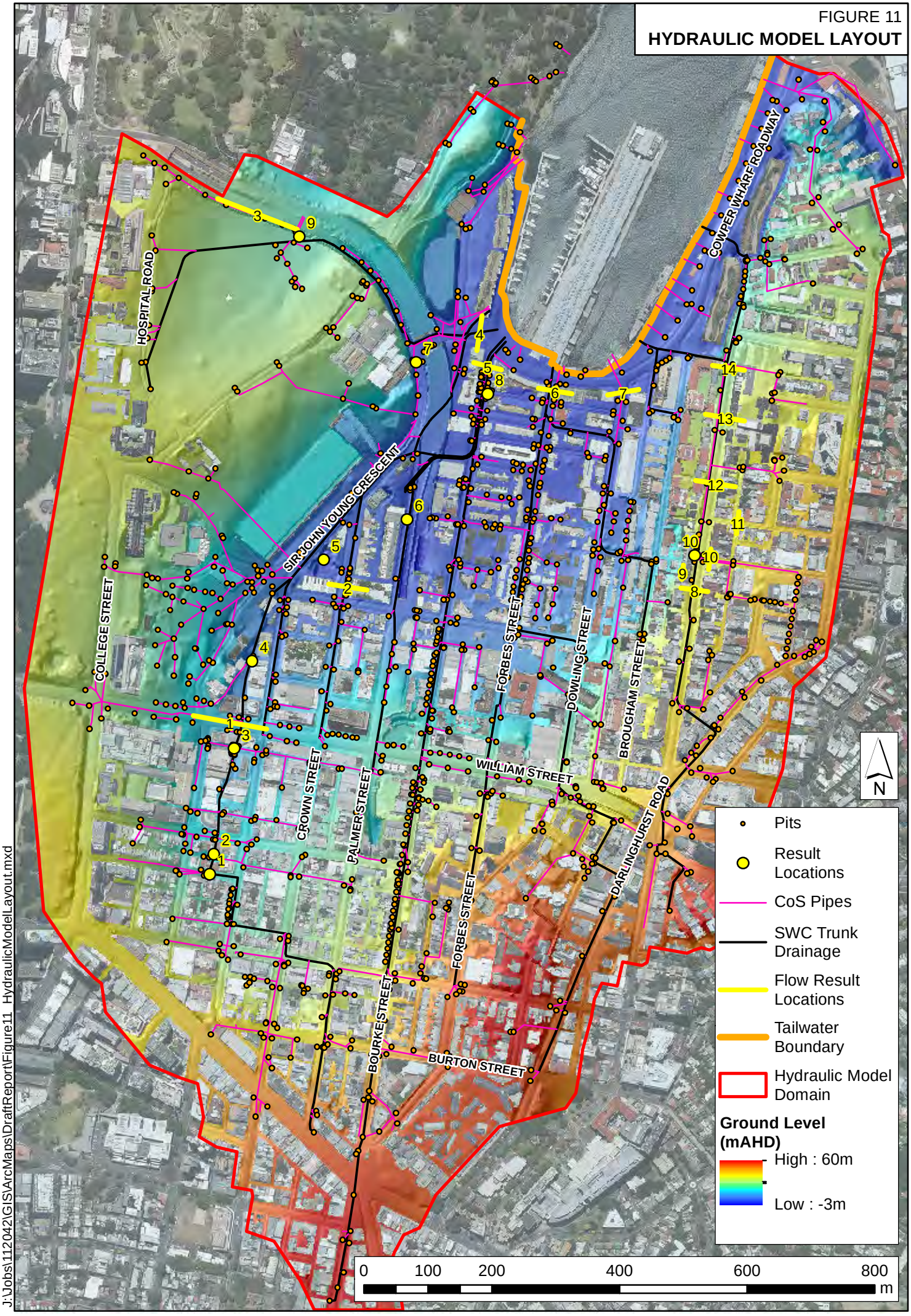
FIGURE 11

HYDRAULIC MODEL LAYOUT



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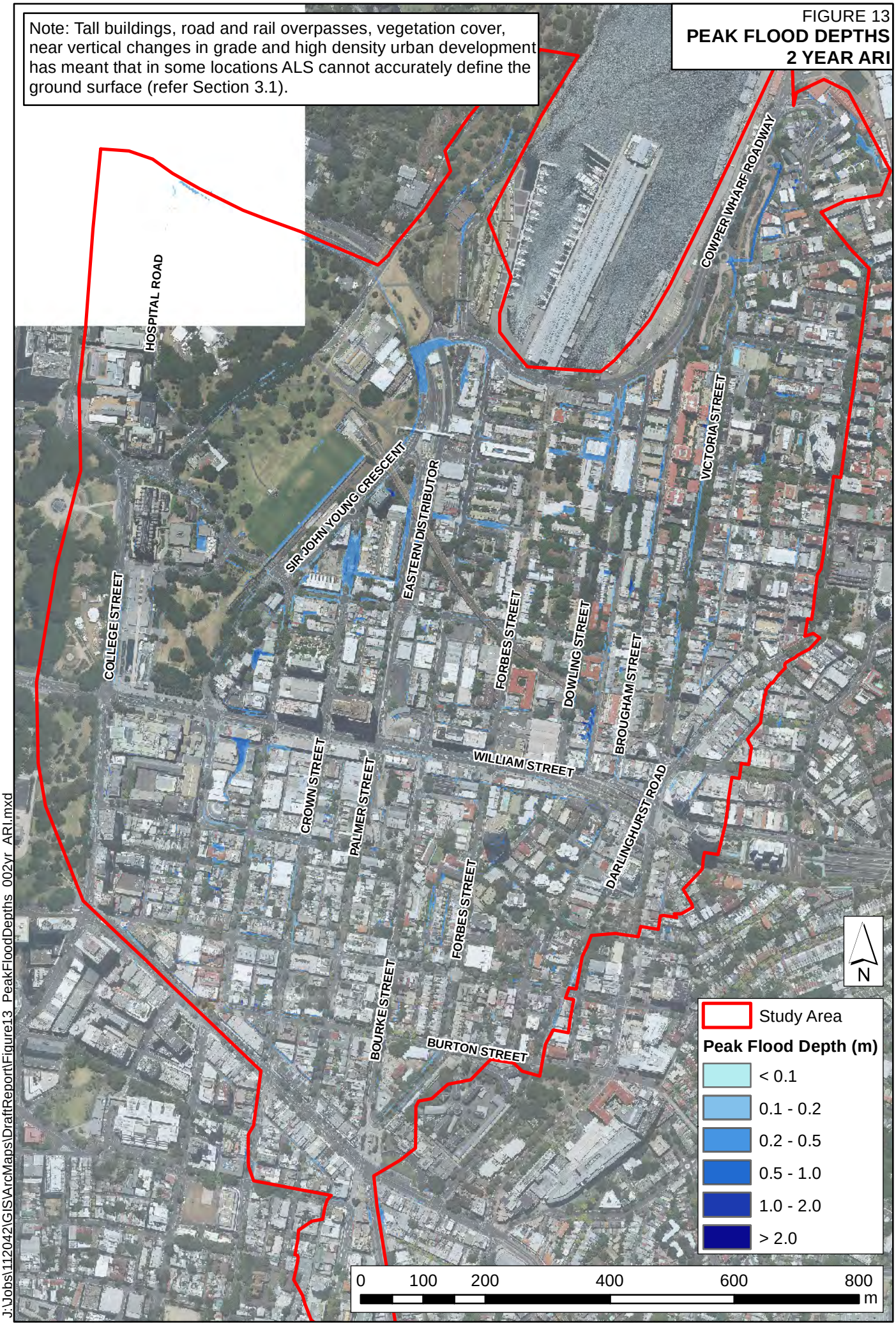


FIGURE 13
PEAK FLOOD DEPTHS
2 YEAR ARI
Note: Tall buildings, road and rail overpasses, vegetation cover, near vertical changes in grade and high density urban development has meant that in some locations ALS cannot accurately define the ground surface (refer Section 3.1).
HOSPITAL ROAD
COWPER WHARF ROADWAY
VICTORIA STREET
SIR JOHN YOUNG CRESCENT
EASTERN DISTRIBUTOR
COLLEGE STREET
FORBES STREET
DOWLING STREET
BROUGHAM STREET
WILLIAM STREET
CROWN STREET
PALMER STREET
DARLINGHURST ROAD
FORBES STREET
BOURKE STREET
BURTON STREET
N
Study Area
Peak Flood Depth (m)
< 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1.0
1.0 - 2.0
> 2.0
0
100
200
400
600
800
m
J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure13_PeakFloodDepths_002yr_ARI.mxd

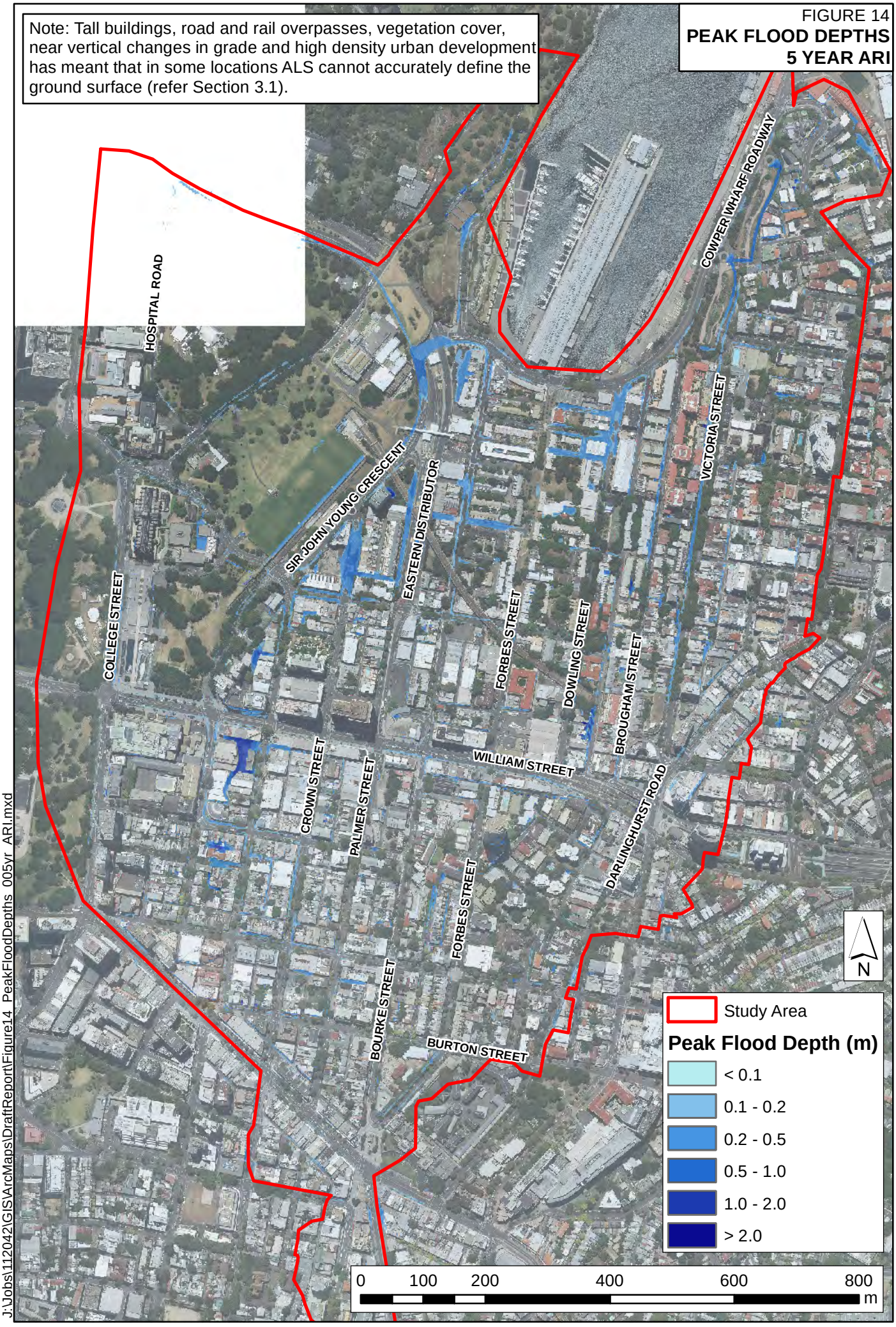


FIGURE 14
PEAK FLOOD DEPTHS
5 YEAR ARI
Note: Tall buildings, road and rail overpasses, vegetation cover, near vertical changes in grade and high density urban development has meant that in some locations ALS cannot accurately define the ground surface (refer Section 3.1).
HOSPITAL ROAD
COWPER WHARF ROADWAY
VICTORIA STREET
SIR JOHN YOUNG CRESCENT
EASTERN DISTRIBUTOR
COLLEGE STREET
FORBES STREET
DOWLING STREET
BROUGHAM STREET
WILLIAM STREET
CROWN STREET
PALMER STREET
DARLINGHURST ROAD
FORBES STREET
BOURKE STREET
BURTON STREET
N
Study Area
Peak Flood Depth (m)
< 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1.0
1.0 - 2.0
> 2.0
0
100
200
400
600
800
m
J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure14_PeakFloodDepths_005yr_ARI.mxd

