Sharp Edged	Gully Inlet	1.30	0.45		
3/14	664052.140	7743408.720	1.20	11.20	11.76	Sharp Edged	Gully Inlet	1.20	0.45		
1/15	664056.676	7743420.736	1.20	11.11	11.75	Sharp Edged	IL	1.20	0.45		
2/15	664070.020	7743510.500	1.20	11.48	11.60	Sharp Edged	IL	1.20	0.45		
1/16	664186.153	7742818.341	1.20	8.91	9.55	No CRS Change	OL	N/A	N/A		
2/16	664192.406	7742862.505	1.00	9.32	9.89	Sharp Edged	Gully Inlet	1.40	0.45		
1/17	664385.750	7742969.440	1.20	7.98	8.24	No CRS Change	OL	N/A	N/A	Yes	*Updated in model as per plans provided by WRC*
2/17	664381.059	7742991.175	1.07	8.41	9.42	Sharp Edged	Gully Inlet	1.20	1.20	Yes	*Updated in model as per plans provided by WRC*
3/17	664387.368	7743035.346	3.74	8.63	9.78	Sharp Edged	Gully Inlet	1.20	1.20	Yes	*Included in model as per plans provided by WRC*
6/17	664408.126	7743183.613	0.65	9.82	10.99	Sharp Edged	Gully Inlet	0.70	0.45		
7/17	664414.748	7743239.261	0.88	10.56	11.42	Sharp Edged	Gully Inlet	1.30	0.45		
1/18	664396.569	7742977.372	1.20	7.59	9.24	Sharp Edged	Gully Inlet	3.60	0.10		
2/18	664395.889	7742989.316	1.20	8.44	9.26	Sharp Edged	Gully Inlet	1.40	0.45		
1/19	664314.022	7743044.847	3.74	8.90	9.83	Sharp Edged	Gully Inlet	1.20	1.20	Yes	*Included in model as per plans provided by WRC*
2/19	664267.139	7743093.993	1.02	9.15	10.07	Sharp Edged	Gully Inlet	0.90	0.10		
3/19	664259.728	7743104.601	1.07	9.23	10.09	Sharp Edged	Gully Inlet	0.90	0.10		
3/21	664495.650	7743339.500	5.00	11.77	12.16	No CRS Change	OL	0.30	0.30		
4/21	664497.948	7743356.477	1.20	11.85	12.40	Sharp Edged	IL	0.30	0.30		
2/23	664589.035	7742964.630	1.77	8.93	10.02	Sharp Edged	Gully Inlet	1.25	0.85		
3/23	664596.227	7743025.146	1.30	9.06	10.10	Sharp Edged	Gully Inlet	1.77	0.75		

MOUSE Model Update - Nodes

Node ID	Easting	Northing	Representative Diameter (m)	Invert Level (m AHD)	Ground Level (m AHD)	Outlet Headloss Type	Inlet Type	Opening Width (m)	Opening Height / Breadth (m)	Updated	Comments
10/23	664692.168	7743216.063	5.00	10.30	11.14	No CRS Change	OL	N/A	N/A		
11/23	664702.767	7743307.239	0.65	10.61	11.66	Sharp Edged	Inlet Pit	0.60	0.60		
12/23	664694.421	7743330.901	1.04	10.80	11.85	Sharp Edged	Gully Inlet	1.00	0.10		
1/24	664631.487	7743261.873	1.20	9.00	10.90	No CRS Change	OL	N/A	N/A		
2/24	664640.536	7743323.700	0.76	10.77	11.64	Sharp Edged	Gully Inlet	0.90	0.10		
3/24	664641.838	7743337.762	0.96	11.00	11.79	Sharp Edged	Gully Inlet	0.90	0.10		
1/26	664725.552	7742933.765	6.00	9.23	10.32	Sharp Edged	Inlet Pit	1.40	0.70	Yes	*Updated in model as per plans provided by WRC*
2/26	664736.802	7742963.538	2.40	9.34	10.55	Sharp Edged	IL	0.45	0.15	Yes	*Included in model as per plans provided by WRC*
3/26	664754.257	7743078.614	2.40	9.42	10.70	Sharp Edged	Manhole	N/A	N/A	Yes	*Updated in model as per plans provided by WRC*
5/26	664770.677	7743207.920	1.20	10.29	11.29	Sharp Edged	Inlet Pit	1.20	1.00		
6/26	664782.975	7743300.921	1.60	10.78	12.13	Sharp Edged	Gully Inlet	1.20	0.94		
2/27	664744.588	7742930.264	1.53	9.56	10.26	Sharp Edged	Gully Inlet	2.10	0.10	Yes	*Updated in model as per plans provided by WRC*
4/29	664963.990	7743187.946	1.35	11.56	12.17	Sharp Edged	Gully Inlet	0.20	0.38	Yes	*Included in model as per plans provided by WRC*
??/48_or_49/??	665359.880	7742727.638	1.31	10.63	11.72	Sharp Edged	Gully Inlet	0.95	0.65		
??34	665558.191	7742686.206	1.04	9.47	10.16	Sharp Edged	Gully Inlet	1.20	0.10		
??34a	665531.888	7742667.813	1.20	9.90	11.10	No CRS Change	OL	N/A	N/A		
??4	665589.809	7743486.039	0.83	11.07	11.57	Sharp Edged	Gully Inlet	0.23	0.23		
??6	665017.059	7743190.019	1.20	10.48	11.02	Sharp Edged	Gully Inlet	1.30	0.45	Yes	*Included in model as per plans provided by WRC*
??9	665340.079	7742303.659	1.20	9.49	10.25	Sharp Edged	Gully Inlet	1.30	0.45		
?10	665339.842	7742290.764	1.68	8.95	9.58	Sharp Edged	Gully Inlet	1.30	0.45		
?12	663975.789	7743300.769	1.20	10.78	11.07	Sharp Edged	IL	1.20	0.30		
?13	663974.235	7743288.509	1.20	10.72	10.92	Sharp Edged	IL	1.20	0.30		
?14	664931.369	7742820.509	1.20	11.20	11.55	Sharp Edged	IL	0.23	0.23		
?15	664932.980	7742833.049	1.20	11.13	11.41	Sharp Edged	IL	0.23	0.23		
?16	665319.103	7742785.862	1.20	11.72	12.10	Sharp Edged	IL	0.23	0.23		
?18	665139.976	7742808.770	1.20	11.41	11.75	Sharp Edged	IL	0.23	0.23		
?19	665153.055	7742791.930	1.20	11.38	11.65	Sharp Edged	IL	0.23	0.23		
?20	665219.919	7742800.196	1.20	11.61	12.02	Sharp Edged	IL	0.23	0.23		
?21	665444.420	7742770.885	1.20	11.94	12.22	Sharp Edged	IL	0.23	0.23		
?22	665453.519	7742769.591	1.20	11.90	12.14	Sharp Edged	IL	0.23	0.23		
?24	664706.816	7742797.119	0.81	10.02	10.56	Sharp Edged	IL	0.45	0.30		
?26	665228.583	7742799.050	1.20	11.61	12.00	Sharp Edged	IL	0.30	0.30		
?29	665775.544	7742360.177	2.19	8.91	10.02	Sharp Edged	Gully Inlet	1.20	0.10		
?31	665872.292	7742344.711	0.78	9.88	10.78	Sharp Edged	Gully Inlet	1.00	0.10		
?33	665587.636	7742706.757	1.05	10.66	11.52	Sharp Edged	Gully Inlet	1.10	0.10		
?35	664837.282	7742954.621	2.40	9.51	10.72	Sharp Edged	Gully Inlet	0.90	0.10		
?36	664844.549	7742966.338	5.00	9.62	10.86	Sharp Edged	Gully Inlet	1.00	0.10		
?37	664917.064	7742956.928	0.78	9.70	11.11	Sharp Edged	Gully Inlet	2.30	0.10		
?38	664917.595	7742944.191	1.82	9.70	11.07	Sharp Edged	Gully Inlet	2.20	0.10		
?40	665041.457	7742926.243	1.00	7.43	8.50	Sharp Edged	Inlet Pit	2.50	1.40		
?42	665136.539	7742909.815	0.90	11.29	11.79	Sharp Edged	Inlet Pit	1.30	0.90		
1/107	665714.045	7742366.887	1.80	8.84	9.80	No CRS Change	OL	N/A	N/A		
1/108	665464.861	7742093.751	5.00	7.92	8.05	No CRS Change	OL	0.38	0.38		
1/109	665019.129	7742931.076	1.78	9.86	11.43	Sharp Edged	Gully Inlet	1.00	0.10		
1/114	664754.568	7742981.607	0.90	9.54	10.42	Sharp Edged	Gully Inlet	0.90	0.10	Yes	*Included in model as per plans provided by WRC*
1/115	665596.835	7742267.885	1.50	8.41	9.30	No CRS Change	OL	N/A	N/A		
1/116	665691.940	7742264.723	0.78	8.69	9.37	Sharp Edged	Gully Inlet	1.20	0.10		
1/117	665514.658	7742103.774	1.20	8.14	8.90	No CRS Change	OL	N/A	N/A		
1/131	663927.269	7743049.872	1.20	9.38	9.74	Sharp Edged	OL	0.30	0.30		
1/155	665279.960	7742312.060	1.00	9.24	10.14	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
1/156	665181.580	7742422.090	1.00	9.41	10.35	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
1/165	665014.737	7742444.319	1.00	9.33	10.56	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
1/166	664988.940	7742327.180	1.00	8.64	9.61	Sharp Edged	Pipe Junction	N/A	N/A		
1/167	664998.150	7742326.420	1.00	8.89	9.74	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
1/169	665332.800	7742403.290	1.00	9.43	10.08	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
1/175	665894.322	7743040.738	1.50	9.74	10.69	Sharp Edged	Manhole	N/A	N/A	Yes	*Updated in model as per plans provided by WRC*

MOUSE Model Update - Nodes

Node ID	Easting	Northing	Representative Diameter (m)	Invert Level (m AHD)	Ground Level (m AHD)	Outlet Headloss Type	Inlet Type	Opening Width (m)	Opening Height / Breadth (m)	Updated	Comments
1/176	665897.480	7743203.720	3.00	7.73	9.59	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
1/182	665958.430	7743025.290	1.00	9.37	10.76	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
1/183	665974.080	7743000.130	1.00	9.57	10.81	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
1/185	664740.840	7742310.470	2.00	8.84	9.98	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
1/188	664791.960	7742261.840	2.00	8.41	9.69	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
1/189	664934.720	7742240.660	2.00	8.36	9.81	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
1/190	665010.976	7742211.538	2.00	7.58	9.49	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
1/191	665036.150	7742262.320	1.00	8.45	9.71	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
1/196	665305.745	7742159.459	1.00	7.64	9.19	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
1/197	665307.840	7742203.848	2.00	8.24	9.50	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
1/198	665265.389	7742231.530	1.00	8.60	9.94	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
1/200	665320.402	7742169.408	1.00	7.73	9.17	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
1/201	665323.036	7742195.358	1.00	7.86	9.34	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
1/202	665331.211	7742254.604	1.00	8.00	9.44	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
10/155	665000.050	7742318.000	1.00	8.36	9.67	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
10/176	665970.380	7743018.760	2.00	9.13	10.52	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC*
100a	663775.626	7743065.728	1.20	7.88	8.19	Sharp Edged	Headwall	0.60	0.60		
100b	663774.784	7743059.592	3.60	7.76	8.63	No CRS Change	OL	N/A	N/A		
109a	665556.514	7743200.675	1.20	11.03	11.30	Sharp Edged	Headwall	0.13	0.13		
11/155	664990.720	7742293.280	5.00	8.25	9.30	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
13/23	664713.579	7743328.427	0.96	10.99	11.87	Sharp Edged	Gully Inlet	1.30	0.45		
13/70	666164.512	7742407.319	0.97	9.98	10.98	Sharp Edged	Gully Inlet	1.30	0.45		
13a	665170.439	7742437.095	1.20	10.01	10.35	Sharp Edged	Headwall	0.45	0.45		
14/70	666154.160	7742394.227	0.97	10.00	10.98	Sharp Edged	Gully Inlet	1.30	0.45		
14a	664985.853	7742464.678	1.20	10.04	10.49	Sharp Edged	Headwall	0.53	0.53		
14b	664985.641	7742462.723	1.20	9.86	10.52	No CRS Change	OL	N/A	N/A		
16a	665537.475	7742277.852	1.20	9.08	9.36	Sharp Edged	Headwall	0.23	0.23		
16b	665580.394	7742272.265	1.35	8.88	9.17	No CRS Change	OL	N/A	N/A		
2/106	665092.079	7742447.232	1.20	10.20	10.70	Sharp Edged	IL	0.45	0.45		
2/106c	665106.475	7742445.308	2.40	10.12	10.85	No CRS Change	OL	N/A	N/A		
2/106x	665182.491	7742435.585	2.40	9.98	10.56	No CRS Change	OL	N/A	N/A		
2/107	665798.477	7742354.214	0.78	9.05	10.08	Sharp Edged	Gully Inlet	2.30	0.10		
2/108	665422.787	7742123.296	1.18	8.42	9.06	Sharp Edged	Gully Inlet	2.30	0.10		
2/109	665036.146	7742927.305	1.23	9.92	11.53	Sharp Edged	Gully Inlet	2.00	0.10		
2/115	665628.239	7742263.020	0.84	8.48	9.26	Sharp Edged	Gully Inlet	1.20	0.10		
2/117	665518.975	7742128.995	0.90	8.32	8.99	Sharp Edged	Gully Inlet	1.00	0.10		
2/131	663943.847	7743047.521	1.20	9.54	9.91	Sharp Edged	IL	0.30	0.30		
2/155	665278.060	7742291.870	1.00	9.18	10.14	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
2/156	665176.780	7742382.890	2.00	9.31	10.09	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
2/165	664988.428	7742432.322	5.00	8.90	9.21	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
2/175	665916.031	7743032.954	1.50	9.77	10.66	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
2/176	665942.030	7743194.740	3.00	8.00	9.70	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
2/185	664675.790	7742318.730	2.00	9.10	10.20	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
2/190	665020.678	7742242.410	1.00	7.84	9.54	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
2/196	665311.835	7742191.934	1.00	7.73	9.20	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
2/197	665282.940	7742209.342	1.00	8.42	9.71	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
2/198	665272.863	7742237.938	1.00	8.87	9.94	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
2/203	665109.240	7742205.530	2.00	9.31	9.89	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
2/40x	665599.100	7742361.540	7.20	8.60	8.64	No CRS Change	OL	2.80	0.45		
2010/P1	664846.596	7743144.930	1.50	9.65	11.33	Sharp Edged	Gully Inlet	1.125	1.125	Yes	*Included in model as per plans provided by WRC*
2010/P10	664761.888	7742977.184	1.03	9.44	10.37	Sharp Edged	Gully Inlet	1.05	0.70	Yes	*Included in model as per plans provided by WRC*
2010/P12	664760.171	7742964.283	3.00	9.41	10.37	Sharp Edged	Gully Inlet	1.125	1.125	Yes	*Included in model as per plans provided by WRC*

