
 GWG queenscliffe

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SUBMISSION TO THE ENQUIRY INTO CLIMATE CHANGE AND ENVIRONMENTAL IMPACTS ON COASTAL COMMUNITIES

by Global Warming Group Queenscliffe
PO Box 103
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To whom it may concern

On behalf of the Global Warming Group queenscliffe, I would like to make the following submission to the enquiry into the climate change and environmental impacts on coastal communities.

Yours truly

Roel Wasterval
Treasurer

Summary

This submission describes the vulnerability of the Borough of Queenscliffe (BoQ) in Victoria to the impact of climate change. Its location at the entrance to Port Phillip Bay means that the Borough is exposed to extreme seas in the Southern Ocean. Its southern coastal dunal system is particularly vulnerable to storm surges. Because much of the Borough is low lying, the towns of Queenscliff and Point Lonsdale are susceptible to flooding and this threat will increase with rising sea levels. Home owners living on or below flood levels are likely to experience the effects of climate change financially through a decline in property values and increased insurance premiums. Rising sea levels and temperatures will also adversely impact some of the Borough's key environmental assets, including the low lying saltmarsh, habitat of the Orange-bellied Parrot, the Ramsar wetland areas of Swan Bay and the intertidal feeding areas for migratory birds and local waders. The submission lists some specific steps and actions that we believe need to be taken to further assess and then mitigate against the impacts of climate change, as they affect our community. These include a CSIRO study of the impact of climate change, similar to that conducted for Gippsland, a review of the vulnerability of local drainage and pipework systems, and the collection of base data on water levels in Swan Bay and its intertidal zones. This submission also describes two broader issues, namely overdevelopment and lack of adequate public transport, which we think are crucial to ensure that the BoQ remains a viable and sustainable community in the face of climate change.

Introduction

The Borough of Queenscliffe occupies a unique and special place as a coastal town in Victoria. Situated at the tip of the Bellarine Peninsula, the Borough is comprised of two townships, Queenscliff and Point Lonsdale (QPL) with approximately 3000 permanent residents. The Borough is the oldest and smallest of all Victoria's boroughs, covering a total area of 13 square kilometres. It is unique by nature of its location. The Borough is almost totally surrounded by water, either coastal (Port Phillip Bay), Bass Strait or wetlands (Swan Bay). The townships' proximity to the "Heads" means that their climate is influenced by the volatile waters of Bass Strait. Most of these areas are classified as marine National Parks. Port Phillip Bay and the Bellarine Peninsula, a total area of 7000 ha, is a Ramsar site (No 266) and is therefore a wetland of international significance.

Impacts on BoQ

Global warming is going to alter our climate and this will in turn produce a number of adverse effects. Previous studies, referred to below, have already identified the vulnerability of the BoQ and predicted some of the impacts on the community's environmental assets. These impacts and some responses are discussed below.

Coastal Erosion

Coastal regions are particularly vulnerable to the extreme weather events associated with climate change (VCC, 2007). Storm surges, occurring when the sea level is increased by a combination of high winds and falling atmospheric pressure, are likely to increase in intensity. Storm surges have maximum impact if these conditions coincide with high tides. The majority of storm surges along the southern coastline of Australia are caused by westerly winds in the winter months (EPA, 1996). In proportion to its size, the BoQ has a long coastline, much of which directly faces the Southern Ocean and it is therefore very vulnerable to severe storm surges. The BoQ is surrounded by areas of significant environmental value and natural beauty. One of these is the coastal dunal system stretching from the harbour area at Swan Bay around the coast to Point Lonsdale. The foreshore reserves managed by the BoQ

make up 8% of the municipality. It is suggested that this is the highest proportion of any municipality in Victoria (DSE 2006). This system is designated as ‘high sensitivity coast’ (DPUG 1990). Climate change will increase the frequency of “severe weather events”, which in turn will adversely impact the dunal system. Sections of the coastline between Queenscliff and Point Lonsdale are vulnerable to climate change (POM 1992). This study identified a possible increase in siltation at the Queenscliff harbour entrance if more sediment is carried in through The Rip. The low-lying dunal area between the Queenscliff pier and Shortlands Bluff is threatened by erosion and inundation. Undercutting of the cliffs and threatening buildings located at the base of the cliffs is also possible. Greenhouse gas-induced changes will also impact on the dunes between Shortlands Bluff and Point Lonsdale, with the greatest impact where the beach is very narrow. Erosion and subsequent undercutting of dunes, resulting in their instability is the main danger envisaged. Erosion of sand dunes at the one particular beach, the “Dog Beach”, is already apparent, demonstrating their vulnerability. The BoQ and local residents have recently planted some 4000 species in this area to mitigate against further erosion (see Figure 1).