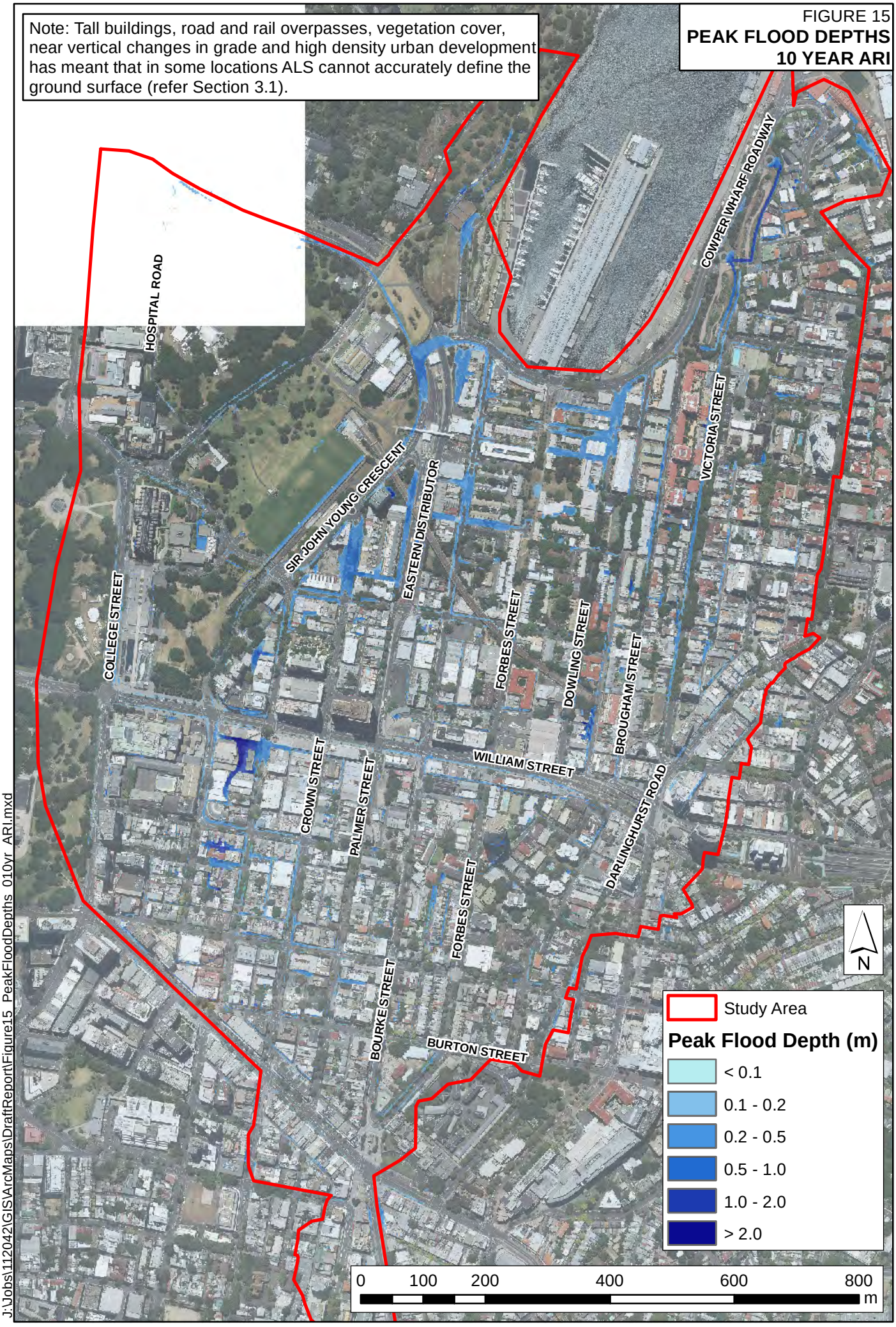
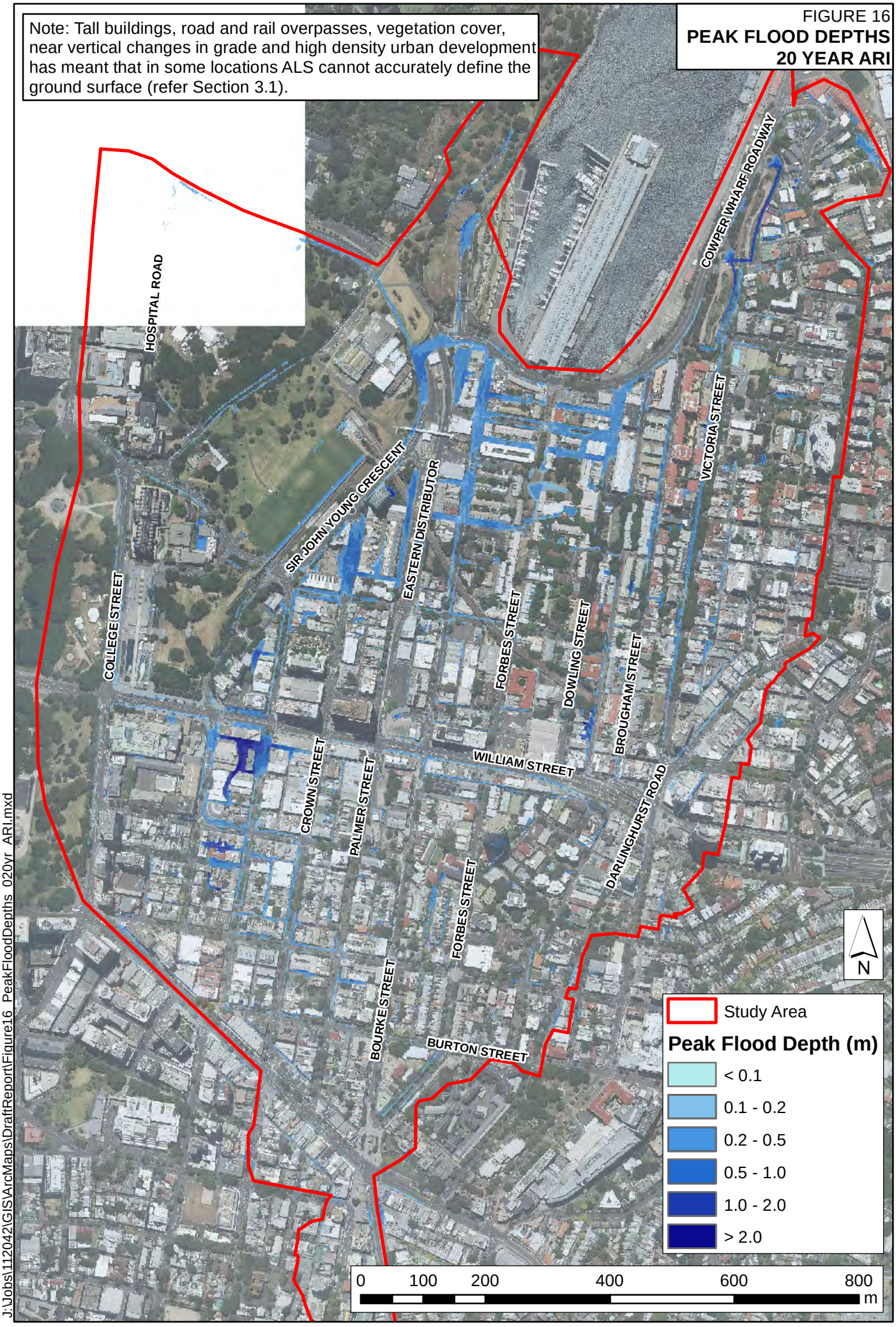
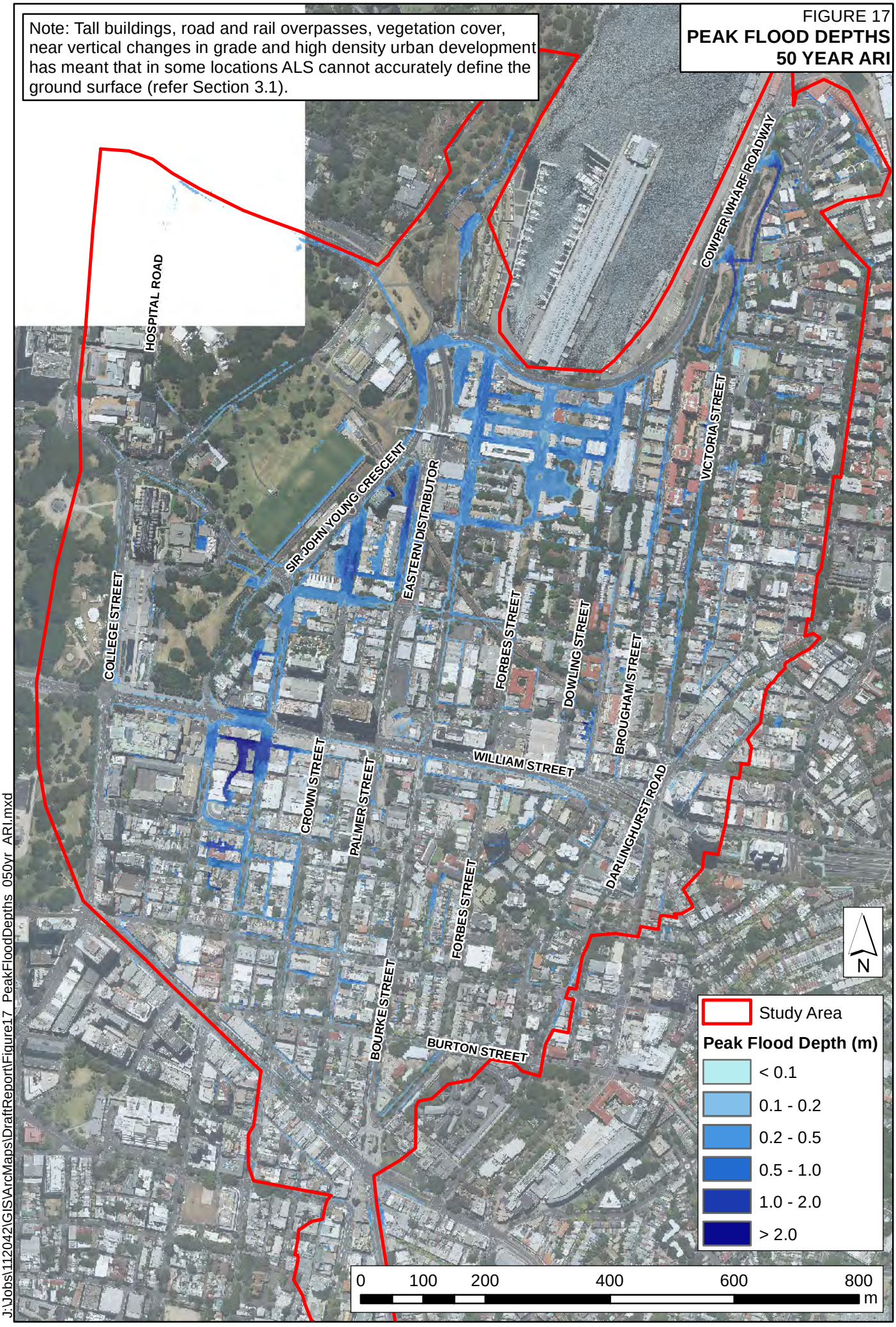


FIGURE 15
PEAK FLOOD DEPTHS
10 YEAR ARI
Note: Tall buildings, road and rail overpasses, vegetation cover, near vertical changes in grade and high density urban development has meant that in some locations ALS cannot accurately define the ground surface (refer Section 3.1).
HOSPITAL ROAD
COWPER WHARF ROADWAY
VICTORIA STREET
SIR JOHN YOUNG CRESCENT
EASTERN DISTRIBUTOR
COLLEGE STREET
FORBES STREET
DOWLING STREET
BROUGHAM STREET
WILLIAM STREET
CROWN STREET
PALMER STREET
DARLINGHURST ROAD
FORBES STREET
BOURKE STREET
BURTON STREET
N
Study Area
Peak Flood Depth (m)
< 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1.0
1.0 - 2.0
> 2.0
0
100
200
400
600
800
m
J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure15_PeakFloodDepths_010yr_ARI.mxd


Note: Tall buildings, road and rail overpasses, vegetation cover, near vertical changes in grade and high density urban development has meant that in some locations ALS cannot accurately define the ground surface (refer Section 3.1).
FIGURE 16
PEAK FLOOD DEPTHS
20 YEAR ARI
HOSPITAL ROAD
COWPER WHARF ROADWAY
VICTORIA STREET
SIR JOHN YOUNG CRESCENT
EASTERN DISTRIBUTOR
COLLEGE STREET
FORBES STREET
DOWLING STREET
BROUGHAM STREET
WILLIAM STREET
CROWN STREET
PALMER STREET
DARLINGHURST ROAD
FORBES STREET
BOURKE STREET
BURTON STREET
N
Study Area
Peak Flood Depth (m)
< 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1.0
1.0 - 2.0
> 2.0
0
100
200
400
600
800
m
J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure16_PeakFloodDepths_020yr_ARI.mxd


Note: Tall buildings, road and rail overpasses, vegetation cover, near vertical changes in grade and high density urban development has meant that in some locations ALS cannot accurately define the ground surface (refer Section 3.1).
FIGURE 17
PEAK FLOOD DEPTHS
50 YEAR ARI
HOSPITAL ROAD
COWPER WHARF ROADWAY
VICTORIA STREET
SIR JOHN YOUNG CRESCENT
EASTERN DISTRIBUTOR
COLLEGE STREET
FORBES STREET
DOWLING STREET
BROUGHAM STREET
WILLIAM STREET
CROWN STREET
PALMER STREET
DARLINGHURST ROAD
FORBES STREET
BOURKE STREET
BURTON STREET
N
Study Area
Peak Flood Depth (m)
< 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1.0
1.0 - 2.0
> 2.0
0
100
200
400
600
800
m
J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure17_PeakFloodDepths_050yr_ARI.mxd

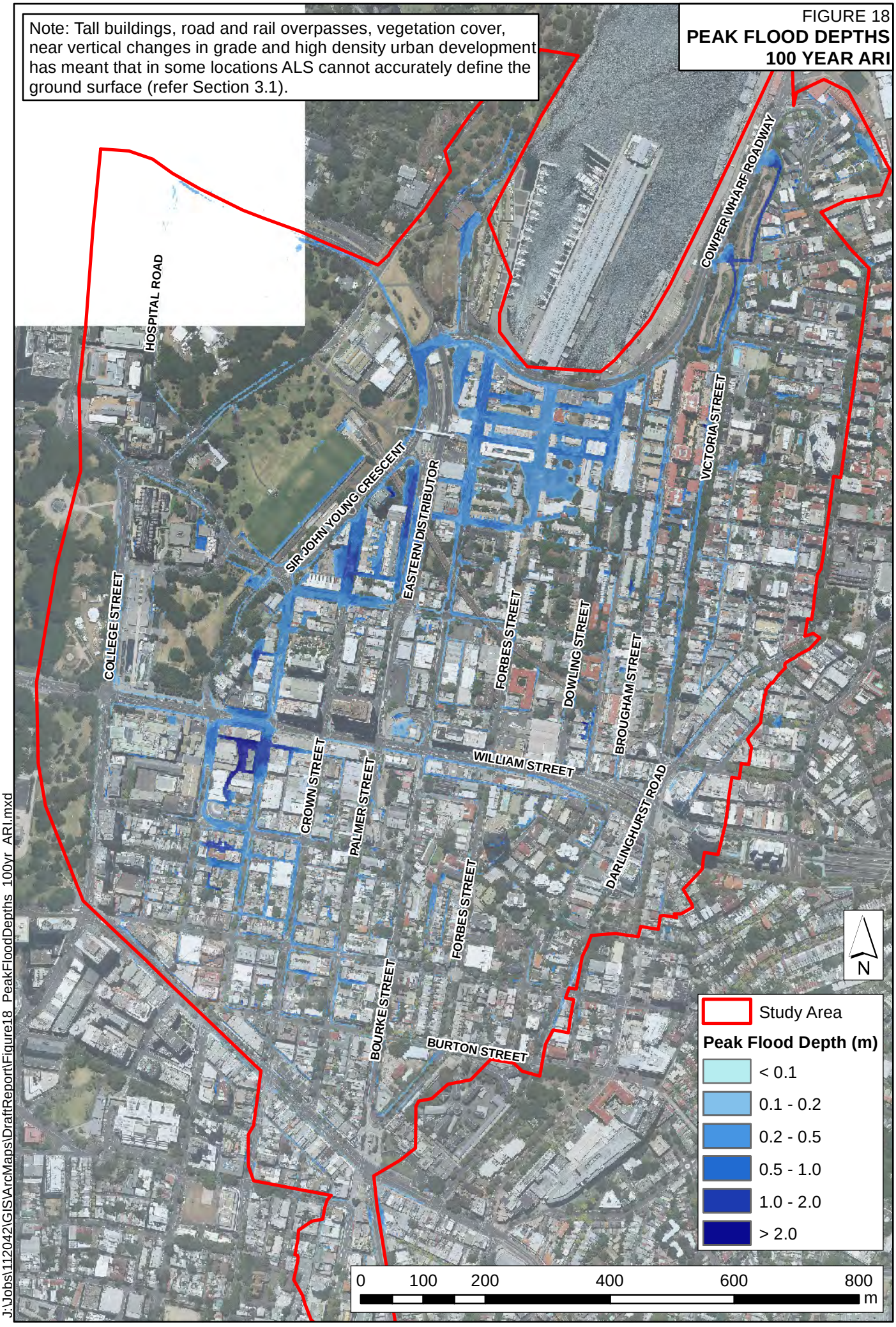


FIGURE 18
PEAK FLOOD DEPTHS
100 YEAR ARI
Note: Tall buildings, road and rail overpasses, vegetation cover, near vertical changes in grade and high density urban development has meant that in some locations ALS cannot accurately define the ground surface (refer Section 3.1).
HOSPITAL ROAD
COWPER WHARF ROADWAY
VICTORIA STREET
SIR JOHN YOUNG CRESCENT
EASTERN DISTRIBUTOR
COLLEGE STREET
FORBES STREET
DOWLING STREET
BROUGHAM STREET
WILLIAM STREET
CROWN STREET
PALMER STREET
DARLINGHURST ROAD
FORBES STREET
BOURKE STREET
BURTON STREET
N
Study Area
Peak Flood Depth (m)
< 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1.0
1.0 - 2.0
> 2.0
0
100
200
400
600
800
m
J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure18_PeakFloodDepths_100yr_ARI.mxd