MOUSE Model Update - Nodes

Node ID	Easting	Northing	Representative Diameter (m)	Invert Level (m AHD)	Ground Level (m AHD)	Outlet Headloss Type	Inlet Type	Opening Width (m)	Opening Height / Breadth (m)	Updated	Comments
2010/P2	664853.700	7743188.729	2.30	10.31	11.49	Sharp Edged	Gully Inlet	1.125	1.125	Yes	*Included in model as per plans provided by WRC*
2010/P5	664883.681	7743193.650	2.04	10.55	11.44	Sharp Edged	Gully Inlet	3.60	1.00	Yes	*Included in model as per plans provided by WRC*
2010/P6	664935.806	7743186.791	1.50	11.21	12.10	Sharp Edged	Gully Inlet	1.30	0.85	Yes	*Included in model as per plans provided by WRC*
2010/P8	665010.307	7743187.627	0.83	12.27	12.76	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC*
2010/P9	664752.409	7742963.230	1.37	9.35	10.07	Sharp Edged	Manhole	2.16	1.44	Yes	*Included in model as per plans provided by WRC*
20a	664751.252	7742475.267	5.00	9.46	10.16	No CRS Change	OL	0.45	0.45		
21a	665465.315	7742112.780	1.20	8.30	9.06	Sharp Edged	Headwall	0.38	0.38		
24a	665385.340	7742208.972	1.20	8.90	9.29	Sharp Edged	Headwall	0.30	0.30		
25a	665375.937	7742126.572	1.20	8.79	9.19	Sharp Edged	Headwall	0.30	0.30		
27a	664703.359	7742794.035	0.78	9.64	10.71	Sharp Edged	Headwall	0.23	0.23		
27b	664706.918	7742823.163	0.81	9.54	10.43	No CRS Change	OL	0.23	0.23		
29a	664926.987	7742816.921	5.00	11.14	11.50	No CRS Change	OL	0.23	0.23		
29b	664929.550	7742837.579	1.20	11.16	11.41	Sharp Edged	Headwall	0.23	0.23		
2a	665489.053	7742399.957	1.20	9.18	9.48	Sharp Edged	Headwall	0.23	0.23		
2a/92	665617.114	7743240.187	1.50	10.21	11.17	Sharp Edged	Gully Inlet	1.05	0.73	Yes	*Included in model as per plans provided by WRC. 2007 survey used for inlet size.*
2b	665488.761	7742397.051	2.41	9.15	9.48	No CRS Change	OL	N/A	N/A		
3/109	665152.482	7742907.516	1.03	11.26	11.88	Sharp Edged	Gully Inlet	0.60	0.45		
3/115	665655.128	7742253.189	1.15	8.51	9.26	Sharp Edged	Gully Inlet	1.10	0.10		
3/155	665261.500	7742285.720	1.00	9.14	10.23	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
3/156	665125.360	7742389.500	2.00	9.26	10.11	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
3/176	665970.440	7743189.610	2.00	8.03	9.89	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
3/188	664810.930	7742271.150	2.00	8.66	9.75	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
3/189	664916.450	7742257.420	2.00	8.55	9.74	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
3/190	665036.360	7742242.130	2.00	7.98	9.53	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
3/196	665319.355	7742244.580	1.00	7.90	9.44	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
3/197	665249.694	7742213.408	2.00	8.64	9.90	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
32a	665523.282	7742667.394	5.00	9.86	10.85	No CRS Change	OL	0.75	0.75		
33a	665136.513	7742806.507	1.20	11.45	11.62	Sharp Edged	Headwall	0.30	0.30		
33b	665155.763	7742803.984	5.00	11.39	11.61	No CRS Change	OL	0.30	0.30		
34a	665438.321	7742767.562	5.00	11.80	12.02	No CRS Change	OL	0.23	0.23		
34b	665457.503	7742764.967	1.20	11.83	12.12	Sharp Edged	Headwall	0.23	0.23		
35a	665332.927	7742768.641	1.20	11.63	11.97	Sharp Edged	Headwall	0.23	0.23		
35b	665329.235	7742764.940	5.00	11.59	11.96	No CRS Change	OL	0.23	0.23		
36a	665316.021	7742783.424	1.20	11.72	11.96	Sharp Edged	Headwall	0.23	0.23		
36b	665335.130	7742780.842	5.00	11.68	12.06	No CRS Change	OL	0.23	0.23		
37a	665331.451	7742784.946	1.20	11.66	12.08	Sharp Edged	Headwall	0.23	0.23		
37b	665329.053	7742765.784	5.00	11.60	12.01	No CRS Change	OL	N/A	N/A		
38a	665216.728	7742796.383	5.00	11.56	11.99	No CRS Change	OL	0.23	0.23		
38b	665231.124	7742794.514	1.20	11.59	11.91	Sharp Edged	Headwall	0.23	0.23		
39a	665149.518	7742788.040	1.65	11.25	11.67	No CRS Change	OL	N/A	N/A		
39b	665152.332	7742808.443	1.20	11.50	11.76	Sharp Edged	Headwall	0.23	0.23		
3a	665412.292	7742405.772	2.40	9.28	9.85	Sharp Edged	Headwall	2.40	0.30		
4/109	665164.560	7742906.050	1.03	11.26	11.88	Sharp Edged	Gully Inlet	0.60	0.45		
4/115	665683.952	7742261.310	0.84	8.60	9.33	Sharp Edged	Gully Inlet	1.10	0.10		
4/155	665175.000	7742296.760	1.00	8.85	9.99	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
4/156	665081.760	7742393.930	2.00	9.23	10.14	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
4/175	665940.410	7743020.170	1.00	10.05	10.81	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
4/190	665094.700	7742234.180	2.00	8.26	9.69	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
4/196	665323.996	7742293.108	2.00	8.19	9.63	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
40a	665182.554	7743140.214	5.00	12.61	13.08	No CRS Change	OL	0.23	0.23		
40b	665184.978	7743159.367	1.20	12.68	12.99	Sharp Edged	Headwall	0.23	0.23		
41a	665014.110	7743174.192	1.20	12.09	12.80	Sharp Edged	Manhole	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
4a	665601.778	7742385.361	4.80	8.74	9.13	Sharp Edged	IL	4.80	0.60		
4b	665601.479	7742382.886	5.40	8.75	9.52	Sharp Edged	Gully Inlet	4.80	0.60		

MOUSE Model Update - Nodes

Node ID	Easting	Northing	Representative Diameter (m)	Invert Level (m AHD)	Ground Level (m AHD)	Outlet Headloss Type	Inlet Type	Opening Width (m)	Opening Height / Breadth (m)	Updated	Comments
5/115	665690.327	7742301.419	0.71	8.70	9.48	Sharp Edged	Gully Inlet	0.60	0.23		
5/155	665123.450	7742303.550	1.00	8.74	10.12	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
5/156	665057.230	7742396.380	1.00	9.12	10.13	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
5/176	665996.530	7743170.840	5.00	8.33	9.97	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
5/190	665143.760	7742227.640	2.00	8.49	9.72	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
52a	665472.055	7742989.772	1.20	11.96	12.32	Sharp Edged	Headwall	0.15	0.15		
52b	665481.299	7742988.571	5.00	11.88	12.29	No CRS Change	OL	0.15	0.15		
53a	665762.616	7743120.923	12.61	9.31	10.11	No CRS Change	OL	N/A	N/A		
55a	664395.078	7742970.457	6.70	7.61	8.70	No CRS Change	OL	N/A	N/A		
56a	665555.536	7743205.463	1.20	10.99	11.39	Sharp Edged	Headwall	0.23	0.23		
56b	665565.433	7743200.913	1.20	10.95	11.29	Sharp Edged	Headwall	0.23	0.23		
56c	665563.016	7743197.874	5.00	11.05	11.26	No CRS Change	OL	0.13	0.13		
59a	665221.214	7743430.527	1.18	11.17	12.07	Sharp Edged	Gully Inlet	1.00	0.12		
6/115	665697.976	7742311.306	0.78	8.72	9.43	Sharp Edged	Gully Inlet	1.10	0.10		
6/155	665066.890	7742310.580	2.00	8.53	9.89	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
6/156	665057.320	7742372.480	1.00	9.05	10.04	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
6/176	666016.540	7743142.240	1.50	8.45	10.14	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
6/190	665189.310	7742221.590	2.00	8.70	9.84	Sharp Edged	Gully Inlet	1.32	0.614	Yes	*Included in model as per plans provided by WRC*
6/196	665338.884	7742393.956	1.00	8.52	10.15	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
60a	665073.025	7743589.412	1.20	11.23	11.90	Sharp Edged	Headwall	0.45	0.45		
61a	665074.311	7743601.592	1.20	11.48	12.18	Sharp Edged	Headwall	0.30	0.30		
61b	665075.020	7743609.381	1.20	11.54	12.24	Sharp Edged	Headwall	0.30	0.30		
63a	665060.643	7743580.518	1.20	11.51	12.25	Sharp Edged	Headwall	0.30	0.30		
63b	665066.806	7743579.801	5.00	11.41	12.05	No CRS Change	OL	0.30	0.30		
67a	665629.279	7743708.381	1.20	10.56	11.29	Sharp Edged	Headwall	0.45	0.45		
67b	665656.481	7743707.253	2.40	10.42	11.10	No CRS Change	OL	N/A	N/A		
68a	665592.790	7743508.042	5.00	10.63	10.78	No CRS Change	OL	0.23	0.23		
69a	665605.117	7743547.170	1.20	10.02	10.76	No CRS Change	OL	1.20	0.45		
69b	665624.459	7743544.543	1.20	10.02	10.88	No CRS Change	OL	N/A	N/A		
7/156	665052.220	7742332.940	2.00	8.88	9.91	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
7/176	666016.930	7743121.360	2.50	8.54	10.13	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
7/196	665348.907	7742393.104	1.00	8.56	9.96	Sharp Edged	Gully Inlet	0.66	0.614	Yes	*Included in model as per plans provided by WRC*
70a	665620.064	7743639.481	1.20	10.64	11.17	Sharp Edged	Headwall	0.45	0.45		
70b	665637.008	7743637.077	3.60	10.53	11.30	No CRS Change	OL	N/A	N/A		
73a	665617.240	7743830.722	1.20	10.84	11.66	Sharp Edged	Headwall	0.45	0.45		
73b	665601.363	7743827.632	1.20	10.91	11.77	Sharp Edged	Headwall	0.90	0.90		
73c	665637.696	7743833.336	3.60	10.77	11.80	No CRS Change	OL	N/A	N/A		
75a	666290.312	7742730.763	5.00	9.52	10.21	No CRS Change	OL	0.30	0.30		
75b	666274.981	7742727.506	1.20	9.61	10.10	Sharp Edged	Headwall	0.30	0.30		
76a	666260.980	7742492.420	1.20	10.13	10.88	Sharp Edged	Headwall	0.38	0.38		
76b	666275.076	7742490.656	5.00	10.07	10.62	No CRS Change	OL	0.38	0.38		
79d	666208.098	7742847.452	1.20	9.16	9.61	Sharp Edged	Headwall	0.45	0.45		
79e	666220.934	7742860.261	3.60	9.13	9.80	No CRS Change	OL	N/A	N/A		
7a	665361.280	7742411.748	1.20	9.48	9.82	Sharp Edged	Headwall	0.38	0.38		
7b	665369.568	7742411.415	1.20	9.47	9.98	No CRS Change	OL	0.38	0.38		
8/155	665047.150	7742316.460	1.00	8.48	10.19	Sharp Edged	Manhole	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
8/176	666009.710	7743091.170	1.50	8.83	10.37	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
9/155	665028.590	7742313.470	2.00	8.23	9.77	Sharp Edged	Gully Inlet	0.60	2.00		
9/176	665996.790	7743066.670	2.00	8.90	10.25	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
90b	664681.594	7743161.571	5.00	10.29	10.56	No CRS Change	OL	0.96	0.60		
92a	664708.548	7743303.656	1.20	10.57	11.86	Sharp Edged	Headwall	0.53	0.53		
96a	664096.906	7742921.765	5.00	9.11	9.37	No CRS Change	OL	0.30	0.30		

MOUSE Model Update - Nodes

Node ID	Easting	Northing	Representative Diameter (m)	Invert Level (m AHD)	Ground Level (m AHD)	Outlet Headloss Type	Inlet Type	Opening Width (m)	Opening Height / Breadth (m)	Updated	Comments
96b	664087.205	7742922.918	1.20	9.32	10.15	Sharp Edged	Headwall	0.30	0.30		
97a	663973.484	7743304.196	1.20	10.75	11.14	Sharp Edged	Headwall	0.30	0.30		
97b	663971.102	7743285.171	5.00	10.64	10.98	No CRS Change	OL	0.30	0.30		
98a	663875.546	7743042.856	5.00	8.98	9.31	No CRS Change	OL	0.30	0.30		
99a	663827.137	7743050.220	1.20	8.49	8.92	Sharp Edged	Headwall	0.45	0.45		
99b	663801.531	7743053.449	5.00	8.24	8.58	No CRS Change	OL	0.45	0.45		
dummy1	665654.393	7742374.831	5.00	8.76	9.54	No CRS Change	OL	N/A	N/A		
dummy13	665641.100	7743636.510	5.00	10.52	10.59	No CRS Change	OL	N/A	N/A		
dummy14	666226.039	7742870.586	1.00	9.12	9.77	No CRS Change	OL	N/A	N/A		
dummy16	665640.940	7743833.990	5.00	10.76	11.05	No CRS Change	OL	N/A	N/A		
dummy17	665618.700	7742455.670	5.00	8.91	9.39	No CRS Change	OL	N/A	N/A		
dummy18	665522.065	7742617.803	5.00	9.43	9.64	No CRS Change	OL	N/A	N/A	Yes	*Location updated in model*
dummy20	666176.765	7742826.744	5.00	9.13	9.66	No CRS Change	OL	N/A	N/A		
dummy21	666181.521	7742822.869	5.00	9.12	9.91	No CRS Change	OL	N/A	N/A		
dummy22	666072.850	7742666.753	5.00	9.46	9.81	No CRS Change	OL	N/A	N/A		
dummy31	666024.717	7742309.201	5.00	10.31	10.51	No CRS Change	OL	N/A	N/A		
dummy32	665107.410	7742445.170	5.00	10.11	10.88	No CRS Change	OL	N/A	N/A		
dummy33	665183.763	7742435.310	5.00	9.97	10.62	No CRS Change	OL	N/A	N/A		
dummy34	664588.770	7742961.580	5.00	8.92	10.01	No CRS Change	OL	N/A	N/A		
dummy36	664104.870	7742991.677	5.00	8.90	9.57	No CRS Change	OL	N/A	N/A		
dummy37	665109.514	7742445.451	5.00	10.20	10.78	No CRS Change	OL	N/A	N/A		
dummy39	665584.960	7742271.570	5.00	8.32	8.54	No CRS Change	OL	N/A	N/A		
dummy42	665658.850	7743707.440	5.00	10.41	10.99	No CRS Change	OL	N/A	N/A		
dummy44	665149.320	7742787.070	5.00	11.25	11.57	No CRS Change	OL	N/A	N/A		
dummy46	665475.707	7742397.901	5.00	9.22	9.30	No CRS Change	OL	N/A	N/A		
dummy47	665488.730	7742396.770	5.00	9.14	9.48	No CRS Change	OL	N/A	N/A		
dummy51	665589.684	7742255.991	5.00	8.40	8.84	No CRS Change	OL	N/A	N/A		
dummy52	665628.000	7743548.853	5.00	10.01	10.92	No CRS Change	OL	N/A	N/A		
dummy57	665530.890	7742667.410	5.00	9.89	10.61	No CRS Change	OL	N/A	N/A		
dummy5-node	664369.445	7742941.460	6.70	7.42	8.65	No CRS Change	OL	N/A	N/A	Yes	*Location updated in model*
dummy60	664631.140	7743260.010	5.00	8.99	11.22	No CRS Change	OL	N/A	N/A		
dummy61	665514.550	7742103.350	5.00	8.13	8.25	No CRS Change	OL	N/A	N/A		
dummy62	665693.503	7742368.955	5.00	8.84	9.23	No CRS Change	OL	N/A	N/A		
dummy67	665235.740	7743543.460	5.00	10.61	11.40	No CRS Change	OL	N/A	N/A		
dummy68	665072.400	7743583.940	5.00	11.14	11.81	No CRS Change	OL	N/A	N/A		
dummy72	664185.820	7742815.880	5.00	8.41	8.79	No CRS Change	OL	N/A	N/A		
dummy74	665800.898	7743168.360	12.60	8.90	9.46	No CRS Change	OL	N/A	N/A		
dummy75	663774.460	7743058.270	5.00	7.75	8.22	No CRS Change	OL	N/A	N/A		
dummy78	665051.530	7743169.090	1.00	11.84	12.65	Sharp Edged	OL	N/A	N/A	Yes	*Updated in model as per plans provided by WRC*
dummy80	665504.160	7742550.140	1.00	9.29	9.86	Sharp Edged	OL	N/A	N/A		
dummy81	665592.490	7742268.840	1.20	8.42	8.69	Sharp Edged	OL	N/A	N/A		
dummy82	665472.945	7743514.303	1.00	10.51	11.62	Sharp Edged	OL	N/A	N/A		
GP1	665186.740	7743027.090	1.00	10.95	12.39	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP11	664996.290	7743068.170	1.50	9.90	11.14	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP12	664965.870	7743071.490	1.50	9.90	11.16	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP13	664921.180	7743076.250	1.50	9.76	10.97	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP14	664887.430	7743081.950	1.50	9.51	10.91	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP15	664837.510	7743087.180	1.50	9.51	10.65	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP16	664805.190	7743090.980	1.50	9.42	10.62	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*

MOUSE Model Update - Nodes

Node ID	Easting	Northing	Representative Diameter (m)	Invert Level (m AHD)	Ground Level (m AHD)	Outlet Headloss Type	Inlet Type	Opening Width (m)	Opening Height / Breadth (m)	Updated	Comments
GP17	664775.710	7743096.690	1.50	9.42	10.61	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP2	665187.140	7743043.820	1.00	10.91	12.07	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP20	665110.390	7743036.730	1.00	10.65	11.70	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP21	665059.040	7743045.350	1.00	10.50	11.35	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP22	665052.860	7743034.410	1.00	10.63	11.21	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP23	665036.230	7743036.790	1.00	10.50	11.27	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP24	665032.420	7743047.720	1.00	10.31	11.41	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP25	664996.290	7743054.380	1.50	10.02	11.21	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP26	664937.820	7743060.560	1.50	9.82	10.98	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP27	664880.300	7743068.170	1.50	9.62	10.93	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP28	664827.060	7743074.820	1.50	9.42	10.82	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP29	664774.760	7743081.950	1.50	9.42	10.56	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP3	665160.170	7743047.360	1.00	10.83	12.26	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP4	665126.910	7743051.500	1.50	10.72	11.80	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP5	665098.190	7743054.450	1.50	10.63	11.33	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP6	665062.460	7743059.820	1.50	10.52	11.14	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP7	665036.301	7743062.958	1.20	10.11	11.10	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP8	665058.580	7743065.970	1.00	10.52	11.86	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
GP9	665039.381	7743067.785	1.22	10.48	11.51	Sharp Edged	Gully Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC. Inlet size assumed to be as per WRC Std Dwg D-0062.*
i?12	663973.060	7743300.850	1.20	10.73	11.14	Sharp Edged	Pipe Junction	N/A	N/A		
i?13	663971.533	7743288.577	1.20	10.66	11.07	Sharp Edged	Pipe Junction	N/A	N/A		
i1/23	664564.530	7742951.710	6.08	8.44	10.06	Sharp Edged	Gully Inlet	6.08	0.90		
i1/23a	664483.890	7742960.640	6.08	8.04	9.77	Sharp Edged	Gully Inlet	6.08	0.90		
i1/26a	664620.010	7742945.560	6.08	8.71	10.08	Sharp Edged	Gully Inlet	6.08	0.90		
i223	664157.685	7743385.661	1.20	10.36	11.73	Sharp Edged	Pipe Junction	N/A	N/A	Yes	*Updated in model as per plans provided by WRC*
i282	664147.410	7743279.770	1.20	9.62	11.10	Sharp Edged	Gully Inlet	1.20	0.75	Yes	*Updated in model as per plans provided by WRC*
i284	664662.611	7742940.836	6.08	8.92	10.15	Sharp Edged	Gully Inlet	6.00	0.90		
i286	664448.777	7742964.506	6.08	7.87	9.86	Sharp Edged	IL	6.08	0.90		
i287	664436.452	7742965.875	6.08	7.81	9.65	Sharp Edged	IL	6.08	0.90		
i296	664705.563	7742809.687	0.81	9.58	10.21	Sharp Edged	Pipe Junction	N/A	N/A		
i297	664703.824	7742797.325	0.81	9.61	10.30	Sharp Edged	Pipe Junction	N/A	N/A		
i298	664927.479	7742820.900	1.20	11.14	11.38	Sharp Edged	Pipe Junction	N/A	N/A		
i299	664929.033	7742833.414	1.20	11.14	11.39	Sharp Edged	Pipe Junction	N/A	N/A		
i300	664725.611	7742876.551	1.20	9.45	10.32	Sharp Edged	IL	1.20	0.30		
i300a	664732.550	7742896.010	1.20	9.40	10.27	Sharp Edged	Gully Inlet	1.13	1.13	Yes	*Included in model as per plans provided by WRC*
i300b	664742.140	7742918.110	1.20	9.38	10.29	Sharp Edged	Gully Inlet	1.13	1.13	Yes	*Updated in model as per plans provided by WRC*
i305	665139.828	7742806.074	1.20	11.39	11.79	Sharp Edged	Pipe Junction	N/A	N/A		
i306	665150.067	7742792.021	1.20	11.29	11.68	Sharp Edged	Pipe Junction	N/A	N/A		
i307	665218.582	7742796.142	1.20	11.56	11.87	Sharp Edged	Pipe Junction	N/A	N/A		

