SUBMISSION TO QUEENSLAND FLOODS COMMISSION OF INQUIRY

Gold Coast City Council

This response constitutes the second submission of the Gold Coast City Council and relates to matters associated with the Sustainable Planning Act. It should be read in conjunction with Council's first submission (which complied with the Commission's deadline of 11 March 2011), which dealt with matters relating to the Disaster Management Act.

1 PURPOSE

The purpose of this submission is to provide input with respect to a number of legislative, policy and resource issues that affect flood management on the Gold Coast (although their resolution is beyond the jurisdiction or the authority of the Gold Coast City Council , alone). To this end, this submission identifies these issues and proposes solutions for consideration. The areas of concern are as follows:

- legislative issues surrounding flooding and the impact of climate change on flooding
- communication of flooding risk to the wider community
- flood insurance
- consistency in planning parameters and approaches at regional and national levels, and
- funding for flood risk management.

2 INTRODUCTION

Gold Coast City Council (GCCC) has undertaken flood risk management over many years addressing existing, future and residual flood risk on the Gold Coast. Some of the important flood risk management initiatives on the Gold Coast include:

- investment on structural flood mitigation projects, most notably raising Hinze Dam
- introduction of a stringent flood code in the Gold Coast Planning Scheme to ensure new developments will not increase flood risk, while also mitigating against existing risk, where possible, and
- development of a flood emergency decision support system for the Gold Coast.

The effectiveness of these measures have been demonstrated during moderate flood events in 2005, 2008 and 2010 on the Gold Coast.

Gold Coast City Council ensures best practice flood risk management through the implementation of the "Sustainable Flood Management Strategy (SFMS)". This is included as **Annexure A** for reference.

The SFMS, endorsed by Council in 2010, introduces an holistic approach towards flood risk management by implementing measures that are aimed at:

- **reducing the probability of flood hazard occurrence, and**

- **reducing the exposure and vulnerability of the city's built and natural environment to flood hazards.**

The SFMS is a corporate strategy that ensures flood risk management regarded as core business for Council and heightens community awareness as well as guiding Council's actions for flood risk management during the next five years, fulfilling its following strategic objectives:

- **Vision: "A flood resilient Gold Coast Community"** through
- **Mission: "Cutting edge and adaptive leadership and management approaches that reduce the threat of flooding to the Gold Coast Community in the face of changing climate and population growth".**

In managing flood risk on the Gold Coast, GCCC has come across limiting legislative, policy and resource issues under state and federal jurisdiction and control. Further exploration of these issues may point to outcomes that enable local authorities to address the risk of flooding more effectively. This submission therefore aims to highlight these issues and suggests further consideration by the Inquiry.

3 LEGISLATIVE ISSUES

Flood maps should be reviewed once new data, technology and knowledge becomes evident (e.g. climate change). However, councils are faced with uncertainties where properties approved for development in previous schemes would trigger a requirement for conditional development in subsequent and updated schemes based on contemporary data inputs. There are concerns regarding a potential diminution in property values as a result of the publication of more up to date information which may become available from time to time.

Council considers that it may be exposed to legal liability risks in its climate change related decision making, including publication of flood maps/data which take into account sea level rise/ storm surge impacts from climate change . Climate change models are based on global scenarios, where the likelihood of occurrence is difficult to determine in practice. While global models are improving, climate predictions are intrinsically linked to the unknown future global response to emissions reduction and thus will always contain a level of uncertainty.

The dynamic nature of climate change science and predicted changes add levels of uncertainty to flood risk assessment practice. The current legislative framework may not provide adequate support to local authorities, who wish to publish the latest credible information, yet fear that doing so may open them to claims for legal liability , or compensation. . Concerns regarding such potential liabilities may lead to an unnecessarily conservative approach to the publication of new data .

There are also concerns that lack of prescriptive requirements from State and Federal governments as to the basis of flood modelling inputs, including models and assumptions leave local governments flood modelling open to challenge on a case by case basis. Some mandated parameters for such models would assist in removing uncertainty across the State..

Liability for a local government can potentially arise under claims for negligence, breach of statutory duty and private or public nuisance.

In response to this there are significant protections against civil suit for damages from claims relating to Local Government actions to be found under common law exemptions for discretionary decision making on matters of policy, further enhanced by statutory defences provided by the Civil Liability Act 2003 (Qld)which extend the protections available under the common law to include a "Wednesbury" style test for

reasonableness, so that only wholly unreasonable decisions of a Council will result in a liability.

Nevertheless, in light of the uncertainties surrounding these matters, Council supports the argument which has been successfully made in New South Wales, that in order to promote a proactive culture of decision making to respond to the impacts of climate change, legislative changes could be made to bolster the protection available for reasonably based Council decision making to meet climate change.

This could be effected by providing certainty in relation to claims for injurious affection under the Sustainable planning Act 2009 (Qld) to the effect that changes made to a planning scheme to meet the impacts of climate change are not an allowable subject for a compensation claim, and also by providing an exemption from liability for a Council's reasonably based climate change related decision making.

In late 2010 the New South Wales Parliament provided an exemption from liability for reasonably-based local government decision making. This applied not only in relation to flood risk assessment and the publishing of flood risk information (an existing exemption under section 733 of the Local Government Act 1993 (NSW)) but also in relation to reasonably-based climate change related decision making. Similar legislation in Queensland may encourage Queensland local governments to be proactive in publishing the most up-to-date, credible flood and climate change impact information, despite the inherent uncertainties associated with both flood modelling and climate change predictions.

Annexure "B" is an extract which sets out the extensive reforms and previously existing exemptions from liability for local governments in NSW.

4 COMMUNICATION OF FLOOD RISK

Local knowledge held by councils is an invaluable resource that could provide a greater level of accuracy to initiatives undertaken by the State and Federal Governments. Opportunities exist for local, State and Federal Governments to communicate flood risk jointly by collaboratively adopting local level detail to convey the most accurate assessment of flood risk without unduly concerning sections of the community through the use of macro-scale data.

Other communication issues include managing the perception by many in the community who believe that the flood representation on a map for a single return period event, (traditionally one for triggering a flood assessment in a planning scheme) is a static and comprehensive representation of all types of flood events. Some members of the community are under the impression that building above the prescribed levels in the flood map provides flood immunity forever and, should damage and losses occur to properties or businesses not included as flood prone on this map; the assumption is that the local authority "got it wrong" and should be held responsible. The GCCC actively seeks to inform the community of limitations associated with the use of such a planning tool in understanding risk, however, continues to be frustrated in this endeavour by incorrect focus in the media. Engaging the public on this matter at a more holistic state-wide or national perspective may lead to greater understanding within the community and ultimately greater flood preparedness.

5 FLOOD INSURANCE

It is recognised that insurance is a vital component of floodplain management. Unfortunately, insurance against flood risk is not readily available to many Australian

residents. The level and nature of flood coverage available to residents is uncertain, variable and highly dependent on the nature of flooding at the time of the event, where the resident is located, the definition of flooding supplied in each product disclosure statement and any specified exclusions or conditions within the policy. The product disclosure statements (PDS) for the policies from insurance companies have variable definitions and conditions that potentially limit payments and actual coverage according to the nature and classification of flooding. This could generate confusion amongst customers uncertain about the differences between the sources of flooding and water damage and might leave many residents under-insured.