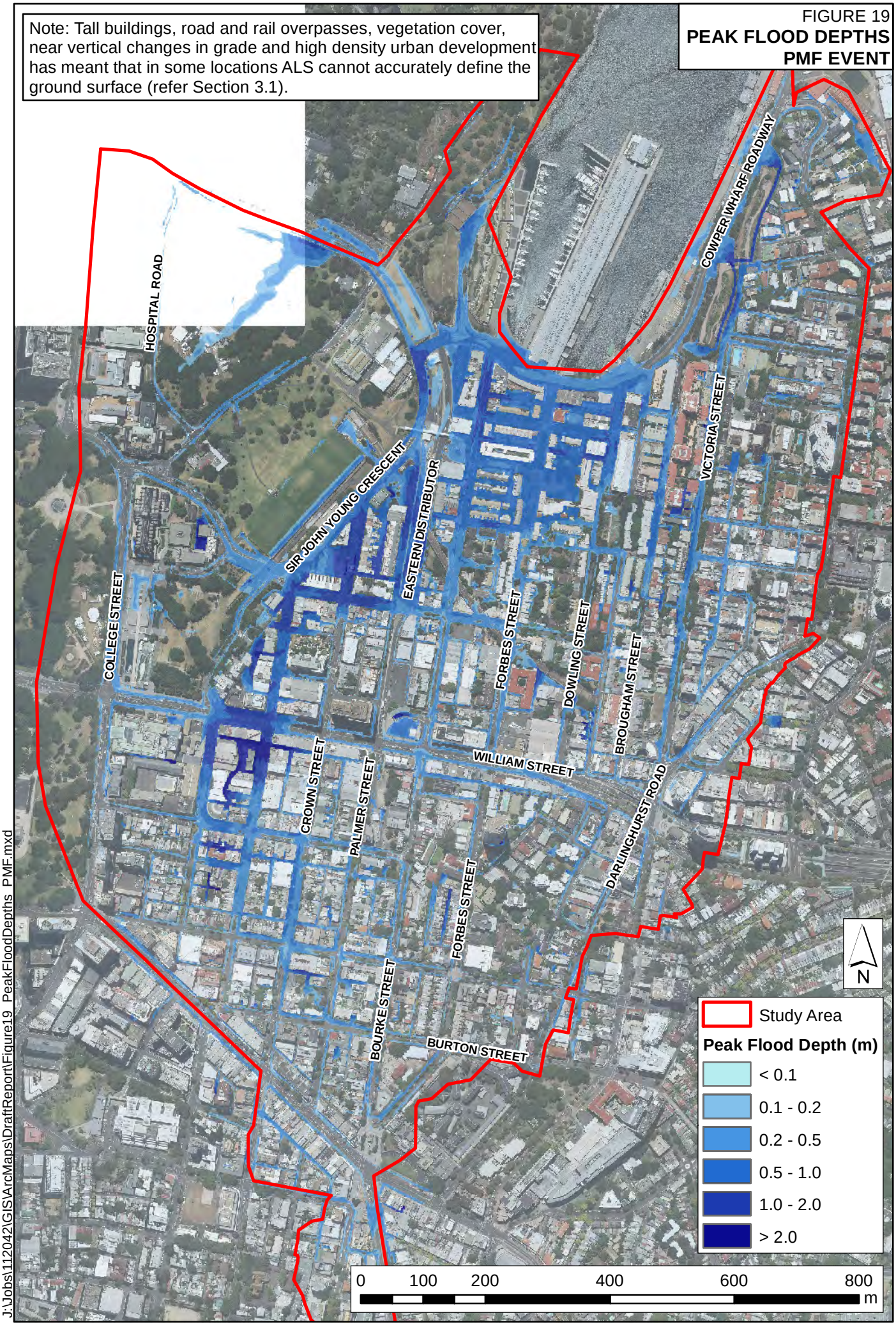

Note: Tall buildings, road and rail overpasses, vegetation cover, near vertical changes in grade and high density urban development has meant that in some locations ALS cannot accurately define the ground surface (refer Section 3.1).
FIGURE 19
PEAK FLOOD DEPTHS
PMF EVENT
HOSPITAL ROAD
COWPER WHARF ROADWAY
VICTORIA STREET
SIR JOHN YOUNG CRESCENT
EASTERN DISTRIBUTOR
COLLEGE STREET
FORBES STREET
DOWLING STREET
BROUGHAM STREET
WILLIAM STREET
CROWN STREET
PALMER STREET
DARLINGHURST ROAD
FORBES STREET
BOURKE STREET
BURTON STREET
N
Study Area
Peak Flood Depth (m)
< 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1.0
1.0 - 2.0
> 2.0
0
100
200
400
600
800
m
J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure19_PeakFloodDepths_PMF.mxd

FIGURE 20

PROVISONAL HYDRAULIC HAZARD 10 YEAR ARI

Note: Provisional hydraulic hazard classification has been determined based on appendix L of the NSW Floodplain Development Manual (2005) given velocity and depth. Other factors that contribute to flood risk have not been considered in preparing this figure

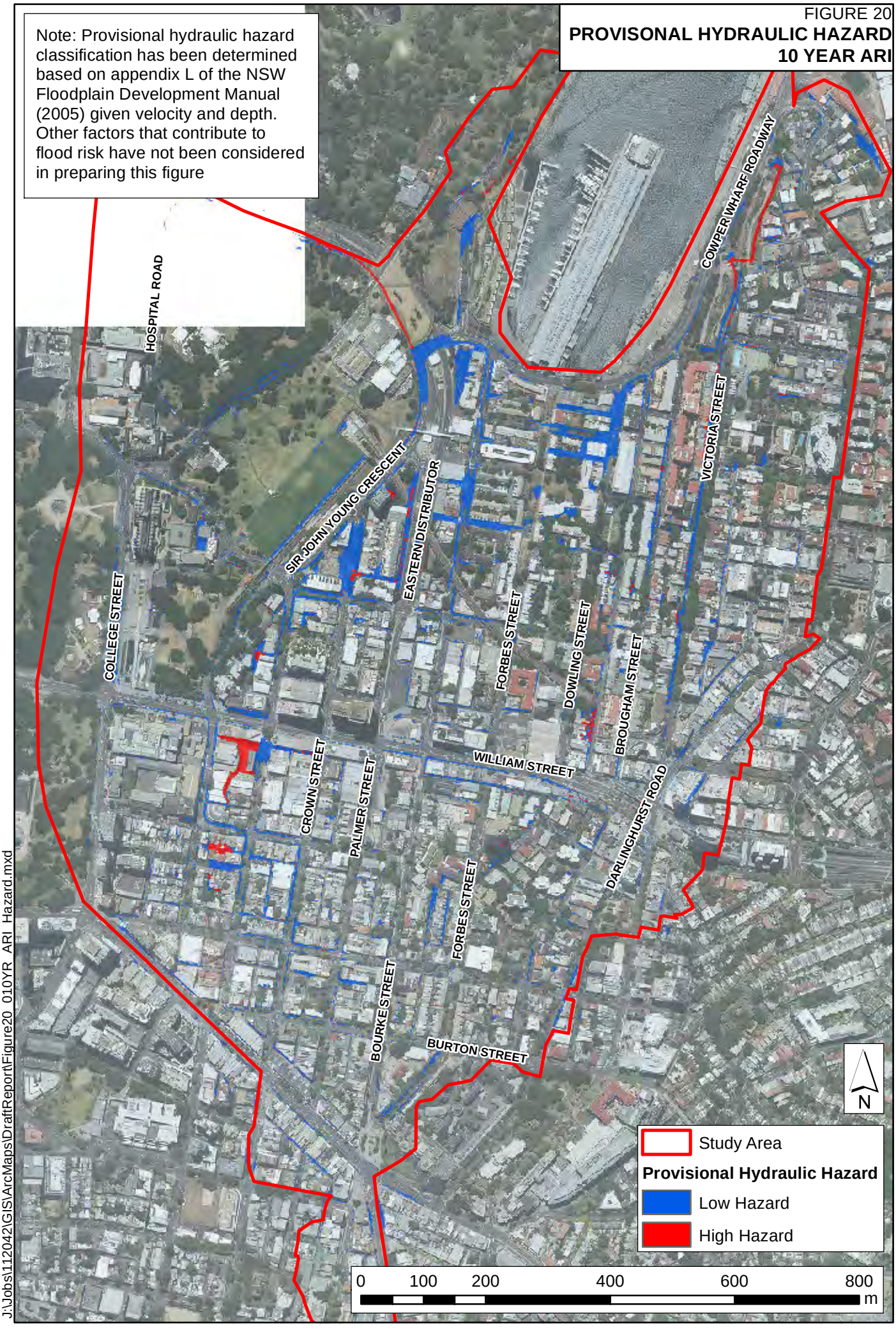


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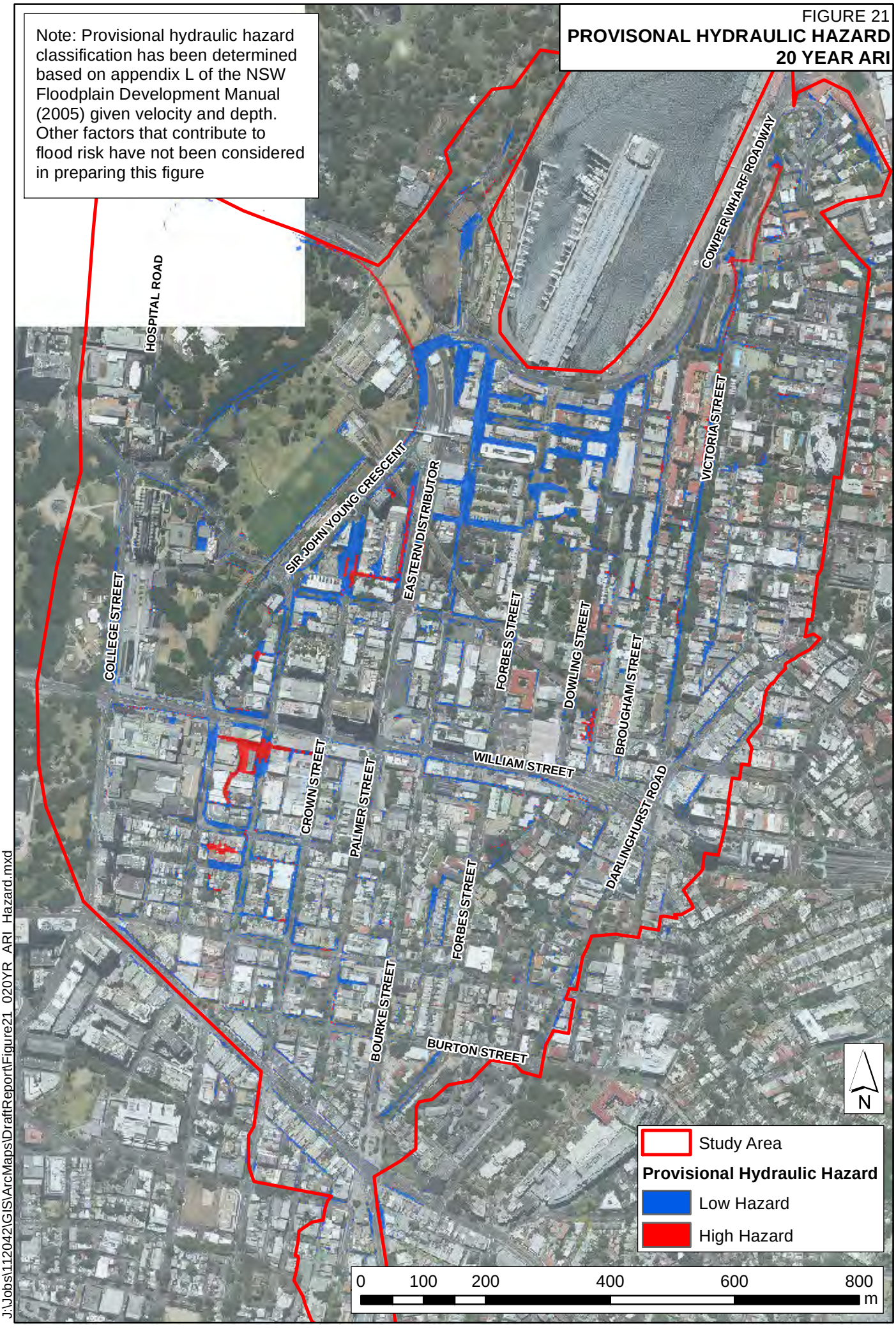
FIGURE 21

PROVISONAL HYDRAULIC HAZARD
20 YEAR ARI

Note: Provisional hydraulic hazard classification has been determined based on appendix L of the NSW Floodplain Development Manual (2005) given velocity and depth. Other factors that contribute to flood risk have not been considered in preparing this figure



J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure21_020YR_ARI_Hazard.mxd

FIGURE 22

PROVISONAL HYDRAULIC HAZARD 100 YEAR ARI

Note: Provisional hydraulic hazard classification has been determined based on appendix L of the NSW Floodplain Development Manual (2005) given velocity and depth. Other factors that contribute to flood risk have not been considered in preparing this figure