MOUSE Model Update - Nodes

Node ID	Easting	Northing	Representative Diameter (m)	Invert Level (m AHD)	Ground Level (m AHD)	Outlet Headloss Type	Inlet Type	Opening Width (m)	Opening Height / Breadth (m)	Updated	Comments
i308	665227.980	7742794.921	1.20	11.56	12.05	Sharp Edged	Pipe Junction	N/A	N/A		
i309	665318.873	7742783.037	1.20	11.68	11.97	Sharp Edged	Pipe Junction	N/A	N/A		
i310	665442.837	7742766.951	1.20	11.81	12.05	Sharp Edged	Pipe Junction	N/A	N/A		
i311	665452.765	7742765.609	1.20	11.80	12.12	Sharp Edged	Pipe Junction	N/A	N/A		
i323	665558.435	7743204.129	1.20	10.95	11.26	Sharp Edged	Pipe Junction	N/A	N/A		
i336/7	664110.906	7743027.553	1.20	8.94	10.27	Sharp Edged	Pipe Junction	N/A	N/A		
i338	664124.480	7743108.240	1.20	9.23	10.25	Sharp Edged	Pipe Junction	N/A	N/A	Yes	*Updated in model as per plans provided by WRC*
i348	664126.494	7743120.236	1.20	9.27	10.59	Sharp Edged	Pipe Junction	N/A	N/A	Yes	*Updated in model as per plans provided by WRC*
i351	664070.262	7743416.044	1.20	11.06	11.57	Sharp Edged	IL	1.38	0.60		
i5/17	664392.833	7743074.380	1.00	8.96	9.98	Sharp Edged	Gully Inlet	0.22	1.00		
IN/166	664989.366	7742336.195	1.80	8.66	9.32	Sharp Edged	IL	1.80	0.75	Yes	*included in model as per plans provided by WRC*
IN/168	665339.090	7742414.310	5.00	9.39	9.93	Round Edged	IL	1.20	0.30	Yes	*Included in model as per plans provided by WRC*
IN/171	664195.000	7743583.000	5.00	12.23	12.41	Sharp Edged	IL	0.30	0.30	Yes	*Included in model as per plans provided by WRC*
IN/184	665819.280	7743140.500	1.00	9.60	10.41	Sharp Edged	IL	0.16	1.00	Yes	*Included in model as per plans provided by WRC*
intersection	665331.006	7742781.400	1.00	11.65	11.94	Sharp Edged	Pipe Junction	N/A	N/A		
intersection2	665151.789	7742804.507	1.00	11.40	11.79	Sharp Edged	Pipe Junction	N/A	N/A		
Main10	665430.740	7743214.990	1.20	11.45	11.94	Sharp Edged	Manhole	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
MH10	665037.868	7743069.548	1.00	10.47	11.69	Sharp Edged	Manhole	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
OUT/166	664988.279	7742311.299	5.00	8.63	9.75	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
OUT/168	665336.960	7742397.310	1.00	8.53	10.08	Sharp Edged	Gully Inlet	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
OUT/171	664176.84	7743564.85	0.30	12.08	12.09	No CRS Change	OL	0.30	0.30	Yes	*Included in model as per plans provided by WRC*
OUT/176	665834.110	7743217.410	5.00	7.46	9.42	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
OUT/184	665824.260	7743179.120	5.00	9.26	10.37	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
OUT/185	664770.400	7742299.770	5.00	8.45	9.20	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
OUT/188	664770.200	7742256.250	5.00	8.33	9.17	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
OUT/189	664963.710	7742216.970	5.00	8.21	8.71	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
OUT/203	665079.980	7742156.020	5.00	9.12	9.54	No CRS Change	OL	N/A	N/A	Yes	*included in model as per plans provided by WRC*
P1/1	664317.300	7743058.500	3.74	9.00	10.43	Sharp Edged	Gully Inlet	1.20	1.20	Yes	*Included in model as per plans provided by WRC*
P1/14	665276.003	7743242.132	1.00	11.30	12.70	Sharp Edged	Kerb Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC*
P1/17	665349.851	7743228.172	1.05	11.38	12.18	Sharp Edged	Gully Inlet	1.00	0.87	Yes	*Included in model as per plans provided by WRC*
P1/33	665351.907	7743245.116	0.90	11.02	12.28	Sharp Edged	Kerb Inlet	0.90	0.62	Yes	*Included in model as per plans provided by WRC*
P1/41	665271.345	7743238.343	1.00	11.50	12.79	Sharp Edged	Gully Inlet	0.60	0.90	Yes	*Included in model as per plans provided by WRC*
P1/6	665400.470	7743226.075	0.68	11.11	12.07	Sharp Edged	Kerb Inlet	0.90	0.15	Yes	*Included in model as per plans provided by WRC*
P2/17	665347.976	7743232.826	1.44	10.92	12.14	Sharp Edged	Kerb Inlet	0.90	0.15	Yes	*Included in model as per plans provided by WRC*
P3/5	665224.543	7743250.732	0.83	11.74	13.10	Sharp Edged	Manhole	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
P4/3	665351.854	7743243.643	1.77	10.89	12.24	Sharp Edged	Manhole	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
P4/5	665272.175	7743244.645	0.83	11.37	12.75	Sharp Edged	Manhole	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
P5/3	665401.992	7743236.754	1.25	10.80	12.08	Sharp Edged	Manhole	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
P5/5	665276.231	7743244.127	1.00	11.27	12.72	Sharp Edged	Manhole	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
P6/3	665416.199	7743234.802	2.34	10.79	12.10	Sharp Edged	Manhole	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
P6/5	665348.431	7743234.801	1.31	10.90	12.26	Sharp Edged	Manhole	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
PSW-133-2	664964.250	7742418.320	2.00	9.06	10.17	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
PSW-133-3	664955.600	7742349.280	2.00	8.78	10.01	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
PSW-133-4	664985.650	7742339.910	5.00	8.64	9.34	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
PSW-134-1	664903.020	7742395.940	1.00	9.47	10.38	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
PSW-134-2	664909.280	7742382.340	1.00	9.27	10.20	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
PSW-134-3	664903.140	7742349.480	2.00	9.05	9.86	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
PSW-134-4	664913.280	7742336.730	1.00	8.96	9.98	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
PSW-134-5	664930.580	7742327.050	2.00	8.86	9.86	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
PSW-134-6	664953.520	7742314.510	1.00	8.77	9.97	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
PSW-134-7	664980.950	7742308.130	5.00	8.68	9.58	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
PSW-135-1	664759.430	7742388.381	1.20	8.83	9.68	Sharp Edged	Box Culvert	1.20	0.60	Yes	*Included in model as per plans provided by WRC*
PSW-135-3	664794.740	7742385.830	3.00	8.98	9.69	Sharp Edged	Gully Inlet	0.60	3.00	Yes	*Included in model as per plans provided by WRC*
PSW-135-5	664798.830	7742425.070	1.20	9.11	9.95	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
PSW-135-6	664817.730	7742425.790	1.00	9.28	10.07	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
PSW-136-2	664742.420	7742391.944	2.00	9.10	9.86	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*

MOUSE Model Update - Nodes

Node ID	Easting	Northing	Representative Diameter (m)	Invert Level (m AHD)	Ground Level (m AHD)	Outlet Headloss Type	Inlet Type	Opening Width (m)	Opening Height / Breadth (m)	Updated	Comments
PSW-136-3	664685.907	7742398.903	1.00	9.27	9.93	Sharp Edged	Gully Inlet	0.60	1.00	Yes	*Included in model as per plans provided by WRC*
PSW-137-IN	664757.906	7742394.861	1.20	8.85	9.84	Sharp Edged	Box Culvert	1.20	0.60	Yes	*Included in model as per plans provided by WRC*
PSW-137-OUT	664763.800	7742373.380	5.00	8.82	9.17	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
PSW-138-1	664808.940	7742362.240	2.00	9.12	9.86	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
PSW-144-OUT	664986.003	7742437.065	5.00	9.34	10.03	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
PSW-148-1	664768.980	7742384.990	2.00	8.93	9.70	Sharp Edged	Gully Inlet	0.60	2.00	Yes	*Included in model as per plans provided by WRC*
TEMP/OUT	665004.031	7742179.918	5.00	7.52	9.28	No CRS Change	OL	N/A	N/A	Yes	*Included in model as per plans provided by WRC*
x/y	665680.400	7742371.210	1.20	8.78	9.71	Sharp Edged	Headwall	0.45	0.45	Yes	*Included in model as per plans provided by WRC*

Appendix H

MOUSE / MIKE21 Couple Locations

MOUSE / M21 Couple Locations

Couple ID	Node ID	M21 Grid Cell X Coordinate	M21 Grid Cell Y Coordinate	Inlet Area
1	2/1	41	609	0.59
2	3/2	50	598	0.27
3	4/2	50	600	0.27
4	1/3	52	597	0.32
5	1/5	108	565	0.05
6	2/6	119	555	0.59
7	3/6	120	558	0.59
8	1/7	137	477	0.18
9	2/7	141	476	0.59
10	3/8	176	475	0.32
11	4/8	178	491	0.54
12	5/8	178	495	2.16
13	6/8	182	523	0.72
14	7/8	183	529	2.16
15	8/8	183	536	1.82
16	9/8	185	549	1.44
17	1/9	173	476	0.59
18	1/10	179	493	0.54
19	1/11	179	526	0.59
20	1/13	190	546	0.59
21	1/17	230	463	0.16
22	2/16	191	442	0.63
23	2/17	229	468	1.44
24	3/17	230	477	1.44
25	6/17	234	506	0.32
26	7/17	236	517	0.59
27	1/18	232	465	0.36
28	2/18	232	467	0.63
29	1/19	216	478	1.44
30	2/19	206	488	0.09
31	3/19	205	490	0.09
32	11/23	293	531	0.36
33	12/23	292	536	0.10
34	13/23	296	535	0.59
35	2/24	281	534	0.09
36	3/24	281	537	0.09
37	1/26	298	456	0.98
38	5/26	307	511	1.20
39	2/27	302	456	0.21
40	4/29	346	507	0.08
41	GP9	361	483	0.56
42	2/33	360	527	0.54
43	2/34	303	365	0.12
44	3/34	303	368	0.50
45	4/34	312	367	0.59
46	2/36	378	409	0.59
47	1/37	381	408	0.59
48	1/38	381	412	0.59
49	2/40x	473	342	1.26
50	3/40	473	346	0.20
51	1/42	472	417	0.11
52	2/42	477	420	0.10
53	3/42	478	431	0.10
54	1/43	478	420	0.11
55	2/44	440	352	0.12
56	4/44	437	360	0.11
57	5/44	431	365	0.12

AECOM

MOUSE / M21 Couple Locations

Couple ID	Node ID	M21 Grid Cell X Coordinate	M21 Grid Cell Y Coordinate	Inlet Area
58	6/44	432	373	0.24
59	1/45	438	352	0.11
60	2/46	449	362	0.23
61	2/47	452	380	0.24
62	3/47	446	380	0.10
63	4/47	442	382	0.11
64	5/47	433	383	0.23
65	2/48	454	398	0.26
66	3/48	451	399	0.11
67	4/48	447	401	0.11
68	5/48	435	403	0.36
69	6/48	423	405	0.36
70	??/48_or_49/??	425	415	0.62
71	8/48	415	416	0.59
72	1/49	433	402	0.36
73	2/50	478	371	0.23
74	4/50	470	377	0.23
75	5/50	470	389	0.23
76	6/50	470	391	0.22
77	1/53	478	372	0.22
78	2/53	487	371	0.23
79	4/53	490	379	0.23
80	5/53	491	388	0.36
81	1/54	486	370	0.23
82	2/54	490	367	0.23
83	2/56	486	347	0.23
84	3/56	488	347	0.23
85	2/58	509	350	0.24
86	3/58	510	352	0.10
87	4/58	525	350	0.36
88	5/58	528	368	0.12
89	6/58	531	395	1.08
90	7/58	534	411	0.72
91	8/58	533	413	0.50
92	1/59	509	353	0.77
93	2/59	508	354	0.72
94	3/59	507	354	0.11
95	2/62	541	337	0.59
96	2/63	558	334	0.08
97	2/64	583	334	0.59
98	3/64	582	334	0.59
99	3/66	583	429	0.27
100	5/66	569	401	0.72
101	6/66	571	397	0.72
102	7/66	569	383	0.72
103	8/66	567	367	0.68
104	9/66	565	351	0.59
105	10/66	563	349	0.59
106	1/67	565	381	0.63
107	2/67	554	382	0.68
108	3/67	553	381	0.68
109	4/67	548	377	0.59
110	5/67	547	365	0.59
111	6/67	548	364	0.59
112	1/68	565	379	0.59
113	1/69	565	366	0.59
114	2/70	589	427	0.72

AECOM

MOUSE / M21 Couple Locations

Couple ID	Node ID	M21 Grid Cell X Coordinate	M21 Grid Cell Y Coordinate	Inlet Area
115	3/70	593	418	0.72
116	4/70	593	408	0.72
117	5/70	591	408	0.72
118	6/70	590	401	0.72
119	7/70	588	399	0.72
120	8/70	588	398	0.81
121	9/70	590	395	0.72
122	10/70	591	392	0.72
123	11/70	589	380	0.72
124	12/70	587	364	0.72
125	13/70	586	351	0.59
126	14/70	584	348	0.59
127	1/71	588	380	0.72
128	1/72	586	364	0.63
129	2/73	584	433	0.68
130	3/73	575	437	0.72
131	4/73	573	436	0.72
132	5/73	569	430	0.68
133	6/73	567	428	0.72
134	7/73	561	427	0.68
135	8/73	561	426	0.72
136	1/74	571	436	0.72
137	3/75	524	482	0.28
138	10/75	528	455	0.10
139	11/75	522	452	0.36
140	12/75	519	448	0.72
141	1/77	533	452	0.72
142	1/78	504	489	0.08
143	2/78	501	469	0.59
144	3/78	501	466	0.59
145	4/78	499	450	0.59
146	1/80	500	469	0.59
147	2/80	500	468	0.59
148	3/80	494	471	0.59
149	4/80	493	463	1.56
150	1/84	507	487	0.09
151	1/85	503	490	1.85
152	1/90	435	514	0.30
153	1/91	440	529	0.45
154	3/96	443	570	0.32
155	2/96	445	570	0.54
156	2/97	425	573	0.10
157	2/98	399	575	0.59
158	3/98	396	547	0.27
159	1/99	402	575	0.59
160	2/106	371	359	0.20
161	2/107	512	340	0.23
162	2/108	437	294	0.23
163	1/109	357	456	0.10
164	2/109	360	455	0.20
165	3/109	383	451	0.27
166	1/114	304	466	0.09
167	2/115	478	322	0.12
168	3/115	484	320	0.11
169	4/115	490	322	0.11
170	5/115	491	330	0.14
171	6/115	492	332	0.11

Client Name: **WRC**
Project Name: **Proserpine Flood Model Update**
Project No: **60188587**

MOUSE / M21 Couple Locations

Couple ID	Node ID	M21 Grid Cell X Coordinate	M21 Grid Cell Y Coordinate	Inlet Area
172	1/116	491	322	0.12
173	2/117	457	295	0.10
174	2/131	142	479	0.09
175	??4	471	567	0.1
176	??6	356	508	0.585
177	??9	421	330	0.32
178	?10	421	328	0.59
179	?12	148	530	0.36
180	?13	148	527	0.36
181	?14	339	434	0.05
182	?15	339	436	0.05
183	?16	417	427	0.05
184	?18	381	431	0.05
185	?19	383	428	0.05
186	?20	397	430	0.05
187	?21	442	424	0.05
188	?22	444	423	0.05
189	?24	294	429	0.14
190	?26	399	429	0.09
191	?29	508	342	0.32
192	?33	470	411	0.44
193	?35	320	460	0.53
194	?36	322	463	0.59
195	?37	336	461	0.16
196	?38	336	458	0.59
197	?42	380	451	0.14
198	2a	451	350	0.05
199	2b	451	349	0.16
200	3a	435	351	0.72
201	4a	473	347	2.88
202	7a	425	352	0.14
203	7b	427	352	0.14
204	13a	387	357	0.20
205	14a	350	362	0.28
206	16a	460	325	0.05
207	20a	303	364	0.20
208	21a	446	292	0.14
209	x/y	489	344	0.20
210	24a	430	311	0.09
211	25a	428	295	0.09
212	27a	293	428	0.05
213	27b	294	434	0.05
214	29a	338	433	0.05
215	29b	339	437	0.05
216	32a	457	403	0.56
217	33a	380	431	0.09
218	33b	384	430	0.09
219	34a	440	423	0.05
220	34b	444	422	0.05
221	35a	419	423	0.05
222	35b	419	422	0.05
223	36a	416	426	0.05
224	36b	420	426	0.05
225	37a	419	426	0.05
226	38a	396	429	0.05
227	38b	399	428	0.05
228	39b	383	431	0.05

