



Planning

DRAFT NSW COASTAL PLANNING GUIDELINE: ADAPTING TO SEA LEVEL RISE

CONSULTATION DRAFT – NOT GOVERNMENT POLICY

OCTOBER 2009



DRAFT FOR PUBLIC COMMENT

This document titled the Draft NSW Coastal Planning Guideline: Adapting to Sea level Rise is a consultation paper outlining a proposed approach for addressing sea level rise in land use planning and development assessment in coastal NSW.

Throughout the document, specific consultation questions are put forward to obtain feedback on certain policy aspects of the consultation paper.

This document is on public exhibition until 11 December 2009.

You are invited to make comments on this document.

Submissions may be emailed to innovation@planning.nsw.gov.au, faxed to 02 9228 6311, or mailed to:
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1 INTRODUCTION

1.1 SCOPE AND AIMS OF THE GUIDELINE

The Draft NSW Coastal Planning Guideline: Adapting to Sea Level Rise (this Guideline) has been prepared to provide guidance on how sea level rise and its associated impacts are to be considered in land use planning and development assessment in coastal NSW.

The most recent climate change projections indicate increased temperature and evaporation rates for coastal NSW, increased storm intensity, seasonal changes to rainfall and runoff and subsequent impacts on bushfire regimes, biodiversity, soils, erosion and flooding. The primary impacts in coastal areas are likely to result from sea level rise which may lead to increased coastal erosion, tidal inundation and flooding.

This Guideline applies to all coastal areas of NSW, including the NSW Coastal Zone, as well as Sydney Harbour and Botany Bay. The term 'coastal areas' is used broadly in this Guideline to include the coastline, beaches, coastal lakes, estuaries, as well as the tidal reaches of coastal rivers. It also includes other low lying land surrounding these areas that may be subject to coastal processes in the future as a consequence of sea level rise.

In the Guideline 'coastal risks' are taken to include risks from coastal erosion, tidal inundation and coastal flooding exacerbated by sea level rise. Of note, coastal flooding in lowland areas will be of particular concern in the future as a consequence of sea level rise, including increased frequency of flooding and consequent emergency evacuations and property damage.

The aim of the Guideline is to promote ecologically sustainable development (ESD), and in particular to encourage a precautionary approach to land use planning and development assessment in light of potential sea level rise impacts in coastal areas. To achieve this, the Guideline adopts a risk-based approach to planning and development assessment in coastal areas.

1.2 POLICY CONTEXT OF THE GUIDELINE

Land use planning and development assessment processes require a balance between social, economic and environmental considerations. As a consequence of climate change, councils and the NSW Government face additional challenges in decision-making, particularly in coastal areas of NSW.

The NSW Government has made a concerted effort to incorporate climate change into relevant planning policies, manuals, plans, strategies and directions including the following documents:

- **NSW Sea Level Rise Policy Statement** (NSW Government 2009) specifies sea level rise planning benchmarks of an increase above 1990 mean sea levels of 40cm by 2050 and 90cm by 2100.
- **NSW Coastal Policy** (NSW Government 1997) requires that climate change be considered in planning and development assessment matters.
- **Coastal Regional Strategies** (Department of Planning) are strategic plans at a regional scale that:
 - seek to ensure future urban development is not located in areas of high risk from natural hazards including sea level rise, coastal recession, rising water tables and flooding;
 - state that in order to manage the risks associated with climate change, councils will undertake investigations of lands with the potential to be affected by sea level rise and inundation to ensure that risks to public and private assets are minimised;
 - specify that local environmental plans (LEP) will make provision for adequate setbacks in areas at risk from coastal erosion and/or ocean-based inundation in accordance with coastline management plans.

- **Sydney Metropolitan Strategy (2005)** and **draft Sub-Regional Strategies** contain a variety of actions factoring climate change into metropolitan planning frameworks.
- **Coastline Management Manual (1990)** and **Floodplain Development Manual (2005)** require consideration of climate change in the preparation of coastal hazard and flood studies and management plans.
- **Coastal Design Guidelines for NSW (2003)** encourage development to be sited outside areas affected by coastal processes, coastal erosion and sea level rise.
- **State Environmental Planning Policy 71: Coastal Protection** requires that councils consider the impact of coastal processes and coastal hazards when preparing LEPs and assessing development in the NSW Coastal Zone.
- **Section 117 Direction 2.2 – Coastal Protection** requires that planning proposals must include provisions that give effect to and are consistent with the NSW Coastal Policy, the Coastal Design Guidelines for NSW and the Coastline Management Manual.
- **Section 117 Direction 4.3 – Flood Prone Land** requires that planning proposals must include provisions that give effect to and are consistent with the Flood Prone Land Policy and the principles of the Floodplain Development Manual.
- **Standard Instrument: Principal Local Environmental Plan** contains clause 5.5: development within the coastal zone which requires that all development within the NSW Coastal Zone consider the effect of coastal processes and coastal hazards and potential impacts, including sea level rise on the proposed development, and arising from the proposed development.

This Guideline builds on these initiatives to encourage more detailed consideration of potential sea level rise impacts in coastal areas, including incorporation of the NSW sea level rise planning benchmarks.

Implementation of this Guideline will ensure more effective application of these existing policies in light of greater understanding and scientific certainty with respect to sea level rise.

Councils, State agencies, planners and development proponents are to have regard to this Guideline when addressing sea level rise matters in land use planning and development assessment in coastal areas.

1.3 GUIDELINE PRINCIPLES

This Guideline adopts six coastal planning principles for sea level rise adaptation. The principles should be applied in decision-making processes for land use planning and development assessment in coastal areas.

Coastal planning principles: Adapting to climate change

Principle 1 – Assess and evaluate coastal risks taking into account the NSW sea level rise planning benchmarks.

Principle 2 – Advise the public of coastal risks to ensure that informed land use planning and development decision-making can occur.

Principle 3 – Avoid intensifying land use in coastal risk areas through appropriate strategic and land use planning.

Principle 4 – Consider options to reduce land use intensity in coastal risk areas where feasible.

Principle 5 – Minimise the exposure to coastal risks from proposed development in coastal areas.

Principle 6 – Implement appropriate management responses and adaptation strategies, with consideration for the environmental, social and economic impacts of each option.

Note: In this Guideline, ‘coastal risks’ refer to coastal erosion, tidal inundation and coastal flooding. ‘Coastal risk areas’ include coastal areas currently at risk, as well as areas that may be at risk in the future due to sea level rise (see Figures 1 and 2) in addition to investigation areas.



