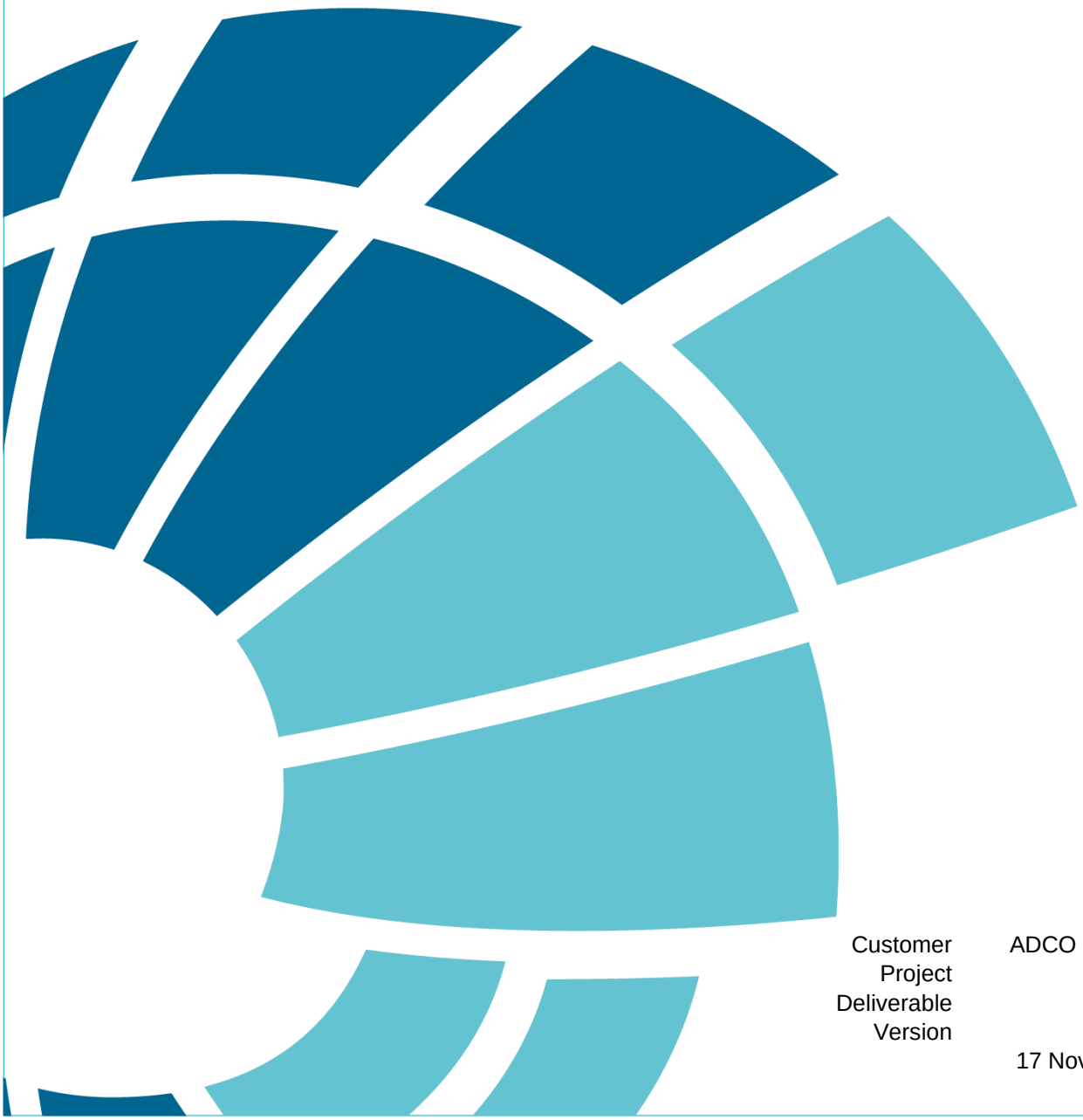
ADCO Tweed Hospital Carpark Flood Emergency Response Sub Plan



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Project	A11601
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Project Manager	Damion Cavanagh

Amendment Record

The Amendment Record below records the history and issue status of this document.

Version	Version Date	Distribution	Record
1	02 December 2021	Via Aconex	Click to enter text.

Contents

1 Purpose

The purpose of this Flood Emergency Response Sub Plan is to provide detail on the flood risks prevalent at this site and how these flood risks will be managed during the construction of the Tweed Hospital Carpark (the 'Site').

The plan has been prepared by BMT with support from ADCO. BMT has provided flood intelligence and ADCO has provided details relevant to the project and Site administration. Specifically, the Flood Emergency Response sub-plan has been prepared by:

- Damion Cavanagh – BMT Principal Engineer
- Netsanet Shiferaw – BMT Associated Principal (review)
- Jason Power – ADCO Construction Manager

2 Site and Development Proposal

2.1 Locality

The ADCO carpark construction site is adjacent the Tweed Valley Hospital Development site on Cudgen Road, Kingscliff. The Tweed Valley Hospital is also currently under construction.

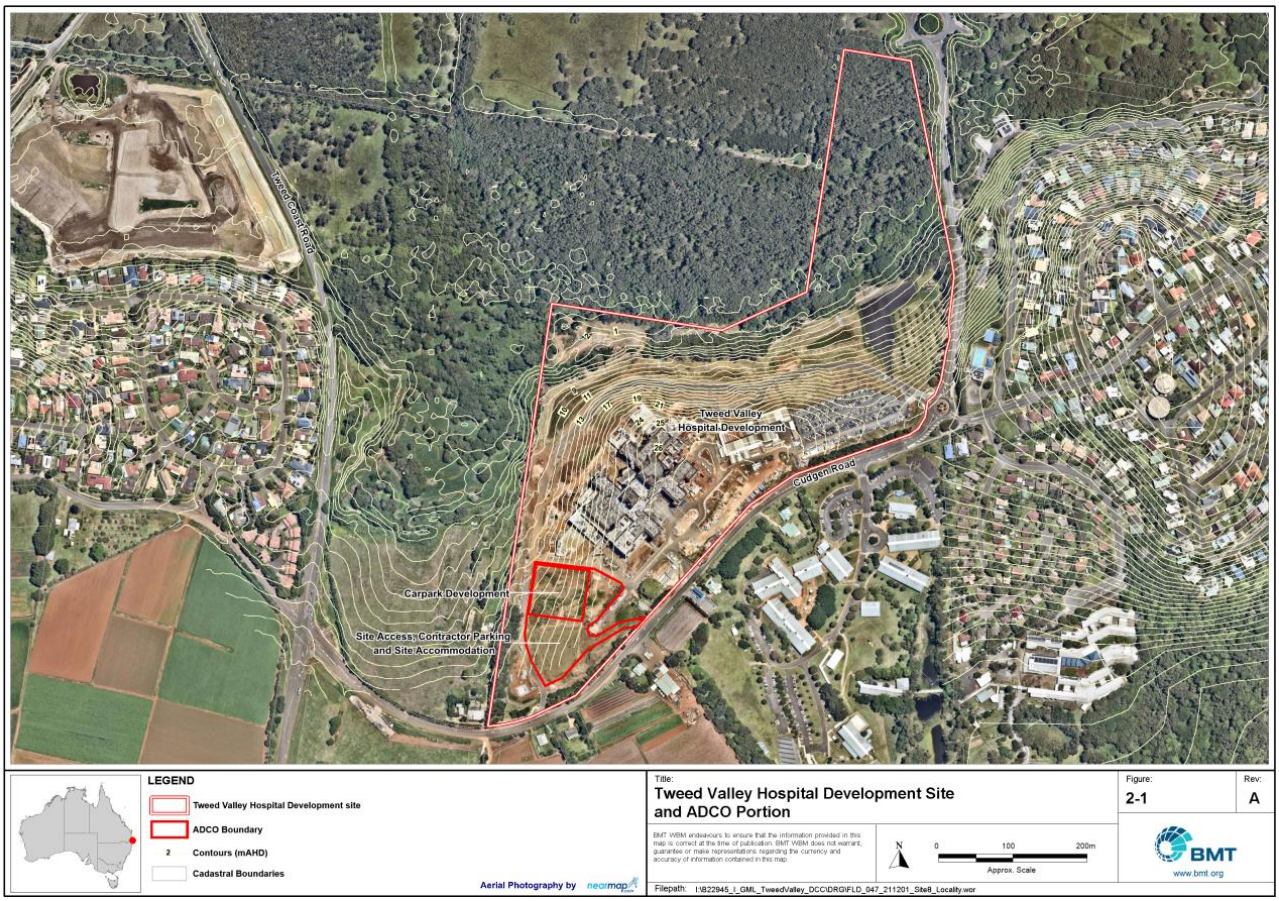
The overall Tweed Valley Hospital Development site is just over a kilometre to the south west of Kingscliff and several kilometres south of Tweed Heads itself. Figure 2.1 shows the overall Tweed Valley Hospital Development in relation to local roads and features.

2.2 Development Proposal

The development proposal to which this Flood Emergency Response Sub Plan applies is the ADCO controlled portion of the Tweed Valley Hospital Development site. This portion of the site is shown in Figure 2.1 and includes the construction of a 5-story with a 2-level basement providing carparking facilities for staff, fleet and visitors. The carpark is to the immediate west of the main hospital development. The following are key project metrics are provided as follows:

- Project commencement – 1/12/2021;
- Estimate project completion – 27/02/2023 (14 months construction period); and
- Maximum workers on-site – 60.

Figure 2.1 Tweed Valley Hospital Development Site and ADCO Portion



3 Site Flooding

3.1 Site topography

The Tweed Valley Hospital / ADCO Development site is located on the north side of a ridge that separates the Tweed River and Cudgen Creek catchments. The topography across the Site is varied, with ground elevations of more than 26 m AHD at the Site's southern boundary (along the ridge adjoining Cudgen Road) decreasing to less than 1 m AHD along the Site's northern boundary.

3.2 Previous flood assessments

In terms of applicable flood assessments, the Site is located within the extents of the Tweed Valley Flood Study prepared by BMT WBM for Tweed Shire Council (updated in 2009). Additionally, floodplain management is detailed within the Tweed Valley Floodplain Risk Management Study and Plan which was prepared by BMT WBM in 2015 for Tweed Shire Council.

These studies focus primarily on regional flooding and associated floodplain management. Local flood responses were not covered in detail in this plan.

Figures included in Annex A have been prepared to show predicted design flood levels at the Site. These include:

- peak flood levels for the 5% AEP (**estimated 2.3m AHD peak at the Site**), 1% AEP (**estimated 3.2m AHD peak at the Site**) and PMF flood (**estimated 8m AHD peak at the Site**) events;
- peak flood depths for the 5% AEP, 1% AEP and PMF flood events; and
- peak flood velocity-depth product for the 5% AEP, 1% AEP and PMF flood events.

