

ABN 67 002 318 621

Our Ref: 110616-02-Winter Sports World Flood Evacuation.docx

1 November 2019

Winter Sports World Pty. Ltd. 2-4 Tench Avenue JAMISONTOWN NSW 2750

Attn: Peter Magnisalis

Subject: Winter Sports World; Flood Evacuation Strategy

#### Dear Peter,

As part of the Gateway Approval process for the Winter Sports World (WSW) development, the NSW State Emergency Service (SES) raised a number of concerns regarding the site flood evacuation strategy of the development in their letter dated 21 August 2019 (see Appendix A) to the NSW Department of Planning & Environment (DPE).

The DPE Gateway Determination Letter to Council dated 2 May 2019 required the supporting Concept Flood Risk Management and Stormwater Management Report (ACOR, 27 June 2018) to be amended to include the following information prior to public exhibition of the application:

- The potential number of vehicles evacuating the site during a flood event, including visitors to the facility; and
- The manner in which the facility will be managed during and after flood events, including securing and managing the site during floods of varying levels and duration, and recovery plans for the faculty after flood events.

As part of a recent meeting with Penrith City Council on 21 October 2019, we understand that Council would like the following issues to also be addressed:

- Identification of local flood evacuation routes and the connection to regional flood evacuation routes;
- An assessment of the available time to evacuate the site in the context of local roads being cut by floodwaters.

This letter also addresses some of the comments provided by the SES relating to flood evacuation in their submission letter (21 August 2019) to the DPE.

Details of our assessment are provided below.

# 1. FLOOD RISK AT THE SITE

The site is located at 2-4 Tench Avenue Jamisontown and is within the Penrith City Council Local Government Area. The elevation of the site ranges from 24.5 m AHD at a localised low point in the eastern third of the site to a high point of 28.0 m AHD in the western end of the site.

The site is situated within the local Peach Tree Creek catchment and was considered in the recent Peach Tree and Lower Surveyors Creek Flood Study (Local Flood Study) prepared by Catchment Simulation Solutions in April 2019. Peach Tree Creek is approximately 450 m east of the site along Jamison Road.

The site also forms part of the Hawkesbury Nepean Valley and is adjacent to the Nepean River. The Hawkesbury Nepean Valley regional Flood Study (Regional Flood Study) was prepared by WMA Water and released to the Public in July 2019 identifies flooding on the site.

Being part of the Hawkesbury Nepean Valley, formal evacuation of the residents within the valley is considered in the SES's evacuation strategy. The site is located within sub-sector 6.1 (Jamisontown West) of the Penrith Sector in the *Hawkesbury Nepean Flood Plan*, which is a sub plan of the State Emergency Management Plan (SES, 2015).

# 2. FLOOD EVACUATION ROUTES

The Hawkesbury Nepean Flood Plan (SES, 2015) identifies local and regional flood evacuation routes for the Penrith Sector. Regional Flood Evacuation routes for the Penrith Sector are:

- Eastbound on the M4 Motorway;
- East on The Great Western Highway; and
- South along The Northern Road to the M4 Motorway.

(source Map 1, Vol 3 Ch 4 Hawkesbury Nepean Flood Plan, SES 2015)

The local evacuation routes from the Winter Sports World site are:

- East along Jamison Road to The Northern Road; and
- South along Mulgoa Road to the M4 Motorway.

(source Map 10, Vol 3 Ch 4 Hawkesbury Nepean Flood Plan, SES 2015)

The primary flood evacuation route for the WSW site is east along Jamison Road. At the intersection of Jamison Road and Mulgoa Road, vehicles are expected to turn right onto Mulgoa Road and head south to the M4 motorway. However there is potential for vehicles to continue east along Jamison Road to The Northern Road regional flood evacuation route.

In the event that the local Jamison Road (west of Mulgoa Road) flood evacuation route is blocked (e.g. breakdown, tree across road etc.), there is potential for vehicles to:

- Travel south along Tench Avenue/Bellevue Roads and then east along Factory Road to Mulgoa Road and join the M4 regional flood evacuation route; or
- Travel south and then along Blaikie Road to the Mulgoa Road local flood evacuation route.

