Asset Management Plan

Coastal & Estuary Assets

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1. EXECUTIVE SUMMARY

Shoalhaven's coastline extends 165 km from Shoalhaven Heads to North Durras and is almost entirely in public ownership. The coastline is very diverse, made up of open coast beaches, major estuaries, coastal lakes, pocket beaches, dune systems, cliffs and bluffs. Much of it is exposed to a high energy wave climate placing many public and private assets at risk.
Scattered through these dynamic and sensitive natural areas are approximately 550 assets, either inherited or constructed by Council and described in this Asset Management Plan (AMP).

1.1. The Purpose of the Plan

The Plan

- Assists Council to meet its regulatory responsibilities and achieve corporate goals
- Informs decision making in regard to the particular challenges of managing assets in increasingly dynamic natural environments
- Manages coast & shoreline protection assets through application of the Quadruple Bottom Line; economic, environmental, social and cultural (including governance) sustainability.

It is also aims to achieve the key elements of asset management;

- Defining levels of service – specifies the services and levels of service to be provided by Council for each asset type
- Condition assessment – specifies the technical tools used to assess the condition of each asset
- Life cycle management – how Council will manage its existing and future assets to provide the required services
- Financial summary – what funds are required to provide the required services
- Asset management practices – how the organisation will manage its assets and the tools it will use to accomplish this
- Monitoring – how the Plan will be monitored to ensure it is meeting Council's objectives
- Asset management improvement plan.

1.2. Asset Description

The 'asset' described in this AMP consists of a collection of hundreds of generally small assets, scattered along the coast and around the estuaries. With the exception of shoreline protection assets, most coastal assets are of a relatively small capital value i.e. $5000-$20,000.
Coast & estuary assets include;

- beach access ways (range of components)
- fencing
- viewing platforms
- car parks
- signs
- shoreline protection assets.

1.3. Levels of Service

Understanding Levels of Service (LoS) determines what type of assets will be provided, how often they will be maintained and when they will be renewed or replaced.
When discussing levels of service with the community it is important to reiterate that the associated costs may limit desired levels of service.
Levels of Service are maintained through

- Auditing – annual safety audit and condition assessment
- Works – seasonal maintenance contracts, budget availability, post storm events
- Planning – community engagement, strategic upgrade and renewal.

The two performance measures are
Customer Performance Measure: how the customer receives or experiences the service.

- MERIT: complaint management system
- Community consultative bodies
- Natural Resource and Floodplain Management Committees

Technical Performance Measure: what Council does to deliver the service. Performance is measured through

- Annual safety audit
- Informal on-going auditing by staff and contractors
- Five year Operations & Maintenance Plan
- Budget expenditure.

1.4. Future Demand

Factors likely to affect future demand on coastal assets in Shoalhaven include;
Climate change

Maintenance, renewal and protection funding for Council's existing infrastructure and property, must take into account gradual sea level rise. Shoalhaven Adaptation Plan 2012	*The asset strategy will provide for orderly relocation or retrofitting of public assets that are currently in coastal risk areas. Relocation/retreat of assets would be linked to existing asset life and recession trigger points.* Coastal Zone Management Plan 2012

Population change

- an increasing coastal population
- an ageing population
- more people requiring assistance

Strategic change

- settlement strategies (draft Citywide Growth Strategy)
- tourism strategies (Tourism Master Plan)

Customer awareness, expectations and preferences
Other drivers of future demand may include seasonal factors, leisure trends, technological changes, transportation ownership and access, economic factors and environmental awareness.

1.5. Lifecycle Management Plan

Create – major works such as boardwalks and viewing platforms as part of recommended actions from strategic planning documents. Minor works such as handrails or upgrading a track surface.
Maintain – following construction, upgrade or renewal and undertaken by contractors
Renew – as the asset moves towards the end of its life, activities are undertaken to restore the asset to a condition close to that of the original. This may include an upgrade.
Remove – particularly, post storm event closure of access ways or removal of board & chain at the end of its life, removal of redundant fencing where vegetation is sufficient.
Relocate – e.g. planned retreat due to the impacts of climate change
Replace – create.

1.6. Financial Summary

	Average Income 2009-2013	**Average expenditure 2009-2012**	**Projected average annual income for 10 years**
Coastal Maintenance 15931	$170,000 grants	$172,000 or $175,000	CPI
Coastal Access 75401 (new budget)	grants	$40,000	Assume 50% grants plus $60,000
Coastal Erosion & Protection (includes the implementation of the CZMP) 75742 (new budget)	grants	$60,000	Assume 50% grants plus $90,000

Note: Reconstruction costs to current standards are significant.

1.7. Asset Management Practices

Information systems
The coastal asset and defect register is currently located in Conquest. Mapping of these assets is undertaken in ArcMap and will eventually be made available corporately in GIS.
Processes (decision making)
The asset and defect registers in Conquest are informed by site audits, site inspections and community action requests. The level of risk associated with any asset, together with degree of urgency for maintenance, is determined by the matrix in the Risk Management Plan.
Implementation tactics
The maintenance actions are added to the Operations and Maintenance Plan.
Contractors are engaged to undertake seasonal maintenance and other works.
Consultants are engaged for design specifications, where necessary.
Some costs are included in grant applications where appropriate.

1.8. Monitoring and Improvement Programme

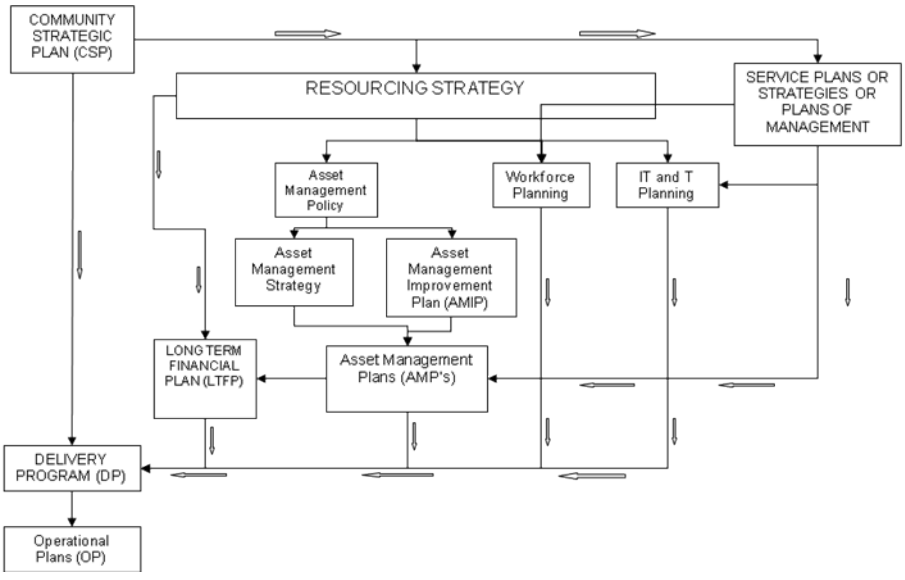
An AMP is a dynamic document, reflecting and responding to changes over time. Monitoring of an AMP is required to ensure compliance with the proposed improvement program milestones and to ensure compliance with adopted standards and procedures for assessing condition and performance.
On-going electronic auditing and mapping, together with corporate access to view the mapping, will improve accuracy and confidence in the Plan.
Ideally, full review of this AMP will be undertaken every three to five years to document progress and set out proposals for the next 10-15 years.

2. INTRODUCTION

2.1. Background

Shoalhaven's coastline extends 165 km from Shoalhaven Heads to North Durras. It includes 109 beaches, bays and headlands, the Shoalhaven River estuary, 14 coastal lakes and estuaries and numerous small coastal creeks. The assets described in this AMP are scattered amongst these sensitive coastal and estuarine areas.
Many of the coastal assets were inherited from the NSW Government, in particular from works undertaken following storms in 1974/5 and through the NSW Beach Improvement Program in the 1980s and 1990s. The number of assets is considered to be beyond Council's maintenance capacity. Many of the assets are no longer required and will be gradually removed.

The Plan assists Council to meet its regulatory responsibilities and achieve its own corporate goals and objectives in a way that best serves the environment and the community. It provides a framework for future management of assets based on current and historical information.



Council documents influencing this AMP

- Community Strategic Plan
- Coastal Zone Management Plan 2012 (draft)
- The Shoalhaven Adaptation Plan (2012)
- Tourism Master Plan
- Foreshore Reserves Policy
- Shoreline Protection Condition Assessment 2010
- Estuary management strategies
- Entrance management plans
- Natural resources management strategies
- Flood studies
- Flood plain risk management strategies and plans
- Risk Management Procedure - Coastal Reserves
- Community Land Plans of Management
- Wharves and Jetties Policy
- Crown Lands Caravan Park Policy
- Companion Animals Policy
- Access Area for Dogs Plicy
- LEP (1985) and draft LEP (2009)
- Various recreation strategies of Council

Council Asset Management Plans linked to this AMP

- Waterways Infrastructure (boating facilities)
- Walking Tracks
- Parks & Reserves
- Public Amenities
- Surf Life Saving Clubs

See also 3.3 Legislative Requirements.

For the purposes of this Asset Management Plan (AMP), coast & estuary assets include;
Beach access ways: sand, gravel, concrete, pavers, boardwalks, ramps, board and chain, steps & stairs (timber/gravel, concrete, stone), bridges, handrails (timber or steel).
Viewing platforms & unformed lookouts.
Fencing: bollards (pine logs or sawn timber), weldmesh, post & wire, post, wire & mesh, post & double rail, post & single rail, post & chain.
Emergency vehicle access and gates.
Seating: bench seats, picnic tables with bench seats.
Signs: warning, hazard, regulatory.
Vehicle access roads and car parks: largely informal and generally providing access to beaches.
Shoreline Protection Assets: a mix of timber & rock bank protection, rock & geotextile groynes and breakwaters.
Detail regarding type of access and materials etc is located as background information in Conquest and not referred to again in this document.