This data has been extracted from the Tweed Valley Flood Study Update (BMT WBM, 2009).

The flood mapping shows that:

- The overall site is inundated in each event with the low-lying areas to the north of the site being inundated.
- Inundation extents increase for the larger and rarer flood events, however, the majority of the site remains flood free.
- The Probable Maximum Flood (PMF) event impacts about a third of the Site.
- The velocity depth hazard generally indicates a high hazard for all events, mainly due to the depth of water expected to pond temporarily on the land during the flood event. Generally, flood velocities in this area are low.

It is worthwhile noting that the Tweed Valley Hospital Development site was selected in part for its flood immunity during the PMF event. This means that the hospital buildings are above the level of the PMF which is in effect the highest conceivable flood level to be experienced on the site. Similarly, the ADCO carpark development is above all predicted regional flood levels and is immune from inundation during regional flood events.

Indicative flood producing rainfall totals were outlined within the Tweed Local Flood Plan 2014 as follows:

1. 50-150mm over a period of 1-3 days usually results in river rises with nuisance to minor flooding;
2. 175-300mm over a period of 1-3 days usually results in moderate flooding;
3. 300-450mm over a period of 1-5 days usually results in major flooding; and
4. 500-700mm on the Condong Range and coastal fringe over a period of 1-3 days will result in major storm water flooding around Cudgen Lake, Tanglewood, Cabarita, Bogangar, Hastings Point and Pottsville.

It should be noted that these totals refer to rainfall that is received across the catchment (not just isolated in one portion of the catchment).

3.3 Site Access

Local access to the Tweed Valley Hospital Development site is via Turnock Street to the east and Cudgen Road to the south.

Turnock Street provides local road access to Kingscliff which can also be used to access areas to the north of Kingscliff and the Pacific Motorway. Cudgen Road can also be used to access Kingscliff, but primarily it is the main connection to Tweed Coast Road and the Pacific Motorway.

From the intersection of Cudgen Road and Tweed Coast Road, Cudgen Road also extends to the west towards Murwillumbah. Additionally, Tweed Coast Road extends to the south towards Wooyung providing connection to a number of coastal towns such as Casuarina, Cabarita, Bogangar, Hastings Point and Pottsville.

Site access during a 5% AEP event

Estimated peak flood levels for the 5% AEP event are in the range of 2.2m AHD to 2.3m AHD at the Barneys Point gauge, Chinderah and Cudgen areas as indicated in the Tweed Local Flood Plan and Tweed Valley Flood Study Update.

At this level, Cudgen Road immediately adjacent the Tweed Valley Hospital / ADCO development site is not subject to flooding; however, Cudgen Road connects to other roads which are subject to inundation. The potential for access road inundation is shown in Figure 3.1 which identifies roads potentially subject to closure during a 5% AEP event. It should be noted that the inundation mapping is based on data prepared during earlier flood studies and local conditions may have changed due to road upgrades or drainage modifications. Additionally, the flood studies from which findings have been extracted do not specifically account for local flood effects. As such roads may also experience local flood effects (e.g., flash flooding) in addition to the regional flood impact described herein.

Figure 3.1 shows that sections of both the M1 and Tweed Coast Road are inundated during the 5% AEP event presenting a limitation on site egress when travelling from locations north of the Tweed River. Road access to the Site for the southern coastal populations is maintained via Casuarina Way/Tweed Coast Road, or via M1/Clothiers Creek Road/Farrants Road/Eviron Road/Duranbah Road and Cudgen Road. The alternative routes will assist in maintaining access to the Site for populations south of the Tweed River during times of flood.

Site access during a 1% AEP event

Estimated peak flood levels for the 1% AEP event are in the range of 3.0m AHD to 3.2m AHD at the Barneys Point gauge, Chinderah and Cudgen areas as indicated in the Tweed Local Flood Plan and Tweed Valley Flood Study Update.

Figure 3.2 identifies locations of known or modelled road closure during a 1% AEP event. The figure illustrates a broadly similar flood inundation pattern and associated road closured to the 5% AEP event. Access via Clothiers Creek Road may however be impacted during this larger event. Access via Casuarina Way/Tweed Coast Road is predicted to remain flood free.

Pacific Highway (M1) access

Within the Tweed LGA sections of the Pacific Highway can become inundated in events of a 5% AEP magnitude. The Tweed Local Flood Plan, 2014 indicates that access along the Pacific Highway at Chinderah will be cut when water levels reach 2.1m (at the Barney's Point gauge – 201426).

Consultations conducted as part of the Tweed Valley Hospital development identified that outside of the Tweed Local Government Area (LGA) the Pacific Highway (M1) can be impacted by the 1% AEP event. For examples, locations in the City of Gold Coast LGA can become inundated during the 1% AEP event (e.g., near exits 82 and 87). Similarly, sections of the Pacific Highway in the Byron LGA can become inundated during the 1% AEP event (e.g., southbound section between Gulgan Road and the Ewingsdale Road intersection).

Further information on active road closures and conditions can be obtained from the following websites:

- NSW Live Traffic - https://www.livetraffic.com/
- Qld Traffic - https://qldtraffic.qld.gov.au/

