

Moreton Bay Regional Council

# Roadmap for a changing climate

2013 - 2016



Example picture

## Roadmap Vision

**Create a low carbon region that is resilient to a changing climate**

How cities develop matters to the delivery of a low-carbon, climate resilient future, it will also determine the feasibility of sustainable economic development across the world (Maddocks, 2011).

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*If we wait until increased climate change impacts are clear to develop preparedness strategies, there is a risk of being poorly equipped to manage the economic, social and ecological consequences. We may also miss out on the potential to take advantage of the benefits.*

*Snover, et.al (2007)*

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## Introduction

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A more variable climate and increased intensity of extreme events presents a significant challenge for society. While there may be uncertainty surrounding the scale, scope and pace of climate change, Moreton Bay Regional Council (MBRC) acknowledges the risks are real.

Managing risks are not new for local government. Environmental and strategic planners, engineers, and emergency management planners have always considered weather related risks. A change in climate over the next few decades and beyond requires that Council extends the current planning horizon and consider the increased variability of climate.

Council is also exposed to price increases of carbon intensive fuels such as petrol, diesel, electricity and also organic waste disposal at landfills through the Clean Energy Plan (2011) carbon price. Reducing exposure to these cost increases is a priority.

The *Moreton Bay Regional Council Climate Change Roadmap* sets out the most effective way for Council to manage its greenhouse gas emissions and to plan for increased climate variability in the most cost effective way. It will be a challenge given the projected growth for the region over the next 20 years.

While the Roadmap provides direction for Council's operations and planning, the community, industry and all levels of government play a significant role in reducing carbon pollution and preparing for climate change in the region. This Roadmap outlines Council's direction for the next three years and will lay the foundation for a lower carbon and climate resilient region.

The MBRC Climate Change Roadmap aims to:

- Improve economic sustainability of MBRC by cost effectively managing energy costs;
- Reduce exposure to carbon pricing through organic waste management practices;
- Ensure MBRC's operations and service delivery become more resilient to more extreme weather events and climatic variability;
- Engage with our community on the costs and benefits of planning for climate change;
- Engage with the community to prepare for a more variable climate;
- Highlight Council's climate change regulatory obligations;
- Engage with stakeholders to manage exposure to litigation risk; and
- Implement the Corporate Climate Change Policy.



### **ADAPTATION**

Actions that reduce the adverse consequences of climate change on both human and natural systems. Adaptation increases our ability to cope with a changing climate, including its variability and extreme events.

### **ADAPTIVE MANAGEMENT**

Decisions can seldom be postponed until we have 'enough' information to fully understand the situation. Council needs to act on the basis of the best available information and then monitor and evaluate the results to derive 'lessons learned' that will improve our response to the problem. Not only does this lead to improved understanding of ways of dealing with resource management issues, it also provides the flexibility necessary for dealing with changing socio-economic or socio-ecological relationships (Healthy Waterways 2012).

### **CLIMATE CHANGE**

A change of climate which is attributed to human activity that alters the composition of the global atmosphere and is in addition to natural climate variability.

### **GREEN INFRASTRUCTURE**

Green Infrastructure (GI) is a strategically planned and delivered network of high quality green spaces and environmental features. It should be managed as a multifunctional asset capable of delivering a wide range of ecological, economic and quality of life benefits.

### **INJURIOUS AFFECTION**

Injurious affection involves damage to, or a decrease in the value of any land. This may include:

- physical damage to the land;
- limitations on the activities on, or the use of, the land;
- interferences with the amenity or character of the land;
- things that may deter purchasers from buying the land; or
- things that increase the expense of using the land.

### **LOW CARBON**

Minimising the use of fossilised fuels as a source of energy.

### **MITIGATION**

Mitigation is a term used to describe activities to reduce the amount of greenhouse gas emissions being emitted into the atmosphere. Mitigation can be achieved through minimising energy use and improving energy efficiency, burning off methane at landfills, switching to low or no carbon fuels or using biosequestration (planting trees, increasing soil carbon, producing biochar) to sequester carbon.

### **URBAN HEAT ISLAND**

An Urban Heat Island develops when hard surfaces (concrete, bitumen) absorb heat during the day and release it at night increasing temperatures in built up areas. The increased temperature can impact on energy use due to increased use of air conditioners and can also magnify health issues during heatwaves.

## Climate Change Scenario

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To plan for a changing climate, Council recognises the need to adopt a scientifically accepted scenario for long term planning. The information below is based on a high emissions scenario<sup>(1)</sup> for South East Queensland (QCCCE, 2010). The figures will be updated as new information is available from the Intergovernmental Panel on Climate Change Assessment Report 5 (IPCC AR5) due to be released in 2014.

### Evaporation

Increase 6% by 2050  
Increase 10% by 2070

### Rainfall Change

Rainfall decreasing by 5% by 2050  
Rainfall decreasing by 8% by 2070

### Average Temperature

Increase 1.8°C by 2050  
Increase 2.9°C by 2070

### Sea level rise

2050 - 0.3metre  
2070 - 0.5metre  
2100 - 0.8metre

### Days above 35°C

Extra 5 days per annum by 2050

### Tropical Cyclones, Severe Storms

Longer duration and higher intensity weather events

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*For land-use planning and infrastructure projects with a lifespan greater than 20 years, consideration of climate change is required for the design, build and operation phases of the project.*

