

Appendix D Emergency Action Subplan for 'Authorised Locations' – Review and Update

Emergency Action Subplan for the Wyong 'Authorised Locations'

Prepared by Umwelt for Wyong Shire Council in
November 2011

Revised by BMT WBM for Central Coast Council in 2017,
to reference current guidelines, legislation and policy plus
include the revised erosion hazard mapping

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Introduction

1 Introduction

This report presents the draft Coastal Erosion Emergency Action Subplan (Coastal Erosion EAP) for the three coastal erosion 'hot spots' identified by the NSW Office of Environment and Heritage (2011a) to occur within the Wyong region of the Central Coast Council (Council). These 'hot spot' locations are the North Entrance Beach, Hargraves Beach and Cabbage Tree Harbour.

This Coastal Erosion EAP was prepared for the former Wyong Shire Council by Umwelt in 2011. BMT WBM has updated this Coastal Erosion EAP to reference current NSW Government guidelines, legislation and policy specific to erosion emergency management. The revised coastal erosion hazard mapping for the three 'hot spot' locations has also been included within this Coastal Erosion EAP.

Private and public assets and infrastructure are situated within the immediate coastal erosion hazard zones at North Entrance Beach, Hargraves Beach and Cabbage Tree Harbour. This includes almost 2 km of frontage that is private property, some sections of public road, beach accesses and water and sewerage infrastructure that are present below ground.

Coastal Erosion EAP's are required under Section 55C(1)(b) of the *Coastal Protection Act 1979* (CP Act) and in accordance with the *Guidelines for Preparing Coastal Zone Management Plans*, determined by the NSW Government through the Office of Environment and Heritage (OEH, 2013a).

The structure and content of this Coastal Erosion EAP draw on and are consistent with guidance provided in the coastal reform documents development by the NSW government, including:

- *Guidelines for Preparing Coastal Zone Management Plans* (OEH, 2013a);
- *Coastal Zone Management Guide Note: Emergency Action Subplans* (OEH, 2011b);
- *Guide to the Statutory Requirements for Temporary Coastal Protection Works* (OEH, 2013b); and
- *Code of Practice under the Coastal Protection Act 1979* (OEH, 2013c).

1.1 OEH Coastal Erosion 'Hot spots' and 'Authorised Locations'

In NSW locations with very high to extreme immediate coastal hazard risks are identified as coastal 'hot spots' and 'authorised locations'. 'Authorised locations' are listed in a schedule attached to the Code of Practice under the CP Act (OEH, 2013c). Table 1-1 list the NSW beaches identified as 'hot spots' and Table 1-2 lists the 'authorised locations' where landowners may be able to place temporary coastal protection works under strict conditions. Three Wyong locations are noted in both lists. Because of this, it is essential that thorough EAP are produced for those locations. This Coastal Erosion EAP is specific to three coastal erosion hotspots occurring within the Wyong coastline.

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Table 1-1 Coastal Erosion 'Hot Spots'

LGA	Beach
Byron Shire Council	Belongil Beach
Ballina Shire Council	Lennox Head
Clarence Valley Council	Brooms Head
	Wooli
Port Macquarie-Hastings Council	Lake Cathie
Mid Coast Council (former Greater Taree City Council)	Old Bar Beach
Mid Coast Council (former Great Lakes Council)	Winda Woppa - Jimmys Beach
Central Coast Council (former Wyong Shire Council)	The Entrance North
	Noraville
	Norah Head
Central Coast Council (former Gosford City Council)	Wamberal/Terrigal
Northern Beaches Council (former Pittwater Council)	Bilgola
	Mona Vale
Northern Beaches Council (former Warringah Council)	Collaroy/Narrabeen
Eurobodalla Shire Council	Batemans Bay

Table 1-2 Authorised Locations for Emergency Coastal Protection Works

Authorised Locations for Emergency Coastal Protection Works	
Avoca Beach, Avoca	Narrabeen Beach, Narrabeen
Basin Bay/Beach, Mona Vale	North Avoca Beach, North Avoca
Belongil Beach, Byron Bay	North Entrance Beach, The Entrance (North)*
Blue Bay Beach, Blue Bay*	McMasters to Copacabana Beach, McMasters Beach
Bilgola Beach, Bilgola	Mollymook Beach, Mollymook
Brooms Head, north of Cakora Lagoon	Norah Head, Cabbage Tree Harbour Beach*
Callala Beach, Jarvis Bay	Old Bar Beach, Old Bar
Campbells Beach, Sapphire Beach	Patonga Beach, Patonga
Collaroy Beach, Collaroy	Pearl Beach, Pearl Beach
Collingwood Beach, Vincentia	Surfside Beach, North Batemans Bay
Fishermans Beach, South Collaroy	Toowoona Bay Beach, Toowoona Bay*
Forresters Beach, Forresters Beach	Wamberal Beach, Wamberal
Hargraves Beach, Noraville*	Wooli Beach, Wooli

* Authorised locations occurring on the Wyong coast and covered by the Wyong CZMP 2017.

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1.2 Purpose of this Emergency Action Subplan

This purpose of this Coastal Erosion EAP is to ensure compliance with state legislation and provide Council with an outline schedule of actions to undertake during an emergency erosion event.

This Coastal Erosion EAP is to clearly define the actions and effective working relationships that will minimise the emergency risks associated with coastal hazards. They are also to facilitate a rapid and effective response in the event of coastal hazards that threaten life, property or community amenity along the Wyong coastline.

This Coastal Erosion EAP sets out the responsibilities of Council, with key partner organisations, and how they will communicate and collaborate together in planning and implementing responses to emergencies associated with coastal hazards. This Coastal Erosion EAP does not set out specific actions for private landowners, however, does briefly note the actions landowners are able to take in protecting their property using temporary coastal protection works. This is to aid Council in ensuring that at risk property owners are complying with the temporary protection works legislation and guidelines. It also identifies any site specific issues (if any) that may limit a landowners capacity to place temporary coastal protection works, such as access, substrate and restricted areas (i.e. Aboriginal Heritage areas, or EEC areas).

1.2.1 Scope of the Emergency Action Subplan

Council is covered by a Local Disaster Plan (DISPLAN) for the Hunter Central Coast Region and has prepared risk assessments for various natural hazards that affect the people and assets of the Wyong area.

This Coastal Erosion EAP has the following scope:

- Pre-emergency planning minimise the impacts during an extreme event.
- Responsibility of Council (and its partner organisations) during coastal emergencies.
- Clear communication and warning systems for residents.
- Actions Council may choose to undertake during an emergency (i.e. temporary works).
- Brief outline of the process of allowance and implementation of temporary protection works for landowners (see Table 1-3).
- Any local limitations to landowners with respect to temporary protection works.
- Clean up and review protocols, monitoring to inform future planning strategies (i.e. reviewing what works, and what doesn't).