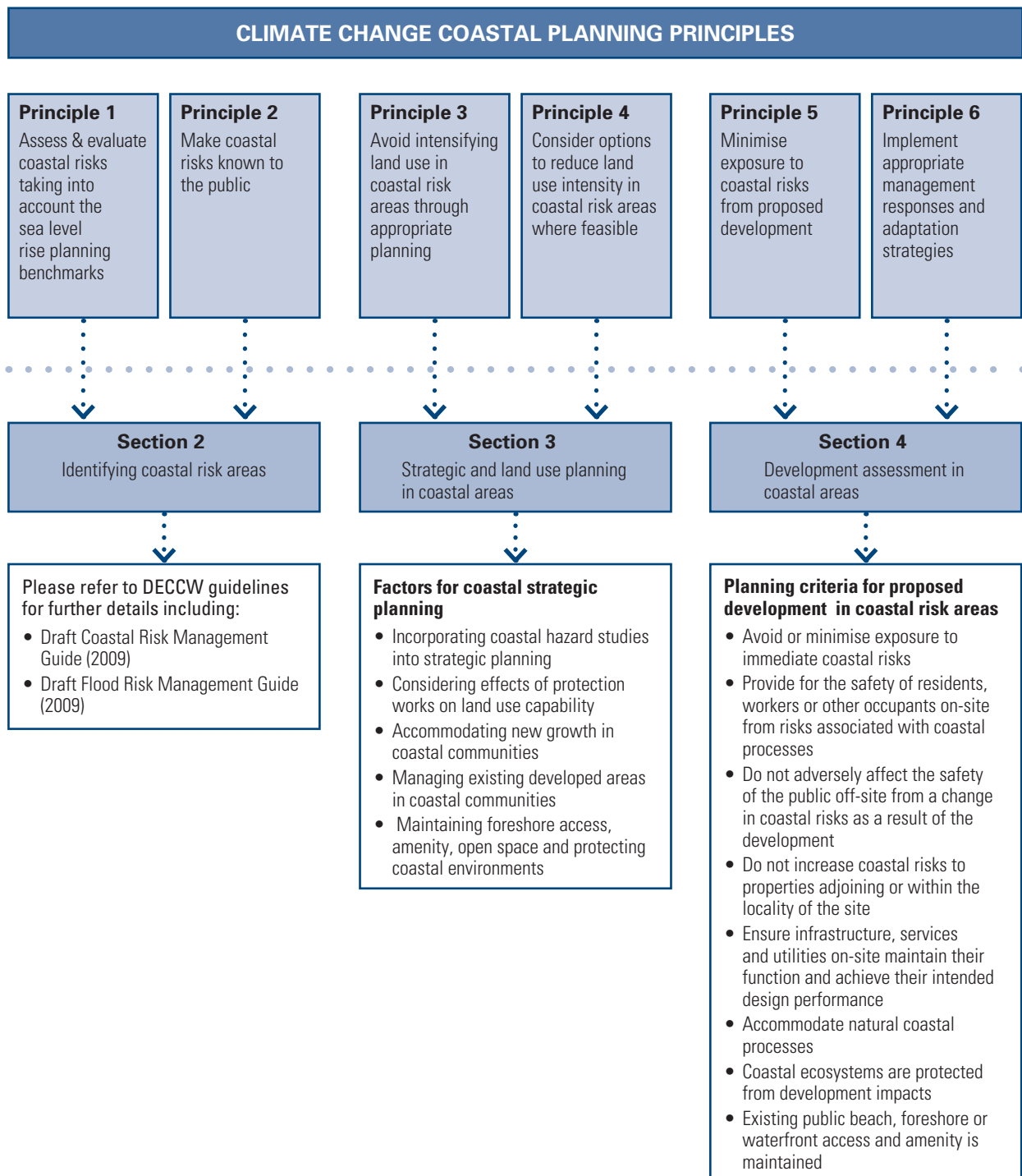
1.4 STRUCTURE OF THE GUIDELINE

The Guideline is structured around the implementation of the six coastal planning principles for the consideration of sea level rise. The following diagram illustrates the relationship between these principles and the structure of this Guideline.

SECTION 2 – IDENTIFYING COASTAL RISK AREAS outlines how sea level rise should be incorporated into coastal risk assessment.

SECTION 3 – STRATEGIC AND LAND USE PLANNING provides information on how sea level rise impacts can be factored into strategic and land use planning.

SECTION 4 – DEVELOPMENT ASSESSMENT outlines the process for considering sea level rise in the preparation and assessment of development applications in coastal areas.



2 IDENTIFYING COASTAL RISK AREAS

PRINCIPLE 1 – Assess and evaluate coastal risks taking into account the NSW sea level rise planning benchmarks

PRINCIPLE 2 – Advise the public of coastal risks to ensure that informed land use planning and development decision-making can occur

2.1 SEA LEVEL RISE PLANNING BENCHMARKS

This Guideline adopts the NSW sea level rise planning benchmarks in the NSW Sea Level Rise Policy Statement (NSW Government, 2009).

The NSW sea level rise planning benchmarks are an increase above 1990 mean sea levels of **40cm by 2050 and 90cm by 2100**. This was established by considering the most credible national and international projections of sea level rise and takes into consideration the uncertainty associated with sea level rise projections.

The adoption of the sea level rise planning benchmarks will ensure consistent consideration of the influence of sea level rise in coastal areas. The sea level rise benchmarks will be updated in light of any changes to internationally and nationally accepted science, such as the release of the next Intergovernmental Panel on Climate Change assessment report into climate change expected in 2014.

The sea level rise planning benchmarks are not intended to be used to prevent development on land projected to be affected by sea level rise. Planning proposals and development applications will continue to be assessed on their merits using a risk-based approach to determine whether the impacts of sea level rise and other coastal processes can be managed.

Coastal planning **Principle 1** emphasises the need to undertake coastal risk assessments incorporating the sea level rise planning benchmarks so that both current and future hazards can be determined.

2.2 IDENTIFIED COASTAL RISK AREAS

There are two primary documents currently used in NSW that guide the identification of coastal risk areas:

- *Coastline Management Manual* (1990) outlines the methodology for assessing and managing coastal hazards including beach erosion, shoreline recession, coastal entrance instability, vegetation degradation and sand drift, coastal inundation, slope and cliff instability and stormwater erosion; and
- *Floodplain Development Manual* (2005) outlines the methodology for assessing and managing flood hazards.

The sea level rise planning benchmarks are to be used in coastal hazard and flood studies. Existing coastal hazard and flood studies that have not incorporated the sea level rise planning benchmarks will need to be updated over time.

Two draft guides have been prepared to assist councils in preparing coastal hazard and flood studies to incorporate the sea level rise planning benchmarks:

- *Draft Coastal Risk Management Guide: Incorporating the sea level rise benchmarks in coastal hazard assessments* (DECCW 2009a); and
- *Draft Flood Risk Management Guide: Incorporating the sea level rise benchmarks in flood risk assessments* (DECCW 2009b).

Most coastal councils have prepared coastal hazard studies that define coastal hazard zones in areas most at risk from coastal erosion and recession. The *draft Coastal Risk Management Guide* provides guidance on how this coastal hazard information can be expanded to identify additional areas projected to be at risk in the future from coastal hazards due to sea level rise.

Flood studies have also been prepared for most coastal rivers and creeks likely to be affected by sea level rise. The *draft Flood Risk Management Guide* provides guidance on how existing flooding information can be expanded to identify additional areas projected to be at risk in the future from flooding due to sea level rise.

As these new studies incorporating the sea level rise planning benchmarks are completed, new 'at risk' areas of coastline, foreshore and floodplain (that previously were of lower risk) will be identified. These *identified coastal risk areas* will need to be taken into consideration when undertaking strategic land use planning and development assessment.

2.3 INVESTIGATION AREAS

Preparing new and updating existing coastal hazard and flood studies will take some time. Prior to the completion of new or revised studies, councils may adopt investigation areas (potential coastal risk areas) for the purpose of land use planning and development assessment.

An investigation area can be used by a council as an interim guide to indicate land likely to be subject to coastal risks now or in the future as a consequence of sea level rise. The sea level rise planning benchmarks should be incorporated into council's calculation of the investigation areas.

Examples of possible measures that can be used in the identification of investigation areas include:

- projected coastal erosion and recession distances along sandy coastlines – 90cm sea level rise may result in coastal recession of 45 to 90 metres landward;
- projected tidal inundation in the lower reaches of an estuary – additional 40cm by 2050 and 90cm by 2100; or
- projected extension of flood prone land in tidal river reaches – additional freeboard of 30cm added to the mapped flood planning area.
- coastal areas below a set elevation in metres (AHD).

References in this Guideline to coastal risk areas include a reference to identified coastal risk areas and investigation areas.

Consultation Question

1. In the absence of completed coastal hazard and flood studies which take the NSW sea level rise planning benchmarks into consideration, should councils be able to use investigation areas for planning or development assessment purposes?
2. Should the NSW Government propose a set measure incorporating the sea level rise planning benchmarks for identifying investigation areas across the State?

2.4 CHANGES IN COASTAL RISKS OVER TIME

Coastal erosion hazards are often depicted on maps as immediate, 50 year and 100 year lines, showing areas of potential impact. With consideration of the sea level rise planning benchmarks, revised coastal risk studies for open sandy coastlines, estuaries and coastal lakes should identify *immediate hazard lines*, as well as *future hazard lines* based on sea level rise for the years 2050 and 2100 (see **Figure 1**).

Flood studies, which generally depict the 1 in 100 year average recurrence interval (ARI) and the probable maximum flood (PMF) lines on maps, should also include modelling of the impact of sea level rise for the years 2050 and 2100 (**Figure 2**).

While climate change projections extend to the year 2100 this does not mean that sea level rise is projected to cease after this time or that other climate change parameters will be static. It is also important to note that climate change impacts are not occurring in a linear pattern, with continued future acceleration possible (IPCC, 2007).

