



Environment,
Climate Change
& Water

Regulatory Impact Statement

**Proposed
Coastal Protection Regulation 2011**

Submissions

The Department of Environment, Climate Change and Water welcomes written comments on the proposed Regulation and Regulatory Impact Statement.

The closing date for submissions is 5pm on Wednesday 23 February 2011. Electronic comments are strongly preferred and should be emailed to coast.flood@environment.nsw.gov.au.

Submissions can also be faxed to (02) 9995 5939 or mailed to:

Executive Officer
Waters, Wetlands and Coast Division
Department of Environment, Climate Change and Water
PO Box A290
Sydney South NSW 1232

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59–61 Goulburn Street

PO Box A290

Sydney South 1232

Phone: (02) 9995 5000 (switchboard)

Phone: 131 555 (environment information and publications requests)

Phone: 1300 361 967 (national parks information and publications requests)

Fax: (02) 9995 5999

TTY: (02) 9211 4723

Email: info@environment.nsw.gov.au

Website: www.environment.nsw.gov.au

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Abbreviations

BCR	Benefit–cost ratio
CZMP	Coastal zone management plan
DECCW	Department of Environment, Climate Change and Water (NSW)
EIS	Environmental Impact Statement
ECPW	Emergency coastal protection works
HRCL	Categorisation of hazard and hazard response for coastal land
LGA	Local government area
NPV	Net Present Value
PV	Present Value
RDCZ	Regulation of development within the coastal zone
RIS	Regulatory Impact Statement

Definitions

Amendment Act	<i>The Coastal Protection and Other Legislation Amendment Act 2010</i>
Coastal Authority	Ministers and public authorities with specified powers under the <i>Coastal Protection Act 1979</i> . Coastal Authorities include the Minister administering the Act and local councils in the coastal zone
Coastal zone	Statutory definition – Coastal zone is defined in the <i>Coastal Protection Act 1979</i> (section 4) and generally includes the area 1 km inland from the coastline and 3 nautical miles offshore
Emergency coastal protection works	Sand or sandbags placed on a beach in accordance with the requirements under the <i>Coastal Protection Act 1979</i> , to reduce the impacts of coastal erosion on eligible land
Estuary	Includes any part of a river whose level is affected (including intermittently affected) by coastal tides, or any partially enclosed body of water that is intermittently open to the sea
Principal Act	<i>The Coastal Protection Act 1979</i>

Summary

The *Coastal Protection Act 1979* (the principal Act) is the principal legislation relating to coastal management in New South Wales. Key provisions of the principal Act include requirements relating to Ministerial concurrences for certain developments in the coastal zone, and requirements relating to preparing coastal zone management plans. It also includes order powers relating to unlawful dumping of material on beaches.

The *Coastal Protection Act 1979* was recently amended by the *Coastal Protection and Other Legislation Amendment Act 2010* (the amendment Act). These amendments included new provisions allowing landowners to temporarily place sand or sandbags as emergency coastal protection works under certain conditions. The amendments also improved the arrangements for preparing coastal zone management plans and the order powers relating to unlawful dumping on beaches, and increased penalties for a breach of the principal Act.

The primary objective of the proposed Coastal Protection Regulation 2011 is to support the recent amendments to the *Coastal Protection Act 1979*. The main provisions of the proposed Regulation are:

- requirements relating to emergency coastal protection works by landowners, to be specified in a proposed Code of Practice under the Regulation
- requirements relating to Ministerial concurrences which must be obtained before carrying out certain off-shore development activities, similar to the requirements in the Coastal Protection Regulation 2004
- defining the arrangements for categorising land according to its vulnerability to coastal hazards and the likely public authority response to these hazards, based on information in council coastal zone management plans
- penalty notice arrangements for minor offences under the Act
- provisions enabling a Coastal Authority to delegate some of their functions
- transitional provisions relating to the amendment Act.

This Regulatory Impact Statement (RIS) fulfils the requirements of the *Subordinate Legislation Act 1989* for the making of statutory rules and is consistent with the NSW Better Regulation Office's *Guide to Better Regulation*.

This RIS explains the need for government action, states the objectives of that action, and analyses the costs and benefits of a range of options. This RIS canvasses four options for responding to the recent amendments to the *Coastal Protection Act 1979*:

- **Option 1 (Base case)** – No regulation would be instated.
- **Option 2 (Coastal Protection Regulation 2011)** – Coastal Protection Regulation 2011 would be made.
- **Option 3 (Reinstate previous provisions of Regulation)** – Coastal Protection Regulation 2004 provisions would be included unchanged in a new regulation.
- **Option 4 (Other)** – No regulation would be prepared and alternative policy instruments would be implemented.

An assessment of the costs and benefits of alternative options available to achieve the objectives of the principal Act shows that anticipated benefits of the proposed Coastal Protection Regulation 2011 will outweigh the anticipated costs, and that it provides the largest net benefits compared to other available alternatives. Option 2, the proposed Coastal Protection Regulation 2011, is therefore the preferred option for achieving the objectives.

1 Introduction

1.1 The proposed new principal Regulation

A new principal Regulation is proposed under the *Coastal Protection Act 1979*. The Coastal Protection Regulation 2004 lapsed in September 2010. The proposed new principal Regulation has been developed to support amendments to the *Coastal Protection Act 1979* (the principal Act) by the *Coastal Protection and Other Legislation Amendment Act 2010* (the amendment Act), which was passed by Parliament in October 2010. The majority of these amendments commenced on 1 January 2011.

This report is a Regulatory Impact Statement (RIS) for the making of the proposed Coastal Protection Regulation 2011.

1.2 The Regulatory Impact Statement

A key aim of the *Subordinate Legislation Act 1989* is to improve the quality of regulatory proposals and to assess the economic and social impacts of the Regulations and alternative options before they are introduced. This process helps to ensure that Regulations have continuing relevance and that they provide the best approach to meet the objectives proposed.

Before a new Regulation can be made, a RIS must be prepared and public consultation undertaken. The purpose of the RIS is to ensure that the new Regulation provides the best approach for achieving the desired objective. The RIS must provide justification for a proposed Regulation by showing that it provides the greatest net benefit or least cost to the community compared with its alternatives.

A RIS generally contains the following:

- a statement of the objectives of the Regulation and the reasons for them (see section 3.1)
- an identification of alternative regulatory options (see section 5)
- an assessment of the costs and benefits of the proposed Regulation and alternatives (including the option of doing nothing) (see section 6)
- an evaluation as to which option provides the most cost effective outcome (see sections 6 and 7)
- a statement of the public consultation process to be undertaken (see section 8)

Where possible, quantification of costs and benefits should be attempted. Where quantification is not possible, the anticipated impacts of the proposed Regulation and the alternative options should be described to facilitate a clear comparison of costs and benefits.

The RIS is consistent with the NSW Better Regulation Office's *Guide to Better Regulation*.

2 Legislative and policy context

2.1 Summary

Proposed Regulation:	Proposed Coastal Protection Regulation 2011
Principal Act:	<i>Coastal Protection Act 1979</i>
Responsibility:	Minister for Climate Change and the Environment

2.2 Overview of instruments relevant to the proposed Regulation

Objects of the Coastal Protection Act 1979

The objects of the *Coastal Protection Act 1979* (the principal Act) are to provide for the protection of the coastal environment of the State for the benefit of both present and future generations and, in particular:

- (a) to protect, enhance, maintain and restore the environment of the coastal region, its associated ecosystems, ecological processes and biological diversity, and its water quality
- (b) to encourage, promote and secure the orderly and balanced utilisation and conservation of the coastal region and its natural and man-made resources, having regard to the principles of ecologically sustainable development
- (c) to recognise and foster the significant social and economic benefits to the State that result from a sustainable coastal environment, including:
 - i. benefits to the environment
 - ii. benefits to urban communities, fisheries, industry and recreation
 - iii. benefits to culture and heritage and
 - iv. benefits to the Aboriginal people in relation to their spiritual, social, customary and economic use of land and water
- (d) to promote public pedestrian access to the coastal region and recognise the public's right to access
- (e) to provide for the acquisition of land in the coastal region to promote the protection, enhancement, maintenance and restoration of the environment of the coastal region
- (f) to recognise the role of the community, as a partner with government, in resolving issues relating to the protection of the coastal environment
- (g) to ensure co-ordination of the policies and activities of the NSW Government and public authorities relating to the coastal region and to facilitate the proper integration of their management activities and
- (h) to encourage and promote plans and strategies for adaptation in response to coastal climate change impacts, including projected sea level rise.