In a regional evacuation it is expected that the emergency services will direct traffic at major intersections along the flood evacuation routes.

A copy of the SES (2015) evacuation routes is provided in Appendix B, together with Figure 1 which provides details of both the primary flood evacuation route for the WSW site and alternate routes.

# 3. FLOOD EVACUATION ASSESSMENT

# Available Evacuation Time

Based on advice received from the SES (meeting minutes ACOR + SES 25 September 2019), we understand that:

- Eight (8) hours reliable warning of flood events is available;
- It takes one (1) hour for the SES to mobilise its operations for this area on receipt of a flood warning; and
- It takes the community one (1) hour to accept that evacuation is necessary and to prepare for evacuation.

Therefore six (6) hours are available for the site to evacuate. The site is has a frontage to Jamison Road, and as detailed in the Hawkesbury Nepean Flood Plan (SES, 2015) Jamison Road is a local evacuation route. Given the close proximity of the WSW site to the regional M4 flood evacuation route (approximately 3.2 kilometres via Jamison Road/Mulgoa Road local flood evacuation routes), it is anticipated that vehicular evacuees from the WSW site would reach the M4 motorway well ahead of evacuees from other sectors of the Hawkesbury Nepean Valley.

Furthermore, given that the WSW site is a managed site, the anticipated community response time of one (1) hour (usually applied to residential development) would likely be reduced, increasing the time available for evacuation of the WSW development.

## Winter Sports World Assessment

Based on information provided in your email dated 16 October 2019, we understand that the total anticipated number of patrons and staff occupying the WSW site at any given time would be 1,863. The makeup of this total patronage is provided in Table 3.1 below.

Code	Use Area	Area (m²)	No. of Customers	No. of Staff	Total no. of People
SC	Snow Centre	16,424	500	105	605
IC	Ice Centre	7,721	300	10	310
CA	Conference Area	1,898	500	30	530
AT	Altitude Training	403	30	3	33
HO	Hotel - 120 room	6,775	200	30	230
FB	Retail, Food & Beverage	2,323	100	55	155
	Totals	35,544	1,630	233	1,863

Based on the Traffic Impact Assessment report prepared by PDC Consultants (PDC, 25 October 2018) we have adopted the following assumptions:

- The maximum number of private vehicles on the site would be 650 based on the number of car parking spaces provided;
- On average, each car would convey 3.0 passengers;
- The anticipated travel mode spit is 90% by car and 10% by public transport/shuttle buses.

Furthermore, we have also assumed that:

- As Jamison Road is a single lane road, a maximum lane capacity of 600 vehicles/ lane/ hour is available for evacuation;
- The capacity of a 12.5 m passenger bus is 65 persons (<u>https://en.wikipedia.org/wiki/Buses in Sydney</u>); and
- An average walking pace for a pedestrian is 5.0 km/hr and a conservatively slow walking pace is 4.5 km/hr for older individuals (<u>https://en.wikipedia.org/wiki/Walking</u>).

We have considered three (3) alternate travel mode scenarios in our evacuation assessment:

- 1. All patrons and staff arrive by private car this results in the highest number of vehicle trips to evacuate the site;
- 2. All patrons and staff arrive via a 90%/10% travel mode spilt this leads to fewer vehicle trips, but requires consideration of how those who have arrived via public transport/ shuttle bus are evacuated from the site;
- 3. There is limited capacity to evacuate by vehicle and all patrons and staff need to evacuate on foot to a location above the regional PMF flood level.

## Scenario 1 – Private vehicle evacuation

Adopting an average of 3.0 persons per car and the 650 car parking spaces provided, there is capacity to evacuate 1,950 persons by private car. Therefore, all of the anticipated 1,863 patrons and staff could be evacuated in this manner. At an evacuation rate of 600 vehicles/lane/hour on Jamison Road, all patrons and staff of the WSW site could be evacuated within 1.1 hours from the time that an evacuation notice is given.