1.3 Statutory and Policy Context

A Coastal Erosion EAP forms an important component of a Coastal Zone Management Plan (CZMP) and outlines Council's intended response to a coastal erosion emergency. It also details how private property owners can undertake temporary coastal protection work under the CP Act. The CP Act provides the legislative context for preparing CZMPs and Coastal Erosion EAP's. In addition to the CP Act, three documents by the NSW Government relating to coastal erosion emergency response include: the *Guide to the Statutory Requirements for Emergency Coastal*

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Protection Works (OEH, 2013a); the *Code of Practice under the Coastal Protection Act 1979* (OEH, 2013c); and the *Coastal Zone Management Guide Note: Emergency Action Subplans* (OEH, 2011b). This section outlines the current requirements.

1.3.1 Definitions Relating to Coastal Emergencies

Definitions used in the Coastal Erosion EAP's are those used in the CP Act and the Coastal Protection Regulation 2011. Definitions of some key terms in relation to the legislation are as follows:

Emergency Action Subplan: that part of a CZMP that deals with the matter referred to in section 55C (1) (b) of the CPA. In Section 55C(1) (b) CZMPs must make provision for emergency actions carried out during periods of beach erosion, including the carrying out of related works, such as works for the temporary protection of property affected or likely to be affected by beach erosion, where beach erosion occurs through storm activity or an extreme or irregular event.

Coastal protection works: activities or works to reduce the impact of coastal hazards on land adjacent to tidal waters, including seawalls, revetments, groynes and beach nourishment.

Temporary coastal protection works: works comprising the placement of the following material on a beach or a sand dune adjacent to a beach, to mitigate the effects of wave erosion on land (in compliance with the requirements of Section 55P (1) of the CP Act):

- (a) Sand or fabric bags filled with sand (other than sand taken from a beach or a sand dune adjacent to a beach);
- (b) Other objects or material prescribed by the regulations (other than rocks, concrete, construction waste or other debris).

The CP Act does not provide a specific definition of a coastal emergency. However, it does define 'storm conditions' as a period during which a severe weather warning for large waves or damaging surf issued by the Bureau of Meteorology applies.

1.3.2 NSW Coastal Panel

The NSW Coastal Panel is a statutory authority under Part 2A of the CP Act, with membership comprising local government and public authority nominees. The Panel's role is to provide expert advice to the Minister administering the Act and to local councils. The Minister may also refer draft CZMPs to the Panel for review. The Coastal Panel is also the consent authority in relation to coastal protection works on the open coast where no coastal zone management plan exists, or is yet to be adopted (<http://www.environment.nsw.gov.au/coasts/coastalpanel.htm>).

1.3.3 Minister's Guidelines for Preparing Coastal Zone Management Plans

Coastal local government areas that commence preparation of CZMP's after 1 January 2011 must prepare their Plans in accordance with the CZMP Guidelines (OEH, 2013a). These guidelines were adopted by the Minister under Section 55D of the CP Act in December 2010 and then later updated in July 2013. In addressing coastal risks, a CZMP must include an Coastal Erosion EAP, which describes:

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- Intended emergency actions to be carried out during periods of beach erosion (other than matters dealt with in any plan made under the *State Emergency and Rescue Management Act 1989* (SE&RM Act). In general, these emergency actions will include property or asset protection.
- Any site specific requirements for landowner temporary coastal protection works. Consultation carried out with owners of land affected by the subplan.

1.3.4 Guide to the Statutory Requirements for Emergency Coastal Protection Works & Code of Practice under the Coastal Protection Act (1979) (OEH, 2013b)

The OEH guidelines for temporary coastal protection works (2013b) primarily relate to works for private landowners. The document provides some helpful information, considerations and implementation information in relation to the design of temporary protection works. It also details the process private landowners must follow to gain permission to undertake temporary protection works. Under specified circumstances, the legislation allows landowners to:

- install, maintain and remove temporary coastal protection works in accordance with requirements under the CP Act. These allowable temporary works are to be small-scale, must not result in up, or downdrift erosion impacts, and be removable;
- apply to construct other types of coastal protection works of a larger scale than temporary coastal protection works and which include long-term protection works or alternate temporary or short-term protection works. These works will need approvals under various Acts, including the *Environmental Planning and Assessment Act 1979*. The landowners need to demonstrate that they (and any future title holders) commit to maintaining the works and managing any up, or downdrift erosion impacts.

Since all three locations covered within this Coastal Erosion EAP are 'authorised locations', private landowners are able to undertake temporary protection works as long as the OEH (2013b) guidelines are followed in addition to the Code of Practice (2013c) for implementation.

The Code of Practice (OEH, 2013c) document was prepared as a guidance document to detail the requirements of the CP Act relating to temporary coastal protection works, specifically the implementation of these works, i.e. placement, maintenance, removal and restoration activities. Council is not obligated to follow the Code of Practice (OEH, 2013c) in its approach to emergency works.

Table 1-3 summarises the requirements for temporary coastal protection works under the CP Act. These requirements are for private landowners.

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Table 1-3 Requirements for temporary coastal protection works by private landowners under the *Coastal Protection Act 1979* (as noted in OEH, 2013b and c)

What temporary coastal protection works are permitted	Sand nourishment, large geotextile bags, filled with sand. Council will not support the placement of temporary coastal protection works which use small 'sandbag' type bags to protect private property on open ocean beaches. <i>Rock and rubble materials are not permitted.</i>
Approvals required	Landholders who wish to undertake one off temporary protection works must apply to an authorised officer (e.g. OEH) for a certificate permitting the works to take place. The authorised officer may place conditions on the certificate. Landholders must notify the authorised officer and council before approved works commence. Where works are on public land, the owner or manager of the land must be notified. Applications for a certificate must include information about the materials to be used, concept designs for placement and where the works will be placed. If stockpiling of materials is necessary, the application must state where materials will be stockpiled.
Locations	Temporary coastal protection works can be placed: <ul style="list-style-type: none"> (i) only at 'authorised locations' (see Table 1-1 of this Coastal Erosion EAP and refer to Sections 3, 4 and 5 for more details including maps); (ii) at any time on private land; (iii) on other (adjacent) private land, with permission of the owner of that land; (iv) on public land, with written authority of the public land owner and a certificate issued from Council, public authority or OEH.
When can works be undertaken?	Placement of sand or sand filled geotextile bags is not to occur during major storm events, unless a professional coastal engineer certifies that placement of the works does not pose a significant risk. Temporary coastal protection measures must only be placed on the beach and/or dune when it is safe for machinery to be on the beach. In general, this implies at low tide and outside peak beach usage periods. Further, particular safety risk may arise if work is undertaken during a storm event. Therefore, landowners should plan to complete works before such an event. Placement of temporary works can only be completed during a storm if a written opinion from a professional coastal engineer states that placement works do not pose a significant risk.
What can be done?	Temporary protection works must be placed at the base of the erosion escarpment, and be in accordance with the construction criteria outlined in the Guidelines (OEH, 2013c). For placement of sandbags, the height of temporary works must not exceed 1.5 metres from the toe of the scarp; the basal width must not exceed 4 metres; the slope of the face must not exceed 34 degrees (from horizontal); no voids are allowed; and limited excavation only may be undertaken Placement of sand (only) must also not exceed 34 degrees (from the horizontal). Only clean sand in the grain size range 0.15 to 0.5 millimetres may be used for beach nourishment or to fill geotextile bags. This sand cannot be sourced from the beach and must not contain heavy metals or contaminants. Council expects that any sand which is used for filling geotextile bags will eventually become part of the beach or dune sand. Sand for temporary coastal protection works must not be extracted or removed from local coastal dunes, except if it is obtained from an existing, licensed or approved sand quarry.