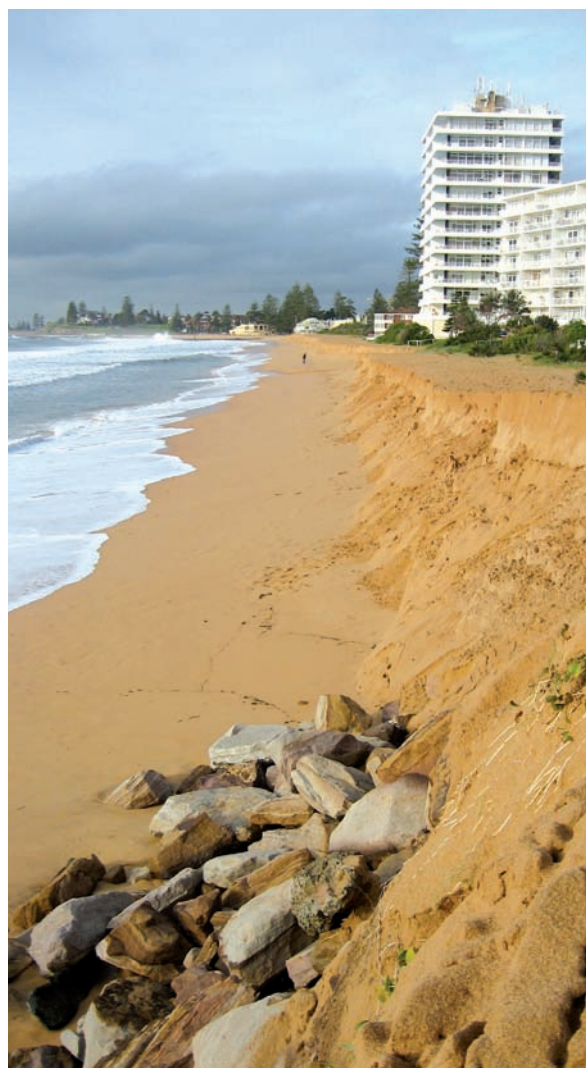
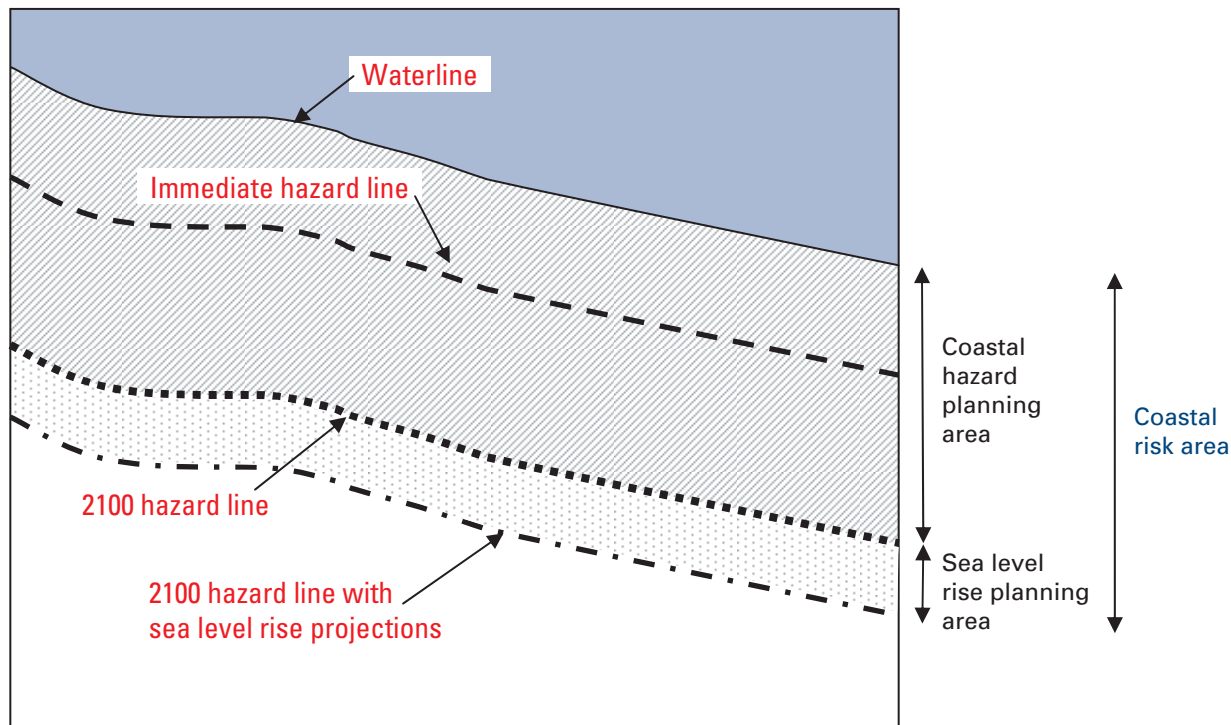
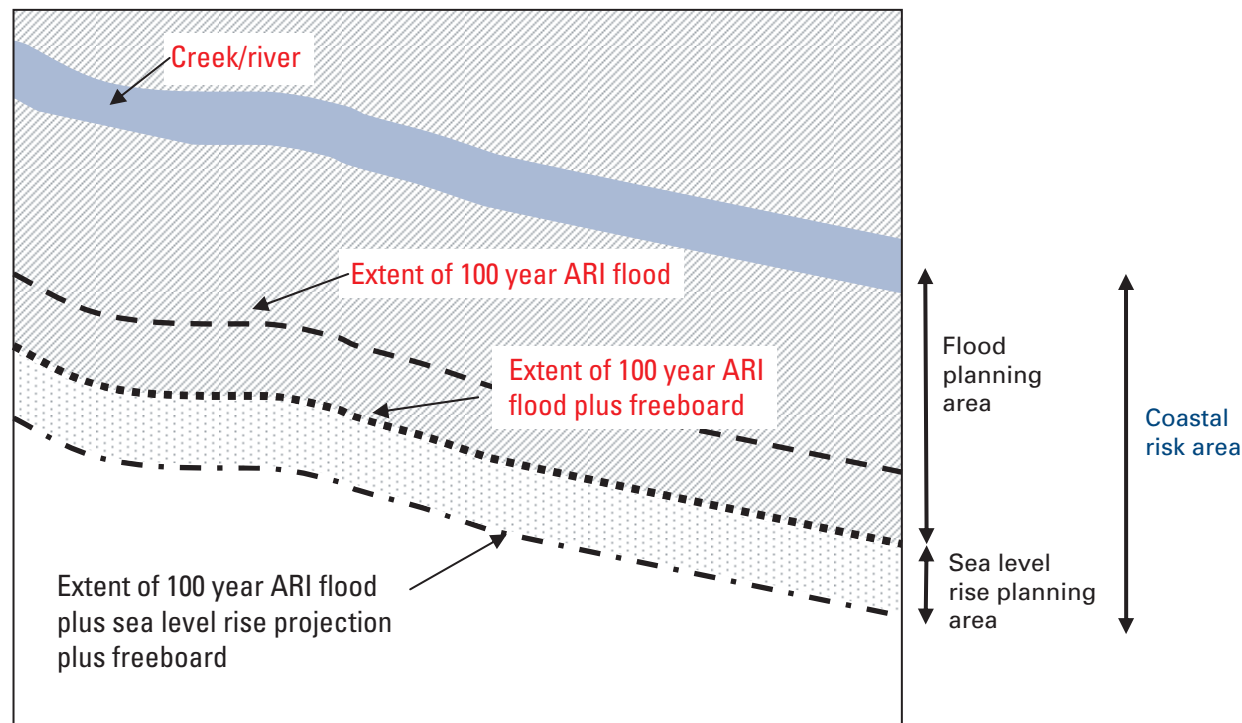


Figure 1 – Coastal risk areas relating to coastal hazards



Nb: Coastal hazard planning areas and sea level rise planning areas are identified in coastal hazard studies undertaken in accordance with the *Coastline Management Manual* and the *draft Coastal Risk Management Guide* (DECCW, 2009a). **Coastal risk area** is the term used in this Guideline to identify the land covered by both the coastal hazard planning area and sea level rise planning area.

Figure 2 – Coastal risk areas relating to coastal flooding



Nb: Flood planning areas and sea level rise planning areas are identified in flood studies undertaken in accordance with the *Floodplain Development Manual* and the *draft Flood Risk Management Guide* (DECCW, 2009b). **Coastal risk area** is the term used in this Guideline to identify the land covered by both the flood planning area and sea level rise planning area.

2.5 MAKING INFORMATION AVAILABLE TO THE PUBLIC

Coastal planning **Principle 2** emphasises the importance of providing the public with timely advice on coastal risks so that informed land use planning and development decision-making to occurs.

The current process for the development of coastal and floodplain management plans includes community consultation and involvement. The process also involves Ministerial approval of coastal zone management plans and gazettal by the local council. Councils' coastal hazard and flood studies should be made readily available to the public when completed.

Advice provided or action undertaken by councils relating to coastal risks does not incur liability if it is done in good faith, which includes acting substantially in accordance with the principles in the *Coastline Management Manual* or *Floodplain Development Manual* (section 733 of the *Local Government Act 1993*).