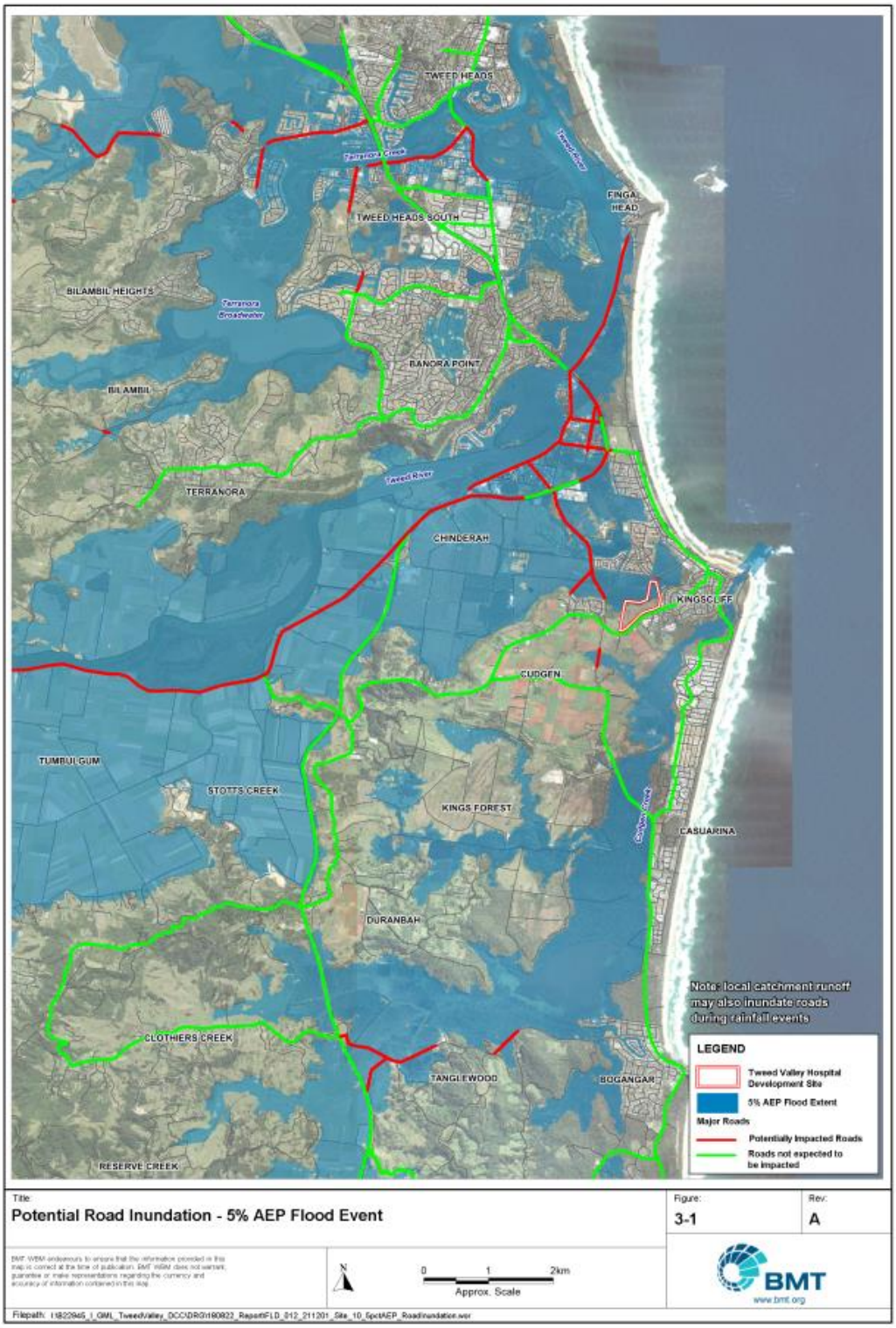


Figure 3.1 Site access for a 5% AEP regional flood

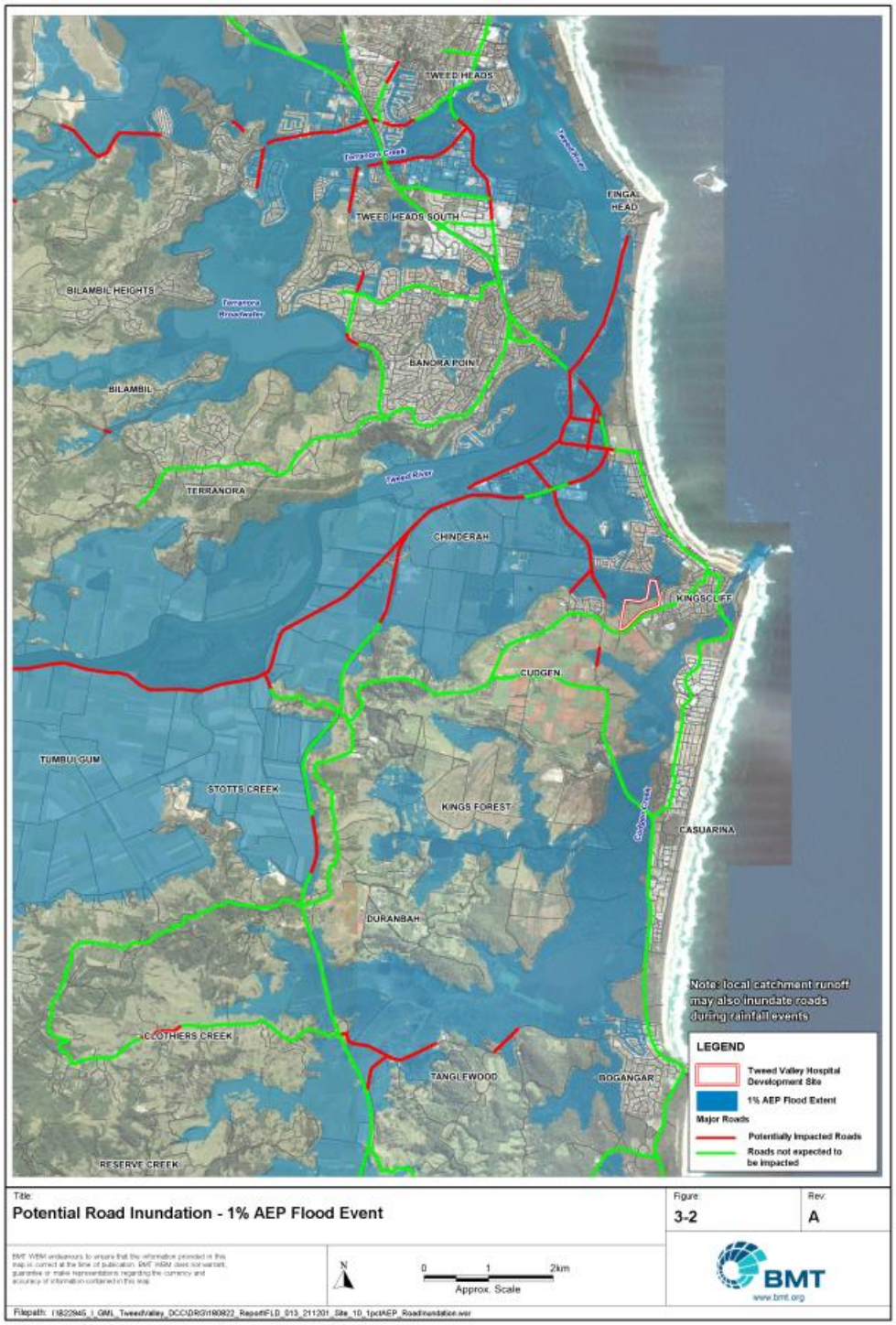


Figure 3.2 Site access for a 1% AEP regional flood

3.5 Flood warning times

The Tweed River catchment has been assessed as having a critical duration of 36 to 72 hours (BMT WBM, 2009). This indicates that peak flood levels in the catchment typically occur from rainfall events of significant duration (i.e., a 1.5-to-3-day rainfall event). In such events, it will normally take a number of hours for river water levels to begin to rise and spill into the floodplain before flooding is observed.

Each flood event has a different set of circumstances in terms of the specific locations of rainfall, the timing of rainfall bursts, antecedent catchment conditions prior to the event, and downstream or tailwater conditions defining ocean water levels and tides. No two flood events are identical and as a result it is difficult to provide specific and universally applicable flood warning times.

It is suggested that the Flood Warnings and Flood Watches as issued by the Bureau of Meteorology (BoM) provide the most reliable and up to date source of information on imminent flooding in the catchment (these are discussed further in Section 4.2). Flood Watches and Flood Warnings are provided by the BoM in addition to, and in consultation with relevant emergency services such as the NSW SES and other bodies such as local government. They are informed by a variety of information such as observations of rainfall patterns and intensities, future forecast rainfall, observed response in water levels in waterways and existing knowledge of flood response.

The Tweed Valley Hospital / ADCO development site is in the lower portions of the Tweed River catchment, although several kilometres upstream of the entrance. The site is on the edge of the floodplain as it adjoins the catchment boundary with Cudgen Creek. The Site's position in the catchment is likely to protect it from the initial flood response of the Tweed River.

Based on review of historic major floods (with recurrence intervals between approximately 10% AEP and 2% AEP) considered in the Tweed Valley Flood Study (BMT WBM 2009), inundation of portions of the site (assumed to be at or above 1m AHD) could occur after around 12 hours with peak flood levels being experienced somewhere in the range of 24 to 36 hours after this initial inundation. As mentioned above, these real-world examples are just two examples of historic floods and are indicative of the site's flood response only.

The Tweed Local Flood Plan 2014 indicated that the onset of flooding in the Chinderah / Kingscliff sector can occur approximately 9 hours after it appears at Murwillumbah.

3.6 Duration of inundation

Based on review of historic major floods (with recurrence intervals between approximately 10% AEP and 2% AEP) considered in the Tweed Valley Flood Study (BMT WBM 2009), inundation of portions of the site (assumed to be at or above 1m AHD) could occur for up to 36 to 48 hours. These outcomes are based on only two historical floods and are indicative of the site's flood response only. A differing period of inundation is expected for each flood event.

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4 Flood Emergency Management

This flood emergency response sub-plan is required to ensure staff (with nominated responsibilities during flood events) and workers are suitably informed of property specific flood risks, have information on how to prepare for a flood and guidance on what to do during a flood. Being prepared for a flood event will help staff respond better and recover faster if a major flood event was to occur.

The ADCO site is above the PMF flood level which provides immunity from peak regional flood levels, however, many of the egress routes to the ADCO site are subject to inundation and are a key consideration in flood emergency response. There also remains a small risk of localised (flash flooding) on the site during localised intense rainfall events. The ADCO site is in close proximity to a community evacuation centre, however, the priority for flood response should be to minimise personnel vehicle traffic to and from the Site prior to and during a flood through vigilance of available information systems, advance warning and sound advice during time of flood.

4.1 Tweed Local Flood Plan

The Tweed Local Flood Plan 2014 is a sub plan of the Tweed Shire Local Emergency Management Plan (EMPLAN) and has been prepared in accordance with the provisions of the *State Emergency Service Act* 1989 (NSW) and is authorised by the Local Emergency Management Committee in accordance with the provisions of the *State Emergency and Rescue Management Act* 1989 (NSW). The plan is approved by the NSW SES Tweed Shire Local Controller and the NSW SES Richmond Tweed Region Controller as a NSW SES plan.

It's stated purpose is, "*This plan covers preparedness measures, the conduct of response operations and the coordination of immediate recovery measures from flooding within the Tweed Shire Council area. It covers operations for all levels of flooding within the council area*."

Overall, the plan outlines measures required to prepare, respond and recover from flooding (and coastal erosion) events. It provides a breakdown of responsibilities, communications, operations, management and coordination for emergency services staff and support agencies during events that trigger the plan.

ADCO in its operations at the Tweed Valley Hospital should remain aware of any directives issued by the NSW SES and associated parties. These may include alerts as to the likelihood, severity and timing of a flood event (discussed further in this section), and subsequent orders relating to evacuation (such as Evacuation Warnings and Evacuation Orders). Other advice may be available relating to local road closures.

Evacuation Centres and Routes

The Tweed Local Flood Plan 2014 identifies that the ADCO construction site in within the 'Chinderah / Kingscliff Sector'. The Plan identifies that a flood evacuation route is Cudgen Road. Cudgen Road divides the site from the Kingscliff TAFE which is a nominated evacuation centre.

The evacuation centres and evacuation routes are shown on Map 9 of the Tweed Local Flood Plan which is represented in Figure 4.1.

Figure 4.1 Chinderah / Kingscliff Sector Evacuation Map

Other local evacuation centres include:

1. Kingscliff Public School Orient Street Kingscliff;
2. Cudgen Public School Collier Street Cudgen; and
3. Banora Pt Public School Pioneer Drive Banora Pt (note, that this is not recommended for access from the ADCO site).

4.2 External warning systems

There are a number of mechanisms available to ADCO to obtain up to date advice on the potential for flooding. The Bureau of Meteorology (BoM) is responsible for the issuance of the following:

- Severe Thunderstorm Warning;
- Severe Weather Warning;
- Flood Watch; and
- Flood Warning.

These advices are for potential or imminent local (flash flooding) and regional flooding. The advice may be accessed on the BoM website as follows.

http://www.bom.gov.au/nsw/warnings/

The 'Flood Watch' advice is issued by the BoM as early advice of a developing weather situation that may lead to flooding, however, there is no certainty that the flood event will actually occur. Flood watch information can be issued up to four days prior to the onset of actual flooding and the information is generally updated daily.

The 'Flood Warning' advice is issued by the BoM to advise that flooding is occurring or expected to occur in a location based on defined criteria. The Flood Warning advice will provide as much detail as is possible on the locations, timing and severity of expected flooding (i.e. minor, moderate and major flood). The advice may include details on the expected peak flood level and timing of that peak. The Tweed Local Flood Plan 2014 indicates that the BoM provides Flood Warning for the following gauges:

- Murwillumbah – 201902 (accessible at http://www.bom.gov.au/fwo/IDN60231/IDN60231.058186.plt.shtml);
- Chinderah (Barney's Point Gauge) – 201426 (accessible at http://www.bom.gov.au/fwo/IDN60231/IDN60231.558102.plt.shtml).

The gauge at Chinderah is the closest to the Site. However, accessing the details from the gauge at Murwillumbah may be useful to understand the timing of flooding as the flood wave moves down the river from Murwillumbah towards the Site, and the possible timing of road closures based on real time flood levels.

The 'Severe Thunderstorm Warning' and 'Severe Weather Warning' are issued by the BoM and relate severe weather events that could generate a variety of atypical weather including dangerous tides, storm surge, or intense local rainfall that could result in localised flash flooding.

Under the Tweed Local Flood Plan 2014 the NSW SES issue a Flood Bulletin in response to the BoM issuing both Flood Watch and Flood Warning alerts. The Flood Bulletins describe information on the estimated impacts of the flooding at the predicted heights. The Bulletins are included in the NSW SES website and issued to NSW SES units, media outlets and agencies.

Flood Bulletins may be accessed by the NSW SES websites as follows:

http://52.63.36.69/

https://www.ses.nsw.gov.au/disaster-tabs-header/flood/

If flooding of concern is expected in localities the NSW SES may issue evacuation warnings and orders. These alerts are described as follows:

- 'Evacuation Warning' alters a community of the potential to evacuate properties, risks to life and property and the safest actions to take.
- 'Evacuation Order' requires immediate evacuate of at-risk sections of the community from a flood threatened area and advises the safest actions to take.
- 'All Clear' advises an evacuated community that it is safe for people to return to the area and any residual risks.

These advice from the NSW SES will be disseminated to and implemented by a variety of organisations and means including the SES, Police, Rural Fire Service, Fire Brigade, radio station, media outlets, television stations and door knocking amongst others. Further details are available within the Tweed Local Flood Plan, 2014.

The Tweed Local Flood Plan, 2014 indicates that at risk localities in the Barneys Point / Chinderah area will commence flood preparations at 1.5m with evacuations triggered at flood levels of 2m. Generally, the Barneys Pont / Chinderah region has average ground levels of around 2m AHD.