## Scenario 2 – 90% Private vehicle evacuation and 10% shuttle bus.

If 90% of patrons and staff arrive by private car (i.e. 1,677 persons) at a rate of 3.0 persons per car, this would result in 559 vehicle trips. The remaining 10% (i.e. 186 persons) would need to be evacuated by bus. At a capacity of 65 persons per bus, we estimate that three (3) bus trips would be required to evacuate this component of evacuees. Therefore, a total of 562 vehicle trips would be required.

At an evacuation rate of 600 vehicles/lane/hour on Jamison Road, all patrons and staff of the WSW site could be evacuated within 0.9 hours under this scenario. We should note however, that this would require buses to remain available for evacuation or a single bus provide a loop service to convey passengers to a safe location.

## Scenario 3 – Pedestrian evacuation

In the unlikely event that vehicle access is restricted, there is potential for evacuees to do so be foot along Jamison Road to a location above the regional PMF flood level. Figure 37 of the Regional Flood Study (WMA, 2019) indicates that Jamison Road near the intersection with Rawson Avenue (near Jamison Park) would be flood free in a Regional PMF flood event. This flood free location is approximately two (2) kilometres east of the WSW site.

The Regional PMF extent has been overlaid on Figure 1 in Appendix B and is also shown in Plate 3.1 below. A copy of Figure 37 (WMA, 2019) is provided in Appendix B.



Plate 3.1 – Extract Figure 1 Regional PMF Flood Extent

At a conservatively slow walking pace of 4.5 km/hr, all patrons and staff could evacuate by foot east along Jamison Road to a location above the regional PMF event in approximately 0.45 hours.

# 3.1. Consideration of neighbouring traffic evacuating via Jamison Road

Given the broader evacuation of sub-sector 6.1 (SES, 2015) would occur concurrently with the WSW developemnt, we have assessed the likely evacuation traffic from the surrounding areas West of Mulgoa Road. A review of cadastral information indicates that there are a number of residential and commercial premises within sub-sector 6.1 which are likely to be evacuated via Jamison Road.

We have assumed the following number of vehicles evacuating from other properties via Jamison Road. Figure 1 in Appendix B provides an overview of the properties included in this assessment:

- 206 Residential properties (incl extra duplexes/town houses), 1 car per dwelling = 206 vehicles;
- Nepean shores 186 dwellings; 1 car per dwelling = 186 vehicles;
- Cables Wake Park 180 car spaces = 180 vehicles;
- The Royce Panthers (145 units + 126 bed aged care + staff) = 300 vehicles;
- Summit Care Nursing home (105 bed aged care + staff) = 150 vehicles.

Total vehicles 650 WSW + 1372 Neighbours = 2022 vehicle trips.

At a capacity of 600 vehicles per hour on Jamison Road, both the WSW development together with neighbouring properties could evacuate within a timeframe of 3.4 hours, well within the available six (6) hours flood evacuation time indicated by the SES.

# 3.2. Early Evacuation and Impact on Regional Flood Evacuation

As commercial properties within the Hawkesbury Nepean Valley are managed sites, these sites have the potential to be evacuated early on direction of the site manager. That is, the SES's assumed one (1) hour time for residential residents to accept that they need to evacuate is not likely to be required for the commercial sites.

Therefore, the evacuation of commercial sites would occur ahead of the residential population. Given the proximity (approximately 3.2 kilometres) of the Jamison Road (west) evacuees to the regional M4 evacuation route, the commercial evacuees would be on the M4 within 15 minutes, well before the residential properties start to mobilise.

The likelihood of all commercial centres being at full capacity also needs to be considered. A severe weather event sufficient to trigger a regional evacuation would likely be apparent to a significant portion of the population in the preceding days via the issue of a 'Flood Watch' for the Hawkesbury Nepean River from the Bureau of Meteorology (BoM). It is therefore likely that many patrons of commercial premises would choose to make alternate arrangements and would not be within the floodplain.

The early evacuation of commercial properties is considered beneficial in the context of the evacuation of the broader regional Hawkesbury Nepean Valley and is likely to improve the regional evacuation timeframe.

# 3.3. No Additional Burden on Emergency Services

The WSW site is a managed site, and therefore it would only require one (1) 'door knock' from the SES to initiate evacuation. This is no greater than the single 'door knock' that would be required for the existing residential dwelling at 2-4 Tench Avenue which will be replaced by the WSW development.