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MOUSE / M21 Couple Locations

Couple ID	Node ID	M21 Grid Cell X Coordinate	M21 Grid Cell Y Coordinate	Inlet Area
229	40a	389	498	0.05
230	40b	390	501	0.05
231	52a	447	467	0.02
232	52b	449	467	0.02
233	56a	464	511	0.05
234	56b	466	510	0.05
235	56c	465	509	0.02
236	59a	397	556	0.12
237	60a	367	587	0.20
238	61a	368	590	0.09
239	61b	368	591	0.09
240	63a	365	586	0.09
241	63b	366	585	0.09
242	67a	479	611	0.20
243	68a	471	571	0.05
244	69a	474	579	0.54
245	70a	477	597	0.20
246	73a	476	636	0.20
247	73b	473	635	0.81
248	75a	611	416	0.09
249	75b	608	415	0.09
250	76a	605	368	0.14
251	76b	608	368	0.14
252	79d	594	439	0.20
253	90b	289	502	0.58
254	92a	295	530	0.28
255	96a	172	454	0.09
256	96b	170	454	0.09
257	97a	147	530	0.09
258	97b	147	527	0.09
259	98a	128	478	0.09
260	99a	118	480	0.20
261	99b	113	480	0.20
262	100a	108	483	0.36
263	109a	464	510	0.02
264	1/33	355	527	0.02
265	6/40	461	418	0.56
266	7/40	463	420	0.20
267	8/40	462	422	0.20
268	9/40	464	439	0.11
269	1/41	460	422	0.14
270	1/46	451	361	0.09
271	1/62	540	333	0.09
272	1/64	583	329	0.09
273	1/65	594	328	0.09
274	2/65	594	330	0.09
275	1/1	34	602	0.20
276	1/4	101	540	0.14
277	3/4	107	584	0.20
278	1/6	116	531	0.20
279	3/21	252	537	0.09
280	4/21	252	541	0.09
281	3/23	272	475	1.33
282	6/26	309	530	1.13
283	??34	464	407	0.12
284	1/108	446	288	0.14
285	1/131	138	479	0.09

MOUSE / M21 Couple Locations

Couple ID	Node ID	M21 Grid Cell X Coordinate	M21 Grid Cell Y Coordinate	Inlet Area
286	IN/168	421	352	0.36
287	4/109	386	451	0.27
288	2/2	42	592	0.28
289	i284	285	458	5.40
290	i286	243	462	5.47
291	i287	240	463	5.47
292	i300	298	445	0.36
293	i351	167	553	0.83
294	2/15	167	572	0.54
295	3/14	163	551	0.54
296	1/12	196	525	0.18
297	5/80	488	466	0.36
298	2/38	382	417	0.23
299	dummy1	484	344	0.22
300	i1/26a	277	459	5.47
301	i1/23	266	460	5.47
302	i1/23a	250	462	5.47
303	dummy5-node	227	458	1.00
304	dummy13	481	597	0.27
305	dummy14	598	444	0.28
306	dummy16	481	636	5.40
307	dummy17	477	361	5.47
308	dummy18	457	393	5.47
309	dummy20	588	435	0.83
310	dummy21	589	434	0.83
311	dummy22	567	403	0.54
312	dummy31	558	331	0.36
313	dummy32	374	359	0.23
314	dummy33	390	357	1.08
315	dummy34	271	462	0.54
316	dummy36	174	468	5.47
317	dummy37	375	359	5.47
318	dummy39	470	324	6.03
319	dummy42	485	611	1.62
320	dummy44	383	427	1.62
321	dummy46	448	349	1.62
322	dummy47	450	349	0.57
323	dummy57	459	403	0.72
324	dummy60	279	522	0.45
325	dummy61	456	290	0.54
326	dummy62	492	343	0.54
327	dummy67	400	578	0.36
328	dummy68	367	586	0.36
329	dummy72	190	433	1.58
330	dummy74	513	503	0.72
331	dummy75	108	481	1.08
332	i5/17	231	484	0.22
333	dummy51	471	321	1.08
334	dummy52	478	579	1.33
335	dummy80	454	380	0.43
336	dummy81	471	323	0.34
337	dummy82	447	572	3.24
338	478	414	300	1.27
339	P1/6	433	515	0.14
340	GP29	308	486	0.16
341	GP17	308	489	0.16
342	GP16	314	488	0.56

MOUSE / M21 Couple Locations

Couple ID	Node ID	M21 Grid Cell X Coordinate	M21 Grid Cell Y Coordinate	Inlet Area
343	GP15	320	487	0.56
344	GP28	318	484	0.56
345	GP27	329	483	0.56
346	GP14	330	486	0.56
347	GP13	337	485	0.56
348	GP12	346	484	0.56
349	GP26	340	482	0.56
350	GP25	352	480	0.56
351	GP11	352	483	0.56
352	GP24	359	479	0.56
353	GP23	360	477	0.56
354	GP22	363	476	0.56
355	GP21	365	479	0.56
356	GP8	365	483	0.56
357	GP6	365	481	0.56
358	GP5	372	480	0.56
359	GP20	375	477	0.56
360	GP4	378	480	0.56
361	GP3	385	479	0.56
362	GP2	390	478	0.56
363	GP1	390	475	0.56
364	PSW-137-IN	304	348	0.72
365	PSW-137-OUT	306	344	0.72
366	OUT/166	350	332	1.35
367	IN/166	351	337	1.35
368	3/197	403	312	0.81
369	1/198	406	316	0.41
370	2/198	407	317	0.41
371	2/197	409	311	0.41
372	1/197	414	310	0.41
373	1/201	417	309	0.41
374	1/202	419	320	0.41
375	1/200	417	303	0.41
376	627	310	314	0.53
377	628	310	312	0.54
378	629	344	310	0.32
379	630	343	309	0.32
380	1/190	355	312	0.81
381	TEMP/OUT	354	305	0.28
382	633	320	249	0.44
383	634	320	248	0.28
384	635	338	248	0.53
385	636	337	247	0.54
386	637	412	285	0.16
387	638	411	283	0.16
388	639	410	259	0.28
389	640	409	260	0.28
390	641	406	243	0.32
391	642	406	241	0.32
392	551	599	445	2.16
393	700	574	532	3.24
394	701	577	531	3.24
395	P1/41	407	517	0.54
396	P1/14	408	518	0.56
397	P2/17	422	516	0.14
398	P1/17	423	515	0.87
399	P1/33	423	519	0.56

MOUSE / M21 Couple Locations

Couple ID	Node ID	M21 Grid Cell X Coordinate	M21 Grid Cell Y Coordinate	Inlet Area
400	P1/1	216	481	1.44
401	2010/P1	322	498	1.27
402	2010/P2	324	507	1.27
403	2010/P5	330	508	3.60
404	2010/P6	340	507	1.11
405	2010/P8	355	507	0.56
406	2010/P10	305	465	0.74
407	2010/P12	305	462	1.27
408	PSW-136-3	290	349	0.60
409	PSW-136-2	301	348	0.60
410	PSW-148-1	307	346	1.20
411	PSW-135-3	312	347	1.80
412	PSW-138-1	315	342	1.20
413	PSW-135-5	313	355	0.60
414	PSW-135-6	316	355	0.60
415	PSW-134-1	333	349	0.60
416	PSW-134-2	335	346	0.60
417	PSW-134-3	333	339	1.20
418	PSW-134-4	335	337	0.60
419	PSW-134-5	339	335	1.20
420	PSW-134-6	344	332	0.60
421	PSW-133-3	344	339	1.20
422	PSW-133-2	346	353	1.20
423	PSW-133-4	350	337	0.32
424	PSW-134-7	349	331	0.32
425	1/167	352	335	0.60
426	11/155	351	328	0.44
427	10/155	353	333	0.60
428	9/155	359	332	1.20
429	6/155	366	332	1.20
430	7/156	363	336	1.20
431	5/156	364	349	0.60
432	6/156	364	344	0.60
433	4/156	369	348	1.20
434	3/156	378	347	1.20
435	2/156	388	346	1.20
436	1/156	389	354	0.60
437	5/155	377	330	1.20
438	4/155	388	329	1.20
439	3/155	405	327	0.60
440	2/155	408	328	0.60
441	1/155	409	332	1.20
442	1/169	419	350	0.60
443	OUT/168	420	349	0.88
444	1/165	356	358	0.60
445	2/165	350	356	0.11
446	PSW-144-OUT	350	357	0.72
447	7/196	423	348	0.41
448	3/92	466	520	1.04
449	2/92	469	520	0.63
450	1/92	481	517	0.45
451	2a/92	476	518	0.77
452	1/191	360	322	0.41
453	4/190	372	316	0.81
454	5/190	382	315	0.81
455	6/190	391	314	0.81
456	2/203	375	311	0.81

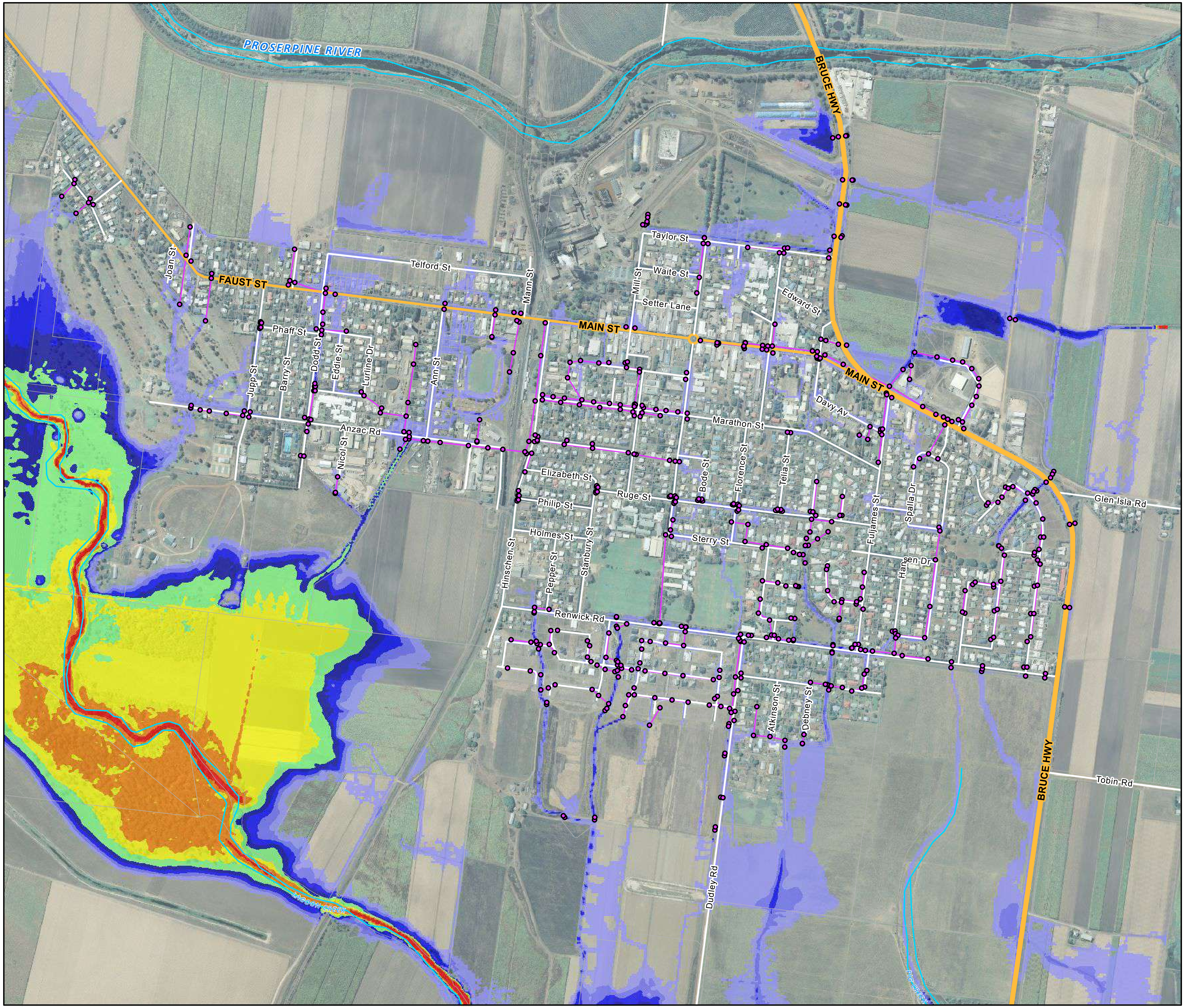
AECOM

MOUSE / M21 Couple Locations

Couple ID	Node ID	M21 Grid Cell X Coordinate	M21 Grid Cell Y Coordinate	Inlet Area
457	OUT/203	369	301	0.04
458	2/185	288	333	0.81
459	1/185	301	332	0.81
460	OUT/185	307	329	0.11
461	OUT/188	307	321	0.11
462	1/188	311	322	0.81
463	3/188	315	324	0.81
464	3/189	336	321	0.81
465	1/189	340	318	0.81
466	OUT/189	346	313	0.11
467	1/176	532	510	0.56
468	2/176	541	508	0.56
469	3/176	547	507	0.56
470	5/176	552	504	0.56
471	6/176	556	498	0.56
472	7/176	556	494	0.56
473	8/176	555	488	0.56
474	9/176	552	483	0.56
475	10/176	547	473	0.56
476	1/183	548	470	0.56
477	1/182	544	475	0.56
478	4/175	541	474	0.56
479	5/75	538	475	1.27
480	OUT/176	520	513	1.27
481	IN/184	517	498	0.16
482	OUT/184	518	505	0.16
483	2/175	536	476	0.56
484	3/1	42	611	0.27
485	i300a	299	449	0.56
486	i300b	301	453	0.56
487	IN/171	192	586	0.07
488	OUT/171	188	582	0.07

Appendix I

Updated Baseline Flood Maps



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Updated Baseline Flood Map Maximum Water Depth for 2 Year ARI 1 Hour Duration Event

Figure I1

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Water Depth (m)

- 0 - 0.3
- 0.3 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- > 3

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_23

AECOM

Imagery provided by Proserpine City Council
StreetPro © 2010 Pitney Bowes Software Pty Ltd
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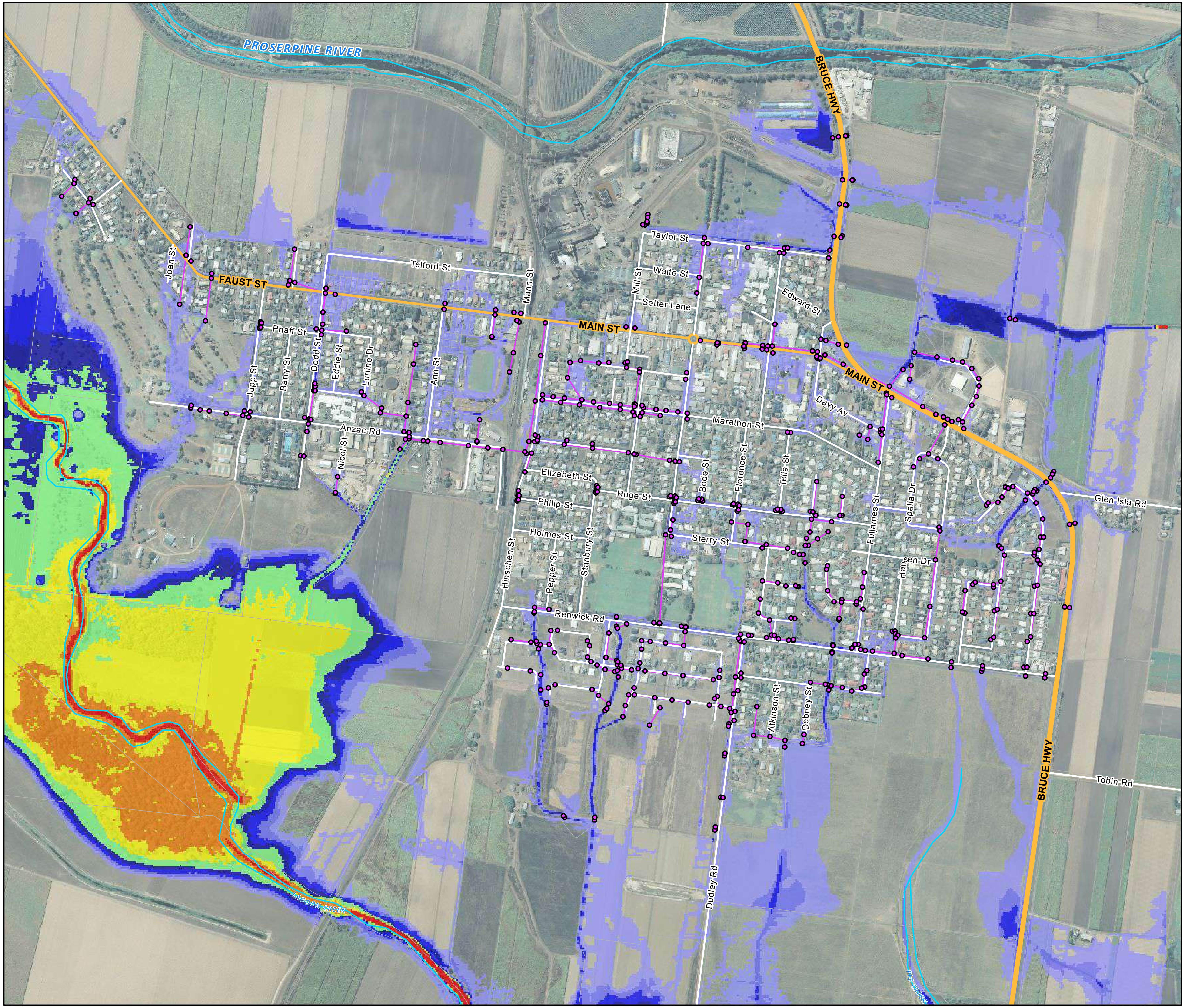


PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Updated Baseline Flood Map Maximum Water Depth for 10 Year ARI 1 Hour Duration Event

Figure I2

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Water Depth (m)

- 0 - 0.3
- 0.3 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- > 3

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

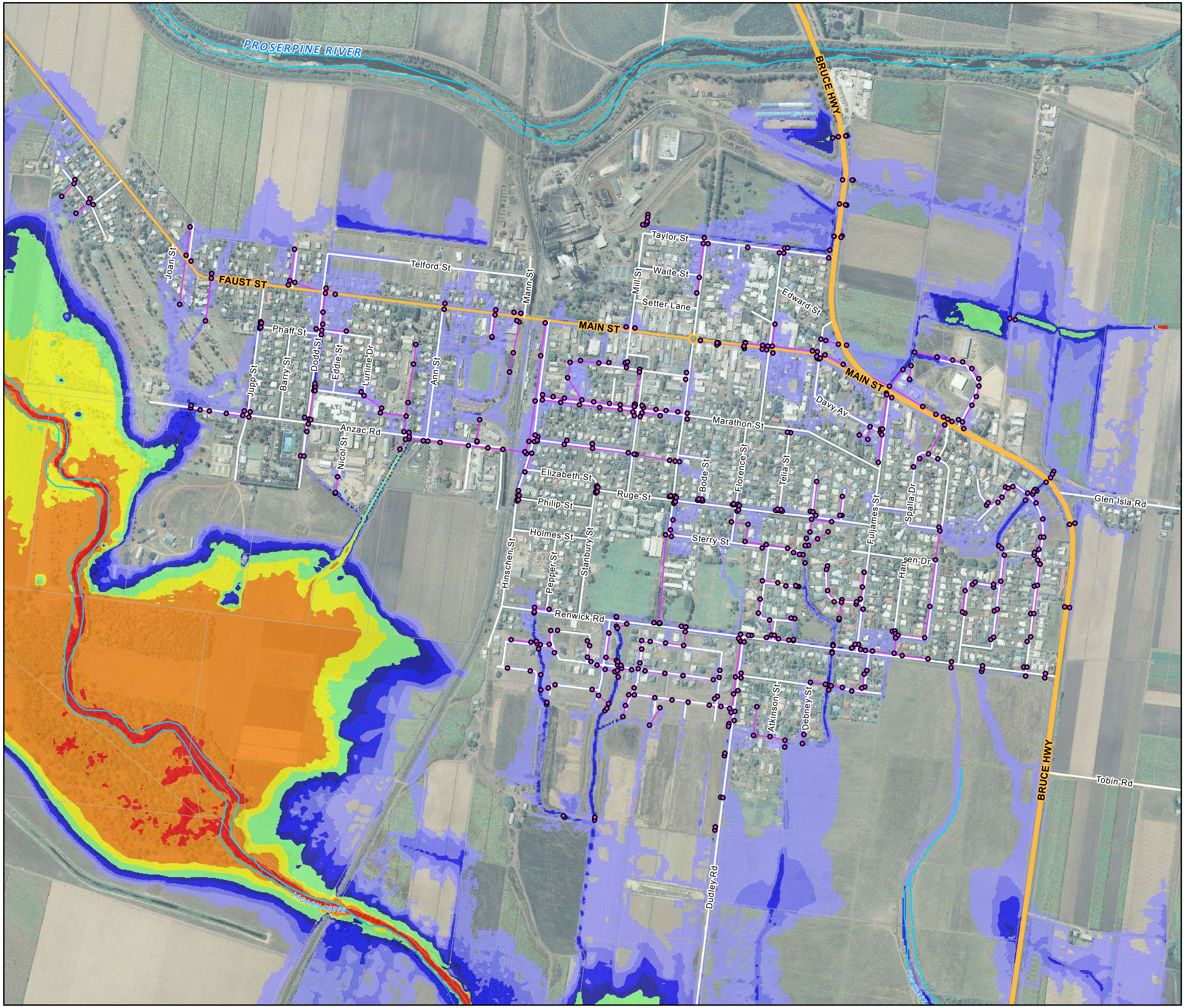
Metres

PROJECT ID	60188587
LAST MODIFIED	DXE 12-Oct-2011
FILE NAME	60188587G_WIS_24

PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Updated Baseline Flood Map Maximum Water Depth for 50Year ARI 1 Hour Duration Event

Figure I3



Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Water Depth (m)

- 0 - 0.3
- 0.3 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- > 3

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

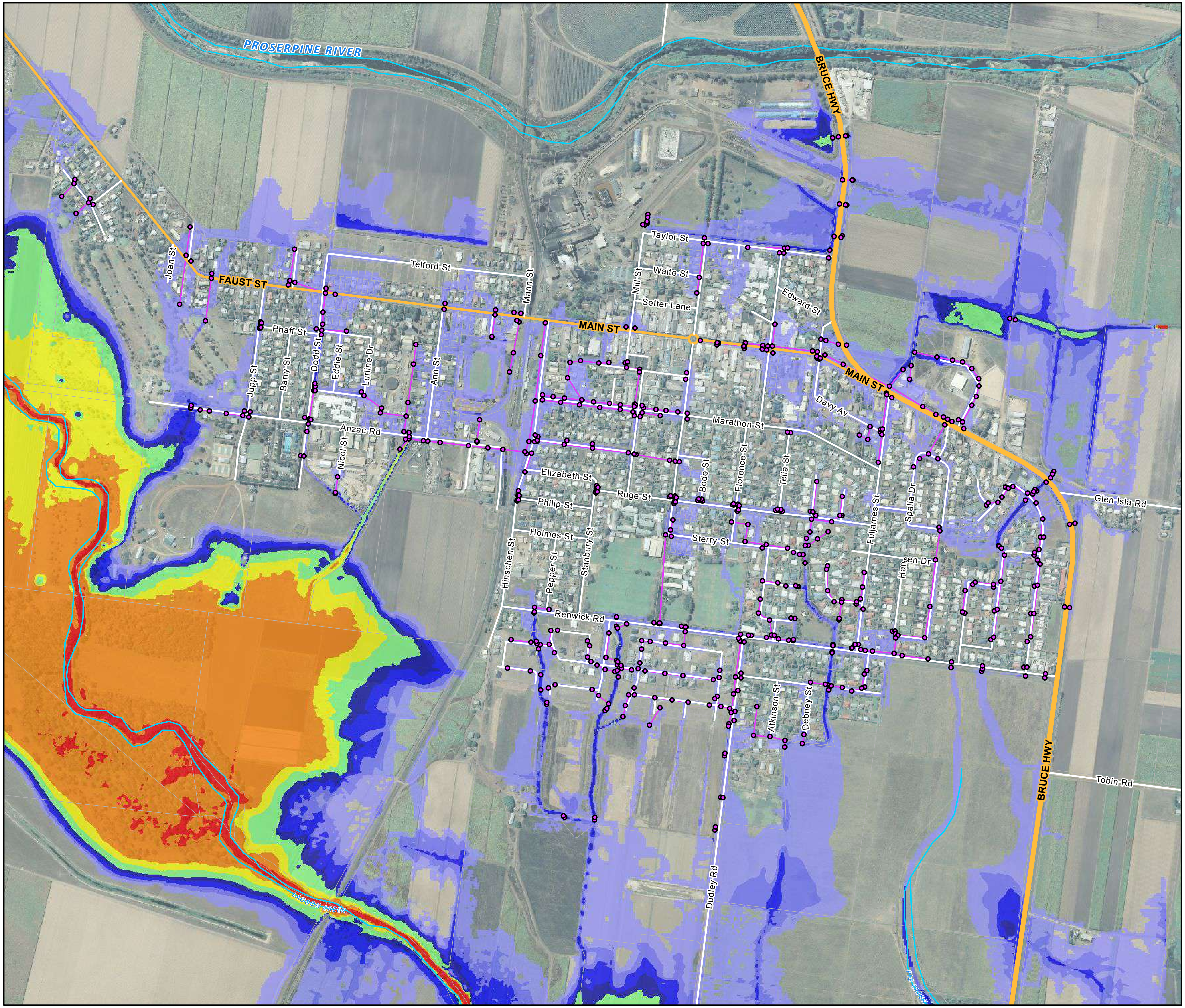
Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_25

AECOM



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Updated Baseline Flood Map Maximum Water Depth for 100 Year ARI 1 Hour Duration Event

Figure I4

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Water Depth (m)

- 0 - 0.3
- 0.3 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- > 3

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400
Metres

PROJECT ID 60188587
LAST MODIFIED DXE 12-Oct-2011
FILE NAME 60188587G_WIS_26

PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Updated Baseline Flood Map
Maximum Water Surface Levels
2 Year ARI
1 Hour Duration Event

Figure I5

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Water Levels (m AHD)

- Below 7m
- 7.01 - 7.50
- 7.51 - 8.00
- 8.01 - 8.50
- 8.51 - 9.00
- 9.01 - 9.50
- 9.51 - 10.00
- 10.01 - 10.50
- 10.51 - 11.00
- 11.01 - 11.50
- 11.51 - 12.00
- 12.01 - 12.50
- 12.51 - 13.00
- 13.01 - 13.50
- 13.51 - 14.00
- Above 14m

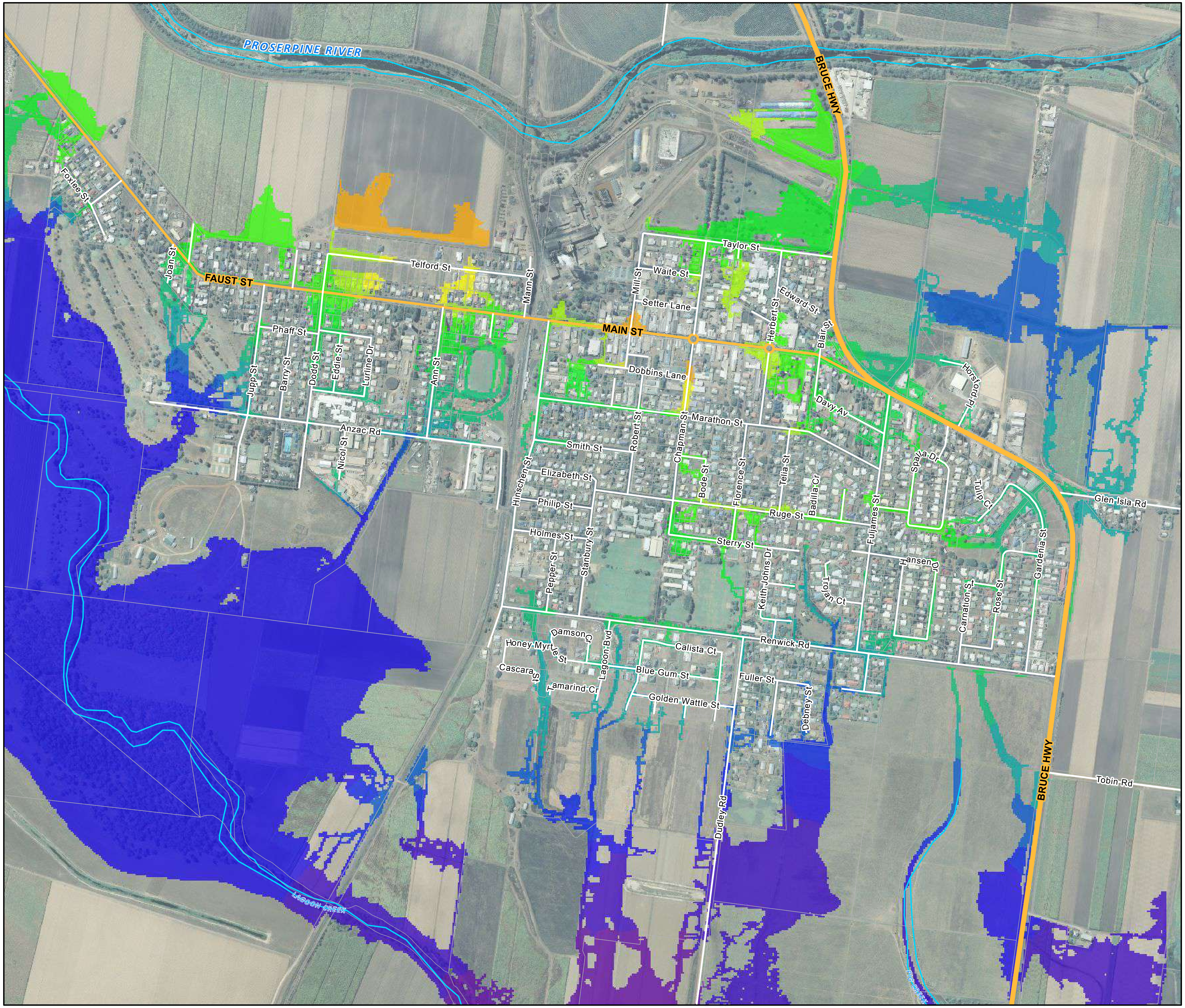
N

Scale: 1:10,000 (when printed at A3)

0 100 200 400
Metres

PROJECT ID 60188587
LAST MODIFIED DXE 12-Oct-2011
FILE NAME 60188587G_WIS_36

AECOM



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Updated Baseline Flood Map
Maximum Water Surface Levels
10 Year ARI
1 Hour Duration Event

Figure I6

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Water Levels (m AHD)

- Below 7m
- 7.01 - 7.50
- 7.51 - 8.00
- 8.01 - 8.50
- 8.51 - 9.00
- 9.01 - 9.50
- 9.51 - 10.00
- 10.01 - 10.50
- 10.51 - 11.00
- 11.01 - 11.50
- 11.51 - 12.00
- 12.01 - 12.50
- 12.51 - 13.00
- 13.01 - 13.50
- 13.51 - 14.00
- Above 14m

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

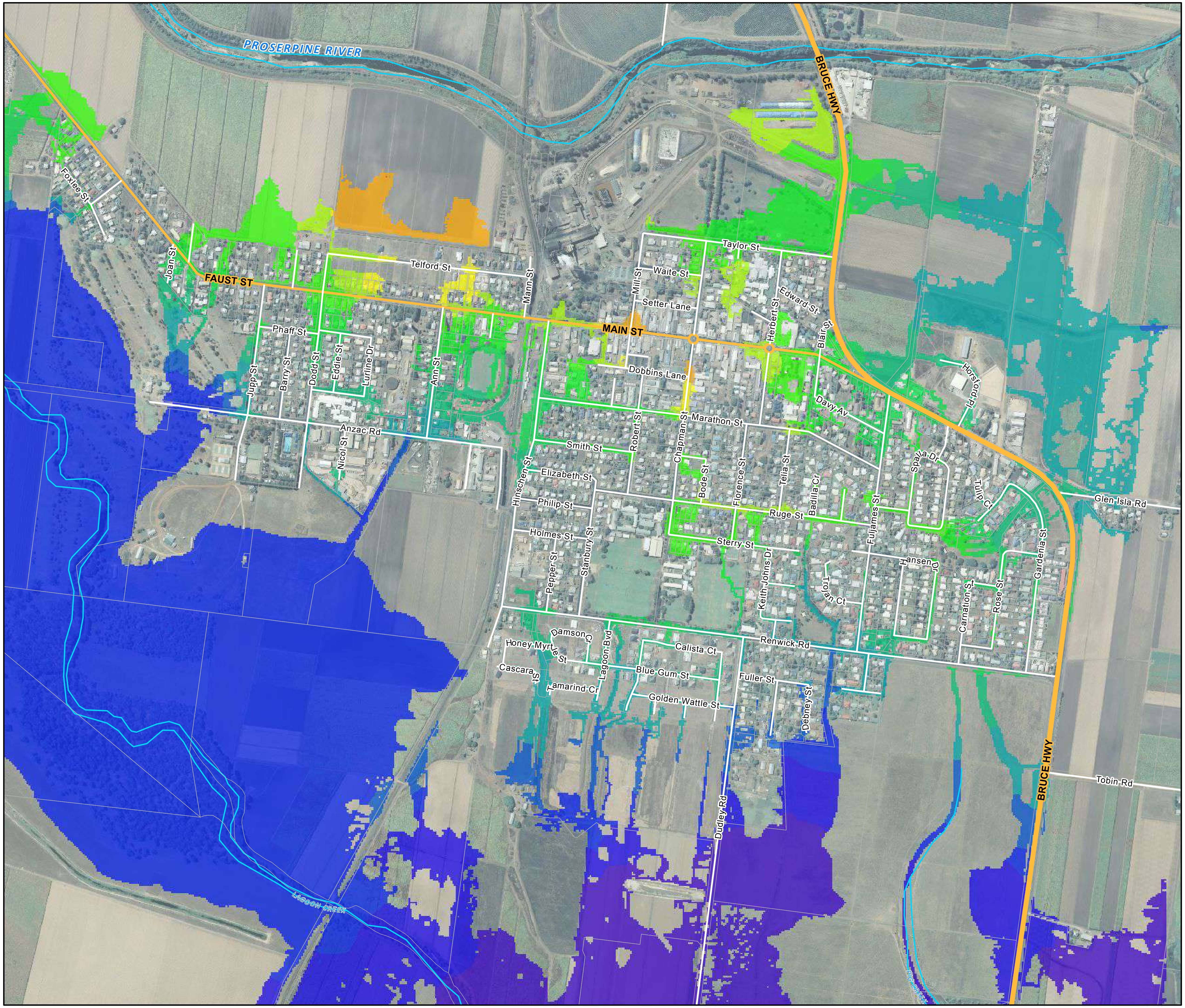
Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_37