A national strategy to increase the provision of residential flood insurance is considered prudent. There are currently significant barriers in terms of information, information sharing, risk assessments, mitigation and damage estimations that slow the progression of product delivery. These issues also need to be further considered.

As mentioned in Section 4 above, the use of incorrect risk tools and assumptions could result in adverse impacts to insurance premiums and/or incorrect identification of areas requiring insurance protection. Engaging the community with appropriate and accurate representations of risk, therefore, is essential.

Where a Local Government has implemented an effective flood mitigation and drainage scheme, insurance companies be requested to take this into account in the calculation of insurance premiums as the risk of flooding is decreased.

6 LACK OF CONSISTENCY IN PLANNING PARAMETERS AND APPROACHES

Natural events do not recognise local or State boundaries. Local governments are currently facing the challenge of changing basic planning design standards for flood risk management in response to climate change, but they are largely working in isolation. Currently, there is not a comprehensive common policy approach between local authorities in determining these parameters which could contribute to the evolution of consistency in local government planning schemes. Lack of co-ordination between local authorities is more critical in catchments that are shared between two or more local authorities and more problematic in cities that are located on State borders such as Gold Coast City and Tweed Shire.

This could be addressed at State and Federal levels, however, there also appears to be a lack of cohesion at a these levels, or indeed a reluctance to set common parameters for local planning. A mutually-agreed core policy at State and Federal levels with respect to the impact of climate change on flooding would help avoid significant differences between (neighbouring) scheme approaches and would assist in establishing common codes, acceptable solutions, standards, guidelines and methods needed for a functional regional approach.

7 FUNDING

State and Federal Governments have substantial flood prone assets in the areas that are administrated by local authorities. It is reasonable to expect that both State and Federal Governments share the cost of flood mitigation and flood risk management activities with local governments. Limited funding is made available to local authorities through competitive national disaster management grant schemes which are inadequate for carrying out the management of comprehensive flood risk strategies. Better co-ordination between the three levels of government, including pooling resources for flood risk management could assist in addressing these limitations.

More investment on national and state sponsored elements of flood information systems can greatly assist local governments in their efforts on flood risk management. For instance, nationwide rainfall maps have not been updated for approximately 25 years and there is still a high degree of uncertainty with respect to the rating curves of river systems.

Annexure "A" GCCC Sustainable Flood Management Strategy

Working for our future – today

Sustainable Flood Management Strategy

Gold Coast City Council

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1 Executive summary

This 2010 Sustainable Flood Management Strategy (SFMS) demonstrates Gold Coast City Council's ongoing commitment to protecting the city's built and natural environments against flooding.

It contributes to sustainable land use planning as well as sustainable development and growth of the city. It assists with asset management activities in flood affected areas and supports Council's flood emergency efforts by creating and maintaining appropriate flood emergency decision support tools. This SFMS introduces a holistic approach towards flood risk management by implementing measures are aimed at:

- ***Reducing the probability of flood hazard occurrence.***
- ***Reducing the exposure and vulnerability of the city's built and natural environment to flood hazards.***

Climate change and the uncertainty of its likely impacts at different time horizons presents challenges that require more adaptive risk management approaches. Greater flexibility is required to continually adapt to emerging technologies, information and policies around flood management and community protection. This strategy delivers a strategic decision support system to guide decision making in this uncertain environment and will guide Council's actions for flood risk management during the next five years, fulfilling its strategic objective:

- ***Vision: A flood resilient Gold Coast Community.***
- ***Mission: Cutting edge and adaptive leadership and management approaches that reduce the threat of flooding to the Gold Coast Community in the face of changing climate and population growth.***

The SFMS is a corporate strategy that ensures flood risk management is core business for Council and the community. It integrates flood risk management as a key consideration in Council's corporate governance arrangements and day to day operations. It also contributes to the achievement of the Bold Future Vision, prepared in consultation with the Gold Coast community, in particular the aspiration for creating:

"A safe city where everyone belongs"

This strategy primarily deals with regional flooding. A regional flood occurs when water spills over rivers, creeks, man-made canals, lakes or the ocean (in general receiving waters) and results in inundation of surrounding lands. Water spillage could be as a result of heavy rainfall, storm tide or sea level rise.

This strategy document has been developed following extensive research work aimed at establishing best practice in flood risk management for the Gold Coast. The adaptive nature allows the strategy to be reviewed and modified as necessary.

2 Strategy background

2.1 What is Flood Risk Management?

Flood risk management is the term used for planning and implementing actions that manage the uncertainty of flood and protect people against its adverse impacts. State and Federal Acts, policies and plans set Gold Coast City Local Government responsibilities on protecting people and their properties against flooding.

There is a distinction between flood hazard and flood risk. Flood only presents as a hazard where it exceeds the coping capacity of the environment or community. Whereas flood risk refers to (and is a measure of) the likelihood and consequence of the hazard eventuating. Adverse consequences of flooding can give rise to broad socio-economic and environmental implications, and may include loss of life and property, environmental degradation and short term disruption to supplies and services. Flood risk management is about identifying means of reducing the likelihood and consequence of flooding.

The geographic scope of flood risk management includes the whole catchment of a river with a focus on its floodplain. A floodplain is the land that, in its natural state, would be hydraulically and biologically connected to a main river and from time to time be inundated due to river flooding. The recurrence of extreme rainfall that results in flooding is a normal part of natural climate variability. Flooding is a natural process that creates both hazard and opportunity. Smaller floods have an important role in reinvigorating floodplain ecological processes and maintaining biodiversity. Medium and larger floods in the upper catchment also replenish water supplies for domestic and commercial uses. On this basis, a comprehensive flood risk management regime would ideally integrate with a river's natural processes. It would involve the development of strategies and specific actions to both reduce losses and at the same time increase catchment efficiency through leveraging opportunities that a flood provides.

It is important to note that a flood risk management plan cannot totally eliminate the adverse impacts of flooding everywhere, anytime and for all land use types. Each land use type can be managed to a level of hazard that is determined through legislation or community expectations. Beyond such a level, the flood risk management plan aims at reducing risk to a level that enables the community to recover from an extreme event.

2.2 Background

The Gold Coast has more than 55 kilometres of coastline and over 260 kilometres of navigable waterways. These natural and man-made features that make our lifestyle unique also present significant challenges and opportunities for managing flooding that is predicted to occur with climate change.

Gold Coast City Council has undertaken flood risk planning and management over many years. Some of the important measures undertaken to-date includes:

- Investment on structural flood mitigation projects, most notably raising Hinze Dam
- Introduction of a stringent flood code in the Planning Scheme to ensure new developments will not increase flood risk in the city, and mitigate existing risk where possible
- Development of flood emergency support systems.

These actions have contributed to the management of flood risk on the Gold Coast. However, review and re-evaluation is prudent in light of changing climate indicators and new technologies in assessment, planning and construction of mitigation options, in addition to changing adaptive capacities of the community.

Sustainability in future flood risk management is a main focus of this strategy. Sustainability is achieved through the development and implementation of a knowledge-based adaptive planning model that enables us to respond to change in a timely and systematic way. This will assist Council and the community to cope with future uncertainties, such as community adaptive responses and climate change impacts, more effectively.

