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CONCEPT FLOOD RISK MANAGEMENT AND STORMWATER MANAGEMENT REPORT FOR THE WINTER SPORTS WORLD

Client: **WSW Winter Sports World**

Property: **Nos. 2 - 4 Tench Ave, Jamisontown**

Date: **27 June 2018**

Document Identification

Our Reference: **GO170662**

For and on behalf of ACOR Consultants (CC) Pty Ltd

Quality Information

Version	Description	Date	Author	Signature
1.0	Report for comment	27/06/2018	Amanda Newman & Bruce Kenny	

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ANNEXURES

1.0 Introduction

ACOR Consultants (CC) Pty Ltd (ACOR) has been commissioned to prepare a concept Flood Risk Management and Stormwater Management Plan in response to the general requirements of Penrith Development Control Plan (DCP) 2014 Part C3 Water Management and Penrith Local Environmental Plan (LEP) 2010 Clause 7.2. In the preparation of this report, ACOR has relied upon certain data and information contained within the following documents:

- Architectural plans prepared by Environa Studio, Reference 781, Sheets 030,101 -114 and 120, Revision A, dated 27 June 2018
- Site survey not referenced nor dated.
- Penrith DCP 2014;
- Penrith LEP 2010;
- Nepean River Flood Study Exhibition Draft Report Reference 301077-14401 prepared by Worley Parsons Services Pty Ltd Dated 16 August 2017
- Hawkesbury Nepean Flood Emergency Sub Plan.
- Penrith City Council Local Flood Plan, Sub Plan of Penrith Local Disaster Plan (Displan);
- 'Technical flood risk management guideline: Flood hazard' published by the Attorney-General's Department, dated 2014;
- 'Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas' published by the Hawkesbury-Nepean Floodplain Management Steering Committee (HNFMSC), dated 2006; and
- 'Floodplain Development Manual: the management of flood liable land' published by NSW Department of Infrastructure, Planning and Natural Resources (NSW DIPNR), dated April 2005.

The purpose of this report is to provide structured guidelines for the design and management of flooding and stormwater related issues. Additionally, the report will examine the impact of flooding at the subject site and recommend measures to ensure that future development of the site will meet flood compatibility standards, including evacuation and emergency response procedures. The purpose of this report is to provide Penrith City Council and other regulatory authorities with sufficient information to assess the recommendations and guidelines for future development of the subject site.

In addition, our Report responds to the requirements of the Penrith City Council Flooding and Evacuation Information Form which states:

Response to Flooding and Evacuation Information

Background: *This information form is for the purpose of assessing regional and local flood risk in the Hawkesbury-Nepean Valley – particularly regional and local evacuation capacity. No detailed studies are required to complete this form. The impact of the proposal on local flood evacuation capacity will be assessed by local council. Should local council support the proposal, its impact on regional flood*

evacuation capacity will be assessed after the planning proposal is submitted to the Department of Planning and Environment.

Location: *Provide location information for the site and adjacent areas such as existing topography and existing land use, site accessibility and land suitability.*

Context: *Provide preliminary information on proposed development including:*

- *Proposed type of land use after rezoning;*
- *any proposed earthworks (cut/fill);*
- *proposed buildings footprint within the site;*
- *numbers of dwellings;*
- *number of storeys if applicable;*
- *potential number of occupiers (residents and employees);*
- *car parking types;*
- *proposed habitable and non-habitable floor levels;*
- *proposed car park and street level;*
- *proposed building and development controls.*

Primary constraints *List the primary constraints in regard to flood risk in this area utilising existing available information including from councils' studies. This includes:*

- *Constraints due to regional and local flood characteristics and vulnerability of proposed land use to flood risk;*
- *Hazard and Hydraulic constraints;*
- *Emergency Management constraints as identified in the Hawkesbury-Nepean State Flood Plan i.e. isolation, evacuation, warning time.*

Management Measures *Outline any proposed management measures/strategy to manage identified constraints, including if applicable, flood barriers or other controls, evacuation plans, use of building Occupant Waring Systems for flood evacuation, etc.*

In relation to the Response to Flooding and Evacuation Information we refer to our correspondence dated 27 June 2018 (copy enclosed under Annexure B).

2.0 Site Description

The subject site is known as Lot 1 in DP 38950 (2-4) Tench Ave, Jamisontown. The site is located on the corner of Tench Ave and Jamison Road. we refer to Figure 1 following which depicts the location of the site and surrounding development.

The subject site is partially developed site of area 2.342 hectares. The site is Existing development of the site consists of a residential building. The site generally falls in an easterly direction with a localised depressed area at RL 24.5m AHD draining to Jamison Road Elevations on site are within the range RL 28.0 m AHD to 24.5 m AHD. We refer to the features depicted on the survey plan referenced under Section 1.0 of this report.

The applicant proposes the construction of a substantial building structure which will facilitate the operation of a specialised sports centre, carparking and hotel accommodation. The principal features of the development are depicted on the architectural plans prepared by Environa Studio, Reference 781, Sheets 030,101 -114 and 120, Revision A, dated 27 June 2018.

3.0 Flooding

This section of the report describes existing flood behaviour at the site, discusses the impact of the proposed development on flood behaviour, and recommends measures to ensure that future development of the site will meet flood compatibility standards. Existing flood behaviour is described in Section 3.1. Measures to mitigate the impact of flooding at the subject site are discussed in Section 3.3, while the impact of the proposed development is discussed in Section 3.2.

We note that the site is included in the Nepean River Exhibition Draft Report Reference 301077-14401 prepared by Worley Parsons Services Pty Ltd Dated 16 August 2017. We have adopted the findings presented in this Draft Report in the following sections of our report.

3.1 Flood Characteristics

The site is impacted by flooding from the Nepean River and a tributary known as Peach Tree Creek. The subject site adjoins the eastern levee bank of the Nepean River. The Peach Tree Creek depression is located east of the site and flows over Jamison Road during the 100 Year ARI event approximately 450 metres east of the site.

The 2% AEP overland floodwaters will not impact the site. We refer to the 50 Year ARI Flood level Maps (copies enclosed under Annexure A).