The patronage of WSW are likely to be able-bodied people, capable of self-evacuating on direction to do so. Therefore, there is unlikely to be any additional burden on emergency services to assist in the evacuation of the WSW development.

# 4. FLOOD EVACUATION STRATEGY

We recommend that WSW Management undertake formal training for their staff in the evacuation strategy and the likely timeframe available for evacuation so that they can assist patrons evacuating the site without unnecessary panic.

We also recommend that WSW have current flood evacuation route maps prepared and printed for distribution to patrons when an evacuation is announced, particularly as traffic leaves the site. Flood evacuation plans should also be clear and visible at all entry/exit points of WSW.

As 10% of patrons and staff are expected to arrive by public transport, these patrons will need to be evacuated via a similar transport mode. We recommend that at least one (1) passenger 12.5 m passenger bus together with an appropriately licensed driver is available on site at all times for evacuation purposes.

In the event that more than one (1) bus trip is required to evacuate the site, the bus could instead be used to convey people to a location above the regional PMF flood event (approximately 2 km east along Jamison Road) on a return loop.

If vehicular evacuation is restricted, preference should be given to evacuating the elderly, disabled and children from the site via bus. Able bodied persons have more than sufficient time within the available six (6) hour evacuation time to walk 2 km east along Jamison Road to a location above the regional PMF flood extent.

Any instruction provided at the time of an evacuation by the SES or other emergency services personnel takes precedence over this strategy. This strategy should be updated when the Hawkesbury Nepean Flood Plan (SES, 2015) is updated.

# 4.1. Regional Nepean River Flooding

The flood depth maps provided in the Regional Flood Study (WMA, 2019) indicate that the site is not affected in a 20% AEP (1 in 5 AEP) regional flood (refer Figure 21 WMA, 2019).

In a 1% AEP (1 in 100 AEP) event the site begins to be affected by Nepean River backwater in Peach Tree Creek (refer Figure 25 WMA, 2019). In this same event, Table 47 of the regional Study (WMA, 2019) indicates a flood level of 25.8 m AHD at the Victoria Bridge in Penrith.

In rarer flood events, flood depth maps indicate overbank flooding of the Nepean River will affect the site directly (refer Figure 29 WMA, 2019).

A copy of Figures 21, 25 and 29 from the Regional Flood Study (WMA, 2019) is provided in Appendix B.

# 4.2. Regional Flood Evacuation

The Hawkesbury Nepean Flood Plan (SES, 2015) is the governing flood evacuation plan for the region. Table 4 of this plan indicates that an evacuation for the Penrith Sector would be triggered when a flood level of 22.1 m AHD is predicted at the Penrith Gauge which is near the Victoria Bridge.

# Early Evacuation

In the event of a flood warning for the Hawkesbury Nepean Valley being issued by the BoM where the Nepean River flood level is predicted to be greater than 22.1 m AHD at the Victoria Bridge in Penrith, the site manager should commence the early evacuation of the site.

Patrons should be instructed to leave the site by vehicle along Jamison Road toward Mulgoa Road and then to the M4 motorway. While evacuees should stay with family or friends in the first instance, those heading for a Major Evacuation Centre (SES, 2015) will be directed by emergency services to travel east along the M4 motorway toward the regional flood evacuation centre at Homebush.

# 4.3. Local Peach Tree Creek Flooding

Flood depth and level maps provided in the local Flood Study (CSIM, 2019) indicate that the western portion of the site (approx. 5,000 m<sup>2</sup>) is flood free in all local flood events up to the Probable Maximum Flood (PMF). See Figure 32.2 (CSIM, 2019) in Appendix C of this letter.

Given the lack of connectivity of flood water in rare events up to the 0.2% AEP, it would appear that the flood affectation evident at the localised low point on the site (refer Figure 31.2 CSIM, 2019) is due to rainfall on the site itself and not overland flow from the surrounding catchment. This localised flooding can be appropriately managed in the detail design of the WSW development and is likely to be removed when the development is constructed.