Planning certificates under section 149 of the *Environmental Planning & Assessment Act 1979* must include reference to coastal risks where Council (or a public authority) has adopted a policy that restricts the development of the specific parcel of land. This may include 'identified coastal risk areas' or 'investigation areas' if Council has applied development controls to such land.

Consultation Question

3. Should council rate notices or other mechanisms be used to advise or remind landowners if their properties are located in coastal risk areas?



3 STRATEGIC & LAND USE PLANNING IN COASTAL AREAS

PRINCIPLE 3 – Avoid intensifying land use in coastal risk areas

PRINCIPLE 4 – Consider options to reduce land use intensity in coastal risk areas where feasible

3.1 STRATEGIC PLANNING

Strategic planning includes land use planning activities at the regional, sub-regional and local level, including the preparation of Regional Strategies, local environmental plans, as well as local studies and strategies that inform the preparation of local environmental plans.

In order to implement coastal planning **Principle 3** and **Principle 4** above, the following factors should be considered as part of the strategic planning process:

- Incorporating coastal and related flood risk studies into strategic planning
- Considering the effects of protection works on land use capability
- Accommodating new growth in coastal communities
- Managing existing developed areas in coastal communities
- Maintaining foreshore access, amenity and open space and protecting coastal environments.

Incorporating coastal risk studies into strategic planning

Councils are to assess and map risks in accordance with the NSW Government's Floodplain Development Manual (2005), Coastline Management Manual (1990) and updated DECCW guidance.

As new coastal risk studies incorporating the sea level rise benchmarks are completed, *identified coastal risk areas* may include new areas of coastline, foreshore and floodplain that previously were considered to be of lower risk. Once identified, these extended areas of risk will need to be taken into consideration when undertaking strategic planning.

In the interim, councils may adopt *investigation areas* as coastal risk areas for use in strategic planning.

Considering the effects of protection works on land use capability

The planned location of any coastal, foreshore or river protection works is an important strategic planning consideration, as it may influence the viability and appropriateness of different land uses.

Structural protection works can include seawalls, revetments, gabion walls, artificial reefs and groynes as well as temporary protection works (eg. sand bagging). Structural protection works can protect immediate areas from erosion but may divert or deflect erosive forces elsewhere if designed incorrectly or sited inappropriately. To minimise such effects, the installation of structural protection works should be consistent with an approved management plan (eg. the relevant coastline or floodplain management plan) or emergency action plan.

While structural protection works are generally undertaken by or on behalf of public authorities, they may also be proposed on private foreshore land on a site by site basis. Private structural protection works, as with public works, should be based on sound engineering and environmental principles and be consistent with the relevant approved management plan.

Where feasible, 'soft engineering' options are preferred to hard engineering works if protection of both assets and coastal habitats can still be achieved. For instance, options such as beach nourishment or re-establishing barrier dune systems may have the advantage of allowing ecological communities to persist, while still protecting landward development from coastal processes.

Accommodating new growth in coastal communities

Strategic planning plays an important role in accommodating future urban growth in a sustainable manner. It can assist in addressing the challenges faced by coastal communities that are affected by both development pressure and the impacts of climate change.

The *Coastal Design Guidelines for NSW* (NSW Coastal Council, 2003) provide advice on the design of coastal urban settlements. These Guidelines include advice on retaining foreshores and headlands in public ownership and protecting buildings and properties from storm events and sea level rise.

Coastal planning **Principle 3** discourages the intensification of development in coastal risk areas. For example, changing land use from rural to urban, or increasing the density of housing from low to medium or high density is strongly discouraged in high risk areas due to the potential future risk to life, property and the environment.

New urban centres should be sited away from coastal risk areas, with consideration for other strategic planning issues that affect where new centres are located, such as adequate transport networks, proximity to populations and urban services, and the commercial viability of locations.

Managing existing developed areas in coastal communities

Coastal planning **Principle 4** encourages the reduction of land use intensity in coastal risk areas where feasible. Reducing land use intensity may however be difficult to achieve in areas that have already undergone significant urban development (e.g. established residential zones).

Changing land use zoning from medium density housing to low density or prohibiting new urban development in general would affect the future development potential of a given area. This is particularly the case if the coastal risks are only minor and the future development potential of the land is not otherwise restricted by other environmental, social or economic constraints.

Conversely, sea level rise may significantly affect the development potential of some areas in the future. Appropriate planning now is needed to minimise the social and economic impacts of inappropriate development in the long term.

In addition to coastal risks, when councils consider reducing land use intensity, the following factors must be considered:

- land tenure (public or private owned land);
- current land uses and existing use rights;
- existing environmental constraints on development (e.g. bushfire hazards, flood risks, slope stability constraints, vegetation and threatened species, acid sulfate soils etc);
- other planning constraints on development (e.g. distance to community services, access to transport, sewage, water and utilities); and
- the risk of requiring land acquisition.

Maintaining foreshore access, amenity, open space and protecting coastal environments

Strategic planning should address and accommodate the effects of sea level rise on public foreshore access and coastal assets such as reserves, recreation areas or natural areas.



This also includes addressing the implications on the long term protection of coastal and estuarine ecology and the importance of accommodating landward migration of wetlands, mangroves and salt marsh communities.

Coastal public reserves in particular provide important public open space and the loss of these assets may place additional pressure on other open space areas.

3.2 STATUTORY PLANNING

The coastal risk strategic planning considerations listed in section 3.1 should directly inform the preparation of planning proposals and local environmental plans (LEPs).

The following section outlines how an LEP can be used to implement coastal planning **Principle 3** and **Principle 4** to avoid intensifying land use or reduce land use intensity in coastal risk areas.

Land use zones and zoning objectives

Land use zones in the Standard Instrument provide an important mechanism for regulating land use in identified coastal risk areas.

The appropriateness of using a particular land use zone will depend on the level of coastal risk, as well as other environmental and planning considerations (e.g. existing and permitted land uses on site).

Additional objectives may be applied to a zone, but only if they are consistent with the mandated objectives for development in the zone. The consent authority must have regard to the objectives for development in a zone when determining a development application in respect of land within the zone.

Where zones are identified as being subject to coastal risks it may be appropriate to include an additional objective for that zone requiring the accommodation of the projected impacts of sea level rise.

Examples of Zoning Options in Coastal Risk Areas

For rural or undeveloped land in coastal risk areas, particularly seaward of the immediate hazard line, the E3 Environmental Management Zone may be appropriate in certain instances to manage land subject to environmental hazards or processes that may require careful management.

Other rural or undeveloped land in coastal risk areas may be zoned E2 Environmental Conservation Zone which provides the highest level of protection, management and restoration for such lands, while allowing uses compatible with those values. It must be noted that the range of permitted uses should not be drawn too restrictively as they may, depending on circumstances, invoke the *Land Acquisition (Just Terms Compensation) Act 1991* and the need for the Minister to designate a relevant acquiring authority.

For risk areas on coastal floodplains that have not yet been zoned for urban uses, retaining low intensity rural zones with large lot sizes may be more appropriate than intensifying land use by allowing residential, industrial or business uses – particularly if the land is projected to be flood prone in the future.

Where coastal risk areas are identified in a National Park or Nature Reserve, the E1 National Parks and Nature Reserves Zone will apply.

For other public land subject to coastal risks, councils may consider applying other zones with low intensity land uses permitted. For instance, in areas currently subject to coastal erosion such as beach and foreshore areas, it may be appropriate to zone the land RE1 Public Recreation Zone. In other circumstances, E2 Environmental Conservation Zone or E3 Environmental Management Zone may be more appropriate.



Principal development standards

The principal development standards provided in the Standard Instrument are the main tools for controlling the bulk, scale and intensity of permissible land uses and include minimum lot size, building height and floor space ratio.

Councils can vary the principal development standards across zones so that they reflect the underlying land capability.

Development standards such as minimum lot size can be used to regulate land-use intensity without rezoning. This may be of assistance when addressing **Principle 3** and **Principle 4** to avoid intensifying land use or to reduce land use intensity in coastal risk areas.

Additional LEP provisions

The Standard Instrument contains clause 5.5 – *development within the coastal zone* which requires that, when assessing development within the NSW Coastal Zone, the consent authority considers the effect of coastal processes and coastal hazards and potential impacts, including sea level rise on the proposed development, and arising from the proposed development.

Additional LEP clauses can be added to apply local provisions to specific locations identified on a map (as an overlay). These types of clauses may contain controls for development, provided the local provisions are consistent with the intent and objectives of the underlying land use zone and compulsory provisions of the Standard Instrument.