Coast & estuary assets do not include;

- temporary assets (generally fencing that is intended to be kept in place for less than 3 years)
- assets on public land built by private persons. The removal & regulation of these assets is managed on a local needs basis.

Key stakeholders
Strategic Planning – Facilities & Asset Management Unit, Natural Resources & Floodplain Unit
Environmental Planning – Recreation Planning & Community Facilities
Finance
Elected representatives
Community
Visitors
Future generations

2.2. Goals and Objectives of Asset Ownership

Council's goal in managing assets is to meet the required level of service in a sustainable manner for present and future stakeholders. The goals of asset management are to:

- Demonstrate responsible stewardship
- Take a life cycle approach to asset ownership
- Define the infrastructure assets physically and financially
- Provide a defined Level of Service (LoS) and monitor the performance against service levels and service expectations
- Understand and meet the demands of growth through demand management and infrastructure investment
- Manage risks associated with asset failure
- Support long term financial planning.

Coast and estuary assets are provided to;

- Protect the natural environment and rehabilitated areas from damage by people and vehicles
- Facilitate safe, effective and convenient access from a public road or reserve to the mobile sand
- Enhance the tourism and recreational experience
- Provide a visual delineation between natural and maintained areas
- Meet community expectations in regard to safety, quality and presentation
- Protect community and private assets.

Links to organisation vision, mission, goals & objectives
Given the 'nature' of Shoalhaven, coast and estuary assets have a clear connection to Council's corporate ideals and goals.
Council's Vision

- *To work together in the Shoalhaven to foster a safe and attractive community for people to live, work, stay and play; where sustainable growth, development and environmental protection are managed to provide a unique and relaxed lifestyle.*

Council's Mission

- *To enhance Shoalhaven's strong communities, natural, rural and built environments and appropriate economic activities through strategic leadership, good management, community engagement and innovative use of resources*.

The Community Strategic Plan (CSP) sits at the top of Council's planning hierarchy and identifies the community's main priorities and expectations for the future. It states,

> *The significant environmental qualities of the Shoalhaven come from its extensive natural areas, vast biodiversity and relatively small area of settlement.*
> *The extensive natural and rural landscapes form part of the cultural heritage and 'sense of connection' for the community, and are important tourism and economic assets.*

(See Attachment 5 for relevant objectives and strategies listed in the CSP.)

Council is committed to integrating the principles of Ecologically Sustainable Development in all planning activities and they underpin the CSP;

- The precautionary principle - where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental damage
- Intergenerational equity
- Conservation of biological diversity and ecological integrity
- Improved valuation, pricing and incentive mechanisms.

The Shoalhaven LEP states that the aim of ESD is *'to work towards an ecologically sustainable future through the proper management, development, protection, restoration, enhancement and conservation of the environment of the City.'*

2.3. Plan Framework

The key elements that affect this AMP are:

- The International Infrastructure Management Manual 2011
- Council's Asset Management Policy: guides the strategic management of Council's infrastructure assets It will be complemented by:
- Council's Asset Management Strategy: details how the Asset Management Policy will be implemented and how asset management practices can be improved.

The key elements of an AMP consist of:

- Level of service – specifying the services and levels of service to be provided by Council
- Future demand – how this will impact on future service delivery and how this is to be met
- Life cycle management – how Council will manage its existing and future assets to provide the required services
- Financial summary – what funds are required services
- Plan Improvement and Monitoring – how the plan will be monitored to ensure it is meeting Council's objectives

2.4. Core and Advanced AM

This Asset Management Plan is a continuous document that will require ongoing evaluation. Currently, the level of this asset management plan is at the minimum level which contains basic information on assets and financial forecasts.

3. LEVELS OF SERVICE

3.1. Customer Research and Expectations

Historically, documents prepared by the Natural Resources and Floodplain Unit have been subject to the process described below. A similar process will be applied to the draft Coast & Estuaries AMP.

A public exhibition period is advertised and the community is provided with the following options;

- Viewing a hard copy of the plan at Nowra or Ulladulla administration offices
- Viewing the plan on Council's website.

Specific stakeholders are targeted for consultation e.g.

- Coastal Management Committee
- Community Consultative Bodies
- Natural Resources and Floodplain Management Committees
- Special interest groups (surf clubs, fishing clubs etc)
- Relevant Council staff.

Comments can be posted, emailed and/or presented verbally at a meeting.

After consideration of comments on the draft AMP, the amended AMP will be reported for formal adoption by Council.

Alternatively, Council's Community Engagement Policy defines Asset Management as 'City Wide – Low Impact' with the Engagement Matrix displaying the appropriate elements for consultation.

Ongoing local knowledge and resident reporting of asset condition is regarded as valuable 'customer research' and an indication of expectations. Customers provide Council with ongoing feedback (complaints & action requests) regarding coastal assets via

- Emails to Council's generic email address and assigned to Natural Resources staff through TRIM
- Email or phone calls directly to Natural Resources staff and recorded in MERIT
- Comments lodged at the counter and assigned to Natural Resources staff through TRIM and MERIT.

Complaints/action requests received by Council generally relate to;

- Beach access maintenance (most requested)
- Erosion
- Fence maintenance/removal
- Vegetation management
- Dumped rubbish
- Signage.

3.2. Strategic and Corporate Goals

Council's strategic goals attempt to meet a multitude of needs and requirements; the principles of ESD, the quadruple bottom line, legislative obligations, budgetary restraints and community expectations.
With legislative variations and regular community engagement, Council's strategic goals and strategies will adapt accordingly. This may impact on the levels of service described in the Plan.

3.3. Legislative Requirements

Legislation	Requirement
National Asset Management Framework Legislation 2010	Focuses on long term financial sustainability and provides a mandate to have a long term strategy, financial statements and annual reporting mechanisms.
DLG Integrated Planning NSW	Key requirement is to integrated community plans with operational and delivery plans
Local Government Act 1993 (NSW)	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery
Work Health and Safety Act 2011 (NSW)	Aims to secure the health, safety and welfare of people at work. It lays down general requirements which must be met at places of work in New South Wales. The provisions of the Act cover every place of work in New South Wales. The Act covers self employed people as well as employees, employers, students, contractors and other visitors.
Work Health and Safety Regulation 2011 (NSW)	Regulations on the control and management or risk in the work place
The Protection of the Environment Operations Act 1997 (POEO Act)	Is the key piece of environment protection legislation administered by Department of the Environment and Climate Change (DECC). The POEO Act enables the Government to set out explicit protection of the environment policies (PEPs) and adopt more innovative approaches to reducing pollution.
Disability Discrimination Act 1992	Sets out responsibilities of Council and staff in dealing with access and use of public infrastructure
Australian Accounting Standards	Sets out the financial reporting standards relating to infrastructure assets. Standards of particular relevane to Infrastructure Assets include:
	AASB116 Property, Plant & Equipment - prescribes requirement for recognition and depreciation of property, plant and equipment assets
	AASB136 Impairment of Assets - aims to ensure that assets are carried at amounts that are not in excess of their recoverable amounts
	AASB1021 Depreciation of Non-Current Assets - specifies how depreciation is to be calculated
	AAS1001 Accounting Policies - specifies the policies that Council is to have for recognition of assets and depreciation
	AASB1041 Accounting for the reduction of Non-Current Assets - specifies the frequency and basis of calculation depreciation and revaluation basis used for assets
	AAS1015 Accounting for acquistion of assets - method of allocating the value to new assets on acquistion
Crown Lands Act 1989	Defined principles for the use and management of Crown land which may be under Trust to Council, they may prescribe:
	Lease & licences of Crown Lands (Part 4, Division 3 & 4); and
	Plans of Management for Crown Lands (Part 5, Division 6)
AS 3600-2001 Concrete Structures	Proposes a set of standard for achieving a design life of 40-60 years for concrete structures.

3.4. Current Level of Service

Shoalhaven City Council is committed to providing a quality network of coast and estuary assets for the benefit of residents and visitors.
The current levels of service are defined by

- environment protection
- public safety, enjoyment & expectations
- legislative requirements
- corporate objectives.

Performance is measured through

- MERIT: complaint management system
- Regular audits using an electronic mobile device or PDA (personal data assistant)
- Informal, on-going auditing by staff and contractors
- Community consultative bodies
- Operations and Maintenance Plans
- Budget expenditure
- Consultant's reports.

3.5. Desired Level of Service

In recent years trends have emerged in the desired level of service being requested by the community;

- General requests for surface improvement to beach access ways e.g. board and chain walkways at the end of their asset lives are removed (subject to site constraints) and sometimes replaced with an upgraded access.
- More people involved in recreational pursuits involving equipment has increased requests for the upgrade of some access ways so that people can more readily transport such things as kayaks and diving equipment. The need is usually for a harder surface in order to wheel in equipment.
- Requests for pruning of vegetation either for ease of access or as a result of eye injury. Pruning is normally undertaken prior to the peak summer holiday period. It will be done more often when requested or needed to due seasonal variation.
- More formalised viewing platforms to replace informal lookouts. This often leads to additional requests for improved access to the viewing platforms.
- Beach car park enhancement is considered a low priority however there is an increasing community expectation for improvements. A draft priority list for upgrading of carparks servicing Council's coastal areas is attached at Attachment 6.