Appendix Q of the local Flood Study (CSIM, 2019) provides stage hydrograph details of road overtopping locations. The Peach Tree Creek crossing of Jamison Road is identified as Location 4 in Figure Q1 (CSIM, 2019). The existing road level of Jamison Road is documented as 24.2 m AHD.

Figure Q.4.1 of the local Flood Study (CSIM, 2019) indicates that in a 1% AEP Nepean River flood, Jamison Road at Peach Tree Creek is cut approximately 5 hours into the storm and remains cut for 30 hours.

Figure Q.4.2 of the local Flood Study (CSIM, 2019) is shown in Plate 4.1 below and in full in Appendix C. This figure indicates that in a 1% AEP local catchment flood, Jamison Road at Peach Tree Creek would become un-trafficable for passenger cars (i.e. depth of flood > 0.3 m) at approximately 2.2 hours into the storm and remains cut for approximately 0.7 hours.



Plate 4.1 – Figure Q.4.2 from the Local Flood Study (CSIM, 2019)

In a rare 0.2% AEP event, Figure Q.4.2 indicates that Jamison Road is cut at approximately 1.2 hours into the storm and remains cut for approximately 2.3 hours. Depth of flow over Jamison Road is approximately 0.7 m and would be un-trafficable for all vehicles.

In more frequent flood events up to the 2% AEP, Jamison Road is trafficable (i.e. depth < 0.3 m). A copy of Figures 31.2, 32.2, Q1, Q4.1 and Q.4.2 from the Local Flood Study (CSIM, 2019) is provided in Appendix C of this letter.

## Flood Safe Site Access

Penrith City Council's Development Control Plan 2014 defines Flood Safe Access as '... access that is generally considered satisfactory when the depth of flooding over vehicular driveways and roads is limited to approximately 0.25m with low velocities.' (DCP 2014, definition Section C3.5 Cl. 3f and applied to Industrial/Commercial development in Section 3.5 Cl. 6b).

Figure 20.2 of the Local Flood Study (CSIM, 2019) indicates that there is sufficient flood free road frontage along the site to provide driveway access in a local 1% AEP flood event. Depths on Jamison Road near a localised low point on the site are in the order of 150 mm within the road carriageway and flood free along the crown of the road.

Figure 39.2 of the Local Flood Study (CSIM, 2019) indicates that flood velocities in a 1% AEP event adjacent to and within the site are within the range of 0.25 to 0.5 m/s, and are therefore considered slow velocities.

The Jamison Road site frontage is therefore passable in a 1% AEP local catchment flood event considered Flood Safe. There is sufficient flood free road frontage to both Jamison Road and Tench Avenue where a Flood Safe driveway access can be provided. A copy of Figure 20.2 and Figure 39.2 (CSIM, 2019) is provided in Appendix C.

# **4.4.** Local Peach Tree Creek Catchment Flood Evacuation

Depending on the severity of the rainfall event, the lack of appropriate warning time and the relatively fast time to peak for a local Peach Tree Creek catchment flood is unlikely to allow the SES to trigger an evacuation of the WSW site before the Jamison Road crossing of Peach Tree Creek is cut by local floodwater.

Given that the western portion of the site is not flood affected (approximately 5,000 m<sup>2</sup>), together with the vertical nature of the WSW development (elevations up to 72.6 m AHD), and given Jamison Road is only likely to be cut for a few hours, it makes practical sense for patrons to remain on site in a safe location above the local PMF flood level. Provided that the building is designed to withstand local PMF flood forces, an appropriate refuge could be provided within the building at an elevation above the local PMF flood.

In the event of a severe weather warning for heavy rainfall, the site manager should relay this information to patrons and monitor the situation. Patrons wishing to evacuate the site could be instructed to leave via Jamison Road toward Mulgoa Road and then to the M4 motorway. However, if local advice indicates that Jamison Road is impassable, we would recommend that patrons are instructed to shelter on site.

# 5. **POST FLOOD RECOVERY PLAN**

In the event of a regional Nepean River flood large enough to inundate the WSW site, it is anticipated that regional utility services such as power, water, sewer, and communications would be out of operation for a significant period of time. In the event of a local Peach Tree Creek catchment flood large enough to inundate the WSW site, local electricity sub-stations could be inundated and may need to be repaired.