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Where can materials be obtained?	<p>No appropriate quarries exist in Wyong Shire. Quarries which may be able to provide suitable sand are located in the Stockton Coastal Barrier, north of Newcastle.</p> <p>Sand for temporary coastal protection works may be obtained from the material that Council dredges from shoals in the entrance of Tuggerah Lake. Such sand must be placed in accordance with the Entrance Management Strategy and Dredging Management Plan for the entrance channel.</p> <p><i>Rock, gravel, soil or other extractive materials must not be used for beach nourishment or to fill geotextile bags which will be placed on the beach. Use of rubble or other unspecified waste or fill is prohibited.</i></p>
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1.3.5 Minimum Requirements for Emergency Action Subplans

The *Coastal Zone Management Guide Note: Emergency Action Subplans* (OEH, 2011b) provides guidance on the preparation of Coastal Erosion EAP's, as well as some of the responsibilities and abilities Council has related to temporary protection works. The document notes the three main requirements that are to be included in any AEP as a minimum, which are to:

- describe intended emergency actions to be carried out during periods of beach erosion, such as temporary protection works for property or asset protection, other than matters dealt with in any plan made under the SE&RM Act relating to emergency response (Sections 55C(1)(b) and (g) of the CP Act;
- describe any site-specific requirements for landowner temporary coastal protection works;
- describe the consultation carried out with the owners of land affected by a Coastal Erosion EAP.

1.4 Roles and Responsibilities

Council has responsibility for planning and works during an extreme event, and is responsible (though not obligated) to undertake temporary works where necessary to protect its coastal assets. Under NSW legislation, Council is not required to obtain prior consent for works (as is required for private landowners), as long as an adequate environmental assessment has been carried out and the NSW Coastal Panel has been notified. Adequate environmental assessment could be in the form of a REF or EIS. In this case, the CZMP is considered to be an adequate assessment.

If a CZMP and Coastal Erosion EAP are not currently in place, Council is still able to undertake works as long as the NSW Coastal Panel is informed. The Coastal Panel then have 21 days to respond. For minor works with sand bags, or minor repair and maintenance works to structures, Council is able to undertake this at their discretion with no requirement for Coastal Panel notification.

As stated in the *Coastal Zone Management Guide Note: Emergency Action Plans* (OEH, 2011b), there is no requirement for Council to follow the Code of Practice under the CP Act in contrast to the temporary works allowances of private landowners. Therefore, if necessary Council may choose undertake temporary protection measures that would be disallowed in the *Guide to Statutory Requirements for Temporary Coastal Protection Works* (OEH, 2013b), for private landowners.

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Under the current legislation relating to emergency works and local and government organisation responsibilities, some specific points are noted:

- Council is not responsible for the protection of private property. Although they may choose to undertake works to protect a location or property in their management, they are not legally required to; this is also the case for public property.
- The responsibility of State Emergency Service (SES) is to protect people, and minimise risk to life (i.e. co-ordinate evacuations etc.). They are not permitted to undertake any kind of works in the coastal zone to mitigate the effects of coastal erosion or inundation to property.
- The role of BoM is to provide accurate and up to date forecasts and severe weather warnings to assist other organisations to plan, communicate and act effectively. The principle division of roles between the SES and Council is in relation to protection of human life and property (SES) and temporary beach protection works (Council) during an emergency event. The SES has protection of human life as its first priority, followed by evacuation and/or rescue of animals, household and business possessions. It is not responsible for temporary beach protection works. Council is responsible for temporary beach protection works, in consultation with OEH and Department of Industry - Lands.
- Private landowners will be responsible for applying for certification to undertake temporary coastal works on their property, as well as the implementation of any works.

1.5 Councils Emergency Responsibilities and Actions

1.5.1 Pre Emergency Preparation

Council should begin educating staff and the community on the protocols and measures to be taken during emergency events, prior to them occurring. This will ensure preparedness during emergencies, which will reduce the risk to people and property. The following points should be noted:

- Council officers should be properly trained in relation to other emergency response measures in the Emergency Management Plans/Subplans.
- Council will ensure residents and landowners in 'authorised locations' are aware of the erosion hazards affecting their properties and of the options available to them for temporary protection.
- Council will ensure that any landowner within the immediate coastal hazard zone carries out temporary protection works, within prescribed conditions.

1.5.2 Storm Prediction

It is suggested that triggers relating to forecast storm events be established. This will enable Council to effectively warn and prepare when a large event is forecast (when extreme wave conditions are forecast to occur at the same time as a very high tide, for example).

Although it is BoM's responsibility to forecast extreme weather events, it will also be in Council's interest to keep track of high tide predictions and wave conditions forecast by BoM, and plan and act accordingly.

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1.5.3 Pre Storm Warnings

Council will provide information to nearby residents about approaching coastal emergencies using the following mechanisms:

- Council will provide routine emergency management briefings to local precinct committees. These briefings will explain coastal emergencies and outline strategies for emergency preparedness.
- Council will provide emergency management information at local community centres.
- Local radio in the area (in association with BOM) will provide regular updates on approaching storm systems, tides and predicted erosion events.
- Council, in consultation with SES and BoM, will provide information about approaching coastal emergencies on its website. After a coastal emergency event, Council will provide information on its website about road and access closures and reopening (if any).
- Council will coordinate with SES to ensure that residents are aware of urgent hazards during emergency events. For instance, Council will work with SES to provide door to door communication and assistance as necessary, and will aid in evacuation procedures if necessary.

1.6 Consultation

The revised draft CZMP and updated draft Coastal Erosion EAP (i.e. 2017 documents) will be placed on public exhibition for a period of not less than 21 days, in accordance with the CP Act.

Consultation activities undertaken in preparation of the draft CZMP and draft Coastal Erosion EAP by Umwelt (i.e. 2011 documents) are summarised below:

- Ongoing consultation with the community via the Tuggerah Lakes Estuary, Coastal and Floodplain Management Committee. This committee has representative from Council, state government agencies (including OEH and SES) and the community;
- A number of coastal management and planning specific community workshops were held, including two workshops in the 2010-2011 period; and
- Council staff also visited relevant Precinct Committee and Ratepayer Associations along the coast to discuss the development of the draft CZMP and EAP (2011) documents.