Matching current and desired levels of service may be achieved following consideration of the following criteria,

- public safety using the risk ranking framework outlined in Council's Risk Management Procedure - Coastal Reserves. See 13.3.2
- budget availability
- compatibility with Council's strategic goals & strategies and other Council planning documents
- number of requests
- consideration of other drivers of change that may support the request – or not.

If the desired LoL cannot be met or it's not appropriate that it be met, community engagement and education may prove effective. Alternatively, budget allocations and the Operational and Maintenance Plan may be reassessed and revised.

4. FUTURE DEMANDS

4.1. Demand Drivers

Climate Change: The individual assets described in this AMP are embedded in Shoalhaven's natural environment and are vulnerable to the dynamic processes of coastal and estuarine systems. This vulnerability is accentuated with the impacts of climate change. It is expected that the assets will be affected by more frequent extreme storm events (including storm surge), coastal inundation and erosion, more frequent & higher intensity bushfires and increased slope instability on cliffs and bluffs. As a result, coast & estuary assets will be exposed to more frequent and more severe damage.

Population change: With an increasing coastal population, an ageing population and more people accessing the coast who require assistance, it is likely that demand for asset upgrades will increase.

- More than 8 in 10 Australians (85%) live within 50 kilometres of the coastline of Australia. With Shoalhaven having an average width of 80kms, the entire population contributes to this statistic of coastal dwelling Australians. Furthermore, most of the Shoalhaven population is concentrated along the coastal fringe with 31 of the 49 towns and villages being coastal.
- The current population (2012) of Shoalhaven is approximately 96,000. By 2036 this is forecast to grow to approximately 135,000. This represents an average growth of 1.28%pa or a 35.88% increase.
- Shoalhaven City has a lower proportion of pre-schoolers and a higher proportion of people at post retirement age than Regional NSW. Nearly 43% of the population is over 50 years of age.
- The number of people aged over 65 is expected to increase by 8,355 (43.9%), and represent 24.6% of the population by 2021. The age group which is forecast to have the largest proportional increase (relative to its population size) by 2021 is 70-74 year olds, who are forecast to increase by 51.5% to 7,188 persons.
- 6.9% of Shoalhaven's population report needing assistance with core activities, compared with 5.8% for Regional NSW.

Strategic change

Shoalhaven Coastal Zone Management Plan 2012: actions identified in the Plan will become drivers over the coming years.

Settlement strategies: Draft citywide Growth Management Strategy (GMS)
With some coastal villages being identified as future growth areas, use of coastal assets in those areas will be intensified. Combined with a general increase in use and 'wear and tear', assets may be exposed to higher levels of vandalism and will therefore require more frequent maintenance and renewal.

Tourism strategies: Tourism Master Plan

- Going to the Beach is the main activity undertaken by visitors to Shoalhaven
- The most often asked question (anecdotal information from staff at Nowra & Ulladulla Visitor Centres) posed by visitors is, 'Where can we walk?'
- Shoalhaven is the most visited Local Government Area in Regional NSW
- Shoalhaven is located about 160 kilometres south of Sydney making it an accessible & attractive destination for short breaks and holidays
- The sealing of Main Road 92 has also significantly increased the City's access to the Canberra and Southern NSW market

During peak holiday periods the population can expand to over 300,000. While the current and projected core population would normally be the basis on which to plan for services and infrastructure, there is also a need to consider the demands of these regular peak periods.

- Visitation is seasonal, peaking in the March quarter (36%) of visitors, June quarter (21%), September quarter (19%) and December quarter (24%).
- One of the four main objectives in the 2012 Tourism Master Plan is;
  Ensuring that the infrastructure and services needed to meet the needs and expectation of visitors and facilitate and support the growth of the tourism sector are in place.
  And listed in Product & Market Development;
  To strengthen and coordinate the walking and cycling product available in the City – including the Round the Bay Walk (Jervis Bay), Shoalhaven River Walks and the Bawley Coast Walk.
  Diversify the market base through the development of special interest and activity based marketing, concentrating initially on fishing, boating, canoeing, mountain-biking and cycling.

Technological change: Council's ability to audit assets is improving with the use of GPS. Increased and more accurate knowledge of asset condition and risk ranking may drive an increased maintenance program.
Also, the increasing utilisation of smart phones and apps, provides more people with knowledge of coastal places and facilities. This may increase demand on assets.

Leisure trends: Walking has become Australia's most popular physical activity. The most popular facilities used for participating in physical recreational activities are parks, beaches and walking trails, with 58% of participants using these facilities. (*Participation in Sport and Physical Recreation, Australia 2009-10* ABS).
As previously mentioned, transporting equipment used for water based activities, is also becoming a driver for improved coastal access.

Customer awareness, expectations and preferences: Expectations and demand may also be influenced by a better informed community making comparisons with what they may experience interstate or overseas together with a heightened environmental awareness.

4.2. Demand Forecasts

See figures above in Population Change.

4.3. Demand Impacts on Assets

Given the demand drivers described above it can be reasonably forecast that demand will increase for some assets and that a higher quality will be expected e.g.

- general improvements to access ways
- more viewing platforms to replace informal lookouts
- more hard surface access to replace sand/gravel.

It can also be reasonably forecast that there will be an increased need for asset repair and replacement due to the impacts of climate change.
At the same time, other assets, such as beach access ways will be closed/removed following storm events or due to reduced utilisation.

4.4. Demand Management Plan

Managing demand can be achieved through community engagement and education, vegetation management rather than fencing and rationalisation of assets. All of these strategies are currently being utilised.

4.5. Asset Programmes to Meet Demand

Please see section 5 for further detail

5. LIFECYCLE MANAGEMENT PLAN

5.1. Background Data

5.1.1. Physical Parameters

Physical Parameters: location maps at Appendix 2.

Condition information will be extracted from Conquest, when data is updated.

Asset type	**Number**	**Approximate asset valuation/replacement cost**	**Condition**	**Total average upgrade cost (target 5%)**	**Approximate asset life (years)**
Beach access ways	232	$20,000	Excellent Good Fair Poor Very poor	Approx $50,000	20 years
Emergency vehicle access/access ramps (including gate)	7	$2,500	Excellent Good Fair Poor Very poor	$5,000	Unknown due to storm impact
Viewing platforms	32	$25,000	Excellent Good Fair Poor Very poor	$10,000	20 years (prone to vandalism)
Car parks	16	$50,000	Excellent Good	$20,000	20 years

			Fair Poor Very poor		
Signs	232	$1500	Excellent Good Fair Poor Very poor	$5,000	10 years
Shoreline protection assets	31	See below	Being mapped and assessed 2012/13	$20,000	Unknown due to storm impact.

Comments
Beach access ways: most beach access ways were installed over 20 years ago and are at the end of their life. A program of continuous rationalisation and improvement is practised through removal of redundant assets, renewal or improvement of track surfaces and adapting to vegetation growth.
Emergency vehicle access: approximately 4m wide and including a gate.
Viewing platforms: some elevated viewing platforms will be 'retreated' to solid ground.
Car parks: these are generally for beach access and are mostly informal & unsealed. See Appendix 6, Coastal Car Parks priority list.
Signs:
Shoreline Protection Assets (SPAs): These assets represent the bigger budget items in this AMP. For example, Ulladulla Harbour Rear Protection Wall cost $100,000 (completed 2012), a 20m timber retaining wall would cost approximately $28,000 and 100m of rock protection would cost approximately $90,000.
In the Shoreline Protection Condition Assessment 2010 there six SPAs listed as high or medium priority, the other 25 are listed as low priority. This indicates that most SPAs have only minor damage at this stage.
See Appendix 3: Shoreline Protection Assessment Inspection Spreadsheet.
The NSW Government coastal and estuarine policy has changed since many of these structures were constructed and it is possible that replacement of some assets may not obtain the support of NSW government agencies in the future.
Impacts of climate change will increase maintenance requirements and raise questions regarding response options i.e. repair, upgrade, replace, relocate or remove.

5.1.2. Asset Capacity / Performance

(Actual measured capacity and current utilisation of assets
Location of detailed information – computer models, calculations and analyses)
Information not available at this time.

5.1.3. Asset Condition

Asset condition is monitored via

- Consultant's reports and the Coastal Zone Management Plan.
- Annual audits undertaken in July. For the first time in 2012 the audit was undertaken using an electronic mobile device or PDA (personal data assistant). Results were uploaded to Conquest. This information will be validated and improved as an integral and on-going component of management activities.
- Informal monitoring conducted by contractors and staff whilst in the field.

- Complaints and action requests from the community.
- Post storm scenario planning.

5.1.4. Asset Valuations

Valuations are

- based on replacement costs identified in contract tenders
- dependent on scale and construction type
- effected by whole of life i.e. new structures will cost more and attract higher valuations.

5.1.5. Historical Data

Type of data available and location
Conquest – Asset and defect register
2008 AMP TRIM POL09/48
Operations and Maintenance Plans: Policy & Planning drive – Natural Resources and Floodplain Unit – Coastal Management – annual Coastal Management spreadsheets and other documents by location etc.
Historical expenditure
Council's Financial Information System (FIS) from 2009/2010
Coastal Maintenance budget 15931
Coastal Access budget 75401
Coastal Erosion & Protection budget – includes implementation of the CZMP 75742

5.2. Infrastructure Risk Management Plan

- **Council's Risk Management Procedure - Coastal Reserves** indicates Council's commitment to minimising risk of injury to users of the coast and Council's coastal assets. It also determines the methodology for inspections and prioritisation and treatment of risks. See Appendix 1.
- **The Shoalhaven Adaptation Plan** addresses a series of risks that were identified via a climate change risk assessment. See Appendix 6 for risks and recommended actions considered relevant to this AMP.