Coastal Protection and Other Legislation Amendment Act 2010

The objectives of the *Coastal Protection and Other Legislation Amendment Act 2010* (the amendment Act) were to make amendments to the principal Act and other legislation to deal with coastal erosion and projected sea level rise, including amendments relating to the following:

- (a) the improvement of the operation and enforcement of the principal Act
- (b) providing that certain temporary coastal protection works (such as sandbags) may be placed on beaches and sand dunes to mitigate coastal erosion in specified circumstances without obtaining development consent or other specified permissions and
- (c) enabling local councils to make and levy an annual charge for the provision of coastal protection services (such as services to maintain coastal protection works or to manage the impacts of such works) on rateable land that benefits from such services, through amendments to the *Local Government Act 1993*.

2.3 Policy context

The 1997 NSW Coastal Policy sets the context in providing for population growth and economic development at the same time as protecting the natural, cultural, spiritual and heritage values of the coastal environment. To achieve this, the Policy has a strong integrating philosophy based on the principles of ecologically sustainable development (ESD).

The NSW Government announced a coastal erosion reform package in October 2009. This package was developed in recognition that coastal communities and local councils are facing difficult issues associated with coastal erosion along the NSW coastline. The reform package aims to better equip the State, local councils and communities with the tools needed to deal with the challenges of coastal erosion. The reforms include amendments to legislation (including the *Coastal Protection and Other Legislation Amendments Act 2010*), new guidelines, and additional support for councils to re-energise their planning processes.

The reform package extends the current framework for managing coastal erosion risks, through the NSW Coastal Policy and the principal Act. This framework sees local councils, with financial and technical support from the State, undertaking coastal hazard studies and developing coastal zone management plans which then inform land-use planning, development controls and coastal activities. These plans and the related planning schemes should contain a range of suitable management strategies to inform the community about how coastal erosion will be dealt with in their communities and how individual landowners of properties at risk can and should respond.

Elements of the reforms are focused on coastal erosion 'hot spots'. These locations have been identified on the basis that five or more homes and/or a public road have been identified in a coastal hazard study prepared by local councils as being currently vulnerable to coastal erosion. There are other locations along the coastline where less than five houses have been found to be vulnerable to erosion. Table 1 provides the locations of these 'hot spots'. Approximately 40 houses are known to have been lost to erosion in recent decades and around 200 are currently under threat, predominantly at these 'hot spots'.

The Minister administering the *Coastal Protection Act 1979* intends to issue a direction to councils with hot spots to prepare coastal erosion emergency action plans by July 2011 and complete their coastal zone management plans within 12–18 months.

Table 1 Coastal erosion 'hot spots'

	Local government area	Location
1	Byron Shire Council	Belongil Beach
2	Ballina Shire Council	Lennox Head
3	Clarence Valley Council	Brooms Head
4	Clarence Valley Council	Wooli
5	Port Macquarie–Hastings Council	Lake Cathie
6	Greater Taree City Council	Old Bar Beach
7	Great Lakes Council	Jimmy's Beach
8	Wyong Shire Council	The Entrance North
9	Wyong Shire Council	Noraville
10	Wyong Shire Council	Norah Head
11	Gosford City Council	Wamberal/Terrigal
12	Pittwater Council	Bilgola
13	Pittwater Council	Mona Vale
14	Warringah Council	Collaroy/Narrabeen
15	Eurobodalla Shire Council	Batemans Bay

Source: www.environment.nsw.gov.au/coasts/coasthotspots.htm

3 The proposed Regulation

3.1 Need and objectives

The recent amendments to the *Coastal Protection Act 1979* envisaged supporting provisions to be provided in regulations, in particular:

- additional requirements relating to the placement, maintenance and removal of emergency coastal protection works
- defining the arrangements for categorising land according to its vulnerability to coastal hazards and the likely response of public authorities to these hazards
- penalty notice amounts for minor offences under the Act
- the ability for a Coastal Authority (e.g. the Minister administering the Act and a local council) to be able to delegate certain powers under the Act
- savings and transition provisions relating to the amendment Act.

Another role for the regulations under the Act relates to activating the requirements for Ministerial concurrences under the Act which must be obtained before carrying out certain developments. Principal regulations under the Act in 1979, 1994 and 2004 activated these concurrence requirements for off-shore activities.

The proposed Regulation therefore includes provisions relating to:

- regulation of coastal development (Part 2 of the proposed Regulation)
- emergency coastal protection works (Part 3 of the proposed Regulation)
- categorisation of coastal hazards to land (Part 4 of the proposed Regulation)
- delegation arrangements for Coastal Authorities, penalty notice arrangements and transitional provisions (Part 5 of the proposed Regulation)

If no provisions were included in a regulation relating to the above, the following circumstances would arise:

- Ministerial concurrences would not apply for offshore developments not subject to Part 3A or Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This may result in impacts on the coastline from some offshore activities where the impacts may not have occurred if a Ministerial concurrence had been obtained under the Act, with suitable conditions.
- Only the relatively limited provisions in the Act relating to placing, maintaining and removing emergency coastal protection works would apply from 1 September 2011¹. These provisions are not considered adequate to ensure that the works present a low public safety risk or minimise impacts on beaches, including beach amenity.
- The provisions allowing the Minister to categorise land and for councils to include this information on section 149 certificates under the EP&A Act would not be put into effect. This would reduce the ability of potential purchasers of coastal land to identify the coastal hazards that currently or are likely to apply to the land.

¹ The Act allows for additional requirements to be specified and gazetted by the Minister, which occurred on 31 December 2010 (*Minister's Requirements under the Coastal Protection Act 1979*, DECCW 2010). However, the Act does not allow these requirements to apply to works placed from 1 September 2011.

- Many of the functions of a Coastal Authority would need to be carried out only by the Authority (e.g. issuing identification cards and orders to remove illegal works). Including delegation powers would simplify the administrative arrangements without loss of accountability.
- Court action would need to be taken by DECCW and local councils for relatively minor offences under the Act, where the costs of court action may be high relative to the penalty applied.
- Coastal zone management plans submitted to the Minister for approval prior to the recent amendments to the principal Act would need to be modified to comply with the new requirements under Part 55C of the Act. This is not considered reasonable, as the plans were prepared in accordance with the statutory requirements that applied when the plans were submitted for approval.

The objectives of the Regulation are therefore to:

- activate Ministerial concurrence provisions for offshore developments which have the potential to result in a significant risk to the coastline
- specify requirements for placing, maintaining and removing emergency coastal protection works to minimise public safety risks, as well as impacts on beaches and adjacent land
- specify that the categorisation of land according to its coastal hazard vulnerability is to be in accordance with the categories identified in coastal zone management plans
- include appropriate delegation provisions for Coastal Authorities for administrative efficiency
- define penalty notice amounts for minor penalties
- not require coastal zone management plans submitted prior to 1 January 2011 to meet the new requirements for these plans under section 55C of the principal Act.

In this RIS, the three significant elements of the Regulation are labelled:

- emergency coastal protection works (ECPW)
- regulation of development within the coastal zone (RDCZ) and
- categorisation of hazard and hazard response for coastal land (HRCL).

3.2 Key provisions

Table 2 provides an overview of the major provisions of the proposed Regulation (excluding the penalty notice, delegation and transitional provisions). This allows the assessment of costs and benefits of these major provisions to those affected by the proposed Regulation.

Table 2 Summary of the key provisions under the proposed Regulation

		Notes
1	Emergency coastal protection works	Procedure to allow coastal landowners to erect emergency coastal protection works without requiring any other regulatory approvals
	<i>Requirements:</i> Compliance with the requirements of section 55P, on a beach, or a sand dune adjacent to a beach, to mitigate the effects of wave erosion on land. There are requirements relating to the placement, maintenance and removal of these works.	
2	Regulation of development within the coastal zone	Provisions to regulate the use or occupation of land, and the carrying out of development of land, that apply to a specified area within the coastal zone.
	<i>Requirements:</i> These provisions are essentially a remake of the expired Coastal Protection Regulation 2004 with amendments to ensure that concurrence is only required for developments with the potential to present a high risk to the coastline.	
3	Categorisation of hazard and hazard response for coastal land	Categorisation of land within the coastal zone into risk and response categories according to the level of the risk that particular land will be adversely affected by coastal hazards and the likely public response based on cost effectiveness of possible actions.
	<i>Requirements:</i> Determination by the Minister of the risk category to which particular land is to be allocated and the likely response of public authorities to the risks posed by coastal hazards to land within the coastal zone. It is required that the categorisations are included in certificates under section 149 of the <i>Environmental Planning and Assessment Act 1979</i> .	