Community and agency participation and consultation during the preparation of this Coastal Erosion EAP will therefore meet the minimum requirements of the CP Act.

2 Emergency Response for North Entrance

2.1 Immediate Hazard Zones

Figure 2-1 and Figure 2-2 show the immediate coastal erosion hazard zones for North Entrance. These hazard zones were determined through the *Review of the Wyong Coastal Zone Hazard Study* (BMT WBM, 2017).

The assets that are in the immediate erosion hazard zones include:

- beach access ways across the frontal dune;
- a section of public road;
- areas of dune vegetation; and
- private properties (plus the water & sewerage infrastructure).

2.2 Communications

2.2.1 Storm Emergency

Where coastal erosion is anticipated as a result of a watch or warning issued by the BoM, the responsibility for communicating the potential hazards defaults to the SES as the combat agency. Activation of the DISPLAN would trigger this Coastal Emergency EAP. Council would assist in the provision of information on the current state of beaches as well as potential for impacts on beach access. Local SLSCs (e.g. North Entrance SLSC and nearby The Entrance SLSC) should be contacted with a view to distribute advice contained in the BoM's weather warnings to people on patrolled beaches when dangerous surf conditions are predicted and to close patrolled beach water areas when dangerous conditions are caused by storms.

Council is required to continue monitoring these areas as the emergency progresses. Where specific hazards are resulting in damage, Council will provide this information to the SES and the broader community through the media as appropriate.

Following the emergency, Council is responsible for advising the public on the current state of beaches and recreation areas in the Council area (when/if they are re-opened for the public). Where residual hazards remain to be addressed, Council should take appropriate action to convey this to local communities (e.g. access closures, signage and the release of media bulletins via the SES).

2.2.2 Non Storm Erosion Emergency

Where the emergency does not trigger the State Storm Plan or DISPLAN, Council is responsible for initially monitoring the potential progress of erosion and subsequently implementing this Coastal Erosion EAP. The roles and responsibilities of Council in communicating the emergency to the community remain the same except that information needs to be provided by Council directly through the media rather than through the SES.



Figure 2-1 Temporary Coastal Protection Works Options for Private Property at North Entrance Beach – Hutton Road

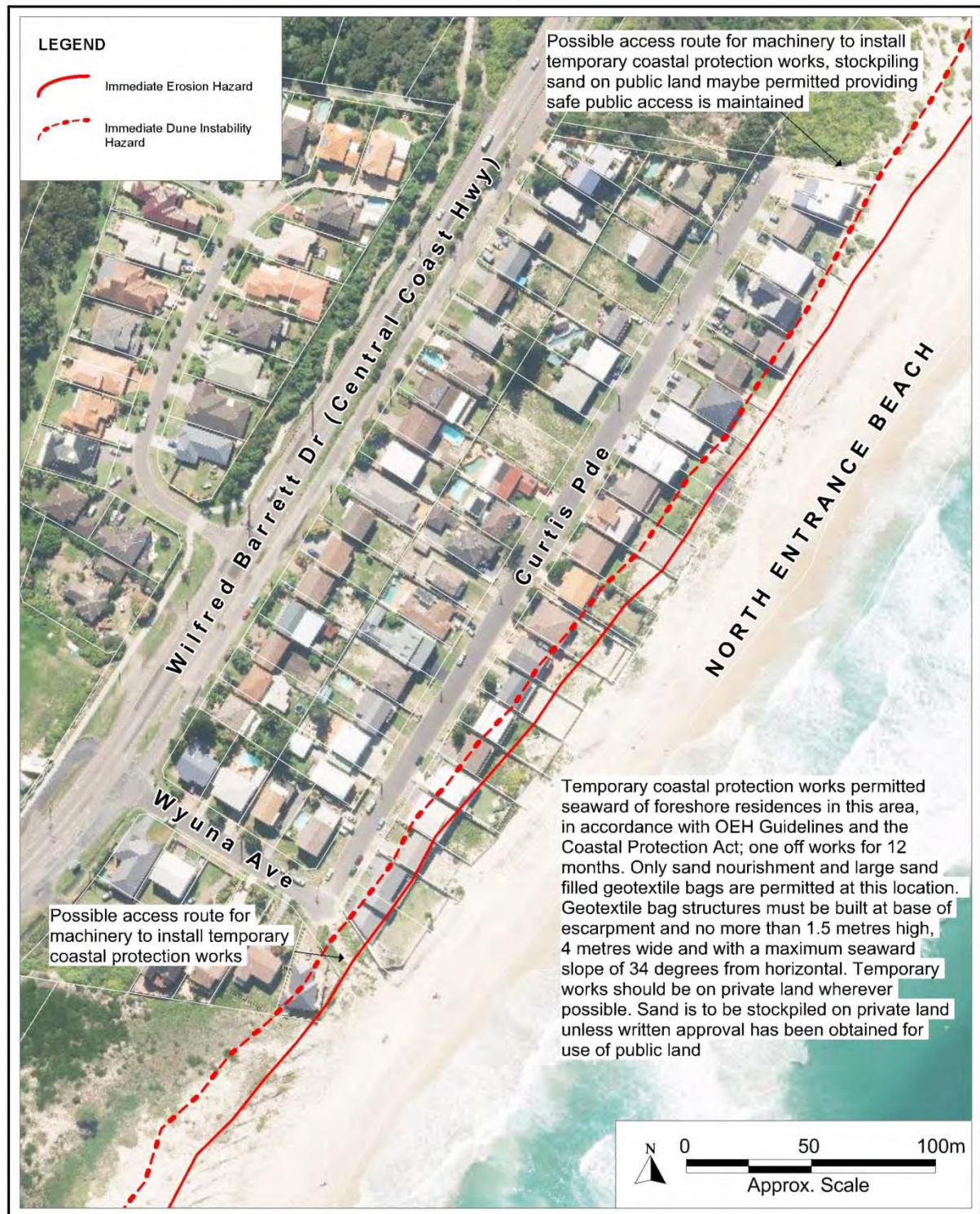


Figure 2-2 Temporary Coastal Protection Works Options for Private Property at North Entrance Beach – Curtis Parade

2.3 Proposed Emergency Response Actions - Council

Council will have responsibility for emergency response actions, as set out in the subsequent sections; however, assistance may be required from SES and local groups to coordinate efforts during an emergency. If there is risk to life, Council will assist SES to evacuate the area.

Due to the OH&S risks apparent during an extreme event, any Council actions near the shoreline should be kept to a minimum unless absolutely necessary. Post storm clean-up and remediation measures are favoured to ensure staff and public safety.

Council should be prepared with signage and/or safety barriers to close the roads to traffic and pedestrians to hazard areas during an emergency.

In some cases, more substantial works over and above sand bag placement may be necessary to protect property or infrastructure (if Council chooses to, and is able to); however, these actions should be seen as a last resort, and only when there is imminent danger to property or infrastructure (as determined by Council or consultant engineers). The following sections give information and actions related to works that Council may choose to undertake during an emergency.