AECOM



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Updated Baseline Flood Map Maximum Water Surface Levels 50 Year ARI 1 Hour Duration Event

Figure I7

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Water Levels (m AHD)

- Below 7m
- 7.01 - 7.50
- 7.51 - 8.00
- 8.01 - 8.50
- 8.51 - 9.00
- 9.01 - 9.50
- 9.51 - 10.00
- 10.01 - 10.50
- 10.51 - 11.00
- 11.01 - 11.50
- 11.51 - 12.00
- 12.01 - 12.50
- 12.51 - 13.00
- 13.01 - 13.50
- 13.51 - 14.00
- Above 14m

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

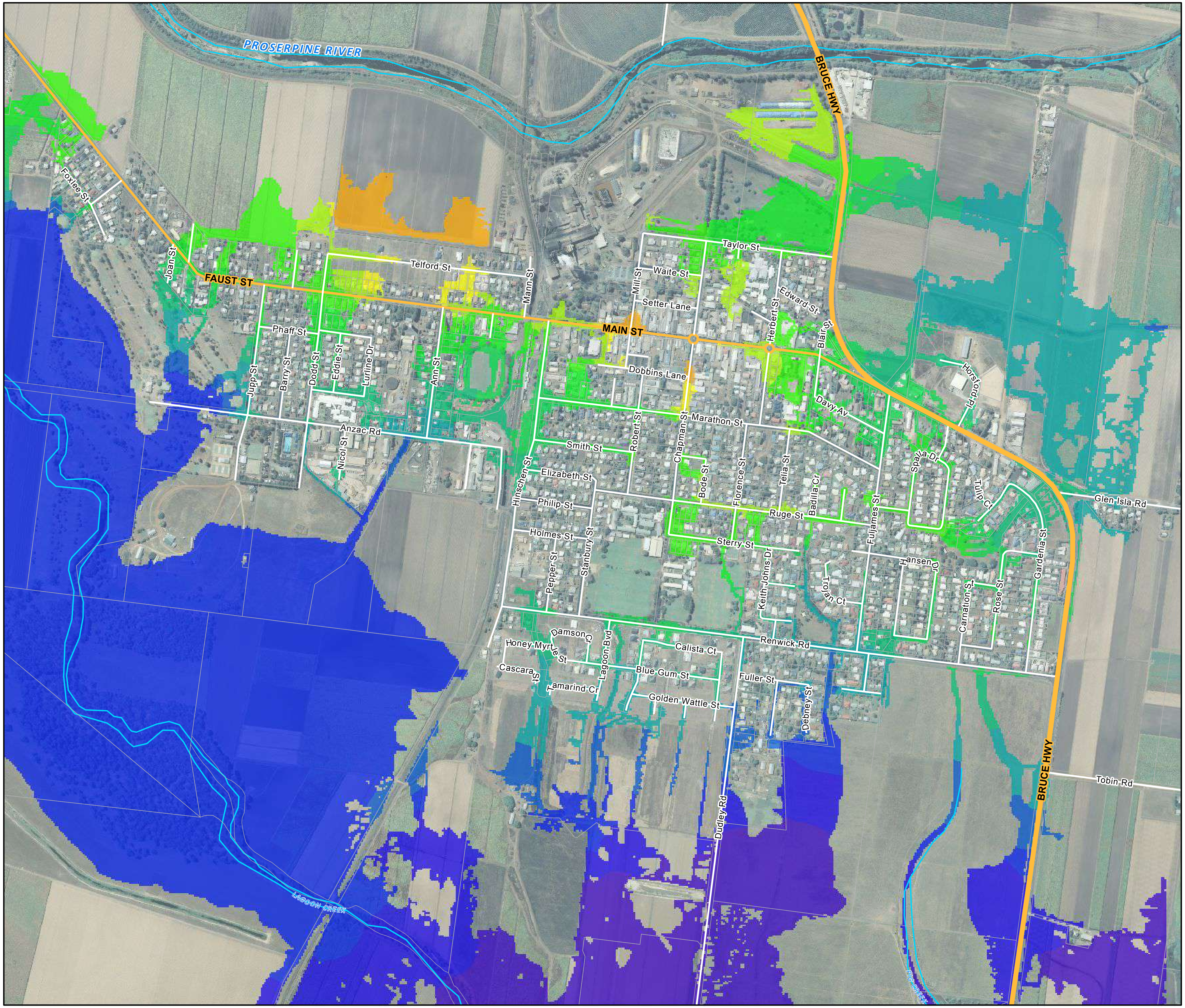
FILE NAME 60188587G_WIS_38

AECOM

PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Updated Baseline Flood Map
Maximum Water Surface Levels
100 Year ARI
1 Hour Duration Event

Figure I8



Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Water Levels (m AHD)

- Below 7m
- 7.01 - 7.50
- 7.51 - 8.00
- 8.01 - 8.50
- 8.51 - 9.00
- 9.01 - 9.50
- 9.51 - 10.00
- 10.01 - 10.50
- 10.51 - 11.00
- 11.01 - 11.50
- 11.51 - 12.00
- 12.01 - 12.50
- 12.51 - 13.00
- 13.01 - 13.50
- 13.51 - 14.00
- Above 14m

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_39

AECOM

PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Updated Baseline Flood Map
Maximum Velocities
2 Year ARI
1 Hour Duration Event

Figure I9

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Velocity (m/s)

- 0 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- 1 - 1.5
- 1 - 1.5
- Above 1.5

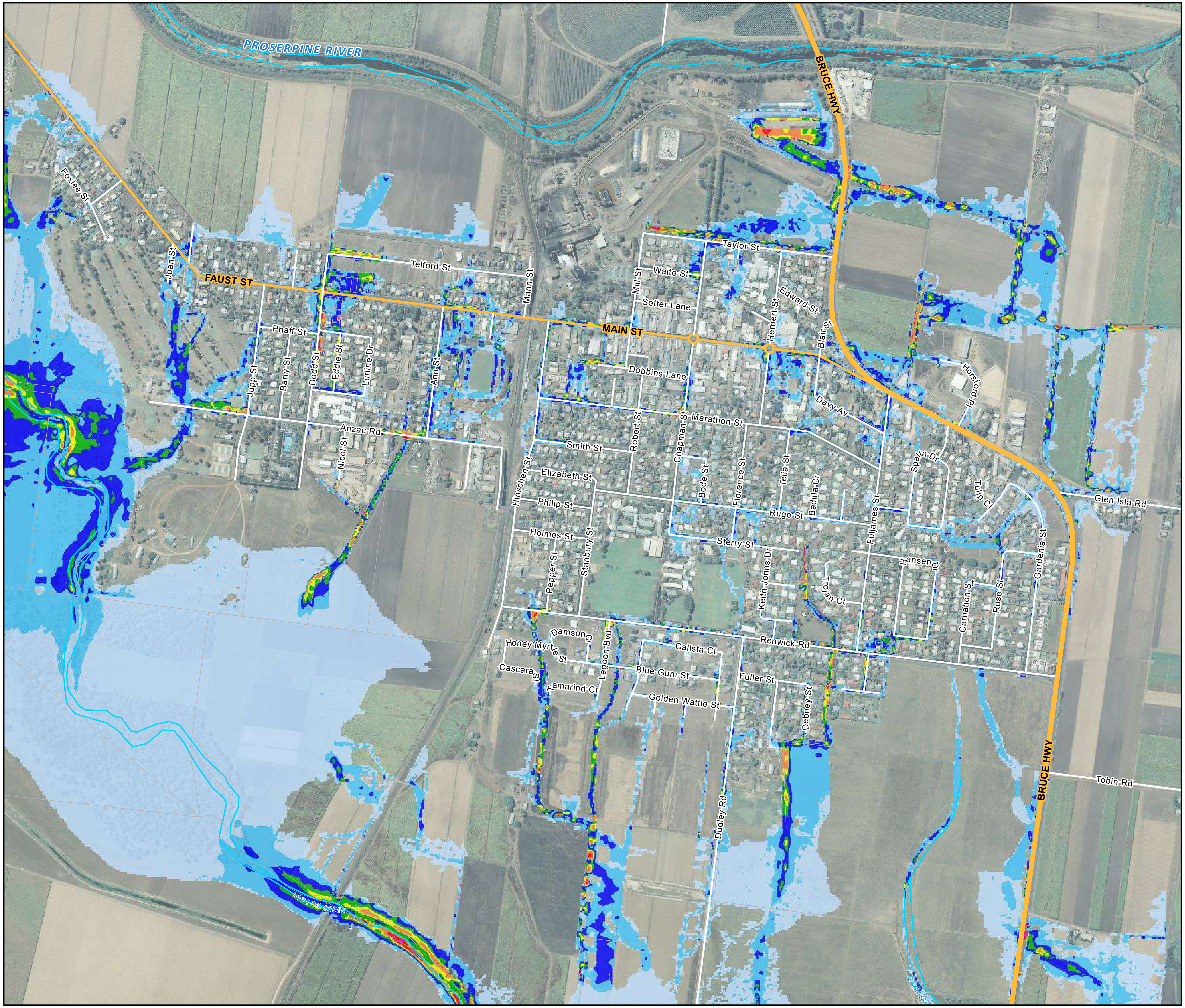
N

Scale: 1:10,000 (when printed at A3)

0 100 200 400
Metres

PROJECT ID 60188587
LAST MODIFIED DXE 12-Oct-2011
FILE NAME 60188587G_WIS_40

AECOM



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Updated Baseline Flood Map
Maximum Velocities
10 Year ARI
1 Hour Duration Event

Figure I10

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Velocity (m/s)

- 0 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 1
- 0.75 - 1
- 1 - 1.5
- Above 1.5

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

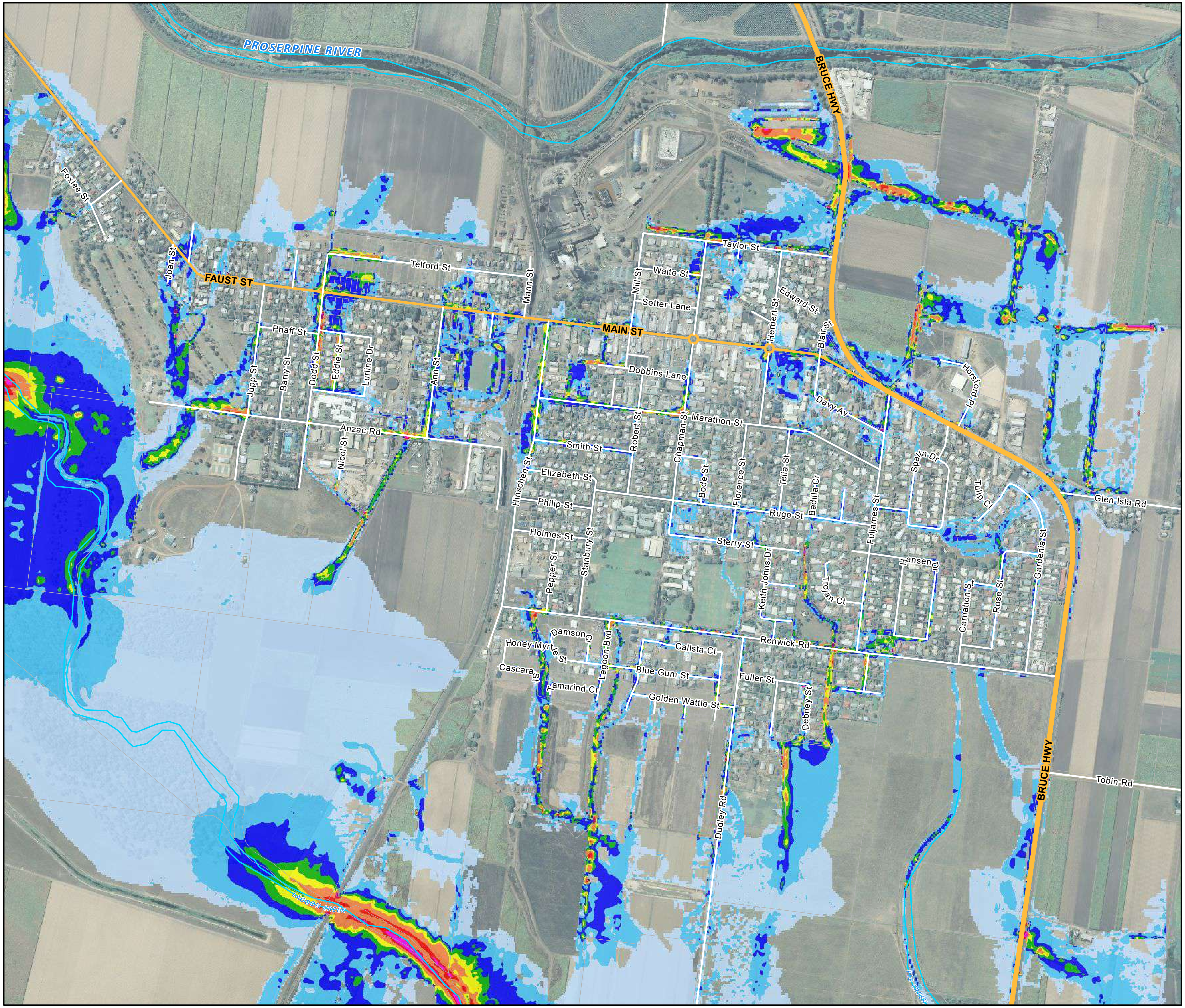
Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_41

AECOM



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Updated Baseline Flood Map Maximum Velocities 50 Year ARI 1 Hour Duration Event

Figure I11

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Velocity (m/s)

- 0 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 1
- 0.75 - 1
- 1 - 1.5
- Above 1.5

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

Metres

PROJECT ID 60188587
LAST MODIFIED DXE 12-Oct-2011
FILE NAME 60188587G_WIS_42

AECOM

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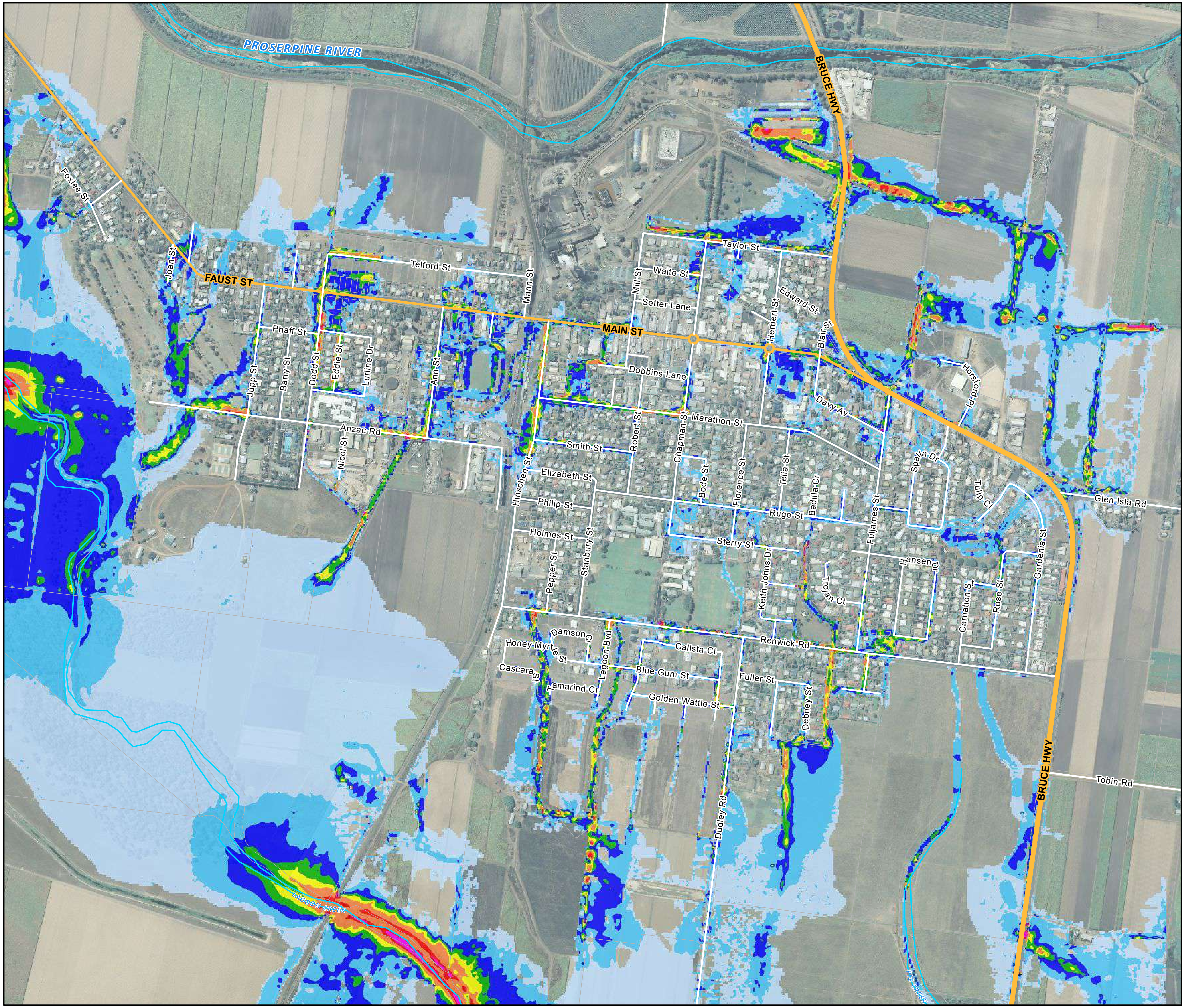
PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Updated Baseline Flood Map
Maximum Velocities
100 Year ARI
1 Hour Duration Event