5.3. Routine Operations and Maintenance Plan

5.3.1. Operations and Maintenance Plan

The Five Year Operations and Maintenance plan is included as a series of maps at Appendix 2. Each map shows the relevant assets and lists the proposed operations for each area.
The usual annual, cyclic operations program is as follows;
July: audit
August – December: maintenance/repair for summer holidays
March – June: major works/replacements/upgrades/closures

Coastal inspections identify maintenance requirements and are of 2 types; defect Inspections and risk Inspections.
Defect Inspections allow for the listing of major maintenance items and the development of an annual, major maintenance program. Defect Inspections are undertaken every two years and are completed by July to allow for budget need identification and contracting prior to peak season.

Risk Inspections are undertaken annually to ensure identification of risks to Coastal Reserves users arising between formal Defect Inspections. Risk Inspections are primarily undertaken to identify risks requiring urgent correction.
The Risk Inspections form part of the Defect Inspections in the year these are undertaken.
Distances, travel time, budgetary constraints and the fact that many assets are not accessible by vehicle, prevent more frequent inspections.
Customer action requests and staff site visits also assist in defect and risk identification.
Data is recorded in the Coastal Asset Register (Conquest) and is used to prepare annual operations and maintenance plans.
Significant storm events (above 5m wave height or rainfall > 200mm) will trigger additional risk inspections on beaches known to be prone to damage from a particular storm swell direction.
Council's Risk Management Procedure - Coastal Reserves, section 4.1 - 4.3.

5.3.2. Operations and Maintenance Strategies

Major defects are assigned a priority rating corresponding to the degree of risk posed by the defect. See Council's Risk Management Procedure - Coastal Reserves, section 4.3.
Routine maintenance in spring addresses minor defects.

2008 RMP

Risk ranking	**Time frame for repair**	**Action**
P5 high risk	within 2 months	barricade until repaired
P4 medium risk	within 1 year	barricade if required
P3 low risk	within 2 years	
P2	within 3 years	
P1	5 years	

5.3.3. Summary of Future Costs

Operations & Maintenance Expenditure 2013/14 to 2015/16 - by beach, north to south.
NB: some beaches aren't listed as no works are proposed for the three financial years.

	2013/14	**2014/15**	**2015/16**
SHOALHAVEN HEADS			
Upgrade Surf Club north access			20,000
Close Surf Club south access			
Post storm – close Tourist Park north and south and River Rd accesses.			
CROOKHAVEN HEAD			
Rebuild Bream Beach access – Walking Track asset.	25,000 (Coastal Access budget)	25,000	
Post storm – close north access			
CULBURRA BEACH			
Remove board & chain and upgrade accesses	25,000	25,000	
Upgrade Ocean St south access to emergency vehicle access	10,000		
WARRAIN BEACH			
Warrain Beach north - asbestos remediation	20,000		
Post storm – close 40, 58 & 68 Eastbourne accesses			

CURRARONG			
Warrain Crescent access reconstructions	25,000	25,000	
CALLALA BAY			
Boatramp reserve erosion remediation	25,000	25,000	
CALLALA BEACH			
Upgrade Princess St and Sir Henry Cres carparks	25,000	25,000	
HUSKISSON BEACH			
Upgrade Huskisson Tourist Park north to ramp	25,000		
Post storm – close damaged southern accesses			
VINCENTIA			
Upgrade Blenheim Beach north access	25,000		
Upgrade Jervis St access	25,000		
HYAMS BEACH			
Upgrade south access	10,000		
CUDMIRRAH / BERRARA			
Upgrade Kirbys Beach south		25,000	
Realign Second Ave access and upgrade to emergency vehicle access		10,000	
Third Ave – finish track at viewing platform	5,000		
BENDALONG			
Relocate viewing platform at Inyadda Beach west access	5,000		
MANYANA			
Replace viewing platform at north end of Sunset Strip	5,000		
CONJOLA			
Replace boardwalk – Walking Track Asset		50,000 (Coastal Access budget + grant funding)	
Close access track when boardwalk is complete.			
NARRAWALLEE			
Post storm – close 27, 51 and 61 Matron Porter Dv	20,000		
MOLLYMOOK			
Formalise Surf Club event vehicle access	5,000		
ULLADULLA			
Replace safety fence at South Pacific Cr carpark			20,000
TABOURIE			
Upgrade Holiday Haven Tourist Park viewing platform		15,000	
Upgrade Tourist Park access road carparks	10,000	10,000	
BAWLEY POINT			
Replace bridge on Northhaven access	20,000		
Construct viewing platforms at 57, 63 and 67 Malibu Dv		25,000	25,000
KIOLOA			
Upgrade Butlers Point carpark	15,000		
WAIRO			
Upgrade carparks at Lagoon Head and north & south accesses	10,000	10,000	10,000
TOTALS			

5.4. Renewal / Replacement Plan

5.4.1. Renewal Plan

The data in the Coastal Asset Register (Conquest) is used to prepare annual renewal and replacement plans with prioritisation based on

- level of risk
- extent of utilisation – high use beaches are a priority
- equitable spread across the City

opportunistic inclusion with other projects e.g. park upgrades, major events or actions from the CZMP.

5.4.2. Renewal Strategies

(Define renewal strategies, methods to meet required LoS
Define how renewals are identified and prioritised
Risks associated with alternative renewal standards.)
Information unavailable at this time.

5.5. Creation / Acquisition / Augmentation Plan

5.5.1. Selection Criteria

(Formal procedure to rank asset creation / acquisition projects)

5.5.2. Capital Investment Strategies

Budget bids, shared funding e.g. Holiday Haven Tourist Parks.

5.5.3. Summary of Future Costs

(Future needs for acquisition of assets based on demand forecast)
(Resulting cash flow forecast)
Generally, new assets will be funded through Council's Coastal Management Program. There is little opportunity to raise income for the management of coastal assets. Funding is available from the NSW Government Coastal Management Program for capital works however; this funding source has been unreliable.

5.6. Disposal Plan

Asset disposal is limited to:

- Track closures (notices placed on tracks prior to closure)
- Removal of board and chain
- Removal of beach access fencing
- Removal of redundant viewing structures.

The value of assets removed is small however timber is reused wherever possible. Treated pine is disposed of to landfill in accordance with current environmental requirements. There is no cash flow from the 'disposal' of other assets e.g. track closure.

6. FINANCIAL SUMMARY

6.1. Financial Statements and Projections

Information currently unavailable

6.2. Funding Strategy

Information currently unavailable

6.3. Valuation Forecasts

According to Australian Accounting Standrad (AASB) 116, asset classes only need to be revalued if there have been material changes. Otherwise it is every five (5) years. The due date of revaluation to each asset class is shown below:

Fair Valuation – Infrastructure, property, plant and equipment

Asset Class	Due
Water & Sewer	30-Jun-12
Property, plant and equipment, operational land, buildings	30-Jun-13
Roads, bridges, footpaths, drainage, bulk earth works	30-Jun-15
Community land, other assets, land improvement	30-Jun-16

6.4. Key Assumptions Made in Financial Forecasts

Key assumption made in presenting the information in this AMP and in preparing forecast of required operating and capital expenditure and asset values, depreciation expenses and carrying amount estimates are detailed below. They are presented to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecast.

Key assumption:

- Average useful lives and average remaining lives of the asset classes are based on current local knowledge and experience, historical trends and accepted industry practice. These need to be reviewed and the accuracy improved, based on regular re-assessment of asset deterioration.
- Reviews of the effective useful lives of assets and population / demographic changes have the potential for greatest variance in future cost predictions.
- Changes in development needs associated with the rate and location of growth and changes in the desired level of service and service standards from those identified in the Asset Management Plan, will both impact on future funding.

Accuracy of future financial forecasts may be improved in future revisions of the Plan by the following actions:

- Implementation of a Job Costing system to incorporate continuously current unit rate data.
- More refined condition rating data with more history for reference.
- Greater degree of componentisation in the rating process.
- Development of better degradation models through national research and development programs.
- Development of better financial models through collaborative processes.
- Implementation of an asset information system.

Specific annual maintenance and renewal cost trends are detailed for each asset category in the relevant Sections.

6.5. Forecast Reliability and Confidence

The Long Term Financial Plan has been developed using the underlying Conquest Asset Register, TRIM Records Management and FIS Financial System. Providing history information, coupled with valuations, capital and operations budget analysis, using the combined information held in the financial system. Asset renewal analysis has been completed on a lifecycle management basis.

The finance system is the responsibility of the Finance section and the asset register (Conquest) is maintained by Infrastructure Group. The requesting system (MERIT) is maintained by Information Technology section. The Maintenance Management System (MMS) is maintained by Works and Services section.

Estimation of when future work is required is based on the life expectancy of each building. For a public amenity, the standard life of the building is fifty (50) years. Regardless of this standard life expectancy, an inspection is undertaken every five (5) years which then gives a more realistic time of when the asset needs to either renewed, replaced or disposed.

The estimation of cost is taken from past history work (for replacement and new building cost) and Cordell Commercial and Industrial Building Cost Guide (for demolition work). Each cost increases each year by 3.5% which is anticipated as the CPI.

7. PLAN IMPROVEMENT AND MONITORING

7.1. Status of AM Practices

It is desirable to have an Asset Management Practice that indicates a good quality of strong governance and accountability; more sustainable decisions, enhanced customer service, effective risk management; and improved financial efficiency.