The 1% AEP overland floodwaters impact the site at elevation RL 26.00 m AHD. The 1% AEP overland floodwaters cause partial inundation over the eastern half of the subject site to depths within the range 0.0 m to 1.5 m. The western portion of the site is not inundated by 1% AEP floodwaters. We refer to the 100 Year ARI Flood level Maps (copies enclosed under Annexure A).

The 1% AEP overland floodwaters affecting the subject site pose Low to High Hazard conditions. We refer to the 100 Year ARI provisional Flood Hazard Category Map (copy enclosed under Annexure A).

The 1% AEP flood level occurring at RL 26.0 m AHD will be adopted for the purposes of this report.

The 0.5% AEP overland floodwaters impact the site at elevation RL 27.5 m AHD. The 0.5% AEP overland floodwaters cause partial inundation over the majority of the subject site to depths within the range 0.0 m to 3.0 m. An elevated western portion of the site is not inundated by 0.5% AEP floodwaters. We refer to the 200 Year ARI Flood level Maps (copies enclosed under Annexure A).

The 0.5% AEP overland floodwaters affecting the subject site pose Intermediate to High Hazard conditions. We refer to the 200 Year ARI provisional Flood Hazard Category Map (copy enclosed under Annexure A).

The PMF overland floodwaters impact the site at elevation RL 31.5 m AHD. The PMF overland floodwaters cause total inundation over the subject site to depths within the range 4 m to 7 m. We refer to the PMF Flood level Maps (copies enclosed under Annexure A).

The PMF overland floodwaters affecting the subject site pose High Hazard conditions. We refer to the PMF provisional Flood Hazard Category Map (copy enclosed under Annexure A).

3.2 Impact of the Proposed Development

The proposed structure will be partially located within the 1% AEP overland flood inundation limits. The section of the building structure encroaching within the 100 Year ARI flood waters will include an elevated open sub-floor supported on isolated columns. The opportunity to provide compensatory flood storage will be assessed during the detail design phase. The design of the structure will include measures that have no impact on the 1% AEP local overland flood behaviour elsewhere within the floodplain.

In this regard It is anticipated that regrading of the site will result in a beneficial increase in the post development 1% AEP mainstream flood storage. Accordingly, the proposed development will result in a beneficial impact on the existing 1% AEP mainstream flood regime.

3.3 Flood Risk Management

Based on the foregoing, we offer the following response, having due regard for the requirements of Penrith DCP 2014 Part C3 Section 3.5, Penrith LEP 2010 and 'Floodplain Development Manual' (NSW DIPNR 2005).

3.3.1 Floor Level

The Flood Planning Level (FPL) is RL 26.5 AHD, this level provides 500 mm freeboard above the 1% AEP floodwaters. Accordingly, the proposed floor level meets the minimum floor level requirements of Penrith DCP 2014 Part C3 Section 3.5 Clauses 6 a) and 7 a).

3.3.2 Building Components and Method

The proposed building structure will be constructed of flood compatible building materials below the PMF floodwaters. Extensive guidance on flood compatible building materials and methods is provided in 'Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas' (HNFMSC 2006); a selection of the flood compatible materials and practices, applicable to the proposed development, described in this resource is summarised below.

Flood compatible floor and sub-floor materials include reinforced or mass concrete and masonry. Suitable wall structure materials include solid brickwork, blockwork, concrete and steel frames. Steel frames should be constructed of open sections where possible and have holes drilled into the bottom steel plates to allow water to drain from the frame in the event of immersion.

Flood compatible wall and ceiling linings include fibre-cement board, brick, concrete (including concrete blocks), stone with waterproof grout, clay tiles glazed with waterproof mortar, glass (including glass blocks), plastic sheeting with waterproof adhesive, steel with waterproof applications, exterior grade plywood, and fully sealed solid wood products. Plasterboard is not a flood compatible material as it requires replacement

after extended immersion, however for shallow and short duration floods there may be little damage to plasterboard wall linings. It is recommended that sheet wall linings be installed horizontally with a 20-30 mm gap provided between the bottom wall plate and the base of the wall lining to facilitate ventilation and cleaning of the wall cavity after a flood event. The gap may be covered with skirting board when access to the wall cavity is not required.

Insulation should be closed cell type foam. Nails, bolts, hinges and fittings should be made from nylon, brass, stainless steel or hot dipped galvanised steel. Hinges should be of a removable pin type.

Flood compatible doors include solid panel doors with waterproof adhesives, flush doors with marine ply and closed cell foam, metal doors, and aluminium or galvanised steel frame doors. Aluminium frame windows with stainless steel rollers or similar corrosion and water-resistant materials suffer least damage during flood events.

Connection to mains power supply, shall be installed such that they will be self-draining in the event of flooding.

Heating and air-conditioning systems, including fuel supply and ducting, should be installed in such a manner as to minimise damage from submersion. This may be achieved through measures such as access for cleaning and draining of water after flood events, manually operated cut off valves for fuel supply lines and ducts, securely fastening heating equipment and fuel storage tanks to prevent buoyancy and movement, and venting of fuel supply tanks at an elevation above the PMF

3.3.3 Structural Soundness

The proposed building structure will be constructed to withstand the loads imposed by the PMF mainstream floodwaters including hydrostatic, hydrodynamic, buoyancy and debris impact forces. The structural design will be prepared by a practicing Structural Engineer with relevant experience designing structures on flood affected lands.

3.3.4 Car Parking and Driveway Access

Car and coach parking areas are proposed to have finished surface levels at or above the FPL. At RL 26.5m AHD

3.3.5 Materials Storage

Goods and materials associated with the operation of the facility will be stored at or above the FPL.

Based on the foregoing, we are of the view that the proposed facility will provide sufficient area above the FPL to store goods and materials which may become hazardous, may be damaged by floodwaters or have the potential to pollute floodwaters. Accordingly, we are of the view that the proposed development complies with the requirements of Penrith City Council DCP 2014 Part C3 Section 3.5 Clause 12 a).

3.3.6 Fencing

The Application will not propose external perimeter fencing. There is a proposal to include flood compatible louvres (or similar) to the external edges of the elevated sub floor. This treatment will not impede the passage of stormwater flows or floodwaters.

3.3.7 Evacuation

The State Emergency Service of NSW (SES) is responsible for providing flood updates which can be received by local, radio and television news and SMS messaging. The timing for evacuation of persons i be established in consultation with the SES.