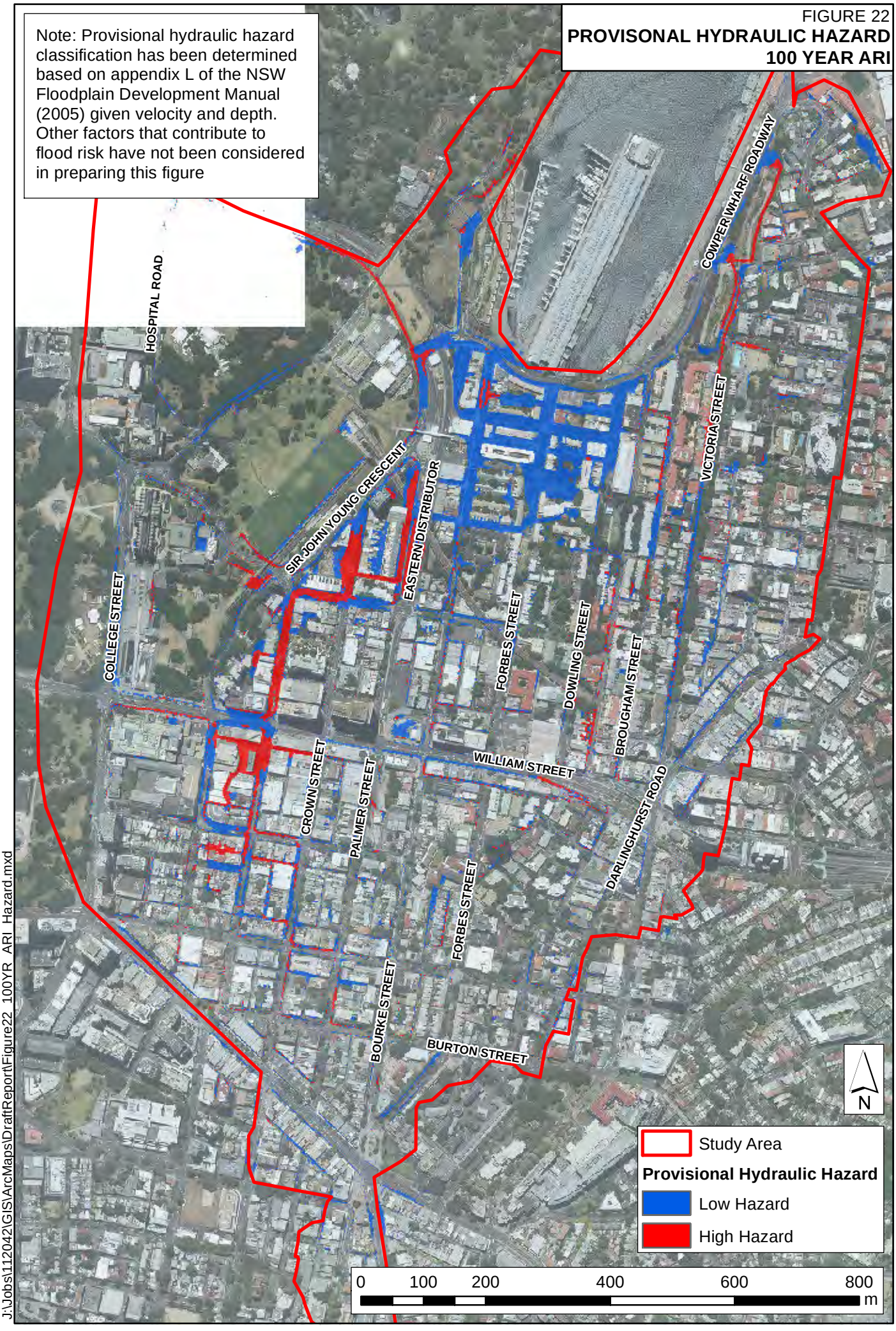


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FIGURE 23

PROVISONAL HYDRAULIC HAZARD
PMF EVENT

Note: Provisional hydraulic hazard classification has been determined based on appendix L of the NSW Floodplain Development Manual (2005) given velocity and depth. Other factors that contribute to flood risk have not been considered in preparing this figure

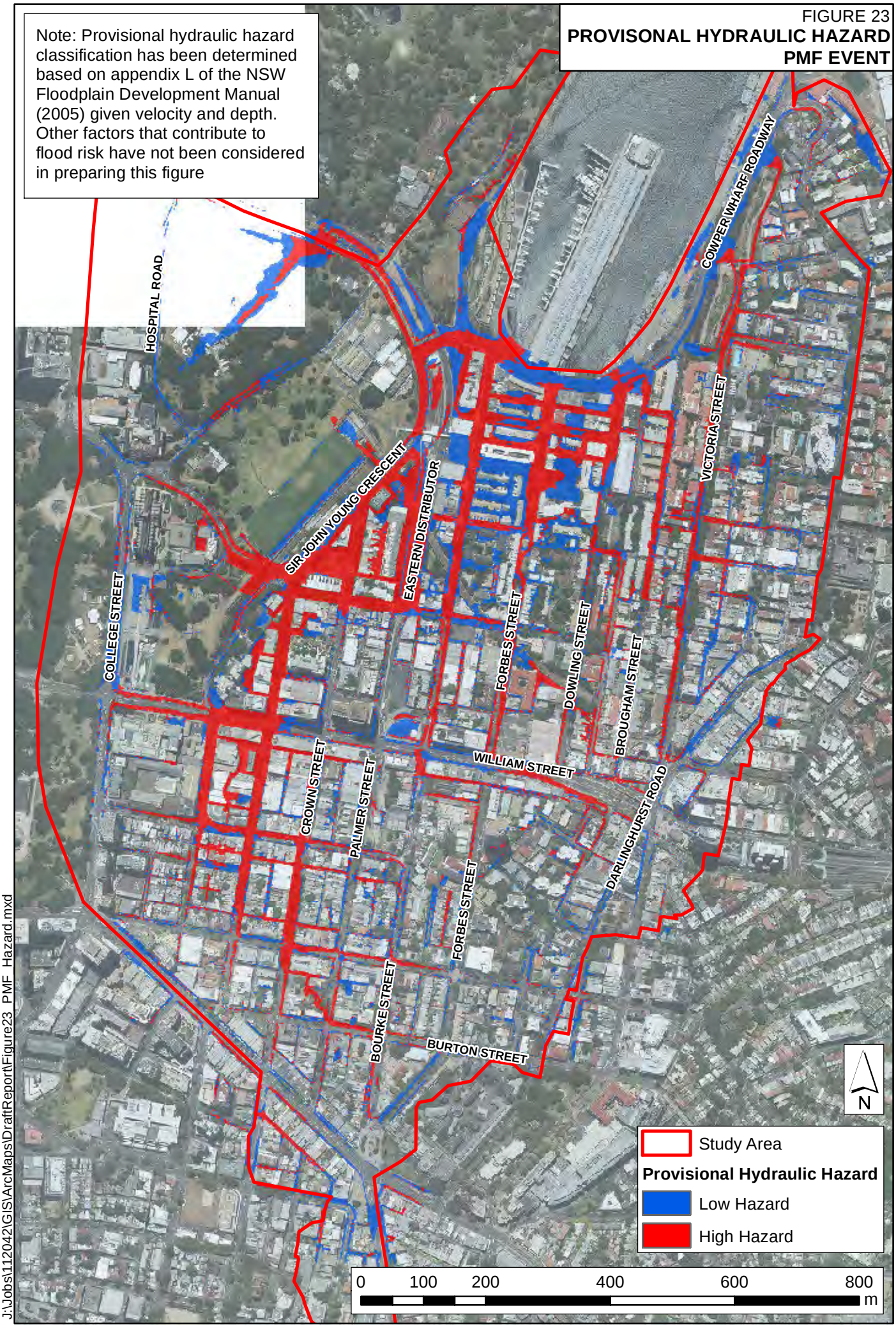

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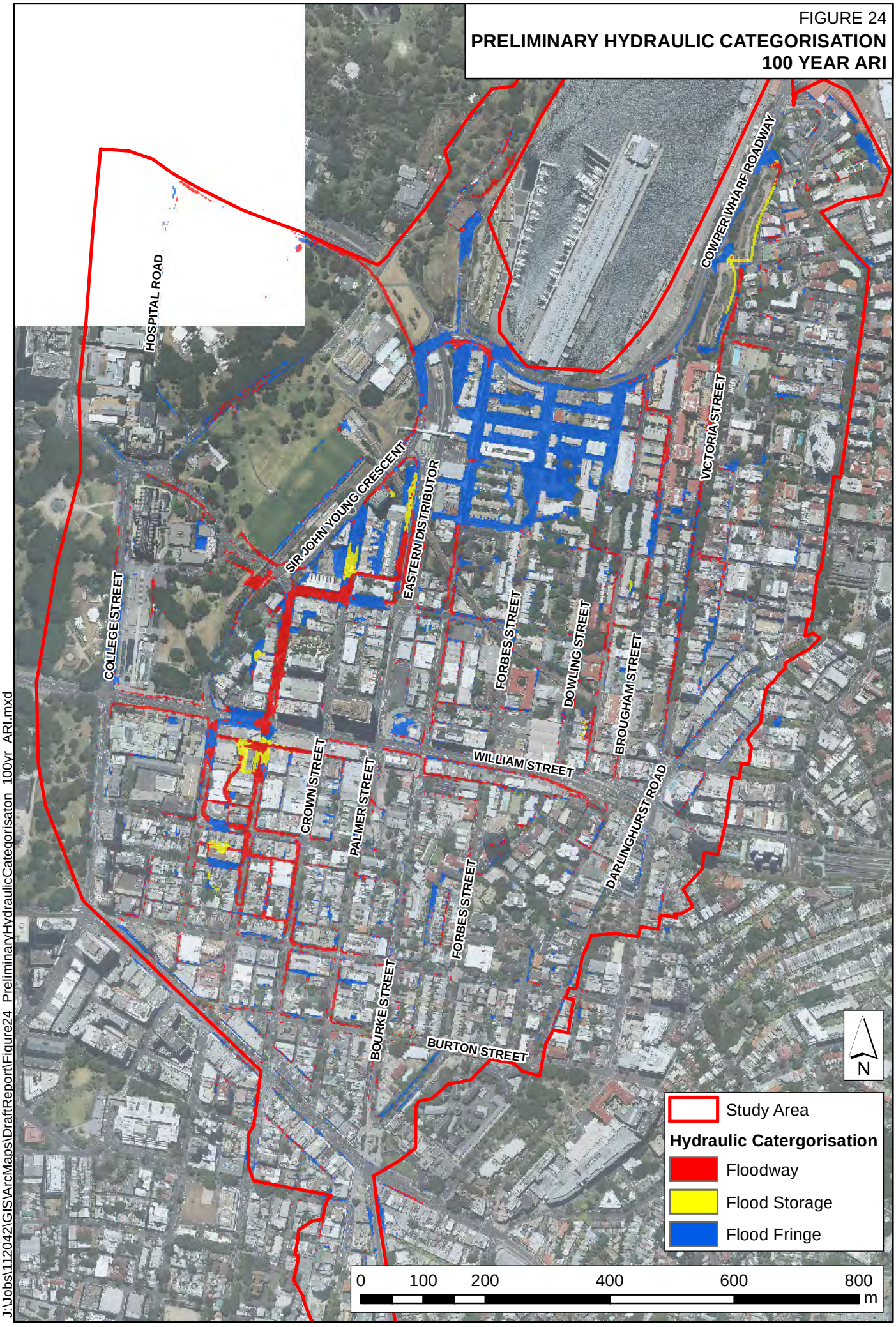
FIGURE 24

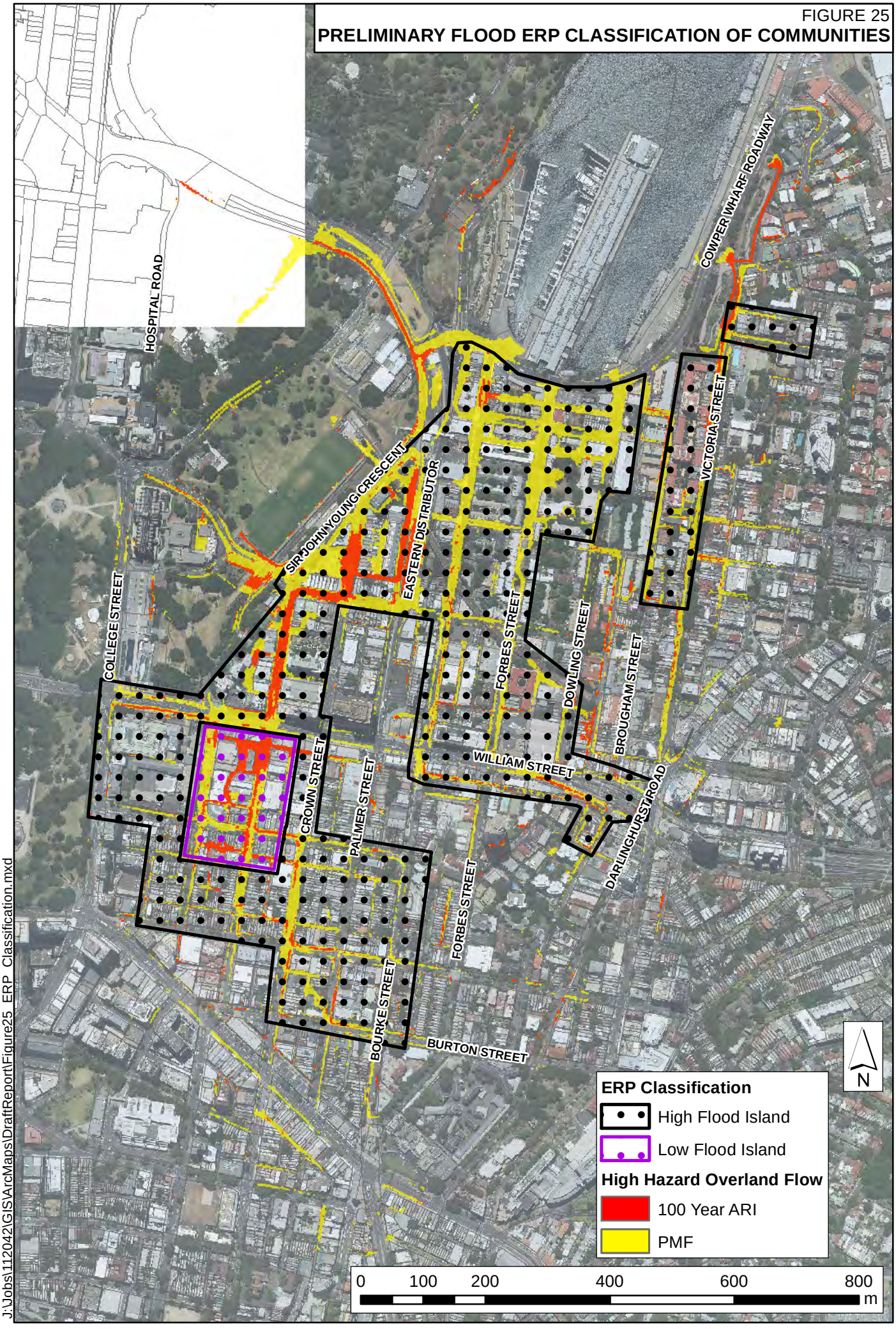
PRELIMINARY HYDRAULIC CATEGORISATION
100 YEAR ARI



J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure24_PreliminaryHydraulicCategorisaton_100yr_ARI.mxd

FIGURE 25

PRELIMINARY FLOOD ERP CLASSIFICATION OF COMMUNITIES



J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure25_ERP_Classification.mxd