2.3.1 Access for Emergency Activities

During and after major coastal storms that may cause erosion of the beach, dunes and hinterland, emergency access to the southern end of North Entrance Beach is via the emergency access is via Hutton Road, off Robert St, which is off the Central Coast Highway (see Figure 2-1). For the northern end of North Entrance Beach access is via Curtis Parade, off the Central Coast Highway (see Figure 2-2).

2.3.2 Actions Prior to an Emergency

The following activities should be undertaken by Council prior to the emergency:

- Contribute to community storm education initiatives, and assist the NSW SES with community awareness programs regarding coastal erosion threats and its management;
- Provide NSW SES with copies of coastal hazard maps and related information to assist with emergency planning and intelligence development;
- Where the likelihood of an emergency event is identified (e.g. storm warnings or damaging wave warnings from the BoM), Council will take the appropriate action to close the beach;
- Council may pre-emptively close beach access ways where difficulties / damage are known to exist; and
- Commence monitoring the effects of the erosion on assets and development at risk.

Erosion Mitigation Works

To facilitate temporary protection works along the shoreline, the following should be noted:

- a stock pile of sand and geotextile bags should be available near to the location
- access is needed to suitable plant (i.e. dumpers, bobcats, filling frames, sewing machine etc.) nearby, or the ability to mobilise it at short notice.

Council should determine whether the use of more substantial coastal protection methods may be required during an emergency. However, these actions should only be considered if they are absolutely necessary, implementable and provide essential benefits when considering the potential costs. Therefore, it is suggested that for use only in extreme cases and where Council or consultant engineers determine it to be a necessity to construct more substantial works, there should be an attainable supply of the appropriate material to stabilise the coastline.

Council should also aid and monitor its coastal residents to ensure and private landowner works are being undertaken legally and in accordance with NSW Government legislation, as shown in Table 1-3.

2.3.3 Actions During an Emergency

The following activities should be undertaken by Council during the emergency:

- Where Council resources are available, assist NSW SES with: reconnaissance to identify storm damage; traffic management on Council managed roads; resources (e.g. plant, equipment and personnel); and removal debris from Council managed road/land during clean-up operations;
- Distribute weather warning advice to people on the beach when dangerous surf conditions are predicted and close the beach when dangerous conditions caused by storms occur;
- Close off beach access ways where damage is identified by, and/or reported to, Council;
- Where damage to assets is identified through monitoring, assess the damage and any opportunities for limiting further damage that may be appropriate during the event.
- Where repairs are permissible and may be readily and safely undertaken, this shall be done at the first opportunity; and
- At the appropriate time, Council will determine that the emergency has passed and that the remediation stages of the plan are to commence.

Note that actions undertaken by Council during a coastal emergency event should not conflict with other agency actions, such as those SES. During any of the above activities, Council should remain focused on the safety of Council staff who may be working under adverse weather conditions.

Erosion Mitigation Works

If placement of protection works on the beach during a storm can be avoided, it should be. The risks of injury during a storm event are extreme. However, if damage to property and infrastructure is imminent and Council has decided to intervene (note: there is no requirement for Council to place any works), the following measures should be taken:

- the use of sand and geotextile sand bags where appropriate to minimise erosion and/or flooding should be the first option; and
- the implementation of more substantial coastal protection methods to stabilise the shoreline only if considered absolutely necessary.

2.3.4 Actions After an Emergency

Details regarding post storm clean-up and rehabilitation works is provided in Section 5.

Erosion Mitigation Works

Any emergency works undertaken during a storm to stabilise the shoreline should be removed from the beach following the storm event, when it is safe and practical to do so.

2.4 Information for Landowners

Any temporary coastal protection works undertaken by landowners must be prearranged and consented to by an authorised officer. The undertaking of works must be consistent with the NSW Government legislation and guidance noted in Section 1, and the actions in Table 1-3. Figure 2-1 and Figure 2-2 give some indication of potential actions landowners are able to take in the coastal zone and the locations. In addition to the generic guidance provided, some site specific considerations are noted:

- Figure 2-1 and Figure 2-2 indicate potential access routes through the dunes. The accesses shown in both figures of The Entrance are through a Local Land Services (LLS) area of bush generation and revegetation. Landowners should consult with Council prior to implementation of works to ensure the impacts on these areas are avoided where possible.
- Council should discuss these access ways with LLS to ensure no approvals or offset areas are required due to potential works.

3 Emergency Response for Hargraves Beach

3.1 Immediate Hazard Zones

Figure 3-1 shows the immediate coastal erosion hazard zones for Hargraves Beach. This hazard zone was determined through the *Review of the Wyong Coastal Zone Hazard Study* (BMT WBM, 2017).

The assets that are in the immediate erosion hazard zones include:

- beach access ways across the frontal dune;
- areas of dune vegetation; and
- private properties (plus the water & sewerage infrastructure).

3.2 Communications

3.2.1 Storm Emergency

Where coastal erosion is anticipated as a result of a watch or warning issued by the BoM, the responsibility for communicating the potential hazards defaults to the SES as the combat agency. Activation of the DISPLAN would trigger this Coastal Erosion EAP. Council would assist in the provision of information on the current state of beaches as well as potential for impacts on beach access. Local SLSCs (e.g. nearby The Lakes SLSC) should be contacted with a view to distribute advice contained in the BoM's weather warnings to people on patrolled beaches when dangerous surf conditions are predicted and to close patrolled beach water areas when dangerous conditions are caused by storms.

Council is required to continue monitoring these areas as the emergency progresses. Where specific hazards are resulting in damage, Council will provide this information to the SES and the broader community through the media as appropriate.

Following the emergency, Council is responsible for advising the public on the current state of beaches and recreation areas in the Council area (when/if they are re-opened for the public). Where residual hazards remain to be addressed, Council should take appropriate action to convey this to local communities (e.g. access closures, signage and the release of media bulletins via the SES).

3.2.2 Non Storm Erosion Emergency

Where the emergency does not trigger the State Storm Plan or DISPLAN, Council is responsible for initially monitoring the potential progress of erosion and subsequently implementing this Coastal Erosion EAP. The roles and responsibilities of Council in communicating the emergency to the community remain the same except that information needs to be provided by Council directly through the media rather than through the SES.