Collection and storage of data in Conquest is a process of continuous improvement

7.2. Improvement Programme

Action	When	Who
Community Engagement	Late 2013	Natural Resource & Floodplain Committees, Coastal Management

		Committee, Community Consultative Bodies
Staff reviews	Late 2013	Ray Massie, Brad Davis, Kerry Thompson, Nia Marshall...
More accurate electronic auditing	annually	contractor
Corporate availability of mapping		IT

7.3. Monitoring and Review Procedures

(Procedures and timetable for performance reporting
Timetable for external audit and review)
Information unavailable at this time.

7.4. Performance Measures

Performance is monitored through Council's:

- Complaint management system
- Periodical inspections
- Management plan submissions
- Community consultative bodies
- Review of Estuary Management Plans

The three significant measures of Council's performance are:

Quality
The assets will be maintained in a usable condition. Defects found or reported that are outside our service standard will be repaired. Defect prioritisation and response times will be detailed in Council's Maintenance Response Levels of Service.

Function
Council's intent is that appropriate assets are maintained in partnership with other levels of government and stakeholders to ensure they meet current and future needs.

Safety
Assets will be maintained at a safe level and associated signage and equipment will be provided as needed. Council inspects all assets regularly and prioritises the repair of defects in accordance with our inspection schedule to ensure they are safe.
The main functional consequences of failure to deliver the desired outcomes are:

Asset Maintenance	Increase in user and owner costs.
Level of Service	Increase in litigation.

The following performance monitors and targets will be used to measure performance of this Plan:

- Number of Merit CRM (Customer Request Management) requests received each year – target <80 per annum
- Operating & Maintenance costs per facility – target <$5,000 per facility
- % of total amenities in Condition 3 (Fair) or better – target 100%

8. REFERENCES

IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australia, Sydney, www.ipwea.org.au/IIMM

IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australia, Sydney, www.ipwea.org.au/namsplus

IPWEA, 2009, 'Australian Infrastructure Financial Management Guidelines', Institute of Public Works Engineering Australia, Sydney, www.ipwea.org.au/AIFMG.

IPWEA, 2011, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australia, Sydney, www.ipwea.org.au/IIMM

9. APPENDICES

9.1. Glossary

The following terms and acronyms (in brackets) are used in Asset Management Plans

Accrual Accounting
Recognition of assets, liabilities, equity, income and expenses as they are incurred (and once they satisfy the definitions and recognition criteria inclusion on Financial Statements)

Age
The current date less year when asset was constructed

AMP
Asset Management Plan, a plan developed for the management of one or more infrastructure assets that combines multi-disciplinary management techniques (including technical & financial) over the life cycle of the asset in the most cost effective manner to provide a specific level of service

Annual service cost (ASC)
1) Reporting actual cost
   The annual (accrual) cost of providing a service including operations, maintenance, depreciation, finance/opportunity and disposal costs less revenue.
2) For investment analysis and budgeting
   An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operations, maintenance, depreciation, finance/ opportunity and disposal costs, less revenue.

Asset condition assessment
The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.

Asset Management (AM)
A systematic process to guide the planning, acquisition, operation and maintenance, renewal and disposal of asset based on the combination of management, financial, economic,

engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner.

Asset
An item of infrastructure that has potential value to a Council such as roads and buildings for a period of greater than 12 months

Asset category
Sub-group of assets within a class hierarchy for financial reporting and management purposes.

Asset class
A group of assets having a similar nature or function in the operations of an entity, and which, for purposes of disclosure, is shown as a single item without supplementary disclosure.

Asset hierarchy
A framework for segmenting an asset base into appropriate classifications. The asset hierarchy can be based on asset function; asset type or a combination of the two.

Asset Management Information System (AMIS)
A combination of process, data, software, and hardware applied to provide the essential outputs for effective AM

Asset Management Plan (AM Plan)
Long-term plans (usually 10-20 years or more for infrastructure assets) that outline the asset activities and programmes for each service area and resources applied to provide a defined level of service in the most cost effective way.

Asset Register
A record of asset information, Council records details in a database software system, including asset attribute data such as quantity, type and construction cost.

Asset renewal funding ratio
The ratio of the net present value of asset renewal funding accommodated over a 10 year period in a long term financial plan relative to the net present value of projected capital renewal expenditures identified in an asset management plan for the same period [AIFMG Financial Sustainability Indicator No 8].

Average annual asset consumption (AAAC)*
The amount of an organisation's asset base consumed during a reporting period (generally a year). This may be calculated by dividing the depreciable amount by the useful life (or total future economic benefits/service potential) and totalled for each and every asset OR by dividing the carrying amount (depreciated replacement cost) by the remaining useful life (or remaining future economic benefits/service potential) and totalled for each and every asset in an asset category or class.

Borrowings
A borrowing or loan is a contractual obligation of the borrowing entity to deliver cash or another financial asset to the lending entity over a specified period of time or at a specified

point in time, to cover both the initial capital provided and the cost of the interest incurred for providing this capital. A borrowing or loan provides the means for the borrowing entity to finance outlays (typically physical assets) when it has insufficient funds of its own to do so, and for the lending entity to make a financial return, normally in the form of interest revenue, on the funding provided**.**

Capital expenditure (CAPEX)
Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital expenditure - growth
Expenditure that extends the capacity of an existing asset to provide benefits, at the same standard as is currently enjoyed by existing beneficiaries, to a new group of users. It is discretionary expenditure, which increases future operations and maintenance costs, because it increases the organisation's asset base, but may be associated with additional revenue from the new user group, eg. extending a drainage or road network, the provision of an oval or park in a new suburb for new residents.

Capital expenditure - new
Expenditure which creates a new asset providing a new service/output that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operations and maintenance expenditure.

Capital expenditure - renewal
Expenditure on an existing asset or on replacing an existing asset, which returns the service capability of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it generally has no impact on revenue, but may reduce future operations and maintenance expenditure if completed at the optimum time, eg. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval.

Capital expenditure - upgrade
Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operations and maintenance expenditure in the future because of the increase in the organisation's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility.

Capital funding
Funding to pay for capital expenditure.

Capital grants
Monies received generally tied to the specific projects for which they are granted, which are often upgrade and/or expansion or

new investment proposals.

Capitalisation threshold
The value of expenditure on non-current assets above which the expenditure is recognised as capital expenditure and below which the expenditure is charged as an expense in the year of acquisition.

Carrying amount
The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.

Capital new expenditure
Expenditure which creates a new asset providing a new service to the community that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operating and maintenance expenditure.

Capital renewal expenditure
Expenditure on an existing asset, which returns the service potential or the life of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or subcomponents of the asset being renewed. As it reinstates existing service potential, it has no impact on revenue, but may reduce future operating and maintenance expenditure if completed at the optimum time, eg. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital upgrade expenditure
Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretional and often does not result in additional revenue unless direct user charges apply. It will increase operating and maintenance expenditure in the future because of the increase in the council's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital Works
The creation of new assets or an increase in the capacity of existing assets beyond their original design capacity or service potential

Carrying amount
The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.

Component
An individual part of an asset which contributes to the composition of the whole and can be separated from or attached to an asset or a system.

Conquest
An asset management software package that includes Council's Asset Register

Core asset management
Asset management which relies primarily on the use of an asset register, maintenance management systems, job resource management, inventory control, condition assessment, simple risk assessment and defined levels of service, in order to establish alternative treatment options and long-term cashflow predictions. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than detailed risk analysis and optimised decision- making).

Cost of an asset
The amount of cash or cash equivalents paid or the fair value of the consideration given to acquire an asset at the time of its acquisition or construction, plus any costs necessary to place the asset into service. This includes one-off design and project management costs.

Council
Shoalhaven City Council

Critical assets
Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than noncritical assets.

Current replacement cost (CRC)
The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business or the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset (not a second hand one) with the same economic benefits (gross service potential) allowing for any differences in the quantity and quality of output and in operating costs.

Current replacement cost "As New" (CRC)
The current cost of replacing the original service potential of an existing asset, with a similar modern equivalent asset, i.e. the total cost of replacing an existing asset with an as NEW or similar asset expressed in current dollar values.

Depreciable amount
The cost of an asset, or other amount substituted for its cost, less its residual value.

Depreciated replacement cost (DRC)
The current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset

Depreciation (amortisation)
The wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes. It is accounted by the allocation of the cost (or revalued amount) of the asset less its residual value over its useful life.

Disposal
Activities necessary to dispose of decommissioned assets

Division of Local Government (DLG)
NSW Division of Local Government, Department of Premier and Cabinet responsible for local government across NSW

Expenditure
The spending of money on goods and services. Expenditure includes recurrent and capital.

Facility
A complex comprising many assets which represent a single management unit for financial, operational, maintenance and other purposes

Fair value
The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arms length transaction.

Financing gap
A financing gap exists whenever an entity has insufficient capacity to finance asset renewal and other expenditure necessary to be able to appropriately maintain the range and level of services its existing asset stock was originally designed and intended to deliver. The service capability of the existing asset stock should be determined assuming no additional operating revenue, productivity improvements, or net financial liabilities above levels currently planned or projected. A current financing gap means service levels have already or are currently falling. A projected financing gap if not addressed will result in a future diminution of existing service levels**.**

Geographical Information System (GIS)
A mapping and spatial location technology systems which show location and relationship to key geographical datum points – should be linked to asset details

Heritage asset
An asset with historic, artistic, scientific, technological, geographical or environmental qualities that is held and maintained principally for its contribution to knowledge and culture and this purpose is central to the objectives of the entity holding it.

Impairment Loss
The amount by which the carrying amount of an asset exceeds its recoverable amount.