4.3 Flood awareness (observation)

It is the responsibility of the **Flood and Emergency Warden** to maintain observation of available external warning systems (as described in Section 4.2) and to utilise and act on this information in a timely manner. Table 4.1 includes summary details of observation requirements.

The **Flood and Emergency Warden** will be required to check relevant sources of information (e.g. NSW SES, BoM, local media) at a number of times during the day, including if possible prior to work commencing to enable early notification of workers of possible work restrictions due to flooding.

Table 4.1 Observation Requirements

Warning	Action	Responsibility
Flood Watch%	Observe daily during work days	Flood and Emergency Warden
Flood Warning%	Observe three hourly during work days once a flood watch has been issued. Tune into local media for updates.	Flood and Emergency Warden

Warning	Action	Responsibility
Severe Weather Warning and Severe Thunderstorm Warning	Observe three hourly during work days. Observe hourly for events likely to impact the site.	Flood and Emergency Warden
Evacuation Warning**	Observe for evacuation warnings issued by the SES at three hourly intervals once a Flood Warning has been issued. Tune into local media for updates.	Flood and Emergency Warden
Evacuation Order**	Observe hourly once an Evacuation Warning has been issued for the locality	Flood and Emergency Warden

% It is suggested that for major weather events that lead to riverine flooding that conditions in adjoining catchments are also observed, e.g. Gold Coast, Byron, etc. As some site workers may live some distance from the Site.
** Only required once there is flood activity in the catchment.

4.4 Flood response

Local catchment flooding ('flash flooding')

Local catchment flooding which can also be referred to as 'flash flooding' typically results from relatively localised storm or severe weather events that results in a large amount of rainfall being received in a relatively short period of time. As per Table 4.1 this type of flooding is typically associated with a Severe Weather Warning and/or Severe Thunderstorm Warning. Local flooding can also occur during a regional event due to an embedded rainfall burst.

The excess rainfall (that cannot enter the ground or formal drainage systems) is converted to runoff that contributes to inundation of areas for a short period of time (i.e., minutes to hours) while the runoff recedes. These runoff events can occur quickly and with little warning and can be dangerous, particularly in a work environment.

While the Tweed Valley Hospital Development and ADCO site has already installed stormwater / local drainage infrastructure (as part of early site works), the capacity of these systems may still be exceeded by a local catchment flood event.

ADCO's **Flood and Emergency Warden** maintains primary responsibility for site responses to local flooding. The **Flood and Emergency Warden** shall after observing a Site significant Severe Weather Warning or Severe Thunderstorm Warning maintain active vigilance of local site conditions and utilise site advisory systems (e.g. PA system, siren or loudspeaker) to move or evacuate workers from at risk locations (particularly sub-ground areas or areas subject to runoff) when site conditions indicate that this is required. Early upwards movement or evacuation of staff operating in below ground areas will be required prior to conditions deteriorating.

Table 4.3 includes summary details of response requirements.

Table 4.2 Local flood event response

Warning	Response	Responsibility
Severe Weather Warning and Severe Thunderstorm Warning	Observe BoM radar hourly when severe weather or thunderstorm warnings are applicable to the	Flood and Emergency Warden

Warning	Response	Responsibility
	Site. Observe rainfall at the Site and Site response to rainfall.	
Intense site rainfall	Move potentially at-risk workers to safer locations, or have them evacuate to the assembly location	Flood and Emergency Warden

Regional catchment flooding

Regional flooding or flooding that emanates from the Tweed River results from extended heavy rainfall in the Tweed River catchment. As per Table 0 this type of flooding is typically associated with a Flood Watch or Flood Warning.

Relevant details of flooding at the Site and on-Site access are provided in Section 2, i.e., predicted flood levels for different magnitude of events along with timing and duration of flooding at the Site.

As regional flooding typically has a long lead time and will be preceded by both a Flood Watch and Flood Warning from the BoM and SES, the ADCO **Flood and Emergency Warden** will have warning of imminent flooding at the Tweed Valley Hospital Development / ADCO Site.

While the Tweed Valley Hospital Development and ADCO Site are immune from regional flooding, site workers may be exposed to the effects of regional flooding due to the need to travel to or from the Site to work on the local and regional road network. To avoid situations where workers have unsafe or inefficient work commutes, early warning should be provided by the **ADCO Flood and Emergency Warden** to workers of potential regional flooding and associated work arrangements.

These warnings should take into account the following factors:

- Location and timing of regional flooding in the Tweed River catchment, along with adjoining catchments if workers are travelling from adjoining areas to the Site. Flooding in Murwillumbah is likely to occur several hours prior to being experienced at the Site.
- Local roads may be closed, or soon be closed by emergency services or be congested with local traffic prior to the flood event due to local evacuation orders.

Table 4.3 includes summary details of response requirements.

Table 4.3 Regional flood event response

Warning	Response	Responsibility
Flood Watch	Normal site activity, maintain observation of flood watches as they are issued.	Flood and Emergency Warden
Flood Warning	Utilise BoM information and or advice from local SES staff to understand local flood risks (i.e. location, timing, magnitude, etc). Once informed, alert all staff of heightened flood risk in the Tweed region and surrounds via Whatsapp group message. Additionally, site alerts will be communicated to all staff via a PA system, siren or loudspeaker or personally contacting staff	Flood and Emergency Warden Supervisor of contracts (for having Whatsapp installed and linked for each staff member)

Warning	Response	Responsibility
	provided records are kept of advised staff, and all site areas are visited. This Whatsapp message and/or site alert should be sent immediately after reviewing Flood Warning updates or communicating with emergency services that imminent risk of road closures for staff travelling to and from the Site may occur over a period of time. The message should consider likely duration of the flood event and provide advice as to when further advice will be issued about returning to work. Depending on details of Flood Warning issued, staff may be advised to not travel to Site or to leave Site. Those unable to leave the Site via roads that are not likely to be inundated are suggested to attend a local evacuation centre.	

All staff will via contractual requirements have a mobile phone with Whatsapp installed. The Supervisor of each respective subcontract will ensure that their staff download this platform and link to the specific group established for communicating potential flood risks at the Site. This will be communicated during the site induction prior to commencing work.

For subcontracted staff (i.e. non ADCO employees), the **Flood and Emergency Warden** will send notifications using this Whatsapp notifying the supervisor of each subcontracted business of flood risks, as for all other ADCO staff. This supervisor of subcontracted staff must immediately relay this message to staff with current work roles at the ADCO development at the Tweed Valley Hospital site.

ADCO Site Assembly Point and Evacuation Routes

The ADCO site has nominated internal assembly points for personnel to be accessed by a number of evacuation routes (see Figure 4.2). The locations and routes have been determined to provide an efficient route for personnel to get to a safe assembly location.

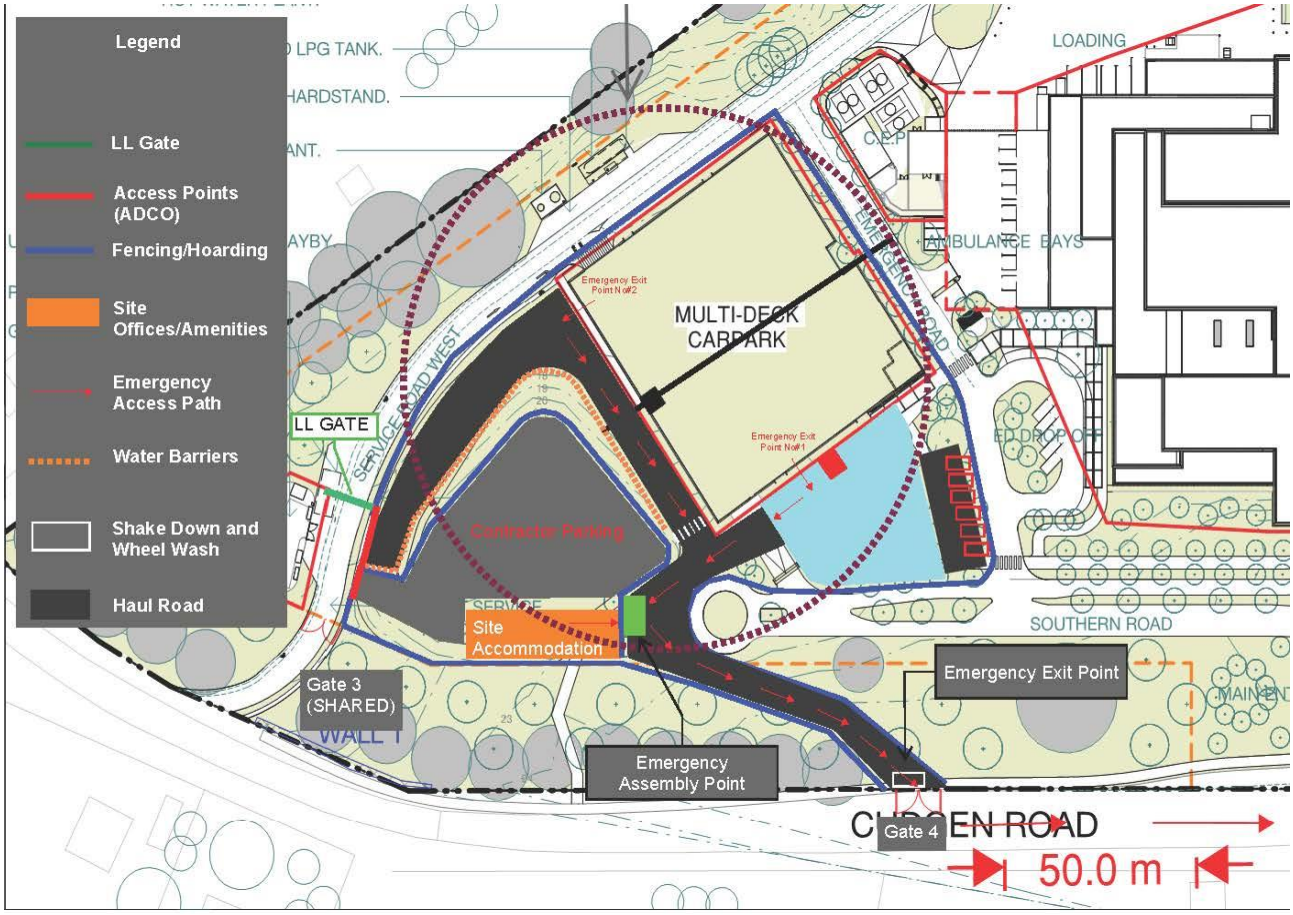


Figure 4.2 Site Evacuation Plan (courtesy ADCO)

Evacuation Warning and Evacuation Orders

As per Table 0, Evacuation Warnings and Evacuation Orders can be issued to localities likely to be subject to inundation. It is unlikely that such a warning or order would be applicable to the Tweed Valley Hospital Development / ADCO Site given its regional flood immunity.