The proposed Regulation has varying application depending on the major element of the Regulation. Table 3 provides description of the scope of application and the parties affected directly by the proposed Regulation.

Table 3 Scope of the proposed Regulation

Element	Scope	Parties directly affected
Emergency coastal protection works	Coastal landowners who erect emergency coastal protection works on a beach, or a sand dune adjacent to a beach, to mitigate the effects of wave erosion on land at authorised locations.	A sub-section of coastal landowners Indirectly: Adjacent landowners, general public
Regulation of development within the coastal zone	The regulatory provisions apply to that part of the coastal zone below the mean high water mark, excluding any estuary, lake or artificial harbour.	Any entity or person (including a public authority) that wishes to carry out a development on any part of the relevant area (subject to exceptions) Indirectly: General public
Categorisation of Hazard and hazard response for coastal land	A CZMP must refer to the geographic area covered by the CZMP (e.g. a section of coastline, an estuary or the entire coastal zone in a council area). A CZMP can be prepared for the entire coastal zone in a council area (i.e. coastline and estuaries), an estuary or number of estuaries, or a stretch of coastline. Categorisations made under a CZMP must be reported on Section 149 Certificates and are therefore available to landholders and existing landholders.	Coastal councils Indirectly: landholders and potential landholders

3.3 Background to elements of the proposed Regulation

3.3.1 Emergency coastal protection works (ECPW)

The principal Act provides an additional option for beachfront landowners potentially vulnerable to coastal erosion, allowing them to place sand or sandbags as emergency coastal protection works, under specified conditions.

In the past, rocks, building debris and other inappropriate materials have been placed in an emergency at locations such as Belongil, Collaroy and Narrabeen beaches. These works have negatively affected the community's enjoyment of these beaches and in some cases have presented a public safety risk.

Landowners will be able to place emergency works once for any parcel of land and may also place them on adjacent private land, with that owner's agreement. The emergency works can normally be placed for up to 12 months. The intent of the amendment Act and Regulation in this regard is to provide the landowner with an opportunity to consider longer-term options for managing erosion risks. The emergency works provision is designed as an interim measure to allow owners time to consider longer term options for managing erosion risks, with the potential to include seeking approval for more permanent and appropriate works.

The controls on emergency works aim to avoid erosion of neighbouring land, but not present a public safety risk, unreasonably affect access to a beach or significantly impact on beach amenity. The proposed Regulation includes requirements relating to the placement, maintenance and removal of emergency coastal protection works (ECPW) through a proposed Code of Practice under the Regulation. This Code will be similar to the *Minister's*

Requirements under the Coastal Protection Act 1979 (DECCW 2010b), gazetted by the Minister in December 2010.

Table 4 notes the locations where landowners may be able to place ECPW under the provisions of the principal Act, the proposed Regulation and the proposed Code. These include most of the 'hot spot' locations (Table 1) other than those where a public road exists between the eligible property and the beach. Additional locations in Table 4 are those areas where less than five houses are known to be vulnerable to coastal erosion. The number of houses at risk in this table is from coastal hazard studies prepared by local councils.

Table 4 Potential emergency coastal protection works locations

Location	Houses at risk*	Potential houses where owners could place ECPW
Belongil	21	Nil**
Brooms Head	13	Nil**
Wooli	25	25
Old Bar Beach	0	Nil
The Entrance North	10	10
Noraville	5	5
Norah Head	8	0
Wamberal/Terrigal	52	~ 20**
Pearl Beach	1	1
Bilgola	7	7
Mona Vale	16	16
Collaroy/Narrabeen	49	~ 20**
Mollymook	1	1
Total	208	~ 105

* Likely to be lost or severely damaged from erosion during a severe storm or a series of severe storms (e.g. coastal erosion with an annual probability of occurring of approximately 1 per cent in a given year).

** Existing coastal protection works (e.g. ad hoc rock seawalls) exist seaward of some/all houses at risk – the proposed Regulation would not permit ECPW to be placed where existing works provide a higher degree of protection.

Welfare implications

The potential effects on the well-being of the community that may result from the ECPW include:

- protection of beach-related tourism and recreation
- reduced threats to buildings and infrastructure due to beach erosion and
- reduced risk to public safety due to application of guidelines on building, maintaining and removing ECPWs.

3.3.2 Regulation of development within the coastal zone (RDCZ)

The proposed Regulation maintains the requirement for the Minister to continue to issue concurrences for some offshore activities that may present a risk to the NSW coastline. This section of the Regulation aims to ensure that development does not adversely affect coastline processes within the offshore marine waters of the coastal zone.

Due to exemptions in the principal Act (section 37B) and the EP&A Act (section 75U), Ministerial concurrences are normally only required for activities which are assessed under Part 5 of the EP&A Act. This avoids duplication with the assessment arrangements for developments under Part 3A and Part 4 of the EP&A Act and the exempt development arrangements for developments with low environmental impacts.

The proposed Regulation is to apply to such part of the coastal zone as is below the mean high water mark, excluding any estuary. Under this circumstance, 'estuary' means:

- a. any part of a river whose level is periodically or intermittently affected by coastal tides or
- b. any lake or other partially enclosed body of water that is periodically or intermittently open to the sea.

Threats to the coastal zone include:

- *Off-shore mining and exploration:* Off-shore mining and exploration have the potential to significantly alter coastal processes and profoundly influence the stability of beaches (in this context, mining includes mining for sand).
- *Disposal of vessels by sinking:* From time to time vessels are disposed of by sinking – in particular for the purpose of creating an artificial reef for diving. Under the previous Regulation there was one instance with the scuttling of the ex-HMAS Adelaide as an artificial reef offshore off Avoca Beach.
- *Pipelines and cables crossing the seabed and near shore areas:* Pipelines and cables can affect coastal processes. Additionally, there may be visual amenity impacts on beaches. An example of an optical fibre cable at Collaroy/Narrabeen in Sydney highlights the role of the Regulation.
- *Land-based structures extending beyond the shoreline:* Development of groyne structures and supplementary beach nourishment may impact on coastal processes. In some cases, these structures are designed to mitigate the impacts of long-term erosion to threatened assets at the back of the beach and in turn, enhance the recreational amenity of historically degraded foreshores and beach areas effects. Modifications to boat harbour and marina projects have been the subject of Ministerial concurrence.
- *Marine-based aquaculture projects:* Marine based projects can affect coastal processes. Since 2004 there have been few proposed developments, with a seawater intake and associated infrastructure for a lobster operation being the only example of this type of development.
- *Sewage ocean outfalls:* Sewage ocean outfalls can extend beyond the local government area (LGA). This type of development has been proposed by water corporations. These have included modifications to existing ocean outfalls and also the proposed demolition of ocean outfalls.
- *Maintenance dredging and supplementary artificial sand nourishment:* Clean dredged sand spoil can be used to artificially nourish or supplement beaches. The continued pressure for dredging to maintain navigable ocean entrances and artificial nourishment of ocean beaches to improve recreational amenities is anticipated to become more important. In the past decade, concurrence has been provided for the dumping of dredge spoil from the Hunter River and Port Hacking.

Although other government agencies have similar regulatory or concurrence roles in the coastal zone (e.g. Industry & Investment NSW under the *Fisheries Management Act 1994*, focusing on fish habitat impacts), none address the impacts of offshore developments on

physical coastline processes and sediment transport, coastline hazards, and hazard management in circumstances where the development is not assessed under Part 3A or Part 4 of the EP&A Act.

Exemptions

To ensure that concurrence is only required where there is a high risk to the coastal zone, the concurrence of the Minister is not required if the development consists of, or the use and occupation of land is for the purpose of, any of the following:

- the dredging of sediments from the seabed, when the dredging occurs in water depths greater than 30 metres below mean sea level and the volume of sediments removed is less than 100 cubic metres per year
- the placement of sediment on the seabed where the water depth following the placement would be greater than 30 metres below mean sea level and the volume of sediments placed is less than 10 000 cubic metres per year
- the placement of any solid object on the seabed where the top of the object, when placed, would be at a depth more than 30 metres below mean sea level and
- the temporary disturbance of the seabed associated with the carrying out of development under the seabed is less than 30 days at any location.