Future flood-readiness for the staff and operators of the facility and occupiers will be developed in consultation with the SES to develop an Emergency Business Continuity Plan. Future owners/occupiers of the site should prepare, regularly review and update an Emergency Business Continuity Plan.

A copy of the Emergency Business Continuity Plan should be accessible to staff, and staff should be made aware of its existence and regularly trained in the appropriate response(s) to emergency situations.

In this regard the site lies within the boundaries and prescriptive requirements of the Penrith City Council Local Flood Plan – a Sub Plan of the Penrith Local Disaster Plan (DISPLAN) and Hawkesbury Nepean Flood Emergency Response Plan – A Sub Plan of the State Emergency Management plan (EMPLAN).

The development of the Emergency Business Continuity Plan including the Flood Management Plan (FMP) will consider the operation of the facility. In this regard the facility has the ability to cease operations and subsequently restrict or deny access to the facility. The trigger to close the facility to the public will be determined in consultation with the SES and Penrith City Council and be a consequence of issued flood warnings.

The hotel accommodation proposes 179 rooms, the FMP will need to be prepared in consultation with the SES in order to provide an evacuation strategy for hotel guests. The FMP will outline instructions for additional vehicles, evacuation routes and refuge centres. Where additional buses, vans and cars are required arrangements will be made with local car rental providers. These vehicles will be controlled by nominated and authorised staff members and, will substantially reduce the time required for evacuation.

In the event that the 1% AEP flood event is expected to be exceeded, strategies should be adopted in accordance with NSW Government operational guidelines and SES Emergency Evacuation operational guidelines.

The FMP will be prepared having due regard to traffic consideration and evacuation routes. The anticipated evacuation route is detailed on the figure following.

Preliminary traffic volumes within this traffic precinct indicate that vehicles should clear in approximately one hour. We note that this will need to be validated during the detail design phase.

It is anticipated that hotel guests will be conveyed to alternate accommodation in accordance with the FMP.

4.0 Stormwater Quality

This section of the report identifies potential impacts imposed by future development on stormwater quality and includes strategies which could be implemented in assisting the ongoing maintenance of streamflow as well as meeting prescriptive targets for the reduction of gross pollutants, nutrients and chemical pollutants. Future assessment at detail design phase will include:

- Existing (pre-development) stormwater quality, including the identification of pollutant sources and treatment devices;
- Post-development stormwater quality, including the identification of pollutant sources and pollutant influx to the proposed treatment train; and
- Performance of the proposed treatment train.

Future Stormwater quality analysis will be undertaken using a MUSIC model of the pre-development and post-development site scenarios.

4.1 Stormwater Treatment Requirements

The proposed development is required to incorporate a stormwater treatment train capable of meeting the pollutant reduction targets outlined in Table 1.

Table 1: Stormwater Pollution Retention Targets

Pollutant	Retention target
Total suspended solids (TSS)	85%
Total phosphorus (TP)	60%
Total nitrogen (TN)	45%
Gross pollutants (GP)	90%
Free oils and grease	90% with no visible discharge

In accordance with guidance contained within Penrith City Council's WSUD Technical guidelines, the treatment train was designed to capture and treat the 3 month ARI site discharge. The 3 month ARI site discharge was taken to be half the 1 Year ARI peak discharge rate from the site (The et al. 2015).

4.2 Stormwater Treatment Train

The stormwater treatment measures for the proposed development consist will include a proprietary device which will be designed at detail design phase. In this regard we note the following device which can meet the prescriptive requirements.

- Ecosol Cartridge Filter (confirm model)

The pollutant removal parameters of the proposed Ecosol ECF Triple were provided by the manufacturer, Ecosol Pty Ltd. The Ecosol ECF Triple provides three stage treatment of stormwater to remove gross pollutants; oil, grease and other hydrocarbons; nitrogen; phosphorous; and heavy metals (Ecosol 2014). The pollutant removal efficiency of the proposed Ecosol ECF Triple is summarised in Table 2.

Table 2: Ecosol ECF Triple Pollutant Removal Efficiency (Ecosol 2014)

Pollutant	Removal efficiency (%)
TSS	92
TP	60
TN	60
GP	99
Total petroleum and hydrocarbons	95
Heavy metals	97

4.3 MUSIC Model Development

A pre-development and post-development MUSIC model will be developed for the subject site. This section describes the climate data, MUSIC parameters and catchment representation used to assess site stormwater quality in the pre-development and post-development conditions.

MUSIC requires climate data, in the form of rainfall and potential evapotranspiration (PET) data, and rainfall-runoff parameters to generate stormwater runoff from the site. This data was acquired through the use of a Penrith City Council MUSIC-link model.

Stormwater pollutant loads will be generated using the stochastic generation tool within MUSIC. This results in log-normally distributed, uncorrelated pollutant loads for each storm event. The pollutant load parameters vary by land use type. Pollutant load parameters will be acquired through MUSIC-link for each land use type.

The pre-development and post-development catchments will be defined based on topographic features indicated during site survey, and anticipated flow paths. The pre-development and post development catchments are anticipated to encompass the same area. The total site area being developed is 2.34 hectares

The post-development MUSIC model will consider the following and a detailed Water Quality Report will be undertaken at detail design phase.

- Source node: Carpark & driveway;
- Source node: Roof;
- Source node: Landscaping;
- Treatment node: Detention storage
- Treatment node: Ecosol Cartridge Filter Triple (Offline); and
- Outlet node: Post-Development node.

4.4 Water Quality Assessment

The proposed stormwater quality treatment device will be required to achieve the percentage reduction targets for gross pollutants, TSS, TP and TN than required under Penrith DCP 2014 Part C3 Section 3.2 Clause 5B.

4.5 Water Conservation Measures

Section 3.1 of Council's WSUD policy requires rainwater tanks to be installed to meet 80% of non-potable demand including outdoor use, toilets and laundries. The application will include measures (rainwater tanks) which will provide beneficial non-potable rainwater re-use to meet this requirement.

5.0 On-site Detention (OSD)

Based on the flood behaviour we understand that there will be no requirement for on-site stormwater detention. It is noted that the application may include additional compensatory flood storage. This will be assessed at detail design phase.