FIGURE 26
FLOOD FIRST INUNDATED

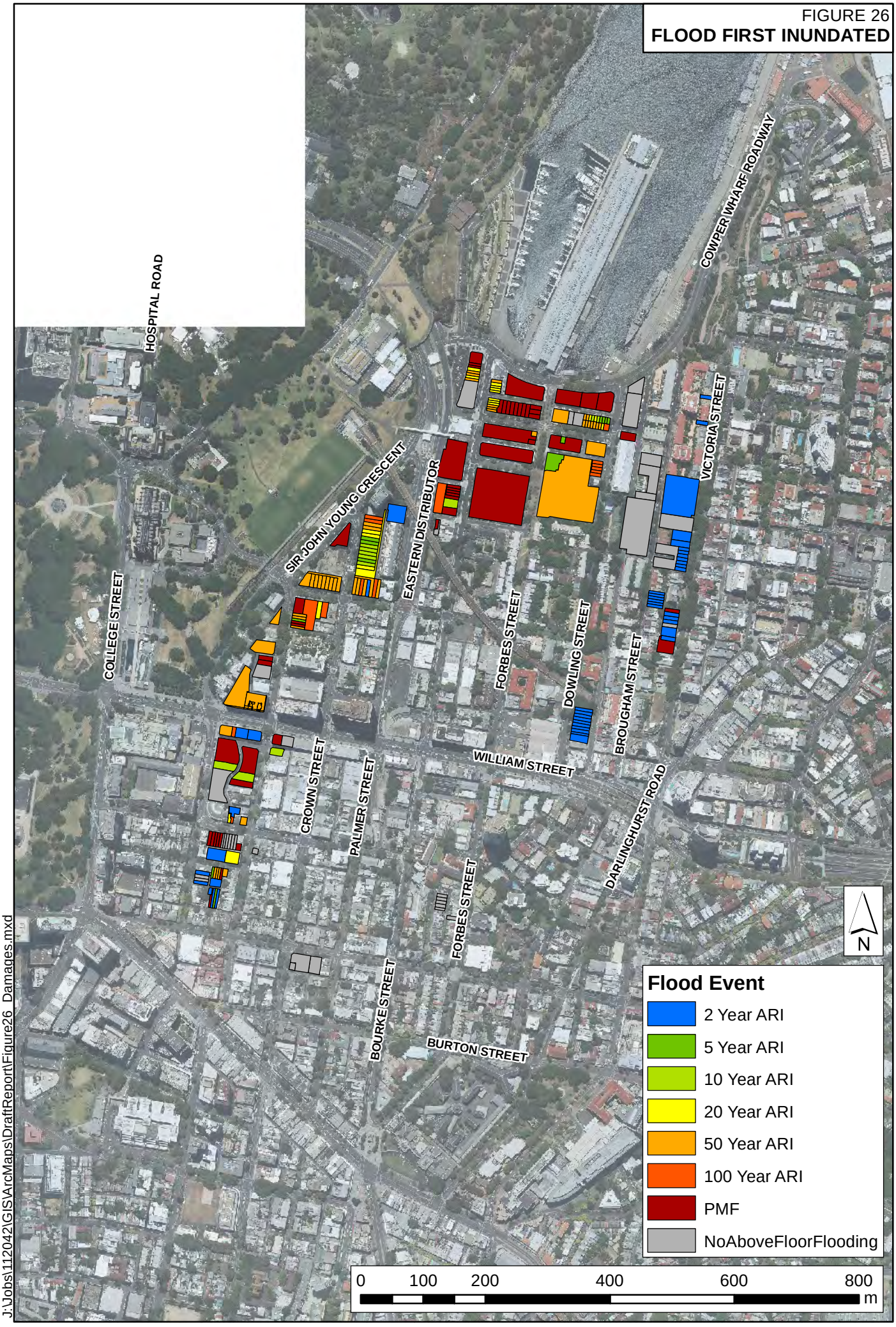


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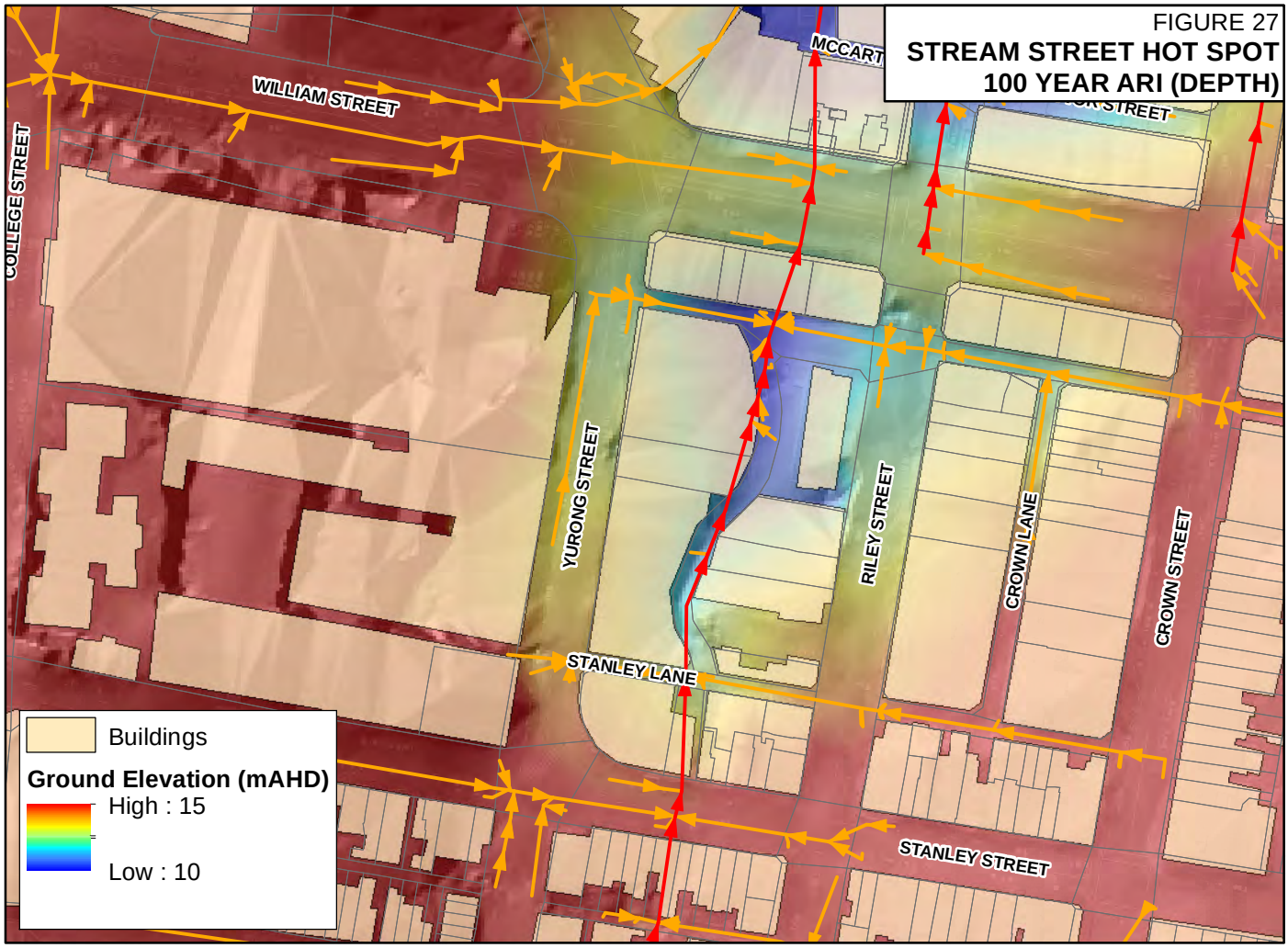
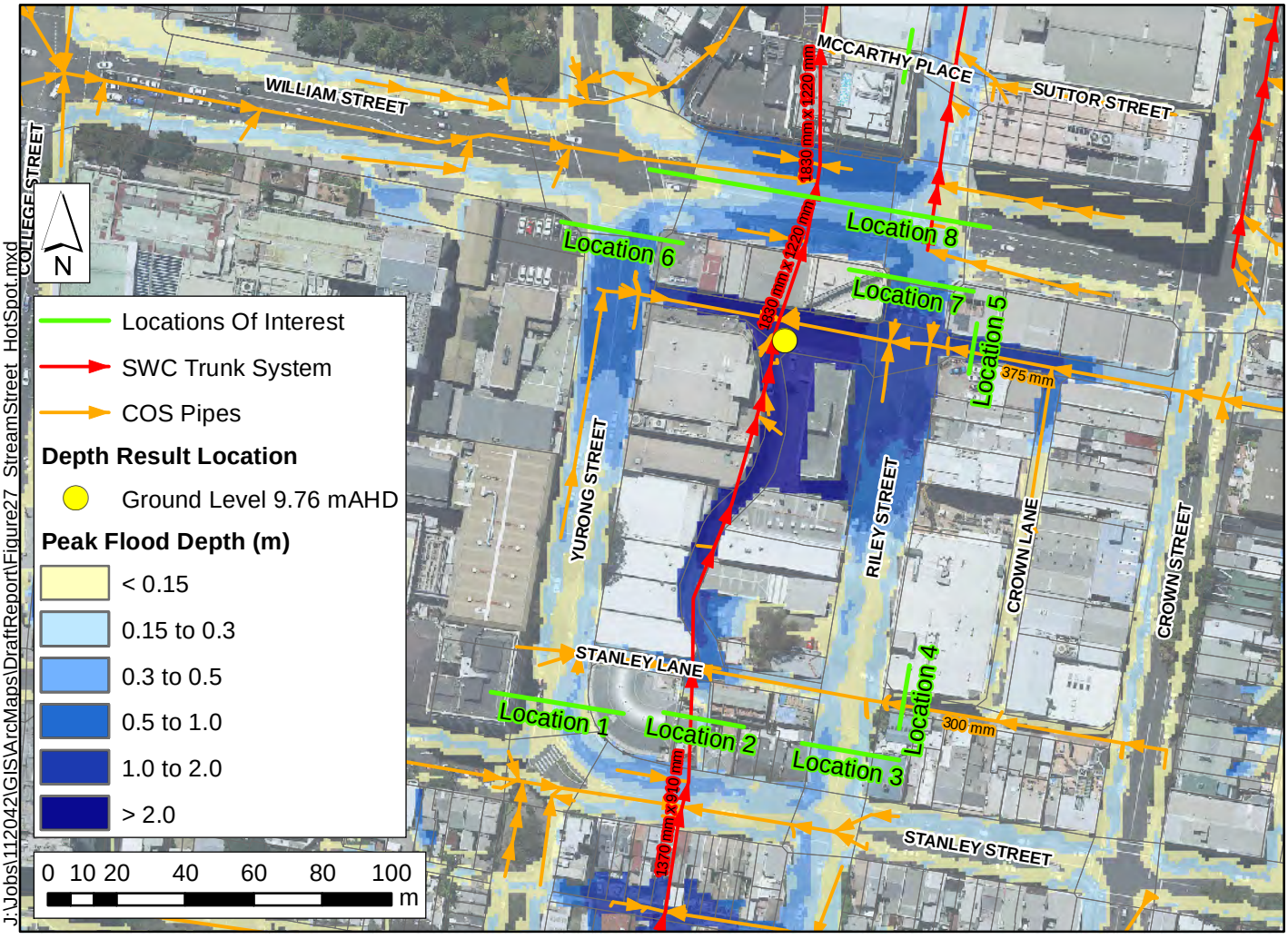
FIGURE 27

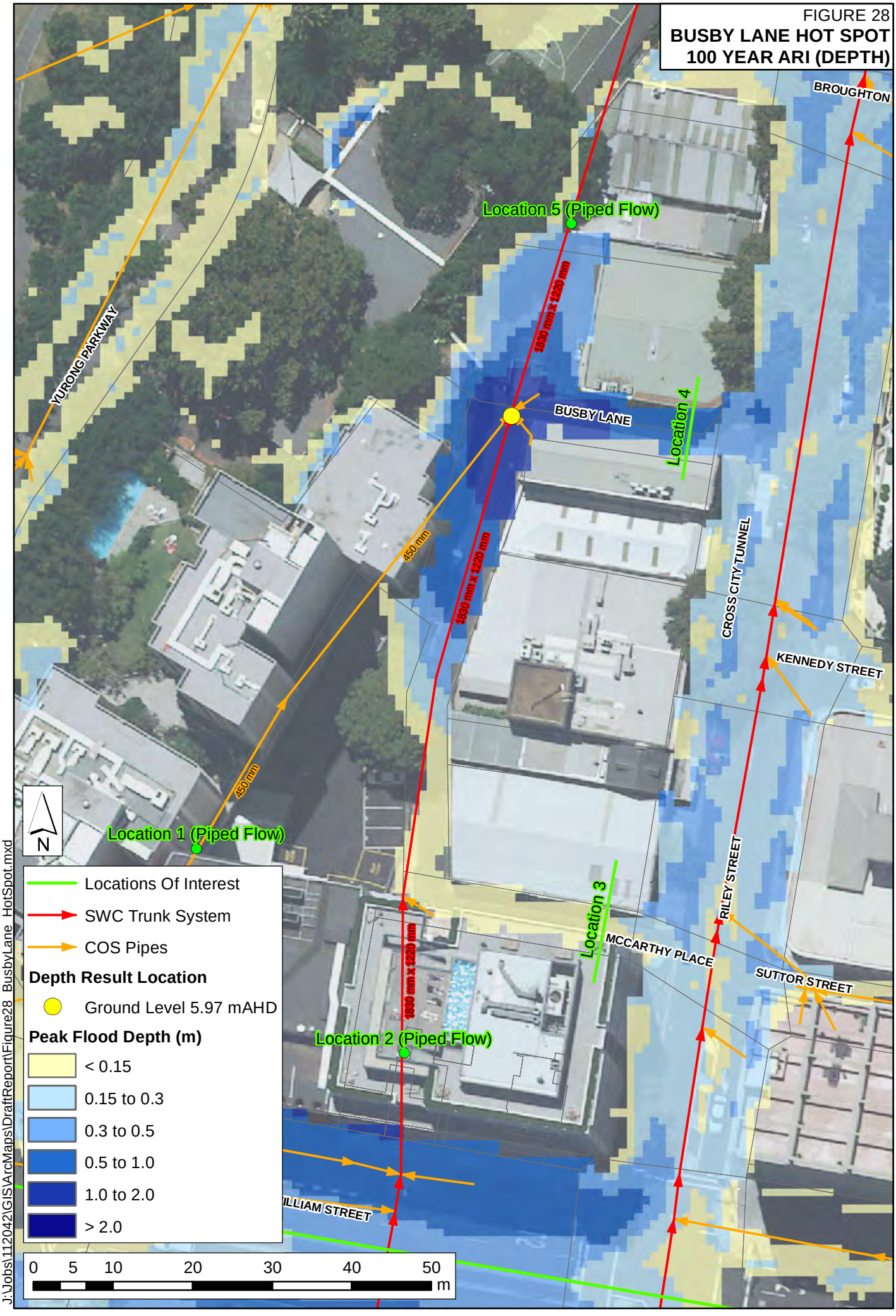
STREAM STREET HOT SPOT
100 YEAR ARI (DEPTH)





J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure27_StreamStreet_HotSpot.mxd

FIGURE 28
BUSBY LANE HOT SPOT
100 YEAR ARI (DEPTH)



J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure28_BusbyLane_HotSpot.mxd

FIGURE 29
CROWN STREET HOT SPOT
100 YEAR ARI (DEPTH)