This strategy primarily deals with regional flooding. A regional flood occurs when water spills over rivers, creeks, man-made canals, lakes or the ocean (in general receiving waters) and results in inundation of surrounding lands. Water spillage could be as a result of heavy rainfall, storm tide and sea level rise.

2.3 Our Bold Future Vision

Our Bold Future Vision sets out the ambitions our community has for the Gold Coast and a process of ongoing engagement between Council and the community to work in partnership to achieve social, environmental and economic sustainability for the future.

The Bold Future Vision for the future of the Gold Coast is:

"Defined by our spectacular beaches, hinterland ranges, forests and waterways, the Gold Coast is an outstanding city which celebrates nature and connects distinct communities with the common goal of sustainability, choice and well being for all."

This vision is supported by six themes with explicit outcome statements (For more information on Bold Future, see (www.boldfuture.com.au). The Sustainable Flood Management Strategy is a key initiative of Council and delivers on a number of these outcomes, in particular outcomes 1 and 4; ***"A safe city where everyone belongs"*** and ***"A city leading by example"***.

2.4 Our Flood Risk

The Gold Coast has experienced more than 45 floods since 1925 (Bureau of Meteorology web site), the most severe of which in recent history was triggered by a passing cyclone (Wanda – 1974). Bureau of Meteorology records show that more than 40 cyclones have occurred in the SEQ region over the past 120 years. A main extreme weather driver in SEQ is low pressure systems, known as East Coast Lows, that occur off the east coast of Australia. East Coast Lows on average occur several times a year and contribute significantly to flooding and storm surge. A moderate flood in the Gold Coast in 2005, is an example of this weather pattern. Past flood events caused moderate to extensive damage to private property, community buildings, bridges and roads. The last major flood (1974) led to the evacuation of 1500 people and homes inundated with 1.2m to 1.5m of water (Gold Coast Bulletin, Tuesday 29, 1974 p3). More recent localised flooding in June 2005, resulted in the inundation of a number of houses and the loss of two lives.

The Gold Coast is subject to **existing**, **future** and **residual** flood risks.

2.4.1 Existing flood risk

Even though the city is geographically susceptible to flooding, recent development of sophisticated engineering and modelling techniques and regulations and planning policies places the Gold Coast in a much better position to mitigate and respond more appropriately and effectively to flooding. Even today comprehensive flood studies on the Gold Coast show that several thousand properties would experience over-floor flooding during a 1 in 100 year flood event. Although this flooding in some areas is only for a very limited depth of inundation and duration, the damage bill for the Nerang River catchment which is the most populated catchment on the Gold Coast could potentially exceed $200 million, excluding damage to infrastructure and intangible losses. Potentially several thousand people would be directly affected in an unlikely event of all catchments in the city simultaneously experiencing a 1 in 100 year flood event.

2.4.2 Future flood risk

Anticipated future flood risk is in part attributable to the projected impacts of climate change. Flooding and climate change are inextricably linked issues, for example CSIRO predicts that as a result of a changing climate the Gold Coast will possibly become more susceptible to increased intense rainfall events, extreme weather, sea level rise and storm tide. This means that a 1 in 100 year flood event by today's standards may occur with greater

frequency in the coming decades. When the complications of sea level rise and storm tides are added it is clear why a Sustainable Flood Management Strategy that is flexible and can incorporate new data as technologies and scientific understanding of climate change advance, is an imperative.

2.4.3 Residual flood risk

Mitigation and protection measures are generally aimed at protecting people against flood events that occur within the design level for residential buildings. Based on the Building Code of Australia and various state and national policies and strategies, the design level for residential buildings is set at 1 in 100 year annual return interval (ARI) flood. Risk over this standard measure is described as 'residual risk'

2.5 Current Trends and Issues

Trends in the Level of Flood Hazard

Traditionally, future floods are predicted based on the recorded historical flood information in a region. The historical flood data for the Gold Coast is available for the past few decades (during a period of relatively stable climate). Faced with predicted change in global temperature, such extrapolation of historical data can no longer produce an accurate estimate of future flood frequency, intensity, extent and duration. Depending on climate change scenarios which might occur, future floods are likely to be different from the ones in the past.

The knowledge of the extent of climate change and its likely impacts on the city is developing. Existing climate change studies for SEQ (by CSIRO) suggest that extreme rainfall on the Gold Coast may become more severe in the future. However, there is a substantial degree of uncertainty associated with these predictions. It is important to note that floods can be highly variable, depending on how each catchment responds to different rainfall events. Likely changes in catchment response to rainfall due to climate change is unknown at present. It is, therefore, important to realise that there is a fundamental degree of uncertainty in any prediction of changes in flood frequency in the future.

Trend in Vulnerability to Flooding

Vulnerability to flood increases with the intensification of land use in areas potentially subject to flooding, increasing value of property or assets located on that land, and increased population levels.

On the other hand structural vulnerability has also decreased due to engineering responses and increased community capacity to respond.

Due to population and economic growth it is anticipated that more people will reside in the Gold Coast's urban areas, more assets will be created and the value of these assets will increase over time. Such growth, if not adequately planned and regulated, will potentially result in an upward trend in vulnerability to flooding.

Landowner Expectations and the Role of Council

While flood is a natural phenomenon, Council has taken a leadership approach to the city's flood management challenges, particularly in regards to climate change and community capacity to adapt to and mitigate against adverse impacts. However, community expectations are likely to exceed Council's capacity to predict, mitigate and respond to some extreme flood events.

Future Development to Match Population Growth

Gold Coast City is one the fastest growing cities in Australia, with an average 11,000 new residents each year. The city is challenged to provide 143,000 additional dwellings in the next 21 years based on city's predicted growth. Again this points to the necessity to adopt and implement a flexible and sustainable strategy to manage flood risk.

2.6 Best Practice in Flood Risk Management

This strategy incorporates the following best practice elements in flood risk management.

- Management measures are technically sound and ecologically, socially and economically sustainable
- Management measures are based on an understanding of natural processes and are integrated with these processes as far as practicable
- Natural process will not be disturbed as far as practicably possible. Engineering intervention is warranted only where human life, significant infrastructure or natural assets are at risk
- Risk changes over time due to changes in the hazard, the value of exposed assets, and their vulnerability
- The broader community has a role in flood risk management;
- All types of flood risks, such as **existing**, **future** and **residual**, will be managed
- The objective of flood management will go beyond minimising flood losses but also to maximising the efficient use of the catchment
- Flood risk management will be sustainable, despite future uncertainties, through the ability of efficient and effective adaptation to change.
- Flood management is an integral part of water resource and catchment management systems that aims to increase the efficiency of the usage of water resources and catchments without compromising sustainability of these vital systems.
- Flood risk will be mitigated through a multi-faceted approach aimed at reducing all three constituents of risk:

    - **Hazard** that is a measure of frequency and severity of flood
    - **Exposure** that is a measure of human life and assets that are located in a flood risk area, and
    - **Vulnerability** that is a measure of a community resilience and their ability to anticipate, cope with and recover from the impact of a flood event.

where
Flood Risk = Hazard * Exposure * Vulnerability
(refer to figure 1)