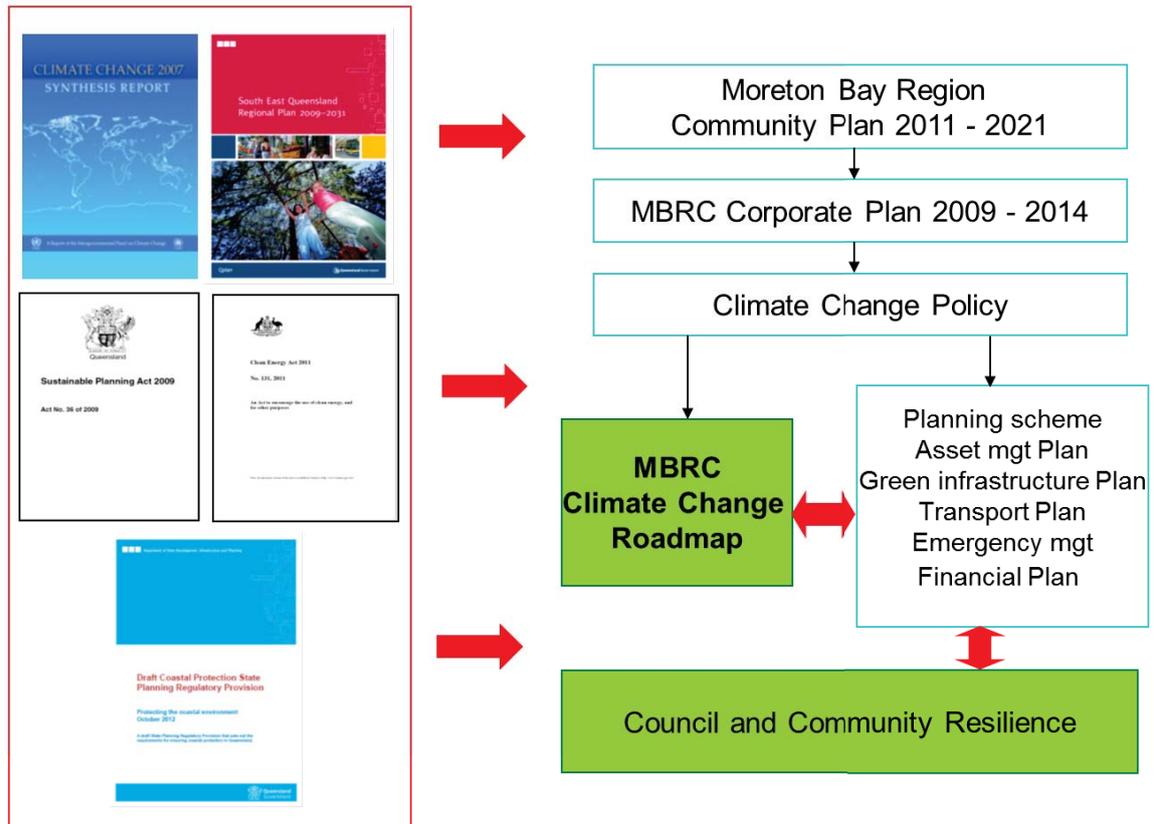
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(1) Assumes continuous global dependence on fossil fuels

## Direction on Climate Change- Policy Context

Council's direction on climate change is guided by International, National, State and Corporate policies (Appendix 1) and legislation (See Legislation section).

## Policy Framework



The Roadmap builds on the Moreton Bay Regional Council Scoping Climate Risk Report, the Corporate Climate Change Policy (Appendix 2) and workshops on climate change risk within Council. The Roadmap captures the current priorities for Council's climate change action over the next few years.

## Local Government Responsibilities

### MITIGATION

The Council acknowledges that its operations and planning decisions have an impact on carbon pollution in the region. The amount of carbon pollution is influenced through transport, infrastructure and land use planning, waste management, vegetation management, managing and maintaining facilities and purchasing decisions. Actions in the Roadmap address the areas where Council has influence to reduce carbon pollution.

Council has already undertaken action to mitigate its carbon pollution in the following areas.

#### Planning

- Integrating compact urban form with an emphasis on walking and cycling, and
- Transport planning for more public transport.

#### Waste

- Landfill gas being captured and flared,
- Mulching and compost of green waste for reuse, and
- Waste minimisation and recycling education programs.

#### Facilities

- Upgraded buildings to be more energy efficient,
- Improved scheduling of equipment on/off times, and
- Sustainable building design for major projects.

#### Corporate Fleet

- Number of fleet vehicles reduced,
- Smaller more efficient cars, and
- Use of biofuels.

#### Purchasing

- Updated policy to reflect environmental considerations in purchasing,
- Purchase of energy efficiency appliances, and
- Use of recycled paper.

#### Corporate

- Climate change policy development
- Scoping Climate Risk Report,
- Involvement in climate change research partnership projects with CSIRO and universities,
- Adopting digital solutions to reduce travel between offices, and
- Internal climate change education programs.



#### Building Sustainability

Council's new library, community centre and office building at North Lakes incorporate sustainability initiatives on water, energy, landscaping and transport to achieve an 'Australian Excellence' rating from the Green Building Council of Australia.

## ADAPTATION

Council regularly considers the risks from natural hazards, including coastal and inland flooding, coastal erosion and bushfire. Council develops management strategies to reduce exposure to these hazards through planning and policy documents. These documents influence the design, function, scale, type and location of infrastructure, buildings and facilities and how Council responds to natural disasters and emergencies.

With the potential of climate change to increase the intensity and variability of natural hazards, Council initiated a [Scoping Climate Change Risk Report](#) (see Council website for full report). The report identified high level risks and the need to look beyond the 'business as usual' approach where decision making is based on previous weather events or information. Future risks will be different and an adaptive management approach to natural hazards is required.