Inclusion of Clause 6.5 – *foreshore building lines* in LEPs may also be appropriate in some instances. The model clause prohibits certain development in foreshore areas, primarily in inner harbour/protected water locations.

Coastal risk areas may be identified in an LEP by a foreshore building line or a flood planning area, with development controls specified in the LEP, and performance criteria specified in a related development control plan.

Consultation Questions

4. If land is subject to immediate coastal risks, should further development in these areas be prohibited?
5. How should consideration be given to potential coastal risk areas when zoning land in LEPs? i.e. areas that may be at risk in the future due to sea level rise and other climate change parameters.

3.3 DEVELOPMENT CONTROL PLANS

The controls within a development control plan (DCP) are part of a consent authority's statutory considerations when assessing a development application. It should be noted that the development controls in a DCP cannot be inconsistent with an LEP, nor can a DCP be used to place prohibitions on development.

DCPs can relate to issues over a whole LGA, or can relate to a mapped area, such as a coastal risk area.

Where an LEP outlines principal development standards (such as height of buildings, minimum subdivision lot size and floor space ratio) a DCP can make more detailed provision with respect to development. These provisions can take the form of text, maps, diagrams and the like, and usually contain further development standards, performance criteria, matters for consideration or procedural matters associated with controlling development.

For example, coastal risk areas could be mapped in a DCP. Performance criteria for development assessment could be applied to that coastal risk area. More detailed development controls can then be applied to the whole or sections of the coastal risk area (such as the immediate hazard line, 2100 hazard line and the 2100 hazard line with sea level rise projections). These development controls could cover construction methods or materials, size of the development, the need for development to be relocatable or temporary and the location of utilities or services within the site. See also **Figure 4** and **Figure 5**.



Consultation Questions

6. Should a model clause be developed for councils to use in LEPs to identify coastal risk areas using maps and to apply specific development controls to that identified land?
7. Should a similar provision be incorporated directly into SEPP 71 – *Coastal Protection* to apply to development in the NSW Coastal Zone?
8. Should consideration be given to expanding the application of any coastal risk clause in SEPP 71 to also apply more broadly to the Sydney coastal region?

The following is an example of a possible model LEP clause that could address coastal risks:

Draft LEP Coastal Risk Planning Model Clause

Coastal risk area

1. The objectives of this clause are:
 - a) to maintain existing coastal processes and to avoid significant adverse impacts from those coastal processes; and
 - b) to enable safe evacuation of coastal risk areas in an emergency; and
 - c) to avoid significant adverse effects on the environment, and
 - d) to ensure uses are compatible with coastal risks.
2. This clause applies to land shown as “coastal risk area” on the Coastal Risk Planning Map.
3. Consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development:
 - a) will not adversely affect coastal processes resulting in detrimental increases in coastal risk exposure of other development or properties; and
 - b) will not significantly alter coastal processes to the detriment of the environment; and
 - c) will make provision for safe evacuation of the land;
 - d) if located seaward of the immediate hazard line, will avoid or minimise exposure to coastal processes; and
 - e) make provision for relocation or modification if required.

4. In this clause:

coastal risks include coastal erosion, tidal inundation and coastal flooding.

immediate hazard line is the line identified on the Coastal Risk Planning Map which represents the estimated extent of beach erosion from a design storm event (as outlined in the draft *Coastal Risk Management Guide 2009*).

4 DEVELOPMENT ASSESSMENT IN COASTAL AREAS

PRINCIPLE 5 – Minimise the exposure to coastal risks from proposed development in coastal areas

PRINCIPLE 6 – Implement appropriate management responses and adaptation strategies, with consideration for the environmental, social and economic impacts of each option

4.1 DEVELOPMENT IN COASTAL AREAS

This section of the Guideline is intended to assist applicants in preparing coastal development applications and consent authorities assessing these development applications under the *Environmental Planning and Assessment Act 1979*.

The strategic planning mechanisms outlined in section 3 will assist councils in long-term planning by avoiding intensifying land use in areas subject to coastal hazards. The development assessment process provides a further opportunity to ensure that future coastal development does not increase exposure to coastal hazard risks.

The following planning criteria should be considered by applicants when selecting coastal development sites and designing development proposals, as these criteria will be considered by consent authorities when assessing coastal development proposals.

4.2 SITE SELECTION IN COASTAL AREAS

Strategic planning mechanisms (i.e. Regional Strategies and local studies) in general provide broad guidance on suitable locations for large-scale coastal developments to meet future housing and employment needs.

Where possible, new urban developments and coastal subdivisions should be located outside coastal risk areas (for the 2100 year sea level rise projection) to avoid increasing the communities exposure to coastal hazards. In particular, developments such as hospitals, schools, child-care or aged-care facilities should not be located in coastal risk areas where risks are high or where evacuation may be difficult.

Developments that are of a hazardous or potentially hazardous nature (e.g. manufacture or storage of hazardous or dangerous materials, or waste disposal) should also be sited outside coastal risk areas.

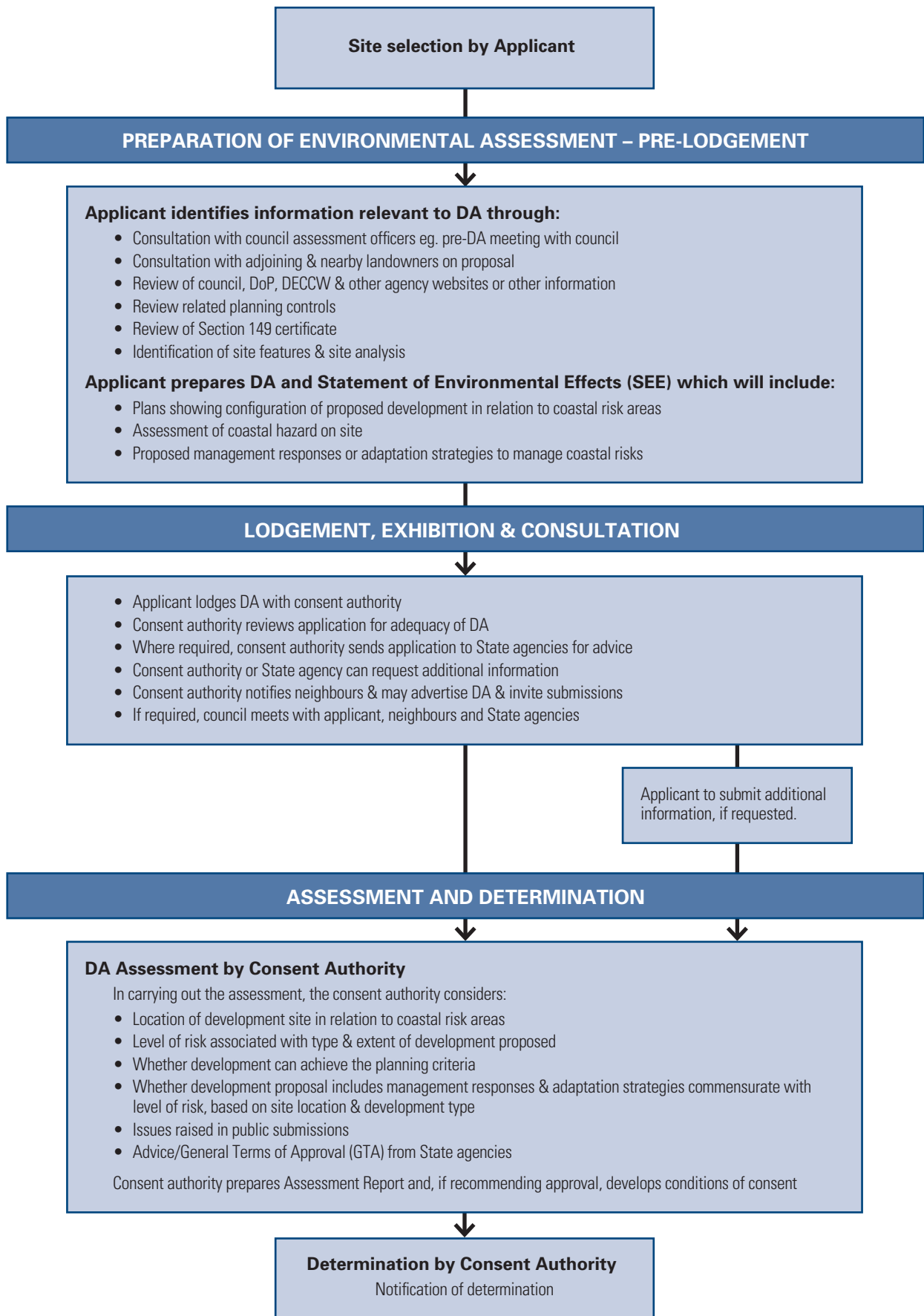
For development sites that are located within coastal risk areas, pre-DA consultation with the consent authorities and relevant State agencies will be an important component of the development assessment process.