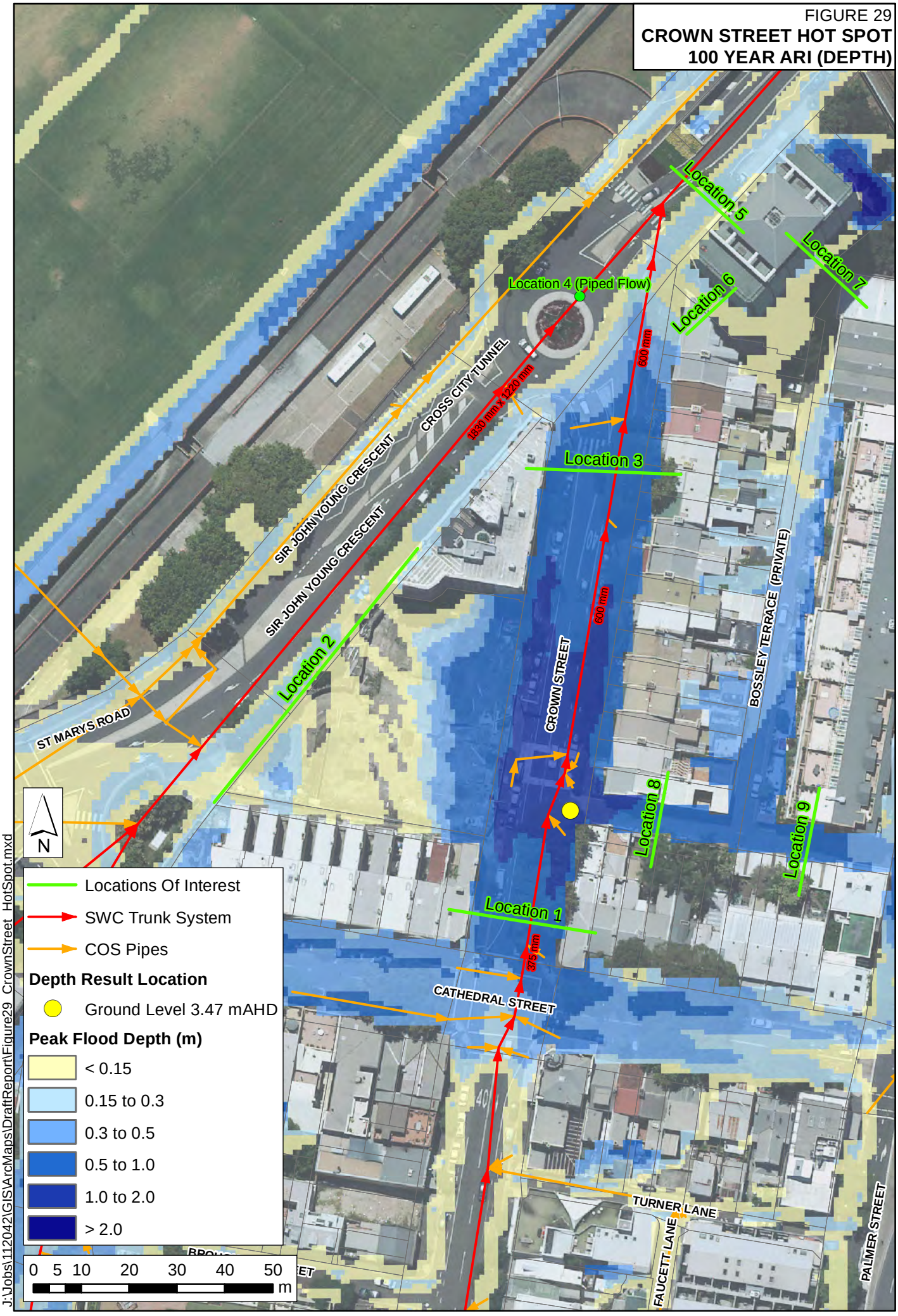
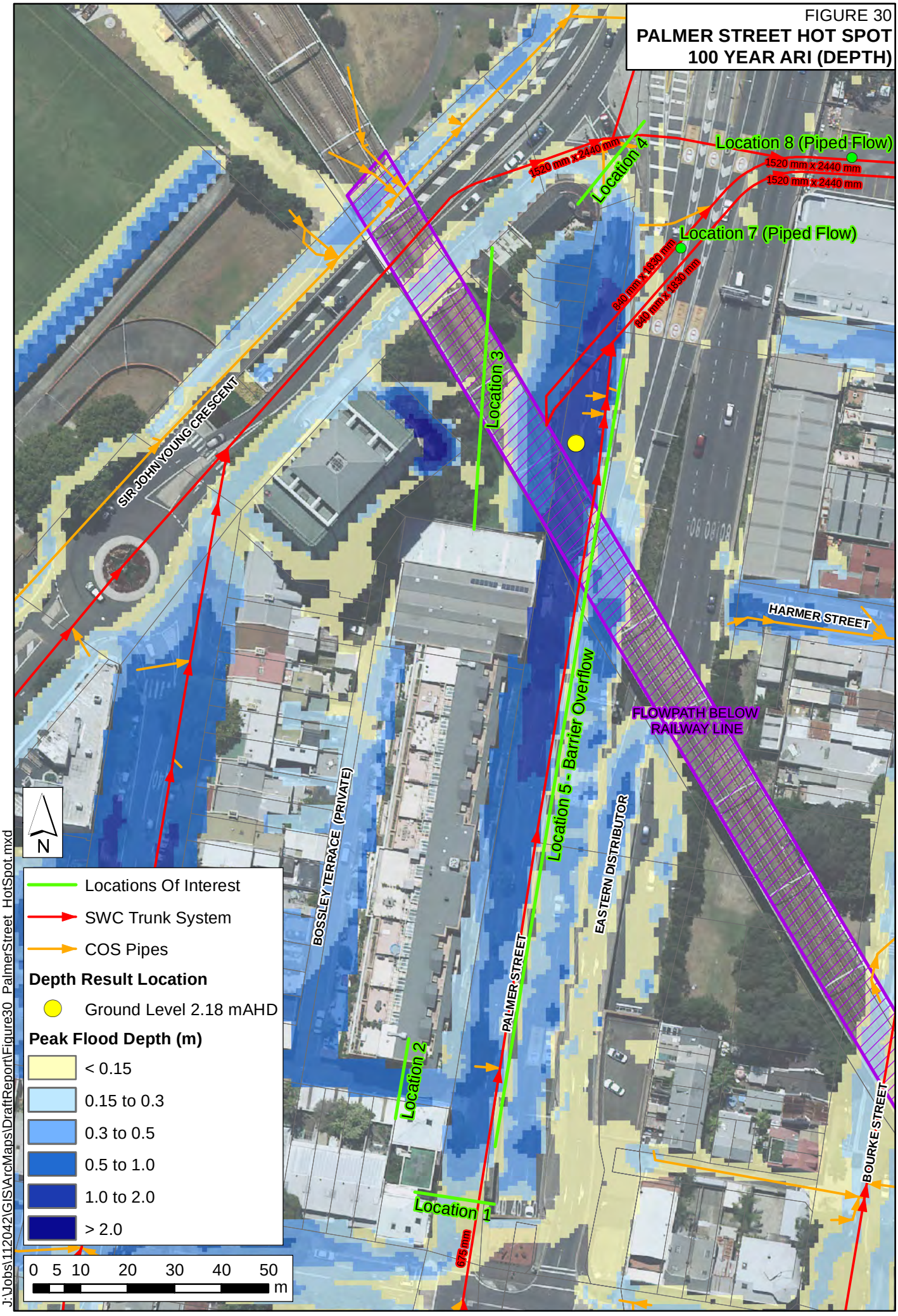


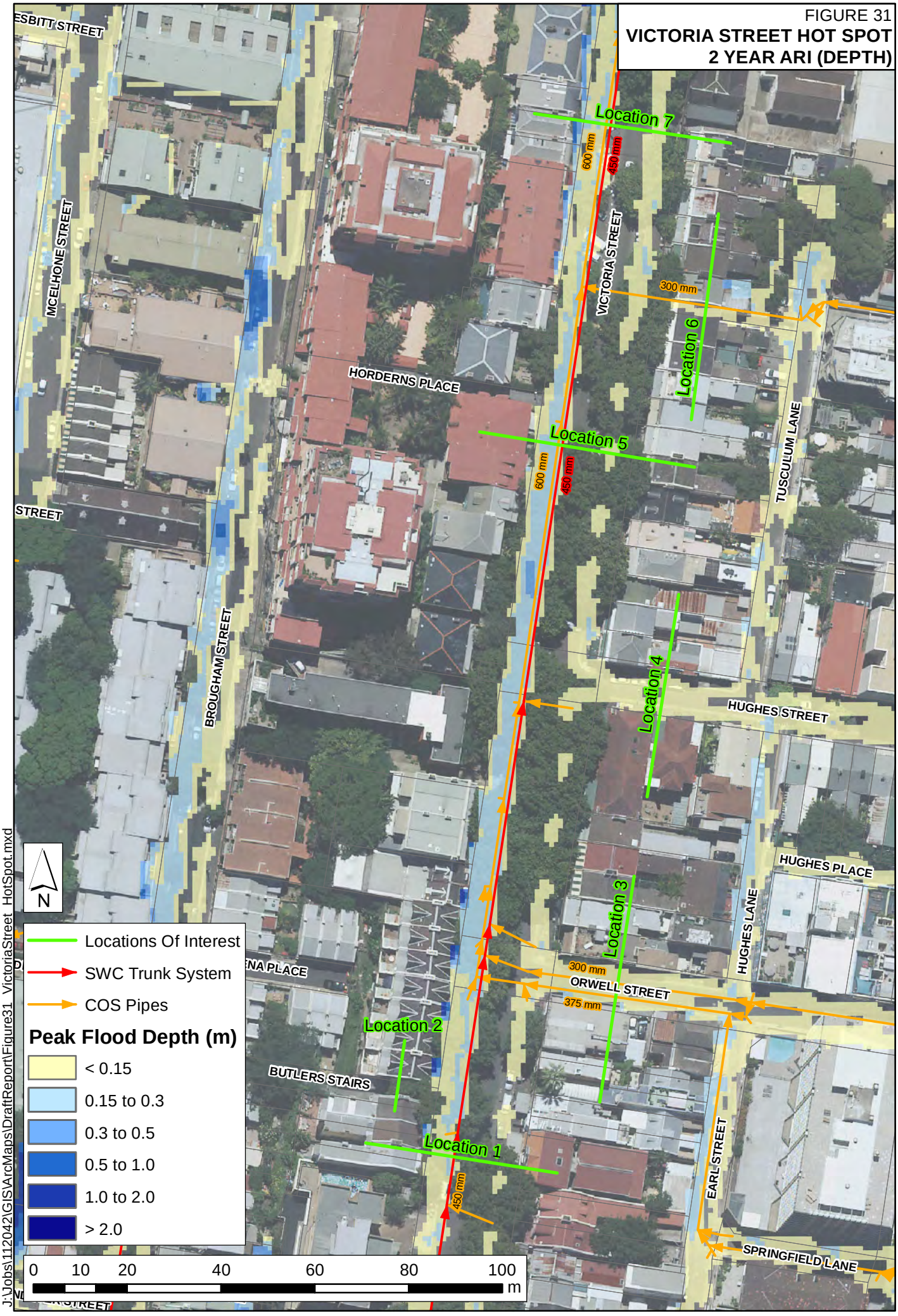
FIGURE 30
PALMER STREET HOT SPOT
100 YEAR ARI (DEPTH)



J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure30_PalmerStreet_HotSpot.mxd

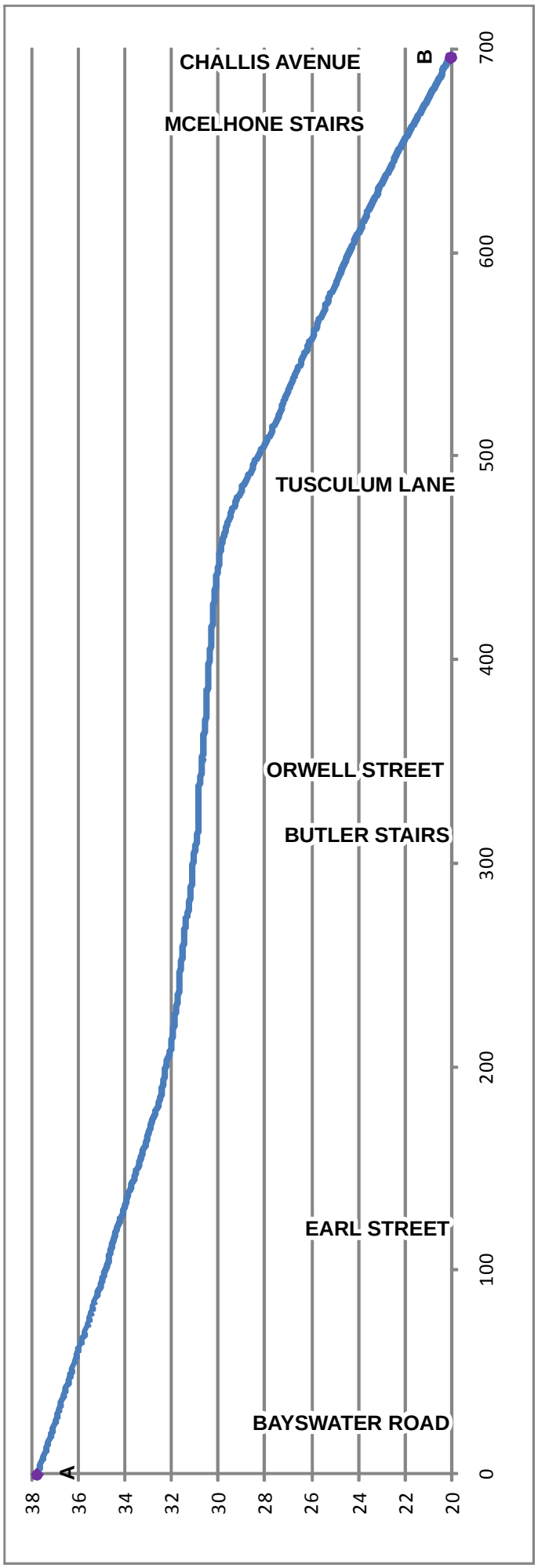
FIGURE 31

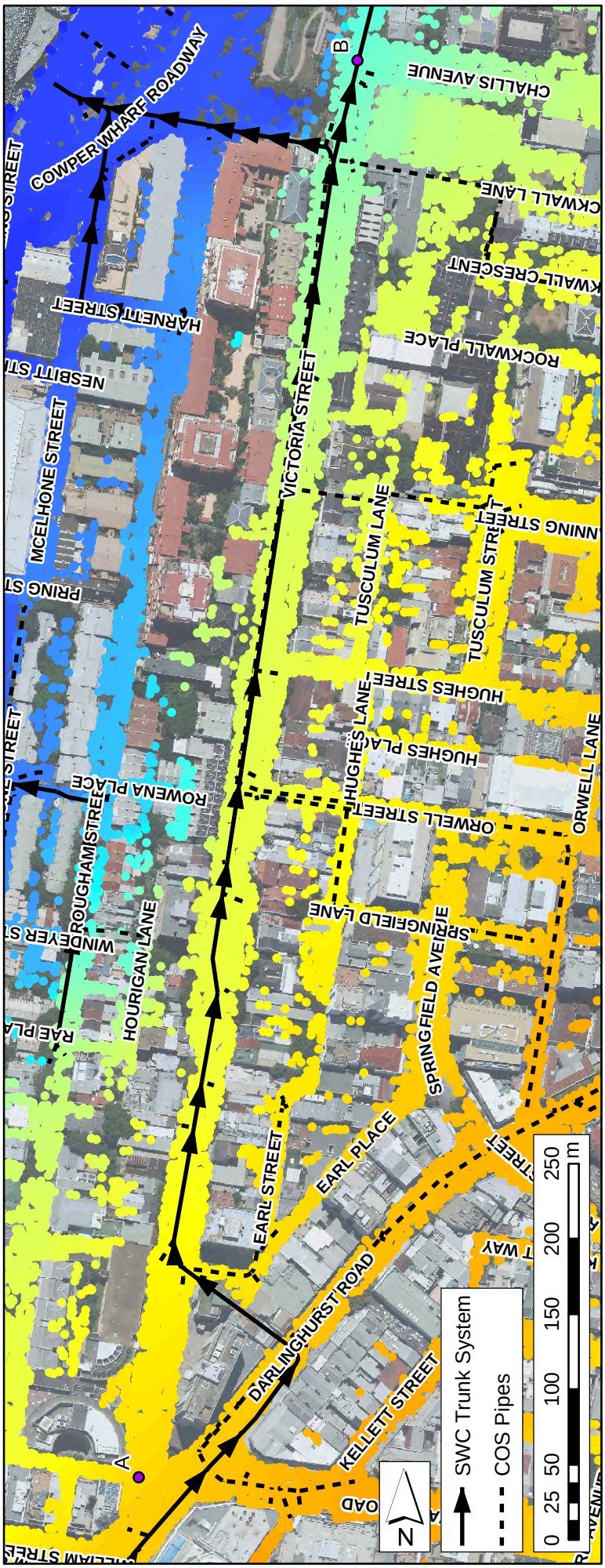
VICTORIA STREET HOT SPOT
2 YEAR ARI (DEPTH)