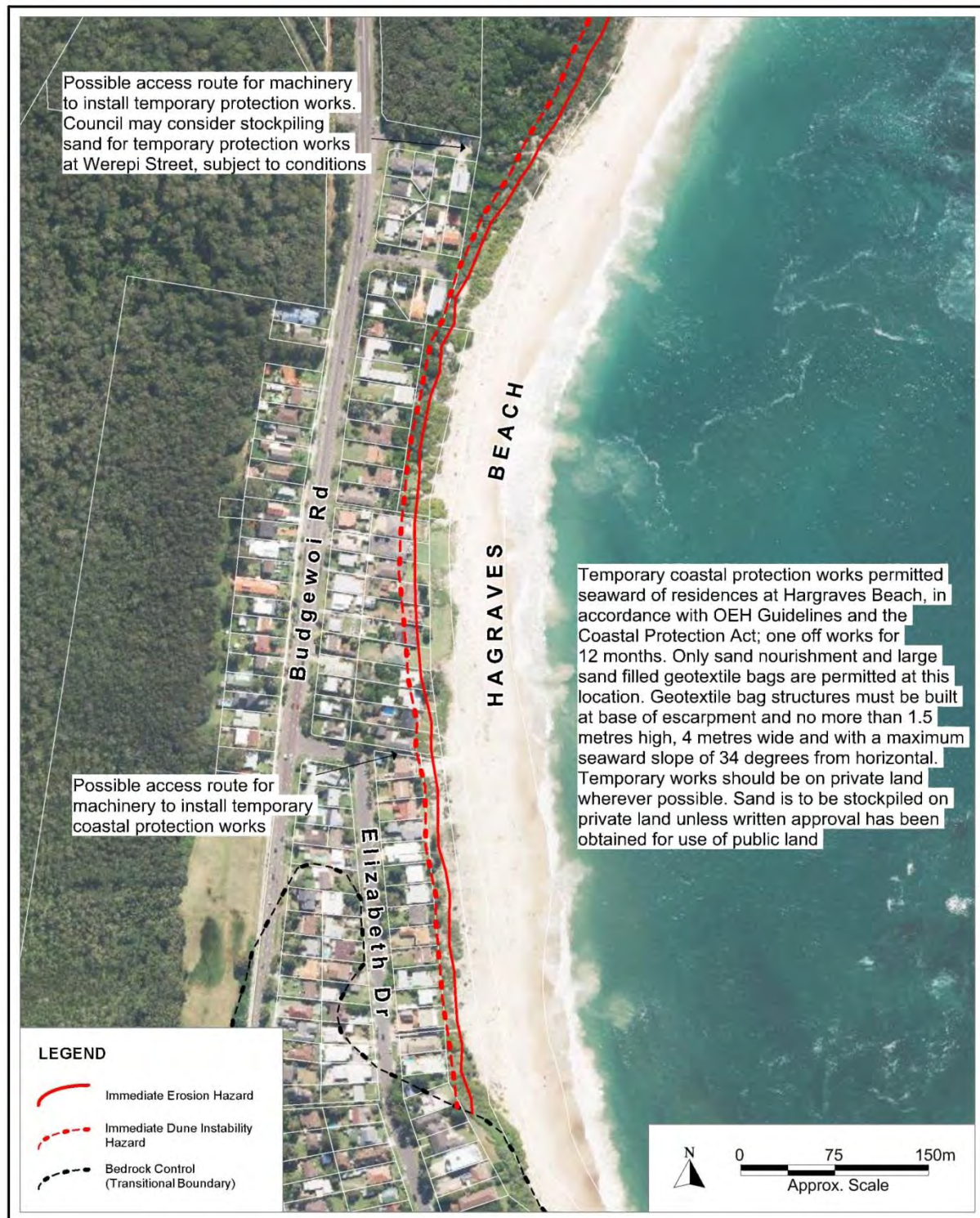


Figure 3-1 Temporary Coastal Protection Works Options for Private Property at Hargraves Beach

3.3 Proposed Emergency Response Actions

Council will have responsibility for emergency response actions, as set out in the subsequent sections; however, assistance may be required from SES and local groups to coordinate efforts during an emergency.

Due to the OH&S risks apparent during an extreme event, any Council actions near the shoreline should be kept to a minimum unless absolutely necessary. Post storm clean-up and remediation measures are favoured to ensure staff and public safety. If there is risk to life, Council should coordinate with SES to evacuate the area.

Council should be prepared with signage and/or safety barriers to close the roads to traffic and pedestrians to hazard areas during an emergency. Should Council choose to undertake works along this frontage to mitigate erosion, the following measures should be considered.

3.3.1 Access for Emergency Activities

Emergency access to the beach is via a track at the northern end of Elizabeth Drive, off the Central Budgewoi Road (Central Coast Highway, see Figure 3-1).

3.3.2 Actions Prior to an Emergency

The following activities should be undertaken by Council prior to the emergency:

- Contribute to community storm education initiatives, and assist the NSW SES with community awareness programs regarding coastal erosion threats and its management;
- Provide NSW SES with copies of coastal hazard maps and related information to assist with emergency planning and intelligence development;
- Where the likelihood of an emergency event is identified (e.g. storm warnings or damaging wave warnings from the BoM), Council will take the appropriate action to close the beach;
- Council may pre-emptively close beach access ways where difficulties / damage are known to exist; and
- Commence monitoring the effects of the erosion on assets and development at risk.

Erosion Mitigation Works

To facilitate emergency works along the shoreline, the following should be noted:

- a stock pile of sand and geotextile bags should be available near to the location. There is a small area at the far north end of the beach near Werepi Street that may be suitable for Council to stockpile materials to use in emergency works.
- access is needed to suitable plant (i.e. dumpers, bobcats, filling frames, sewing machine etc.) nearby, or the ability to mobilise it at short notice.

Council should also aid and monitor its coastal residents to ensure and private landowner works are being undertaken legally and in accordance with NSW Government legislation.

3.3.3 Actions During an Emergency

The following activities should be undertaken by Council during the emergency:

- Where Council resources are available, assist NSW SES with: reconnaissance to identify storm damage; traffic management on Council managed roads; resources (e.g. plant, equipment and personnel); and removal debris from Council managed road/land during clean-up operations;
- Distribute weather warning advice to people on the beach when dangerous surf conditions are predicted and close the beach when dangerous conditions caused by storms occur;
- Close off beach access ways where damage is identified by, and/or reported to, Council;
- Where damage to assets is identified through monitoring, assess the damage and any opportunities for limiting further damage that may be appropriate during the event.
- Where repairs are permissible and may be readily and safely undertaken, this shall be done at the first opportunity; and
- At the appropriate time, Council will determine that the emergency has passed and that the remediation stages of the plan are to commence.

Note that actions undertaken by Council during a coastal emergency event should not conflict with other agency actions, such as those SES. During any of the above activities, Council should remain focused on the safety of Council staff who may be working under adverse weather conditions.

Erosion Mitigation Works

If placement of protection works on the beach during a storm can be avoided, it should be. The risks of injury during a storm event are extreme. However, if damage to property and infrastructure is imminent and Council has decided to intervene (note: there is no requirement for Council to place any works), the following measures should be taken:

- the use of sand and geotextile sand bags where appropriate to minimise erosion and/or flooding should be the first option.

3.3.4 Actions After an Emergency

Details regarding post storm clean-up and rehabilitation works is provided in Section 5.

Erosion Mitigation Works

Any emergency works undertaken during a storm to stabilise the shoreline should be removed from the beach following the storm event, when it is safe and practical to do so.