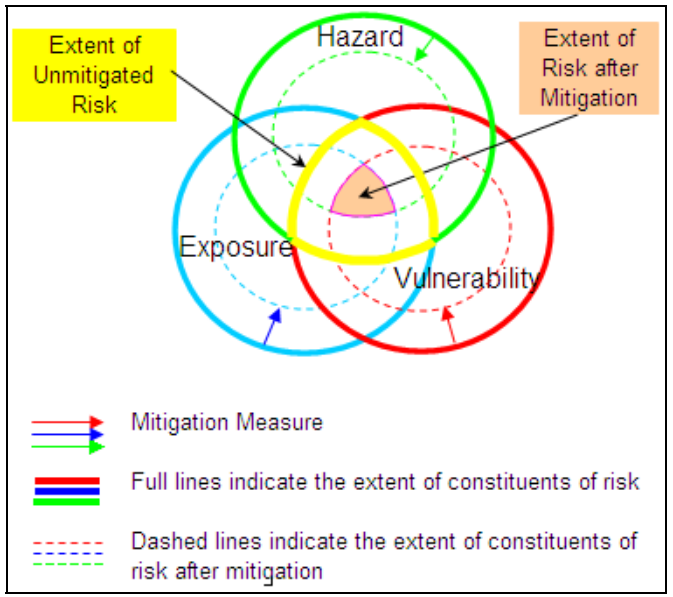

Figure 1 – Construct of flood risk in terms of its basic elements

Figure 2 shows how Council seeks to manage flood risk by reducing the physical hazard, the exposure to the hazard, or the vulnerability to hazard.

Flood defence has traditionally been concerned with reducing the physical hazard for existing risk, whereas this strategy seeks to consider and include all three above-mentioned groups of measures for existing, future and residual risks. The two axes in this figure, i.e. “Risk Type” and “Risk Reduction Method”, provide a space within which the 19 Actions of the Strategy are prescribed for the management of flood risk on the Gold Coast. Each one of these actions is aimed at reducing one or more elements of flood risk.

Actions that are placed close to the bottom right corner generally comprise of non-structural measures for flood risk management. Actions that are placed close to the top left corner have a more structural nature. Structural methods of flood risk management require construction of physical assets, such as dams, weirs and levies. These measures require considerable upfront investments, are less flexible and are often irreversible. Non-structural methods require less upfront investment and are of a non-permanent nature. Development of flood warning systems or community education programs are examples of these types of measures. These measures are suitable for climate change adaptation strategies by providing a high level of flexibility, which fit well with the uncertain nature of climate change impacts on flooding.

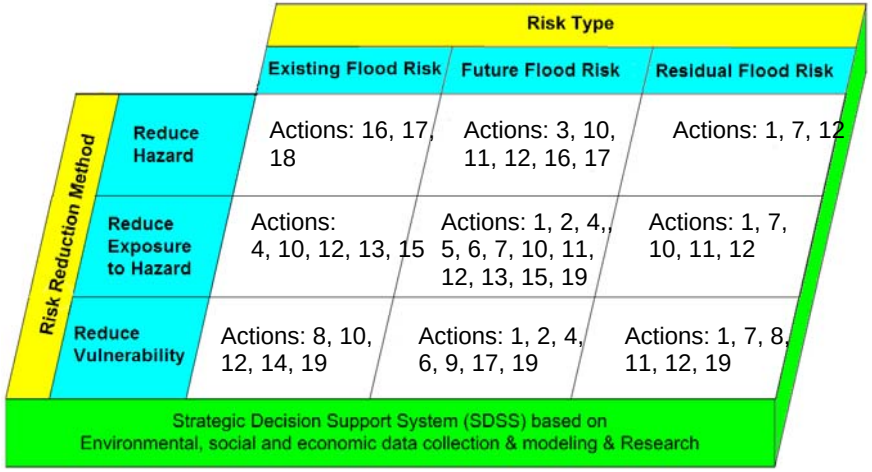

Figure 2 – Flood Risk Management Matrix

2.7 Relationship between the Sustainable Flood Management and Water Cycle Strategy

The predicted addition of 143,000 more dwellings over the next 21 years to the Gold Coast, means a high demand on potable water, increased flows to the sewage treatment works, greater stress on the ecological health of the city's natural assets and a greater risk of local flooding as stormwater runs off new houses, driveways and roads. Managing such growth necessitates the development of a set of strategies to ensure water is managed in an integrated manner. Council is currently preparing an integrated watercycle strategy that seeks to provide a strategic response to these challenges. Alignment of these strategies is essential for ensuring that all the issues associated with the water cycle, are captured.

3 The Strategy

3.1 Our vision & mission

- *Vision: A flood resilient Gold Coast Community.*
- *Mission: Cutting edge and adaptive leadership and management approaches that reduce the threat of flooding to the Gold Coast Community in the face of changing climate and population growth.*

3.2 Objectives of the strategy

The objectives of this strategy are to:

- Equip Council and the Gold Coast community with a robust framework for flood risk management to increase our resilience to flood events, provide appropriate mitigation and adaptation responses and recognise and plan for the action required to enable rapid flood recovery.
- Ensure Council's flood risk response is adaptive to new information, improved knowledge, mid-course learning, community expectations and state and federal government policy and/or legislative requirements.
- Build capacity and capability within Council and the Gold Coast community to develop our understanding of flood risk, risk management and response and recovery that will reduce the social, economic and environmental impacts of flood events.
- Ensure flood risk considerations are integrated into Council's decision making, operational management strategies,
- statutory and non-statutory planning and corporate risk management.
- Direct Council's activities as a partner and leader in flood risk research and development that is relevant and specific to the challenges of flooding on the Gold Coast.
- Integrate climate change considerations into flood risk management, response and recovery plans for the Gold Coast to ensure long term resilience of our community to flood events.

3.3 Strategic outcomes

Council's strategy for managing flood and flood risk, focuses on five key themes: Governance and Leadership, Research, Advocacy and Awareness, Infrastructure and Planning and Regulation. Strategic outcomes associated with the key focus areas are presented in the tables below.

Governance and Leadership 	This part of the strategy directs Council's organisational management (governance) of flooding and the leadership required by Council to demonstrate its commitment to the treatment of flood risk on the Gold Coast.
Strategic outcome 1 - Reduced flood risk for the Gold Coast community ***Strategic outcome 2 - Systematic and knowledge-based management of flood risk*** ***Strategic outcome 3 – whole of catchment flood risk management***	

Research	The research component of this strategy provides for more specific information about the impact of climate change on flooding and identifying innovative methods to best manage flood risk.
Strategic outcome 4 – Contemporary and scientific knowledge-based flood response. ***Strategic outcome 5 –Adaptable and future-proof flood management approaches***	

Advocacy and Awareness	A strategic advocacy and awareness focus acknowledges that Council cannot manage flood risk in isolation or without support from other agencies and levels of government. Council and the community will need to be informed and educated to take action in response to flooding issues and management.
Strategic outcome 6 – Increased community awareness of and resilience to flooding impacts ***Strategic outcome 7 – Aligned key local stakeholder objectives and responsibilities***	

Infrastructure	City infrastructure and assets are at risk from flooding impacts. Action is required to ensure that our critical infrastructure continues to function in the event of flooding.
Strategic outcome 8 – Appropriate design, construction and maintenance of critical infrastructure	

Planning and Regulation	The city's planning documents and practices respond to the risks posed to the city, the community, economy, and built and natural environments by flooding. A planned response is required to existing, future and residual flood risk that considers community expectations and meets associated legislative obligations.
Strategic outcome 9 - Adaptive risk-based plans ***Strategic outcome 10 - Protected and flood-prepared Gold Coast Community***	

4 Strategy outcomes, performance measures and reporting

4.1 Performance of the strategy

The corporate performance management framework requires quarterly reporting of strategy implementation and progress. The process monitors the achievement of outcomes and associated performance measures that are identified within the strategy.