6.0 Conclusions

The impact of overland and mainstream 1%, 0.5% and PMF flooding of the site has been assessed and measures to manage the risk posed by flooding at the site are presented in the forgoing sections of this report. The site is impacted by flooding from the Nepean River and Peach Tree Creek. The 1% AEP floodwaters impact areas of the site where development is proposed at elevation RL 26.0 m AHD, resulting in partial inundation to depths within the range 0.0 m to 1.5m

The lowest floorspace is proposed at elevation 26.5 m AHD, which is at the Flood Planning Level (FPL) of RL 26.5 m AHD. The proposed structure will be designed to withstand the loads imposed by the PMF floodwaters. The proposed structure will be constructed of flood compatible building materials below the PMF. Guidance on appropriate flood compatible building materials is provided in Section 3.3.2.

The proposed carparking and coach parking is proposed at level at or above RL 26.5 m AHD. In this regard, the proposed parking facilities will not be impacted by the 1% AEP floodwaters.

All materials stored on site which may become hazardous, pollute floodwaters or be damaged by floodwaters will be stored either within the structure at or above of RL 26.5 m AHD. In this regard, the proposed development provides adequate area to store goods either above, or protected above, the FPL of RL 26.5 m AHD.

There is no proposal for filling of the site results and consequently no loss of flood storage.

During the 1% AEP mainstream and overland flood events, Jamison Road and Tench Ave are not expected to be trafficable for pedestrians and vehicles. The timing of evacuation strategy of the site is currently being established in consultation with the NSW SES. The framework for the evacuation strategy is provided in the Penrith City Council Local Flood Plan – a Sub Plan of the Penrith Local Disaster Plan (DISPLAN) and Hawkesbury Nepean Flood Emergency Response Plan – A Sub Plan of the State Emergency Management plan (EMPLAN).

The structure of the Evacuation Plan is discussed in Section 3.3.7 of the report.

Based on the foregoing, we are of the view that the proposed development can include measures which will provide compliance with the intent of Penrith DCP 2014 Part C3 Water Management.

7.0 References

Attorney-General's Department. (2014). *Technical flood risk management guideline: Flood hazard*. Barton, ACT: Author.

Hawkesbury-Nepean Floodplain Management Steering Committee (HNFMSC). (2006). *Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas*. Available from http://www.ses.nsw.gov.au/content/documents/pdf/resources/Building_Guidelines.pdf

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The C., Beesley C., Podger S., Green J., Jolly C., and Hutchinson M. (2015). 'Very Frequent Design Rainfalls – An Enhancement to the New IFDs'. In Engineers Australia (ed.) *36th Hydrology and Water Resources Symposium (HWRS 2015)*. Barton, ACT: Author.

ANNEXURE A

ACOR Consultants (CC) Pty Ltd
50 Year, 100 Year, 200 Year ARI Flood Plans
PMF Flood Level Plan
100 Year ARI, 200 Year ARI Flood Hazard Plans
PMF Flood Hazard Plan
Reference GO17662
Issue A
Dated 27 June 2018

This drawing has been assigned an electronic code that signifies the drawing has been checked and approved by: L.D APPLEYARD MIE Aust CPEng (CIVIL / STRUCTURAL)

Issue	Description	Date	Drawn	Approved
A	INITIAL ISSUE	27.06.18	SJ	BK

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Project
WESTERN SYDNEY WINTER SPORTS COMPLEX
No. 2 - 4
TENCH AVENUE
JAMISONTOWN

Drawing Title
50 YEAR ARI FLOOD LEVEL PLAN

Drawn	Date	Scale A1	Q.A. Check	Date
SJ	27.06.18	NTS	-	-

Designed	Project No.	Dwg. No.	Issue
BK	GO170662	F1	A

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JAMISONTOWN

Drawing Title
100 YEAR ARI FLOOD LEVEL PLAN

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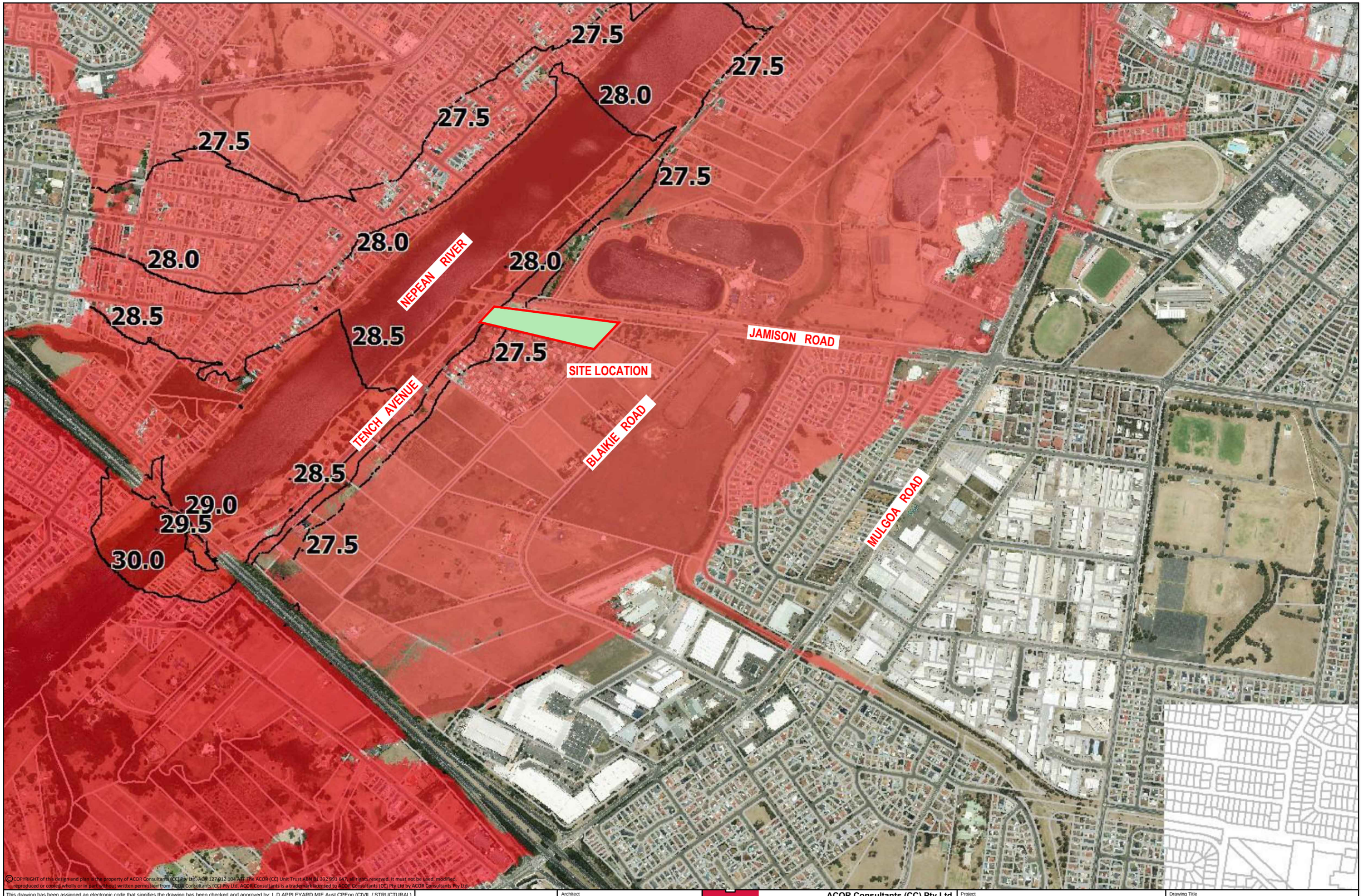