Figure I12



Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Velocity (m/s)

- 0 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 1
- 0.75 - 1
- 1 - 1.5
- Above 1.5

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400
Metres

PROJECT ID 60188587
LAST MODIFIED DXE 12-Oct-2011
FILE NAME 60188587G_WIS_43

AECOM

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Appendix J

Previous Baseline Flood Maps

PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Previous Baseline Flood Map Maximum Water Depth for 2 Year ARI 1 Hour Duration Event

Figure J1

Legend

- Railway Line
- Watercourse
- Property Boundary

Water Depth (m)

- 0 - 0.3
- 0.3 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- > 3

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_19

AECOM

PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Previous Baseline Flood Map Maximum Water Depth for 10 Year ARI 1 Hour Duration Event

Figure J2

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_20

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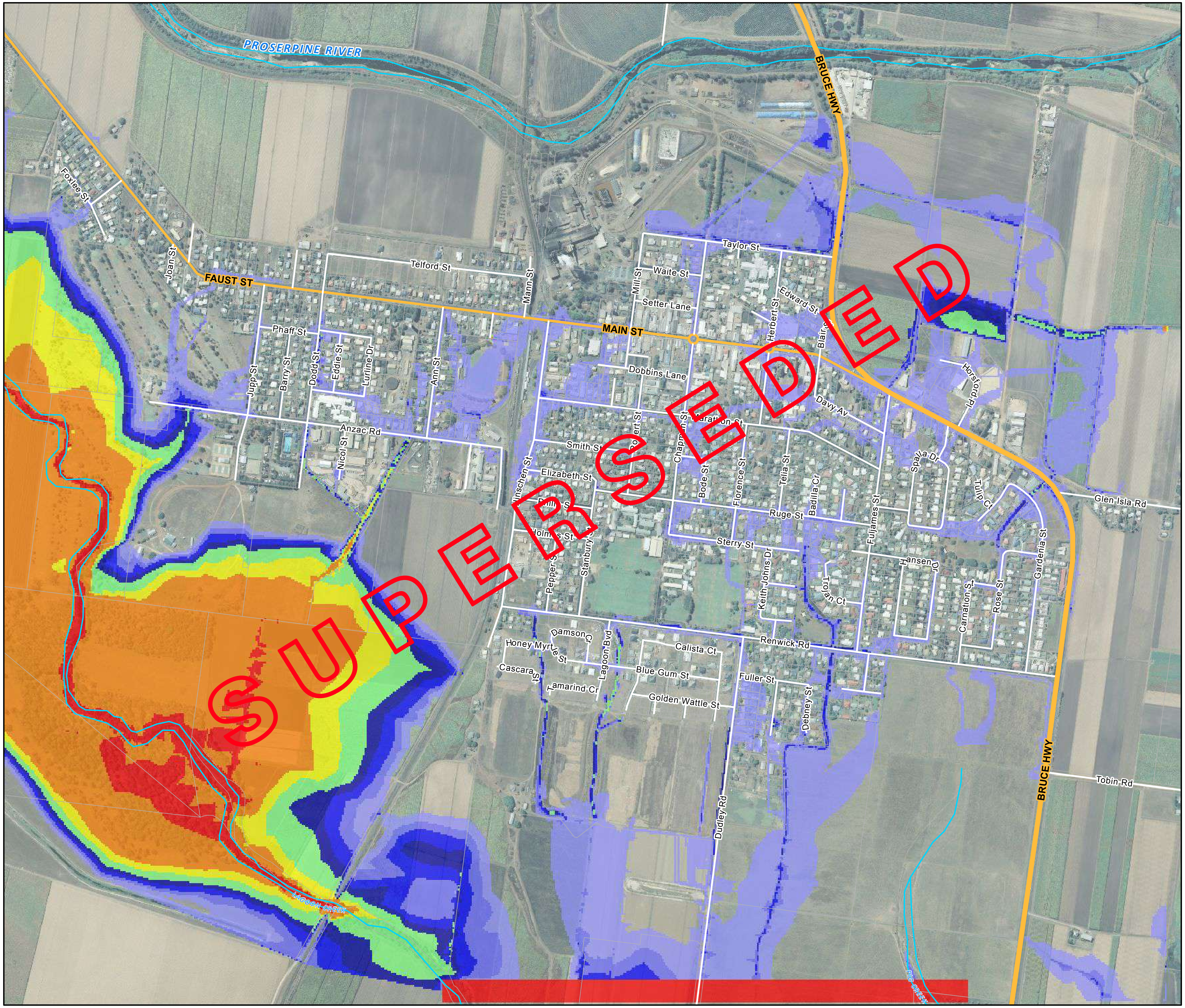
PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Previous Baseline Flood Map Maximum Water Depth for 50 Year ARI 1 Hour Duration Event

Figure J3



Legend

- Railway Line
- Watercourse
- Property Boundary

Water Depth (m)

- 0 - 0.3
- 0.3 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- > 3

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

Metres

PROJECT ID	60188587
LAST MODIFIED	DXE 12-Oct-2011
FILE NAME	60188587G_WIS_21

AECOM

PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Previous Baseline Flood Map Maximum Water Depth for 100 Year ARI 1 Hour Duration Event

Figure J4

Legend

- Railway Line
- Watercourse
- Property Boundary

Water Depth (m)

- 0 - 0.3
- 0.3 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- \> 3

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

Metres

PROJECT ID 60188587

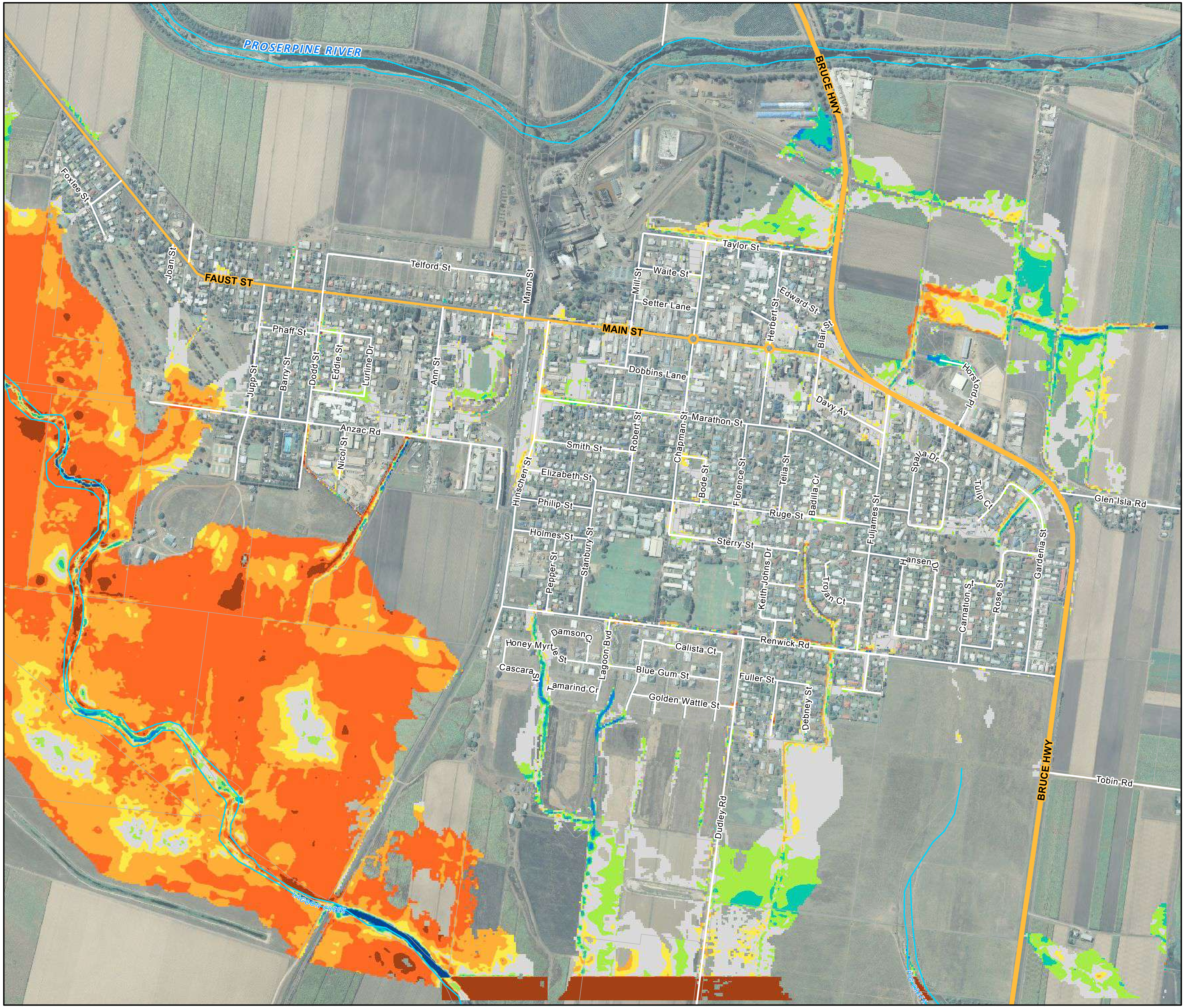
LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_22

AECOM

Appendix K

Maximum Water Level Difference Maps



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Water Level Difference between Updated and Previous Results 100 Year ARI 1 Hour Duration Event

Figure K4

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Difference (m)

- < -1
- -1 - -0.5
- -0.5 - -0.25
- -0.25 - -0.1
- -0.1 - 0.1
- 0.1 - 0.25
- 0.25 - 0.5
- 0.5 - 1
- > 1

Scale: 1:10,000 (when printed at A3)

0 100 200 400

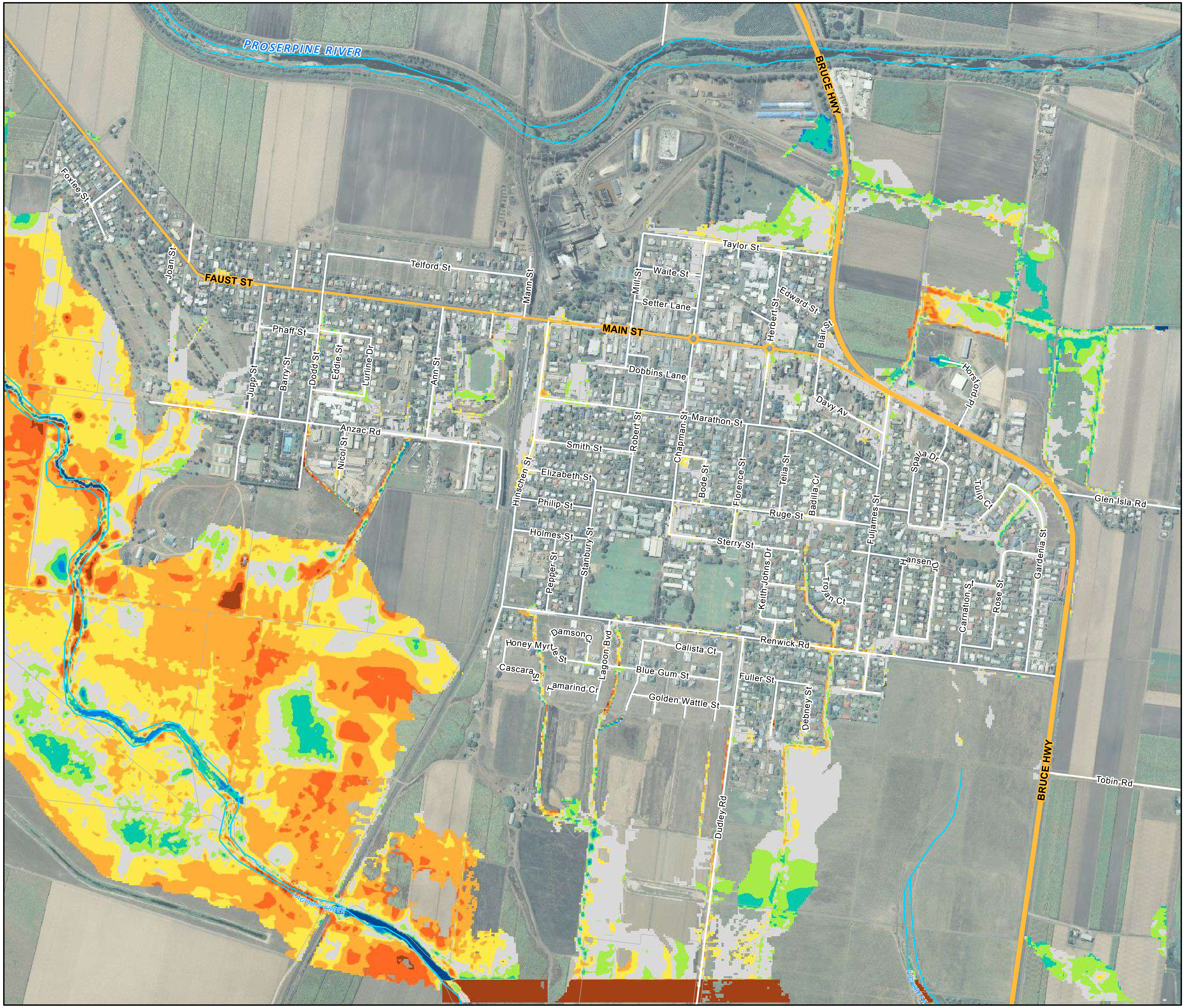
Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_27

AECOM



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Water Level Difference between Updated and Previous Results
50 Year ARI
1 Hour Duration Event

Figure K3

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Difference (m)

- < -1
- -1 - -0.5
- -0.5 - -0.25
- -0.25 - -0.1
- -0.1 - 0.1
- 0.1 - 0.25
- 0.25 - 0.5
- 0.5 - 1
- > 1

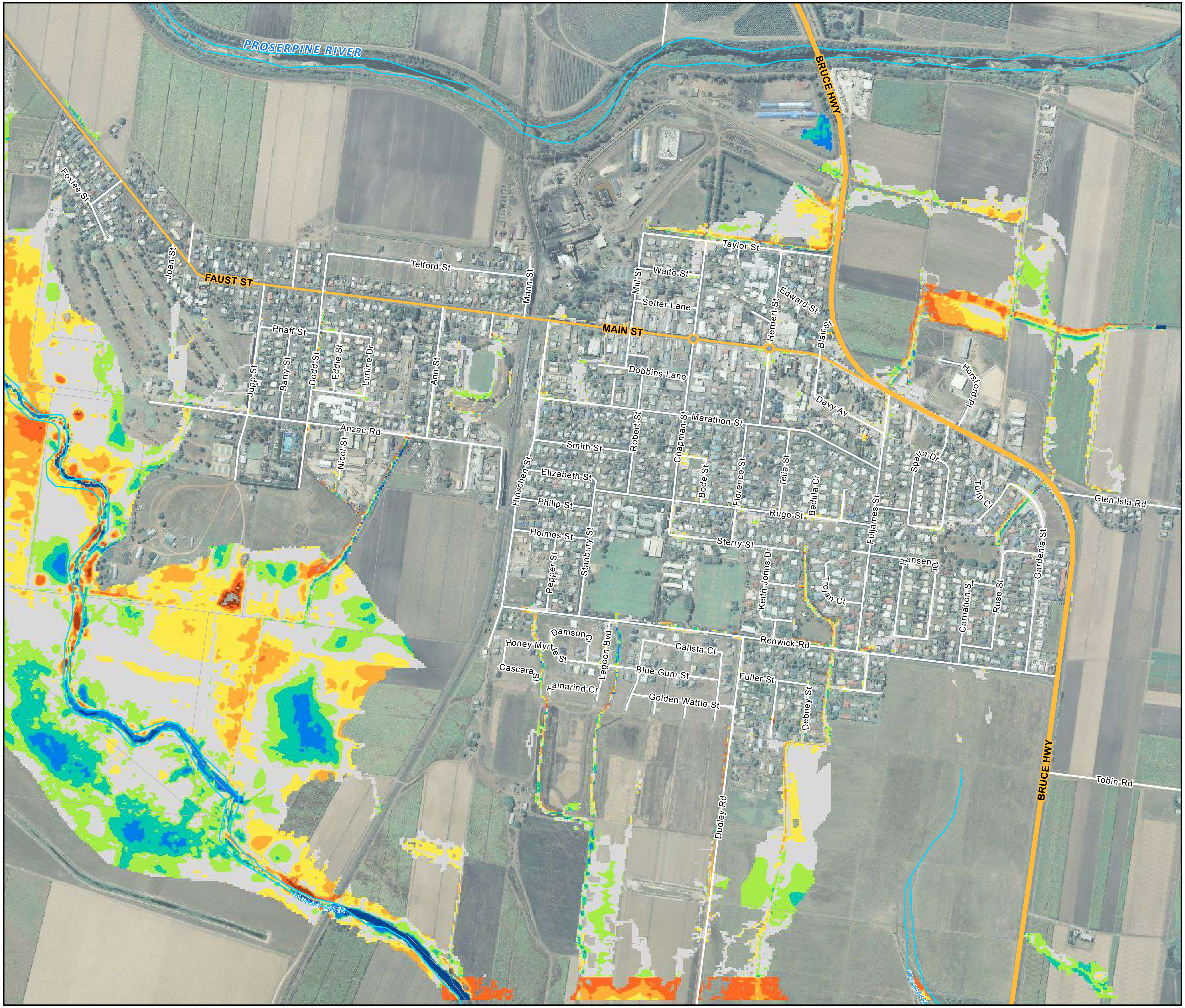
N

Scale: 1:10,000 (when printed at A3)