We understand that the WSW development is intended to be designed to withstand flood forces and buoyancy for flood events up to and including the regional PMF flood event. However, without the availability of key utility infrastructure mentioned above, it is unlikely that the WSW development would be able to conduct normal operations immediately following a flood.

Once the SES have given the 'all clear' for residents and business owners to return to their premises after a flood, we anticipate that the post flood recovery operations would include the following actions by the site manager:

- Arrange for appropriately qualified personnel to inspect the WSW development for any structural damage and confirm whether the building is safe to occupy;
- Liaise with utility providers and/or seek public broadcasts to confirm anticipated timeframes in which utility services are to be restored;
- Arrange for clean up and immediate repair operations to make the building safe;

Once all essential services are re-established and the site is cleaned/repaired after a flood event, normal operations could resume.

# 6. CONCLUSION

J. Wyndham Prince has prepared a flood evacuation strategy for the proposed Winter Sports World site at 2-4 Tench Avenue Jamisontown. The site has direct access to Jamison Road which is a local Penrith Sector flood evacuation route identified in the *Hawkesbury Nepean Flood Plan* (SES, 2015). A copy of local and regional flood evacuation routes is provided in Appendix B of this letter.

Previous correspondence between the SES and ACOR consultants (meeting minutes ACOR + SES 25 September 2019), indicates that:

- Eight (8) hours reliable warning of flood events is available;
- It takes one (1) hour for the SES to mobilise on receipt of a flood warning; and
- It takes the community one (1) hour to accept that evacuation is necessary and to prepare for evacuation.

Therefore six (6) hours are available for evacuation. As this is a managed site, early evacuation of the site would be triggered by the receipt of a flood warning for a predicted Nepean River flood level of 22.1 m AHD at the Penrith Gauge, located near the Victoria Bridge crossing of the Nepean River in Penrith.

Given that the WSW development will be a managed site, a single door knock is all that is required in order to trigger an evacuation. Therefore, there would be no additional burden placed on the emergency service personnel as a result of the WSW development. All staff at WSW will need to be trained to understand and implement the flood strategy for the site.

The flood evacuation assessment has concluded that, at a full capacity of 1,863 persons, the site could evacuate within 1.1 hours via Jamison Road. The early evacuation of commercial premises could be triggered directly by the site managers without awaiting instruction from the SES to do so. Therefore, commercial properties potentially have an additional one (1) to two (2) hours available to evacuate.

An assessment of the concurrent evacuation the WSW site together with neighbouring residential and commercial properties in the area has estimated that an estimated total of 2,022 vehicles could evacuate via Jamison Road within 3.4 hours. These timeframes are well within the available six (6) hours evacuation timeframe indicated by the SES.

Based on the WSW Traffic Report (PDC, Oct 2019), it is anticipated that 10% of patrons and staff would arrive at the WSW site by public transport. This would require at least three (3) 12.5 m passenger bus trips to evacuate this component of patrons. However, this needs to be balanced with the reduced likelihood of there being a full complement of patrons at the WSW site if a regional severe weather event was occurring in the Hawkesbury Nepean Valley. Furthermore, in the event of an evacuation situation, it is likely that patrons who have arrived by private vehicle may offer to convey additional persons in their vehicles. Therefore, we recommend that at least one (1) 12.5 m public passenger bus, together with an appropriately licensed driver is available at the WSW site at all times for evacuation.

In the event that vehicular evacuation is restricted, we have determined that patrons and staff at the WSW site could evacuate on foot approximately 2 km east along Jamison Road to a location above the regional PMF flood extent within 0.9 hours.

The primary flood evacuation route for the WSW site is east along Jamison Road. At the intersection of Jamison Road and Mulgoa Road, vehicles are expected to turn right onto Mulgoa Road and head south to the M4 motorway. In the event that Jamison Road is impassable, alternate routes to the M4 via Tench Avenue or Blaikie Road/Mulgoa Road are potential options. Figure 1 in Appendix B provides details of the WSW evacuation route.