As indicated by coastal planning **Principle 5** proposed developments should seek to minimise exposure to coastal risks.

PLANNING CRITERIA FOR PROPOSED DEVELOPMENT IN COASTAL RISK AREAS

1. Development avoids or minimises exposure to immediate coastal risks (seaward of the immediate hazard line)
2. Development provides for the safety of residents, workers or other occupants on-site from risks associated with coastal processes
3. Development does not adversely affect the safety of the public off-site from a change in coastal risks as a result of the development
4. Development does not increase coastal risks to properties adjoining or within the locality of the site
5. Infrastructure, services and utilities on-site maintain their function and achieve their intended design performance
6. Development accommodates natural coastal processes
7. Coastal ecosystems are protected from development impacts
8. Existing public beach, foreshore or waterfront access and amenity is maintained

Figure 3 – Assessment process for development applications in coastal areas



4.3 APPLICANT PREPARES DEVELOPMENT APPLICATION (DA)

Figure 3 outlines the process for development assessment in coastal areas.

Pre-DA consultation

Proponents who intend to submit applications for development proposals in coastal risk areas should seek early advice from the local council and DECCW on the nature and extent of the coastal risks that may affect the development site. Proponents should also review relevant technical documents and reports.

Councils may have DCPs, management plans or other council policies or strategies which apply to the land or the type of development being proposed which may assist proponents in siting and designing developments in coastal risk areas.

Discussions with councils could also assist in identifying how the proposed development could contribute to any initiatives proposed by the council to manage or avoid coastal hazard risks.

It is also important to consult with adjoining and nearby landowners to discuss both the proposed development and any actions proposed to manage or mitigate offsite coastal risks associated with the proposed development.

Site design and layout

For proposed developments located in coastal risk areas, the planning criteria will need to be addressed through site design and layout.

The council may also be able to provide advice on appropriate site design and layout for developments in coastal areas.

Management responses and adaptation strategies

Implementation of appropriate management responses and adaptation strategies will be an important component of any new developments coastal areas (**Principle 6**).

Applications for coastal development should outline management responses or adaptation strategies that will be adopted to address the planning criteria such as:

- configuring the development site layout to minimise exposure to coastal risks e.g. ensuring that buildings and infrastructure are placed in low risk areas on site and provide open space and landscaping between buildings and areas of higher hazard risk (see **Figure 4**);
- installing and maintaining protection works on-site;

- constructing buildings or structures that are easily decommissioned, dis-assembled or relocated either on-site or off-site as required;
- providing for safe exit routes above storm flood height levels;
- designing buildings with all habitable floors above storm flood height levels;
- using appropriate foundations (eg. driving piles down to a stable foundation, not slab on ground);
- designing adaptable buildings to extend the asset life such as:
 - utilising shorter design life elements, design for disassembly and separation, construct with materials suitable for reclamation and recycling in higher risk areas; and
 - investing in greater building permanence in construction and components where there are fewer risks.

The appropriateness of these management responses and adaptation strategies will differ on a case-by-case basis.

DA information requirements

Applicants submitting DAs for development in coastal risk areas should outline how the proposal satisfies the planning criteria in section 4.1. In order to do so, the following information is to be submitted with the DA, as part of the Statement of Environment Effects (SEE), as appropriate to the scale and location of the proposal:

- Information outlining the type of proposed development including:
 - nature, bulk, scale and location of proposed development; and
 - proposed use and occupation of buildings, and those on adjoining land.



- Plans illustrating the position and configuration of the proposed development in relation to coastal risks including:
 - position of the existing and proposed buildings;
 - existing ground levels to AHD around the perimeter of the building and contours of site;
 - existing or proposed floor levels in AHD and foundation type; and
 - topographic levels to an accuracy of 0.1m, and structures to an accuracy of 0.01m, showing relative levels to AHD.
- A report addressing the following issues relating to sea level rise as they relate to the development site, where relevant:
 - permanent increase in sea level and increased tidal range;
 - soft coast erosion – beach and foredune loss and/or migration, shoreline recession, beach realignment;
 - coastal flooding;
 - coastal entrance behaviour;
 - intermittently open and closed lakes and lagoons (ICOLL) reconfiguration;
 - cliff and slope instability;
 - wetland migration; and
 - groundwater elevation and/or salinisation.
- Information that demonstrates whether the development proposal:
 - is consistent with the relevant approved coastline or floodplain management plan;
 - is consistent with any relevant DCP that relates to coastal or flood issues;
 - meets the coastal protection requirements of the LEP; and
 - incorporates appropriate management responses and adaptation strategies.

Consultation Questions

9. If a relevant coastal hazard or flood study has not been completed or council has not identified an investigation area, should applicants be required to undertake their own coastal risk assessment as part of the DA requirements?
10. Should this requirement only be restricted to large-scale or medium to high risk coastal developments?

4.4 CONSULTATION

The consultation process informs the community of a development application and enables input from the community as well as other agencies that may have an interest in the development assessment process.

The consultation process for a development application within a coastal risk area is the same as for other developments. The consultation process and procedures is often outlined in a council's DCP.

4.5 CONSENT AUTHORITY ASSESSES DEVELOPMENT APPLICATION

When assessing a development application in a coastal area the consent authority should assess the level of risk of the proposal. Risk is a function of proximity and exposure to coastal hazard risks and the likely severity of the impacts of the event on the particular type of development.

$$\text{Risk} = \text{Probability of an event occurring} \times \text{Likely severity of the impacts}$$

If the proposed development is not located within a coastal risk area, additional assessment under these Guidelines is not required.



Assess risk related to location of proposed development

The *probability of an event occurring* will be dependent on the location and nature of the development site. The consent authority should determine whether any part of the development site is located in an identified coastal risk area or coastal risk investigation area (see also **Figure 4** and **Figure 5**).

The proponent must provide the consent authority with the appropriate information to determine whether the development is sited within a coastal risk area. In some cases, this information will be available in council plans or studies, in other cases, the applicant will need to undertake their own studies.

Examples of development controls in coastal risk areas

Depending on the proposed location of the development in relation to coastal risk areas, further detailed assessment may be required. In some instances the site may be deemed to be unsuitable for further development. See **Figure 4** and **Figure 5** for details.

As indicated in Figure 4, proposed developments located seaward of the 2100 hazard line incorporating sea level rise projections will need to address the planning criteria in this Guideline. Councils may also apply additional development controls on mapped land in a DCP (eg. the land seaward of the current 2100 hazard line). For example, buildings should be designed to be easily relocated in the event of coastal erosion (eg. not slab-on-ground, modular in construction). It is not suitable to develop land seaward of the immediate hazard line (ie. in close proximity to the erosion escarpment).

In relation to flooding (Figure 5) all development that falls within or below the sea level rise planning area will require merit assessment addressing the planning criteria in this Guideline. Furthermore, council's existing flood planning requirements continue to apply in the flood planning area. Development located outside the coastal risk area may still require consideration of flood emergency response such as adequate evacuation routes, especially in cases where the site is wholly surrounded by low-lying areas susceptible to flooding.

Assess risk related to type of proposed development

The *impact of an event* (the effects of coastal hazard events on a development site) will be a function of the type of development.

As a guide, the following types of development proposals in coastal risk areas would require further detailed assessment of risks to life, property or the environment:

- construction of new residential, commercial, retail or industrial buildings or structures or substantially increasing the floor space ratio of existing buildings or structures;
- subdivision, with consideration for proposed building envelopes, access and service easements;
- institutional developments, especially where evacuating people may be particularly difficult e.g. hospitals, schools, child care or aged care facilities;
- material change of use that substantially increases the number of people living or working on site;
- manufacture or storage of hazardous or dangerous materials or waste disposal; or
- sewerage treatment works, substations & other key infrastructure.

If these types of development are proposed in a coastal risk area, the consent authority should determine whether the type of development proposed (its nature, bulk, scale) and its use is likely to have implications for:

- exposure to immediate coastal risks (seaward of the immediate hazard line);
- safety of residents, workers or other occupants on-site;
- safety of public off-site from a change in coastal hazards as a result of the development;
- safety of properties adjoining or within the locality of the development site;
- performance of infrastructure, services and utilities on-site;
- natural coastal processes as a result of the design of the development;
- coastal ecosystems on or adjoining the site; or
- existing public beach, foreshore or waterfront access and amenity.