4.2 Strategic outcomes, key actions and performance measures

Governance and Leadership

Strategic outcome: 1
Reduced flood risk for the Gold Coast community.

Performance measures:
Reduction in flood risk score, based on the 2010 baseline.
Number of regional committees that Council contributes to.

Key Actions

1. Review Corporate Governance Framework to integrate and embed flood risk management.

What does this mean?
- Seek to achieve consistency in Council's policies and practises.
- Clearly defined flood risk management roles and responsibilities within Council's business units.
- Identify Council's flood management intellectual assets and review funding for the maintenance of these assets.
- Improve the communication flow process between stakeholders.
- Achieve accreditation of flood risk management through alignment with national and international standards.
- Clearly articulate the outcomes of the strategy to internal stakeholders.

2. Engage in regional cooperation on flood risk management.

What does this mean
- Collaborate with relevant state government agencies and other local governments to ensure that flood mitigation and environmental protection is considered as an integrated issue.
- Review consultative arrangements in regard to flood management with federal and state agencies and other SEQ Councils.
- Seek to establish common planning levels and flood management policies across the region.
- Clear and transparent decision making on regional flood risk management issues through cooperation, collaboration and effective communication
- Strengthen regionally coordinated flood risk management initiatives.
- Share knowledge and innovative solutions with the regional partners.
- Seek to align federal, state and local government flood risk management initiatives.

3. Continue to ensure the currency of Council's legal responsibilities in regard to flood risk management under federal and state legislation, under current and future climate conditions.

What does this mean?
- Liaise with legal services, State and Federal agencies and LGAQ

to regularly review Council's legal responsibilities in these areas.
- Continuously review climate change science in collaboration with research bodies

Strategic outcome: 2
Systematic and knowledge-based flood risk management.

Performance measures:
Percentage of progress in development and implementation of the Strategic Decision Support System.

Key Actions

4. Develop a Strategic Decision Support System (SDSS) that enables Council to respond to changing knowledge and new information in a consistent and efficient manner.

What does this mean?
SDSS comprises of a suite of computer models, data, methodical processes and multi-criteria evaluation methods and is used for continuous improvement of management decision making in an uncertain environment (for instance due to climate change).

Strategic outcome: 3
Whole of catchment flood risk management.

Performance measures:
Number of collaborative catchment related decisions and plans.

Key Actions

5. Assist with the integration of the operational arrangements and business processes between stormwater, mainstream flood management, Ocean, Beaches and Foreshores; and water cycle strategy.

What does this mean?
This action will ensure that Council policies and strategies that address the future need for the provision of clean water, the safe disposal of waste water, safeguard of the city's natural assets and protection from flooding are integrated.

Research

Strategic outcome: 4
Contemporary and scientific knowledge-based flood response.

Performance measures:
Number of strategic decisions that are informed by contemporary research.
Percentage of progress towards development of Flood Proof Housing Guideline.

Key Actions

6. Undertake flood risk management research for the Gold Coast in partnership with research facilities.

What does this mean?

- Assess the impact of climate change on the hydrology of the Gold Coast, in particular assessing change in rainfall, wind field, storm tide, catchment response to rain and morphology (conveyance) of waterways.
- Develop property scale flood proof housing guidelines.

Strategic outcome: 5
Adaptable and future-proof flood risk management approaches.

Performance measures:
Percentage of drivers taken into consideration in developing future scenarios (i.e. robustness of approach).

Key Actions

7. Develop a flood risk model that is capable of quantified assessment of various future scenarios and analyse change in the main drivers of flood risk.

What does this mean?

- Continual assessment of the following drivers of risk:
  - Climate change
  - Catchment land-use
  - River processes
  - Human behaviour
  - Socio-economic drivers
  - Coastal processes
  - Urban change
- Asses driver impacts, analyse their uncertainty and the response to flood risk.
- Analyse the environmental impacts of changes in flooding in fluvial and coastal zones against future scenarios.

Advocacy and Awareness

Strategic outcome: 6
Increased community awareness of and resilience to flooding impacts.

Performance measures:
Detailed KPIs will be developed when the framework for communication with community has been established.

Key Actions

8. Enhance collaborative partnerships within the community.

What does this mean?

1 Empower communities in flood risk areas to protect their own safety and to reduce damage to their properties during flood events.

2 Facilitate community input into policy formulation and decision making for flood risk management.

Strategic outcome: 7
Aligned key local stakeholder objectives and responsibilities

Performance measures:
The percentage of buildings and infrastructure within the flood risk areas that are subject to low flood risk.

Key Actions

9. Advocate on behalf of Council and the community for improved flood management outcomes.

What does this mean?

- Seek to incorporate flood proof housing in relevant national and state standards
- Communicate Council's flood risk management outcomes to the insurance industry with the aim of improved services and acknowledgement of risk mitigation
- Advocate for improved communication between the three levels of government on flood risk management.

Infrastructure

Strategic outcome: 8
Appropriate design, construction and maintenance of critical infrastructure
Performance measures:
Percentage of new critical infrastructure that can operate during flood events.

Key Actions

10. Investigate the status of critical infrastructure with respect to flood impacts and identify necessary priority-based remedial measures.

What does this mean?

- Identify and prioritise critical community infrastructure/assets at risk from flooding.
- Develop mitigation measures to manage the risk of loosing critical infrastructure during flood events
- Identify and prioritise Council infrastructure/assets at risk from flooding and determine their level of risk.
- Continue maintaining city's flood management infrastructure/assets including the flood monitoring system.

11. Review and progressively amend flood design standards in the Land Development Guidelines.

What does this mean?

- Review and amend Gold Coast rainfall maps for the current climate and future climate change scenarios (intensity, frequency, duration and temporal patterns).
- Establish Storm tide intensity-frequency on the Gold Coast.

Planning and Regulation

Strategic outcome: 9
Adaptive risk-based planning

Performance measures:
Percentage of the city's floodplains that have flood inundation, flood hazard and flood risk maps.

Key Actions

12. Undertake modelling and investigative studies for effective management of existing, future and residual flood risks.

What does this mean?

- Undertake flood modelling studies to develop flood hazard and flood inundation maps for the Gold Coast.
- Undertake social, economic and environmental flood impact studies to develop flood risk maps for the Gold Coast.
- Undertake damage modelling to estimate flood damage to residential/commercial buildings and infrastructure.
- Undertake a planning study to establish future hydrological parameters for various planning horizons.
- Develop an intellectual asset management program to ensure currency of the Council's environmental models.

13. Review development, building and land use controls in the Planning Scheme to support both existing, future and residual flood risk management.

What does this mean?

- Maintain and (where required) review the Planning Scheme, in particular the requirements for
  - Flood free access for all new developments.
  - Feasibility of on site flood emergency management.
  - The control of filling within the overland flow paths, waterway corridors and floodplains in particular with regard to cumulative impact.