Infrastructure assets
Physical assets of the entity or of another entity that contribute to meeting the public's need for access to major economic and social facilities and services, eg. roads, drainage, footpaths and cycleways. These are typically large, interconnected networks or portfolios of composite assets. The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally the components and hence the assets have long lives. They are fixed in place and are often have no market value.

Investment property
Property held to earn rentals or for capital appreciation or both, rather than for:
(a) use in the production or supply of goods or services or for administrative purposes; or
(b) sale in the ordinary course of business (AASB 140.5)

Level of Service (LoS)
The defined service quality for a particular service against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental, acceptability and cost).

Life Cycle Cost *
1. **Total LCC** The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
2. **Average LCC** The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises average operations, maintenance expenditure plus asset consumption expense, represented by depreciation expense projected over 10 years. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

Life Cycle Expenditure
The Life Cycle Expenditure (LCE) is the actual or planned annual maintenance and capital renewal expenditure incurred in providing the service in a particular year. Life Cycle Expenditure may be compared to Life Cycle Expenditure to give an initial indicator of life cycle sustainability.

Loans / borrowings
Loans result in funds being received which are then repaid over a period of time with interest (an additional cost). Their primary benefit is in 'spreading the burden' of capital expenditure over time. Although loans enable works to be completed sooner, they are only ultimately cost effective where the capital works funded (generally renewals) result in operating and maintenance cost savings, which are greater than the cost of the loan (interest and charges).

Maintenance
All actions necessary for retaining an asset as near as practicable to an appropriate service condition, including regular ongoing day-to-day work necessary to keep assets operating, eg road patching but excluding rehabilitation or renewal. It is operating expenditure required to ensure that the asset reaches its expected useful life.

- **Planned maintenance**
  Repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown criteria/experience, prioritising scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.
- **Specific maintenance**
  Maintenance work to repair components or replace sub-components that needs to be identified as a specific maintenance item in the maintenance budget.
- **Unplanned/reacitve maintenance**

Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

Maintenance and renewal sustainability index
Ratio of estimated budget to projected expenditure for maintenance and renewal of assets over a defined time (eg 5, 10 and 15 years).

Maintenance expenditure
Recurrent expenditure, which is periodically or regularly required as part of the anticipated schedule of works required to ensure that the asset achieves its useful life and provides the required level of service. It is expenditure, which was anticipated in determining the asset's useful life.

Materiality
An item is material is its omission or misstatement could influence the economic decisions of users taken on the basis of the financial report. Materiality depends on the size and nature of the omission or misstatement judged in the surrounding circumstances.

Modern equivalent asset
Assets that replicate what is in existence with the most cost-effective asset performing the same level of service. It is the most cost efficient, currently available asset which will provide the same stream of services as the existing asset is capable of producing. It allows for technology changes and, improvements and efficiencies in production and installation techniques

Net present value (NPV)
The value to the organisation of the cash flows associated with an asset, liability, activity or event calculated using a discount rate to reflect the time value of money. It is the net amount of discounted total cash inflows after deducting the value of the discounted total cash outflows arising from eg the continued use and subsequent disposal of the asset after deducting the value of the discounted total cash outflows.

New Works
New work expenditure is Capital Works expenditure, i.e. money spent on new works (development costs) and upgrades to an existing asset or on creating a new asset

Non-revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are not expected to generate any savings or revenue to the Council, eg. parks and playgrounds, footpaths, roads and bridges, libraries, etc.

Operations
Regular activities to provide services such as public health, safety and amenity, eg street sweeping, grass mowing and street lighting.

Operating expenditure
Recurrent expenditure, which is continuously required excluding maintenance and depreciation, eg power, fuel, staff, plant equipment, on-costs and overheads.

Operational Plan
Generally comprise detailed implementation plans and information with a 1-3 year outlook (short-term). The plans detail structure, authority, responsibilities, defined levels of service and emergency responses

Operational Plan
Generally comprise detailed implementation plans and information with a 1-3 year outlook (short-term). The plans detail structure, authority, responsibilities, defined levels of service and emergency responses

Optimised Decision-Making (ODM)
Two definitions are: 1. ODM is a formal process to identify and prioritise all potential solutions with consideration of financial viability, social and environmental responsibility and cultural outcomes. 2. An optimisation process for considering and prioritising all options to rectify existing or potential performance failure of assets. The process encompass NPV analysis and risk assessment.

Performance Measure
A qualitative or quantitative measure used to measure actual performance against a standard or other target. Performance measures are used to indicate how the organisation is doing in relation to delivering levels of service.

Performance Monitoring
Continuous or periodic quantitative and qualitative assessments of the actual performance compared with specific objectives, targets or standards.

Planned Maintenance
Planned maintenance activities fall into three categories:
a) Periodic – necessary to ensure the reliability or to sustain the design life of an asset
b) Predictive – condition monitoring activities used to predict failure
c) Preventive – maintenance that can be initiated without routine or continuous checking (e.g. using information contained in maintenance manuals or manufacturers' recommendations) and is not condition-based.

Rate of annual asset consumption *
The ratio of annual asset consumption relative to the depreciable amount of the assets. It measures the amount of the consumable parts of assets that are consumed in a period (depreciation) expressed as a percentage of the depreciable amount.

Rate of annual asset renewal *
The ratio of asset renewal and replacement expenditure relative to depreciable amount for a period. It measures whether assets are being replaced at the rate they are wearing out with capital renewal expenditure expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

Rate of annual asset upgrade/new *
A measure of the rate at which assets are being upgraded and expanded per annum with capital upgrade/new expenditure expressed as a percentage of depreciable amount (capital upgrade/expansion expenditure/DA).

Reactive maintenance
Unplanned repair work that carried out in response to service requests and management/supervisory directions.

Recoverable amount
The higher of an asset's fair value, less costs to sell and its value in use.

Recurrent expenditure
Relatively small (immaterial) expenditure or that which has benefits expected to last less than twelve (12) months. Recurrent expenditure includes operating and maintenance expenditure.

Recurrent funding
Funding to pay for recurrent expenditure.

Rehabilitation
See capital renewal expenditure definition above.

Remaining Useful life
Remaining useful life is determined for each individual asset from the condition rating. It is the time that the asset provides future economic benefit, from acquisition to expected replacement, renewal in full or replacement / disposal

Renewal
Works or actions to upgrade, refurbish or replace components of an asset to restore it to near new and required functional condition, extending its current remaining life

Replacement
The complete replacement of an asset that has reached the end of its life, so as to provide a similar, or agreed alternative, level of service.

Residual value
The net amount which an entity expects to obtain for an asset at the end of its useful life after deducting the expected costs of disposal.

Revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are expected to generate some savings or revenue to offset operating costs, eg public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

Risk management
The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.

Section or segment
A self-contained part or piece of an infrastructure asset.

Service
A benefit gained from utilising or accessing an asset and the associated work done by Council staff or others associated with the Council

Service expectation
The description of Level of Service available to users of an asset and any associated services, as described in consultation for developing and reviewing the Community Strategic Plan

Specialised assets
Specialised assets are assets designed for a specific limited purpose and have limited capability to support different activities such as specialised buildings to house infrastructure (pump stations, etc.), some heritage properties and most infrastructure assets.

Specific Maintenance
Replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacement of air conditioning equipment, etc. This work generally falls below the capital/ maintenance threshold and needs to be identified in a specific maintenance budget allocation.

Strategic Long-Term Plan
A plan covering the term of office of councillors (4 years minimum) reflecting the needs of the community for the foreseeable future. It brings together the detailed requirements in the Council's longer-term plans such as the asset management plan and the long-term financial plan. The plan is prepared in consultation with the community and details where the Council is at that point in time, where it wants to go, how it is going to get there, mechanisms for monitoring the achievement of the outcomes and how the plan will be resourced.

Stakeholder
A person; group; company or government department representing an interest in an asset; project or service utilising an asset

Sub-component
Smaller individual parts that make up a component part.

Sustainability
Sustainability is the capacity to endure; in the context of AM it is about meeting the needs of the future by balancing social, economic, cultural and environmental outcomes or needs when making decisions today.

Useful life
Either:
(a) the period over which an asset is expected to be available for use by an entity, or
(b) the number of production or similar units expected to be obtained from the asset by the entity.
It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the council. It is the same as the economic life.

Value in Use
The present value of estimated future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life. It is deemed to be depreciated replacement cost (DRC) for those assets whose future economic benefits are not primarily dependent on the asset's ability to generate new cash flows, where if deprived of the asset its future economic benefits would be replaced.

Willingness to Pay
A method of assessing benefits associated with a proposal, by assessing the monetary amount that customers' are willing to pay for the services that will be provided by the proposal.

ACRONYMS

The following acronyms also appear in this Manual:

AAS	Australian Accounting Standard
AM	Asset Management
ADAC	Asset Design As Constructed
AMIS	Asset Management Information System
BCA	Benefit-Cost Analysis
CAPEX	Capital Expenditure
DCF	Discounted Cashflow
DRC	Depreciated Replacement Cost
GAAP	Generally Accepted Accounting Practices
GIS	Geographic Information System
IFRS	International Financial Reporting Standards
IIMM	International Infrastructure Management Manual
IPWEA	Institute of Public Works Engineering Australia
IRR	Internal Rate of Return
KPI	Key Performance Indicator
LGA	Local Government Act
MCA	Multi-Criteria Analysis
NPV	Net Present Value
ODM	Optimised Decision Making
O&M	Operations and Maintenance
QA	Quality Assurance
RCM	Reliability Centred Maintenance
PV	Present Value

SLA Service Level Agreement

SMARTER Specific, Measurable, Achievable, Relevant, Timebound, Evaluation, Re-assess

(Source – International Infrastructure Management Manual (IIMM 2011))

10. REVIEW

The Asset Management Plan shall be reviewed every 3-5 years and the outcomes reported to Council.

