

NSW AMBULANCE INFRASTRUCTURE PROGRAM – FLOOD ADVICE

PRELIMINARY FLOOD RISK OVERVIEW – GATESHEAD, NSW

Prepared for: TSA Management

Date: 19/01/2023

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Site Overview		Flood Risk Rating
Area/Region	Gateshead, NSW	Moderate Flood Risk The site itself is outside the PMF event. The main access route west of the site is flooded in multiple locations from events as frequent as a 50% AEP event. Alternative access may be available to the east and north, adding approximately 2-3min travel time to the Service Area, and 9-10min travel time to Lake Macquarie Private Hospital.
Site Address	75-79 Oakdale Road, Gateshead 2290	
Lot/DP	LOT 1 DP 215337	
Local Government Area (LGA)	Lake Macquarie City Council	
Site Elevation (mAHD)	24.5 – 29.5 (based on 1 m LiDAR from 2014, NSW Spatial Services)	
Total site area (m ²)	7,465.12	High Flood Risk Site and/or access routes subject to high degree of flood risk, unfeasible to mitigate flood risk. Not recommended to proceed. Moderate Flood Risk Flood risk to the site or access route is likely to be able to be managed or mitigated, further investigation and consideration is advised. Low flood risk Site and access routes either flood free or subject to a low level of flood risk that can be managed with minimal intervention.
Site Description	The site is situated within the IN2 Light Industrial zone, and it is currently used by TfNSW as a depot. The northern portion of the site is largely undeveloped with grass, trees and shrubs scattered throughout. The remaining area of the site comprises of hardstand, utilised currently for storage and parking. The site is located approximately 270 m outside the Gateshead Heat Map Zone. The shortest access route between the site and the Service Area is via Oakdale Road through the west, however an alternative route is available through the east, adding approximately 2-3 minutes travel time (2.5 km).	