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Drawing Title
200 YEAR ARI FLOOD LEVEL PLAN

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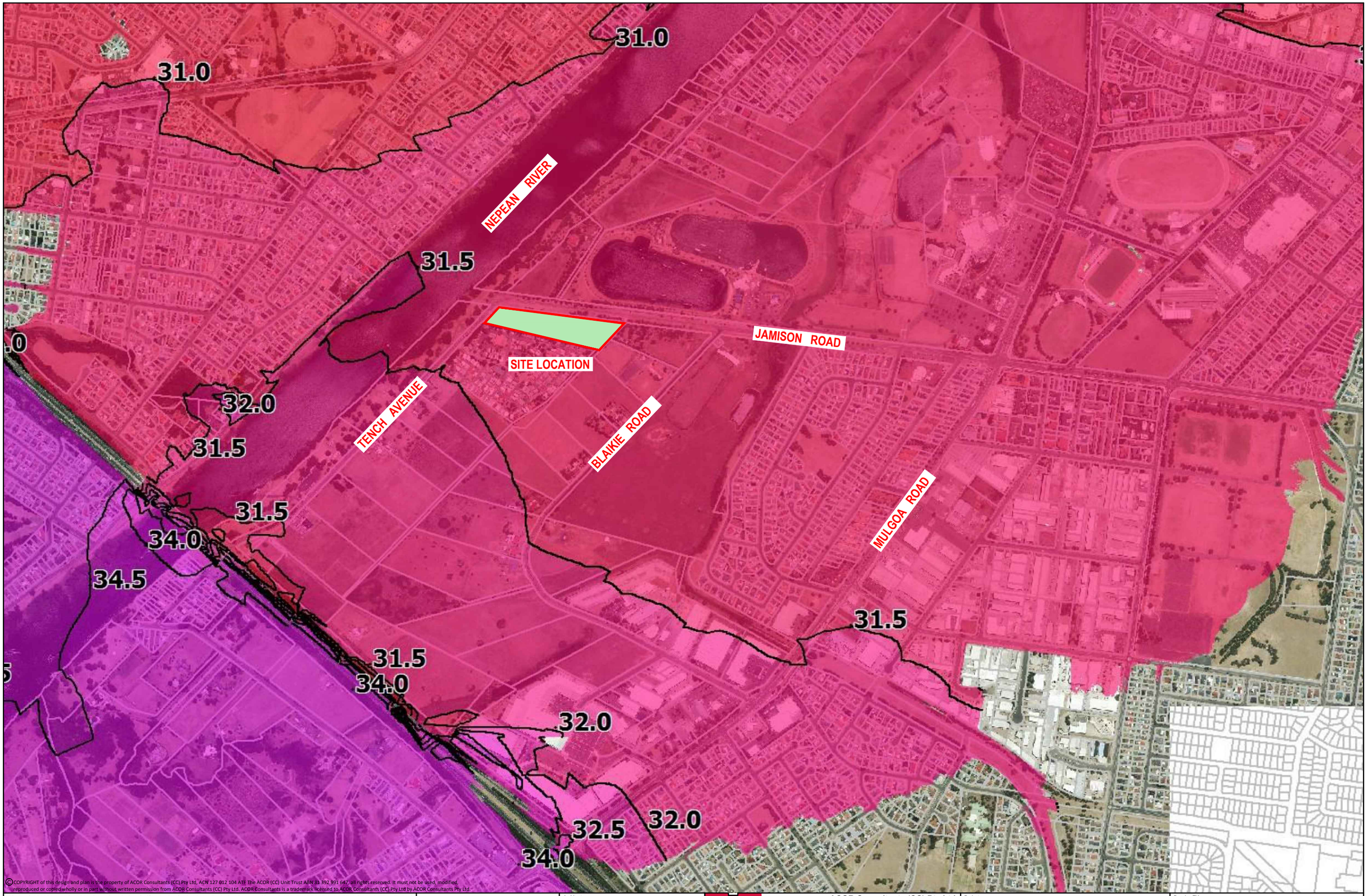

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Drawing Title
PMF FLOOD LEVEL PLAN