The table below outlines the planning areas where the climate change hazards need to be considered. Some of the areas listed are outside of Council's direct responsibility however these hazards will impact on the Moreton Bay region.

CLIMATE CHANGE ELEMENT	Corporate Plan	Planning Scheme	Water Supply Plan	Transport Plan & Infrastructure	Coastal Management Plan	Economic Development Plan	Open Space and Recreation Plan	Natural Environment Plan	Wastewater Plan & Infrastructure	Disaster Management Plan
<b>LONG TERM, INCREMENTAL ELEMENTS</b>										
Increasing temperatures	✓		✓			✓	✓	✓	✓	
Decreasing rainfall	✓		✓		✓	✓	✓	✓	✓	
Sea level rise	✓	✓	✓	✓	✓	✓	✓	✓	✓	
<b>SUDDEN, SHORT TERM EVENTS</b>										
Cyclones	✓	✓	✓	✓	✓	✓			✓	✓
Storm surge	✓	✓	✓	✓	✓	✓			✓	✓
Heat wave	✓	✓				✓			✓	✓
Storms, flooding	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Adapting to Climate Change – A QLD Local Government Guide. LGAQ 2007

*In Queensland, 'Moreton Bay, Mackay, the Gold Coast, the Sunshine Coast, Fraser Coast and Bundaberg local government areas are the most at risk from rises in sea level together with high tides, storm surges and heavy rainfall'.*

*(Climate Commission, 2012)*

## Legislation and Liability

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There are a number of new issues for local government that are driven by climate change science, policy settings and legislation (see Appendix 1 for further detail).

### LEGISLATION

#### Clean Energy Act (2011)

The *Clean Energy Act (2011)* was introduced by the Federal Government as a mechanism to move Australia towards a low carbon economy. The Act places a price on carbon intensive fuels, products and greenhouse gas emissions from landfill. Council anticipated that the largest financial exposure to this legislation would be the emissions from landfill. Landfill gas capture and flaring was installed in late 2010 to manage these emissions and minimise Council's carbon liability.

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*Each year Moreton Bay Regional Council captures and flares methane, which avoids around 40,000 tons of greenhouse gas emissions. The Council expects to see a return on its \$3.2 million investment in landfill gas capture systems by 2016 through reducing its liability under the carbon price mechanism.*

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Further mitigation actions are required to minimise costs and Council's carbon liability. Actions to achieve this reduction will be developed as part of the Roadmap and the Moreton Bay Regional Council Waste Reduction and Recycling Management Plan.

#### Planning Legislation

The Queensland Government has passed legislation that requires planning for a changing climate. These requirements provide minimal direction for Council on how to mitigate the potential impacts from coastal hazards. The current requirements are:

- *Sustainable Planning Act 2009; and*
- *Queensland Draft Coastal Protection State Planning Regulatory Provision (2012).*

### LIABILITY

Impending risks and liabilities of climate change are of particular concern to local governments and the insurance sector (Norman, 2010). Increased variability and intensity of weather events are likely to increase damage to public and private assets which may expose Council to litigation. Due to the current planning legislation in Queensland, local governments may also be liable for 'injurious affection' (see Glossary). This is an emerging issue that requires resolution at the Federal and State Government level. However the insurance industry, governments and the community need to develop a partnership approach in responding to climate related risks.

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#### ECONOMIC IMPACTS

*"If we don't act now, the overall costs and risks of climate change will be equivalent to losing at least 5 percent of global Gross Domestic Product (GDP) each year, now and forever".*

*(Economics of Climate Change, Stern 2004)*

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## Affordable Energy

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The region has been planned and built with the belief that there will always be affordable energy to service our lifestyle. This belief is being challenged as the price of energy continues to rise and increases the cost of living.

The two main types of energy used in the Moreton Bay Regional Council area are:

### 1. Electricity

Prices have increased significantly in the last few years and will continue to rise mainly due to the renewal of aging energy infrastructure, the growth in the energy network to service new areas and building the electricity grid to cope with peak energy periods. A price on carbon has also contributed to an increase in the cost of electricity produced from coal and gas.

### 2. Oil

Oil is a non-renewable energy source and its price is influenced by extraction technology, increasing international demand, socio - political issues and the emerging cost of carbon pricing. Even though Australia was previously effectively self-sufficient in oil reserves, the country is now becoming more reliant on imports of oil with the associated supply and cost related risks.

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*Australia's domestic oil supply is likely to run out by 2020 and by 2015 oil imports will amount to AUD\$15 billion dollars. By 2030, oil imports will cost Australia AUD\$30 billion per annum.*

*(Senate Economics Committee, 2005)*

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### Case Study

Council installed a 'state of the art' internet based building management system across three sites for \$150,000. The power bill was reduced by 35% and the upgrade paid for itself in just 14 months (Figure 1).



Figure 1: Electricity cost before and after installing energy management software.

## Roadmap Strategic Outcomes

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The Roadmap follows the four Corporate Climate Change Policy (Appendix 2) themes of:

1. **Governance** – create policies and strategies that support the treatment of climate change risk and mitigation.
2. **Infrastructure** – assess in a prioritised manner the vulnerability of current assets and planning for long term impact of a changing climate.
3. **Planning and Regulation** – strategically plan for a response to climate change that allows for growth and will meet legal obligations.
4. **Advocacy and Awareness** – facilitate improved knowledge of climate change at all levels and involve relevant stakeholders to share the risk.

Within these themes, ten Strategic Outcomes were identified (see Appendix 3 for methodology).