J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure31_VictoriaStreet_HotSpot.mxd

FIGURE 32
VICTORIA STREET HOT SPOT
ROAD PROFILE





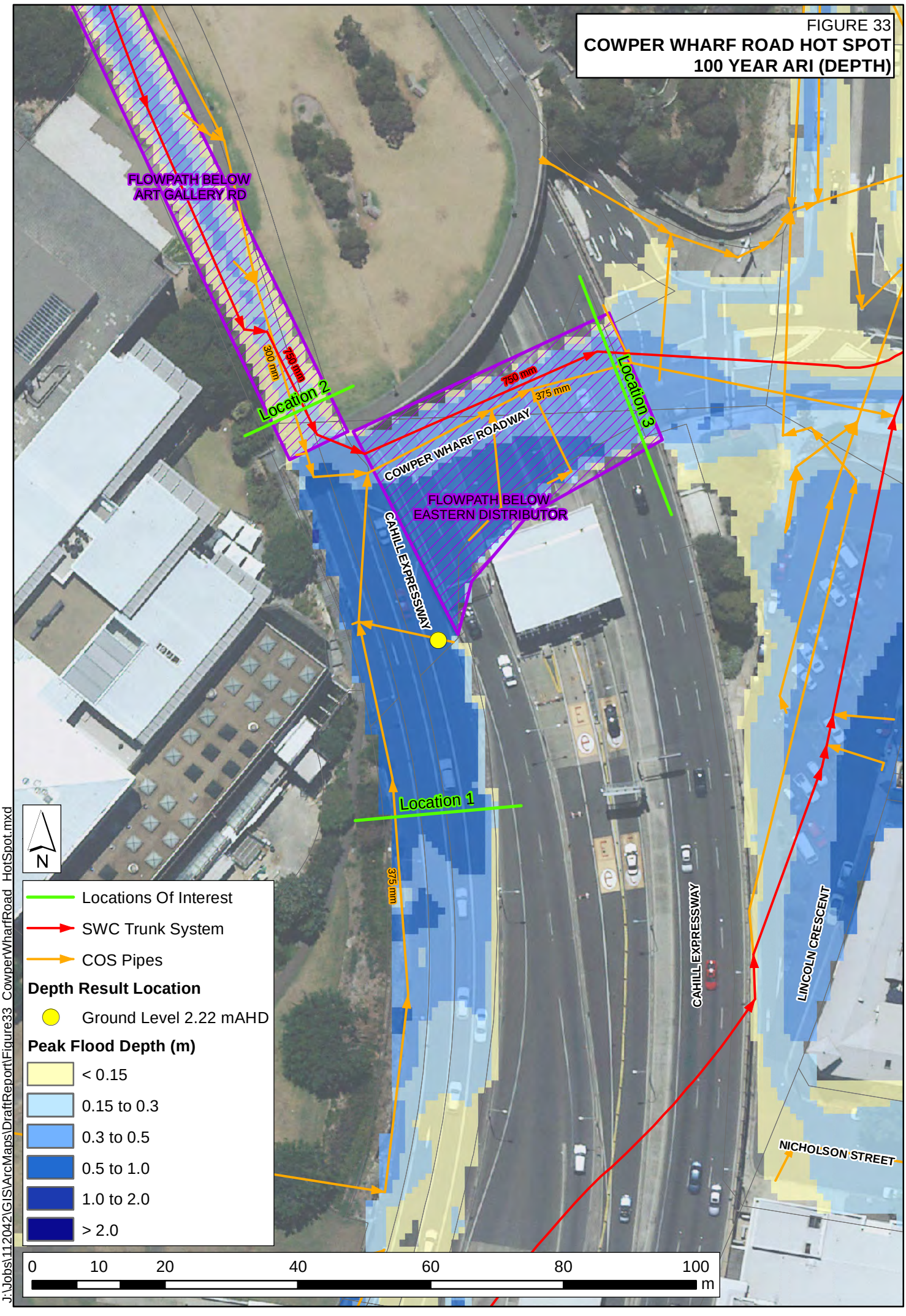
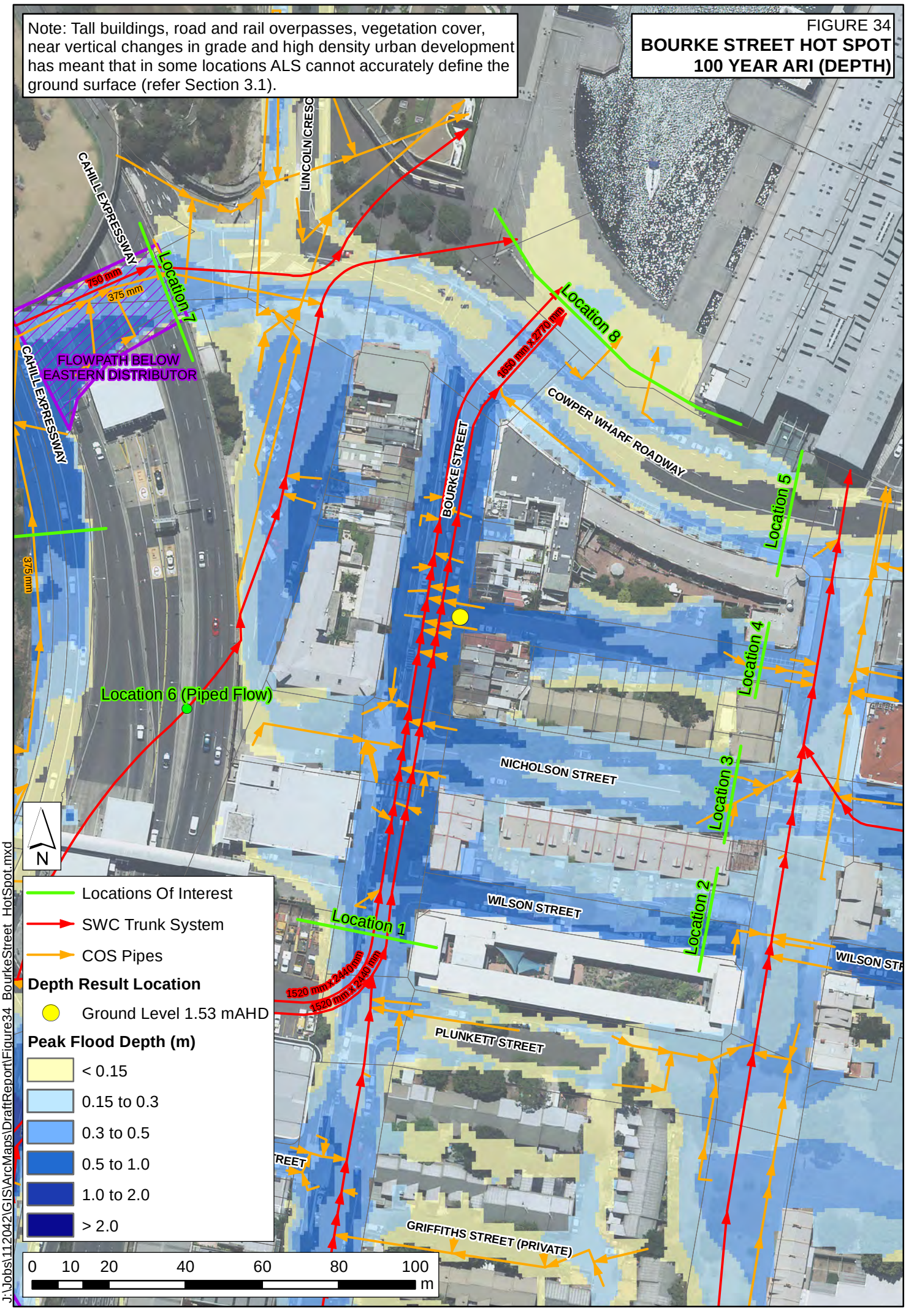


FIGURE 33
COWPER WHARF ROAD HOT SPOT
100 YEAR ARI (DEPTH)
FLOWPATH BELOW
ART GALLERY RD
300 mm
750 mm
Location 2
750 mm
375 mm
Location 3
COWPER WHARF ROADWAY
FLOWPATH BELOW
EASTERN DISTRIBUTOR
CAHILL EXPRESSWAY
Location 1
375 mm
CAHILL EXPRESSWAY
LINCOLN CRESCENT
NICHOLSON STREET
N
Locations Of Interest
SWC Trunk System
COS Pipes
Depth Result Location
Ground Level 2.22 mAHD
Peak Flood Depth (m)
< 0.15
0.15 to 0.3
0.3 to 0.5
0.5 to 1.0
1.0 to 2.0
> 2.0
0
10
20
40
60
80
100
m
J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure33_CowperWharfRoad_HotSpot.mxd


Note: Tall buildings, road and rail overpasses, vegetation cover, near vertical changes in grade and high density urban development has meant that in some locations ALS cannot accurately define the ground surface (refer Section 3.1).
FIGURE 34
BOURKE STREET HOT SPOT
100 YEAR ARI (DEPTH)
CAHILL EXPRESSWAY
LINCOLN CRESC
Location 7
750 mm
375 mm
FLOWPATH BELOW EASTERN DISTRIBUTOR
Location 8
1650 mm x 2770 mm
COWPER WHARF ROADWAY
BOURKE STREET
Location 5
Location 4
Location 6 (Piped Flow)
NICHOLSON STREET
Location 3
Location 2
WILSON STREET
Location 1
1520 mm x 2440 mm
1520 mm x 2140 mm
PLUNKETT STREET
GRIFFITHS STREET (PRIVATE)
N
Locations Of Interest
SWC Trunk System
COS Pipes
Depth Result Location
Ground Level 1.53 mAHD
Peak Flood Depth (m)
< 0.15
0.15 to 0.3
0.3 to 0.5
0.5 to 1.0
1.0 to 2.0
> 2.0
0 10 20 40 60 80 100
m
J:\Jobs\112042\GIS\ArcMaps\DraftReport\Figure34_BourkeStreet_HotSpot.mxd

Appendix A

APPENDIX A: GLOSSARY

Taken from the Floodplain Development Manual (April 2005 edition)

acid sulfate soils	Are sediments which contain sulfidic mineral pyrite which may become extremely acid following disturbance or drainage as sulfur compounds react when exposed to oxygen to form sulfuric acid. More detailed explanation and definition can be found in the NSW Government Acid Sulfate Soil Manual published by Acid Sulfate Soil Management Advisory Committee.
Annual Exceedance Probability (AEP)	The chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage. For example, if a peak flood discharge of 500 m^3/s has an AEP of 5%, it means that there is a 5% chance (that is one-in-20 chance) of a 500 m^3/s or larger event occurring in any one year (see ARI).
Australian Height Datum (AHD)	A common national surface level datum approximately corresponding to mean sea level.
Average Annual Damage (AAD)	Depending on its size (or severity), each flood will cause a different amount of flood damage to a flood prone area. AAD is the average damage per year that would occur in a nominated development situation from flooding over a very long period of time.
Average Recurrence Interval (ARI)	The long term average number of years between the occurrence of a flood as big as, or larger than, the selected event. For example, floods with a discharge as great as, or greater than, the 20 year ARI flood event will occur on average once every 20 years. ARI is another way of expressing the likelihood of occurrence of a flood event.
caravan and moveable home parks	Caravans and moveable dwellings are being increasingly used for long-term and permanent accommodation purposes. Standards relating to their siting, design, construction and management can be found in the Regulations under the LG Act.
catchment	The land area draining through the main stream, as well as tributary streams, to a particular site. It always relates to an area above a specific location.
consent authority	The Council, government agency or person having the function to determine a development application for land use under the EP&A Act. The consent authority is most often the Council, however legislation or an EPI may specify a Minister or public authority (other than a Council), or the Director General of DIPNR, as having the function to determine an application.
development	Is defined in Part 4 of the Environmental Planning and Assessment Act (EP&A Act). **infill development:** refers to the development of vacant blocks of land that are generally surrounded by developed properties and is permissible under the current zoning of the land. Conditions such as minimum floor levels may be imposed on infill development. **new development:** refers to development of a completely different nature to that associated with the former land use. For example, the urban subdivision of an area previously used for rural purposes. New developments involve rezoning and typically require major extensions of existing urban services, such as roads, water supply, sewerage and electric power. **redevelopment:** refers to rebuilding in an area. For example, as urban areas

	age, it may become necessary to demolish and reconstruct buildings on a relatively large scale. Redevelopment generally does not require either rezoning or major extensions to urban services.
disaster plan (DISPLAN)	A step by step sequence of previously agreed roles, responsibilities, functions, actions and management arrangements for the conduct of a single or series of connected emergency operations, with the object of ensuring the coordinated response by all agencies having responsibilities and functions in emergencies.
discharge	The rate of flow of water measured in terms of volume per unit time, for example, cubic metres per second (m^3/s). Discharge is different from the speed or velocity of flow, which is a measure of how fast the water is moving for example, metres per second (m/s).
ecologically sustainable development (ESD)	Using, conserving and enhancing natural resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be maintained or increased. A more detailed definition is included in the Local Government Act 1993. The use of sustainability and sustainable in this manual relate to ESD.
effective warning time	The time available after receiving advice of an impending flood and before the floodwaters prevent appropriate flood response actions being undertaken. The effective warning time is typically used to move farm equipment, move stock, raise furniture, evacuate people and transport their possessions.
emergency management	A range of measures to manage risks to communities and the environment. In the flood context it may include measures to prevent, prepare for, respond to and recover from flooding.
flash flooding	Flooding which is sudden and unexpected. It is often caused by sudden local or nearby heavy rainfall. Often defined as flooding which peaks within six hours of the causative rain.
flood	Relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with major drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves overtopping coastline defences excluding tsunami.
flood awareness	Flood awareness is an appreciation of the likely effects of flooding and a knowledge of the relevant flood warning, response and evacuation procedures.
flood education	Flood education seeks to provide information to raise awareness of the flood problem so as to enable individuals to understand how to manage themselves an their property in response to flood warnings and in a flood event. It invokes a state of flood readiness.
flood fringe areas	The remaining area of flood prone land after floodway and flood storage areas have been defined.
flood liable land	Is synonymous with flood prone land (i.e. land susceptible to flooding by the probable maximum flood (PMF) event). Note that the term flood liable land covers the whole of the floodplain, not just that part below the flood planning level (see flood planning area).
flood mitigation standard	The average recurrence interval of the flood, selected as part of the floodplain risk management process that forms the basis for physical works to modify the impacts of flooding.