However, in the unlikely event of an Evacuation Order being issued then all staff will be required to comply with the Evacuation Order. Based on advice from the **Flood and Emergency Warden** having reviewed the details of the Evacuation Order, and considered the current flood event and associated advice (e.g. details of Flood Warning, Flood Bulletins and Emergency Services), it may be possible for some staff to return home via foot or personal vehicle, however, it may not be possible for some staff to do this. In this eventuality, it is suggested that these staff shelter in one of the community evacuations centres. The locations of these are included in Section 0, with the closest one being the Kingscliff TAFE which is immediately opposite the Tweed Valley Hospital Development / ADCO Site on Cudgen Road.

4.5 Awareness training

Training in relation to this Flood Sub-Plan and required staff response will from part of the formal Site induction to be completed by all staff and contractors. ADCO site specific inductions will introduce the project team and project specific items, such as emergency processes.

The Flood Emergency Response Sub-Plan will be provided to all constructors and form part of their contract documents. During construction (every six months), ADCO will convene an evacuation drill simulating the requirements and expectations of such an event. If the response to the evacuation drill is not acceptable, the drill will be repeated.

Any updates to this plan will be communicated with the entire project team through an open training and educational forum and distributed by Aconex.

4.6 Responsibilities

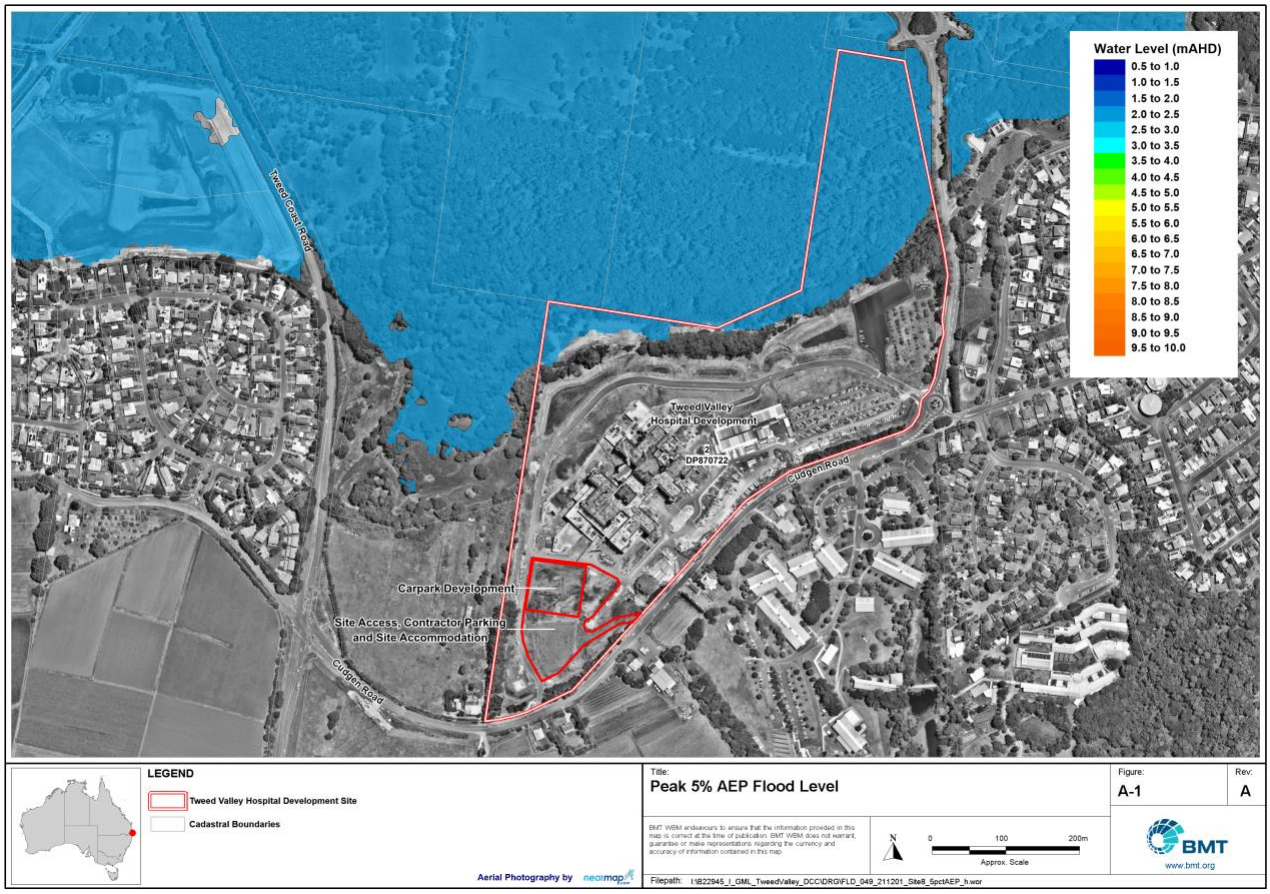
Table 4.4 includes a summary of relevant responsible parties from ADCO and contact details. The table also includes contact details for known advisory and emergency services of importance to the plan.

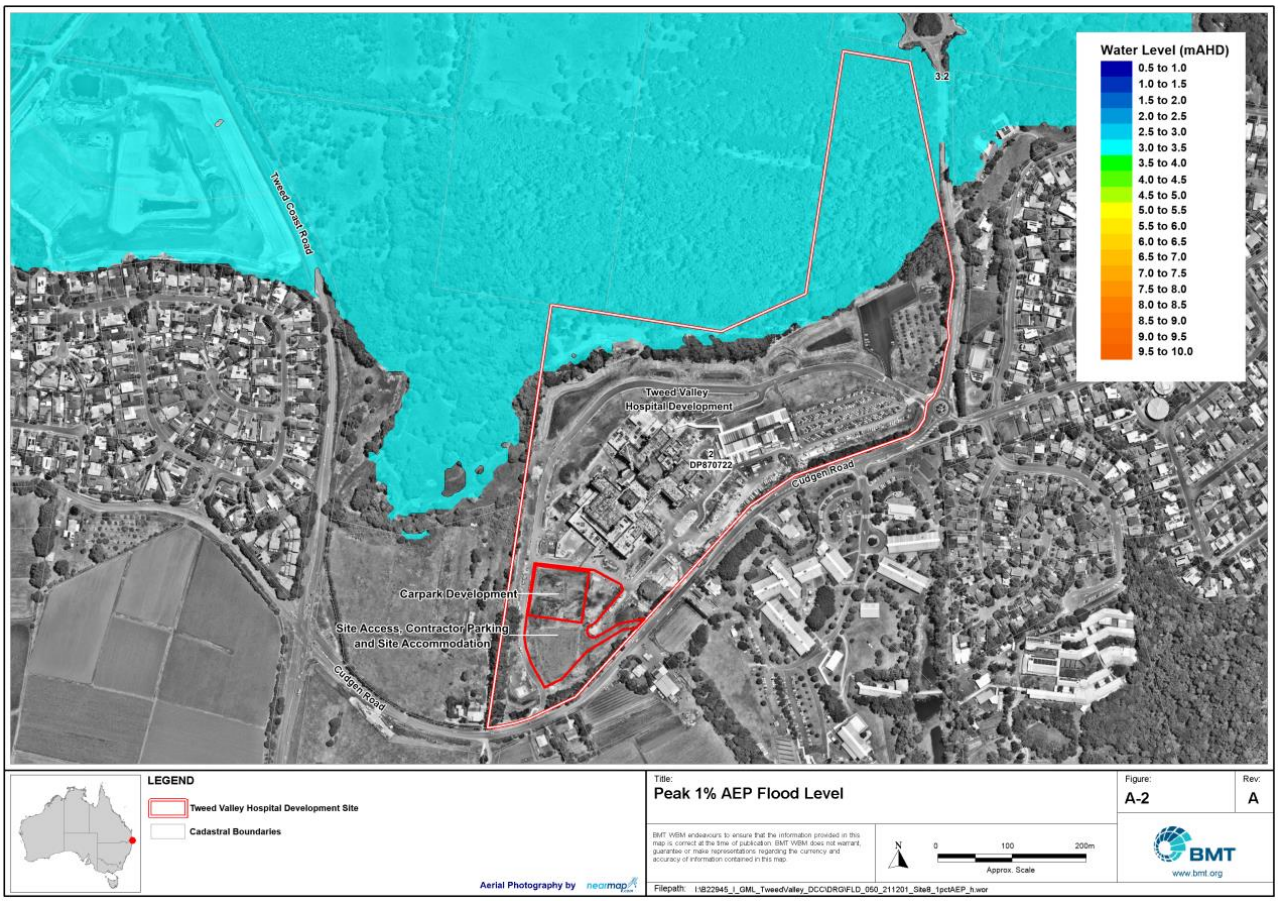
Table 4.4 Site contacts and responsibilities

Name	Position	Roles	Contact
Jason Power	Project Manager	Overall Site Project Manager	0413 777 065
Glen Winters	Site Manager	Flood and Emergency Warden	0413 777 451
Dominic Barrett	Senior Health Safety and Environmental Officer	Assistant Flood and Emergency Warden	0438 263 494
SES	NA	Emergency Services Advisory and Response	132 500
Tweed Heads Police Station	NA	Support to emergency services	07 5506 9499