In the event of a local Peach Tree Creek catchment flood, there may be little or no warning time available for occupants of the WSW site to evacuate before the Peach Tree Creek crossing of Jamison Road is cut by floodwater. However, Peach Tree Creek is only expected to be cut for approximately 2.3 hours even in a rare 0.2% AEP flood event. Furthermore, the PMF extents from the local Flood Study indicate that the western portion of the site would be flood free, and we understand that the building will be designed to withstand flood forces and buoyancy up to a regional PMF event. Therefore, in a local Peach Tree Creek flood event, it would make practical sense for patrons to remain on-site until the local floodwaters have receded.

Subsequent to receiving the 'all clear' from emergency services to enable people to return to the area, the immediate focus of the post flood recovery operation should be to confirm the structural integrity of the buildings. It is possible that key utility services may be unavailable for some time after a flood and will restrict the ability of the WSW development to conduct normal operations.

We trust that this assessment enables the SES and Penrith City Council to have confidence that the patrons and staff of the WSW development will have a manageable and safe flood evacuation strategy and the amendment of the LEP can be supported.

Should there be any queries regarding this matter please do not hesitate to contact David Crompton on 4720 3340 or <a href="https://docs.org/action.org/dcrompton@jwprince.com.au">dcrompton@jwprince.com.au</a>

Yours faithfully,

Cutto

**David Crompton** Manager – Stormwater and Environment

# 7. **REFERENCES**

- Catchment Simulations (CSIM, 2019), Peach Tree and Lower Surveyors Creeks Flood Study, Penrith City Council, April 2019;
- State Emergency Service (SES, 2015), Hawkesbury Nepean Flood Plan, NSW Government, September 2015.
- WMA Water (WMA, 2019), Hawkesbury Nepean Valley Regional Flood Study Final Report, Infrastructure NSW, July 2019.

# 8. **APPENDICES**

- Appendix A SES Letter to DPE dated 21 August 2019
- Appendix B Flood Evacuation Routes
- Appendix C Regional Flood Study Figures (WMA, 2019)
- Appendix D Local Flood Study Figures (CSIM, 2019)

# **APPENDIX A – SES LETTER TO DPE DATED 21 AUGUST 2019**

21<sup>th</sup> August 2019



Ms Anne-Maree Carruthers Director, Sydney Region West NSW Department of Planning and Environment GPO Box 39 Sydney NSW 2001 Your ref: PP\_2018\_PENRITH\_010\_00 Our ref: ID971 Attention: Ryan Klingberg

### Re: Planning Proposal - Winter Sports World - 2-4 Tench Avenue, Jamisontown

Dear Ms Carruthers,

Thank you for the opportunity to comment on the Planning Proposal - Winter Sports World - 2-4 Tench Avenue, Jamisontown ('Planning Proposal'). The Planning Proposal has been reviewed using the information provided by the proponent in the proposal, relevant floodplain management studies, arrangements in the Hawkesbury-Nepean Flood Emergency Sub Plan, and evacuation modelling undertaken for the Hawkesbury Nepean Valley.

The proposal will result in an increased transient population making use of the recreation and accommodation facilities on the site. This has the potential to increase the risk to NSW SES response operations during flood emergencies by:

- 1. Increasing the population requiring evacuation;
- 2. Increasing the need to rescue those who are unable or unwilling to comply with evacuation orders;
- 3. Exposing NSW SES personnel to risks associated with effecting flood evacuations and rescues;
- 4. Exacerbating existing pressure on the regional evacuation network.

In addition, the NSW SES does not support a condition of development consent that requires a private evacuation plan reviewed by the NSW SES (refer to Annex N of the Floodplain Development Manual) and has limited capacity to review an Emergency Business Continuity Plan that is required for the purpose of allowing the development.

Thank you for referring the Planning Proposal to the NSW SES. The addendum to this letter provides additional information that supports our submission. The NSW SES looks forward to working with the Department of Planning and Environment in the future and is available to meet to discuss this matter further. Please contact Peter Cinque on 0418 257 028 or Marcus Morgan on (02) 4251 6665, or, if you wish to discuss any of the matters raised in this correspondence.