floodplain	Area of land which is subject to inundation by floods up to and including the probable maximum flood event, that is, flood prone land.
floodplain risk management options	The measures that might be feasible for the management of a particular area of the floodplain. Preparation of a floodplain risk management plan requires a detailed evaluation of floodplain risk management options.
floodplain risk management plan	A management plan developed in accordance with the principles and guidelines in this manual. Usually includes both written and diagrammetic information describing how particular areas of flood prone land are to be used and managed to achieve defined objectives.
flood plan (local)	A sub-plan of a disaster plan that deals specifically with flooding. They can exist at State, Division and local levels. Local flood plans are prepared under the leadership of the State Emergency Service.
flood planning area	The area of land below the flood planning level and thus subject to flood related development controls. The concept of flood planning area generally supersedes the "flood liable land" concept in the 1986 Manual.
Flood Planning Levels (FPLs)	FPLs are the combinations of flood levels (derived from significant historical flood events or floods of specific AEPs) and freeboards selected for floodplain risk management purposes, as determined in management studies and incorporated in management plans. FPLs supersede the "standard flood event" in the 1986 manual.
flood proofing	A combination of measures incorporated in the design, construction and alteration of individual buildings or structures subject to flooding, to reduce or eliminate flood damages.
flood prone land	Is land susceptible to flooding by the Probable Maximum Flood (PMF) event. Flood prone land is synonymous with flood liable land.
flood readiness	Flood readiness is an ability to react within the effective warning time.
flood risk	Potential danger to personal safety and potential damage to property resulting from flooding. The degree of risk varies with circumstances across the full range of floods. Flood risk in this manual is divided into 3 types, existing, future and continuing risks. They are described below. **existing flood risk:** the risk a community is exposed to as a result of its location on the floodplain. **future flood risk:** the risk a community may be exposed to as a result of new development on the floodplain. **continuing flood risk:** the risk a community is exposed to after floodplain risk management measures have been implemented. For a town protected by levees, the continuing flood risk is the consequences of the levees being overtopped. For an area without any floodplain risk management measures, the continuing flood risk is simply the existence of its flood exposure.
flood storage areas	Those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood. The extent and behaviour of flood storage areas may change with flood severity, and loss of flood storage can increase the severity of flood impacts by reducing natural flood attenuation. Hence, it is necessary to investigate a range of flood sizes before defining flood storage areas.

floodway areas	Those areas of the floodplain where a significant discharge of water occurs during floods. They are often aligned with naturally defined channels. Floodways are areas that, even if only partially blocked, would cause a significant redistribution of flood flows, or a significant increase in flood levels.
freeboard	Freeboard provides reasonable certainty that the risk exposure selected in deciding on a particular flood chosen as the basis for the FPL is actually provided. It is a factor of safety typically used in relation to the setting of floor levels, levee crest levels, etc. Freeboard is included in the flood planning level.
habitable room	**in a residential situation:** a living or working area, such as a lounge room, dining room, rumpus room, kitchen, bedroom or workroom. **in an industrial or commercial situation:** an area used for offices or to store valuable possessions susceptible to flood damage in the event of a flood.
hazard	A source of potential harm or a situation with a potential to cause loss. In relation to this manual the hazard is flooding which has the potential to cause damage to the community. Definitions of high and low hazard categories are provided in the Manual.
hydraulics	Term given to the study of water flow in waterways; in particular, the evaluation of flow parameters such as water level and velocity.
hydrograph	A graph which shows how the discharge or stage/flood level at any particular location varies with time during a flood.
hydrology	Term given to the study of the rainfall and runoff process; in particular, the evaluation of peak flows, flow volumes and the derivation of hydrographs for a range of floods.
local overland flooding	Inundation by local runoff rather than overbank discharge from a stream, river, estuary, lake or dam.
local drainage	Are smaller scale problems in urban areas. They are outside the definition of major drainage in this glossary.
mainstream flooding	Inundation of normally dry land occurring when water overflows the natural or artificial banks of a stream, river, estuary, lake or dam.
major drainage	Councils have discretion in determining whether urban drainage problems are associated with major or local drainage. For the purpose of this manual major drainage involves: • the floodplains of original watercourses (which may now be piped, channelised or diverted), or sloping areas where overland flows develop along alternative paths once system capacity is exceeded; and/or • water depths generally in excess of 0.3 m (in the major system design storm as defined in the current version of Australian Rainfall and Runoff). These conditions may result in danger to personal safety and property damage to both premises and vehicles; and/or • major overland flow paths through developed areas outside of defined drainage reserves; and/or • the potential to affect a number of buildings along the major flow path.
mathematical/computer models	The mathematical representation of the physical processes involved in runoff generation and stream flow. These models are often run on computers due to the complexity of the mathematical relationships between runoff, stream flow and the distribution of flows across the floodplain.

merit approach	The merit approach weighs social, economic, ecological and cultural impacts of land use options for different flood prone areas together with flood damage, hazard and behaviour implications, and environmental protection and well being of the State's rivers and floodplains. The merit approach operates at two levels. At the strategic level it allows for the consideration of social, economic, ecological, cultural and flooding issues to determine strategies for the management of future flood risk which are formulated into Council plans, policy and EPIs. At a site specific level, it involves consideration of the best way of conditioning development allowable under the floodplain risk management plan, local floodplain risk management policy and EPIs.
minor, moderate and major flooding	Both the State Emergency Service and the Bureau of Meteorology use the following definitions in flood warnings to give a general indication of the types of problems expected with a flood: **minor flooding:** causes inconvenience such as closing of minor roads and the submergence of low level bridges. The lower limit of this class of flooding on the reference gauge is the initial flood level at which landholders and townspeople begin to be flooded. **moderate flooding:** low-lying areas are inundated requiring removal of stock and/or evacuation of some houses. Main traffic routes may be covered. **major flooding:** appreciable urban areas are flooded and/or extensive rural areas are flooded. Properties, villages and towns can be isolated.
modification measures	Measures that modify either the flood, the property or the response to flooding. Examples are indicated in Table 2.1 with further discussion in the Manual.
peak discharge	The maximum discharge occurring during a flood event.
Probable Maximum Flood (PMF)	The PMF is the largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation, and where applicable, snow melt, coupled with the worst flood producing catchment conditions. Generally, it is not physically or economically possible to provide complete protection against this event. The PMF defines the extent of flood prone land, that is, the floodplain. The extent, nature and potential consequences of flooding associated with a range of events rarer than the flood used for designing mitigation works and controlling development, up to and including the PMF event should be addressed in a floodplain risk management study.
Probable Maximum Precipitation (PMP)	The PMP is the greatest depth of precipitation for a given duration meteorologically possible over a given size storm area at a particular location at a particular time of the year, with no allowance made for long-term climatic trends (World Meteorological Organisation, 1986). It is the primary input to PMF estimation.
probability	A statistical measure of the expected chance of flooding (see AEP).
risk	Chance of something happening that will have an impact. It is measured in terms of consequences and likelihood. In the context of the manual it is the likelihood of consequences arising from the interaction of floods, communities and the environment.
runoff	The amount of rainfall which actually ends up as streamflow, also known as rainfall excess.

stage	Equivalent to “water level”. Both are measured with reference to a specified datum.
stage hydrograph	A graph that shows how the water level at a particular location changes with time during a flood. It must be referenced to a particular datum.
survey plan	A plan prepared by a registered surveyor.
water surface profile	A graph showing the flood stage at any given location along a watercourse at a particular time.
wind fetch	The horizontal distance in the direction of wind over which wind waves are generated.

Appendix B

Woolloomooloo Catchment Flood Study

CITY OF SYDNEY 2030

The City of Sydney and Sydney Water are jointly preparing a flood study for the Woolloomooloo area and we would like your help.

The study will tell us about the type of flooding issues in the catchment and help us plan for and manage any flood risks.

Good management of flood risks can help reduce damage and improve social and economic opportunities.

Sydney WATER

Sydney2030/Green/Global/Connected

city of villages

To access the questionnaire online visit

cityofsydney.nsw.gov.au

Management of land

Under the NSW Government Flood Prone Land Policy, management of flood prone land is, primarily, the responsibility of councils.

The Policy specifies a staged process (see Stages 1 – 5).

The City will follow this process in order to manage the floodplain in your area.

Stages 1 – 5

1. The Data collection
2. Flood Study
3. Floodplain Risk Management Study
4. Floodplain Risk Management Plan
5. Implementation of Plan

Objectives

- Investigate historical flooding in the catchment area.
- Develop a computer simulation of flooding that can be used to predict the size and extent of future floods.
- Provide the City with the necessary information to make effective investments in flood management in the future.

For further information please contact

WMAwater
Stephen Gray
Phone 9299 2855

Sydney Water
Matthew Lewis
Phone 8849 4001

City of Sydney
Myl Senthilvasan
Phone 9246 7223

Study area and flooding issues

The Wooloomooloo Catchment includes parts of Wooloomooloo, Darlinghurst, Kings Cross, Potts Point and Rushcutters Bay.

The overall catchment is about 265 hectares. Land uses within the catchment include residential, commercial and industrial properties as well as parklands.

In the past, flooding in the Wooloomooloo Catchment has caused property damage, and posed a hazard to people close to the main drainage channels or drainage paths.

Flooding may also occur along natural depressions and near stormwater pits. The City is trying to measure and understand the extent of these types of flooding within the Wooloomooloo Catchment.

The Flood Study

The Wooloomooloo Catchment Flood Study will be based on historical data and includes a computer simulation that represents flooding in your area.

Information from the study will help future planning in the City of Sydney Local Government Area .

After the Flood Study, a Floodplain Risk Management Study and Plan will be prepared. This will investigate specific flood management options.

Can you please help us?

We want your comments about previous flood experiences.

The local knowledge of residents and business operators and any personal experiences of flooding are an important source of information. We are especially interested in historical records of flooding such as photographs, flood marks or observations that residents may have.

This information will help the City better understand how floods happen in the catchment and lead to better management of the hazards.

Please complete the questionnaire and return it in the reply paid envelope, or complete it online (preferred) at cityofsydney.nsw.gov.au

Floodplain Management Committee

A Floodplain Management Committee has been established and we are seeking representatives of your community for this catchment area. Meetings will be held quarterly and will be about one to two hours long. The committee will oversee the floodplain management process and help with reviews.

The Flood Study is due for completion in March 2013.

The community will be invited to view and comment on the Draft Study when it is placed on public exhibition.

Sydney2030/Green/Global/Connected

Woolloomooloo Catchment Flood Study

Community questionnaire

Sydney Water and The City of Sydney are carrying out a flood study for the Wooloomooloo catchment. Your local knowledge of the catchment and personal experiences of flooding will help us to undertake this flood study.

We appreciate you taking the time to assist us. All residents who complete this questionnaire are invited to enter a draw to win a $100 Myer Gift Voucher. Details are attached.

1

Your details

The purpose of the Flood Study is to identify the nature of flooding in your catchment area to enable the City to better understand, plan and manage the potential flood risk. We may contact you to discuss some of the information that you provide.

Name: .....

Address: .....

Email: .....

Contact Phone Number: .....

2

How long have you lived at the above address?

Months: ..... Years: .....

3

Are you aware of stormwater flooding from streets or channels in your catchment? (Please tick one)

☐ Aware ☐ Some Knowledge ☐ Not Aware

4

Have you ever been inconvenienced by uncontrolled floodwater/stormwater from streets or channels in this area?

☐ Yes ☐ No

If yes, please give more details in the space provided on the next page.

4 continued

Please show how uncontrolled floodwater/stormwater has inconvenienced you?

- ☐ Daily routine was affected (e.g. it was difficult to get to work) .....
- ☐ Safety was threatened .....
- ☐ Access to property was affected (e.g. driveways or roads flooded) .....
- ☐ Property and/or its contents were damaged .....
- ☐ Business was unable to operate during the flooded period .....
- ☐ Other (please specify) .....

5

Can you remember when this happened?

☐ Yes ☐ No

☐ June 2007	☐ April 1998	☐ January 1991	☐ November 1988
☐ February 2001	☐ February 1993	☐ January 1989	☐ Other

6

Has your home or other property been flooded because of uncontrolled floodwater/stormwater from streets or channels in this area?

☐ Yes ☐ No

If Yes, where was your property flooded, and when did it happen? (You may tick more than one)

- ☐ Frontyard or backyard .....
- ☐ Garage or shed .....
- ☐ Residential (below floor level) .....
- ☐ Residential (above floor level) .....
- ☐ Commercial (e.g. shops, above floor level) .....
- ☐ Commercial (below floor level) .....
- ☐ Industrial (e.g. factories) .....
- ☐ Other (please give details) .....

.....

.....

7

If you have experienced flooding, what other areas have you seen flooded?

☐ Residential or commercial

Address: ..... Description: .....

☐ Roads or footpaths

Address: ..... Description: .....

☐ Parks

Address: ..... Description: .....

☐ Other (give details)

Address: ..... Description: .....

8

Did you notice any bridges and/or drains were blocked during the flooding?

☐ Yes ☐ No

If you answered yes, please provide details. How blocked would you say it was (i.e. 50% blocked, 80% blocked)?
What was causing the blockage?

.....

.....

9

Do you have any evidence of past floods (e.g. photos, video footage, watermarks on walls or posts)?

☐ Yes ☐ No

If yes please provide more information:

.....

.....

.....

.....

10

Do you have any more information you think might help the Study?

.....

.....

.....

.....

11

Are you interested in taking part in the floodplain risk management committee? The committee will oversee the floodplain risk management process. Meetings will occur quarterly and will take 1-2 hours at a time.

☐ Yes ☐ No

If yes, please provide your contact details in Question 1 for our staff to contact you.

Thank you for providing this information. Please remember to place all pages in the reply paid envelope and send to WMAwater by 19 November 2012. A representative from WMAwater may contact you in the near future to discuss your response.

Privacy notice The information obtained from the Woolloomooloo Catchment Flood Study questionnaire will be used by staff at the City of Sydney and WMAwater only. Supply of this information is voluntary, but entries will not be accepted unless accompanied by a completed questionnaire form. Access to/or correction of information should be addressed to the Promoter (see over). The information will be stored on Council's file for the duration of the project. The winner will be contacted at the conclusion of the competition as per the Conditions of Entry.

ENTER the draw for a $100 Myer Gift Voucher

To go in the draw for a $100 Myer gift voucher simply fill in this slip with your details and return it with your completed questionnaire in the reply paid envelope by 19 November 2012.

Please do not staple or attach this form to your questionnaire.

We need to ensure the anonymity of your response. The draw will be held on 23 November 2012.

YES! I would like to enter the draw for a $100 Myer Gift Voucher

Please enter your details below

Name: .....

Address: .....

Email: .....

Contact Phone Number: .....

Conditions of entry

1. Entries close at 4pm on 19 November 2012.
2. Entries will not be accepted unless sent with a completed questionnaire form.
3. Only one entry for each completed survey form will be accepted.
4. The winner will be contacted within two weeks of the draw.
5. Prizes cannot be exchanged for cash.