0 100 200 400
Metres

PROJECT ID 60188587
LAST MODIFIED DXE 12-Oct-2011
FILE NAME 60188587G_WIS_28

AECOM



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Water Level Difference between Updated and Previous Results 10 Year ARI 1 Hour Duration Event

Figure K2

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Difference (m)

- < -1
- -1 - -0.5
- -0.5 - -0.25
- -0.25 - -0.1
- -0.1 - 0.1
- 0.1 - 0.25
- 0.25 - 0.5
- 0.5 - 1
- > 1

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

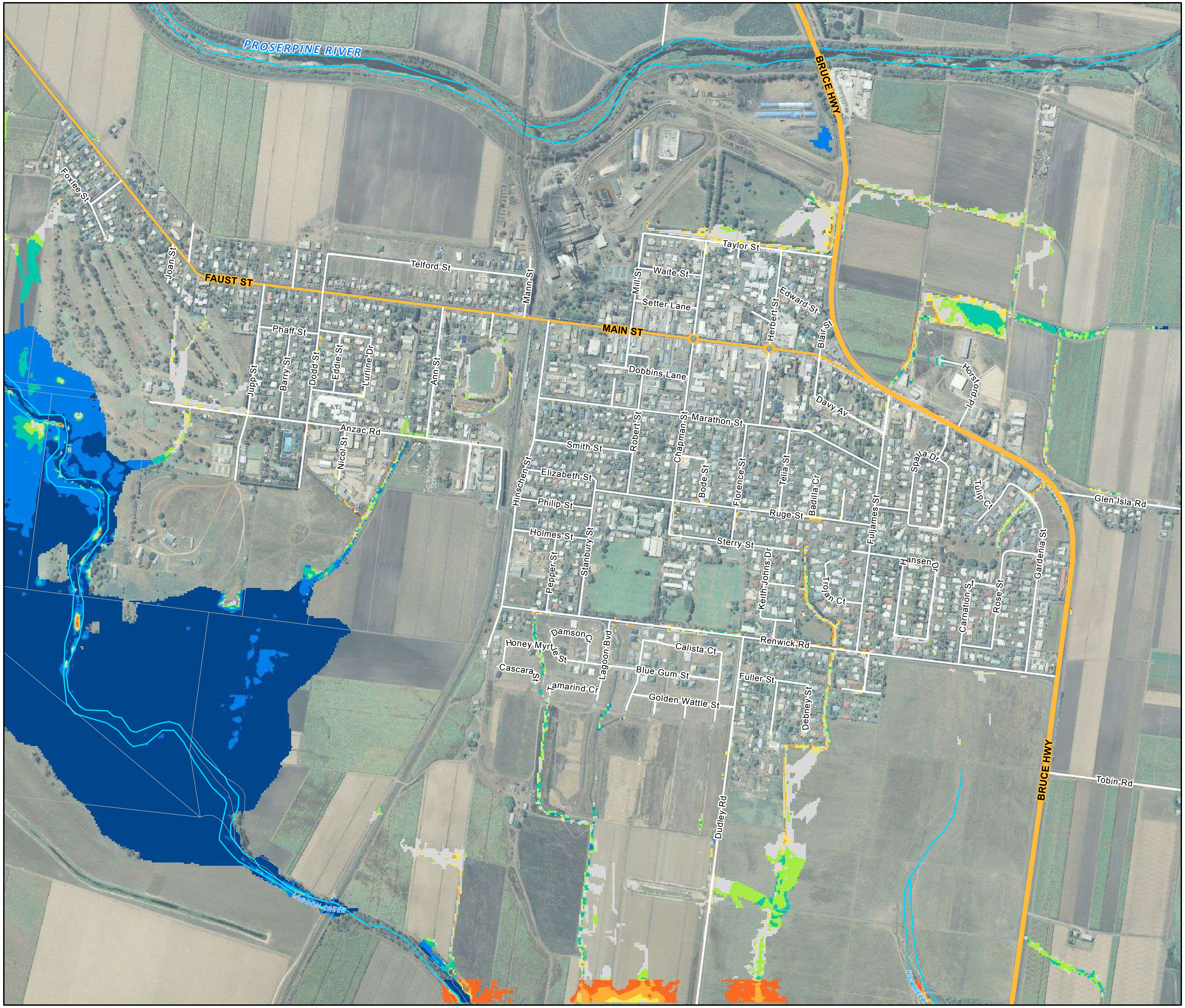
Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_29

AECOM



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Water Level Difference between Updated and Previous Results 2 Year ARI 1 Hour Duration Event

Figure K1

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary

Difference (m)

- < -1
- -1 - -0.5
- -0.5 - -0.25
- -0.25 - -0.1
- -0.1 - 0.1
- 0.1 - 0.25
- 0.25 - 0.5
- 0.5 - 1
- > 1

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_30

AECOM

Appendix L

Flood Extent Differences

PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Flood Extent Difference between Updated and Previous Results
2 Year ARI
1 Hour Duration Event

Figure L1

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_31

AECOM

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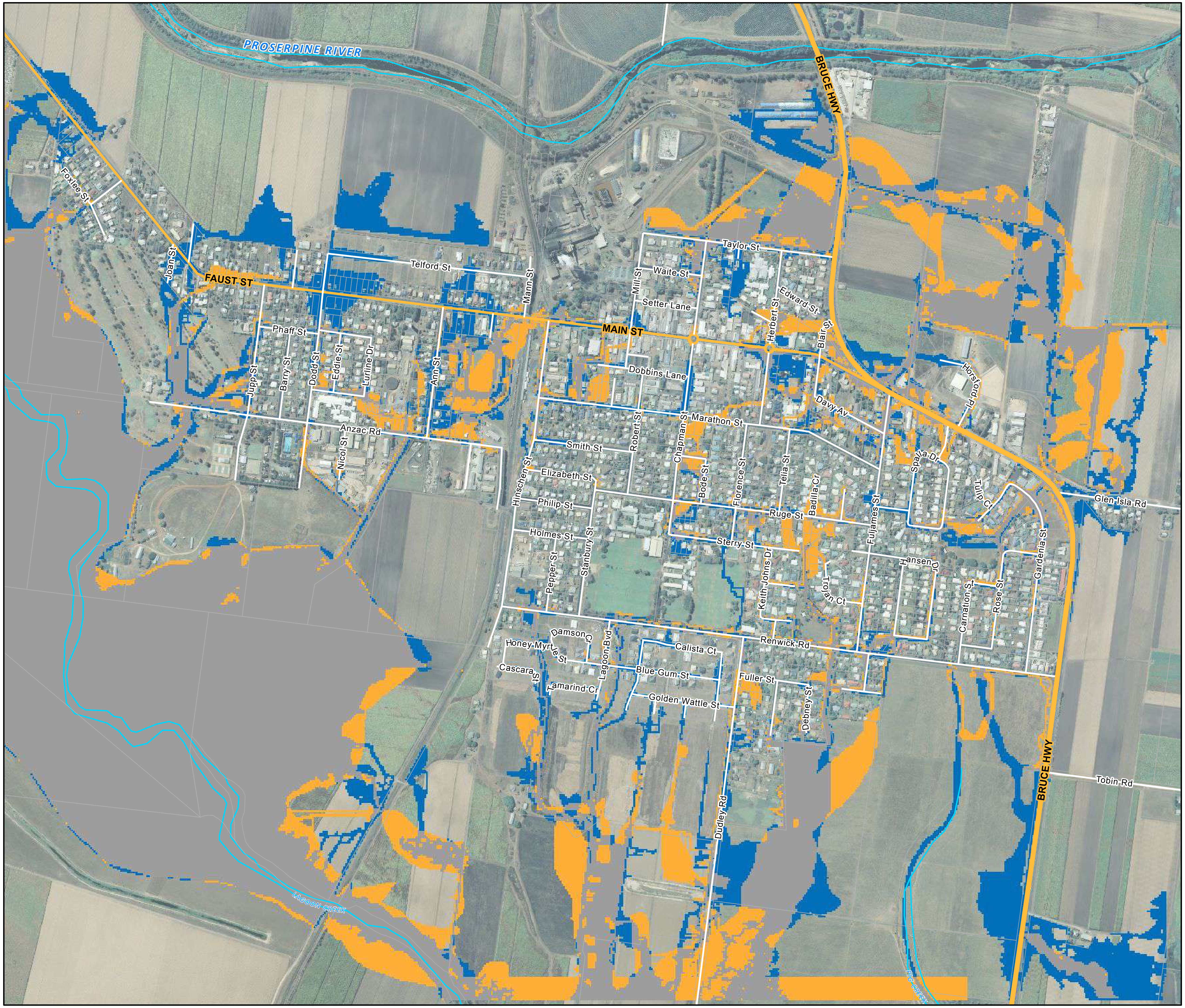


PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Flood Extent Difference between Updated and Previous Results
10 Year ARI
1 Hour Duration Event

Figure L2

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary
- Previous Model
- Updated Model
- Both Models

N

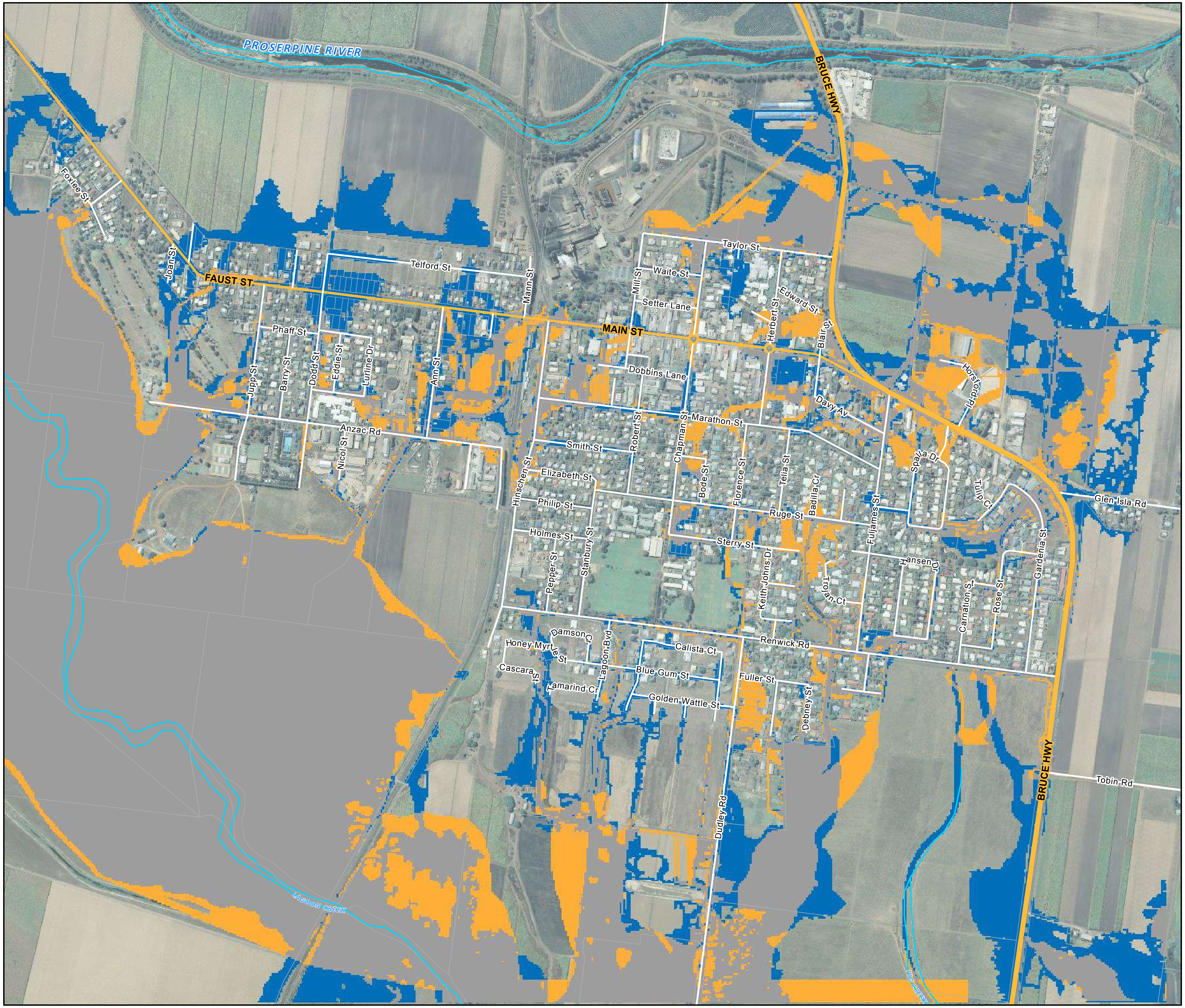
Scale: 1:10,000 (when printed at A3)

0 100 200 400

Metres

PROJECT ID 60188587
LAST MODIFIED DXE 12-Oct-2011
FILE NAME 60188587G_WIS_32

AECOM



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Flood Extent Difference between Updated and Previous Results 50 Year ARI 1 Hour Duration Event

Figure L3

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary
- Previous Model
- Updated Model
- Both Models

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

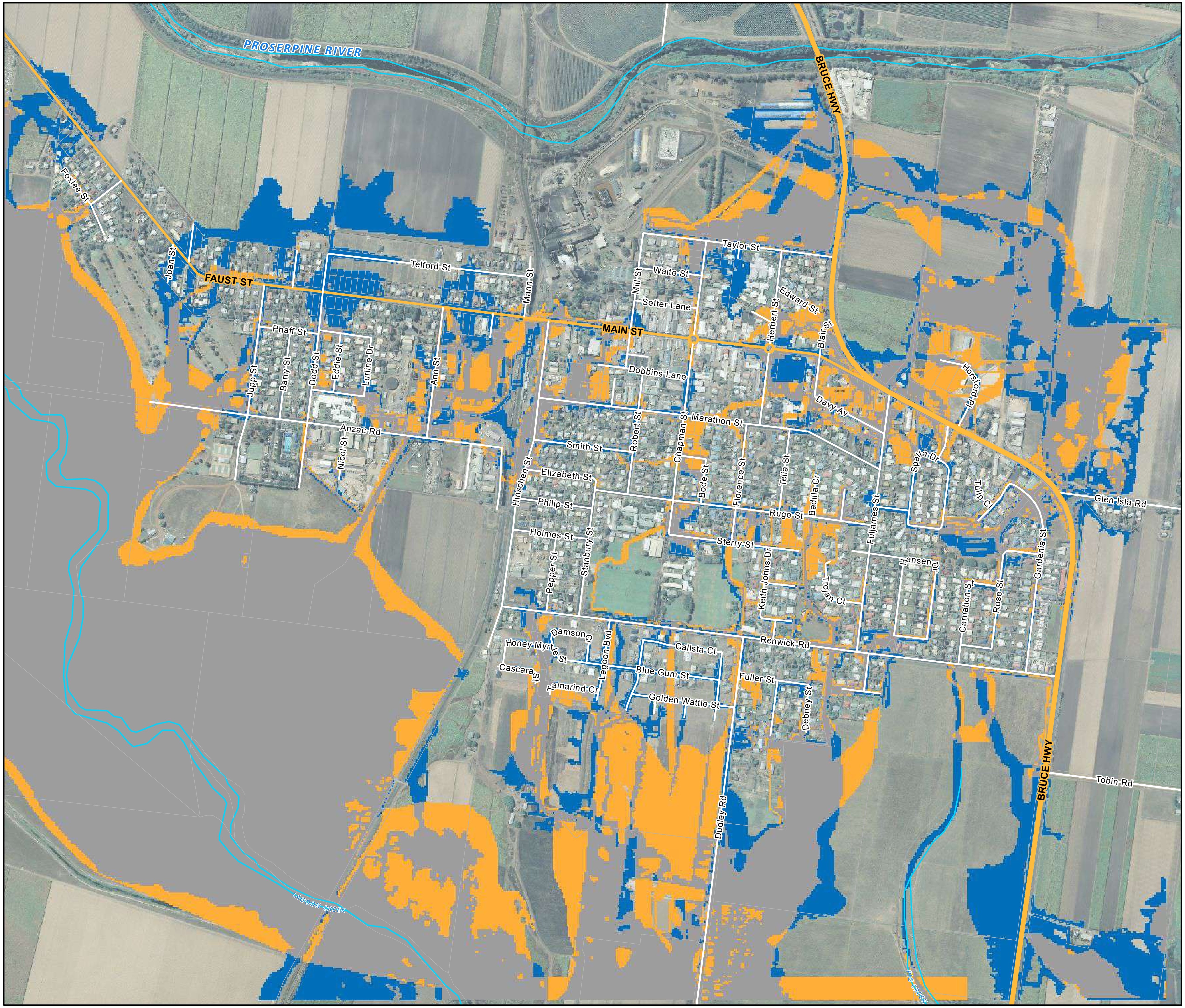
Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_33

AECOM



PROSERPINE FLOOD AND DRAINAGE MODEL 2011 UPDATE

Flood Extent Difference between Updated and Previous Results 100 Year ARI 1 Hour Duration Event

Figure L4

Legend

- MOUSE Model Nodes
- Railway Line
- MOUSE Model Links
- Watercourse
- Property Boundary
- Previous Model
- Updated Model
- Both Models

N

Scale: 1:10,000 (when printed at A3)

0 100 200 400

Metres

PROJECT ID 60188587

LAST MODIFIED DXE 12-Oct-2011

FILE NAME 60188587G_WIS_34

AECOM