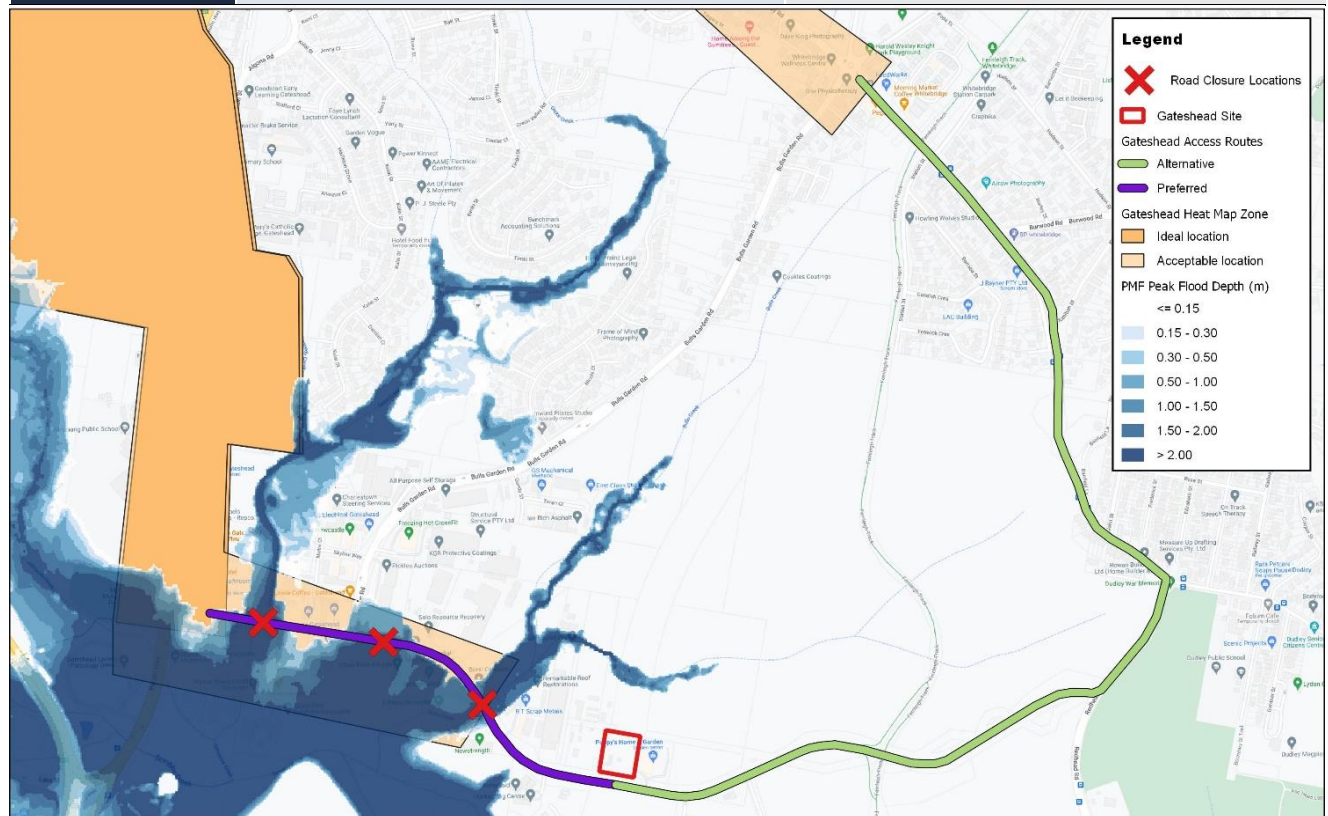


Figure 1 Site and Flood Risk Overview

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Flood Risk Overview			
Catchment	Jewells Wetland catchment		
Key Watercourses of Interest	Bulls Creek, Dicks Creek, Johnsons Creek		
Is flood information available? (If yes, source and access method)	Yes <i>Jewells Wetland Flood Study (BMT WBM, 2013)</i> Available at: https://flooddata.ses.nsw.gov.au/flood-projects/jewells-wetland-flood-study		
Type of Flood Risk	Riverine		
Is the site within the floodplain (i.e. PMF extent)?	☐ Yes	☒ No	Comments The site is outside the PMF extent.
Is access to the site likely to be impacted by flooding?	☒ Yes	☐ No	Comments The main access route west of the site is flooded in multiple locations from events as frequent as a 50% AEP event, and safe vehicle access (based on the AIDR hazard classifications) is hindered from the 20% AEP event – see below. Alternative access may be available to the east and north via Oakdale Road, Ocean Street and Dudley Road. The alternative route adds approximately 2-3 minutes travel time (2.5 km) to the Service Area, and 9-10 minutes travel time (6.5 km) to the Lake Macquarie Private Hospital.
Flood Hazard Classification	Flood hazard classifications are defined by depth, velocity and depth x velocity products, based on the guidance outlined in <i>Managing the floodplain: a guide to best practice in flood risk management in Australia</i> (Australian Institute of Disaster Resilience, Guideline 7-3). The classifications are divided into 6 categories (H1-H6), shown below, which indicate the effect of the hazard on people, buildings and vehicles. Figure 2 Flood Hazard Classifications (AIDR, 2017)		

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AIDR flood hazard classification is not available as part of the results from the *Jewells Wetland Flood Study (BMT WBM, 2013)*, and therefore depth and velocities have been used to estimate the AIDR hazard classifications at the three road closure locations identified in **Figure 3**. The estimated hazard classifications are provided in **Table 1**.

Table 1 Flood Depths, Velocities and Estimated AIDR Hazard Classification at Road Closures

AEP	Location	Depth (m)	Velocity (m/s)	D x V (m ² /s)	Hazard
50%	1	0.4	0.4	0.16	H2
	2	-	-	-	-
	3	-	-	-	-
20%	1	0.7	0.6	0.42	H3
	2	0.2	0.3	0.04	H1
	3	-	-	-	-
10%	1	0.8	0.6	0.48	H3
	2	0.2	0.2	0.04	H1
	3	-	-	-	-
5%	1	1.0	0.7	0.67	H4
	2	0.4	0.3	0.12	H2
	3	-	-	-	-
2%	1	1.1	0.7	0.77	H4
	2	0.5	0.1	0.05	H2
	3	-	-	-	-
1%	1	1.2	0.7	0.84	H4
	2	0.6	0.1	0.04	H3
	3	0.2	0.3	0.04	H1
0.50%	1	1.4	0.8	1.05	H5
	2	0.7	0.3	0.21	H3
	3	0.2	0.5	0.10	H1
PMF	1	3.4	1.7	5.78	H6
	2	3.3	0.3	0.83	H5
	3	2.0	2.5	5.00	H6

Climate Change Considerations

The *Jewells Wetland Flood Study (BMT WBM, 2013)* included modelling of climate change conditions such as increased rainfall and sea level rise. The study results indicate that flood risk at and in the vicinity of the site is not significantly increased under the climate change scenarios assessed – likely a result of the location of the site in the upper reaches of the catchment.

The study results also indicate that flood affectation of access routes is not likely to increase, i.e., there would be no increase in the number of road closure locations and minimal increase in the extent of flooding at the current closure locations.

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Overall Recommendation

The site at 75-79 Oakdale Road, Gateshead is outside the PMF extent and has merit for consideration as a new ambulance station site.

Further, the site is located 1 km from the catchment boundary (ridgeline), indicating it would be subject to minimal local catchment runoff, and it is anticipated this could be managed with a site stormwater management strategy.

If this site is to proceed as a potential new ambulance station site, consideration of accessibility during relatively frequent flood events is required.

Under current conditions, Oakdale Road is shown as being subject to flooding from Dicks Creek (near intersection with Nevin Close) in as frequent as a 50% AEP event, however with a hazard classification of H2 (unsafe for small vehicles), access still may be possible. In the 20% AEP event, hazard classification increases to H3 (unsafe for vehicles, children and the elderly), and therefore safe access through the 'preferred' route is unlikely to be possible. In the 20% AEP, Oakdale Road is also overtopped near the intersection with Bulls Garden Road. In the 1% AEP, a third overtopping location occurs at the crossing between Bulls Creek and Oakdale Road. Road inundation locations and the 1% AEP and PMF flood extents are illustrated in **Figure 3**.