14. Develop a dedicated flood information system.

What does this mean?

- Develop a data collection program to collect information, before, during and after flood events, to inform the planning process. The collected data, would include (but not be limited to) surveys of the infrastructure, residential buildings, waterways bathymetry, ALS rainfall, waterway flow and flood levels, location and features of vulnerable elements (such as community infrastructure and census data)
- Review the Council's flood search database and investigate the feasibility of an automated flood search in order to reduce the costs and time of access to data by the general public
- Develop a process to ensure as-constructed information that is provided to Council inform the Council's flood information system.

Strategic outcome: 10
Protected and flood-prepared Gold Coast Community

Performance measures:
Percentage of the city that is covered by Internet-based flood emergency Decision Support System.

Key Actions

15. Review other governmental arrangements for the acquisition of residential buildings where the flood immunity is unacceptably low.

What does this mean?
- Undertake a review of best practice by other government agencies that actively acquire residential property in areas of low flood immunity.

16. Investigate physical flood mitigation work.

What does this mean?
- Investigate the increase of retention and detention of floodwater in parts of the catchment to reduce flood flows.
- Investigate the increase of conveyance of waterways (particularly at lower parts of river systems) to discharge flood water more rapidly from the floodplain into receiving waters. Identify areas where this would be most beneficial.
- Undertake a feasibility study to employ existing hydraulic infrastructure to control flood wave desynchronisation.

17. Identify areas that cannot be adequately defended by catchment-wide strategic measures and develop specific local flood defences.

What does this mean?
- Identify areas of the city that due to their physical location may not benefit from catchment-wide flood mitigation and investigate the feasibility of local mitigation measures for these areas.

18. Undertake a feasibility study on real time physical flood fighting responses.

What does this mean?
Investigate the feasibility and effectiveness of physical work (such as building temporary bunds or removing sands from the mouth of the creeks) immediately prior to a flood event to mitigate the adverse impact of flooding.

19. Develop, implement and maintain the Council's flood emergency management Decision Support System (DSS), and ensure the provision of an adequate and cost-effective flood warning system.

What does this mean?
- Develop an intellectual asset management cycle program for the maintenance of the Council's flood emergency DSS.
- Identify enhancements to the network of rainfall and flow measurement stations and develop a program of work to make these enhancements.
- Develop a regular/periodical maintenance program for the Council's internet-based flood information.
- Utilise technology to support operational efficiency and effectiveness in supporting Disaster Coordination Centre flood emergency management efforts.

4.3 Corporate governance and flood management

Gold Coast City Council, as shown in the corporate and directorate risk registers, is exposed to a variety of risks ranging from natural disasters to different strategic concerns that may affect the organisation in unanticipated ways. Risk management is an integral part of management and is essential to good corporate governance. To this end, the Sustainable Flood Management Strategy articulates a series of actions aimed at managing the natural phenomenon of flooding. Successful implementation of the strategy is key to enabling the organisation to address flood risk. Corporate Governance elements of the strategy ensure successful implementation of the strategy through:

- Clear direction in resource allocation, in terms of long-term financial planning and annual budgeting
- Accountability that is realised through the corporate performance management framework, based on relevant performance measures
- Integration of flood risk management into Council business and service delivery
- Embedding adaptive planning/managing methodology into the corporate governance framework and undertaking the required capacity building

4.4 Sustainable Flood Management Strategy review arrangements

The Sustainable Flood Management Strategy does not limit itself to a periodic review process. Instead, reviews can be triggered at any time even by natural phenomenon events. A key concept with sustainable flood risk management is that it is necessary to as accurately as possible forecast changes in the built environment, social demography and climatic conditions to ensure that physical mitigation and planning responses are able to reduce risk, both today and also into the future. This is especially important given the lifespan of infrastructure assets that will be built today. In other words our responses to this risk must seek to be flexible to future changes and must ensure associated investigations of probable floods are both justifiable and effective. To address this a Strategic Decision Support System (SDSS) will be developed as part of implementation of this strategy. The SDSS, identifies the need for a review through its environmental scanning and adaptive management modules:

I. Environmental scanning is a continuous operation of the SDSS. The aim of environmental scanning is to identify the latest trends on climate change, legislation or policies, socio-economic status or any other changes that have the potential to impact on flood risk management. Any detected change, where necessary, is converted to information, fact, knowledge or impact statement through a scientific process embedded within the SDSS. A threshold analysis then determines the importance of the change (based on the corporate risk assessment methodology) and depending on the seriousness of the assessed risk, a review and/or modification of the strategy can be triggered.

II. Adaptive management process of the SDSS includes four steps, - Implementation, Monitoring, Evaluation and New Learning. These steps create a feedback loop that iteratively feeds new learning from the implementation of the strategy back into the decision-making process. As part of this process a number of indicators are set to measure the performance of different aspects of the strategy. Once an indicator exceeds a threshold, an evaluation process is triggered. The evaluation process leads to new learning and identification of the need for change. A threshold analysis determines the importance of the required change and depending on the seriousness of the assessed risk a review of the strategy can be triggered.

5 Strategy implementation

5.1 Implementation plan

The strategy will be implemented using an interdisciplinary, participatory and cooperative approach to ensure the successful completion of numerous actions that have trans-sectoral scope. The implementation, change management and communication activities of the strategy will be primarily coordinated by the Waterways and Flood Management Team in the Strategic & Environmental Planning & Policy Branch, Planning and Environment & Transport Directorate within Council. Table 1 provides an Implementation Plan.

5.2 Responsibility and accountability

Sustainable Flood Management Strategy (SFMS) actions within Council will require input across all directorates. Service owners are assigned the lead responsibility for those actions that directly relate to their business. A coordinated approach to managing the ongoing implementation of the SFMS is necessary to achieving its full implementation. Council will integrate its flood management activities into governance arrangements to provide the transparent responsibility and accountability for enacting the strategy. While all Council directorates have a corporate responsibility to contribute to flood management outcomes, the level of involvement differs for each individual team or section. Table 1 provides an indication of the involvement of various Council's sections in the implementation of this strategy.

Table 1 - Implementation plan: Key actions of the Sustainable Flood Management Strategy

Governance and Leadership

Strategic outcome 1 - Reduced flood risk for the Gold Coast community.