These thresholds have been developed using an expert approach within the DECCW. Disturbances to the sea bed at depths greater than 30 metres are considered unlikely to impact on coastal processes, particularly shoreline movement. In addition, excavation of offshore sediments is considered likely to result in a higher potential for a negative impact to the shoreline than the deposition of sediment; hence a lower threshold was adopted for dredging.

Activities above these thresholds are considered to have the potential to impact negatively on the coastline and warrant assessment under the concurrence process.

History

There were 24 Ministerial concurrences made under the *Coastal Protection Act 1979*, or an average of almost four per year, during the life of the previous Regulation. The majority of these developments were proposed by government departments or state-owned corporations. Five were by local government and four by private companies.

Local Government Areas where the developments were located were Shellharbour, Newcastle, Tweed, Wollongong, Sutherland, Warringah, Coffs Harbour, Gosford City, Sutherland and Shoalhaven. An outline of the types of developments that were provided concurrence since 2004 is provided in Table 5.

Table 5 Coastal Protection Regulation 2004 – concurrence register

Year	Type of development	Year	Type of development
2004	Ocean outfall	2007	Marina
2005	Ocean outfall	2007	Dredge spoil
2005	Seawater intake	2007	Dredge spoil
2005	Breakwater	2007	Cable
2006	Dredge	2008	Dredge spoil
2006	Rock groyne	2009	Dredge spoil
2007	Dredge spoil	2009	Dredge spoil
2007	Dredge spoil	2009	Dredge spoil
2007	Marina	2009	Dredge spoil
2007	Dredge spoil	2009	Boat launching ramp
2007	Dredge spoil	2010	Artificial reef
2007	Harbour	2010	Dredge spoil

Source: DECCW

Of the developments approved by DECCW between 2004 and 2010, 54 per cent had conditions placed on the concurrence.

The *Environmental Planning and Assessment Act 1979* was amended in 2005 so that activities under Part 3A of that Act did not require concurrence under the *Coastal Protection Act 1979*. Some of the types of development activities (for which concurrences were issued under the 2004 Regulation) would no longer require a concurrence under the Coastal Protection Act.

The Coastal Protection Act was amended by the *Environmental Planning and Assessment Amendment Act 2008* to exclude a further category of development:

- development that requires development consent under the EP&A Act or is exempt development under that Act or
- is carried out in accordance with a coastal zone management plan.

These amendments, which commenced on 1 January 2011, would exclude further types of development activities, for which past concurrences have been issued, from requiring concurrence.

The majority of the projects for which concurrences were issued under the 2004 Regulation would, under the current arrangements, be assessed under Part 3A or Part 4 of the EP&A Act. The type of projects that previously required concurrence and would still require concurrence include large dredging projects, a breakwater extension, and the scuttling of a ship to create an artificial reef, as they are wholly within the coastal zone and aspects of the development exceed greater than the thresholds.

Seven of the projects from the past would require concurrence if assessed under the proposed Regulation assuming the same project details and no thresholds. The thresholds defined in the proposed Regulation mean that only four of these projects would be assessed under the Regulation.

That is, around 30 per cent of proposals would have required concurrence if no thresholds were included, and 17 per cent require concurrence under the proposed threshold. The balance would be assessed under Part 3A, Part 4 or Part 5 of the EP&A Act – the Part 5 assessment occurs for projects not assessed under Parts 3A or 4 which are below the proposed thresholds.

Welfare implications

When high risk projects and activities are not subject to concurrence, the potentially adverse effects on the well being of the community could be expected to include the following:

- reduction in the quality of experience for beach-related tourism and recreation
- impediments to beach based fisheries (i.e. where hauling nets and other methods are used to catch fish off beaches)
- threats to buildings and infrastructure due to beach erosion
- need for dune stabilisation and management and
- adverse effects on the value of properties located along the coast.

3.3.3 Categorisation of hazard and hazard response for coastal land (HRCL)

As noted in section 2.3, councils in coastal erosion hot spots will be required to prepare coastal zone management plans. Under the statutory *Guidelines for Preparing Coastal Zone Management Plans* (DECCW 2010b) adopted by the Minister, these plans are to categorise any parcels of land vulnerable to coastal hazards according to the degree of the hazard and the intended public authority response to these hazards. These categories are presented in Tables 6 and 7.

Table 6 Hazard vulnerability categories

Risk category	Hazard area (level of risk)
1	Current hazard area (likely to be affected by hazard now)
2	2050 hazard area (likely to be affected by hazard in the next 40 years)
3	2100 hazard area (likely to be affected by hazard in the next 40–90 years)

Table 7 Coastal hazard response category

Response category	Intended public authority response
A	Coastal protection works are considered technically feasible and cost effective – funding is being sought for implementation
B	Coastal protection works are considered technically feasible but not cost-effective for public funding – unlikely to be implemented by a public authority
C	Coastal protection works are not considered technically feasible – no intended public authority works

Under section 4 (1) of the principal Act, a coastal hazard is defined as:

- beach erosion
- shoreline recession

- coastal lake or watercourse entrance instability
- coastal inundation
- coastal cliff or slope instability
- tidal inundation and
- erosion caused by tidal waters, including the interaction of those waters with catchment floodwaters.

Coastal zone management plans must be prepared in consultation with the community and must be made publicly available, including on council's website. These plans must be submitted to the Minister for certification under the Act and adopted and published in the Gazette by the council. The plan takes effect after it is gazetted.

The amendment Act includes provisions enabling a regulation to establish a scheme for identifying the vulnerability of land to coastal hazards and the likely public authority (e.g. council) response to these hazards. The amendment Act requires this information to be included on section 149 certificates under the EP&A Act. This will assist future purchasers to better understand the erosion problems associated with a particular parcel of property.

The proposed Regulation establishes the arrangements to enable these provisions in the Act to be implemented. The proposed arrangements provide for the Minister's certification of a council's CZMP to be the basis for the requirement to include hazard and response categories on each property's section 149 certificate. This arrangement avoids the need for separate categorisation of land for the purposes of the Act, utilising categories developed with public input which are already made publicly available through council's CZMP.

The proposed Regulation will require from 45 days after the commencement of a coastal zone management plan (i.e. after gazettal), the relevant council would be required to include, in any certificate issued under section 149 of the *Environmental Planning and Assessment Act 1979* in respect of any land covered by the plan, a statement of the following:

- where applicable, the risk category of the land for each coastal hazard from the CZMP
- where applicable, the likely response of the council to the risks posed by beach erosion and shore recession to the land from the CZMP.

The total length of the NSW Coast (excluding all offshore islands) is 1973 km (Department of Environment 2006). It is estimated that in 2004 there were 524 km of this coast classed as urbanised using remote sensing.

It is estimated that in the next five years, approximately 150–200 km of the coastal zone will be included in CZMPs. There is a very low proportion of privately held beachfront property, estimated at 1 per cent of the entire parcels of land along the coastal zone. The majority of beachfront land is in public ownership (e.g. reserved under the national Parks and Wildlife Act or Crown land). Most private land ownership in the coastal zone is not beachfront but some of this land can be affected by coastal hazards (e.g. erosion of foreshore public land).

Based on available council coastal erosion hazard definition studies, some 200 properties (see Table 4) are likely to be categorised in hazard category 1 (mainly at coastal erosion hot spots). Approximately 600 further properties at these hot spots are likely to be in hazard category 2 or 3.

These estimates indicate that the inclusion of information on section 149 certificates is likely to affect a relatively small number of coastal properties and if this information was used when market transactions take place, the affect on the overall market should be minimal. The Regulation serves to ensure that information about property that may otherwise be hard to locate in coastal zone management plans is readily accessible to buyers and sellers.

Efficiency of property markets

The maximisation of social welfare in a competitive market relies on market prices being reflective of all costs and benefits. If all agents, both buyers and sellers, are able to maximise their personal welfare through responding to fully informed price signals, then social welfare is maximised. Market failure is said to occur when prices fail to provide buyers and sellers with full and symmetrical information. Where market failure occurs, social welfare may not be maximised.

Therefore, any action, government intervention or otherwise, that provides for greater information to both buyers and sellers, should enhance social welfare. The cost of providing this information will be modest compared to the value of the information provided.

Welfare implications

The categorisation provisions in the proposed Regulation will reduce the potential for misinformation to impair the efficiency of property markets, by ensuring that the results of a council's coastal planning processes are clearly communicated to those who most need to know.

3.3.4 Other provisions

The recent amendments to the principal Act establish Coastal Authorities, which can exercise specified functions under the Act. These Authorities include the Minister administering the Act and local councils. The powers of these Authorities include appointing authorised officers, and issuing orders relating to unlawful works on beaches or inappropriate ECPW. Section 9 of the principal Act allows the Coastal Authority to delegate functions to a class of persons authorised by the Regulation. The proposed Regulation allows for the Minister to delegate his functions as a Coastal Authority to DECCW staff and for councils to delegate to their General Manager. The costs of this delegation, which have not been considered further in this RIS, will be minimal as there will be administrative efficiency benefits. .

There are two penalty notices offences and associated penalties specified in the proposed regulation. These are outlined in Table 8.

Table 8 Penalty notice offences

Offences under the Act	Provision penalty	Note
Section 55X Notice to council and others of placement of emergency coastal protection works	\$550 for an individual \$1100 for a corporation	Ensures compliance with notification requirements
Section 55ZE (5) Not paying the fee set to recover the administrative costs of a coastal authority to prepare and give orders within the time provided	\$1100	Aims to ensure payment of fees levied

The amendment Act provides for expedited authorisation of protective works, including access to and use of public land by private parties. These benefits are carefully balanced with potential impacts on public assets and access, so it is important that there are mechanisms to maximise compliance.

The penalties relate to procedural processes that play an important role in ensuring that any ECPW are known by a coastal authority and can be assessed against the guidelines. The penalties are unlikely to have a significant effect on government revenue but ensure that the intent of the Act to allow ECPW does not lead to adverse outcomes. This could occur if the emphasis on notification and planning for permanent works is maintained by the possibility of penalty to an individual or corporation.

In this analysis it is assumed that for the small number of potential allowable ECPW the role of the penalty in raising awareness adds to the effectiveness of the amendment Act.

The proposed Regulation includes transitional arrangements relating to CZMPs submitted to the Minister by councils for approval prior to 1 January 2011. This is the date when the related amendments to the principal Act by the amendment Act commenced. Two CZMPs were being considered by the Minister prior to this date. The transitional arrangements would require that the contents of the plan comply with the statutory requirements that applied at the time the plans were submitted by councils for the Minister's approval. The costs associated with this provision are negligible and the benefits include councils avoiding the costs of updating their plans to meet the new requirements. The costs and benefits have not been considered further in this RIS.

4 Overview of coastal assets

4.1 Economic valuation of coastal assets at risk

The following sections outline the values associated with the coastal zone of NSW as defined under the principal Act. These have been estimated on the basis of approximations of consumer and producer surpluses. In some cases this has been possible where market values are available and in the case of non-market values, values have been drawn from economic valuation studies (e.g. willingness to pay, travel cost).

In all cases, the estimated values have been reported in 2009 dollars and where a capitalised value has been estimated on the basis of an assumed loss, capital values have been estimated using a discount rate of 7 per cent, consistent with *NSW Treasury Guidelines for Economic Evaluation*, and over 40 years. A summary of values is provided in Table 11 at the end of this chapter.

4.1.1 Tourism

Improper or inadequate management of coastal assets has the potential to reduce the quality of beach and other coastal tourism. The value of tourism at risk has been estimated on the basis of visitor nights of accommodation in coastal local government areas (LGAs) and an estimate of average daily expenditure by tourists, as shown in Table 9.

Table 1 Estimated revenue from tourism in coastal LGAs of NSW

Local government area	Number of beds ¹	Estimated number of visitor days (days per yr) ²	Total revenue (\$million per year) ³
Ballina	3 109	567 393	38
Bega Valley	9 975	1 820 438	121
Bellingen	577	105 303	7
Byron	7 270	1 326 775	88
Clarence Valley	5 998	1 094 635	72
Coffs Harbour	10 241	1 868 983	124
Eurobodalla	11 355	2 072 288	137
Great Lakes	11 382	2 077 215	138
Greater Taree	3 458	631 085	42
Hastings	8 571	1 564 208	104
Kempsey	4 986	909 945	60
Kiama	1 783	325 398	22
Lake Macquarie	4 146	756 645	50
Nambucca	1 342	244 915	16
Port Stephens	15 023	2 741 698	182
Richmond Valley	nr ⁴	–	–
Shellharbour	nr	–	–
Shoalhaven	19 826	3 618 245	240
Tweed	6 604	1 205 230	80
Total	125 646	22 930 395	1 518

1 Source: ABS Regional Statistics 2007. Includes capacity in motels, hotels, hostels, caravan parks and guest houses.

2 Estimated on the basis of bed numbers and assuming 50 per cent average annual capacity.

3 Average daily spend across of all international tourists 2001–2004 reported to be \$94 (Dwyer et al. 2006), and, adjusted to 2009 terms, \$111 per day. Gillespie & Clarke (2005) used a daily value of beach visits to be \$19, which adjusted to 2009 terms is \$21.40 per day. An average of these two, \$66 per day, has been used to calculate the total value.

4 Not reported.

Visitor nights recorded in the Sydney, Hunter and Illawarra urban coastal LGAs have not been included, as visits to these large areas would be for a broad range of intentions, not only those related to beach and coastal environments. However, many visits to these urban coastal LGAs will have some element related to beach and coastal related experiences. The potential damage costs estimated therefore would be understated and provide a conservative estimate of the full damage that might be incurred in all coastal areas of the State. Similarly, not all visitor nights in those coastal LGAs included will be related to beach or coastal related experiences; however, it is assumed that 50 per cent would be in related in a significant way.

The revenue of tourism in relevant coastal LGAs of NSW has been estimated to be \$759 million per annum on this basis. On the assumption of a typical 40 per cent net revenue, the total estimated producer surplus associated with tourism in regional coastal NSW is estimated to be in the order of \$300 million per annum.

4.1.2 Recreation

Tourism is usually defined as visitors travelling from more than 40 km away while recreation is confined to visitors travelling less than 40 km from a site and so the distinction is made between tourism and recreation in reviewing values. Using the travel cost method to estimate the imputed value of recreation on beaches on the North Coast of NSW, Pitt (1992a) estimated the willingness to pay for recreation on beaches was estimated to be \$143 per visitor per year (1991 prices). The recreation values in 2009 dollars per kilometre of beach have been estimated to be:

- Lower North Coast – \$790 000 per annum
- Mid North Coast – \$3 400 000 per annum
- Far North Coast – \$1 000 000 per annum.

As an indication of the risk to recreational values, assuming a discount rate of 7 per cent, the capitalised lost value of 1 per cent of 1 km of beach², used for recreation would be:

- Lower North Coast – \$106,000
- Mid North Coast – \$460,000
- Far North Coast – \$140,000.

An alternative approach to valuation was undertaken by Gillespie and Clarke (2005), who estimated the value of recreational beach visits by residents and found the value to be \$12 million per annum across all coastal LGAs. This estimate used a willingness to pay of \$19 per day of beach visit and the assumption that all residents of coastal LGAs visit the beach for an average of only one day per year. In 2009 dollars their estimate would be equivalent to \$14 million and a 1 per cent loss capitalised over 40 years at 7 per cent would be \$1.8 million. Gillespie and Clarke (2005) separately estimated the recreational value of NSW coastal fishing to be \$12 million per annum. In 2009 values this is was equivalent to \$13 million per annum or a capitalised 1 per cent loss of \$2 million at 7 per cent over 40 years.

² These values of recreation are based on the PV of the annual values over 40 years

4.1.3 Beach-based fisheries

A number of commercial fisheries depend on beach access to facilitate their catch. These include garfish net hauling, ocean hauling, pilchard, anchovy or bait net, and hand gathering. In the four years to 2007–08, these fisheries landed an average of 3328 tonnes per annum, with an estimated average annual value of \$9.39 million (Table 10).

Table 10 NSW beach-based commercial wild harvest

Year	Landings (tonnes)	Value (\$000)
2004–05	3 601	10 132
2005–06	2 990	8 765
2006–07	3 241	9 173
2007–08	3 481	9 486
5-year average totals	3 328	9 389

Source: Makin (2011).

Note: Total includes garfish net (hauling); garfish net, hauling (beach); hauling net (beach haul); pilchard, anchovy or bait net (beach); pilchard, anchovy or bait net; hand gathering (excludes hand gathering catch in estuaries).

In 2009 terms, this equals \$10.21 million. If 0.5 per cent of this value of the fishery were lost because of inappropriate coastal management activities, this would represent an annual loss of \$51 045. Assuming an average business profit in the industry of 15 per cent, the producer surplus lost annually would be \$7657. The capitalised value of this loss over 40 years, using a discount rate of 7 per cent, would be \$0.10 million.

4.1.4 Prevention of damage to buildings or infrastructure

Shoreline erosion can result from inappropriate developments in the coastal zone. The value of the costs associated with this shoreline erosion can be estimated either as the cost of the damage that occurs to adjacent buildings and infrastructure, or the cost of restoration and preventative works that are undertaken to negate the threat of damage in the future.

In 2004, the Department of Infrastructure, Planning and Natural Resources estimated that the costs per kilometre (km) to construct sea walls to engineered specifications to be \$6–8 million, plus an additional \$2 million per km for replenishment of sand (Hassall & Associates 2004). In 2009 dollars, this is equivalent to \$9–12 million.

If approval processes fail to protect beach frontages and associated buildings or infrastructure, then the costs of protection or restoration are estimated to be in the order of \$9–12 million as a one-off capitalised value. Further costs for future restoration and expenditure would be additional.

4.1.5 Dune and beach restoration and maintenance

Hassall & Associates (2004) estimated the value of restoration and maintenance of dune formations and beaches to be equivalent to \$22 000 per km of beachfront per year based on willingness to pay estimates conducted by Pitt (1992b, 1993). In 2009 terms this value is \$34 000 per kilometre. The capitalised value of this annual willingness to pay, calculated over 40 years at discount rate of 7 per cent is \$45 million per km.

More recently, AECOM (2010) estimated the cost of preserving Sydney's beaches to be more than \$700 million over the next 50 years. This is equivalent to \$23 million per km as a capitalised value on the basis that there are in the order of 30 kilometres of beach on Sydney's coastline (estimate based on 36 Sydney ocean beaches, at an average of 850 m).

4.1.6 Property values

The Australian Government has estimated that between 40 800 and 62 400 homes in NSW would be at risk from inundation under a projected sea level rise of 1.1 metres. This property is estimated to be worth between \$12 and \$19 billion, or an average of \$300 000 per residence (Australian Government 2009).

Most of these properties are in the Lake Macquarie, Gosford, Wyong, Wollongong, Shoalhaven and Rockdale local government areas and most are located near estuaries rather than along the open coastline. While many at risk homes are in these areas, hot spot areas at risk extend along the coast, as shown in Table 1 previously.

DECCW estimate that some 200 homes along the NSW coast are at risk from coastal erosion (section 3.2.1). On this basis, and using estimate of average residential values of \$300 000 (Australian Government 2009), the value of assets at risk from inappropriate development in the coastal zone is \$60 million.

4.1.7 The property market

If the total value of homes at risk of inundation from sea-level rise is \$12–19 billion (Australian Government 2009), and the annual turnover rate is 10 per cent, then the improvement in the efficiency has the potential to affect \$1.24–1.87 billion in annual turnover. To provide some context if the efficiency gain is only 0.1 per cent, the annual effect this has on the market is \$1.24–1.87 million. Quantification of any improvement in efficiency in the property market of NSW is challenging as it is dependent on the extent of misinformation in the property market on the risk of individual property to coastal erosion.

It should be noted at this point that the proposed application of the CZMP is highly targeted and it is likely that there would be a very minor impact on the overall market for coastal properties.

4.2 Summary

Table 11 provides a summary of the values estimated in this Chapter. The total values should not be summed for a cumulative total value because there is the potential for double counting. Estimates of capitalised surplus losses calculated at the margin will be used in the analysis of the costs and benefits of the options in section 6.

**Table 2 Summary of assets values and indicative potential losses
– NSW coastal zone**

Asset	Estimate gross value (in 2009 \$)	Basis	Annual surplus estimate associated with asset	Loss assumption	Value of capitalised loss (over 40 years @ 7%)	Notes
Tourism	\$759 million p.a.	ABS visitor data and visitor expenditure estimates	\$304.6 million p.a.	1% loss	\$40.7 million	Tourism (individuals travel more than 40 km to the coast)
Recreation	\$175 859 per km p.a.	Average of values on north coast as applied from Pitt (1992a)	\$175 860 per km p.a.	1% loss	\$235 550 per km	Local
	\$13.750 million p.a.	Gillespie & Clarke (2005)		1% loss	\$1.8 million	
	\$13.043 million p.a.	Gillespie & Clarke (2005)		1% loss	\$2.0 million	Recreational fishing only
Commercial fishing	\$10.209 million per annum	Makin (2011)	\$7657 p.a.	0.05%	\$0.1 million	Beach-based fisheries
Prevention of damage to buildings or infrastructure		Hassall & Associates (2004)		Avoided future cost – capital works	\$9.3–11.6 million	Future restoration would be an additional cost
Dune and beach restoration and maintenance	\$33 718 per km p.a.	Hassall & Associates (2004) and Pitt (1992b, 1993)		Avoided future costs – capital works	\$45.2 million	
		AECOM (2010)		Avoided future costs – capital works	\$23.0 million per kilometre	
Property values	\$300 000 per residence at risk	Average value reported by Australian Government (2010)		Total capital at risk	\$12.4–18.7 billion	Based on 40 800–64 400 homes at risk of inundation. Australian Government (2009)
				Capitalised loss of 5% of value	\$3 million	Based on 200 homes at risk (Table 4)

p.a. per annum

The information presented here is used as a basis for quantifying the impact of an event caused by inappropriate development in a specific coastal locality over the next 5 years. The key values considered are impacts on tourism, recreation, commercial fishing and dune restoration. It is assumed that property damage will be avoided, and that any entity that is responsible for inappropriate development will incur costs to resolve any issue.

5 Alternative options

This RIS examines policy initiatives to support the objectives of the principal Act by focussing on the following three major components of the proposed Regulation:

1. emergency coastal protection works (ECPW)
2. regulation of development within the coastal zone (RDCZ)
3. categorisation of hazard and hazard response for coastal land (HRCL).

As required by Schedule 2 of the *Subordinate Legislation Act 1989*, policy objectives corresponding to each of these, alternative options by which the objectives can be achieved, and an assessment of the costs and benefits of each alternative option, including the option of not proceeding with any action, are discussed below.

5.1 Options evaluated

In order to assess the alternative options (and specifically the costs and benefits of a proposal), it is necessary to compare the options to a common base line, or base case. Generally, and in this RIS, the base case is where no Regulation is enacted. The four options considered are:

- **Option 1 (Base case)** – No Regulation would be enacted;
- **Option 2 (Coastal Protection Regulation 2011)** - Coastal Protection Regulation 2011 would be enacted;
- **Option 3 (Reinstate previous provisions of Regulation)** – Coastal Protection Regulations 2004 would be reinstated; and
- **Option 4 (Other)** – No Regulation would be enacted and alternative policy instruments would be used.

The following provides a description of the options together with an outline of the anticipated costs and benefits.

5.2 Description of options

5.2.1 Option 1: Base case – no Regulation made

Under Option 1 the provisions under the principal Act would stand; however:

- there would be no additional requirements relating to the placement, maintenance and removal of emergency coastal protection works
- some development within the coastal zone would be regulated by the EP&A Act
- other development within the coastal zone would be unregulated
- categorisation of land according to coastal hazard and hazard response would be included in CZMPs, though there would be no reporting on section 149 certificates.

The likely impacts of the base case would include:

- inappropriate development leading to loss of various coastal values
- inappropriate emergency works leading to loss of coastal values and/or accidents to the constructor of the works or the public
- inappropriate emergency works leading to loss of access
- poor communication of information on the categorisation of hazard and hazard response for coastal land within the area of a CZMP, leading to a lost opportunity to increase the efficient operation of the coastal property market.

5.2.2 Option 2: Coastal Protection Regulation 2011 enacted

The provisions under the principal Act would stand and there would be:

- specification of additional requirements relating to the placement, maintenance and removal of emergency coast protection works
- regulated development on the coastal zone that is assessed and reviewed by informed departments
- categorisation of hazard and hazard responses reported on section 149 certificates and
- penalties applying for incomplete compliance with the Regulation.

The likely costs as compared to the base case would include:

- additional costs to comply with specified approaches to emergency protection works
- development application costs that apply to all but 'exempt' developments (department and proponent)
- loss of individual property values for affected properties and
- penalties and enforcement costs associated with penalties.

The likely benefits would include:

- improved efficiency of the land market
- avoided accidents (proponent or community) associated with emergency coastal protection works and
- avoided loss of coastal values.

5.2.3 Option 3: Reinstate previous provisions of the Coastal Protection Regulation 2004

The provisions under the principal Act would stand and there would be:

- regulated development on the coastal zone assessed and reviewed by DECCW without any threshold exemptions
- no additional requirements relating to the placement, maintenance and removal of emergency coastal protection works to manage public safety risks and beach amenity and
- no requirements to include information on the categorisation of hazard and hazard responses on section 149 certificates.

The likely costs as compared to the base case would include:

- development application costs that apply to all developments (department and proponent) and
- some quantifiable costs associated with inappropriate ECPW.

The likely benefits would include:

- avoided loss of coastal values due to any inappropriate development.

5.2.4 Option 4 (Other) – No Regulation made and alternative policy instruments implemented

Under this Option, no Regulation would be made and instead other methods to achieve the objectives of the Act would be implemented.

The primary alternative methods would be education and communication. Generally education and communication are viewed as potential alternatives if enforcement costs are high and where the personal impact of non-compliance is considered low relative to the potential perceived social cost of non-compliance.

The target of the emergency coastal protection works (ECPW) elements of the Regulation is specific. An estimated 100 properties are affected (see Table 4). It would be feasible to inform these property owners of the proposed Regulation and guidelines. However, the promulgation of the guidelines alone without penalties would unlikely to be effective as the personal cost of non-compliance is low and social costs are high. That is, a work that is unsafe may still be effective, although public safety may be compromised by a work that does not follow the guideline.

In the case of regulated coastal activities, personal impacts are considered high relative to the perceived social costs, the external impacts are not dispersed and are specific to localities. For all three elements of the proposed Regulation the costs of enforcement are relatively low as the Regulation is targeted and specific. As such, general education and communication approaches are unlikely to be appropriate for the regulation of development within the coastal zone (RDCZ).

Under the categorisation of hazard and hazard response for coastal land (HRCL) communication as a tool is established by development and publication of CZMPs by councils. The proposal in the Regulation to include this information on section 149 Certificates is a low-cost enhancement of this strategy.

As education and communication are not considered appropriate, they are not quantified in this analysis.

5.3 Marginal difference between options

This section describes the expected impacts of options 2 and 3 compared to the base case (Option 1).

5.3.1 Option 2: Proposed Regulation

Government

Because the costs and benefits of Option 2 are estimated with reference to the base case, there will be costs to the NSW State Government and councils under the proposed Regulation. These costs relate to administering and enforcing the ECPW guidelines, assessment of applications for development in the coastal zone, and minor costs associated with the introduction of information to section 149 certificates.

These costs are estimated to have a very minor present value of \$10 000 for the 5-year period from 2011 to 2016. These costs would mainly involve establishing the process for inclusion of the information on section 149 certificates and minor variable costs for providing the certificates when requested.

Private parties

Where proponents of developments apply for concurrence there will be additional costs associated with the application and any compliance with conditions placed on a development. An allowance of \$30 000 per development is assumed.

5.3.2 Option 3: Reinstate previous provisions

Costs and benefits under this option would be similar to those under Option 2, except for the threshold efficiency savings and the benefits of ECPW and the HRCL. Incremental impacts of Options 2 and 3 are summarised in Table 12.

Table 3 Incremental impacts of Options 2 and 3 over base case

	Option 2 Proposed Regulation	Option 3 Reinstate previous provisions
NSW Government and local councils		
ECPW – Management	Monitoring and compliance costs	None
RDCZ – Preparation of assessment of applications	Additional eight concurrence assessments over 5 years	Additional twenty concurrence assessments over 5 years
HRCL – Activities	Establishment and administration costs of section 149 certificates	None
Property owners directly affected		
ECPW	<ol style="list-style-type: none"> 1. Increased cost of temporary works to meet guidelines 2. Protection of private assets 3. Improved safety in construction 	None
RDCZ	<ol style="list-style-type: none"> 1. Reduction in costs of development in the coastal zone due to thresholds 2. Protection from inappropriate development and costs of rectification 	<ol style="list-style-type: none"> 1. Increased costs of development in the coastal zone as no application of thresholds 2. Protection from inappropriate development and costs of rectification
HRCL	<ol style="list-style-type: none"> 1. Improvement in information around risk for private properties in the coastal zone 	None
Society		
ECPW	<ol style="list-style-type: none"> 1. Protection from inappropriate development 2. Improved public safety 	None
RDCZ	<ol style="list-style-type: none"> 1. Protection from inappropriate development 	<ol style="list-style-type: none"> 2. Protection from inappropriate development
HRCL	<ol style="list-style-type: none"> 1. Minor improvement in overall efficiency of coastal property market 2. Potential change in extent of moral hazard issue 	None

5.4 Discussion

Option 2 would lead to some impacts to the state and local government, property owners who wish to erect emergency works, and proponents of projects in the coastal zone.

Option 2 would lead to significant gains in coastal protection from preventing inappropriate development, an increase in protection of impacts on coastal property owners from ECPW and public safety, and an increase in the efficiency of the coastal property market.

The same would be true of Option 3; however, the gains would not be as large or widespread as those for Option 2 because of the exclusion of efficiency gains from information in planning certificates and the risk of inappropriate placement of temporary protection works.

Therefore, compared to Option 3, Option 2 would better enable the NSW Government to achieve the objectives of the Act. An assessment of whether the costs outweigh the benefits of achieving this aim is outlined in Section 6.

6 Costs and benefits

Consistent with the NSW Guidelines for Economic Appraisal, a discount rate of 7% is to be applied in the cost–benefit analysis. Sensitivity testing is to be undertaken by varying the discount rate in the cost-benefit analysis to 4 per cent and 10 per cent.

The cost–benefit analysis is to be conducted over a 5-year period, consistent with the life of the Regulation. However, the effects of any impacts continue past this timeframe if they are likely to persist.

6.1 Background assumptions

There are a number of assumptions that underpin the assessment of costs and benefits for each option. These assumptions relate to each of the elements of the regulation, namely:

1. emergency coastal protection works (ECPW)
2. regulation of development within the coastal zone (RDCZ)
3. categorisation of hazard and hazard response for coastal land (HRCL).

Emergency coastal protection works (ECPW)

It is assumed that without the additional requirements in the proposed regulation relating to ECPW, the arrangements in the principal Act alone will be less effective in protecting assets/or affect surrounding assets and also result in an increased level of public safety incidents. The average cost of emergency works for a property in a typical locality is included in the analysis as \$30 000. The average cost of a safety incident is estimated at \$8494 (Watson & Ozanne-Smith 1997).

Regulation of development within the coastal zone (RDCZ)

It is assumed that without the proposed Regulation the current process may allow inappropriate development within the coastal zone. The approach taken to assess this possible impact is to assume a typical location affected by inappropriate development and assess the costs on coastal attributes in the locality (e.g. dunes, recreational access, tourism, property values). It is assumed that two inappropriate developments may occur within the 5-year period.

While there is variation between localities, for the purpose of the benefit cost analysis in this RIS, a typical locality has been assumed. The typical locality, broadly an LGA, has four beaches, each averaging 2.7 km in length. The locality has a resident population of some 50 000 which enjoy recreation of the local coastal activities. The local tourism industry is worth an estimated \$80 million annually while beach based fishing accounts for approximately \$1 million of the annual local commercial catch. The locality includes eight homes considered at risk of inappropriate coastal development or potentially at need of emergency works after severe storm activity.

Table 4 Typical locality potentially affected by coastal zone development

Locality characteristics	Estimate	Notes
Population	50 000	Based on a typical coastal LGA
Number of beaches	4	
Average beach length (km)	2.7	
Number of properties at risk	8	Within the coastal zone
Value of property at risk (\$)	2 400 000	Value of 8 properties
Local tourism at risk (\$ value added per annum)	16 000 000	The average for an LGA in the relevant coastal area
Dune restoration and maintenance (\$ per annum)	364 000	Direct public restoration costs if dune damage

This information combined the assumptions on a typical locality with the values provided in Section 3 on the value of assets to provide a basis for the quantification of impacts of an 'event' that disrupts these values caused by inappropriate development. In this analysis it is assumed that the coastal assets will recover after a period if the correct steps are undertaken to resolve the issue.

Categorisation of hazard and hazard response for coastal land (HRCL)

It is assumed that the inclusion of information held within CZMP will have a negligible effect on the land market affected (assumed to be 50 properties). This is somewhat dependent on the risk assessment and the response. That is, whether coastal protection works are considered technically feasible and cost effective and funding is being tagged for these works. If these match current expectations of future expenditures this information would have a neutral effect on the price of property categorised as at risk to coastal erosion. This represents a transfer from Government to property owners, however, the effect of the principal Act and the therefore the regulation is dependent on the intent of the policy.

If the coastal hazard response information is to place the emphasis of expenditure on the private property owners in the vast majority of cases, then this will increase the efficiency of the market and avoid moral hazard.

6.2 The cost and benefits of options

6.2.1 Option 1: No Regulation

Table 14 provides a summary of the (ECPW) costs of inappropriate installation of protection works that do not meet the guidelines developed for use in conjunction with the proposed Regulation. The costs are associated with impacts on neighbouring property and one minor safety issue occurring over 5 years.

Table 5 Emergency coastal protection works: summary of costs over 5 years – do nothing

	Estimate	Note
Emergency works undertaken	\$240 000	Costs of actions taken to protect property
OH&S incidences due to inappropriate emergency works	\$8 494	Assuming one OHS incident (direct and indirect costs of the lifetime of the injury's impact).

The following costs are based on the expectation of inappropriate development occurring over the 5-year period (Table 15). It is assumed that two inappropriate developments may

occur within the 5-year period if there is no Coastal Protection Regulation in place. These costs assume a significant development that has effects on beach sands over 2 years.

The costs are a mix of damage and rectification costs. Tourism costs are assumed to be relatively low when compared to overall value as it is assumed that tourists would substitute visitation to other coastal areas rather than not spend money in the State.

Table 6 Regulation of development within the coastal zone: summary of costs over 5 years – do nothing (\$)

Cost per event	Estimate (\$)	Note
Tourism	3 600 000	Two events affect beach and tourism reduced by average \$0.66 million over 3 years (5 % of local value)
Recreation	1 280 000	Local recreation affected (assume 15 % of value lost) or \$0.24 million for three years
Beach based commercial fishing	30 000	Minor impact (5 % of value lost)
Developer remediation works	750 000	Additional costs placed on parties responsible for an inappropriate development
Property protection works	240 000	Costs of protective works by private parties such as ECPW
Dune restoration	91 000	Assume one event requires dune restoration
Total	5 991 000	

Note: Costs are not discounted.

These costs are incurred at year 1 and year 4 when an event triggered by an inappropriate development becomes apparent. These costs are then discounted. It is assumed that the cost occur within the 5-year period and they do not extend into the future as the impacts are direct and would require action to rectify any damage to the coastal area.

The net present value (NPV) of costs and benefits for Option 1 is –\$5 860 085. That is, the do nothing scenario results in possible loss in overall welfare in the order of \$5.9 million.

6.2.2 Option 2: Coastal Protection Regulation 2011

Agency costs

The costs of Option 2 include costs in establishing programs to monitor ECPW and also establishing the section 149 certificates.

There are costs associated with development under regulation of development within the coastal zone (RDCZ) is based on four development applications per year being assessed under the provisions of the proposed regulation.

Table 7 Summary of agency costs and applicant costs

	Year 1	Year 2	Year 3	Year 4	Year 5
RDCZ – Agency assessment and monitoring	49 000	49 000	49 000	49 000	49 000
RDCZ – Applicant costs	240 000	240 000	240 000	240 000	240 000
HRCL	10 000	500	500	500	500

For the costs (i.e. avoided impacts from inappropriate development) it is assumed that there is only one incident within the 5 years and its severity is reduced by 85 per cent from that in base case. The costs are estimated to be \$0.36 million if the incident is ameliorated due to any monitoring conditions imposed.

The present value (PV) of costs under Option 2 is –\$1.2 million with the majority of costs associated with development applications and the process of concurrence.

Benefits to community

RDCZ: The benefits of Option 2 are based on the avoidance of two ‘events’ caused by inappropriate development during the 5-year period of analysis (the case under Option 1).

The PV of benefits under Option 2 is \$5.6 million which represents the value of avoided damage associated with inappropriate developments and emergency coastal works.

There is no quantifiable benefit associated with the inclusion of information on section 149 certificates.

Option 2 results in a potential gain in overall welfare in the order of \$4.4 million.

6.2.3 Option 3: Reinstate previous provisions

Under Option 3 there would be no emergency coastal protection works requirements and no inclusion of the categorisation of hazard and hazard response for coastal land under section 149 certificates.

Under Option 3 costs associated with inappropriate establishment of emergency coastal protection works will occur.

When considering RDCZ the benefits of Option 3 are based on the same avoidance of two ‘events’ caused by inappropriate development during the 5-year period of analysis. Government administrative and proponent costs are assumed to be greater due to the inclusion of more development applications. These are assumed to be \$1.6 million over the five years.

The PV of costs under Option 3 is –\$1.34 million with the majority of costs associated with development applications and the process of concurrence. This is approximately \$0.14 million less than the costs under Option 2.

The PV of benefits under Option 3 is \$5.2 million which represent that avoided damage associated with inappropriate developments and emergency coastal works.

Option 3 results in a potential gain in overall welfare of \$3.8 million.

6.3 Summary of the costs and benefits

Table 17 provides an overview of the costs and benefits under each Option.

Table 8 Summary of cost and benefits

Option	Present value of costs (\$million)	Present value of benefits (\$million)	Net Present Value	Benefit Cost Ratio
Option 2: Coastal Protection Regulation 2011	1 197 000	5 594 000	4 397 000	4.7
Option 3: Reinstate previous provisions	1 335 000	5 179 000	3 844 000	3.9

Option 2 provides the largest net benefit to society with a net present value of \$4.4 million. The ratio of benefits to costs for Option 2 is 3.8. The minimal costs to society are likely to have a very positive return as the coastal zone has a higher level of protection than under the base case of no Regulation.

These costs and benefits have been assessed on the costs of the regulation state wide and the benefits in a 'typical locality'. The scale of the net benefits based on these assumptions is significant and are much greater than the minimal costs that are incurred to Government and proponents of development in the coastal zone.

As the proposed Regulation applies across the state, instances could be lesser or greater than that assumed depending on the location and number of events that disrupt the coastal zone. However, a sensitivity analysis illustrates that the costs of the proposed Regulation would be outweighed by the benefits if only one instance of inappropriate development was avoided within the 5-year period of this RIS.

7 Assessment and conclusions

This assessment of the costs and benefits of the proposed Regulation highlights a number of points.

First, the costs associated with the proposed Regulation to the NSW Government and to the wider community are low. The most significant cost of the proposed Regulation is associated with the on-going assessment of proposed developments in the coastal zone. These costs are less in Option 2 than Option 3 because the concurrence would only be required for high risk developments

The costs associated with the application of guidelines for ECPW and also the transfer of information from CZMPs to section 149 certificates under the EP&A Act are minor, as these initiatives are very specifically targeted.

Second, the benefits of avoiding damage and incurring costs on communities who reside in localities next to the coastal zone are much greater than the costs of the proposed Regulation. The benefits under Option 2 are greater than the benefits under Option 3 because Option 3 does not ameliorate the risk of inappropriate placement of emergency coastal protection works.

The cost–benefit analysis highlights the high value of the assets potentially affected by inappropriate placement of ECPW and of inappropriate development within the coastal zone.

Although the exact risk of inappropriate placement of ECPW and developments is difficult to determine, an examination of the historical record in each case illustrates this risk. There are a number of ECPW that have been erected without due consideration of safety and impacts on other property. An examination of the concurrence register since 2004 highlights a number of significant developments that involve conditions and monitoring.

The proposed Regulation, in conjunction with the amendment Act, provides sufficient flexibility to allow the appropriate placement of ECPW and appropriate coastal development, thereby minimising and costs of the proposed Regulation to affected parties in the community.

8 Consultation

The RIS and proposed Regulation 2011 are available for public comment for a period of 3 weeks, commencing on Wednesday 2 February 2011. DECCW welcomes written submissions from all interested parties and will consider all submissions received before finalising the Regulation.

Community comments on the RIS and proposed Coastal Protection Regulation 2011 will be sought through:

- a notice published in the NSW Government Gazette calling for submissions
- advertising the exhibition of the proposed Regulation and RIS in the *Sydney Morning Herald* and major coastal newspapers
- exhibiting the proposed Regulation and RIS on the DECCW website
- writing to the following groups seeking comments:
 - all coastal councils
 - major environmental non-government organisations
 - property and landowner groups.

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