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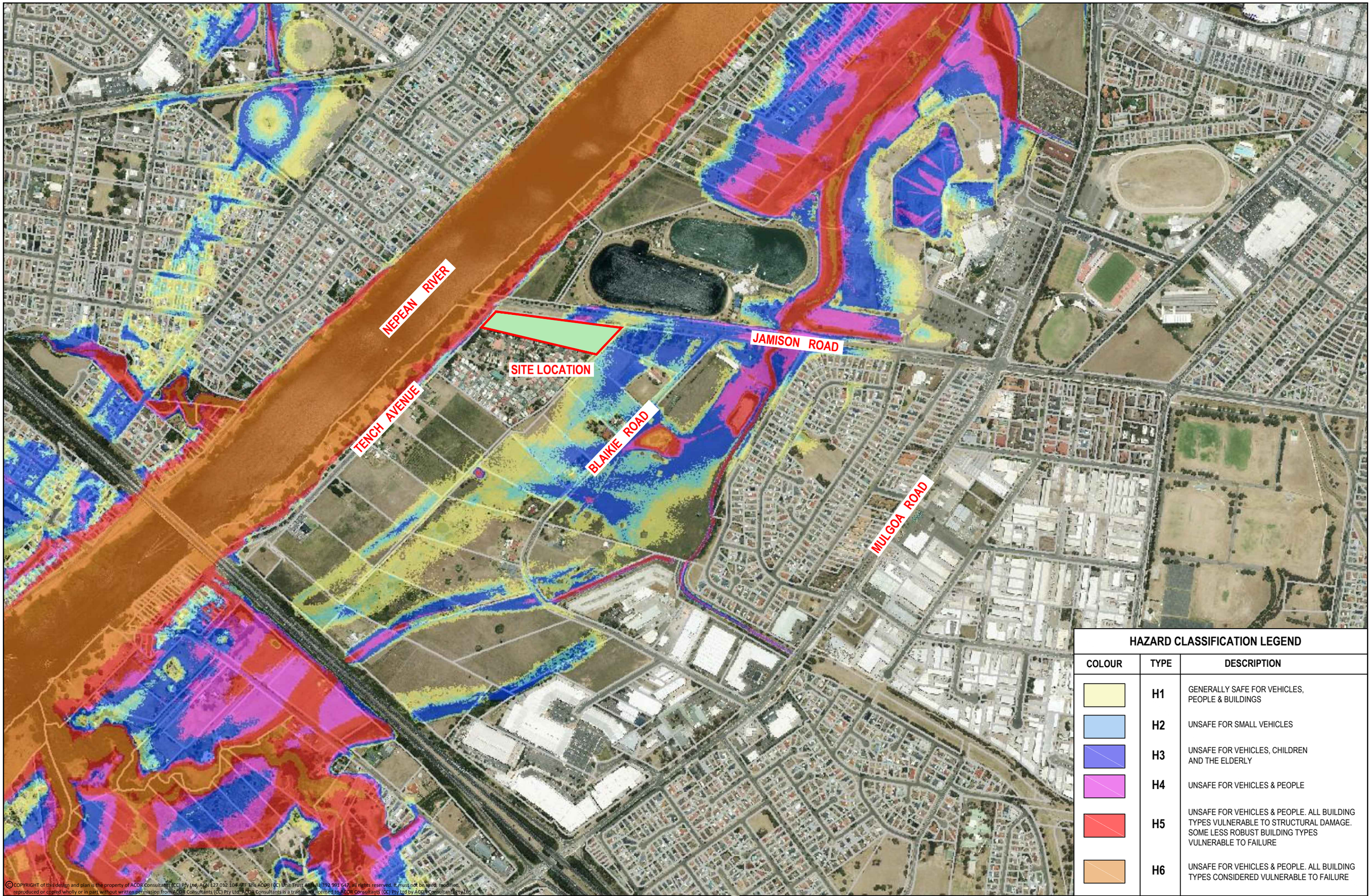

HAZARD CLASSIFICATION LEGEND

COLOUR	TYPE	DESCRIPTION
	H1	GENERALLY SAFE FOR VEHICLES, PEOPLE & BUILDINGS
	H2	UNSAFE FOR SMALL VEHICLES
	H3	UNSAFE FOR VEHICLES, CHILDREN AND THE ELDERLY
	H4	UNSAFE FOR VEHICLES & PEOPLE
	H5	UNSAFE FOR VEHICLES & PEOPLE. ALL BUILDING TYPES VULNERABLE TO STRUCTURAL DAMAGE. SOME LESS ROBUST BUILDING TYPES VULNERABLE TO FAILURE
	H6	UNSAFE FOR VEHICLES & PEOPLE. ALL BUILDING TYPES CONSIDERED VULNERABLE TO FAILURE

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100 YEAR ARI FLOOD HAZARD PLAN

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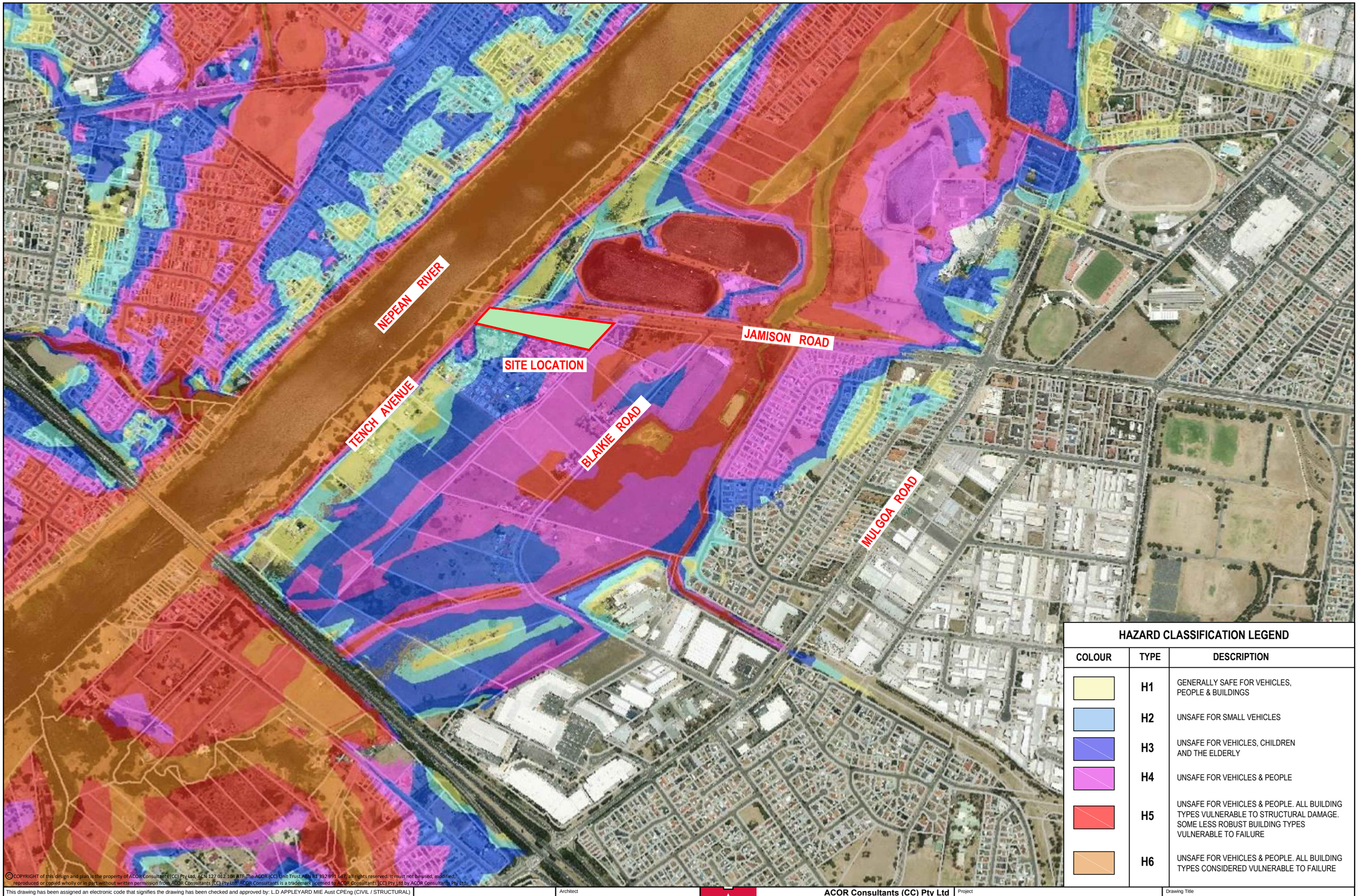