Appendix 1: Risk Management Procedure - Coastal Reserves

COASTAL RESERVES RISK MANAGEMENT PROCEDURE

CONTENTS

Coastal Reserves Risk Management Procedure

1. Scope

The Risk Management Procedure forms a part of the Corporate Risk Management Policy. The development of a risk management procedure for the coastal asset type is a specific requirement of the corporate Policy.

For the purpose of this Policy, Coastal assets shall be defined as:

- Council owned community land of all land classifications, separated from maintained park reserve areas by vegetation boundary or revegetation protective fencing.
- Council managed Crown Reserves, separated from maintained park reserve areas by vegetation boundary or revegetation protective fencing
- Council managed assets that exist for the users of beach, lake , river or other estuary areas only (not including boat ramps or park facilities)
- The main asset types are car parks, viewing platforms, board walks, dune fencing, beach walkways, safety fencing, beach steps and stairs, paths and tracks
- The attached maps indicate the reserves subject to this procedure

Community Land and Crown Reserves are included in this Procedure. The development of a Coastal Reserves Risk Management Procedure is an element of the Coastal Asset Management Plan, which will include details of asset condition, maintenance/renewal strategies and service delivery model.

2. Purpose

This Procedure has been prepared to clearly indicate Council's commitment to minimising in so far is reasonably practicable risk from injury to users of Council's coastal network and to determine the methodology for inspection and programming of repair and replacement works. The progressive implementation of Asset Management Plans for various asset types is one of the objectives in Council's Management Plan.

3. Objectives

The objectives of the Policy are:

- To apply to Coastal maintenance, the risk management principles of identification, assessment and treatment of risks.
- To implement a formal system of Coastal asset inspections that records risks including defined hazards.
- To implement a formal system to inspect and prioritise reports of risks received from the public and/or employees.
- To implement a method of prioritising the risks recorded from the various sources.
- To establish affordable response times to affect repairs or provide temporary warnings for the identified risks; and
- To establish a system of documenting all-important steps of the Procedure to allow ongoing monitoring and review in order to provide evidence to defend Coastal related claims against Council.

4. Inspections

4.1 Purpose

Coastal inspections are to identify Defects requiring repair in the short to medium term and risks requiring urgent action and are designed to allow for the systematic identification of coastal community land risks and defects and the prioritising of repairs.

4.2 Inspection Intervals

Coastal assets are numerous and located at disparate locations along the full length of the coast. The resources required to undertake a high frequency of inspections is considerable, particularly as most cannot be directly accessed by vehicle.
It is proposed that a detailed annual inspection only be undertaken; this is estimated to cost $12,000 and this frequency is considered reasonable when compared to the available funds for implementation of about $130,000. It is proposed to undertake the inspection in September/October each year to ensure urgent actions are undertaken prior to the summer holiday period.

Additional inspections will be undertaken in response to customer reporting and the result of the CAMS inspection will be entered in the Coastal Defect Register.

4.3 Use of Defect/Risk Inspection Information

All defects will be identified and the information will be entered in the Coastal Reserves Defect Register which is a sub-set of the Coastal Asset Register.

Each Defect will be assigned a priority rating corresponding to the degree of risk posed by the Defect. The standard priority ratings are –

- P5 – High Risk – repair within 2 months; barricade until repaired
- P4 – Medium Risk – repair within 1 year; barricade if required
- P3 – Low Risk – repair within 2 years
- P2 – repair within 3 years
- P1 – repairs not required within 5 years

Coastal defects are defined as any defect on any asset within the coastal reserve. The Asset Register is also regularly updated from data on works undertaken as well as additional information arising from CAMS and informal staff inspections.

The data in the Coastal Asset Register will be used to prepare annual repair and replacement programs with prioritisation based on defect priority as assessed by the inspecting officer. An annual budget allowance will be made for this annual programmed maintenance which will be directed to P4 and P3 priority actions as well as re-opening of barricaded P5 actions.
The amount of funding voted each year will be dependent on the needs of Council each year and the demands for funding for other services.

An annual budget allowance will also be made to undertake urgent repairs (P5) identified by CAMS or the annual Defect Inspections.

4.4 Inspection Staff

The inspections will be undertaken by appropriately trained and skilled personnel who have an understanding of Coastal related risks and defects. These may be works supervisors, engineers, gangers, technicians, asset officers or anyone deemed suitable to undertake inspections.
All inspectors will be trained in the systems and recording methods which support this Procedure.

4.5 Inspection Process

Inspectors shall record Defects on a hardcopy or electronic Coastal Defect Record (CDR). Completed CDRs shall be returned to the Coastal Manager for data entry and/or updating of data in the Coastal Asset Register and Defect Register.
Defect inspections will relate to structural assets and dunal vegetation in accordance with relevant standards and guidelines. The structural assets include –

- Carparks
- Boardwalks / bridges
- Viewing platforms
- Safety fencing
- Beach steps
- Beach stairs
- Beach walkways
- Dune Fencing
- Paths and tracks
- Beach Hazard & other Signage

Note : Significant storm events (above 5m mean wave height) will trigger additional risk inspections on beach locations known to be prone to damage from a particular storm swell direction.

4.6 Minimum Recording Levels

Defects that are less than as shown in Table 1 do not need to be recorded in the Coastal Asset Register and Defect Register.

Asset Type	Minimum Recording Level
Paths / walking tracks	100mm differential
Beach Hazard & other signage	Sign illegible or missing
Timber walkway or bridge /viewing platform /stairs	20 mm differential
Beach access board and chain	100mm differential
Car park	Potholes 150mm in diameter and at least 50mm deep.
Beach steps	50 mm differential between filling and top of boards
Dune fencing	Protrusion into walkways

Table 1 – Minimum Recording Levels

5. Documentation

5.1 Purpose

It is necessary to keep evidence of the various steps detailed in this Procedure. Both computerised and 'hard-copy' data will need to be accessible, when required, for both review requirements and as defence for claims against Council.

5.2 Inspection Records

Data from the various Coastal Risk Records will be combined in one computerised database i.e. the Coastal Reserves Asset Register and Defect Register. Hardcopy records will be kept on a Central file however it is proposed to collect defect data electronically for direct downloading into the Defect Register.

5.3 CAMS Data

Coastal Reserves related risks identified in CAMS (arising from customer reporting) will be included in the Coastal Reserves Asset Register and Defect Register.

5.4 Coastal Reserves Asset Register and Defect Register

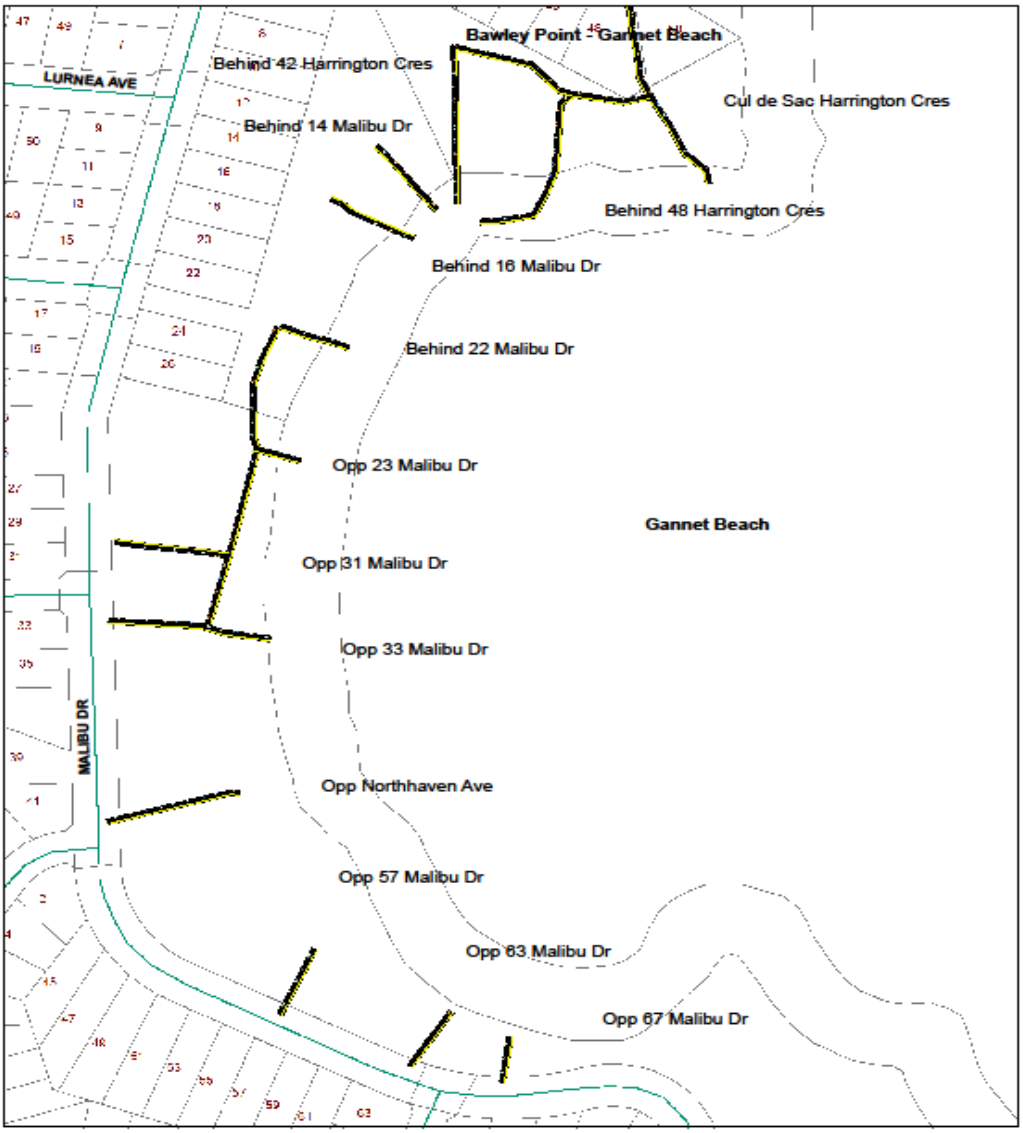
The Coastal Reserves Asset Register and Defect Register is a computerised database that will be maintained by the Natural Resource and Flood Plain Manager. Data from the Register will be archived monthly to provide evidence of changes to the Register over time. These archives will be held electronically using Council's data backup procedures.