Figure 4 – Coastal erosion consideration in DA assessment

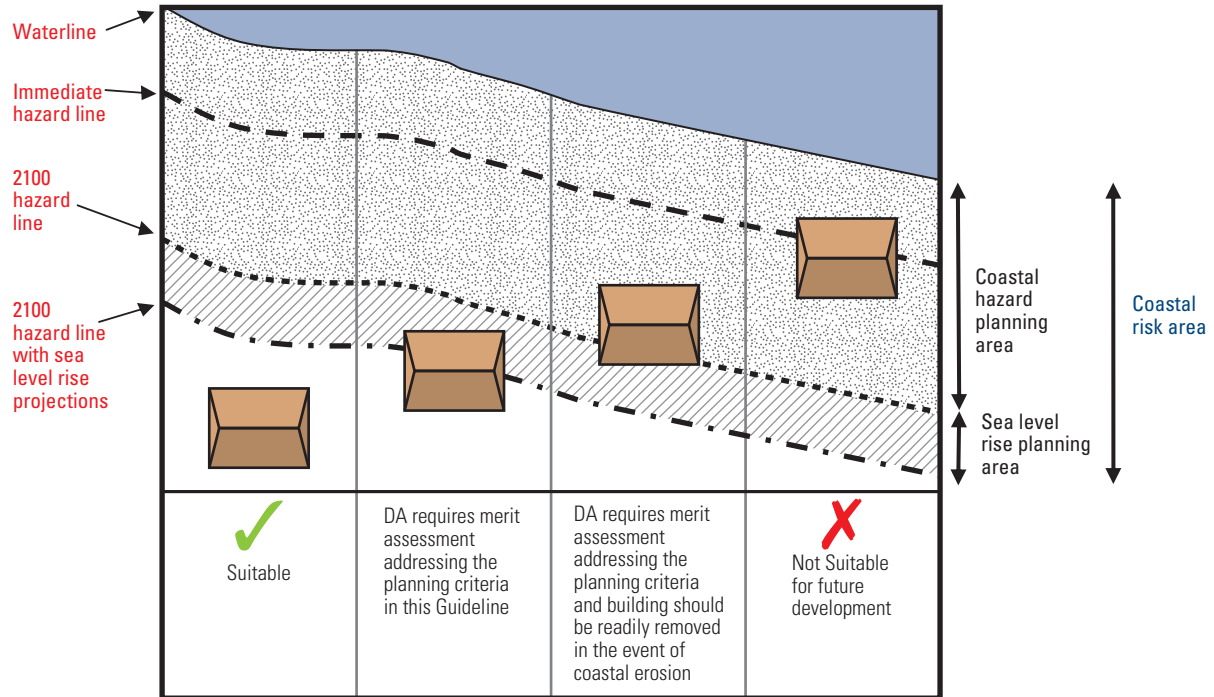
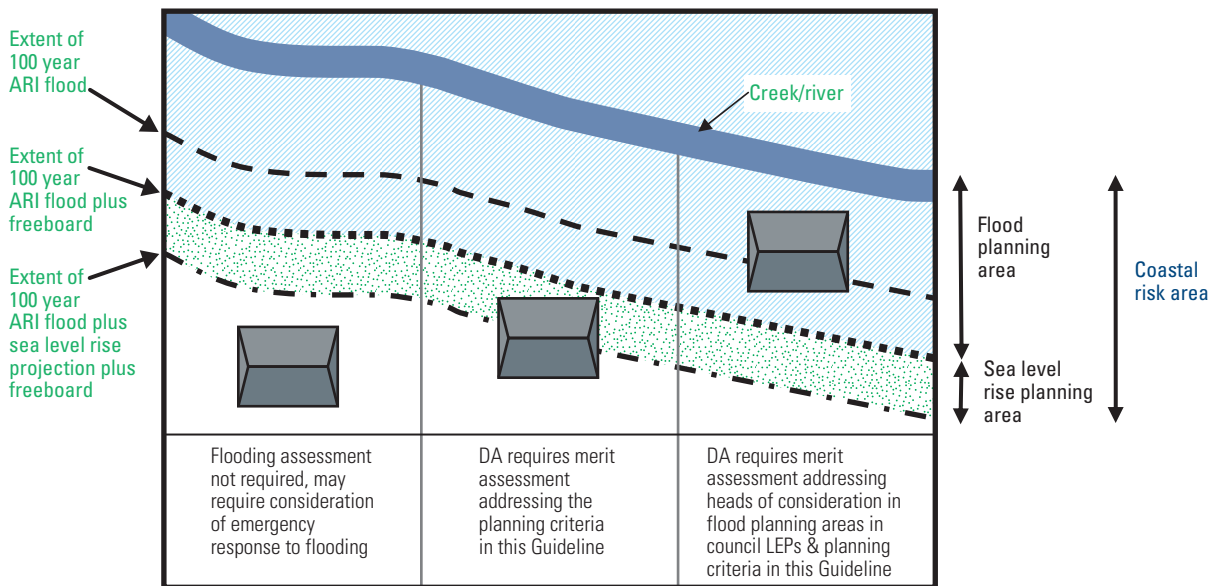


Figure 5 – Coastal flooding consideration in DA assessment



If the consent authority considers the proposed development to be minor development, applications need not be assessed against the above criteria. The following types of development could generally be considered minor, however the consent authority should consider each application on a case-by-case basis:

- internal fitouts, minor alterations, additions or extensions to existing buildings or structures that are landward of the seaward alignment of the existing buildings or structures;
- waterway recreation structures including jetties, slipways, wharves, boat sheds and pontoons;
- exempt development; or
- temporary or minor relocatable structures.

Assess proposed development against criteria

Based on the risk assessment process identified above, applications for development (other than minor development) in coastal risk areas will need to demonstrate how the proposed development will be designed and managed to achieve safety, planning and environmental performance outcomes.

This assessment approach promotes appropriate development in coastal risk areas through the merit assessment of proposals based on social, economic and environmental factors, rather than strict compliance with a set of prescriptive development controls.

The planning criteria will need to be considered by a consent authority before determining development applications in coastal risk areas.

4.6 DETERMINATION OF DEVELOPMENT APPLICATION

When determining development applications in coastal areas, consent authorities are to have regard to the coastal planning **Principle 5** and **Principle 6** contained in this Guideline.

In addition, consent authorities should take into consideration:

- location of the development site in relation to coastal risk areas (see **Figures 4** and **5**);
- level of risk associated with the type and extent of development proposed;
- whether the development can achieve the planning criteria; and
- whether the development incorporates appropriate management responses and adaptation strategies commensurate with the level of risk associated with the site location and the type of development being proposed.

In addition to this Guideline, consent authorities should also have regard to other relevant policies and development controls that apply to the development and the subject site.

Consultation Question

- 11.** Should new development be prevented in coastal risk areas that are already subject to coastal risks (as identified by an immediate hazard line)?

FURTHER INFORMATION & REFERENCES

Coastal Council of NSW (2003) *Coastal Design Guidelines for NSW*
<http://www.planning.nsw.gov.au/PlansforAction/Coastalprotection/CoastalDesignGuidelines/tabid/174/Default.aspx>

Department of Environment, Climate Change and Water (2009a) *Draft Coastal Risk Management Guide: Incorporating the sea level rise benchmarks in coastal hazard assessment.*

Department of Environment, Climate Change and Water (2009b) *Draft Flood Risk Management Guide: Incorporating the sea level rise impacts in flood risk assessments.*

Department of Planning's *Coastal Regional Strategies*
<http://www.planning.nsw.gov.au/PlansforAction/Regionalplanning/tabid/161/Default.aspx>

IPCC (2007) *Climate Change 2007: The Physical Science Basis – Summary for Policymakers, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 17 April 2007.* http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_wg1_report_the_physical_science_basis.htm

NSW Government (1990) *Coastline Management Manual*
<http://www.environment.gov.au/coasts/publications/nswmanual/index.html>

NSW Government (1997) *NSW Coastal Policy*
<http://www.planning.nsw.gov.au/plansforaction/pdf/CPPARTA.PDF>
<http://www.planning.nsw.gov.au/plansforaction/pdf/CPPARTB.PDF>

NSW Government (2005) *Floodplain Development Manual*
<http://www.dnr.nsw.gov.au/floodplains/manual.shtml>

NSW Government (2009) *NSW Sea Level Rise Policy Statement*
<http://www.environment.nsw.gov.au/climatechange/sealevel.htm>

Section 117 Direction 2.2 – Coastal Protection
http://www.planning.nsw.gov.au/planningsystem/pdf/s117s_issued_01jul09.pdf

Section 117 Direction 4.3 – Flood Prone Land
http://www.planning.nsw.gov.au/planningsystem/pdf/s117s_issued_01jul09.pdf

Standard Instrument – Principal Local Environmental Plan
<http://www.planning.nsw.gov.au/LocalEnvironmentalPlans/StandardInstrument/tabid/247/Default.aspx>

State Environmental Planning Policy 71 – Coastal Protection
<http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+816+2002+cd+0+N>

GLOSSARY

annual exceedance probability (AEP) – the chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage.