No.	Key actions	Outcome	Output (Deliverable)	Responsibility	When
1	Review Corporate Governance Framework to integrate and embed flood risk management.	Consideration of flood risk in all Council activities.	A report that outlines how the integration is being undertaken.	CPP-CG SEPP-PET	2011
2	Engage in regional cooperation on flood risk management.	Consistency in flood risk management across the region	Annual progress report, outlining regional cooperation involving Council.	SEPP-PET	2011-2015
3	Continue to ensure the currency of Council's legal responsibilities in regard to flood risk management under federal and state legislation, under current and future climate conditions.	Fulfilment of Council's legal responsibilities in terms of flooding.	Legal advice report, recommending actions that should be taken by the Council to fulfil its legal responsibilities in regard to flooding.	LS-CG SEPP-PET	2011-2015

Governance and Leadership

Strategic outcome 2* - *Systematic and knowledge-based flood risk management

No.	Key actions	Outcome	Output (deliverable)	Responsibility	When
4	Develop a Strategic Decision Support System (SDSS) that enables Council to respond to changing knowledge in a consistent and efficient manner.	Enabling Council to develop adaptive flood risk management plans in response to the uncertainties of climate change.	An operative SDSS.	SEPP-PET	2011-2015

Governance and Leadership

Strategic outcome 3* - *Whole-of-catchment flood risk management

No.	Key actions	Outcome	Output (deliverable)	Responsibility	When
5	Assist with the integration of the operational arrangements and business processes between stormwater, mainstream flood management, Ocean, Beaches and Foreshores; and water cycle strategy.	Efficiency and comprehensiveness in addressing water related issues.	Water related strategies that are consistent and comprehensive.	CPP-CG EPA-ES CM - CS SEPP-PET	2011-2015

Research

Strategic outcome 4 - Contemporary and scientific knowledge-based flood response

No.	Key actions	Outcome	Output (deliverable)	Responsibility	When
6	Undertake flood risk management research for the Gold Coast in partnership with research facilities.	State of the Art flood risk management on the Gold Coast.	▪ A publication containing principles and recommendations for innovative and integrated risk management strategy. ▪ A new Appendix to Land Development Guideline for Flood Proof Housing.	SEPP-PET	2011-2015

Research

Strategic outcome 5 - Adaptable and future-proof flood risk management

No.	Key actions	Outcome	Output (deliverable)	Responsibility	When
7	Develop a flood risk model that is capable of quantified assessment of various future scenarios and analyse change in the main drivers of flood risk.	Applying foresight in flood risk management at the Gold Coast.	A number of reports on the topic of climate change impact on flooding. These reports contain a first cut assessment in order to: ▪ identify key factors likely to change flood risk on a 30 to 100 year time scale. ▪ quantify the impact of future flood risk on the Gold Coast. ▪ recommend the possible responses to the challenges of future flood risk.	SEPP-PET	2011-2015

Advocacy and Awareness

Strategic outcome 6 - Increased community awareness of and resilience to flooding impacts

No.	Key actions	Outcome	Output (deliverable)	Responsibility	When
8	Enhance collaborative partnerships within the community.	A prepared and flood resilient community.	Community arrangements that deal with flood emergency situations.	DCC-ES CC-CG SEPP-PET	2011-2015

Advocacy and Awareness

Strategic outcome 7 - Aligned key stakeholder objectives and responsibilities.

No.	Key actions	Outcome	Output (deliverable)	Responsibility	When
9	Advocate on behalf of Council and the community for improved flood management outcomes.	Active support of State and National bodies for flood risk management at the Gold Coast. Consistency in flood risk management between all stakeholders is achieved.	▪ Amendment to the Building Code of Australia regarding flood proof housing. ▪ Increased flood management funding from State and Federal Governments. ▪ Consistent property-based risk assessment approach between Council and Insurance industry.	SEPP-PET CC-CG	2011-2015

Infrastructure

Strategic outcome 8 - Appropriate design, construction and maintenance of critical infrastructure.

No.	Key actions	Outcome	Output (deliverable)	Responsibility	When
10	Investigate the status of critical infrastructure with respect to flood impacts and identify necessary priority-based remedial measures.	Improved management of the Council's infrastructure.	A database of (major) Council assets, with their degree of vulnerabilities to flooding.	SEPP-PET EAP-ES	2011-2015
11	Review and progressively amend flood design standards in the Land Development Guidelines.	Council's and private assets are correctly designed for current and future flood risks,	Updated Land Development Guidelines for flood risk management and stormwater management assets.	SEPP-PET EAP-ES	2011-2015

Planning and Regulation

Strategic outcome 9 - Adaptive risk-based planning

No.	Key actions	Outcome	Output (deliverable)	Responsibility	When
12	Undertake modelling and investigative studies for effective management of existing, future and residual flood risks.	Continually updated policy and risk assessment and management guidance.	▪ Flood inundation models for riverine and coastal flooding . ▪ Environmental models for flood and waterway management, for all catchments of the city and for all types of flooding. ▪ Digital elevation model for the whole city. ▪ Flood damage model for the whole city.	SEPP-PET	2011-2015

No.	Key actions	Outcome	Output (deliverable)	Responsibility	When
13	Review development, building and land use controls in the Planning Scheme to support both existing, future and residual flood risk management.	Flood-aware land use planning.	Flood risk, hazard, vulnerability and inundation maps for the city covering man-made and natural assets.	SEPP-PET	2011-2015
14	Develop a dedicated flood information system.	Fact based flood risk management.	A central data warehouse for storing information on but not limited to: ▪ historic or modelled flood events. ▪ location and features of vulnerable elements, e.g. age care and child care centres, schools. ▪ survey data. ▪ structures and assets relevant to flooding.	SEPP-PET	2011-2015

Planning and Regulation

Strategic outcome 10 - Protected and flood-prepared Gold Coast Community

No.	Key actions	Outcome	Output (deliverable)	Responsibility	When
15	Review other governmental arrangements for the acquisition of residential buildings where the flood immunity is unacceptably low.	Greater understanding of property purchase initiatives.	A report outlining a review of current buyback practices by other local authorities.	SEPP-PET	2015
16	Investigate physical flood mitigation work.	Comprehensive flood risk management.	A report outlining the findings of the study and the implementation plan for the identified mitigation measures.	SEPP-PET	2011-2015
17	Identify areas that cannot be adequately defended by catchment-wide strategic measures and develop specific local flood defences.	Flood risk management plans for all the city.	A prioritised list of areas of localised flood risk hazard and a report outlining possible flood risk management for these areas.	SEPP-PET	2011-2015
18	Undertake a feasibility study on real time physical flood fighting responses.	More effective flood emergency management.	A report outlining the feasibility of this approach.	SEPP-PET	2015
19	Develop, implement and maintain the Council's flood emergency management Decision Support System (DSS), and ensure the provision of an adequate and cost-effective flood warning system.	Better informed flood emergency management for the Gold Coast.	Operational flood emergency decision support system for all catchments accessible via internet.	SEPP-PET DCC-ES	2011-2015

5.3 Financial and resource requirements

Allocating the right resources to the Sustainable Flood Management Strategy requires finding a balance between Council's legislative obligations, community expectations and other competing demands.

Gold Coast City Council currently has a dedicated flood management team who will have the principal implementation responsibility . The proposed strategy shows two distinct implementation periods:

Phase 1) Intellectual asset creation phase – This three-year period will focus on the creation of tools (such as SDSS) and an enhanced information processing capacity that are needed for the successful implementation of the strategy and measuring its progress.

Phase 2) Asset Management phase – Once the required intellectual assets are created, the strategy moves to an asset management state.

Indicative costing is provided below in Table 2.

Intellectual assets that are created as a result of the implementation of this strategy will generate savings that can, in the longer term, offset the initial investment. Such savings are anticipated to occur through efficiency gains.

In terms of offsetting costs, this strategy achieves significant savings for the Council and broader community where "damages averted" are taken into consideration.