<b>Strategic Outcome 1</b>	A multi-directorate Leadership Committee ensures the Roadmap is implemented.
<b>Strategic Outcome 2</b>	Council corporate strategies, plans and policies incorporate adaptation and carbon pollution mitigation measures.
<b>Strategic Outcome 3</b>	Council commits to a reduction target from its operations.
<b>Strategic Outcome 4</b>	Council adopts a cost abatement plan to minimise corporate emissions.
<b>Strategic Outcomes 5</b>	Council assets are resilient to climate change risks and ongoing costs are minimised.
<b>Strategic Outcome 6</b>	Council meets its legislated carbon reporting requirements and publically reports its annual carbon profile.
<b>Strategic Outcomes 7</b>	Strategic planning documents include climate change mitigation and adaptation strategies.
<b>Strategic Outcome 8</b>	The Green Infrastructure Network and Plan is used as a planning document to ensure resilience of the region's natural assets to climate change risks.
<b>Strategic Outcome 9</b>	Moreton Bay region receives funding for corporate and community climate change initiatives from the State and Federal government.
<b>Strategic Outcome 10</b>	Council and the community have the capacity to respond to climate change (mitigation and adaptation).

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*The Investment that takes place in (mitigation and adaptation) in the next 10-20 years will have a profound effect on the climate in the second half of this century and the next.*

*(Stern 2007)*

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**GOVERNANCE**

Strategic Outcome 1					
A multi-directorate Leadership Committee ensures the Roadmap is implemented.					
No.	Action	Responsibility	Timing	Cost	Indicator
1.1	<p>A Roadmap Leadership Committee to be established to facilitate actioning the strategy</p> <ul style="list-style-type: none"> <li>• Members of the Implementation Committee will be elected by Directors</li> <li>• Members of the Committee are at a level to enable effective resourcing of the Roadmap Actions</li> <li>• Representatives are required from Legal Services, Finance, Strategic Planning, Engineering Planning, and Disaster Management.</li> <li>• The Roadmap Leadership Committee will report to Council and the Executive Management Team every six months.</li> </ul>	Environmental Planning and Compliance (EP&C)	Review in 2016	No cost	Roadmap actions are implemented in timeframes

**Risks**

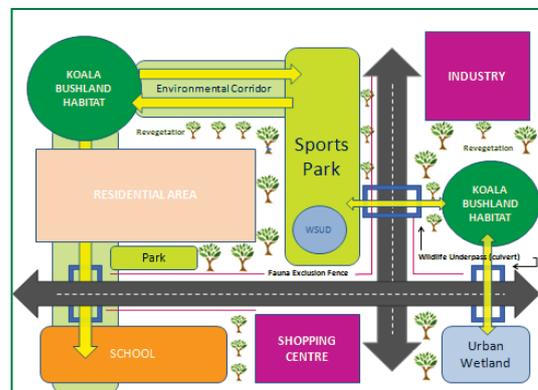
- Road map is not implemented due to competing short term organizational priorities
- Climate change is currently viewed as an environmental issue.

**Benefits**

- Improved long term adaptation planning
- Reduced carbon liability
- Improved communication between Directorates on climate change
- Increased understanding of climate related issues facing Council.

**Justification for Action**

- Co-ordination is required at a cross directorate level for effective implementation
- Climate change related legislation impacts on multiple areas in Council
- Short, medium and long term action required for outcomes of Council’s strategies, plans and policies
- Executive leadership is required
- Potential to reduce litigation risk.



Green Infrastructure conceptual model

## GOVERNANCE

<b>Strategic Outcome 2</b> <b>Council corporate strategies, plans and polices incorporate adaptation and carbon pollution mitigation measures.</b>					
No.	Action	Responsibility	Timing	Cost	Indicator
2.1	Review relevant Corporate strategies, plans, policies and recommend changes to ensure they include climate change issues	Corporate Services, Disaster Management and EP&C	September 2013	No cost	Relevant documents incorporate climate change
2.2	Climate risks and mitigation strategies are identified through the Councils Enterprise Risk Management process	Corporate Services	December 2013	No cost	Climate change risks are considered in decision making

### Risks

- Climate change is seen as an environmental issue rather than a cross-disciplinary issue
- The Climate Change Policy is a stand-alone document and currently is not sufficiently reflected in corporate strategies, plans and policies.

### Potential Benefits

- Improve long term financial investment and management
- Council demonstrates leadership to the community by integrating consideration of climate change across the organisation
- Council can effectively report progress on climate change.

### Justification for Action

- Council has a range of strategies, plans and policies in place to guide its day to day decision making
- Planning for climate change risk will require changes to be made across the organisation
- Council strategies, plans and policies need to reflect the Climate Change Policy
- Staff need to be provided with guidance on how to achieve better climate change outcomes through Council's strategies, plans and policies
- Improve resilience of the community
- Potentially reduce future litigation risk.

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*"By the time a building has had 1% of its budget spent, it has assured 70% of its carbon emissions"*

*(Green Building Council of Australia website, 2009)*

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## GOVERNANCE

Strategic Outcome 3					
Council commits to a reduction target from its operations.					
No.	Action	Responsibility	Timing	Cost	Indicator
3.1	Assess carbon reduction targets of Federal, State and local governments of similar size to MBRC	EP&C	March 2013	No cost	Summary table of targets
3.2	Set baseline year and produce carbon pollution trajectories	EP&C and Financial Services	April 2013	No cost	Year selected and graph showing carbon profile trajectories
3.3	Report to Council recommending reduction target options	EP&C	May 2013	No cost	Council adopts target

### Risks

- Council carbon footprint increasing
- Increase in carbon liability under the Clean Energy Plan
- Energy costs increasing due to network charges.