Next steps:

- Detailed review of road closure locations, depths, frequency, duration and potential mitigation options.
- Review and assessment of suitability of alternate route to the west and north (and check there is no other flood risk data needed for that area), including consideration of additional distance and travel times.

As such, this site is given the following flood risk rating:



Moderate Flood Risk

The site itself is outside the PMF event. The main access route west of the site is cut in multiple locations from events as frequent as a 50% AEP event and safe vehicle access (based on the AIDR hazard classifications) is hindered from the 20% AEP event when a hazard classification of H3 is reached. Alternative access may be available to the east via Oakdale Road, Ocean Street and Dudley Road, adding approximately 2-3 minutes travel time (2.5 km) to the Service Area, and 9-10 minutes travel time to the Lake Macquarie Private Hospital.

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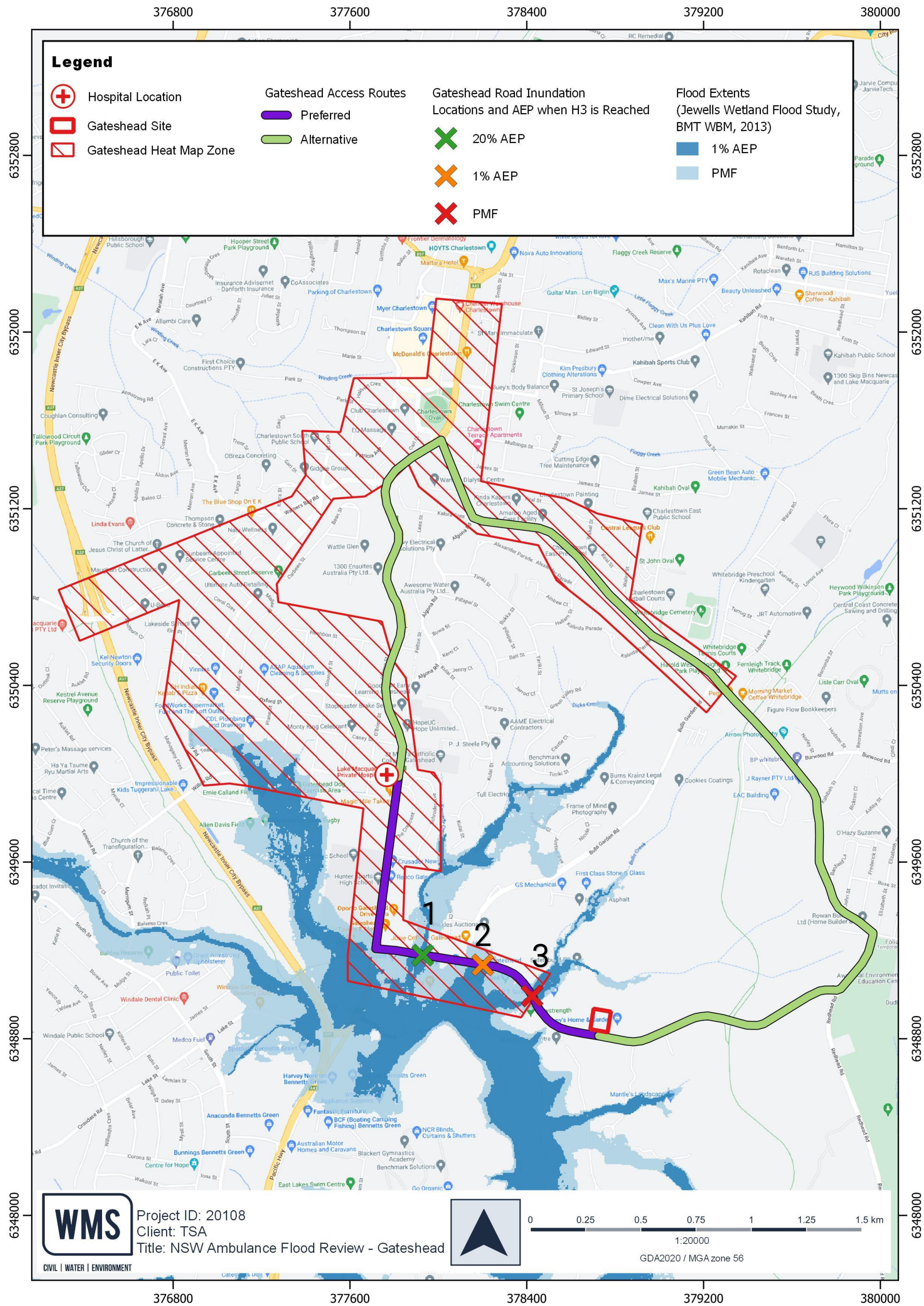


Figure 3 Road Inundation Locations and Flood Extents