5 References

Annex A: Flood Inundation Figures




Water Level (mAHD)
0.5 to 1.0
1.0 to 1.5
1.5 to 2.0
2.0 to 2.5
2.5 to 3.0
3.0 to 3.5
3.5 to 4.0
4.0 to 4.5
4.5 to 5.0
5.0 to 5.5
5.5 to 6.0
6.0 to 6.5
6.5 to 7.0
7.0 to 7.5
7.5 to 8.0
8.0 to 8.5
8.5 to 9.0
9.0 to 9.5
9.5 to 10.0
3.2
Tweed Coast Road
Tweed Valley Hospital Development
2
DP870722
Cudgen Road
Carpark Development
Site Access, Contractor Parking and Site Accommodation
Cudgen Road
LEGEND
Tweed Valley Hospital Development Site
Cadastral Boundaries
Aerial Photography by nearmap
Title:
Peak 1% AEP Flood Level
Figure:
A-2
Rev:
A
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N
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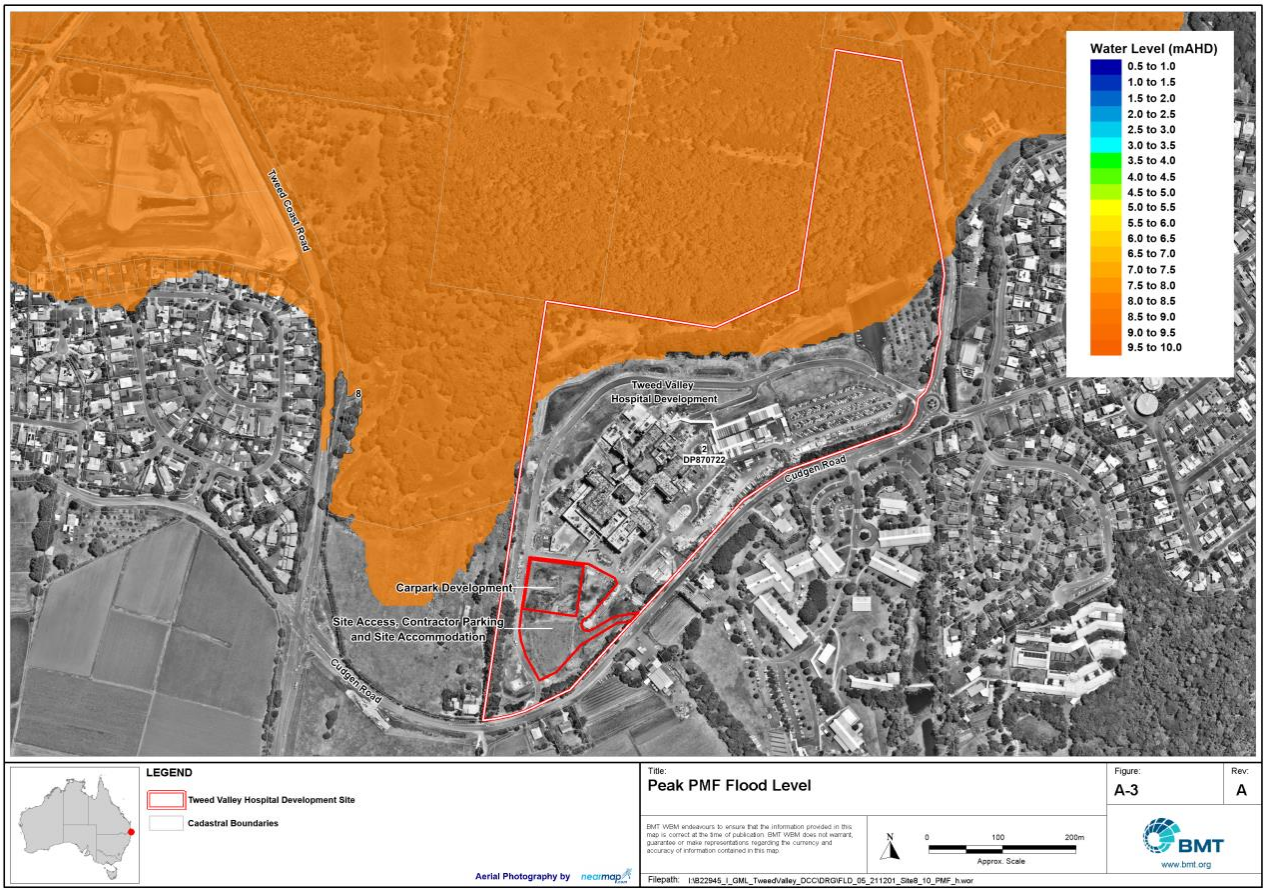
200m
Approx. Scale
BMT
www.bmt.org
Filepath: I:\B22945_I_GML_TweedValley_DCC\DRG\FLD_050_211201_Site8_1pctAEP_h.wor


Water Level (mAHD)
0.5 to 1.0
1.0 to 1.5
1.5 to 2.0
2.0 to 2.5
2.5 to 3.0
3.0 to 3.5
3.5 to 4.0
4.0 to 4.5
4.5 to 5.0
5.0 to 5.5
5.5 to 6.0
6.0 to 6.5
6.5 to 7.0
7.0 to 7.5
7.5 to 8.0
8.0 to 8.5
8.5 to 9.0
9.0 to 9.5
9.5 to 10.0
Tweed Coast Road
Tweed Valley Hospital Development
2 DP870722
Cudgen Road
Carpark Development
Site Access, Contractor Parking and Site Accommodation
Cudgen Road
LEGEND
Tweed Valley Hospital Development Site
Cadastral Boundaries
Aerial Photography by nearmap
Title:
Peak PMF Flood Level
Figure:
A-3
Rev:
A
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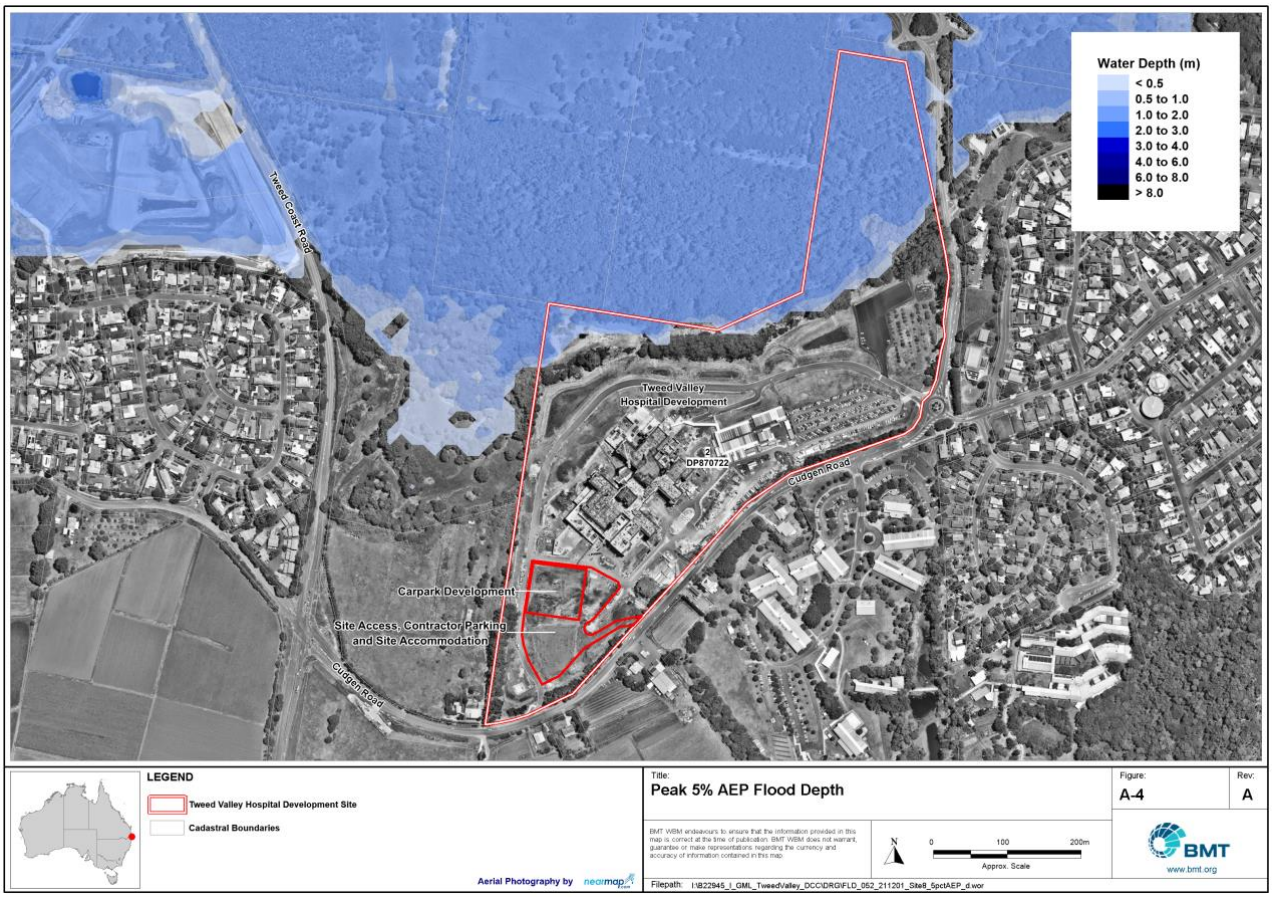
Approx. Scale
BMT
www.bmt.org
Filepath: I:\B22945_I_GML_TweedValley_DCC\DRG\FLD_05_211201_SiteB_10_PMF_h.wor


Water Depth (m)
< 0.5
0.5 to 1.0
1.0 to 2.0
2.0 to 3.0
3.0 to 4.0
4.0 to 6.0
6.0 to 8.0
> 8.0
Tweed Coast Road
Tweed Valley Hospital Development
2 DP870722
Cudgen Road
Carpark Development
Site Access, Contractor Parking and Site Accommodation
Cudgen Road
LEGEND
Tweed Valley Hospital Development Site
Cadastral Boundaries
Aerial Photography by
Title:
Peak 5% AEP Flood Depth
Figure:
A-4
Rev:
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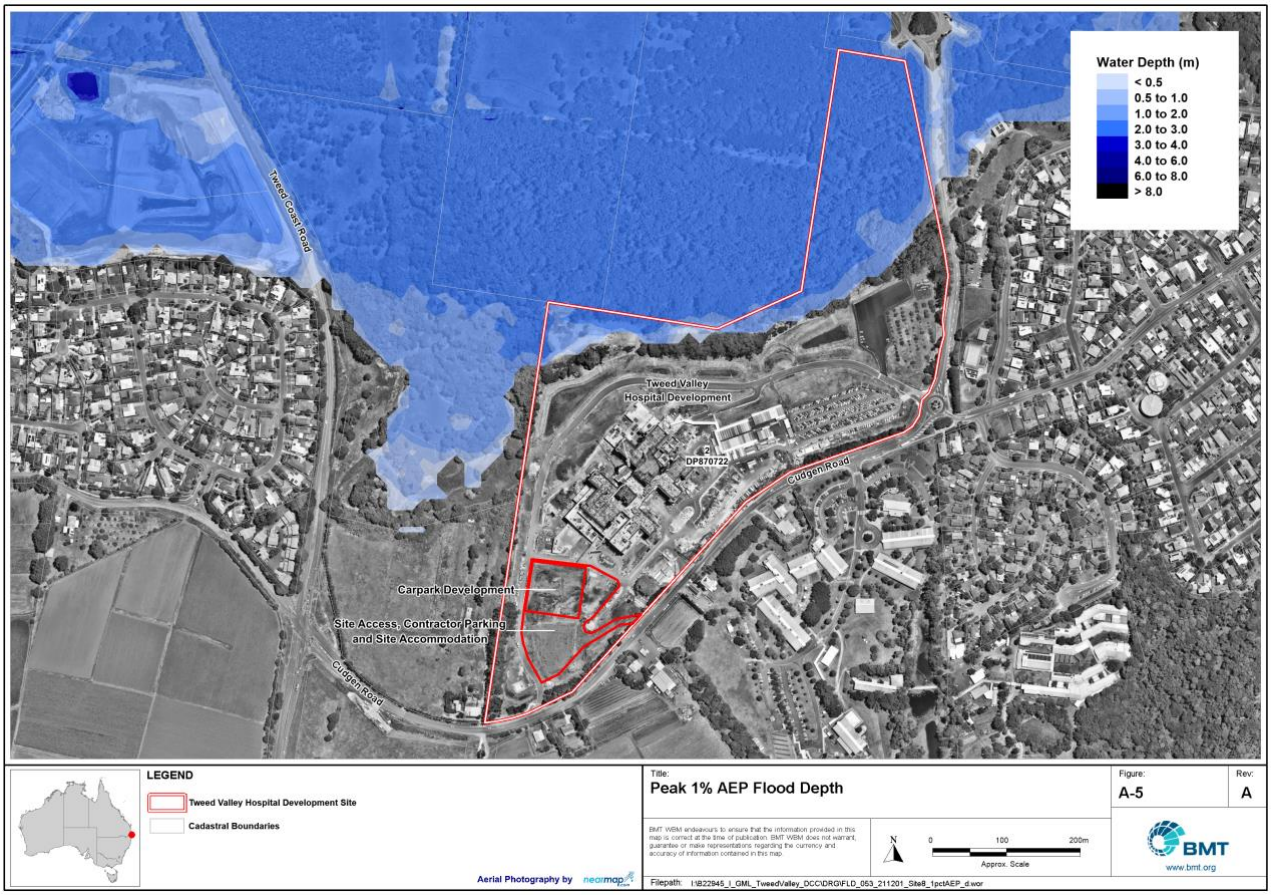
200m
Approx. Scale
www.bmt.org
Filepath: I:\B22945_I_GML_TweedValley_DCC\DRG\FLD_052_211201_Site8_5pctAEP_d.wor