### Potential Benefits

- Minimise long term carbon liability
- Increase potential for access to fund projects
- Staff and management are aware of the commitment to reach the target and can make informed decisions on priority actions.

### Justification for Action

- The region is growing in population increasing greenhouse gas emissions
- State and Federal governments have a political commitment to reach carbon pollution reduction targets within timeframes
- Align with other local governments and the Local Government Association of Queensland for improving mitigation outcomes
- Staff and management require direction on mitigation.



## GOVERNANCE

Strategic Outcome 4					
Council adopts a cost abatement plan to minimise corporate emissions					
No	Action	Responsibility	Timing	Cost	Indicator
4.1	Scope Cost Abatement Plan	Roadmap Leadership Committee	April 2013	No cost	Scope completed
4.2	Develop a Cost Abatement Plan to ensure Council meets corporate carbon reduction target and cost savings are achieved.	Roadmap Leadership Committee (consult - Waste Services, Building and Facilities, Fleet Services, Purchasing)	September 2013	No cost (actions from the plan will incur a cost)	Plan Completed
4.3	Seek approval of Plan by Council	EP&C	November 2013	No cost	Plan Approved

### Risks

- Minimise the impact of carbon pricing
- Minimise carbon pollution
- Reduce exposure to increase in energy prices
- Improve efficiencies in technology and process.

### Potential Benefits

- MBRC reduces carbon pollution to minimise carbon pricing
- Reduces dependence on fossil fuels
- Makes climate change mitigation a corporate issue.

### Justification for Action

- There is commitment to reduce carbon pollution within timeframes
- Reduced exposure to energy pricing increases
- There currently is no current strategy to reduce carbon pollution.



Methane gas flaring at Caboolture Landfill

## INFRASTRUCTURE

Strategic Outcome 5					
Council assets are resilient to climate change risks and ongoing costs are minimised.					
No.	Action	Responsibility	Timing	Cost	Indicator
5.1	Develop a process for assessing sustainability implications on infrastructure programs and major projects with a lifecycle over 30 years	Roadmap Leadership Committee	Sept 2014	To be determined	Projects are assessed with sustainability criteria
5.2	Develop and adopt a Sustainable Building policy	Roadmap Leadership Committee	December 2013	Project dependent	Policy adopted by Council
5.3	Identify climate change risks which will compromise the service delivered of council assets. Prioritise remedial action (eg. modify or replace) based on modelling predicted timing for impact to occur.	Roadmap Leadership Committee	August 2014	To be determined	Exposure to climate risks is reduced.
5.4	Integrate climate change implications into: <ul style="list-style-type: none"> <li>asset planning and design process</li> <li>asset construction process</li> <li>asset condition inspections</li> </ul>	Roadmap Leadership Committee	Ongoing	No cost	Council assets are managed to be more resilient to weather events

### Justification for Action

- High level risks were identified in the Scoping Climate Change Risk for MBRC report (2009)
- Ensuring consistency with other local, state and national government organisations.
- Ensure that climate change impacts and carbon reduction strategies are considered at all stages of the asset lifecycle.

### Potential Benefits

- Proactive measures undertaken to identify/ prioritise required actions which will mitigate the impacts from climate change.
- Minimal impact from climate change implications on the delivery of services provided by council's assets.
- Minimised costs to council through adaption to mitigate impacts from climate change

### Risks

- Increased costs by using carbon intensive products and services
- Increased damage to infrastructure and assets leading to increased maintenance costs and reduced functionality and/or asset life
- Community concern about investment on infrastructure susceptible to climate change.

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*The Garnaut Review highlighted...tens of billions of dollars' worth of assets and services in SEQ are exposed to severe weather events*

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*(Garnaut 2008)*

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## PLANNING AND REGULATION

<b>Strategic Outcome 6</b> <b>Council meets its legislated carbon reporting requirements and publically reports its annual carbon profile (Scope 1 and Scope 2).</b>					
No.	Action	Responsibility	Timing	Cost	Indicator
6.1	Ensure requirements for the Clean Energy Act and National Greenhouse Energy Reporting (NGER) regulations are being met	Roadmap Leadership Committee	August 2013	No cost	Correct data is reported in regulated timeframe
6.2	Scope project to verify and monitor electricity bills.	EP&C and Financial Services	April 2013	No Cost	All relevant data is captured and reported annually
6.3	Develop a process to enable Scope 1 and 2 data to be collated and reported	EP&C and Financial Services	Jan 2014	No cost	Scope 1 and 2 reports can be generated on demand and regularly sent to Managers responsible for those areas
6.4	Investigate the development of carbon permit trading strategy for the introduction of the 2017 emissions trading system.	Financial Services and Waste Services	August 2016	May require budget 2014/15. Further scoping required	Scoping document is completed

National Greenhouse and Energy Reporting Act scope for Local Government  
 Scope 1 – Waste emissions, Scope 2 – Electricity, Fuel

### Risks

- MBRC is unable to meet its legislated requirements of the Clean Energy Plan
- Relevant data is not available for reporting requirements
- Carbon profile allows identification of carbon reduction projects.

### Justification for Action

- Legislative requirements need to be met
- Corporate carbon reporting for quadruple bottom line reporting.

### Potential Benefits

- Improved monitoring of Council's carbon pollution
- Improved transparency of Council's operations
- Improved understanding of the source of Council's greenhouse gas emissions.
- Reduction in energy use through improved monitoring
- Reduction in energy use through improved monitoring.