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	H1	GENERALLY SAFE FOR VEHICLES, PEOPLE & BUILDINGS
	H2	UNSAFE FOR SMALL VEHICLES
	H3	UNSAFE FOR VEHICLES, CHILDREN AND THE ELDERLY
	H4	UNSAFE FOR VEHICLES & PEOPLE
	H5	UNSAFE FOR VEHICLES & PEOPLE. ALL BUILDING TYPES VULNERABLE TO STRUCTURAL DAMAGE. SOME LESS ROBUST BUILDING TYPES VULNERABLE TO FAILURE
	H6	UNSAFE FOR VEHICLES & PEOPLE. ALL BUILDING TYPES CONSIDERED VULNERABLE TO FAILURE

This drawing has been assigned an electronic code that signifies the drawing has been checked and approved by: L.D APPLEYARD MIE Aust CPEng (CIVIL / STRUCTURAL)

Issue	Description	Date	Drawn	Approved
A	INITIAL ISSUE	27.06.18	SJ	BK

North

1cm at full size

Architect
ENVIRONA STUDIO

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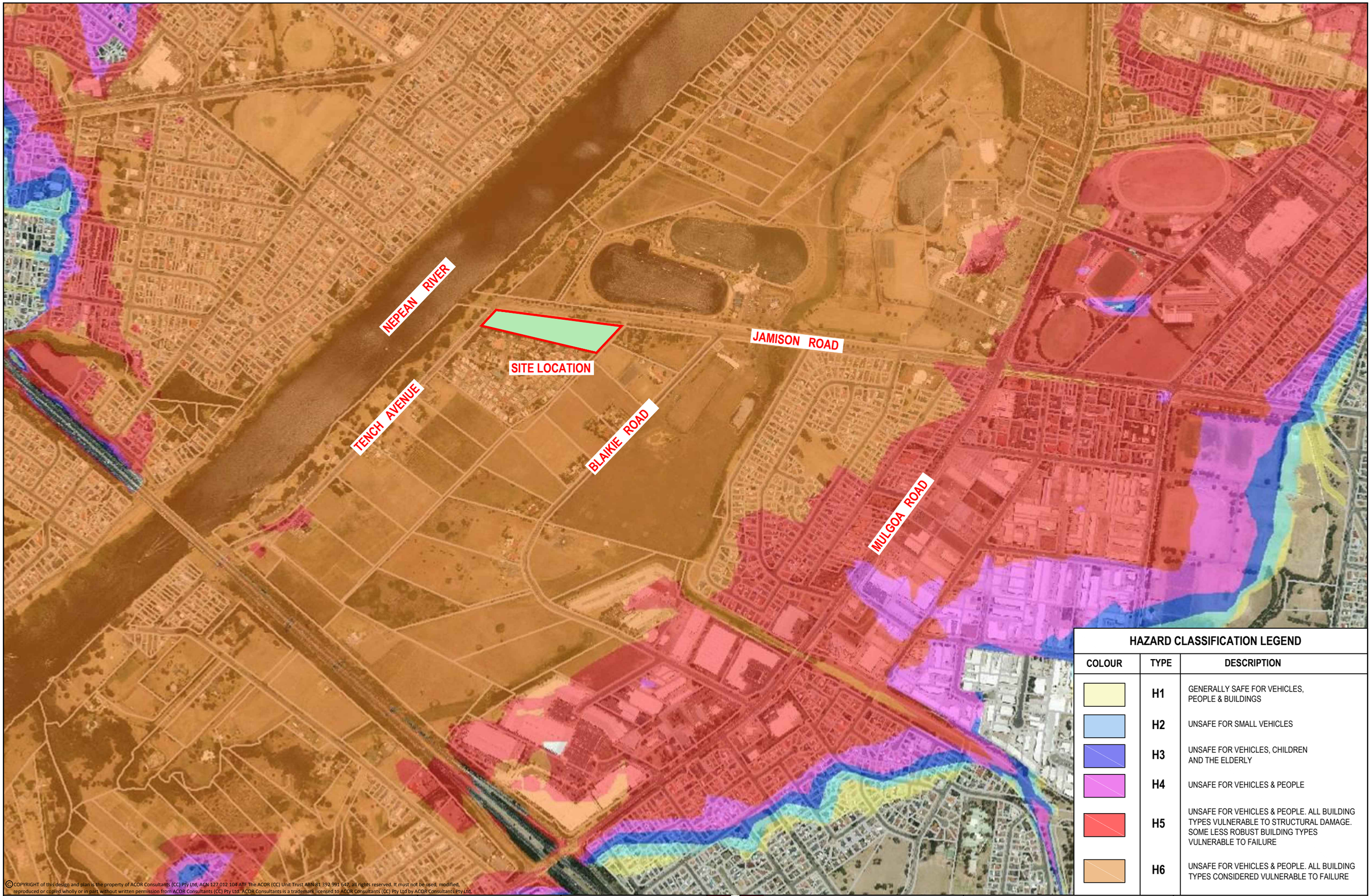
Project
WESTERN SYDNEY WINTER SPORTS COMPLEX
No. 2 - 4
TENCH AVENUE
JAMISONTOWN