Water Depth (m)
< 0.5
0.5 to 1.0
1.0 to 2.0
2.0 to 3.0
3.0 to 4.0
4.0 to 6.0
6.0 to 8.0
> 8.0
Tweed Coast Road
Tweed Valley Hospital Development
2 DP870722
Cudgen Road
Carpark Development
Site Access, Contractor Parking and Site Accommodation
Cudgen Road
LEGEND
Tweed Valley Hospital Development Site
Cadastral Boundaries
Aerial Photography by
Title:
Peak 1% AEP Flood Depth
Figure:
A-5
Rev:
A
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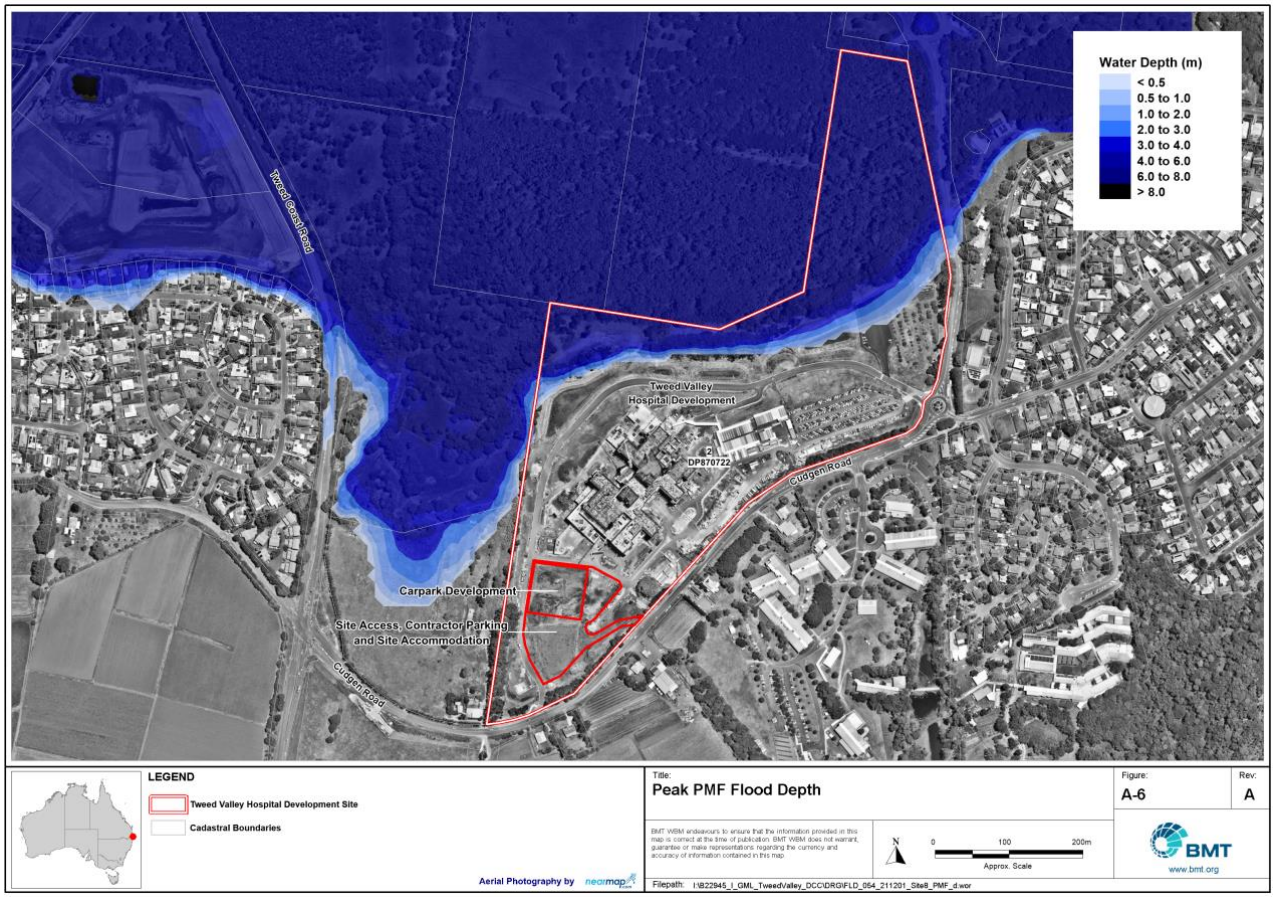
Water Depth (m)
< 0.5
0.5 to 1.0
1.0 to 2.0
2.0 to 3.0
3.0 to 4.0
4.0 to 6.0
6.0 to 8.0
> 8.0
Tweed Coast Road
Tweed Valley Hospital Development
2 DP870722
Cudgen Road
Carpark Development
Site Access, Contractor Parking and Site Accommodation
Cudgen Road
LEGEND
Tweed Valley Hospital Development Site
Cadastral Boundaries
Aerial Photography by
Title:
Peak PMF Flood Depth
Figure:
A-6
Rev:
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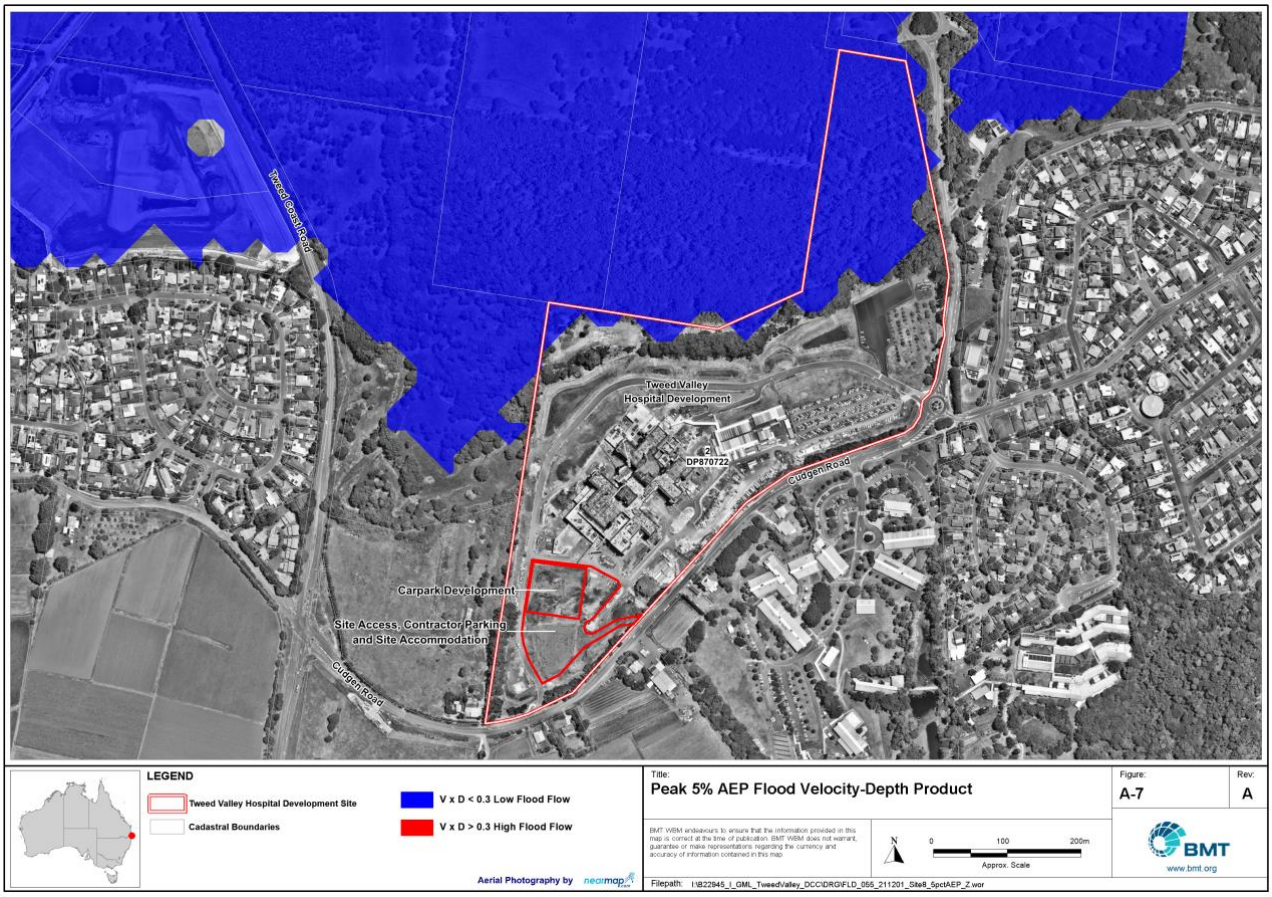
Filepath: I:\B22845_I_GML_TweedValley_DCC\DRG\FLD_054_211201_SiteB_PMF_d.wor