## PLANNING AND REGULATION

Strategic Outcome 7					
Strategic planning documents include climate change mitigation and adaptation strategies.					
No	Action	Responsibility	Timing	Cost	Indicator
7.1	Ensure climate change scenarios are considered in river, creek and storm tide mapping.	Strategic Planning, EP&C, Drainage, Waterways and Coastal Planning	Sept 2013	Included in project costs	Areas are identified at risk to long term inundation.
7.2	Use subtropical design principles to guide built environment development	Strategic Planning and Development Assessment	Sept 2013	No cost	Inclusion of design principles in planning codes
7.3	Integrate low carbon modal shifts in regional transport planning	Strategic Planning	August 2014	No cost	Reduced transport CO <sub>2</sub> emissions per capital
7.4	Ensure that climate change is addressed in settlement patterns and urban design through planning documents including <ul style="list-style-type: none"> <li>• Open Space Strategy</li> <li>• Transport Strategy</li> <li>• Total Water Cycle Strategy</li> <li>• Master Plans</li> <li>• Planning Scheme (including Strategic Framework, Priority Infrastructure Programs, Local Plan, Integrated Design Manual, Green Infrastructure Plan) and</li> <li>• Planning scheme amendments</li> </ul>	Strategic Planning	ongoing	No cost	More resilient communities

### Risks

- Potential exposure to litigation from planning decisions
- Reduce vulnerability to future community assets
- Reduced exposure to sea level rise and storm surge
- Reduced exposure of Council assets.

### Justification for Action

- Climate change as an additional driver for sustainable development
- MBRC needs to plan for climate change and extreme weather events
- Consistency with other local, state and national government organisations
- Plan for coastal hazards
- Minimise ongoing energy cost.

### Potential Benefits

- MBRC is proactively planning for climate change
- Climate resilient design
- More liveable settlements
- Reduced exposure to the physical risks
- Reduced long term operational costs
- Implements the statutory requirements of legislation.

## PLANNING

### Strategic Outcome 8

The Green Infrastructure Network and Plan is used as a planning document to ensure resilience of the region's natural assets to climate change risks.

No.	Action	Responsibility	Timing	Cost	Indicator
8.1	Develop pilot capital works projects for priority projects	EP&C and Strategic Planning	March 2013 and ongoing	No cost	Capital works schedule cost developed
8.2	Prioritise Green Infrastructure projects in urban footprint	EP&C	December 2013	No cost	Minimum percentage of vegetation cover is met or exceeded for each Place Type (long term)
8.3	Prioritise Green Infrastructure projects in rural areas that are planning to cater for longer term multi-functional outcomes	EP&C	December 2014	No cost	Rural vegetation cover has a net increase (long term).
8.4	Implement actions relating climate change in the Sustainable Environmental Strategy	EP&C	Ongoing	Project Dependent	Action are completed in timeframes

#### Risks

- Increased heat impact in urban areas with high urban heat island ratings
- Reduced loss of natural assets from changing climate
- Green infrastructure is fragmented.

#### Justification for Action

- Improved management of open spaces and natural areas
- Delivery of multiple benefits from natural assets.

#### Potential Benefits

- Enhanced recreational opportunities, increased biodiversity, improved water quality, amenity and local climate modification, and carbon sequestration
- Demonstrates leadership to the community
- Increases connectivity between natural areas, providing additional protection of natural areas from changing climatic conditions
- Potential partnerships with the community.

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'Ecosystem based Adaptation' (EbA) uses biodiversity and ecosystem services as part of an overall adaptation strategy to help people and communities adapt to the negative effects of climate change at the local, national and global levels.

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## ADVOCACY AND AWARENESS

Strategic Outcome 9					
Moreton Bay region receives funding for corporate and community climate change initiatives from the State and Federal government.					
No.	Action	Responsibility	Timing	Cost	Indicator
9.1	Actively seek State and/or Federal Government grants relating to mitigation and adaptation	EP&C and Grants Officer	Ongoing	No cost	Council receives grants for mitigation and adaptation
9.2	Promote Federal and State grants programs to the local community support local carbon pollution and adaptation action	EP&C	Ongoing	No cost	Community is aware of relevant grants

### Risks

- The Moreton Bay region does not receive an equitable share of government funded climate change programs.

### Justification for Action

- A number of programs are being delivered by State and Federal governments aimed at improving the greenhouse performance of householders and businesses
- It is important that MBRC advocates on behalf of the Moreton Bay community to ensure equitable access to these programs
- Funding from external sources is needed to support actions to reduce community based greenhouse gas emissions
- Greenhouse gas emissions reduction actions can often be expensive for local government to deliver

### Potential Benefits

- Reduction in greenhouse gas emissions from the residential and business sectors in the region
- Minimise carbon price impact from improved energy efficiency
- Assisting community members to cope better with the potential increase in costs likely to eventuate from increased energy prices
- Development of partnerships for projects.



## ADVOCACY AND AWARENESS

<b>Strategic Outcome 10</b> <b>Council and the community have the capacity to respond to climate change (mitigation and adaptation).</b>					
No.	Action	Responsibility	Timing	Cost	Indicator
10.1	Integrate sustainability and climate risk and abatement into corporate induction program	EP&C	April 2013	No cost	Awareness of new staff increase on climate change
10.2	Engage relevant staff on mitigation and adaptation issues	EP&C and Strategic Planning	Ongoing	No cost	Increase capacity across the organisation on climate change
10.3	Further develop community awareness programs about climate change	EP&C and Marketing	Ongoing	No cost	Increase community capacity on climate change at a regional level
10.4	Council supports community driven actions on climate change, for example the Bribie Island Climate Change Adaptation Plan	Roadmap Leadership Committee	Ongoing	No cost	Council works with community to implement partnership actions
10.5	Engage with research institutions to increase local knowledge on climate change	Roadmap Leadership Committee	Ongoing	Project dependent	Initiate and support relevant research project on climate change
10.6	Work with adjacent Councils on regional projects relating to climate change	EP&C	Ongoing	Project dependent	Engage in partnerships on relevant projects

### Risks

- Community may feel disconnected from Council's work on climate change.
- Climate change risks are not well understood
- Perception that Council is not actively in addressing climate change risks.