Yours sincerely,

Michelle Egan A/Director Planning & Preparedness NSW State Emergency Service

Cc: George Jeoffreys, Senior Manager, Risk Reduction and Avoidance Peter Cinque, Principal Advisor Hawkesbury Nepean Marcus Morgan, Planning Coordinator (future risk)

#### STATE HEADQUARTERS

- 93 99 Burelli Street, Wollongong 2500 PO Box 6126, Wollongong NSW 2500 P (02) 4251 6111 F (02) 4251 6190 WWW.ses.nsw.gov.au
- ABN: 88 712 649 015



### Addendum - Planning Proposal - Winter Sports World

During our review of the proposal, the following issues were identified and are drawn to your attention:

#### 1. Flood risk at the site

The site subject of the Planning Proposal is classified as a 'low flood island' which becomes surrounded by floodwater and inundated in a large enough flood. In a probable maximum flood the land has a hazard classification of H6 where it is unsafe for vehicles and people and all building types considered vulnerable to failure.

### 2. Evacuation from the site

Future occupants would need to evacuate from the site of the Planning Proposal to ensure public safety during a flood that is forecast to exceed a 1 in 50 year Annual Exceedance Probability (AEP) flood. This evacuation would need to make use of the regional evacuation network. However, this will need to be undertaken prior to the evacuation of the residential population to ensure that the regional evacuation capacity is not reduced. To ensure that the proposal will not increase the risk to the community during an evacuation, the proponent should show that there are sufficient arrangements put in place to trigger early self-evacuation of the facility in line with Penrith Council's approach to managing commercial buildings in Penrith local government area.

### 3. Evacuation from neighbouring areas

If approved, the proposal will result in an increased reliance on the NSW SES to manage the evacuation of additional occupants located on a flood prone site. Furthermore, the proponent should demonstrate that there is no additional impact on the regional evacuation.

#### 4. Vulnerable population

The nature of the proposal is likely to attract visitors from outside the immediate area who will not be familiar with the flood prone nature of the location. While likely to be largely able bodied, due to the proposed use of the site, the lack of local knowledge about the flood problem makes this cohort vulnerable to underestimating the risk to life posed by flooding at the site. This is further exacerbated by the need to evacuate the site well ahead of peak flood levels, and ahead of the local residential population.

5. Consistency with Environmental Planning and Assessment Act 1979 (NSW) ('EP&A') Section 9.1 Direction Given the potential of increased emergency response operations because of the impacts of flooding in the area, the NSW SES would consider that rezoning this land would result in a substantially increased requirement for government spending on flood services. This consideration takes into account the full range of flood events, and the multi-agency nature of flood response and recovery operations. Refer to:

- Environmental Planning and Assessment Act 1979

### 6. Uncertainty about the scale of impact

It is unknown at this stage what the potential increased numbers of vehicles (and people) at the proposed site would be; however, it could be significant considering the proposed hotel and sports facility that could increase the itinerant population in the area. As such, the NSW SES would see it necessary for the proponent to model this increase to determine what the cumulative impact would be on the regional flood evacuation out of the Hawkesbury Nepean Valley.



## 7. The NSW SES does not support private evacuation plans

The NSW SES does not support a condition of development consent that requires a private evacuation plan reviewed by the NSW SES (refer to Annex N of the Floodplain Development Manual) and has limited capacity to review an Emergency Business Continuity Plan that is required for the purpose of allowing the development.

End of Submission

# **APPENDIX B – FLOOD EVACUATION ROUTES**



Map 2: Hawkesbury-Nepean Valley Emergency Management Sector Map



Map 1: Regional Evacuation Routes within the Hawkesbury-Nepean Valley



Map 10: Emu Plains and Penrith - Evacuation Routes



# **APPENDIX C – REGIONAL FLOOD STUDY FIGURES**









Pennin Lakes Area (approximate only) - reler to	note
Depth (m)	
0 - 1	-
1 - 2.5	
2.5 - 5	,
5 - 10	1
10 - 15	
> 15	
5 1 2 S	3
	] km 📗

# **APPENDIX D – LOCAL FLOOD STUDY FIGURES**

