Australian Height Datum (AHD) – a common national surface level datum approximately corresponding to mean sea level.

average recurrence interval (ARI) – the long term average number of years between the occurrence of a flood as big as (or larger than) the selected event.

coastal area – used broadly in this Guideline to refer to the coastline, beaches, coastal lakes, estuaries, as well as the tidal reaches of coastal rivers. It also refers to other low lying areas that may be susceptible to future coastal processes exacerbated by climate change impacts.

coastal hazard planning area – the extent of calculated coastal recession plus any allowance for reduced foundation capacity, as identified by undertaking a study in accordance with the *NSW Coastline Management Manual*. The 2100 hazard line should normally be the maximum extent of the coastal hazard planning area.

coastal risk area – the term used in this Guideline to identify the land covered by both the coastal hazard planning area and its associated sea level rise planning area (see Figure 1), as well as the flood planning area and its associated sea level rise planning area (see Figure 2). This includes ‘identified coastal risk areas’ and ‘investigation areas’.

coastal risks – in the context of this Guideline means coastal erosion, tidal inundation and coastal flooding.

DA – Development Application

DCP – Development Control Plan

DECCW – NSW Department of Environment, Climate Change and Water

DoP – NSW Department of Planning

flood planning area – the area of land below the flood planning level.

flood planning level (FPL) – are the combinations of flood levels and freeboards selected for floodplain risk management purposes.

identified coastal risk area – as new coastal hazard and flood studies incorporating the NSW sea level rise benchmarks are completed, *identified coastal risk areas* may include new areas of coastline, foreshore and floodplain that previously were of lower risk.

immediate hazard line – mapped line representing the estimated extent of beach erosion from a design storm event.

investigation areas – potential coastal risk areas adopted by council prior to preparing new and updating existing coastal hazard and flood studies. The sea level rise planning benchmarks should be incorporated into the calculation of investigation areas.

LEP – Local Environmental Plan

NSW Coastal Zone – land identified in a series of gazetted maps under the *Coastal Protection Act 1979*.

NSW sea level rise planning benchmarks – are specified in the *NSW Draft Sea Level Rise Policy Statement* as an increase above 1990 mean sea levels of 40 cm by 2050 and 90cm by 2100.

planning criteria – eight assessment criteria to be considered by consent authorities when assessing development applications in coastal risk areas (see section 4.1).

risk – is assessed on the basis of the probability of an event occurring multiplied by the impact of the event.

sea level rise planning area (coastal hazards) – area of land between the 2100 hazard line calculated assuming no sea level rise and the 2100 hazard line calculated using the 2100 sea level rise benchmark.

sea level rise planning area (flooding) – area of land excluding the flood planning area which is below the 100 year ARI flood level plus freeboard plus projected sea level rise influence.

SEE – Statement of Environmental Effects

Draft NSW Coastal Planning Guideline: Adapting to Sea Level Rise

BACKGROUND

The Draft Coastal Planning Guideline: Adapting to Sea Level Rise (the draft guideline) accompanies the NSW Government's Sea Level Rise Policy Statement and aims to provide practical advice to coastal councils on how sea level rise should be considered in future land use planning and development assessment in coastal NSW.

The policy statement, which underwent community consultation in early 2009 prior to its finalisation in November 2009, establishes sea level rise planning benchmarks of 40cm by 2050 and 90cm by 2100 (above 1990 mean sea levels).

The draft guideline encourages a risk-based approach to strategic land use planning and development assessment, taking into consideration these new benchmarks.

When finalised, it will be a landmark document which for the first time provides clear advice to councils for land use planning and development assessment in areas subject to coastal hazards.

COASTAL PLANNING PRINCIPLES

The draft guideline is based around the implementation of six coastal planning principles guiding sustainable development with consideration for sea level rise, and these include to:

1. Assess and evaluate coastal risks taking into account the NSW sea level rise planning benchmarks;
2. Advise the public of coastal risks and to ensure that informed land use planning and development decision-making can occur;
3. Avoid intensifying land use in coastal risk areas through appropriate strategic and land use planning;
4. Consider options to reduce land use intensity in coastal risk areas where feasible;
5. Minimise the exposure to coastal risks from proposed development in coastal areas; and
6. Implement appropriate management responses and adaptation strategies, with consideration for

the environmental, social and economic impacts of each option.

COMMUNITY CONSULTATION

The draft guideline has been released for community consultation until 11 December 2009.

Any interested parties are encouraged to lodge a submission. The guideline also includes consultation questions, seeking specific input on certain matters.

For more information on the guideline or to make a submission, please either call (02) 9228 6333 or visiting www.planning.nsw.gov.au

IDENTIFYING COASTAL RISK AREAS: PRINCIPLES 1 AND 2

The draft guideline adopts the sea level rise benchmarks, ensuring consistent consideration of the influence of sea level rise on coastal areas.

In identifying and evaluating coastal risks, councils should use the Coastline Management Manual and the Floodplain Development Manual, in addition to the advice contained within the draft Coastal and Flood Risk Management Guides, all prepared by the Department of Environment, Climate Change and Water (DECCW).

Revised coastal hazard studies should identify immediate and future hazard lines, factoring in the new benchmarks.

Where new coastal hazard and flood studies have not yet been completed, the draft guideline says councils may use investigation areas as an interim measure to indicate land likely to be subject to coastal risks due to future sea level rise.

The draft guideline says coastal risk areas (including identified coastal risk areas and investigation areas) can be mapped in a development control plan (DCP), and additional development standards or criteria may be added to the DCP which impose further controls

on the type of development permitted in these areas, for instance:

- Type of construction materials;
- Size of the development; or
- Need for the development to be relocatable or temporary.

STRATEGIC AND LAND USE PLANNING: PRINCIPLES 3 AND 4

The draft guideline says land use planning at the local, sub-regional and regional level should aim to avoid intensifying land use and, where possible, reduce land use intensity in coastal risk areas.

It advises councils to use their discretion in their strategic and land use planning to carefully weigh up the environmental, social and economic costs of altering land use intensity in coastal risk areas.

For instance, the draft guidelines says that changing land use from rural to urban or increasing the density of housing from low to medium or high density is strongly discouraged in high risk areas, and similarly new urban centres should be sited away from coastal risk areas.

The draft guideline encourages a reduction in land use intensity where feasible, however this should be carefully considered in light of the current land uses and use rights, existing environmental and planning constraints on development, land tenure and risk of requiring land acquisition.

For example, it may be appropriate to use the E3 Environmental Management zone for rural or undeveloped land seaward of the immediate hazard line that may require careful management due to ongoing risks from coastal hazards.

The draft guideline is designed to encourage a forward looking approach to coastal land use planning to prevent creating or exacerbating risks to property or life due to sea level rise.

DEVELOPMENT ASSESSMENT: PRINCIPLES 5 AND 6

The draft guideline provides clear direction to consent authorities for development assessment in coastal areas, outlining how proposals should be considered based on their location in the coastal risk area, in particular that:

- Proposed development within the immediate hazard line should be avoided;
- Proposed development seaward of the current 2100 hazard line should be assessed

- against strict planning criteria and be portable in the event of coastal erosion; and
- Proposed development seaward of the 2100 hazard line with sea level rise projections should be assessed against the strict planning criteria.

According to the draft guideline, any proposal located outside the coastal risk area – in other words behind the 2100 hazard line with sea level rise projections – is considered suitable for development with regard to coastal hazards, subject to merit based assessment of other relevant issues.

The draft guideline says the eight planning criteria should be considered by proponents when preparing a proposal, and by consent authorities when assessing a development application in a coastal risk area. These criteria state that the proposal should not impact on natural coastal processes, not increase coastal risks around the site and should protect coastal ecosystems from development impacts.

FURTHER INFORMATION

Department of Planning website:
www.planning.nsw.gov.au

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