### Potential Benefits

- Community-wide understanding of the challenges the region faces from climate change
- Climate change messages are consistently applied across MBRC's stakeholders
- Stabilisation of energy costs when prices are rising.

### Justification for Action

- There may be low levels of awareness among the community about the connection between their actions and climate change impacts
- Awareness and understanding is generally a precursor to achieving community 'buy-in' for action
- There are many opportunities to reduce energy consumption through community engagement and awareness raising.

## Strategy Implementation

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### REPORTING

Progress on the actions will be reported through the quarterly reporting obligations and annual reporting of key performance indicators that relate to the corporate targets. The Roadmap will also contribute to the sustainability indicators in the Moreton Bay Community Plan.

### REVIEW

The Roadmap actions are achievable in the short term that will create medium and long term benefits to the Moreton Bay Regional Council area. The Roadmap will be reviewed in late 2014 in preparation for a revised plan and budget cycle in 2015.

### FUNDING

The Roadmap has focussed on no or low cost actions. This is intentional as it focuses Council to set up processes and systems that incorporate mitigation and adaptation into decision making. Council will however need to invest resources into mitigation and adaptation as will the local community, businesses, industry, higher levels government and research partners.



Porous surface is an urban adaptation and resilience strategy.  
(Griffith Uni, 2011)

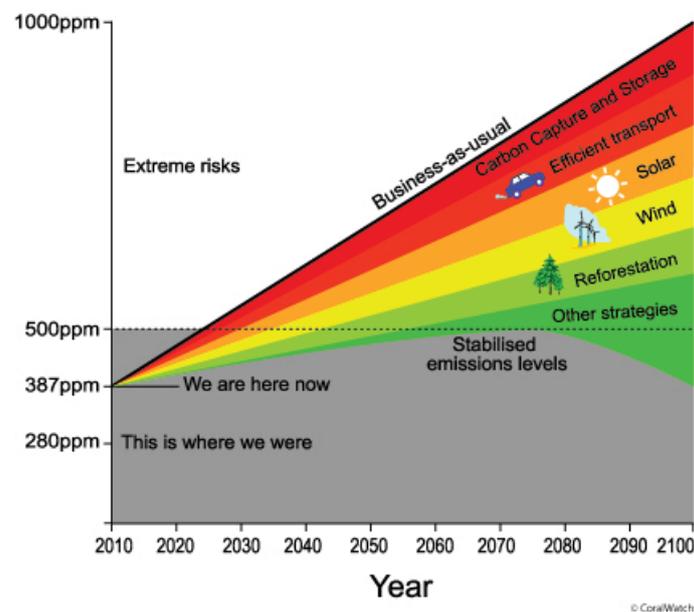
## Appendix 1- Policy Context

### International Direction

The Intergovernmental Panel on Climate Change (IPCC) concludes that warming of the climate system is unequivocal, natural and human induced, and is evident in increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level (IPCC, 2007).

Since the start of the industrial revolution, carbon dioxide (CO<sub>2</sub>) in the atmosphere has risen from 280 ppm (parts per million) to over 390 ppm by 2011. This has correlated with an increase in global average temperatures of around 0.7° C over the last 100 years. The Copenhagen Accord (2009) aimed to limit global warming to 2° C above pre-industrial levels. The United Nations Climate Change Conference in Durban (2011) gained a commitment from all countries to develop a legally binding treaty to reduce carbon pollution. If the temperature rises beyond the 2° C threshold, there is an increased risk to human settlements and the healthy function of natural systems.

While there is some voluntary agreement on reducing greenhouse gas emissions, international consensus has not been reached. There is also discussion at the international level on who will pay for adaptation in lower socio-economic countries as they are the most likely to experience the greatest impact from a changing climate.



Potential mitigation actions to reduce carbon pollution by 2100

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*The world's 13 warmest years on record have  
all occurred in the past 15 years  
(CSIRO, 2012)*

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## Australian Federal Government

The Federal Government and the Opposition both support a target of a minimum 5% reduction of Australia's total carbon dioxide emissions by 2020 (based on 2000 levels for the Government, and 1990 levels for the Opposition). With the announcement of the Government's carbon price came an increase in the Government's long term emissions target from a 60% reduction by 2050 to an 80% reduction based on 2000 levels. By setting targets that reduce Australia's emissions and enacting policy that allow these to be met; Australia can play a role in global climate change mitigation efforts.

The Federal Government is responsible for coordinating and leading national research and reform on climate change. They promote Australia's interests internationally and develop policy, programs and reporting requirements to support a reduction in carbon pollution and planning for adaptation. Some of the programs include:

- Clean Energy Plan – legislation to facilitate a lower carbon economy initially through a set carbon price then a trading system.
- Renewable Energy Target – achieve 20% renewable energy supply in Australia by 2020
- Monitoring and Reporting of National Emissions for international agreements
- Minimum Energy Performance Standards – improving the efficiency of electrical appliances
- Australian Building Codes - increasing standards for energy efficiency and wind loading
- Climate Change Adaptation Program – programs on assessment of risk, increasing knowledge and building capacity of decision-makers

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*90 countries, representing 90 per cent of the global economy,  
have committed to limit their greenhouse gas emissions.*

*(Australian Financial Review 2012)*

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## Queensland State Government

The Queensland Government has planning legislation and a number of strategies and policies that require planning for a changing climate.