Drawing Title
200 YEAR ARI FLOOD HAZARD PLAN

Drawn	Date	Scale A1	Q.A. Check	Date
SJ	NTS	AS NOTED	-	-

Designed	Project No.	Dwg. No.	Issue
BK	GO170662	F6	A



HAZARD CLASSIFICATION LEGEND

COLOUR	TYPE	DESCRIPTION
	H1	GENERALLY SAFE FOR VEHICLES, PEOPLE & BUILDINGS
	H2	UNSAFE FOR SMALL VEHICLES
	H3	UNSAFE FOR VEHICLES, CHILDREN AND THE ELDERLY
	H4	UNSAFE FOR VEHICLES & PEOPLE
	H5	UNSAFE FOR VEHICLES & PEOPLE. ALL BUILDING TYPES VULNERABLE TO STRUCTURAL DAMAGE. SOME LESS ROBUST BUILDING TYPES VULNERABLE TO FAILURE
	H6	UNSAFE FOR VEHICLES & PEOPLE. ALL BUILDING TYPES CONSIDERED VULNERABLE TO FAILURE

This drawing has been assigned an electronic code that signifies the drawing has been checked and approved by: L.D APPLEYARD MIE Aust CPEng (CIVIL / STRUCTURAL)

Issue	Description	Date	Drawn	Approved
A	INITIAL ISSUE	27.06.18	SJ	BK

1 0 1cm at full size 10cm

North

Architect
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Project
WESTERN SYDNEY WINTER SPORTS COMPLEX
No. 2 - 4
TENCH AVENUE
JAMISONTOWN

Drawing Title
PMF FLOOD HAZARD PLAN

Drawn	Date	Scale A1	Q.A. Check	Date
SJ	NTS	AS NOTED	-	-
Designed	Project No.	Dwg. No.	Issue	
BK	GO170662	F7	A	

ANNEXURE B

ACOR Consultants (CC) Pty Ltd
Correspondence to Penrith City Council
dated 27 June 2018

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ENGINEERS
MANAGERS
INFRASTRUCTURE PLANNERS
DEVELOPMENT CONSULTANTS

Our Reference: GO170662\BAK:kcb

Your Reference:

27 June 2018

The General Manager
Penrith City Council
601 High Street
PENRITH NW 2751

Dear Sir/Madam,

Re: Proposed Winter Sports World
Flooding and Evacuation Information
Property: Nos 2 – 4 Tench Avenue, Jamisontown

We refer to the requirements of the Penrith City Council Flooding and Evacuation Information Form which states:

Response to Flooding and Evacuation Information

Background: *This information form is for the purpose of assessing regional and local flood risk in the Hawkesbury-Nepean Valley – particularly regional and local evacuation capacity. No detailed studies are required to complete this form. The impact of the proposal on local flood evacuation capacity will be assessed by local council. Should local council support the proposal, its impact on regional flood evacuation capacity will be assessed after the planning proposal is submitted to the Department of Planning and Environment.*

Location: *Provide location information for the site and adjacent areas such as existing topography and existing land use, site accessibility and land suitability.*

Context: *Provide preliminary information on proposed development including:*

- *Proposed type of land use after rezoning;*
- *any proposed earthworks (cut/fill);*
- *proposed buildings footprint within the site;*
- *numbers of dwellings;*
- *number of storeys if applicable;*
- *potential number of occupiers (residents and employees);*
- *car parking types;*
- *proposed habitable and non-habitable floor levels;*
- *proposed car park and street level;*
- *proposed building and development controls.*

Primary constraints *List the primary constraints in regard to flood risk in this area utilising existing available information including from councils' studies. This includes:*

- *Constraints due to regional and local flood characteristics and vulnerability of proposed land use to flood risk;*
- *Hazard and Hydraulic constraints;*
- *Emergency Management constraints as identified in the Hawkesbury-Nepean State Flood Plan i.e. isolation, evacuation, warning time.*

Management Measures *Outline any proposed management measures/strategy to manage identified constraints, including if applicable, flood barriers or other controls, evacuation plans, use of building Occupant Waring Systems for flood evacuation, etc.*

In response to the matters raised by Council we offer the following comments adopting the same dot point sequence.

- There is no Application proposed for rezoning, the land is Zoned SP3.

- The Application does not include or propose significant earthworks. The Application has been prepared having due regard to the flood related issues. The site associated maintains the overland flow behaviour conveyance regime by retaining the existing surface profile.

- We refer to the Architectural plans prepared by Environa Studio Reference 781, Sheets 030, 101 – 114 and 120, dated 27 June 2018 (copies enclosed), which depict the features of the proposed building structure including the building footprint.

- The Application does not propose any residential dwellings. We refer Architectural plans prepared by Environa Studio Reference 781, Sheets 030, 101 – 114 and 120, dated 27 June 2018 which depict amongst other features, the internal uses of the building.

- We note the Application proposes 179 hotel rooms. Anticipated staff numbers at maximum capacity use would be 200 employees. This will be confirmed at detailed design stage.

- We refer to Architectural plans prepared by Environa Studio Reference 781, Sheets 030, 101 – 114 and 120, dated 27 June 2018 which depict the car parking facilities. In this regard the following will be provided - 450 visitor parking, 200 staff parking and 5 coach parking.

- The Flood Planning Level is RL 26.5m AHD. All floor levels are located at or above this level including vehicular parking.

- There is no parking at street level.

- We refer to the report prepared by Sutherland & Associates Planning for Building and Development Controls.

In response to the matters raised under Primary Constraints and Management Measures we refer to the Concept Flood Risk Management and Stormwater Management Report for the Winter Sports World prepared by ACOR Consultants (CC) Pty Ltd, Reference GO170662.

Should you have any further queries in relation to this matter, please do not hesitate to contact Bruce Kenny in our Central Coast office.

Yours faithfully,

ACOR Consultants (CC) Pty Ltd

Per: