



# PLANNING for NATURAL HAZARDS

Wyong Shire Council

The Planning for **NATURAL HAZARDS** section of Council’s Settlement Strategy considers the impacts of Acid Sulfate Soils; Bushfire and Coastal Erosion; Flooding; Soil Instability; Salinity; and Climate Change particularly on the frequency and intensity of other identified natural hazards.



**ESTABLISHING OUR VISION:**

**What do we want to achieve?**

Natural hazards represent an intrinsic component of planning for both new and existing urban communities. Flooding, bushfire, coastal hazards, erosion and soil stability, salinity, acid sulfate soils and contaminated lands are hazards that can never be entirely avoided but can be mitigated through careful planning. In addition, it is anticipated that the effects of climate change will intensify some of these hazards, and this needs to be carefully considered when deciding on the location of new development and new urban communities.

Land use planning can therefore play a key role in reducing the risk associated with natural hazards. Council needs to ensure that new greenfield release areas as well as infill developments are appropriately sited in terms of vulnerability to natural hazards. This chapter identifies the numerous ways that Council, in conjunction with State and Federal Government can reduce the level of risk associated with natural hazards within Wyong Local Government Area (LGA).

**Note:** Some natural hazards such as earthquakes and tsunami have not been discussed in this chapter due to the low probability of these events occurring within Wyong LGA.

**Key Documents for Planning for NATURAL HAZARDS:**

- |                                                                   |                                                       |
|-------------------------------------------------------------------|-------------------------------------------------------|
| Community Strategic Plan (2011)                                   | Community Plan (2008)                                 |
| Central Coast Regional Strategy (2008)                            | NSW State Plan (2010)                                 |
| Planning for Bushfire Protection (2006)                           | Bushfire Risk Management Plan (2011)                  |
| Floodplain Development Manual (2005)                              | Sea Level Rise Policy Statement (2010)                |
| Draft Coastal Zone Management Plan (2011)                         | Porters Creek Floodplain Risk Management Plan (2011)  |
| NSW Coastal Planning Guideline: Adapting to Sea Level Rise (2010) | Tuggerah Lakes Floodplain Risk Management Plan (2011) |
| North Wyong Shire Structure Plan (2010)                           |                                                       |

**What legislation do we need to consider?**

- |                                                |                                                 |
|------------------------------------------------|-------------------------------------------------|
| Environmental Planning and Assessment Act 1979 | State Emergency and Rescue Management Act, 1989 |
| Contaminated Land Management Act 1997          | Native Vegetation Act 2003                      |
| SEPP 55 – Remediation of Land                  | Coastal Protection Act 1979                     |
| SEPP 71 – Coastal Protection                   | Local Government Act 1993                       |
| Rural Fires Act, 1997                          | State Emergency and Rescue Management Act, 1989 |

## Planning for FLOODING

### HOW DO WE SUSTAINABLY CATER FOR OUR RESIDENTS, BUSINESS AND VISITOR POPULATION, IN TERMS OF FLOODING?



#### Background to FLOODING:

Estimated to be the most costly natural disaster in Australia, flood events can cause millions of dollars damage to buildings and critical infrastructure, such as roads and railways as well as to agricultural land and crops. There are high social and emotional costs associated with flooding, as it can lead to long disruptions to people's lives which can continue long after the flooding has finished. Flooding can be defined as:

*'Relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, an/or local overland flooding associated with major drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves overtopping coastline defences (excluding tsunami)'* (Department of Infrastructure, Planning and Natural Resources, 2005)

The most common cause of flooding in Australia is heavy rainfall. Flooding that is sudden and unexpected is called flash flooding and is usually caused by short intense bursts of rainfalls. Smaller scale flooding can also occur when heavy rains cause stormwater drains to become blocked due to the high volume of water. Certain parts of Wyong LGA also experience coastal flooding due to storm surges and elevated tide levels.

Wyong LGA is located on a number of floodplains with over 15% of properties subject to flooding. Tuggerah Lakes is the largest floodplain in Wyong LGA, with almost 6,000 private properties located within the floodplain. Wyong LGA has therefore experienced a number of large floods in the past century, including those in 1949, 1964, 1974, 1990, and 2004. More recently, the June 2007 flood resulted in widespread disruption in the LGA, including elevated water levels in Tuggerah Lakes for almost 3 weeks. This flooding was equivalent to a one in twenty year event and similar flooding was experienced in 1990.

#### Issues:

#### What are the current and foreseeable issues that impact upon our FLOOD PRONE AREAS?

##### Damage to private property

Water entering private dwellings can cause damage to the structural integrity of the building and the contents of the building including flooring, furniture and appliances. The surrounding areas can also be damaged, including garages, pools and barbecues. This results in social and financial costs to the community, which can be exacerbated if individuals fail to insure their property adequately. This is a particular concern for those areas of Wyong LGA that may be permanently inundated by the effects of sea level rise associated with climate change.

##### Agricultural Losses

Flooding can result in crop and livestock losses, impacting on agricultural productivity.

The estimated average annual cost of floods in Australia is \$315 million (BTE 2001)

Figure 17: Floodplain

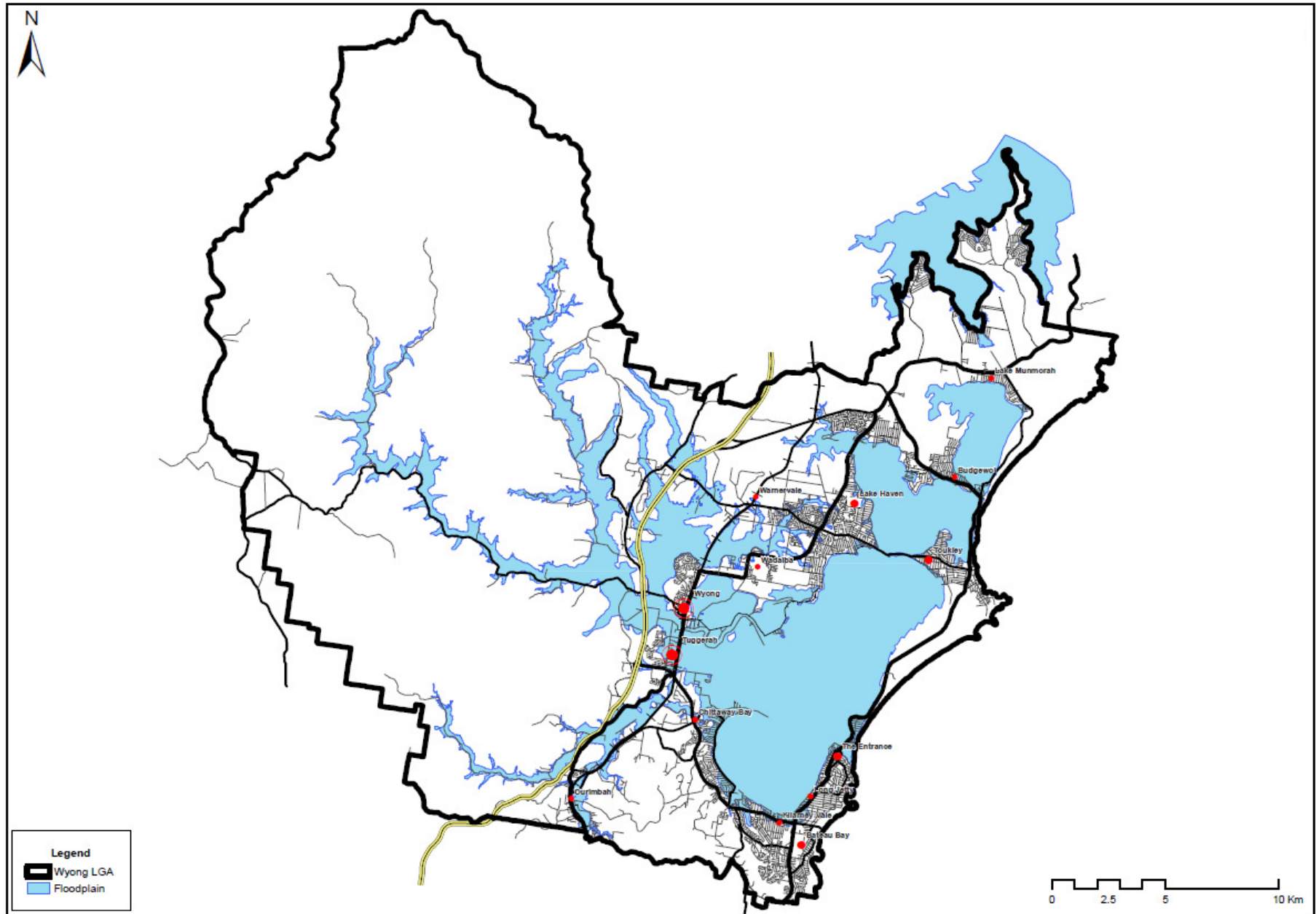
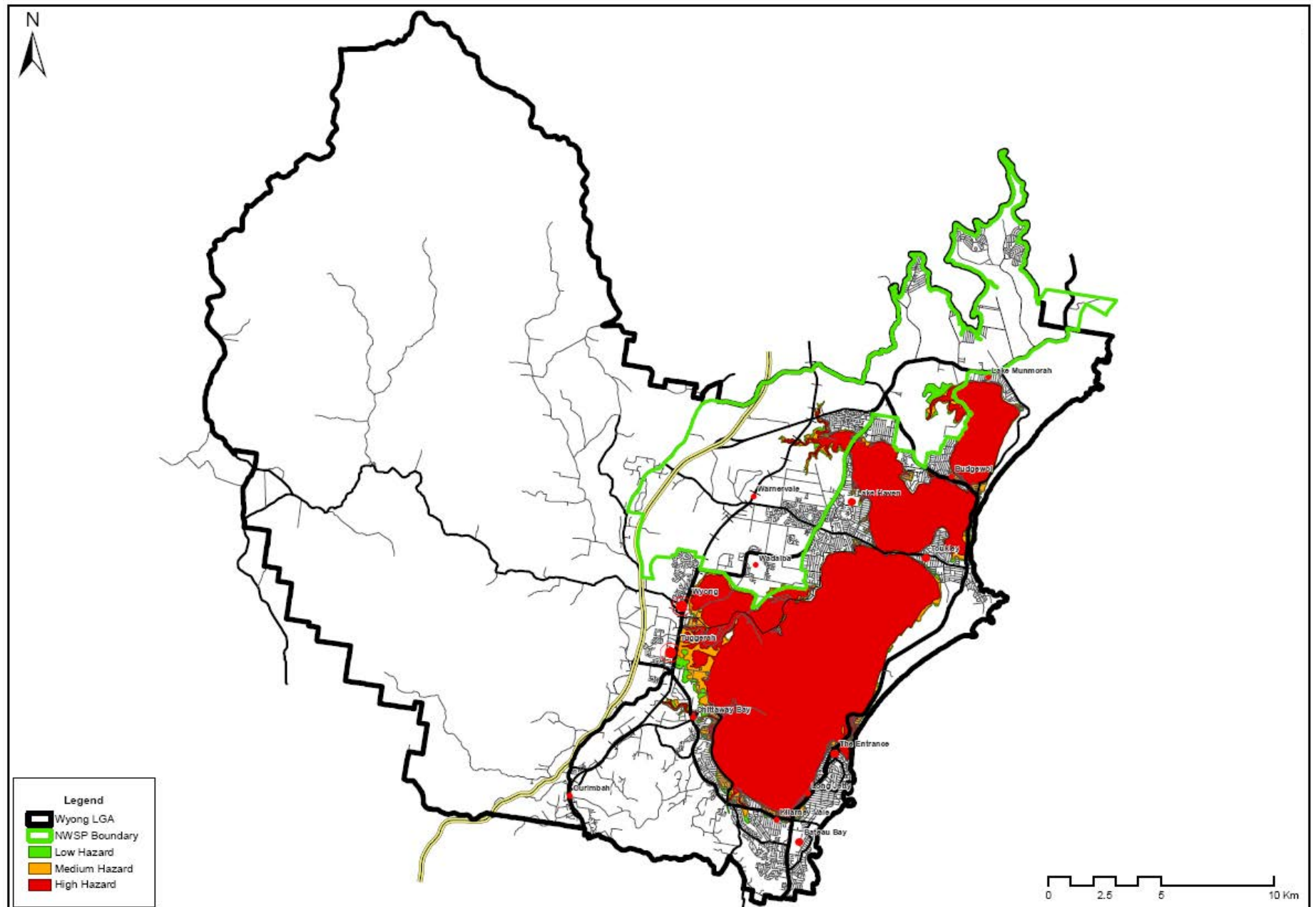


Figure 18: Flood Hazard Areas



### Damage to public infrastructure and disruption of services

Flooding can cause damage to public infrastructure, including roads, parks, reserves, and sewer, water and electricity supply. In Wyong LGA, some of these services have been disabled during flood events due to inundation and it can be many days before these services can be restored. This is a particular concern for those assets that may be permanently inundated by the effects of sea level rise associated with climate change.

### Availability of affordable insurance

The availability and affordability of home and contents insurance (including flood cover) for private dwellings and public infrastructure is expected to decrease as flooding events increase in both frequency and severity. If insurance premiums become more expensive, this may result in some residents being unable to afford insurance for dwellings in flood-prone areas, leaving residents at risk of major financial hardship in the event of a flood.

### Risk to Public Health

Flood events carry an inherent risk to human health. The primary risk to humans is by drowning; however secondary health effects from flooding result from the inundation of sewerage infrastructure which releases toxic substances into the floodwaters, as well as general garbage and debris in floodwaters, and the spread of water-borne diseases.

### Environmental Impacts

Flooding can result in wildlife habitat destruction due to floodwaters smothering vegetation for long periods of time, erosion, sediment transport and deposition.

### Erosion

Floodwaters can cause erosion, which can undermine bridges, buildings, roads and creek banks, creating structural issues leading to safety issues and financial impacts.

### Climate Change

Please refer to the 'Planning for CLIMATE CHANGE' section of this chapter.

### Planning for our Population:

### How do we plan for development having consideration for FLOODING?

#### Flood Mapping

Most areas vulnerable to flooding in Wyong LGA have been mapped, and all areas vulnerable to ocean inundation are mapped. Mapping is based on the flood extent and hazard assessment, having regard to the possibility of sea level rise and the increasing severity of storm events resulting from global warming and climate change.

#### Floodplain Management Program

Council has a Floodplain Management Program, which aims to help manage flood prone land in a sustainable manner consistent with the flood hazard. As part of this program,

Council is undertaking Floodplain Risk Management studies and plans for each catchment to help protect residents and existing developments from flood damage, and minimise flood risks to future developments. These plans detail a wide range of structural and non-structural measures that can be used to help protect against flooding. These may include:

- Development controls, such as floor level heights for new buildings and extensions on flood prone land; and voluntary house raising
- Vegetation management, for example, stabilising a river bank by planting trees and keeping rivers and creeks clear of obstructions
- Construction of detention basins to store water and slowly drain to creeks or rivers.
- Community education and awareness campaigns about living in flood prone areas
- Allocating appropriate land use zones for flood prone land such as restricting future residential development in low lying areas to the R2 Low Density Residential zone

These studies are being carried out in accordance with the NSW Floodplain Development Manual, and involve input from the local community, relevant industry and Government bodies, and Council. The plans are implemented once adopted by Council. In 2010, Council adopted the Lower Wyong River Floodplain Risk Management Study and Plan. Studies are currently underway for Lower Ourimbah Creek, Tumbi Umbi Creek, Porters Creek and Tuggerah Lakes. Council will continue to prepare and review these plans so that all watercourses in the LGA are covered by a floodplain risk management plan.

#### Flood Prone Land Development Policy

Council has developed a Flood Prone Land Development Policy with the primary objective of reducing the impact of flooding and flood liability on owners and occupiers of flood prone property, and to reduce private and public losses resulting from floods. The Policy divides the floodplain into high and low hazard areas of flood fringe, flood storage and floodway. Developments on flood prone land are considered based on their location within one of these categories and are subject to restriction and/or building requirements intended to minimise damage to property and the environment. A revised Flood Prone Land Development Policy should inform an updated chapter of Wyong DCP 2013.

#### Coastal Zone Management Plan (CZMP)

Council's CZMP is discussed in more detail later in this chapter, under the heading 'Planning for COASTAL HAZARDS'.

### What are other Government Authorities currently doing?

#### Section 117 Direction

Section 117 Ministerial Directions are issued by the Minister for Planning & Infrastructure under the *Environmental Planning and Assessment Act, 1979* (EPA Act) for consideration in the preparation of new planning proposals. Direction No.15 was adopted to 'ensure that development of flood prone land is consistent with the NSW Government's Flood Prone Land Policy and the principles of the Floodplain Development Manual, 2005' and 'ensure

that the provisions of an LEP on flood prone land is commensurate with flood hazard and includes consideration of the potential flood impacts both on and off the subject land'.

### Flood Prone Land Policy Statement and Floodplain Development Manual

The State Government's Flood Prone Land Policy Statement aims to reduce the impact of flooding and flood liability on individual owners and occupiers of flood prone property and to reduce private and public losses resulting from flooding. The Floodplain Development Manual ((Department of Infrastructure, Planning and Natural Resources, 2005) supports the Flood Prone Land Policy in providing for the development of sustainable strategies for managing human occupation and use of the floodplain considering risk management principles based upon a hierarchy of avoidance, minimisation (using planning controls) and mitigation works. The manual applies to floodplains across NSW, in both urban and rural areas.

#### The Standard Instrument, Wyong LEP 2013 and Wyong DCP 2013:

### What provisions can be incorporated into our Planning Instruments what will help to manage FLOODING?

#### Wyong LEP 2013

The following measures can be incorporated into Wyong LEP 2013 to improve our flood planning:

- There may be opportunities to reduce exposure to risk associated with flooding by minimising future development and/or reducing development densities within flood affected areas. Such mechanisms may include down-zoning flood affected areas to zones which promote lower density (e.g. from medium density residential to low density residential). Additionally, there may be scope to increase the minimum subdivision lot size in these localities through the minimum lot size mapping layer to achieve a similar result of reducing residential density.
- Model local clause 7.3 – Flood planning, can be utilised in flood planning areas, particularly where flooding matters cannot be fully addressed by limiting land uses, such as flood prone areas where the existing zone and permissible land uses include residential development.
- Additional matters that can be addressed in the Wyong LEP 2013 include:
  - LEP to be consistent with NSW Floodplain Development Manual (2005) and subsequent State Government planning guidelines.
  - LEP to map intermittent and permanent water courses and overland flow paths.
  - LEP to map flood planning areas incorporating climate change in accordance with State and Federal Government policies.
  - LEP to identify high hazard land for acquisition, based on an adopted Council policy framework and State or Federal Government funding.

- LEP to rezone low lying areas of The Entrance North to the lowest density residential zone (R2 Low Density Residential). This also is to include other areas where there is no flood free access to suitable high ground in the 100 year ARI event plus 0.9m sea level rise.

#### Wyong DCP 2013

The following measures can be incorporated into Wyong DCP 2013 to improve our flood planning:

- The information provided by Councils Floodplain Management Program has informed a draft chapter (Flood Prone Land Development) that applies to development proposals for flood-affected areas of the Wyong LGA to ensure consistent assessment and determination of development applications. The Flood Prone Land Policy will also continue to apply to activities that do not fall within the development assessment process.

#### Key Planning Considerations:

#### Key Planning Considerations for FLOODING:

- *All planning and development to comply with the appropriate Floodplain Risk Management Plan. Rezoning should not occur until detailed flood hazard mapping (including climate change) and a Floodplain Risk Management Plan is prepared.*
- *Master planning for flood prone areas to demonstrate compliance with ESD principles and consideration of climate change impacts including future flooding constraints.*
- *All critical emergency response and recovery facilities and infrastructure to consider the Probable Maximum Flood (PMF) level for planning and development purposes.*

**Strategic Actions and Local Initiatives:**
**FLOODING**

#	ACTIONS	RESPONSIBLE AUTHORITY	IMPLEMENTATION				Other	COMMUNITY STRATEGIC PLAN	CENTRAL COAST REGIONAL STRATEGY
			LEP 2012	Am.	DCP 2012	Am.			
NH01	Wyong LEP 2013 to be consistent with the NSW Floodplain Development Manual (2005) and subsequent State Government planning guidelines.	WSC	X	X			There are no CSP actions that apply to this component.	<b>6.11:</b> Ensure LEPs and other strategies implement the NSW coastal policy, the NSW Flood Prone Land Policy and plans prepared in accordance with these documents.  <b>7.1:</b> Councils are to prepare (or update) floodplain, estuary and coastal zone management plans in order to reduce risks from natural hazards. These plans must be completed and considered in planning decisions made within the areas that they apply.  <b>7.2:</b> Local environmental plans will zone areas subject to high hazard to reflect the capabilities of the land.	
NH02	Wyong LEP 2013 to map flood planning areas incorporating climate change in accordance with Federal Government policies. This may also include mapping of intermittent and permanent water courses and overland flow paths.	WSC	X	X					
NH03	Wyong LEP 2013 to down-zone flood affected areas to zones that provide for lower density, where justified by a Council-endorsed Floodplain Risk Management Plan	WSC		X					
NH04	Flood Prone Land Policy to be updated and adopted as a chapter of Wyong DCP 2013 to ensure consistent assessment and determination of development applications. Flood Prone Land Policy to continue to apply to activities that do not fall within the development assessment process.	WSC			X				
NH05	Continue to prepare and adopt Floodplain Risk Management Plans so that all watercourses in the LGA are covered by a catchment based floodplain risk management plan. This includes overland flow watercourses.	WSC				X			
NH06	Review S.94 Plans to enable collection of funds for flood management purposes.	WSC				X			
NH07	Investigate shirewide and/or catchment specific levies to fund flood management measures including planning, construction and on-going maintenance.	WSC				X			
NH08	Investigate additional sources of funding from State and Federal Governments for floodplain management.	WSC				X			



## Planning for COASTAL HAZARDS

### HOW DO WE SUSTAINABLY CATER FOR OUR RESIDENTS, BUSINESS AND VISITOR POPULATION, IN TERMS OF MINIMISING COASTAL HAZARDS?



#### Background to COASTAL HAZARDS:

Wyong LGA's 35 kilometres of coastline is viewed by the local community as a key asset of the area. However, our coastline is constantly changing due to both naturally occurring processes (e.g. sediment inputs, erosion, accretion, landslips, sea level, tides, winds) and man-made changes (e.g. sea walls, channel dredging etc). Therefore, managing the coast to maintain community access, enjoyment and economic values is an important part of Council's sustainability strategy.

#### Man-made changes

Wyong LGA has experienced a history of development along the coastline without the known impact of coastal processes. High recreational usage and population growth place pressure on sensitive coastal landscapes. Storm wave erosion of beaches and dunes, and landslip on cliffs or bluffs may threaten development, community assets, safety, spoil enjoyment and put additional pressures on sensitive coastal environments. With development pressures in Wyong LGA most likely to occur along the coastal strip, the issue of coastal processes is an important consideration as part of the Settlement Strategy.

#### Naturally occurring processes

Naturally occurring processes include sediment inputs, erosion, accretion, landslips, sea level, tides, winds and tsunamis. Strategic coastal zone risk assessment prepared by the State Government in 2010 identified the North Entrance, Hargraves Beach and Cabbage Tree Harbour as coastal erosion hotspots, with more properties at other beaches likely to be affected in the future.

Coastal erosion hazards are expected to worsen as climate change and sea level rise take effect in the coming decades. A strategic coastal zone risk assessment prepared by the Federal Government in 2009 identified Wyong LGA as one of the most at-risk LGAs in terms of the effects of sea level rise and other climate change impacts on the built environment.

The following pages contain Coastal Hazard and Geotechnical Hazard Mapping for the coastal zone.

A healthy and well managed coast is one where:

- Land is managed within its capability, so coastal hazards are recognised as a constraint to land capability.
- Natural resource decisions and land use decisions jointly contribute to economic sustainability, biodiversity resilience and social well being.
- The condition of coastal ecosystems is maintained or improved.

(Wyong Shire Council, 2011).

Figure 19: Coastal Hazard Map - North

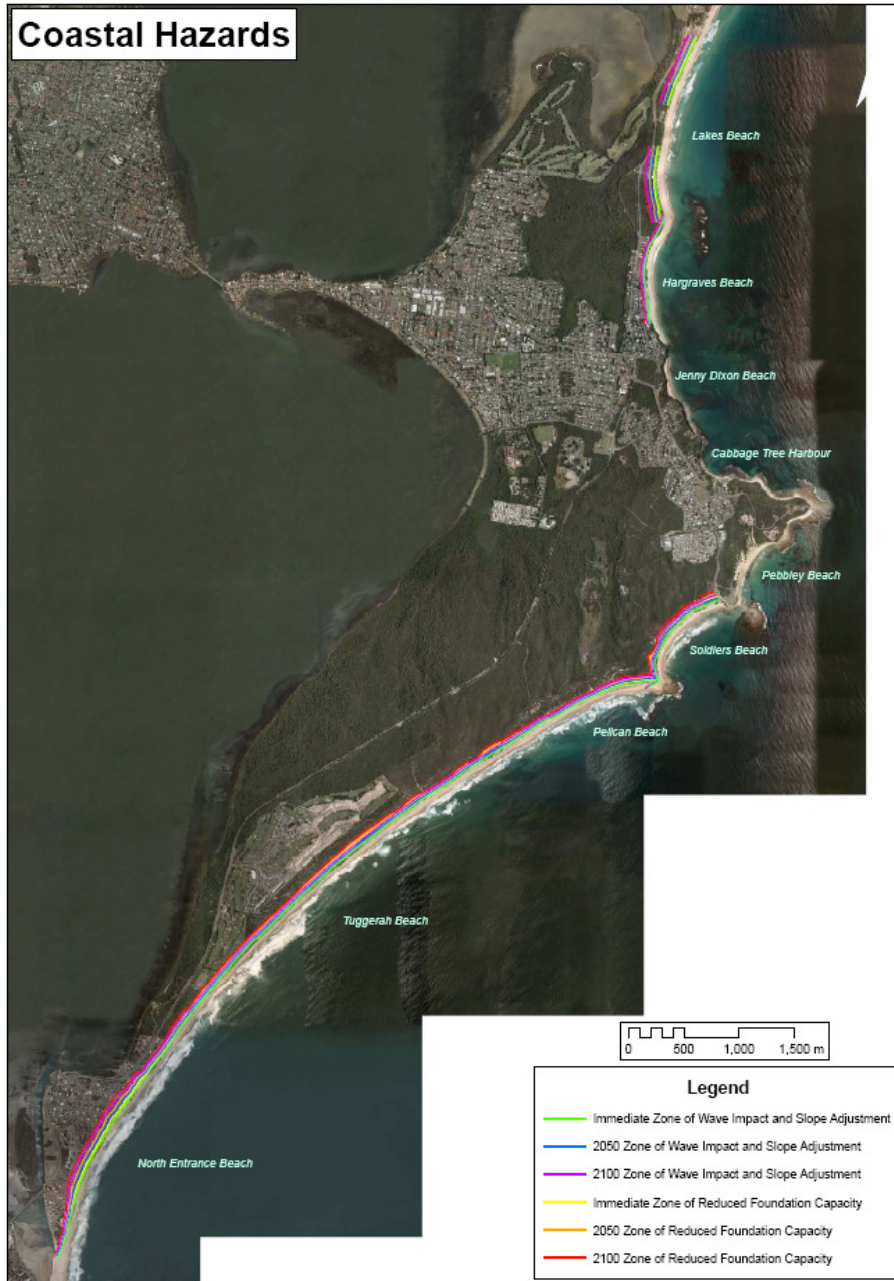


Figure 20: Coastal Hazard Map - South



Figure 21: Geotechnical Hazard Map - North

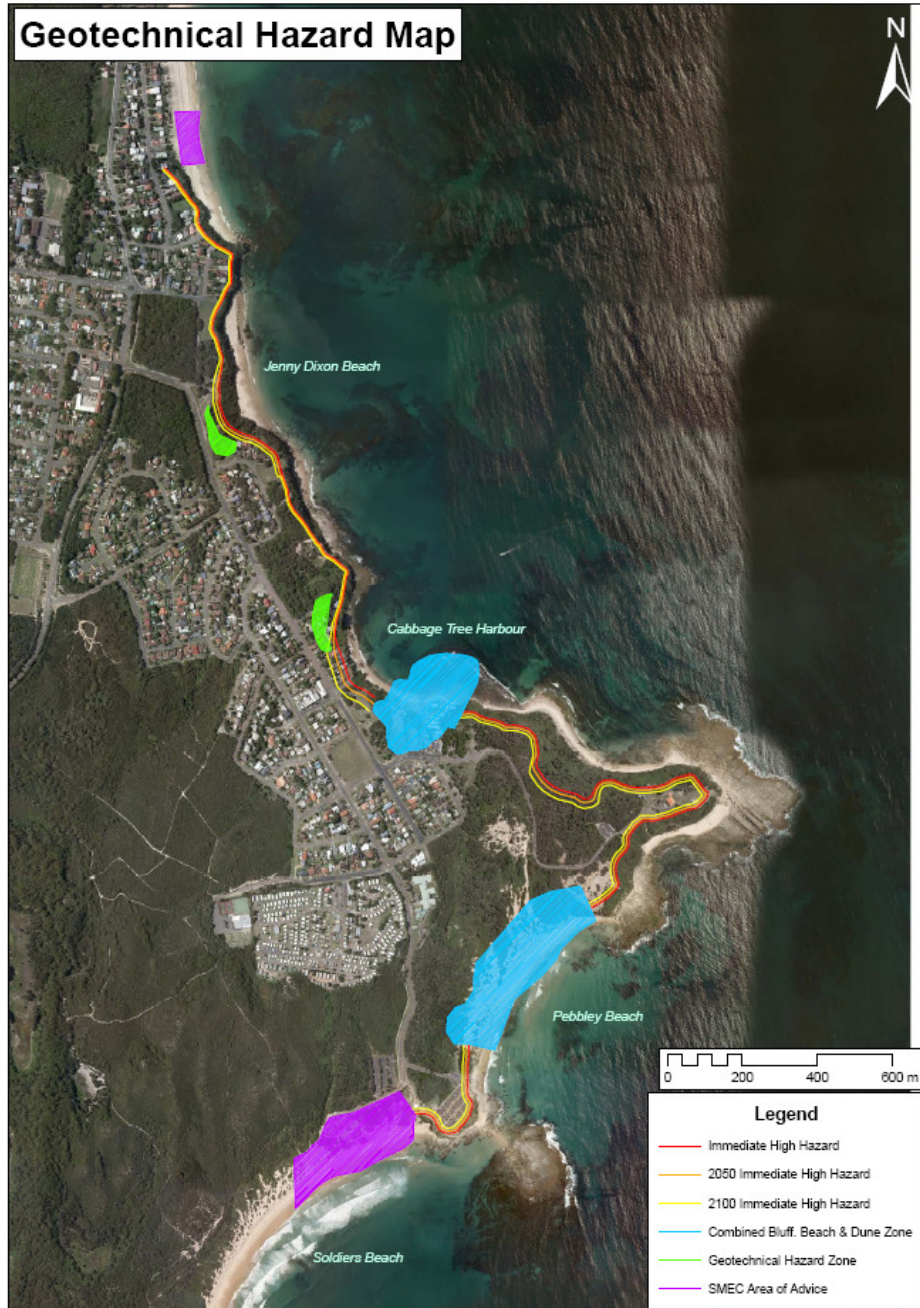
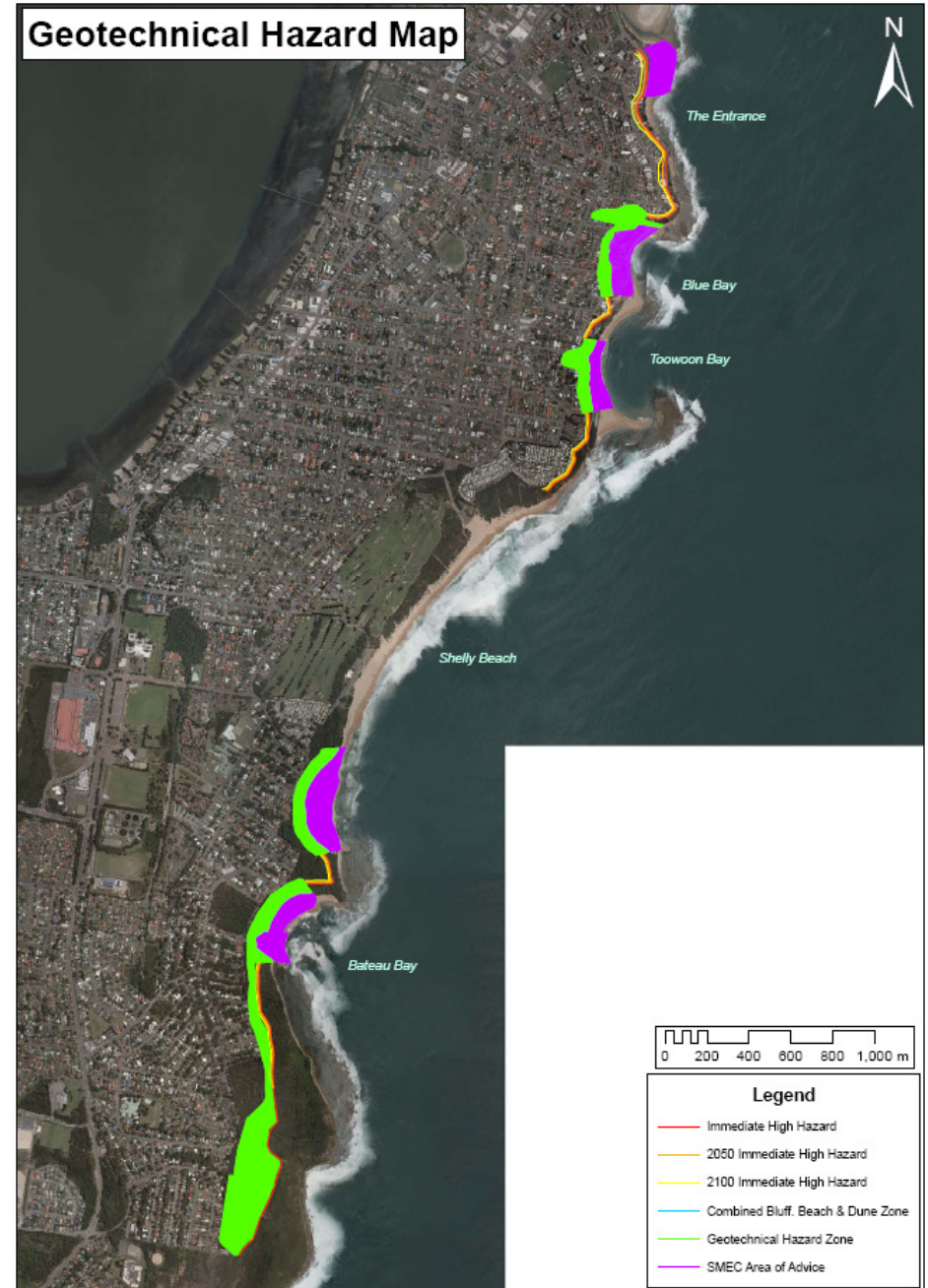


Figure 22: Geotechnical Hazard Map - South



**Issues:****What are the current and foreseeable issues arising from our COASTAL HAZARDS?****Climate Change**

Coastal inundation events are expected to increase due to the combined effects of sea-level rise, storm surge and ocean waves, leading to considerable damage to coastal environments and built assets (Department of Climate Change, 2009). For example, climate modelling predicts that storm surges will increase along the east coast of Australia due to increased low-pressure systems and winds (Department of Climate Change, 2009). The risk of beach loss, salinisation of wetlands and inundation of low-lying areas must be considered in short term development decisions and long term land use planning.

**Erosion**

Damage to the coastal environment occurs from a combination of natural processes and human impacts. Damage can include beach erosion, shoreline recession, slope and cliff instability, vegetation degradation and coastal inundation. Erosion events can cause damage to the environment and to buildings, roads, infrastructure and agricultural land. Fatalities can even occur in the worst cases of cliff erosion and instability. Coastal erosion is a particular concern within Wyong LGA, and it is anticipated that erosion processes will be exacerbated by climate change. Both naturally-occurring and man-made changes are likely to exacerbate coastline erosion.

**Damage to Private and Public Assets**

Coastal processes have the potential to cause major damage to public and private assets. With a large proportion of our public infrastructure concentrated within the coastal zone, coastal processes exacerbated by climate change will threaten assets, with consequences for the economy as well as for the provision of essential services.

**Threats to Biodiversity**

Terrestrial and aquatic plants and animals that rely on coastal habitat are likely to be adversely affected by sea-level rise, sea surface temperature increases, and ocean acidification. The coastal systems most at risk within Wyong LGA are estuaries and associated wetlands; tidal flat communities and saltmarsh; and beaches where there is a lack of sediment for replenishment (Department of Climate Change, 2009). Initial biodiversity responses to climate change are expected to be either inland or pole-ward migration, with un-seasonal southward migration of some species already observed along the south-east coast of Australia (Department of Climate Change, 2009).

**Risks to Public Health**

Floods are not always caused by heavy rainfall, particularly in coastal areas where inundation can be caused by a storm surge associated with a tropical cyclone (or east coast low); a tsunami; or a high tide coinciding with higher than normal sea levels caused

by low pressure systems and onshore winds. The primary risk from flooding is the potential for human fatalities; however secondary health effects from flooding can include inundation of sewerage infrastructure, releasing toxic substances and water-borne diseases into floodwater, as well as general garbage and debris. There is also a risk to human health from coastal erosion processes, such as landslides and rock falls.

**Planning for our COASTAL HAZARDS:****How do we plan for development having consideration for our COASTAL HAZARDS?**

Council has a key role in planning and carrying out coastal zone management. Within coastal environments it is not possible to remove all likely risk to life, property and the environment resulting from naturally occurring coastal processes, however mitigation measures can reduce these risks. Strategies to protect or retreat will need to be developed, and where possible, avoidance of future risk is the most cost-effective adaptation response, particularly where development has not yet occurred.

**Draft Coastal Zone Management Plan (CZMP)**

Council has prepared a draft CZMP, to assist our understanding of:

- How the coastline changes and how to minimise the impact of development
- Options for managing coastal erosion and balancing community expectations
- Where special protection should be provided for infrastructure
- What emergency procedures are needed for major storms
- What is needed to provide safe access and recreation spaces for locals and visitors.

A Hazard Assessment and Coastal Management Study was completed to inform recommendations within the draft CZMP. This study looks at the severity of erosion along the Wyong LGA coastline at present, 2050 and 2100, taking into account sea level rise, storm surge and wave run up. A strategy of increased protection is simply not financially or environmentally sustainable, and the draft CZMP proposes a long term strategy of planned retreat where affected assets and infrastructure is moved out of coastal hazard zones whilst allowing some interim protection of public and private assets, to give residents and businesses time to develop more adaptive measures. This will also reduce the risk of sterilising coastal land unnecessarily before hazards are realised.

**Coastal Erosion Emergency Action Plans**

The Office of Environment and Heritage (OEH) has identified three coastal erosion 'hot spots' (areas where five or more houses and/or a public road are located in a current coastal hazard area), in Wyong LGA, at The Entrance North, Norville and Norah Head. The OEH requires that Council prepare Coastal Erosion Emergency Action Plans for these 'hot spots', therefore Council will need to undertake individual plans for each hot spot.

**Coastal Protection Service Charges**

The cost of remediating and maintaining areas subject to coastal hazards is unable to be met solely by Council, and other sources of funding need to be identified. Subject to the

*Coastal Protection and Other Legislation Amendment Act 2010*, Council should investigate levies to fund coastline management and maintain public accessibility and facility.

### What are other Government Authorities currently doing?

#### Federal Government

The Federal Government manages matters of national importance, sets broad policy direction and priorities for our coast, funds and conducts research into coastal process impacts and provides funding for works through the Caring for Our Country Program.

#### State Government

The State Government prepares policies, guidelines and directions and sets standards to drive a consistent approach to issues affecting the NSW coastal zone; and provides some funding to Local Government for on-ground works and the preparation of coastal zone management plans and emergency action sub-plans as required by the *Coastal Protection Act, 1979*. The State Government recently released the NSW Coastal Erosion Reform Package that provides a coastal management toolkit for Local Government and communities. The reforms include amendments to legislation, new guidelines, and additional support for Local Government to improve planning processes:

##### 1 Sea level rise policy

This policy is supported by new guidelines that explain how the sea level rise benchmarks are to be applied locally in coastal and flood hazard assessments and land-use planning.

##### 2 Legislative amendments

The primary objective of the *Coastal Protection and Other Legislation Amendment Act, 2010* is to improve arrangements for managing coastal erosion to achieve a balance between protecting private property and protecting our beaches. Key provisions include:

- Allowing landowners in specific locations to use sandbags as emergency coastal protection works to reduce erosion. If the bags cause erosion they are to be removed.
- Requiring consent authorities be satisfied that appropriate arrangements are in place to restore beaches if they are eroded by coastal protection works, such as seawalls.
- Allowing Councils to levy a coastal protection service charge on land where the current or past landowners have voluntarily constructed coastal protection works.
- Enhancing statutory exemptions from liability for councils and State agencies when their coastal management activities are carried out in good faith.

#### The Standard Instrument, Wyong LEP 2013 and Wyong DCP 2013:

### What provisions can be incorporated into our Planning Instruments what will help to manage COASTAL HAZARDS?

#### Wyong Local Environmental Plan 2012

The following measures can be incorporated into Wyong LEP 2013 to improve our planning for coastal hazards:

- Wyong LEP 2013 will include compulsory Clause 5.5 – Development within the Coastal Zone to provide for the protection of the coastal environment. Clause 5.5 ensures that development applications within the coastal zone consider the effects of coastal processes, coastal hazards and the potential impacts of sea-level rise.

#### Wyong DCP 2013: Development Controls for Wyong Shire

The following measures can be incorporated into Wyong DCP 2013 to improve our planning for coastal hazards:

- Chapter 77 Coastal Hazards is a current component of Wyong DCP 2005, prepared to provide interim guidelines until such time that the draft CZMP was complete. The purpose of Chapter 77 is 'to identify hazard zones along the Coast in which development will be restricted or in which design will have to reflect the potential hazard.' Chapter 77 will be amended to take into account the CZMP, and this Chapter will be incorporated into Wyong DCP 2013 as a chapter entitled 'Coastal Hazards'.

#### Key Planning Considerations:

#### Key Planning Considerations for COASTAL HAZARDS:

- *Undeveloped areas that are identified as "High Risk" or "Affected Areas" in the draft Coastal Zone Management Plan are to remain undeveloped.*
- *Redevelopment of existing areas identified as "High Risk" or "Affected Areas", in the draft Coastal Zone Management Plan is to be prohibited.*
- *No new development should be approved seaward of the immediate coastal erosion hazard line or seaward of the immediate geotechnical hazard line.*
- *Require new development in the 2050 and 2100 coastal erosion hazard area to include appropriately designed residential buildings, including development which can be relocated landward as the coastal erosion scarp recedes.*
- *Major infrastructure (such as main roads and sewerage systems) is not to be located in the 2050 or 2100 coastal hazard area, except where it can be protected in a cost effective manner that does not increase risks to other coastal values.*
- *Council will not approve new subdivisions, vulnerable development (including nursing homes and hospitals) or other development that intensifies land use in the 2050 or 2100 coastal hazard areas.*
- *Floor levels for new development in immediate inundation hazard areas must consider the 1% AEP storm wave run-up.*
- *Relocate surf clubs out of coastal erosion hazard areas when a major upgrade of facilities occurs, except surf club facilities that must be in the immediate hazard zone.*

**Strategic Actions and Local Initiatives:**

**COASTAL HAZARDS**

#	ACTIONS	RESPONSIBLE AUTHORITY	IMPLEMENTATION					COMMUNITY STRATEGIC PLAN	CENTRAL COAST REGIONAL STRATEGY
			LEP 2012	Am.	DCP 2012	Am.	Other		
NH09	Finalise and implement the draft Coastal Zone Management Plan (CZMP). The draft CZMP and associated mapping will identify areas subject to instability along the coastal region, including restriction of development in identified high-risk areas. Wyong LEP 2013 and Wyong DCP 2013 to reflect high-hazard areas and to provide guidelines and development application requirements for hazard areas.	WSC		X	X	X	X	<ul style="list-style-type: none"> <li>There are no CSP actions that apply to this component.</li> </ul> <p><b>7.5:</b> Local environmental plans will make provision for adequate setbacks in areas at risk from coastal erosion and/or ocean based inundation in accordance with Coastal Zone Management Plans. Until these plans are made by the Minister for the Environment and Climate Change, councils cannot zone land or approve new development or redevelopment in potential hazard areas, unless assessed within a risk assessment framework adopted by the council.</p>	
NH10	Place a notation on the Section 149 certificate for all properties within immediate, 2050 and 2100 coastal hazard areas and all properties seaward of the 2100 low hazard line for geotechnical hazards.	WSC					X		
NH11	Introduce provisions in Wyong LEP 2013 and/or Wyong DCP 2013 with requirements for appropriate geotechnical assessments of proposed development within the area bounded by the immediate hazard line and 2100 low hazard geotechnical line.	WSC		X	X				
NH12	Introduce provisions in the Wyong LEP 2013 and/or Wyong DCP 2013 that may require timed consents or triggers for new development in the 2050 or 2100 coastal hazard area. Before the expiry date of the timed consent or nominated trigger, the landholder must apply for an extension to the consent, relocate the structure landward or remove the structure.	WSC		X		X			
NH13	Investigate Shire-wide and/or area specific levies to fund coastline management mechanisms and maintain public accessibility and facility.	WSC					X		
NH14	Undertake individual Emergency Management Sub-Plans for the three hot spots identified by the NSW Coastal Reforms Package (The Entrance North, Noraville, Norah Head).	WSC					X		

## Planning for EROSION and SOIL INSTABILITY

**Please note:** Coastal erosion is discussed in the 'Planning for COASTAL HAZARD' section of this document.

### HOW DO WE SUSTAINABLY CATER FOR OUR RESIDENT, BUSINESS AND VISITOR POPULATION, IN TERMS OF MINIMISING EROSION AND SOIL INSTABILITY?



#### Background to EROSION and SOIL INSTABILITY:

Erosion and soil instability, including land slip, land slides and rock falls, can be caused by both natural and man-made causes. Natural causes include undercutting of cliffs and banks by stormwater or river erosion and saturation of slope material from intense or prolonged rainfall and seepage. These problems are exacerbated on land with a high degree of slope. Man-made causes can include removal of topsoil and vegetation; interference with natural drainage; leaking pipes; modification of and overloading of slopes; and excavation or displacement of rocks. Poor management of building sites, particularly in urban areas, can also lead to erosion and sedimentation issues. The majority of soils in Wyong LGA have high erosion potential and are highly dispersible.

#### Issues:

#### What are the current and foreseeable issues that impact development of land within areas of EROSION AND SOIL INSTABILITY?

##### Climate Change

More frequent intense rainfall events are expected to increase erosion impacts, given that water is a major force of erosion. Projected sea level rise will impact coastal erosion and exacerbate damage due to storm surge and coastal inundation.

##### Property Damage

Soil and slope instability can cause damage to both public and private property if development is inappropriately sited on unstable soil types or unsuitable slopes. Damage can include foundation failure, disturbance of underground services or loss of property due to slippage. This also represents a risk to human life.

##### Siltation of Waterways

Streambank erosion causes a deeper and wider waterway. Where the grade of the waterway flattens out, the water movement generally slows and sediment such as soil, rocks and other material is deposited. Over time, the sediment builds up and changes the alignment of the waterway. Past development in Wyong LGA has resulted in soil loss and siltation of waterways. In these areas soils are being stripped, eroded and deposited in waterways at a rate far exceeding natural processes. This siltation can have a negative effect on aquatic ecosystems, and are likely to increase with projected sea level rise and changes in rainfall patterns associated with climate change if not properly managed.

##### Increased Bushfire Risks

Slope is a significant factor influencing bushfire hazard, with bushfires increasing speed as slope increases. Therefore, increasing the number of dwellings located in areas of high slope will increase the risk from bushfire hazard.





**Planning for EROSION and SOIL INSTABILITY:****How do we plan for development having consideration for EROSION AND SOIL INSTABILITY?****Slope constraints**

The greater the slope the more likely there will be stability and erosion issues, with development on slopes more likely to have geotechnical problems; require extensive cut and fill; and excessive soil loss. Council has adopted a slope limit of 15% (approximately 8.5°) considered to define land capability for supporting more intense settlement patterns such as rural-residential development, or urban development. Council utilised a slope constraint map to assist in determining appropriate areas in this regard, with any land with a slope greater than 15% excluded from consideration for future urban development. Note: Certain areas may still be considered dependant on other constraints.

**Slope and Stability Assessment**

Council, in conjunction with the State Government, should undertake a Slope and Stability Assessment to identify and map at risk and/or unstable areas including those with known or potential slip issues in Wyong LGA. Council should also liaise with the Hunter-Central Coast Regional Environmental Management Strategy (HCCREMS) to develop a regional approach for the management of hazards associated with slope and stability.

**Erosion and Sediment Control Policy**

Managing Urban Stormwater: Soils & Construction (Landcom, 2004), is considered to be the industry standard for erosion and sedimentation control. While the current version is generally referred to as being best practice, it does not address local conditions and is not user friendly for small scale developers. To address this issue Council has developed an Erosion and Sediment Control Policy to assist those undertaking relatively small scale works (sites up to 2500m<sup>2</sup> in size). For sites larger than 2500m<sup>2</sup>, Wyong DCP 2005 (Chapter 67 - Engineering Requirements for Development) applies.

**Streambank Management Program**

All watercourses draining into the Tuggerah Lakes have sections identified as high priority for rehabilitation to improve water quality flowing through to the lakes. Projects being implemented from 2009-2013 as part of the Estuary Management Plan, include streambank rehabilitation in Wyong River, Ourimbah Creek, Tumbi Creek and Wallarah/Spring Creek to reduce erosion and stabilise creek banks.

**What are other Government Authorities currently doing?****Managing Urban Stormwater: Soils & Construction Vol 1 (Landcom, 2004)**

Considered to be the industry standard for erosion and sedimentation control, this document provides guidance for local councils and practitioners on the design,

construction and implementation of measures to improve stormwater management, including erosion and sediment control, during construction.

**Managing Urban Stormwater: Soils & Construction Vol 2 (Department of Environment and Climate Change, 2008)**

This document guides the application of the principles and practices of erosion and sediment control described in Volume 1 to projects that include service installations; waste landfills; unsealed roads; main road construction; mines; and quarries.

**The Standard Instrument, Wyong LEP 2013 and Wyong DCP 2013:****What provisions can be incorporated into our Planning Instruments what will help to manage EROSION AND SOIL INSTABILITY?****Wyong LEP 2013**

The following measures can be incorporated into Wyong LEP 2013 to improve our planning for erosion and soil instability:

- An assessment of topographical constraints will be undertaken for new urban release areas and any land that is too constrained due to slope or soils, or in capacity to achieve water quality targets will be identified and excluded from development areas.

**Wyong DCP 2013**

The following measures can be incorporated into Wyong DCP 2013 to improve our planning for erosion and soil instability:

- Chapter 67 - Engineering Requirements for Development, will be revised and will now be a Design and Construction Manual attached to Wyong DCP 2013 known as " Civil Works - Design and Construction Specification ". This will include consideration of erosion and sediment control issues. The Erosion and Sediment Control Policy will also continue to apply to permit some regulation of activities that do not fall within the development assessment process.
- The draft Water Sensitive Urban Design chapter will also address erosion and sediment control.

**Key Planning Considerations:****Key Planning Considerations for EROSION and SOIL INSTABILITY:**

- *Any land with a slope greater than 15% or land subject to known slip issues will be excluded from consideration for future urban development.*
- *A Soil and Water Management Plan is required for all developments. The scope of the plan will be dependent on the size of the development. Soil and Water Management Plans are to be consistent with Managing Urban Stormwater: Soils & Construction (Landcom, 2004); Council's Civil Works - Design and Construction Specification; and/or Policy E1 – Erosion and Sediment Control.*

**Strategic Actions and Local Initiatives:**
**EROSION AND SOIL INSTABILITY**

#	ACTIONS	RESPONSIBLE AUTHORITY	IMPLEMENTATION					COMMUNITY STRATEGIC PLAN	CENTRAL COAST REGIONAL STRATEGY
			LEP		DCP		Other		
			2012	Am.	2012	Am.			
NH15	Undertake assessment of topographical constraints for new urban release areas. Any land constrained due to slope, soil or inability to achieve water quality targets, is to be identified and excluded from development areas.	WSC		X		X	X	There are no CSP actions that apply to this component.	<b>7.5:</b> Local environmental plans will make provision for adequate setbacks in areas at risk from coastal erosion and/or ocean based inundation in accordance with Coastal Zone Management Plans. Until these plans are made by the Minister for the Environment and Climate Change, councils cannot zone land or approve new development or redevelopment in potential hazard areas, unless assessed within a risk assessment framework adopted by the Council
NH16	Liaise with the Hunter-Central Coast Regional Environmental Management Strategy to develop a regional-approach for the management of hazards associated with slope and stability, including land slip.	WSC					X		

## Planning for BUSHFIRE RISK

### HOW DO WE SUSTAINABLY CATER FOR RESIDENTS, BUSINESS AND VISITOR POPULATION, IN TERMS OF MINIMISING BUSHFIRE RISK?



#### Background to BUSHFIRE RISK:

Fires, including grass and bushfires, are considered to be an intrinsic part of Australia's environment. Fire was traditionally used as a land management tool by indigenous populations, whilst much of our native vegetation has evolved to tolerate or even require fire within the landscape. Fire can be utilised in a controlled manner to clear agricultural lands and protect properties from fire threats. However, the combination of climate, topography and vegetation in many areas of Australia combine to produce one of the most severe fire environments in the world.

Between 1967 and 1999, major Australian bushfires cost over \$2.5 billion or 10% of the cost of all major natural disasters in Australia (Geoscience Australia, 2007). Significant bushfires in Australia since 1999, including the Sydney Christmas Bushfires (2001/2002); the Canberra Bushfires (2003); and the Victorian Black Saturday Bushfires in 2009 are classified as major natural disasters affecting the Australian economy and resulting in the loss of human life. According to the Wyong Bushfire Management Committee, it is estimated that 25,149 properties within Wyong LGA are at risk from some level of bushfire threat.

#### Issues:

#### What are the current and foreseeable issues that are, and will continue to impact from increased BUSHFIRE RISK?

##### Risk to Property and Human Life

Bushfires are all too often associated with damage or loss of private and public property, environmental impacts, and more tragically the loss of human life. Bushfire risk needs to be carefully managed in the context of these dangers.

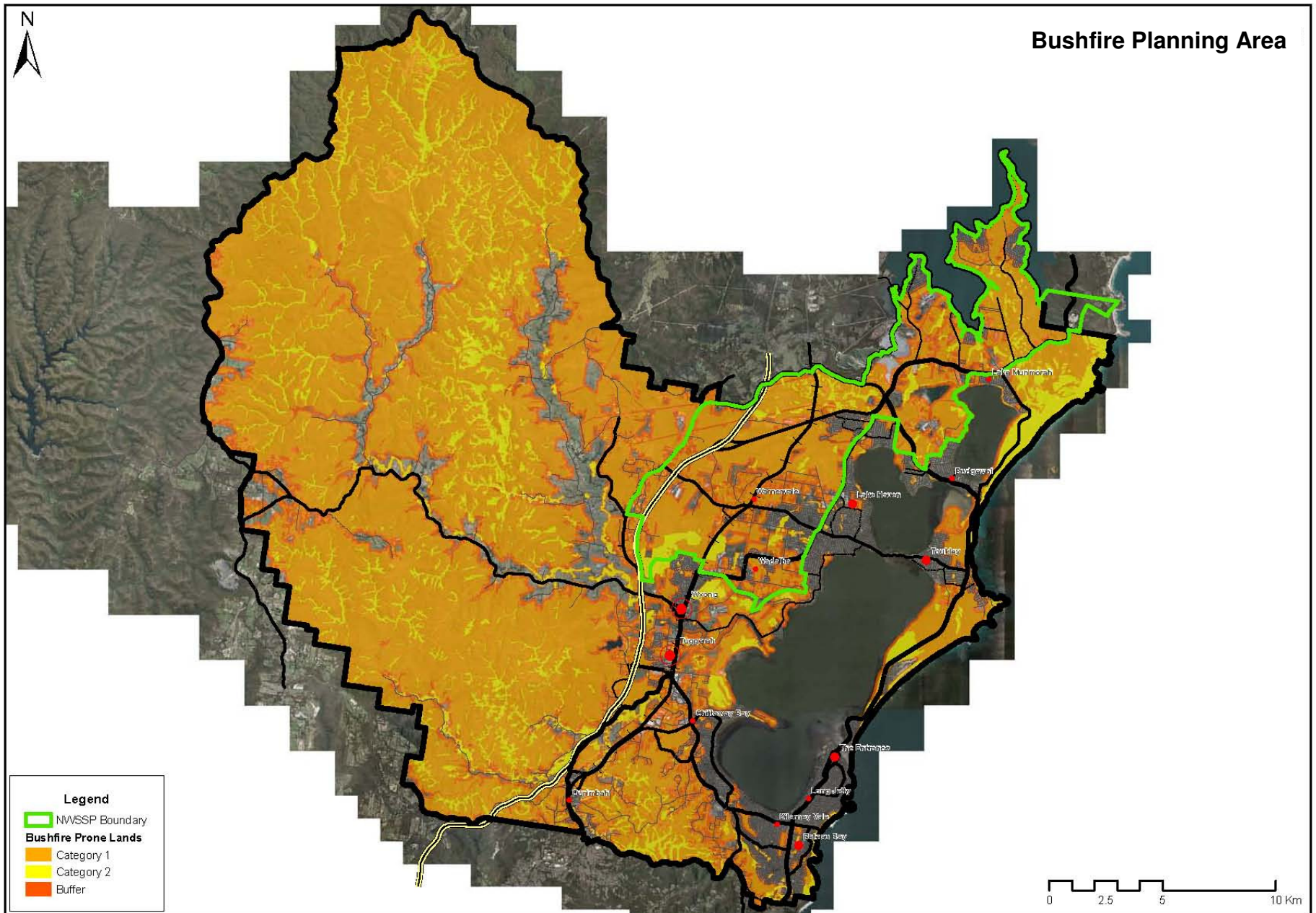
##### Climate Change – Increased Frequency of Bushfires

Climate changes has the potential to significantly impact on the bushfire threat in Australia. In considering climate change for Wyong LGA, the major impact of climate change on bushfire management is expected to be an increase in the number of days where the Fire Danger index is rated High, Very High, Severe, Extreme or Catastrophic by 2020, and consequently resulting in significant additional risk to life and property. Furthermore, it is considered that climate change impacts upon vegetation types and growth rates may further intensify the fire hazard. Additionally, fire seasons are expected to be longer overall, and opportunities to carry out hazard reduction works may be reduced.

Each year 'disaster-level' bushfires cost Australia an average of \$77 million (Bushfire CRC, 2004)

Modelling suggests that, by 2020, extreme fire danger days in south-eastern Australia may occur 5 to 65 per cent more often than at present (CSIRO, 2009)

Figure 24: Bushfire Hazard Categories



### Projected Population Growth

The Central Coast Regional Strategy (CCRS) requires Wyong LGA to accommodate an additional 70,000 residents over the next 25 years. Locating increased populations in future urban release area precincts nominated by the North Wyong Shire Structure Plan (NWSSP) will expose more residents, businesses and visitors to the threat of bushfire risk, increasing the risks to human life, property and the environment.

### Bushfire Management cannot be dealt with in isolation

The management of bushfires interacts with other policy areas including water supply, biodiversity, air pollution, tourism and timber production, as well as the more obvious impacts on human life and property. Therefore the requirement to manage threats to human safety and assets from bushfire has to be balanced against the needs of the environment and the economy. In particular, past patterns of infrastructure development (for example, telecommunications, water and sewer pump stations, community buildings) have not taken into account bushfire risk, resulting in a legacy of many sites that require ongoing management including significant vegetation modification. In the future, improved consideration at the early planning stage will minimise ongoing maintenance.

### Dispersed Rural Settlement and areas with limited road networks

The western part of Wyong LGA has a significant amount of dispersed rural settlement, representing significant emergency management issues. Additionally numerous areas have limited road networks with only one or two roads into the area, numerous dead end roads, or roads passing through significant bush land such as Fountaindale, Glenning Valley, Chain Valley Bay or Bushells Ridge. The key issues relate predominantly to the susceptibility of rural roads to be blocked by bushfires, and the relative isolation of these properties, resulting in a lack of emergency services to manage fires in the short term before resources can be sourced from other areas. Additionally, isolated developments often require significant and unacceptable vegetation modification to bring the site and access roads to the required standard of bushfire protection.

Continued dispersed settlement or location of Special Fire Protection Purpose classes of development (tourist facilities, childcare centres, schools, group homes) in isolated areas will exacerbate these problems. This will increase the number of people in locations where the ability to evacuate from the path of a fire is compromised, and would place a significant burden on emergency services to protect life, property and the environment.

#### Planning for our Population:

### How do we plan for development having consideration for BUSHFIRE RISK?

#### Bushfire Risk Management Plan

A Bushfire Risk Management Plan is a document which identifies bushfire risk across an area. The Plan is developed by the local Bushfire Management Committee, made up of

relevant State Government agencies, community representatives and Council. In addition to determining which community assets are at threat from bushfire, it identifies actions and nominates responsibility to mitigate risks through a variety of methods including hazard reduction through burning or mechanical means, or targeted community engagement to improve preparedness. On 18 July 2011, the Wyong Bushfire Risk Management Plan was endorsed for Wyong LGA.

#### Bushfire Prone Land Mapping

All LGAs with a bushfire risk are required to maintain a Bushfire Prone Land Map which is certified by the Commissioner of the NSW Rural Fire Service. The map identifies bushfire hazards and associated buffer zones in the LGA, and is the primary tool to trigger consideration of bushfire protection measures at the time of new development. Section 149 Certificates carry a specific notation, and development on areas identified as bushfire prone are subject to the development and planning controls of *Planning for Bushfire Protection (2006)* and associated documentation.

The Wyong Bushfire Prone Land Map was updated in August 2011. Currently approximately 21,000 properties are identified as bushfire prone.

### What are other Government Authorities currently doing?

#### Section 117 Direction No. 4.4 Planning for Bushfire Protection

Section 117 Ministerial Directions are issued by the Minister for Planning under the EPA Act for consideration in the preparation of new planning proposals for LEPs. Section 117 Ministerial Direction No. 4.4 was developed to *'protect life, property and the environment from bushfire hazards, by discourage the establishment of incompatible land uses in bushfire prone areas,'* and *'to encourage the sound management of bushfire prone areas'.*

Generally, the Ministerial Direction requires consent authorities to refer development proposals within bushfire prone areas to the Commissioner of the NSW Rural Fire Service for comment. It further ensures compliance with Planning for Bushfire Protection (NSW Rural Fire Service, 2006) and dictates development guidelines for proposals located within bushfire prone areas.

#### Planning for Bushfire Protection (NSW Rural Fire Service, 2006)

Planning for Bushfire Protection aims to utilise the Development Assessment system to protect human life and minimise impacts on properties from the threat of bushfire when new development is undertaken. Planning for Bushfire Protection establishes performance criteria for rural and rural-residential subdivisions and for infill and other developments on bushfire prone land. Planning for Bushfire Protection also specifies controls for special fire protection purposes, including schools, child care centres, hospitals, tourist accommodation, SEPP (Seniors Living) developments. Generally, all proposals within bushfire prone areas must demonstrate to both the consent authority and the NSW Rural Fire Service that developments satisfy the broad aims and objectives of this document.

### National Strategy for Disaster Resilience

In February 2011, the Council of Australian Governments formally adopted the National Strategy for Disaster Resilience. Section 3.6 – Reducing risks in the built environment specifically addresses the role of good planning to improve overall community resilience to natural disasters. This states clearly that “Locating new or expanding existing settlements and infrastructure in areas exposed to unreasonable risk is irresponsible. Land use planning policies can be used to reduce the number of people and assets in areas where risk profiles have increased over time or settled when these risks were not fully understood.” Priority outcomes in the Strategy include:

- *All levels of decision-making in land use planning and building control systems take into account information on risks;*
- *Development decisions take account of both public and private risks and costs;*
- *Settlements, businesses and infrastructure are, as far as is practicable, not exposed to unreasonable risks from hazards or they have implemented suitable arrangements including hardening infrastructure or taking up adequate insurance; and*
- *Following a disaster, the appropriateness of rebuilding in the same location, or rebuilding to a more resilient standard to reduce future risks, is adequately considered by authorities and individuals.*

#### The Standard Instrument, Wyong LEP 2013 and Wyong DCP 2013:

### What provisions can be incorporated into our Planning Instruments which will help to mitigate BUSHFIRE RISK?

#### Wyong Local Environmental Plan 2012

The following measures can be incorporated into Wyong LEP 2013 to improve our planning for bushfire risk:

- Wyong LEP 2013 will incorporate Clause 5.11 – Bushfire Hazard Reduction to ensure that bushfire hazard reduction work authorised by the *Rural Fires Act, 1997* can be carried out on land without any consent.

#### Wyong DCP 2013: Guidelines for Development in Wyong Shire

The following measures can be incorporated into Wyong DCP 2013 to improve our planning for bushfire risk:

- Although bushfire protection strategies and measures are well documented for residential, rural-residential developments and those classified as special fire

protection purposes, Council recognises that there are limited legislative controls and guidelines for industrial and commercial developments. Early consideration in subdivision design is required. As approximately 25,000 properties within Wyong LGA are at risk from bushfire threat, it is recommended that appropriate bushfire protection measures for all development be prepared and included as an amendment to Wyong DCP 2013: Development Controls for Wyong Shire.

#### Key Planning Considerations:

#### Key Planning Considerations for BUSHFIRE RISK:

- *Protect life, property, infrastructure and the environment from the threat of bushfire.*
- *New Greenfield and Infill development areas are to have adequate infrastructure for bushfire protection measures and emergency services including an Urban Interface Area as detailed in the Wyong DCP 2013.*
- *Master-planning for areas subject to bushfire hazard to provide for bushfire measures consistent with Planning for Bushfire Protection (NSW Rural Fire Service, 2006), specific LEP requirements and demonstrate compliance with ESD principles.*
- *Development in areas likely to be subject to Extreme, Very High or High bushfire risk, or that have significant limitations for safe access and egress, will require specific consideration.*

**Strategic Actions and Local Initiatives:**

**BUSHFIRE MANAGEMENT**

#	ACTIONS	RESPONSIBLE AUTHORITY	IMPLEMENTATION					COMMUNITY STRATEGIC PLAN	CENTRAL COAST REGIONAL STRATEGY
			LEP 2012	Am.	DCP 2012	Am.	Other		
<b>NH18</b>	In light of anticipated increases in bushfire intensity and frequency due to Climate Change, Council to adopt a risk-based approach and compliance with ESD principles.	WSC					<b>X</b>	<ul style="list-style-type: none"> <li>There are no SSV actions that apply to this component.</li> <li>There are no CCRS actions that apply to this component.</li> </ul>	
<b>NH19</b>	Undertake a study to determine appropriate bushfire protection measures for all development This should be included as an amendment to Wyong DCP 2013.	WSC				<b>X</b>	<b>X</b>		

## Planning for ACID SULFATE SOILS and CONTAMINATED LANDS

**HOW DO WE SUSTAINABLY CATER FOR OUR RESIDENTS, BUSINESS AND VISITOR POPULATION, IN TERMS OF MINIMISING RISK FROM ACID SULFATE SOILS AND CONTAMINATED LANDS?**



### Background to ACID SULFATE SOILS AND CONTAMINATED LANDS:

#### Acid Sulfate Soils

The OEH defines acid sulfate soils as naturally occurring sediments and soils containing iron sulfides. Acid Sulfate Soils are particularly prevalent along the NSW coastline. Given they are formed under tidal conditions, they have the ability to occur in a range of estuarine and coastal locations; including tidal flats; salt marshes and swamps.

The total damage and cost to development from acid sulfate soils across Australia is thought to exceed \$10 billion.  
(CRC Care Pty Ltd, April 2009)

The exposure of sulfides to oxygen by development activities, including drainage or excavation, generates sulphuric acid, which in turn, results in adverse impacts upon the natural and built environments. Mapping undertaken by the then Department of Land and Water Conservation indicates the location of actual and the probability of potential acid sulfate soils occurring within the Wyong LGA.

#### Contaminated Lands – Closed Landfills

There are eight closed landfills in the LGA - Bateau Bay, Mardi, Gwandalan, Shelly Beach, Tumbi Umbi, Toukley, Warnervale and North Entrance. The North Entrance site is no longer in Council's ownership and is now used as a golf course with adjoining sites developed for residential and commercial uses. All closed landfills are classified as potentially contaminated land under the Contaminated Lands Act and Council is required to investigate the sites and undertake rehabilitation works (if required) in order to minimise environmental impacts. Council has a program in place to rehabilitate these sites over the next seven years.

#### Other Contaminated Sites

Other forms of soil contamination, including current or former service stations, mechanical workshops and industrial premises, may affect other development sites in the Wyong LGA. Some former agricultural land can also be liable to be contaminated from the use of various hazardous chemicals and pesticides. The OEH administers the Contaminated Lands Register.



Figure 25: Acid Sulfate Soils

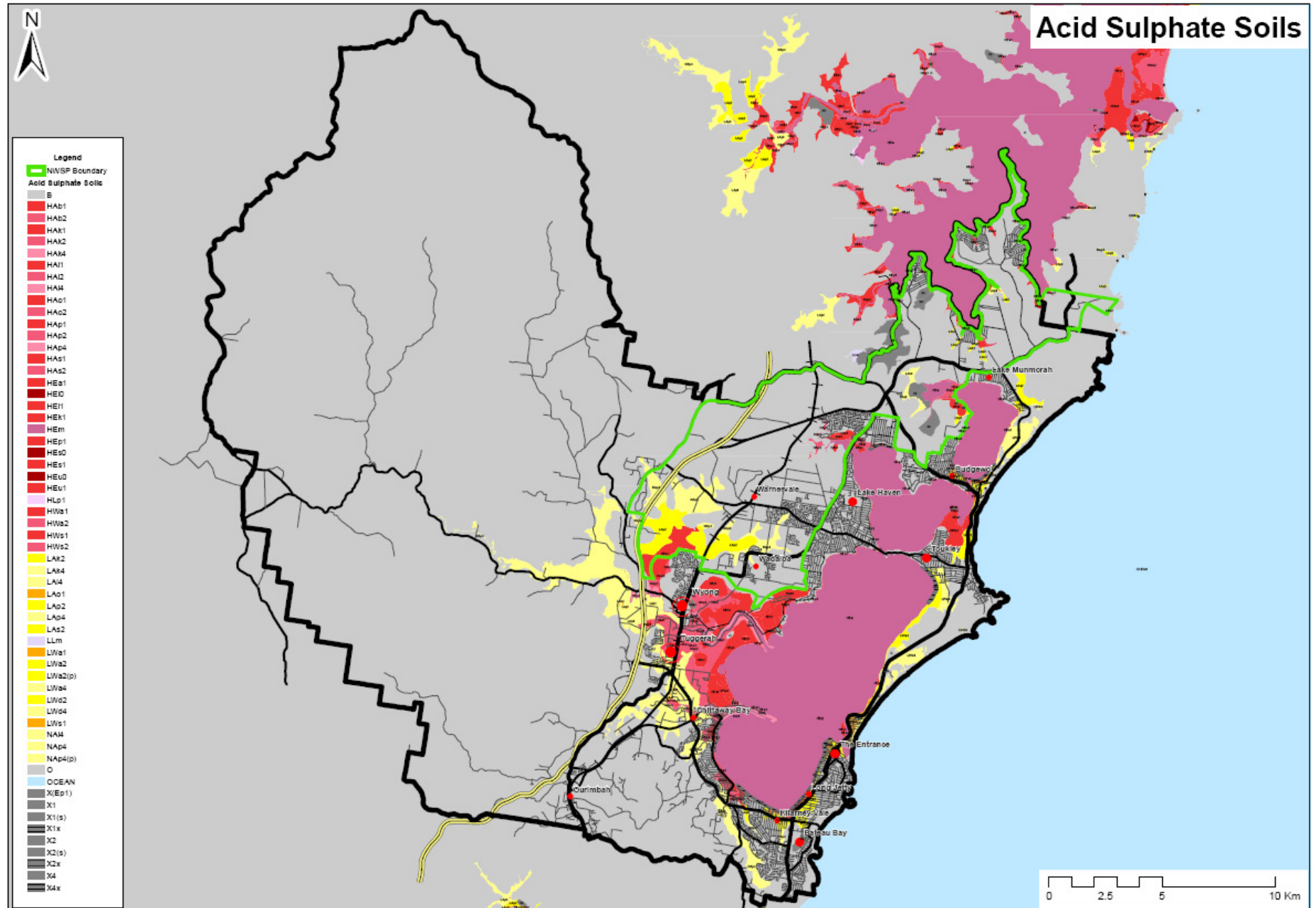
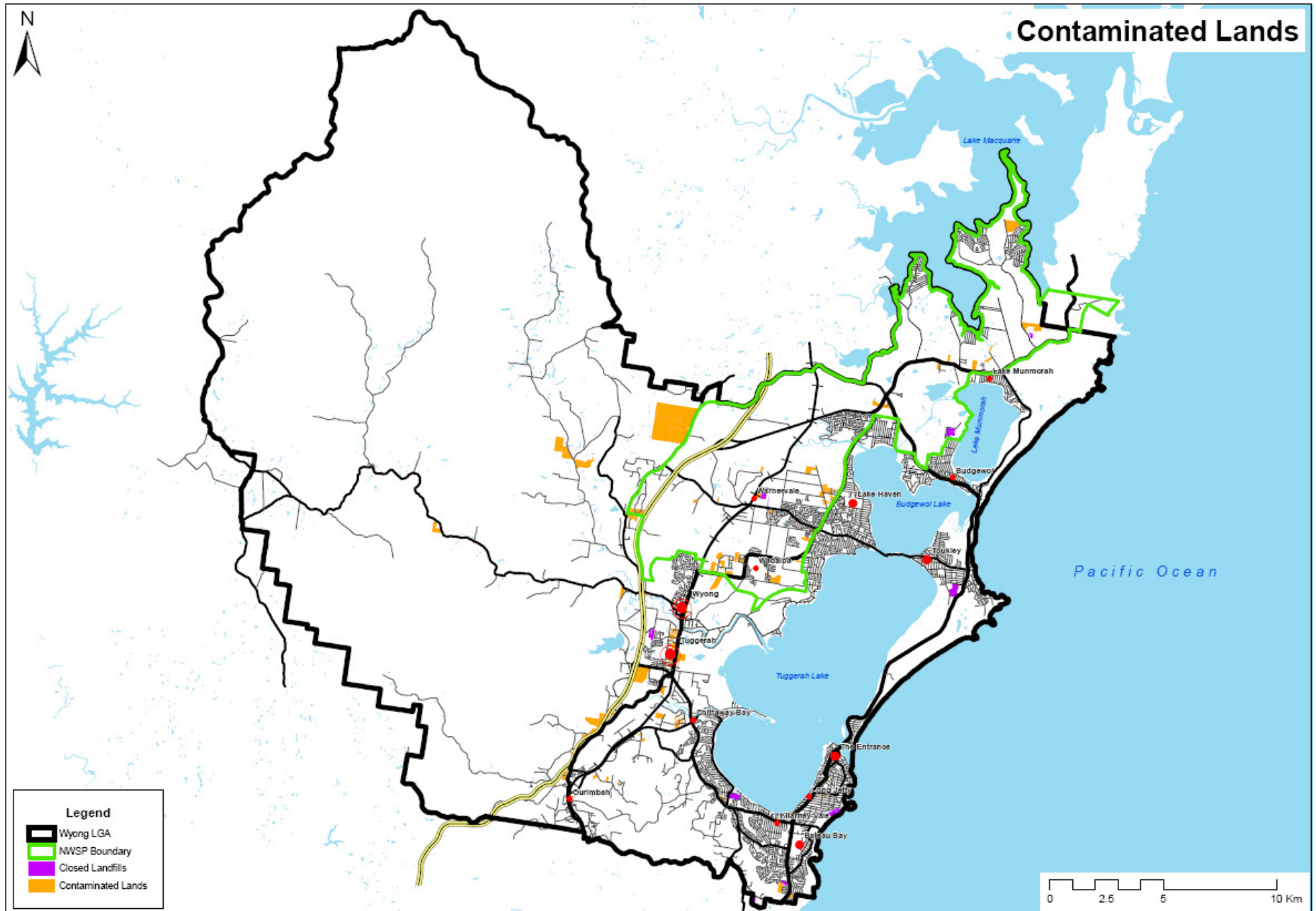


Figure 26: Contaminated Lands



**Issues:****What are the current and foreseeable issues that impact upon development of land containing ACID SULFATE SOILS AND CONTAMINATED LANDS?****Acid Sulfate Soils***Biodiversity and Aquatic Health*

Adverse impacts of acid sulfate soils include damage to critical habitat areas and wetland biodiversity and the loss of fish stocks. Inappropriate drainage and excavation associated with urban development costs the NSW fishing industry \$23 million per year (Department of Environment, Climate Change and Water, 2008).

*Infrastructure Damage*

Sulfuric acid produced by Acid Sulfate Soils corrodes concrete, iron, steel and certain aluminium alloys. Disturbance of acid sulfate soils has been linked to public and private infrastructure damage, including corrosion to concrete structures and slabs, fence posts, foundations of buildings, underground concrete water and sewerage pipes. The costs associated with damage to public and private infrastructure is significant.

*Increased Cost of Development*

The cost of testing, treating and monitoring of Acid Sulfate Soils can add substantially to the costs of development.

*Public Health*

The public health implications of disturbing Acid Sulfate Soils are not well known or understood. However, the loss of biodiversity habitat, particularly along estuarine and tidal locations, can result in an increase in transmittable viruses, such as Ross River Fever. Drinking water can also become contaminated by sulfuric acid.

*Agricultural Impacts*

Acid Sulfate Soils reduce farm productivity by decreasing the availability of soil nutrients to plants, and reducing animal productivity by discouraging quality agricultural environments.

*Lack of Community Knowledge of Risks*

While there is relatively good information about the occurrence and location of Acid Sulfate Soils within the Wyong LGA, Council recognises that the risks associated with the disturbance of Acid Sulfate Soils within the community is not well known.

**Contaminated Lands***Increased Cost of Development*

Development on contaminated land is often prohibitively expensive, due to the costs associated with rehabilitating the contaminated land. There are a number of unknowns associated with development of a contaminated site, including exposure to legal liability,

damages and compensation claims; delays in development; and extensive remediation measures that may be required.

*Public Health Implications*

Depending on the type of contamination and the nature of the development proposal, significant health implications could be expected if a contaminated site is inappropriately developed without adequate remediation.

*Environmental Health Implications*

Development of a contaminated site often results in increasing exposure pathways for the contaminants to enter the environment. Environmental toxins introduced into the environment can cause a loss of habitat and subsequent loss of biodiversity in the area.

**Planning for our Population:****How do we plan for development having consideration for ACID SULFATE SOILS AND CONTAMINATED LANDS?****Acid Sulfate Soils***Acid Sulfate Soil Mapping*

Acid Sulfate Soil Mapping was undertaken in the late 1990s by the then Department of Land and Water Conservation. Acid Sulfate Soil mapping identifies the probability of different classes of Acid Sulfate Soil and their required management. To build on this information, Council will continue to refine Acid Sulphate Soil mapping, and liaise with the HCCREMS to develop a regional approach to the ongoing management of Acid Sulfate Soils.

*Acid Sulfate Soil Planning Guidelines*

In 1994, the State Government established the Acid Sulfate Soils Management Advisory Committee to coordinate a State-wide approach to Acid Sulfate Soil issues. Acid Sulfate Soil Guidelines were prepared to provide advice to assist in strengthening provisions in LEPs, particularly for rezoning land in Acid Sulfate Soil areas; managing Acid Sulfate Soils within existing land use zones; and assessing developments affecting Acid Sulfate Soils.

*Increasing Community Awareness*

Community Education Programs may be required in order to raise community awareness about the potential impacts from inappropriate Acid Sulfate Soil management.

**Contaminated Lands***Section 149 Certificates*

Contaminated lands are controlled at State Government level, via the OEH administering the Contaminated Lands Register. Council is required under Section 149 of the EPA Act, to list whether a site is significantly contaminated; is under a management order; subject of

an approved voluntary management proposal; subject to ongoing maintenance order or if the site is subject to an audit statement.

### What are other Government Authorities currently doing?

#### Acid Sulfate Soils

*Section 117 Ministerial Direction No. 4.1 Acid Sulfate Soils*

Section 117 Ministerial Directions are issued by the Minister for Planning under the EPA Act for consideration in the preparation of new planning proposals for LEPs. Section 117 Ministerial Direction No. 4.1 Acid Sulfate Soils was developed to avoid adverse environmental impacts from the use of probable Acid Sulfate Soil land. The Ministerial Direction requires Planning Authorities to consider the Department of Planning and Infrastructure's Acid Sulfate Soils Planning Guidelines; comply with the provisions of model local clause 7.1; and not permit intensification of land uses on land identified as actual or potential Acid Sulfate Soils, unless an Acid Sulfate Soils study has been prepared.

#### Contaminated Lands

##### Federal Government

*National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM)*

The NEPM was developed due to increasing pressure to redevelop former industrial and agricultural land. As a result, there was a need to ensure that appropriate processes were in place to properly assess potentially contaminated sites. The NEPM establishes a nationally-consistent approach to the assessment of site contamination to ensure sound environmental management practices by the community which includes regulators, site assessors, contaminated land auditors, land owners, developers and industry.

##### State Government

*Contaminated Land Management Act 1997 (CLM Act)*

The CLM Act and *Contaminated Land Management Amendment Act 2008* regulates seriously contaminated sites in NSW. The CLM Act establishes a process for the EPA to identify, investigate and (where appropriate) order the remediation of land if the EPA considers the land to be significantly contaminated. The amendments aimed to allow sites to be cleaned up more efficiently while reinforcing the "polluter pays" principle.

*Protection of the Environment (Operations) Act 1997 (POEO Act)*

Water and land pollution is regulated under the POEO Act.

*Environmental Planning and Assessment Act 1979 and State Environmental Planning Policy No. 55 – Remediation of Land*

Contaminated land is also regulated under the EPA Act and State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55). SEPP 55 provides that land must not be rezoned or developed if it is unsuitable for a proposed use because it is contaminated. If an assessment of contamination finds the land is unsuitable for the proposed use,

remediation must take place before the land is developed. The policy is relevant in considering possible contamination sources in the assessment of new development areas.

**The Standard Instrument, Wyong LEP 2013 and Wyong DCP 2013:**

### What provisions can be incorporated into our Planning Instruments to mitigate the impacts of ACID SULFATE SOILS AND CONTAMINATED LANDS?

#### Wyong Local Environmental Plan 2012

The following measures can be incorporated into Wyong LEP 2013 to improve our planning for Acid Sulfate Soils:

- Model local clause 7.1 – Acid Sulfate Soils aims to ensure that development does not disturb, expose or drain acid sulfate soils and cause environmental damage. It specifies when development consent for activities on land containing Acid Sulfate Soils must be obtained by Council, and furthermore, requires appropriate Acid Sulfate Soil Management Plans to accompany development applications. Given the importance of managing Acid Sulfate Soils within Wyong LGA, Clause 7.1 – Acid Sulfate Soils should be included within Wyong LEP 2013. While previously not included within the provisions of draft Wyong LEP 1991, preparing a new LEP will enable the incorporation of Acid Sulfate Soils mapping.

The following measures can be incorporated into Wyong LEP 2013 to improve our planning for contaminated lands:

##### *Contaminated Lands*

- There are a number of draft local clauses that may be suitable to address contaminated land issues. This needs to be amended as more information becomes available in relation to the LEP.

#### Wyong DCP 2013: Development Controls for Wyong Shire

No provisions have been identified for inclusion within Wyong DCP 2013.

##### Key Planning Considerations:

### Key Planning Considerations for ACID SULFATE SOILS and CONTAMINATED LANDS:

- Manage the impacts of Acid Sulfate Soils for public and environmental health, through increased community awareness and consistent consideration of appropriate guidelines and controls in both development applications and the planning proposal process.
- Development on lands identified as having the probability of containing Acid Sulfate Soils will consider all necessary guidelines and controls.
- Maintain Section 149 Notations for lands affected by land contamination.

**Strategic Actions and Local Initiatives:**
**ACID SULFATE SOILS AND CONTAMINATED LAND**

#	ACTIONS	RESPONSIBLE AUTHORITY	IMPLEMENTATION				Other	COMMUNITY STRATEGIC PLAN	CENTRAL COAST REGIONAL STRATEGY
			LEP 2012	Am.	DCP 2012	Am.			
<b>NH19</b>	Incorporate model local clause 7.1 Acid Sulfate Soils within Wyong LEP 2013.	WSC	<b>X</b>					<ul style="list-style-type: none"> <li>▪ There are no CSP actions that apply to this component.</li> <li>▪ There are no CCRS actions that apply to this component.</li> </ul>	
<b>NH20</b>	Develop a community education program to increase awareness of the risks associated with Acid Sulfate Soils.	WSC					<b>X</b>		
<b>NH21</b>	Liaise with the Hunter and Central Coast Regional Environmental Management Strategy to develop a regional approach to the management of Acid Sulfate Soils.	WSC					<b>X</b>		
<b>NH22</b>	Continue to refine Councils Acid Sulfate Soil mapping and update Wyong LEP 2013 as information becomes available.	WSC					<b>X</b>		
<b>NH23</b>	Maintain Section 149 notations for lands affected by land contamination.	WSC					<b>X</b>		

## Planning for SALINITY

### HOW DO WE SUSTAINABLY CATER FOR OUR RESIDENTS, BUSINESS AND VISITOR POPULATION, IN TERMS OF MINIMISING RISK FROM SALINITY?

#### Background to SALINITY:

Dryland salinity causes the most widespread damage in Australia, and occurs due to the movement of salt to the land surface with groundwater, which can then seep into rivers and streams (CSIRO, 2008). Wetland salinity occurs due to rising salty groundwater entering the wetland; and wetting and drying of the wetland without flushing, causing the salts to accumulate over time (Nielsen, D. and Brock, D. 2006). Increasing salinity levels in river systems are occurring in the Wyong LGA due to increasing urban development and loss of natural ecosystems and agricultural lands. Salinity in the Tuggerah Lakes system fluctuates due to freshwater inputs from catchment runoff and precipitation, and by saltwater inputs from the ocean.

Salinity is estimated to cost NSW around \$180-\$200 million each year in the loss of productive land, lack of suitable water for irrigation, damage to infrastructure and increased costs to industry (Hunter CMA, 2011)

#### Issues:

#### What are the current and foreseeable issues that are, and will continue to impact development of land within areas of HIGH SALINITY?

##### Biodiversity

Salinity impacts on soil and water quality, causing a shift in vegetation type with colonisation and dominance by salt tolerant plants, and saline pools in creek beds, eventually reducing biodiversity.

##### Infrastructure

Salty groundwater and soils can affect public infrastructure such as buildings, roads and other infrastructure, resulting in increased maintenance and replacement costs.

##### Agricultural Productivity

Increasing soil salinity can reduce agricultural productivity, making it difficult for plants to extract water and nutrients from the soil. In the worst case scenario, some salts are toxic to certain plants, and most normal crop and pasture plants are not highly salt-tolerant and will eventually die under saline conditions.

#### Climate Change

There is a risk of saltwater intrusion to the LGA's freshwater wetlands from rising water tables due to increasing sea levels associated with climate change. With this will come a change to vegetation community types to those more tolerant to more saline conditions and a loss of biodiversity as species dependent upon the existing flora die out or relocate.

#### Planning for our Population:

#### How do we plan for development having consideration for SALINITY?

##### The Tuggerah Lakes Estuary Management Plan

Developed in 2006, the Tuggerah Lakes Estuary Management Plan is the platform by which Council will manage the lakes and estuary into the future. Its primary objective is to provide direction for the management of Tuggerah Lakes and its catchment in order to ensure the sustainability of its ecological systems, however the plan does have a role in reducing salinity in the lakes system by reducing the amount of sediment that ends up in the lakes from the various tributaries. The Tuggerah Lakes Estuary Management Plan is discussed in more detail in the 'Planning for ENVIRONMENT' chapter of this document.

##### Land Use Planning

Council can assist in managing salinity impacts by ensuring appropriate land use and protecting and/or rehabilitating native vegetation in areas prone to salinity issues. Land is to be used and developed in a manner that does not significantly increase water infiltration to groundwater systems and does not significantly increase salt loads in waterways, wetlands, drainage lines, or soils. In order to assist Council in making informed land use planning decisions, a study needs to be undertaken to identify saline soils within the LGA so that development can be controlled or limited accordingly.

##### Salinity Management Strategy

Council should develop a Salinity Management Strategy including consideration of infrastructure programs; education and awareness programs; groundwater and water quality monitoring programs; Plans of Management for community land, parks and reserves; stormwater and wastewater management plans, and Section 94 Development Contributions Plans. This may also require close liaison with HCCREMS and Hunter-Central Rivers Catchment Management Authority (CMA) to develop a regional approach to the management of saline soils.

#### What are other Government Authorities currently doing?

##### Catchment Action Plans

State Government CMA's are responsible for developing a Catchment Action Plan (CAP) for their catchment. The Hunter-Central Rivers CAP applies to Wyong LGA and runs from 2006-2015. In terms of salinity, the Hunter-Central Rivers CAP is consistent with the NSW

Salinity Strategy; and National Action Plan for Salinity and Water Quality. The CAP defines salinity targets, as well as other natural resource objectives, for the region and describes the best management actions the community must undertake in order to help meet the targets. Thousands of individual projects will contribute to achieving the goals of the CAP including things like re-establishing native vegetation on a riverbank, holding educational workshops on sustainable agriculture, and supporting community salinity monitoring in local waterways. In terms of salinity, a key management target to be achieved by 2015 includes revegetating 1200ha of salinity recharge areas with deep-rooted vegetation. The Hunter-Central Rivers Catchment Management Authority administers the CAP.

### **Caring for Our Country Program**

In June 2008, the Federal Government introduced the *Caring for Our Country* program, with the aim of providing funding for various natural resource management programs, including salinity mitigation programs.

#### **The Standard Instrument, Wyong LEP 2013 and Wyong DCP 2013:**

### **What provisions can be incorporated into our Planning Instruments what will help to manage SALINITY?**

#### **Wyong LEP 2013**

The following measures can be incorporated into Wyong LEP 2013 to improve our planning for salinity:

- Council should consider developing and implementing a clause for inclusion in a future amendment of Wyong LEP 2013 in order to ensure the impact of future development on the salinity process is considered.

#### **Wyong DCP 2013**

The following measures can be incorporated into Wyong DCP 2013 to improve our planning for salinity:

- Council's DCP 2005 Chapter 67 - Engineering Requirements for Development, has been reviewed and should not be incorporated in Wyong DCP 2013 but instead be established as a Technical Guideline rather than a DCP chapter. The Technical Guideline will provide support and detail to Wyong DCP 2013, and will address erosion and sediment control issues. Council's Erosion and Sediment Control Policy will also continue to apply.
- In addition, Council's Water Sensitive Urban Design (WSUD) DCP chapter will also address erosion and sediment control issues. These measures will assist in reducing salinity issues in the LGA.
- Upon completion of the Salinity Management Strategy, it is recommended that salinity measures be incorporate within the WSUD DCP chapter.

#### **Key Planning Considerations:**

#### **Key Planning Considerations for SALINITY:**

- *Recognise and assess the impacts of development on groundwater and salinity.*
- *Ensure that land is developed in a manner that minimises disturbance to natural hydrological systems, does not significantly increase water infiltration and does not significantly increase salt loads in waterways, wetlands, drainage lines, or soils.*

**Strategic Actions and Local Initiatives:**
**SALINITY**

#	ACTIONS	RESPONSIBLE AUTHORITY	IMPLEMENTATION				Other	COMMUNITY STRATEGIC PLAN	CENTRAL COAST REGIONAL STRATEGY
			LEP 2012	Am.	DCP 2012	Am.			
NH24	Undertake a study to identify saline soils within the LGA and control or limit development accordingly.	WSC					X	<ul style="list-style-type: none"> <li>▪ There are no CSP actions that apply to this component.</li> <li>▪ There are no CCRS actions that apply to this component.</li> </ul>	
NH25	Liaise with Hunter Central Coast Regional Environment Strategy and Hunter-Central Rivers Catchment Management Authority to develop a regional approach to the management of saline soils.	WSC					X		
NH26	Develop a Salinity Management Strategy including consideration to infrastructure; education and awareness programs; groundwater and water quality monitoring; Plans of Management for community land, parks and reserves; stormwater and wastewater management plans, and Section 94 Development Contributions Plans.	WSC					X		
NH27	Incorporate salinity measures within WSUD DCP chapter upon completion of the Salinity Management Strategy.	WSC				X			



## Planning for CLIMATE CHANGE

### HOW DO WE SUSTAINABLY CATER FOR OUR RESIDENTS, BUSINESS AND VISITOR POPULATION, IN TERMS OF MINIMISING RISK FROM CLIMATE CHANGE?



### Background to CLIMATE CHANGE

The Earth's climate has always changed, alternating between long periods of warm (interglacial) and cool (glacial) conditions, cycling over thousands of years (Cleugh et al, 2011). However, coinciding with a significant increase in human produced greenhouse gas emissions since the 20<sup>th</sup> century, the Earth's climate has been observed to change more rapidly than can be attributed to any natural causes. The greenhouse effect is the process whereby greenhouse gases in the atmosphere absorb the radiation released by the Earth's surface, reducing the amount of heat escaping into space. Observed changes include increases in global average air and ocean temperature, widespread melting of snow and ice, rising global sea levels, and altered atmospheric and ocean circulation which influences rainfall and wind patterns (Cleugh et al, 2011).

Wyong LGA is particularly vulnerable to the impacts of climate change due to our natural and built assets, diversity of land uses, and low lying coastal topography. Climate change is considered separately to other natural hazards, as climate change may have an impact on each individual natural hazard. Therefore, particular planning considerations will be required in order to appropriately plan for future development within Wyong LGA.

#### Issues:

#### What are the current and foreseeable issues that are, and will continue to impact from development of land affected by CLIMATE CHANGE?

##### Rainfall: Increased Incidence of Intense Rain and Storm Events

Increased intense rainfall events are likely to increase the incidence of flash flooding and riverine flooding events. This hazard is also expected to increase in settlements around catchments in lower coastal areas and coastal lakes and lagoons of the LGA due to the combination of raised ocean levels and catchment flooding (Department of Environment, Climate Change and Water, 2010).

##### Rising Temperatures: More Hot Days and Heatwaves

Evidence is emerging of increased frequency of severe heatwaves, with daily maximum temperatures projected to increase by an average of 1.5–3°C, with the greatest increase during winter and spring (2–3°C) and the smallest increase in summer (1–2°C) (Department of Environment, Climate Change and Water, 2010). Increased temperatures can have a direct impact on the health of our population, by causing an increase in heat-related deaths, particularly in the elderly and very young. In addition, increased incidence of infectious diseases may affect health indirectly; for example, by increasing exposure to dengue fever. Infrastructure failure such as rail transport and power failure is also a possibility as a result of extreme temperatures.

From 2001-2010, the global average temperature was 0.46°C above the 1961-1990 average, the warmest decade on record (Climate Commission, 2011)

### Rising Sea Levels: Increased Storm Surges and Permanent Inundation

The main contributors to sea-level rise in the past half century have been expansion of the upper layers of the oceans as they warm, and increased discharge from glaciers worldwide (Church et al, 2010). Global sea levels are currently rising at around 3.2mm a year, nearly twice the average rate experienced during the 20th century (Bindoff et al, 2007). Current climate models project that by 2100, global sea levels could be up to 0.59cm above 1990 values (International Panel on Climate Change, 2007). Coastal zones and estuaries are at risk of sea-level rise, storm surges, and floods. Given the coastal nature of the majority of urban settlement within Wyong LGA, a large proportion of the LGA will be affected in some way by future sea level rise. Private property, as well as essential services and infrastructure such as electricity generation and wastewater management would be at risk from flooding, erosion, the intrusion of sea water into coastal freshwater systems and drainage systems, and increased corrosion. Inundation of sewerage treatment plants as well as permanent inundation of some land is also expected to cause public health concerns.

Severe flooding in Queensland and Victoria in early 2011 has raised the question of a possible link between the floods and human-induced climate change (Climate Commission, 2011)

### Rising sea levels: Increased coastal erosion and inundation

Rising sea levels are already significantly increasing the frequency of coastal sea-level events in Australia and overseas, occurring when storms and strong onshore winds coincide with high tides. Increased wave height and altered wave direction may increase coastal erosion, shoreline recession and inundation and may affect coastal properties and infrastructure. For example, a projected rise in sea level of up to 40cm by 2050 is likely to result in a recession of the coastline of 20–40m (Department of Environment, Climate Change and Water, 2010).

Global sea level has risen by about 20cm since the 1880s, when the first global estimates could be made (Climate Commission, 2011)

### Increased Bushfire Frequency

Increases in temperature, evaporation and high-risk fire days are likely to increase bushfire frequency and intensity across the Central Coast region, as well as extending the fire season (Department of Environment, Climate Change and Water, 2010). Bushfire is considered separately in this chapter.

### Public Liability – Cost to Local Council’s for Poor Decision Making

In NSW, Clause 733 of the *Local Government Act 1993* permits a legislative exemption from liability for reasonably-based local government decision making. However, this decision making needs to be undertaken in “good faith” by the Council. A concern for

Council is the issue of liability where approval is given to develop in flood-prone areas, or those areas anticipated to become flood-labile due to the effects of climate change.

### Availability of affordable insurance

The availability and affordability of insurance for private dwellings and public infrastructure is expected to decrease as flooding events increase in both frequency and severity due to climate change impacts. It is likely that some residents will be unable to obtain affordable insurance for dwellings in flood or even bushfire-prone areas, leaving residents at risk of major financial hardship in the event of these natural disasters.

### Planning for our Population:

### How do we plan for development having consideration for CLIMATE CHANGE?

#### Draft Climate Change Policy

In December 2009, Council considered a staff recommendation to exhibit a draft Climate Change Policy. The Policy was designed to address the complexity of issues and risks facing the Community regarding the impacts of climate change. These included sea level rise, bushfire, human health implications and natural resource management. The draft Policy requires review, revision and adoption by Council.

#### Floodplain Risk Management Plans

The State Government’s Sea Level Rise Policy requires climate change when undertaking flood hazard assessments in accordance with the Floodplain Development Manual. Tuggerah Lakes and Porters Creek Floodplain Risk Management Plans have been developed since the issue of the State Government Sea Level Rise Policy, and therefore give consideration to the potential impact of sea level rise and potential increase in storm intensity. The remaining Floodplain Risk Management Plans will need to be reviewed and amended in line with this requirement.

#### Climate Change Adaptation Plan

Rising sea levels will be one of the major impacts of climate change in Wyong LGA with many assets vulnerable to coastal processes. Council has undertaken a comprehensive climate change risk assessment and is developing an Adaptation Plan which will provide actions specific to Council activities. This complements a Regional Adaptation Plan undertaken with the HCCREMS in 2010.

In the longer term Council will apply a strategy of adaptation and planned retreat. Planned retreat allows the temporary use and occupation of coastal lands until coastline hazards threaten life and property. This will require the relocation and/or re-design of assets, infrastructure and development to outside coastal risk areas so that they are more resilient to coastal erosion and recession whilst allowing some interim protection of public

and private assets to allow residents and businesses time to refine and implement adaptive or retreat strategies.

### Local Mitigation Strategy

Council needs to consider actions it can take to promote energy conservation and reduction of greenhouse emissions in the community. For example:

- Settlement patterns influence the emission of greenhouse gases, with the dispersed settlements within Wyong LGA resulting in an increased need to use cars to travel around the LGA.
- Similarly, poorly designed dwellings that are not appropriately oriented or do not have appropriate insulation, result in the increased use of air conditioners and heaters, which increases greenhouse gas emissions.

### Identify opportunities

Opportunities are likely to arise from climate change issues that Council can plan ahead for and be ahead of the curve, such as:

- The local economy is likely to be impacted by rising costs associated with emissions abatement. Industry and activities which use more electricity and fuel will be most affected. New industry opportunities will emerge in a low carbon economy in particular carbon sequestration and renewable energy.
- There is likely to be a trend towards more efficient motor vehicles, including hybrids and electric vehicles and greater demand for efficient public transport systems. This will need to be catered for as part of future growth within the Wyong LGA.
- Investigation of opportunities for the utilisation of existing or future land holdings for carbon offsets for Council activities.

### Wyong Shire Sustainable Living Guide

The Wyong Sustainable Living Guide is designed to help Wyong LGA residents take action to live more sustainably at home and in the community. The Guide provides ideas, tips and inspiration about how small changes can have positive impacts on the environment. The top ten actions are (in no particular order):

- |                                   |                                               |
|-----------------------------------|-----------------------------------------------|
| ▪ Buy an energy efficient car     | ▪ Insulate, shade and weatherproof your house |
| ▪ Embrace energy efficiency       | ▪ Help protect our waterways                  |
| ▪ Reduce and offset car emissions | ▪ Make your business carbon neutral           |
| ▪ Eat less meat                   | ▪ Use public transport                        |
| ▪ Install solar hot water         | ▪ Use water efficiently.                      |

Encouraging the LGA's residents to live more sustainably will have positive impacts in reducing the greenhouse gas emissions per household. Other initiatives include continuing to develop and implement Sustainability Scorecards for development, such as rezoning applications, which are not covered by BASIX.

### Coastal Zone Management Plan (CZMP)

The draft CZMP is discussed in more detail earlier in this chapter, under the heading 'Planning for COASTLINE MANAGEMENT'.

### What are other Government Authorities currently doing?

#### Federal Government

The Federal Government has adopted a predicted sea-level rise increase of 1.1m by 2100. In addition, the Federal Government has developed the National Climate Change Adaptation Framework, which sets the agenda for a national approach to long-term adaptation to climate change. The Framework covers a range of co-operative actions between all levels of government to address key demands from business and the community for targeted information on climate change impacts and adaptation options. Initiatives contributing towards the implementation of the Framework include:

- CSIRO Climate Adaptation National Research Flagship: \$44 million to develop scientific solutions to help Australia adapt to climate change and to inform national planning, regulation and investment decisions.
- Climate Change Adaptation Research Facility: \$20 million to establish a research facility to help Australian industries and communities adjust to climate change.
- Australia's Farming Future: 130 million to improve the ability of primary producers to respond to climate change and manage their emissions.
- Caring for our Coasts: Helping local communities protect the Australian coastline and prepare for the impact of climate change.
- National Coastal Vulnerability Assessment: To help better understand how climate change may impact our coastal communities.
- Forest Industries Climate Change Research Fund: \$5 million to address major knowledge gaps about the impact of climate change on forestry and forest industries in Australia, and build industry capacity to adapt to predicted scenarios and capitalise on emerging mitigation opportunities.
- Water for the Future: \$12.9 billion to secure the water supply, with four key priorities: taking action on climate change; securing water supplies; using water wisely; and supporting healthy rivers.
- Climate Change Risks to Australia's Coast – A First Pass National Assessment: This report presents the findings of the first national assessment of the risks of climate change for the whole of Australia's coastal zone. The assessment objectives were to:
  - a Provide an assessment of the future implications of climate change for nationally significant aspects of Australia's coast, including coastal settlements and ecosystems.
  - b Identify areas at high risk to climate change impacts.
  - c Identify hurdles that to minimise coastal zone climate change impacts.

- d Identify national adaptation priorities to reduce coastal zone climate change risk.
- *The Critical Decade: Climate Science, Risks and Responses*: This report reviews the current scientific knowledge base on climate change, particularly with regard to the underpinning it provides for the formulation of policy, and the information it provides on the risks of a changing climate to Australia.

### State Government

The NSW Government is addressing climate change by undertaking a number of actions, including:

- NSW State Plan: Under the 'Green State' priority area the Government committed to a 60% cut in greenhouse emissions by 2050. The Government will also achieve 20% renewable energy consumption by 2020 and will implement 4,000 GWh of annual electricity savings through NSW energy efficiency programs by 2014.
- NSW Greenhouse Gas Reduction Scheme (commenced 2003).
- Climate Change Fund: A \$700 million fund to help businesses, households, schools, and government save water, energy and greenhouse gas emissions.
- NSW Energy Efficiency Strategy: A \$150 million fund to assist families and businesses reduce energy use and greenhouse gas emissions.
- NSW Clean Coal Fund: A \$100 million fund supporting development of low emission coal.
- National Australian Built Environment Rating System (NABERS): A performance rating tool to assess energy efficiency in buildings.
- Building Sustainability Index (BASIX): To ensure that all new residential development in NSW is water and energy efficient.
- Native Vegetation Act 2003: To protect against salinity, soil erosion, water table changes, and habitat loss by prohibiting broad scale land clearing.
- Solar Bonus Scheme: Provides a gross tariff of between 20c-60c/kWh for all electricity supplied to the grid for a 7-year period. New entries to this program were suspended in April 2011.
- NSW Green Skills Strategy, Green Business Skills Incentives Scheme and Green Skills Taskforce: A \$20 million investment to ensure the NSW workforce is well placed to tackle the green skills gap under a low carbon future.
- Sea Level Rise Policy Statement: setting out the State Government's approach to sea level rise for use in land-use planning and development assessment decisions.
- High resolution terrain mapping of the NSW Central Coast and Hunter coastline for assessments of potential climate change impacts.

### The Standard Instrument, Wyong LEP 2013 and Wyong DCP 2013:

#### What provisions can be incorporated into our Planning Instruments that will help mitigate the impacts of CLIMATE CHANGE?

#### Wyong Local Environmental Plan 2012

The following measures can be incorporated into Wyong LEP 2013 to improve our planning for climate change:

- The CZMP and the Tuggerah Lakes Floodplain Risk Management Plan each have hazard lines outlining risks to 2050 and 2100 and land use planning recommendations that can be implemented as part of Wyong LEP 2013.

#### Wyong DCP 2013: Development Controls for Wyong Shire

The following measures can be incorporated into Wyong DCP 2013 to improve our planning for climate change:

- A draft Climate Change policy (yet to be adopted); the CZMP; and the Tuggerah Lakes and Porters Creek Floodplain Risk Management Plans are designed to assist Council in preparing future Wyong DCP 2013 chapters with climate change issues in mind.
- Council does not plan to implement a specific Climate Change DCP chapter; rather the planning and adaptive measures for climate change found in the above mentioned documents will be integrated into other DCPs, in particular the Flood Prone Land DCP chapter. For example, a future planned Urban Design chapter of the DCP may require improved building designs to address climate change risks such as more intense rain events. Such building design improvements may include increased eave width and/or more downpipes to cope with increased water runoff.

#### Key Planning Considerations:

#### Key Planning Considerations for CLIMATE CHANGE:

- *All planning and development to consider the impacts of climate change including sea level rise, increased rainfall and bushfire intensity.*
- *All planning and development to comply with the draft Coastal Zone Management Plan; and the appropriate floodplain risk management plan for that area, to appropriately consider potential climate change impacts.*

**Strategic Actions and Local Initiatives:**
**CLIMATE CHANGE**

#	ACTIONS	RESPONSIBLE AUTHORITY	IMPLEMENTATION				Other	COMMUNITY STRATEGIC PLAN	CENTRAL COAST REGIONAL STRATEGY
			LEP		DCP				
			2012	Am.	2012	Am.			
<b>NH28</b>	Complete and adopt the Climate Change Policy.	WSC					<b>X</b>	There are no CSP actions that apply to this component.	<b>7.3:</b> 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.
<b>NH29</b>	Complete and/or update the remaining Floodplain Risk Management Plans to give consideration to the potential impact of climate change.	WSC					<b>X</b>		
<b>NH30</b>	Continue to develop and implement Sustainability Scorecards for development, such as rezoning applications, which are not covered by BASIX.	WSC					<b>X</b>		
<b>NH31</b>	Investigate opportunities for the utilisation of existing or future land holdings for carbon offsets for Council activities.	WSC					<b>X</b>		