The *Sustainable Planning Act 2009* aim is to achieve **ecological sustainability**.

Section 11 of the Act explains how to interpret the term

- *'maintenance of the cultural, economic and physical and social wellbeing of people and communities' This is achieved, in part, when*
- *'potential adverse impacts on climate change are taken into account for development, and sought to be addressed through sustainable development, including, for example, sustainable settlement patterns and sustainable urban design.'*

The *Queensland Draft Coastal Protection State Planning Regulatory Provision* (the Draft SPRP) took effect on 8 October 2012 and suspends the operation of the State Planning Policy 3/11: Coastal Protection (Coastal SPP). The Draft SPRP identifies four categories of coastal protection that require focus:

- land use planning;
- coastal hazards;
- provision for coastal dependent land uses; and
- areas of high ecological significance.

The Draft SPRP is an interim document from the State and longer term direction will be provided at a later date. Council will need to consider coastal hazards under a climate change scenario in the new planning scheme preparation and in development assessment. These planning mechanisms need to adopt planning approaches that mitigate the potential impacts from coastal hazards. The following adaptation approaches are recognised as contemporary planning practice and should be considered in descending order;

- **avoidance** of areas vulnerable to the impacts of coastal hazards;
- **planned retreat** of facilities/infrastructure in vulnerable areas;
- **accommodation** of the effects of coastal hazards through continual change; and
- **protection** or construction of protection as a last resort.

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*A range of market-based incentives will be needed to address the legacy of previous planning and building decisions, and overcome barriers to action. Incentives complement regulation by encouraging voluntary action beyond minimum standards, helping to achieve positive results far earlier than would occur normal circumstances.*

(ASBEC 2012)

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## Appendix 2- Climate Change Policy

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### CLIMATE CHANGE POLICY

Policy No: 35-2150-004

Adopted by Moreton Bay Regional Council 2010

#### Policy Objectives

- To provide leadership and work in partnership with the community to raise awareness of climate change and better manage local greenhouse gas emissions.
- To ensure that the Council organisation at all levels has appropriate knowledge of climate change implications, and the organisation actively plans and prepares for the more serious implications of climate change within its financial and other regulatory limits.

#### Councils Policy Statement

The Council will actively plan and prepare for the more significant implications of climate change within its financial and other regulatory limits. This planning and preparation process includes:

- evaluating climate change implications for significant capital and operational activity, operational decision-making and the setting of policy positions;
- a commitment to managing, and where practical reducing greenhouse gas emissions; and
- risk management through appropriate mitigation and adaptation strategies.

To achieve these policy positions Council, in partnership with its community, industry and Government, will:

- **Inform** its staff and members of reliable information on climate change and assist in community education through current programs such as the library service and the Council website.
- **Encourage** staff to take a considered and measured approach in actively planning for the more serious implications of climate change, mindful of Council's financial and other regulatory limits. Council's current intention is that those activities with higher risk and cost long term need more detailed attention than those of lesser durability or exposure. As Council gains experience in assessing climate change impacts, and scientifically based information becomes more firmly developed, the range of projects and programs requiring more specific planning and design will be reviewed.
- **Meet legislated obligations** in regard to climate change.
- Plan to **reduce our vulnerability** to weather related risk.
- **Manage our carbon footprint** through cost effective processes, including energy consumption monitoring and management, and greenhouse gas production management.
- **Reduce exposure** to litigation risk.
- Identify and **capitalise on potential opportunities** arising from climate change.
- Continue to **improve our response** through mitigation and adaptation measures.

Action will be undertaken to deliver appropriate policy responses, under the following four themes:

- **Governance** – creating policies and strategies that support the treatment of climate change risk and mitigation.
- **Infrastructure** – assess in a prioritised manner the vulnerability of current assets and planning for long term impact of a changing climate.
- **Planning and Regulation** – need for a strategically planned response to climate change that allows for growth and will meet legal obligations.
- **Advocacy and Awareness** – facilitate improved knowledge of climate change at all levels and involve relevant stakeholders to share the risk.

## Appendix 3- Methodology for Determining Strategic Outcomes

Council sought assistance from AECOM to develop actions and make recommendations for a Climate Change Strategy, including actions to address risks identified in the Moreton Bay Regional Council Scoping Climate Change Risk for report. The report provided input into the strategy development; specifically it includes prioritised actions for the Strategy, implementation plans for ten actions and a recommended framework to assist MBRC in developing the Strategy document.

The highest priority outcomes were selected by staff through a facilitated workshop after ninety three actions were assessed with four selection criteria (Table 1).

The final ten actions were assessed and modified by the Climate Change Adaptation Steering Committee and were updated to include recent legislative requirements.

Table 1. Assessment criteria and rating categories used for the selection of outcomes.

Assessment Criteria	Higher Rating	Lower Rating
Internal Capacity	Current capacity is sufficient to implement action	Capacity is insufficient and implementation would require external support
Co-benefits	Action will achieve numerous outcomes of the corporate plan, policies and strategies	Direct benefits of action would satisfy a limited of outcomes of the corporate plan, policies and strategies
Budget	Action can be delivered within the existing budget allocation	Action would require a separate budget allocation
Adaptation Potential (only used for adaptation actions)	Action will result in a significant reduction in risks from climate change	Action will result in minimal reduction in risks from climate change
Mitigation Potential (only used for mitigation actions)	Action will result in a significant reduction in greenhouse gas emissions	Action will result in minimal reduction in greenhouse gas emissions

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