Figure 1 Planting to mitigate against erosion of sand dunes

Sea Level Rise

The IPCC estimates that global rises in sea level, relative to 1990 levels, of between 0.09 and 0.88 m are possible by 2100 (IPCC 2001). The effect of these rises will be to inundate low lying areas and erode shorelines. For sandy beaches, a recession of 4.5 to 88 metres would be caused by these vertical rises in sea level respectively. “Sea-level rise will have an impact on soft sediment shorelines and intertidal communities” (CSIRO 2002). Sea level rises pose a high risk to Swan Bay. Bone (1988) suggests that a one metre rise in sea level would result in “the disappearance of Swan Island, Duck Island and Edwards Point, and the subsequent opening of Swan Bay to wave attack and erosion of salt marshes”. The areas of greatest vulnerability are the south-western sections of Swan Island and climate-induced changes may accelerate erosion and even breaches to the main access road (POM 1992). The vulnerability of this only entry and exit road to the BoQ can be seen in Figure 2.



Figure 2 The main Queenscliff access road is vulnerable to flooding due to sea level rises

The impact of climate change on other vulnerable parts of the Victorian coastline i.e. Gippsland has been studied in detail by CSIRO. No such study has been carried out for the BoQ. We submit that the CSIRO be commissioned to carry out a detailed impact study on this iconic location.

According to an (undated) map of the Borough, over 40% of the residential area in QPL is designated 'subject to flooding'. The information reflects actual inundation that occurred at some time in the past. The flood water level in the Borough is nominally taken to be 1.2m above the Australian Height Datum (AHD). The areas designated 'subject to flooding' include the land adjacent to the Queenscliff Harbour (known as Fisherman's Flat) at 0.84m AHD and that adjacent to the western end Swan Bay at 1.23m AHD. The dwellings in these locations are particularly vulnerable (Figure 3). Currently Building (Interim) Regulations 2005 require that the level for the surface of the lowest floor of a building must be at least 300 mm above any flood levels or 1.5 m AHD. Changes over the last decade have required new buildings or additions to existing buildings to be 150 mm higher. Any significant rise in water levels due to sea level or seasonal run-off increases may increase the potential for property damage. Not only will this produce an immediate financial impact on affected property owners but longer term impacts in terms of increased insurance premiums and declining house prices are likely.

To our knowledge, the water levels in Swan Bay are not measured and recorded in a systematic way. This lack of data needs to be urgently addressed. Comprehensive data collection should begin immediately in a representative number of locations around the Bay so that the impact of global sea level rise can be locally quantified. In addition to water levels, the change in the shorelines of Swan Bay needs to be monitored. Wetland areas are disappearing in Australia as well as overseas, impacting adversely on migratory bird populations. It is imperative that the effect of rising water levels on intertidal areas be measured so that mitigation can be undertaken, if necessary.

Mitigation of sea level rises in the BoQ can only be undertaken if the Federal Government works with and supports our local council. Leaving mitigation works to local authorities alone, even with the support of the State Government, will not work because of the scale of resources required. Protection of the coastline of Australia is primarily a Federal Government responsibility. Specifically in the BoQ, this means:

- an action plan to prevent flooding of vulnerable buildings i.e. the Department of Primary Industries' Marine Discovery Centre, homes in the Murray Road. area, homes in Lonsdale Lakes estate, homes on Fisherman's Flat and in Symonds Street and in the Railway Precinct. The action plan should also include measures to prevent flooding of "the Narrows" (Figure 2).
- a review of the drainage system of storm water pumps into Swan Bay and the effect that the extra water may have on the flood levels and the flora and fauna. An action plan is needed to deal with any system inadequacies found from the review.
- a review the sewerage system from Queenscliff to Point Lonsdale - with a rise in water levels this may become submerged where it runs along the edge of Swan Bay. It may also be under threat if the dunal system blows out between Point Lonsdale and Ocean Grove as the pipework runs straight through this farming area. An action plan should follow the review.
- a risk assessment of the vulnerability of the existing water supply into the Borough.