3.4 Information for Landowners

Any temporary coastal protection works undertaken by landowners must be prearranged and consented to by an authorised officer. The undertaking of works must be consistent with the NSW Government legislation and guidance noted in Section 1, and the actions in Table 1-3. Figure 3-1

Emergency Response for Hargraves Beach

gives an indication of potential actions landowners are able to take in the coastal zone and the locations. In addition to the generic guidance provided, some site specific considerations are noted:

- Figure 3-1 indicates potential access routes through the dunes. The accesses shown in both figures of North Entrance Beach are through a LLS area of bush generation and revegetation. Landowners should consult with Council prior to implementation of works to ensure the impacts on these areas.
- Council should discuss these access ways with LLS to ensure no approvals or offset areas are required due to potential works.

4 Emergency Response for Cabbage Tree Harbour

4.1 Immediate Hazard Zones

Figure 4-1 shows the geotechnical hazard zones for Cabbage Tree Harbour. These hazard zones were determined through the *Review of the Wyong Coastal Zone Hazard Study* (BMT WBM, 2017).

The assets that are in the hazard zones include:

- beach access ways;
- beach access carpark and amenities block;
- small section of public road;
- foreshore structures, including SES boat ramp and private residential foreshore retaining walls;
- areas of slope vegetation; and
- private properties (plus the water & sewerage infrastructure).

4.2 Communications

4.2.1 Storm Emergency

Where coastal erosion is anticipated as a result of a watch or warning issued by the BoM, the responsibility for communicating the potential hazards defaults to the SES as the combat agency. Activation of the DISPLAN would trigger this Coastal Erosion EAP. Council would assist in the provision of information on the current state of beaches as well as potential for impacts on beach access. Local SLSCs (e.g. nearby Soldiers Beach SLSC) should be contacted with a view to distribute advice contained in the BoM's weather warnings to people on patrolled beaches when dangerous surf conditions are predicted and to close patrolled beach water areas when dangerous conditions are caused by storms.

Council is required to continue monitoring these areas as the emergency progresses. Where specific hazards are resulting in damage, Council will provide this information to the SES and the broader community through the media as appropriate.

Following the emergency, Council is responsible for advising the public on the current state of beaches and recreation areas in the Council area (when/if they are re-opened for the public). Where residual hazards remain to be addressed, Council should take appropriate action to convey this to local communities (e.g. access closures, signage and the release of media bulletins via the SES).

4.2.2 Non Storm Erosion Emergency

Where the emergency does not trigger the State Storm Plan or DISPLAN, Council is responsible for initially monitoring the potential progress of erosion and subsequently implementing this Coastal Erosion EAP. The roles and responsibilities of Council in communicating the emergency to the community remain the same except that information needs to be provided by Council directly through the media rather than through the SES.

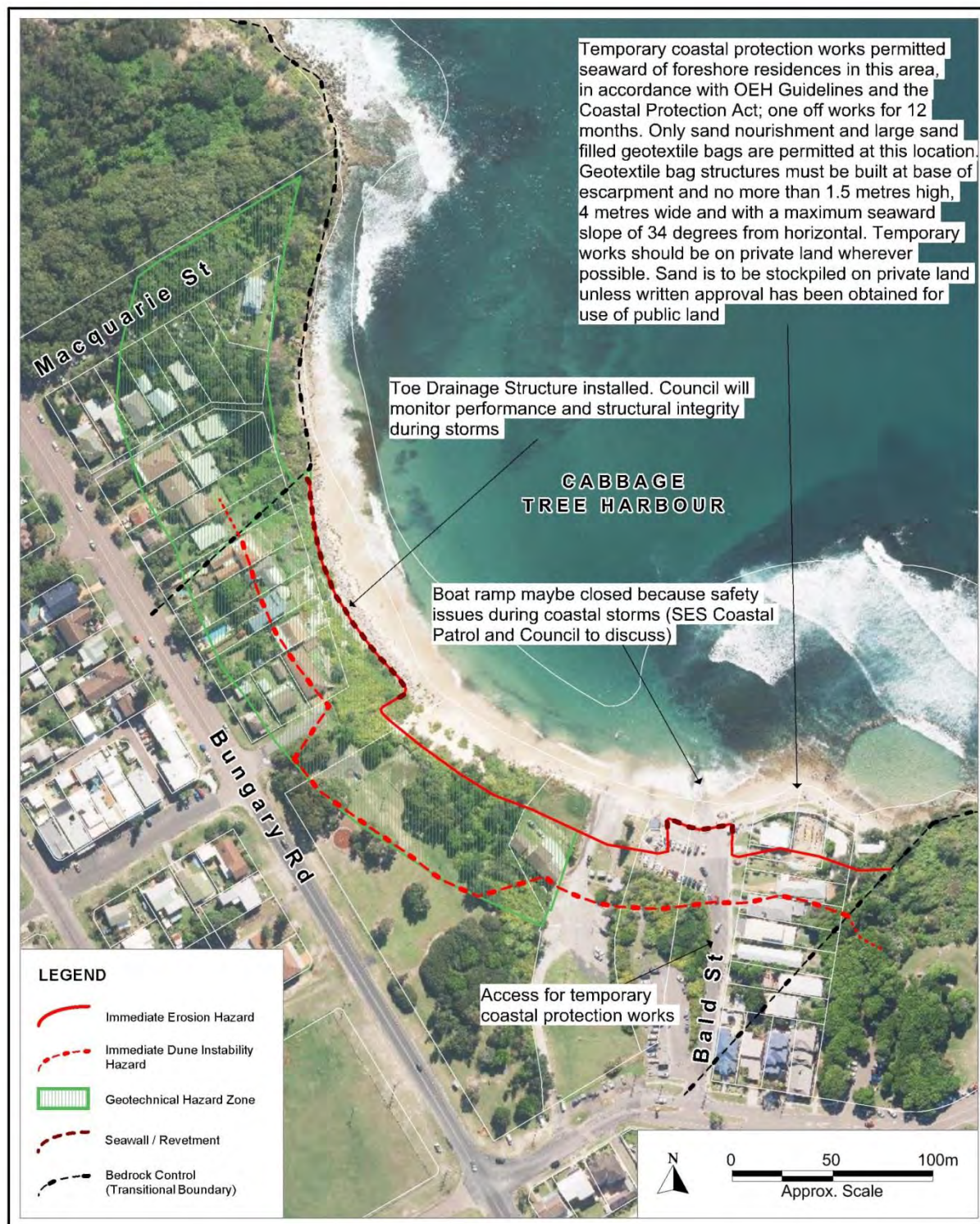


Figure 4-1 Temporary Coastal Protection Works Options for Private Property at Cabbage Tree Harbour

4.3 Proposed Emergency Response Actions

Council will have responsibility for emergency response actions, as set out in the subsequent sections; however, assistance may be required from SES and local groups to coordinate efforts during an emergency.