Table 2 – Financial Requirements for the Implementation of the Sustainable Flood Management Strategy

No.	Action	2011	2012	2013	2014	2015	sub-total	Comment
1	Review Corporate Governance Framework to integrate and embed flood risk management.	Internal Resources	Internal Resources	Internal Resources	Internal Resources	Internal Resources	*	
2	Engage in regional cooperation on flood risk management.	Internal Resources	Internal Resources	Internal Resources	Internal Resources	Internal Resources	*	
3	Continue to ensure the currency of Council's legal responsibilities in regard to flood risk management under federal and state legislation, under current and future climate conditions.	$25,000	Internal Resources	Internal Resources	Internal Resources	Internal Resources	$25,000	
4	Develop a Strategic Decision Support System (SDSS) that enables Council to respond to changed knowledge in a consistent and efficient manner.	$220,000	$220,000	$60,000	$60,000	$60,000	$620,000	
5	Assist with the integration of the operational arrangements & business processes between stormwater, mainstream flood management, Ocean, Beaches and Foreshores; and water cycle strategy.	Internal Resources	*	*	*	*	*	
6	Undertake flood risk management research for the Gold Coast in partnership with research facilities.	$150,000	$150,000	$150,000	$150,000	$150,000	$750,000	Plus $210,000 to be raised externally
7	Develop a flood risk model that is capable of quantified assessment of various future scenarios and analyse change in the main drivers of flood risk.	$70,000	$70,000	$70,000	$70,000	$70,000	$350,000	Plus $120,000 to be raised externally
8	Enhance collaborative partnerships within the community.	$80,000	$80,000	$80,000	$80,000	$80,000	$400,000	
9	Advocate on behalf of Council and the community for improved flood management outcomes.	$10,000	$10,000	$10,000	$10,000	$10,000	$50,000	
10	Investigate the status of critical infrastructure with respect to flood impacts and identify necessary priority-based remedial measures.	$30,000	$30,000	$30,000	$30,000	$30,000	$150,000	
11	Review and progressively amend flood design standards in the Land Development Guidelines.	$30,000	$30,000	$30,000	$30,000	$30,000	$150,000	
12	Undertake modelling and investigative studies for effective management of existing, future and residual flood risks.	$100,000	$100,000	$100,000	$100,000	$100,000	$500,000	
13	Review development, building and land use controls in the Planning Scheme to support both existing, future and residual flood risk management.	$30,000	$30,000	$30,000	$30,000	$30,000	$150,000	
14	Develop a dedicated flood information system.	$50,000	$50,000	$50,000	$50,000	$50,000	$250,000	
15	Review other governmental arrangements for the acquisition of residential buildings where the flood immunity is unacceptably low.	*	*	$25,000	*	*	$25,000	
16	Investigate physical flood mitigation work.	$20,000	$20,000	$20,000	$20,000	$20,000	$100,000	
17	Identify areas cannot be adequately defended by catchment-wide strategic measures and develop specific local flood defences.	Internal Resources	$20,000	$20,000	$10,000	$10,000	$60,000	
18	Undertake a feasibility study on real time physical flood fighting responses.	$10,000	*	*	*	*	$10,000	
19	Develop, implement and maintain the Council's flood emergency management Decision Support System (DSS), and ensure the provision of an adequate and cost-effective flood warning system.	$70,000	$70,000	$70,000	$70,000	$70,000	$350,000	
	Sub-total	$895,000	$880,000	$745,000	$710,000	$710,000	**$3,940,000**	plus $330,000 to be raised externally

Annexure " B" s733 LGA 1993 (NSW)

NSW Coastal Reform Legislation
Explanatory note page 14 **Coastal Protection and Other Legislation Amendment Bill 2010 (No 2),** introduced 22 September 2010, subsequently enacted December 2010..

Proposed Exemption from Liability to extend to include the following things done in good faith by the council:
(a) the preparation or making of a coastal zone management plan, or the giving of an order, under the Principal Act,

(b) any thing done or omitted to be done regarding beach erosion or shoreline recession on Crown land or land owned or controlled by a council or a public authority,

(c) the failure to upgrade flood mitigation works or coastal management works in response to projected or actual impacts of climate change,

(d) the failure to undertake action to enforce the removal of illegal or unauthorised structures on Crown land or land owned or controlled by a council or a public authority that results in beach erosion,

(e) the provision of information relating to climate change or sea level rise,

(f) anything done or omitted to be done regarding the negligent placement or maintenance by a landowner of emergency coastal protection works.

Section 733 (4) provides that, unless the contrary is proved, a council is taken to have acted in good faith for the purposes of section 733 if advice was furnished, or a thing was done or omitted to be done, substantially in accordance with the principles contained in a specified manual relating to the management of flood liable land or the management of the coastline identified by the Minister for Planning. **Schedule 2 [7]** provides that guidelines may also be adopted for this purpose.

Note the existing protections available to Local Governments in New South Wales:

Local Government Act 1993 No 30
Current version for 9 July 2010 to date (accessed 24 September 2010 at 14:57)
Chapter 17 Part 3 Division 2 Section 733

733 Exemption from liability—flood liable land and land in coastal zone
(1) A council does not incur any liability in respect of:

(a) any advice furnished in good faith by the council relating to the likelihood of any land being flooded or the nature or extent of any such flooding, or

(b) anything done or omitted to be done in good faith by the council in so far as it relates to the likelihood of land being flooded or the nature or extent of any such flooding.

(2) A council does not incur any liability in respect of:

(a) any advice furnished in good faith by the council relating to the likelihood of any land in the coastal zone being affected by a coastline hazard (as described in a manual referred to in subsection (5) (b)) or the nature or extent of any such hazard, or

(b) anything done or omitted to be done in good faith by the council in so far as it relates to the likelihood of land being so affected.

(3) Without limiting subsections (1) and (2), those subsections apply to:
(a) the preparation or making of an environmental planning instrument, including a planning proposal for the proposed environmental planning instrument, or a development control plan, or the granting or refusal of consent to a development application, or the determination of an application for a complying development certificate, under the *Environmental Planning and Assessment Act 1979*, and
(b) (Repealed)
(c) the imposition of any condition in relation to an application referred to in paragraph (a), and
(d) advice furnished in a certificate under section 149 of the *Environmental Planning and Assessment Act 1979*, and
(e) the carrying out of flood mitigation works, and
(f) the carrying out of coastal management works, and
(g) any other thing done or omitted to be done in the exercise of a council's functions under this or any other Act.

(4) Without limiting any other circumstances in which a council may have acted in good faith, a council is, unless the contrary is proved, taken to have acted in good faith for the purposes of this section if the advice was furnished, or the thing was done or omitted to be done, substantially in accordance with the principles contained in the relevant manual most recently notified under subsection (5) at that time.

(5) For the purposes of this section, the Minister for Planning may, from time to time, give notification in the Gazette of the publication of:

(a) a manual relating to the management of flood liable land, or

(b) a manual relating to the management of the coastline.
The notification must specify where and when copies of the manual may be inspected.

(6) A copy of the manual must be available for public inspection, free of charge, at the office of the council during ordinary office hours.

(7) This section applies to and in respect of:

(a) the Crown, a statutory body representing the Crown and a public or local authority constituted by or under any Act, and
(b) a councillor or employee of a council or any such body or authority, and

(c) a public servant, and

(d) person acting under the direction of a council or of the Crown or any such body or authority, in the same way as it applies to and in respect of a council.

(8) In this section, ***coastal zone*** has the same meaning as in the *Coastal Protection Act 1979*, and includes land previously in the coastal zone under that Act.