Tweed Coast Road
Tweed Valley
Hospital Development
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DP870722
Cudgen Road
Carpark Development
Site Access, Contractor Parking
and Site Accommodation
Cudgen Road
LEGEND
Tweed Valley Hospital Development Site
Cadastral Boundaries
V x D < 0.3 Low Flood Flow
V x D > 0.3 High Flood Flow
Aerial Photography by
Title:
Peak 5% AEP Flood Velocity-Depth Product
Figure:
A-7
Rev:
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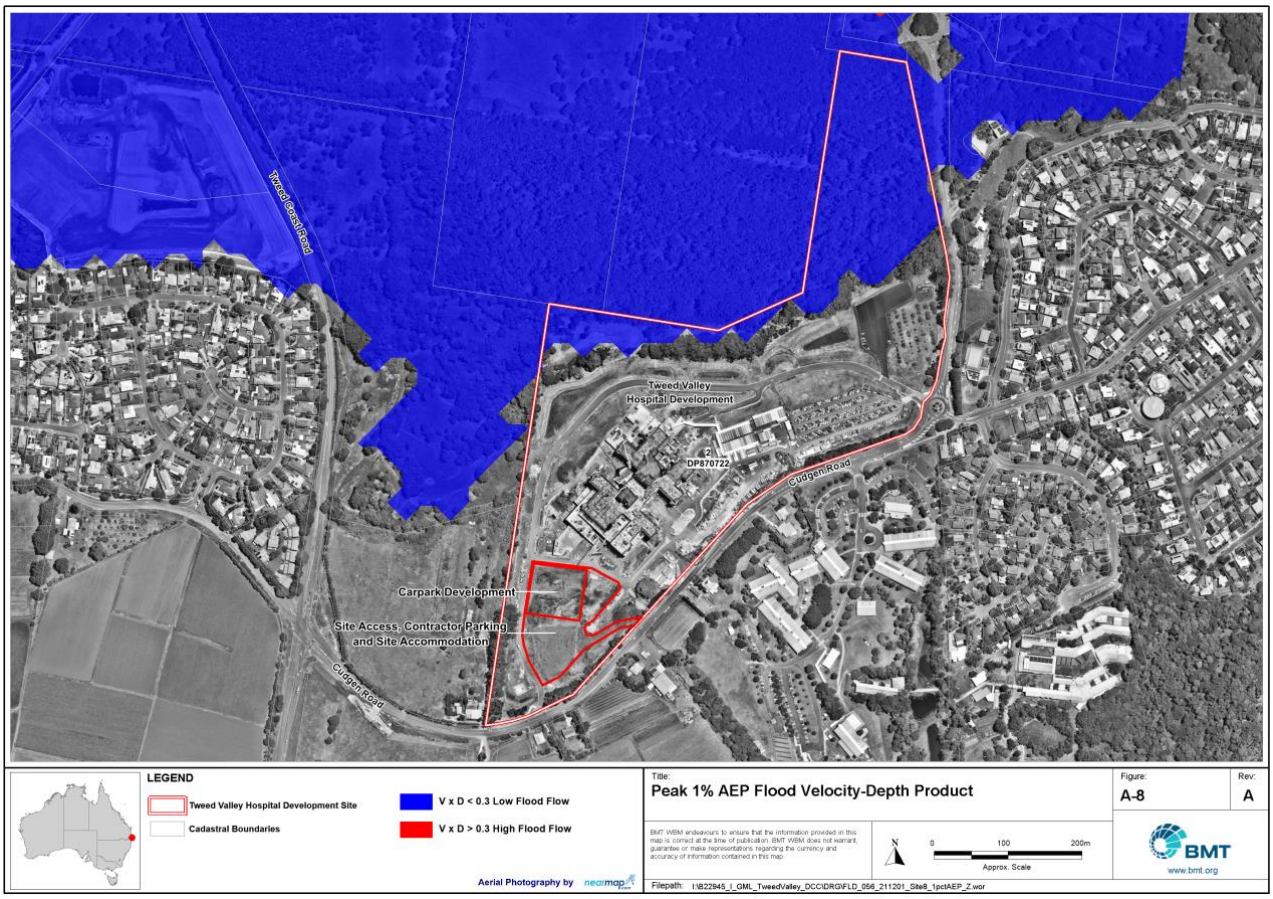
Filepath: I:\B22945_I_GML_TweedValley_DCC\DRG\FLD_055_211201_Site8_5pctAEP_Z.wor


Tweed Coast Road
Tweed Valley
Hospital Development
DP870722
Guddgen Road
Carpark Development
Site Access, Contractor Parking
and Site Accommodation
Cudgen Road
LEGEND
Tweed Valley Hospital Development Site
Cadastral Boundaries
V x D < 0.3 Low Flood Flow
V x D > 0.3 High Flood Flow
Aerial Photography by nearmap
Title:
Peak 1% AEP Flood Velocity-Depth Product
Figure:
A-8
Rev:
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Approx. Scale
BMT
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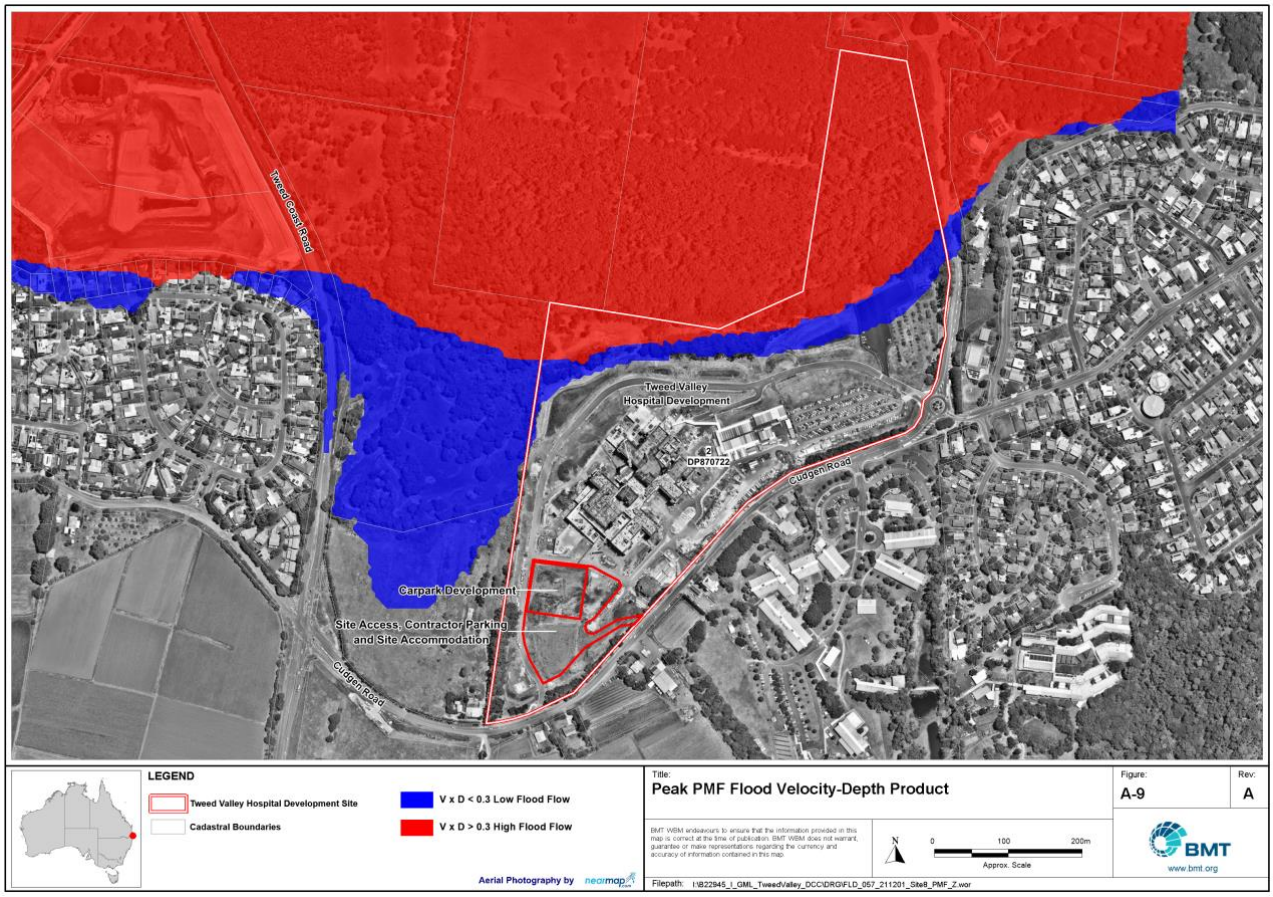
Filepath: I:\B22945_I_GML_TweedValley_DCC\DRG\FLD_056_211201_Site8_1pctAEP_Z.wor


Tweed Coast Road
Tweed Valley
Hospital Development
Lot 2
DP870722
Cudgen Road
Carpark Development
Site Access, Contractor Parking
and Site Accommodation
Cudgen Road
LEGEND
Tweed Valley Hospital Development Site
Cadastral Boundaries
V x D < 0.3 Low Flood Flow
V x D > 0.3 High Flood Flow
Aerial Photography by nearmap
Title:
Peak PMF Flood Velocity-Depth Product
Figure:
A-9
Rev:
A
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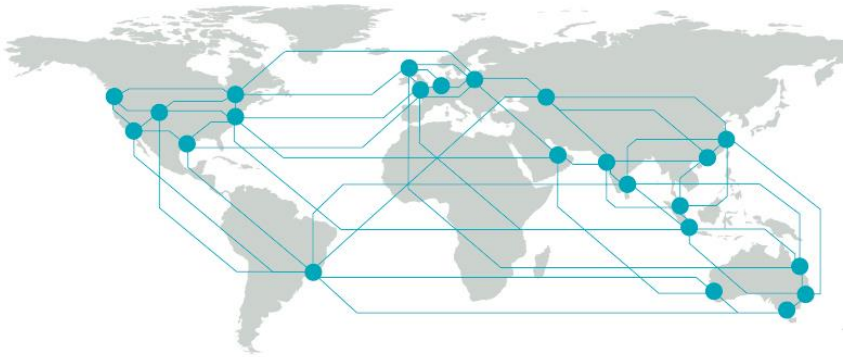
Filepath: I:\B22945_I_GML_TweedValley_DCC\DRG\FLD_057_211201_Site8_PMF_Z.wor



BMT is a leading design, engineering, science and management consultancy with a reputation for engineering excellence. We are driven by a belief that things can always be better, safer, faster and more efficient. BMT is an independent organisation held in trust for its employees.

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