Marine Flora

Swan Bay is one of the most remarkable features of BoQ. It is a place of environmental and economic significance, as well as beauty. The area is a fish nursery and breeding ground for small marine organisms, which subsequently become the food source for the fish of Port Phillip Bay. Any deterioration in the health and operation of Swan Bay could have a significant impact. The dominant marine flora found in Swan Bay is seagrass, whose multiple importances to the ecology are described by Blake and Ball (2001). Some research has found that the growth of sea grass (*Zostera muelleri* and *Heterozostera tasmanica*) in Swan Bay appears to expand during periods of drought and calm weather (Longmore 2002). If the heavy rains of storm events occur as a result of climate change increase the flow of storm water into Swan Bay, declines in seagrass could occur. Because of its high storm water input compared to other breeding grounds, Longmore (2002) suggests that the seagrass in Swan Bay could be more vulnerable.

Native Fauna

As a Ramsar site, the impact on visiting bird populations is of particular importance. The Orange-bellied Parrot (*Neophema chrysogaster*) is classified as critically endangered and there are thought to be only about 180 adult birds remaining (Birds Australia 2006). In Victoria, up to 70% of the entire population winters on sites around Port Phillip Bay and the Bellarine Peninsula, including Swan Island. Bennett et al. (1991) have studied the impact of climate change on selected Victorian fauna, including the Orange-bellied Parrot. In six scenarios of increasing temperature and changing rainfall pattern, they have predicted changes in the extent of the bird's core bio-climatic habitat. In all but one of the six scenarios, this declines to zero for the orange-bellied parrot. Other birds using Swan Bay will be affected by climate change. Shorebirds or waders such as plovers, for example, who will only feed on exposed areas of the intertidal zones, will find their habitat reduced by any rise in water levels in Swan Bay.



Figure 3 Houses on Fisherman's Flat are vulnerable to rises in Swan Bay water level

Promoting Sustainable Communities

As described above, global warming will effect the BoQ community and its environment. The BoQ community has already demonstrated its concern about global warming in various ways. In January 2007, a group of BoQ residents began to meet with the purpose of forming a local global warming action group This was subsequently launched as the Global Warming Group Queenscliffe (GWGQ). The aims of GWGQ are to reduce the greenhouse gas emissions from the Queenscliffe community; to prepare the Borough for the consequences of global warming and to encourage neighbouring communities to be informed and actively involved in reducing their greenhouse gas emissions. Although still in its infancy, the group has already initiated activities and projects to educate and encourage the local community to reduce their greenhouse gas emissions. These include:

- organising a public meeting entitled "Climate Change - what will it mean for the Bellarine?" in May 2007. Former CSIRO scientist and author Dr Barrie Pittock addressed an audience of approximately 200. The turn-out of people from the Borough and surrounding towns was a clear unambiguous statement of the level of concern of local residents.
- successfully persuading the BoQ Council to become a signatory to the International Council for Local Environmental Initiatives (ICLEI). This step has meant that the Council is currently auditing its own emissions and will then hopefully adopt mitigation measures.
- developing a website with the aid of a BoQ Community Grant. This site will provide a central information resource specific to the Borough's residents.

To strengthen this community response and promote a genuinely sustainable community in the BoQ, it is imperative that two key issues, namely coastal overdevelopment and rural transportation, also be addressed. The relevance of these issues to the BoQ and some specific recommendations are made below.

Overdevelopment

Norman (Age, 2008) graphically described the current battles being fought to stem the tide of coastal overdevelopment. She stated that "the Australian coastline is littered with exhausted

communities battling to save the character and environment of their townships.” The BoQ is no exception and is currently opposing a proposed development which will see 590 houses, 170 retirement units and a care centre for 120 residents on a section of wetland, which links Lake Victoria with Swan Bay. Some of the land proposed for development is particularly vulnerable to rising sea levels. The protection of Australian coastal areas should be a Federal area of jurisdiction and governance. The Federal Government should be the final arbiter to protect coastal zones from inappropriate development. These decisions should not be left to the State Government, which has limited powers to intervene.

Transportation

Like many rural communities, the residents of the BoQ are almost totally dependent on the motor car. The BoQ is 36 kilometres from the main regional population centre of Geelong, and although there is a bus service, this is woefully inadequate. There are only five direct services per day and no buses after 5pm at the weekend. Emissions trading will bring further increases in the price of petrol. The uncertainty of future oil supply due to ‘peak oil’ will make the BoQ unsustainable socially and economically. Up until 1931, there was a passenger rail service between Queenscliff and Geelong. This ceased apparently due to competition from buses. To ensure the economic and social sustainability of the BoQ and other towns on the Bellarine Peninsula well into the future, a regular light rail service needs to be built. Such a system would also provide the link for non-motorised travel between from Geelong to the Mornington Peninsula via the Queenscliffe-Sorrento Ferry Service.

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