Due to the OH&S risks apparent during an extreme event, any Council actions near the shoreline should be kept to a minimum unless absolutely necessary. Post storm clean-up and remediation measures are favoured to ensure staff and public safety. If there is risk to life, Council should coordinate with SES to evacuate the area.

Council should be prepared with signage and/or safety barriers to close the roads to traffic and pedestrians to hazard areas during an emergency.

4.3.1 Access for Emergency Activities

Access to the coastal frontage here is via Bald Street at the in the south eastern corner of the bay (see Figure 4-1).

4.3.2 Actions Prior to an Emergency

The following activities should be undertaken by Council prior to the emergency:

- Contribute to community storm education initiatives, and assist the NSW SES with community awareness programs regarding coastal erosion threats and its management;
- Provide NSW SES with copies of coastal hazard maps and related information to assist with emergency planning and intelligence development;
- Where the likelihood of an emergency event is identified (e.g. storm warnings or damaging wave warnings from the BoM), Council will take the appropriate action to close the beach;
- Council may pre-emptively close beach access ways where difficulties/damage are known to exist; and
- Commence monitoring the effects of the erosion on assets and development at risk.

Erosion Mitigation Works

To facilitate emergency works along the shoreline, the following should be noted:

- a stock pile of sand and geotextile bags should be available near to the location;
- a stockpile of appropriate rock material if maintenance on the toe drainage structure is required; and
- access is needed to suitable plant (i.e. dumpers, bobcats, filling frames, sewing machine etc.) nearby, or the ability to mobilise it at short notice.

4.3.3 Actions During an Emergency

The following activities should be undertaken by Council during the emergency:

- Where Council resources are available, assist NSW SES with: reconnaissance to identify storm damage; traffic management on Council managed roads; resources (e.g. plant, equipment and personnel); and removal debris from Council managed road/land during clean-up operations;
- Distribute weather warning advice to people on the beach when dangerous surf conditions are predicted and close the beach when dangerous conditions caused by storms occur;
- Close off beach access ways where damage is identified by, and/or reported to, Council;
- Where damage to assets is identified through monitoring, assess the damage and any opportunities for limiting further damage that may be appropriate during the event.
- Where repairs are permissible and may be readily and safely undertaken, this shall be done at the first opportunity; and
- At the appropriate time, Council will determine that the emergency has passed and that the remediation stages of the plan are to commence.

Note that actions undertaken by Council during a coastal emergency event should not conflict with other agency actions, such as those SES. During any of the above activities, Council should remain focused on the safety of Council staff who may be working under adverse weather conditions.

Erosion Mitigation Works

If any action during a storm can be avoided, it should be. The risks of injury during a storm event are extreme. However, if damage to property and infrastructure is imminent and Council has decided to intervene (note: there is no requirement for Council to place any works), the following measures should be taken:

- the use of sand and geotextile sand bags where appropriate to minimise erosion, especially in the area between armoured and unarmoured sections of the shoreline.

4.3.4 Actions After an Emergency

Details regarding post storm clean-up and rehabilitation works is provided in Section 5.

Erosion Mitigation Works

Any emergency works undertaken during a storm to stabilise the shoreline should be removed from the beach following the storm event, when it is safe and practical to do so. Inspection of the toe protection structure and other shoreline structures within the bay should be undertaken by a suitably qualified coastal engineer following any larger events to determine whether additional maintenance is required.

4.4 Information for Landowners

Any temporary coastal protection works undertaken by landowners must be prearranged and consented to by an authorised officer. The undertaking of works must be consistent with the NSW Government legislation and guidance noted in Section 1, and the actions in Table 1-3. Figure 4-1 gives an indication of potential actions landowners are able to take in the coastal zone and the locations.

5 Post Storm Clean-Up and Rehabilitation Works

Although the immediate frontage is mostly in private tenure, there are small areas of public land where access may be temporarily inhibited. Council should erect signage warning of the hazard, or if the public safety risks are considered to be extreme, temporarily close access to this beach area, until said risks are mitigated.

Council will inspect the beaches and coastal structures after damaging storm events and carry out works to ensure the area is safe before taking down signage, or reopening the area.

When inspecting damaged beach access ways and carrying out repairs prior to reopening, Council should also note the presence of:

- broken or protruding timber, slats, platforms or posts;
- broken or protruding metal posts and chains;
- broken or protruding wire;
- other forms of erosion debris that form a risk to safety; and
- erosion scarps of no more than 0.5 m are suggested for the seaward end of a safe beach access way.

These features should be repaired and/or replaced before public access to the beach is reinstated.

Council should consider whether works undertaken to protect infrastructure require removal after the storm.

Council should inspect areas where landowners have undertaken works to ensure compliance with individual restrictions.

Council should work with local Landcare and Dunecare groups to plan and implement replanting of dune stabilising species following an event, where necessary, to aid in stabilising the foreshore area.

5.1 Records of Storm Impacts and Emergency Response Activities

The monitoring of emergency response activities and outcomes will inform more strategic decisions about coastal zone management approaches.

To track these activities Council should add information to a data base after each damaging storm. This will include:

- locations of assets and infrastructure that were damaged by the storm and details of the extent of damage;
- photographs of the impact of the storm on assets and infrastructure at key locations;
- undertaking a survey of the beach levels and other features to provide a greater understanding of the hazard;
- what rectification works have been carried out;

Post Storm Clean-Up and Rehabilitation Works

- the date of rectification works; and
- cost of rectification works.

The records of storm events, extent of damage and rectification works will assist Council to understand how climate change and/or extreme events are affecting its coastline and to better plan for retreat of some assets over time, to adapt to the effects of sea level rise and other factors such as storm frequency and intensity.

6 Summary Action Table

The following implementation table details the actions Council, its partner organisations and private landowners should follow prior to, during, and after an emergency storm event.

Table 6-1 Summarises actions Council (and its partner organisations) during an emergency storm event

Pre-storm preparation	Actions	Responsibility
	Make the public aware of the hazards & risks	SES & Council
	Storm prediction & monitoring	BoM & Council
	Stock pile materials for emergency works	Council & Dept. of Industry - Lands
	Pre-arrange access to plant	Council
	Ensure applications to undertake works are approved.	Private landowners
Storm phase	Actions	Responsibility
	Erect temporary signage of dangers or closure of the road etc.	Council
	Alert residents if risk level is high	SES & Council
	Evacuate residents if necessary	SES & Council
	Use sand and/or sand bags where appropriate	Council
	Undertake emergency works if necessary	Council & Dept. of Industry - Lands
	Undertake sand bag works to protect property prior to an event (to ensure safety).	Private landowners
Post storm	Actions	Responsibility
	General clean-up	Council
	Inspect the area for dangers and remove	Council
	Erect permanent warning signs if necessary	Council
	Maintenance on the toe drainage structure	Council & Dept. of Industry - Lands
	Remove emergency works if necessary	Council & Dept. of Industry - Lands
	Replant dune if necessary	Council and Landcare/Dunecare
	Record and document all actions taken, and monitor area after the event.	Council

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