6. Review

This Procedure will be reviewed at least annually by relevant employees and adopted by Council. It will be necessary to regularly review the Procedure to verify that its requirements are financially and operationally feasible and that it is effective in reducing Council's exposure to liability claims.

Appendix 2: Five Year Operations and Maintenance Plan maps

There are 32 maps which are being re-formatted. New maps will show transparent aerial photos to provide clearer context with operational activities embedded in the map.
Below is an example of how they currently appear.



Operational

Remove walkway fence wire
Add viewing platforms opposite 45, 57, 63 and 67 Malibu Drive.
Replace bridge on Northhaven Ave access.

Appendix 3: Shoreline Protection Condition Assessment – Inspection Spreadsheet (in process)

Appendix 4: Draft Coastal Carpark priority list for upgrading

Car Park ID	Coastal Carpark Asset	Village	AREA (M2)	Usage including multiple benefit	Env Impact including dust and complaints	Difficulty of Maintenance	Score	Estimated seal cost
			Weighting Factor	3	1	2		
1	Edith Twynam Reserve	Mollymook	1,400	5	2	3	10	**$73,000**
2	Sir Henry Cres Reserve	Callala Beach	300	4	3	2	9	**$18,000**
3	Princess St	Callala Beach	350	4	3	2	9	**$20,500**
4	Abrahams Bosom Reserve	Currarong	1,100	4	4	1	9	**$58,000**
5	Surfers Ave	Narawallee	127	4	2	2	8	**$9,342**
6	Currarong Beach (Warrain Cres)	Currarong	489	3	2	3	8	**$27,433**
7	Wilinga Headland	Bawley Pt	1,000	3	2	3	8	**$53,000**
8	Haven St Carpark	Culburra Beach	29	5	1	1	7	**$4,463**
9	Beach St Reserve	Lake Tabourie	1,800	3	2	2	7	**$93,000**
10	Sandmines Beach	Bawley Pt	881	3	1	3	7	**$47,062**
11	Waratah St	Bendalong	115	3	2	1	6	**$8,772**
12	Inyada Beach	Bendalong	600	3	2	1	6	**$33,000**
13	Wowley Creek	Calllala Bay	215	3	1	1	5	**$13,731**
14	Monument Beach	Bendalong	168	2	1	2	5	**$11,391**
15	Washerwomens Beach 2	Bendalong	825	2	2	1	5	**$44,232**
16	Dee Beach	Bendalong	450	2	1	1	4	**$25,500**
17	Quebec St Carpark	Cunjuraong Pnt	200	2	1	1	4	**$13,000**
18	Super Tubes	Burrill Lake	200	2	1	1	4	**$13,000**
19	Wairo Beach	Lake Tabourie	200	2	1	1	4	**$13,000**
20	Murramarang Beach	Bawley Pt	185	2	1	1	4	**$12,272**
21	Shell Beach	Kioloa	713	2	1	1	4	**$38,658**
							Grand Total	**$630,356**

Appendix 5: Community Strategic Plan – relevant objectives and strategies

Objectives: Shoalhaven Environments

- A City that protects, values and cares for the Shoalhaven environment
- Population and urban settlement growth that is ecologically sustainable, carefully planned and managed to meet the needs of the community
- A community that seeks to reduce global warming impacts and increase our ability to adapt to the effects and impacts of climate change
- A City that shows leadership in ecologically sustainable development and living
- Community infrastructure and services that are environmentally responsible and ecologically sustainable.

Strategies

1.3.3 Design, locate, construct and manage Council facilities, public spaces, buildings and landscapes to enhance neighbourhood amenity and reflect community values and pride.
1.4.1 Provide and maintain a diverse range of high quality passive and active open space.
2.1.1 Ensure that the ecological and biological environments of the Shoalhaven are protected and valued through careful management.
2.1.3 Enhance links between the natural environment and educational programs and recreational activities.
2.4.2 Create urban environments that meet community needs while ensuring the qualities and ecological integrity of the natural environment are protected.
2.5.1 Ensure that the provision of community infrastructure and services meets best practice environmental standards and controls.
3.1.6 Create active and connected foreshores and waterfronts that support recreational and community use and respect local environmental constraints.

Appendix 6: Shoalhaven Adaptation Plan – relevant issues

Extreme Risk Issues

Risks associated with community complacency and their unsafe/unpredictable and stupid behaviour during an event.
Action 7: Implement suggested management measures (fencing and signage etc) where required.

Lack of adequate funding to upgrade and implement flood mitigation measures and Coastal Protection strategies.
Action 8: Investigate opportunities for regional resource sharing arrangements
Action 9: Lobby State Government for resourcing
Action 10: Investigate options for Council to budget for some of these high priority measures

Deficiencies in strategic planning processes for urban expansion and current consideration of climate change impacts on ecosystems.
33: Identify areas where 'ecosystem retreat' may occur (e.g. as sea level rises salt marsh will move)

Community expectations of infrastructure delivery exceed Council ability.
34: Develop communications strategies that enable the community to be fully informed of Councils limitations in the delivery of infrastructure.

Additional costs associated with the management of Council's natural environment
35: Develop operational agreement for natural areas to ensure adequate budget for the sustainable management of Council's natural areas
36: Five yearly condition assessments of targeted natural areas.

Change to Rainfall

Impact of climatic changes on the management of lakes and waterway ecosystems.
51: Implement Estuary Management Plans, Stormwater Management Plan

Wind

Increased cost of repairs to Council and natural assets that could be affected by high winds.
55: Ensure that all new infrastructure or infrastructure being refurbished complies with worst wind category building standards.
56: Review and update Asset Management Plan to comply with worst wind standard. Identify priority adaptations to mitigate clean up expense in balanced consideration of other risks – NB Recognising that if declared as natural disaster – State Government will cover costs.
57: For minor events, increase operational budget by 5% to accommodate increased clean up costs.

Fire
Post fire effect on vegetation and assets cause increased risk of injury e.g. loss of fences / safety barriers, walking tracks.
58: Inspection and response strategy - tape off unsafe areas e.g. stabilise or isolate within two weeks post event.

Sea level rise
Strategies to manage vulnerable areas must be developed and account for heightened levels of impact.
Develop, implement and review Coastal Management Program
Develop, implement and review Floodplain Risk Management Program
Ensure that expert flood and coastal advice is considered in land use zoning
64: Investigate, in association with Federal and State Governments, retreat and protection scenarios.
65: Undertake a feasibility investigation in association with Federal and State Governments, including policy and legal basis, for the introduction of rolling easements to protect foreshore areas subject to climate change risk factors.

Maintenance, renewal and protection funding and regimes for Council's existing infrastructure and property must take into account gradual sea level rise.
Review asset management plans in accordance with sea level impacts and budget accordingly in the medium term.

Inundation and damage to building substructures and foundations could impact upon public safety.
69: Review asset management plans in accordance with sea level impacts and budget accordingly.
70: The Capital Strategy of the AMP will identify any assets which need to be relocated / abandoned.
71: Increase safety measures in high risk locations.

Loss of beach fronts and sand dunes
74: Develop a targeted policy which identifies strategic water front areas for acquisition where legally practical and investigate land use planning (through dedication or development contribution plan) (refer – rolling easements)

Council may need to consider a planned retreat option vs. new infrastructure such as sea wall and flood levies.
75: Consider a planned retreat policy if evidence of sea level rise is realised. This would be in line with state and federal government policy for high risk areas.
76: Consider planned retreat implications in future land use planning (e.g. seek insertion of appropriate zones or provisions in the standard LEP instrument)

Council fails to adopt the Shoalhaven Coastal Zone Management Plan.
83: Adoption, implementation and appropriate resourcing of Council Coastal Zone Management Plan

Council may have to purchase new land to relocate those recreational facilities that have been affected by sea level rise.
86: Identify those assets at risk and then plan accordingly to address the community's needs and expectations

Additional information required and expertise to manage erosion and landslide susceptibility of Council's natural resources e.g. geotechnical reports.
92: Consider further studies to indicate areas of reduced foundation capacity

Intense Rainfall Risks
More frequent landslides
119: Review of Council's Strategic Asset Management Plan
120: Use available LIDAR to build a land slip risk overlay to be incorporated into the LEP.

Adaptation Actions
Potential impact of sea level rise on developments and Council infrastructure.
127: Review DCPs and DSPs; Climate Change Adaptation Planning
Lack of political and community acceptance that climate change is an issue resulting in lack of policy and strategic direction and inadequate investment.
128: Develop a community engagement and education strategy for climate change.