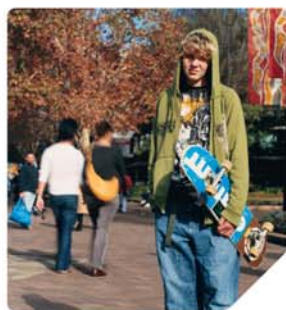




Environmental Wellbeing Position Paper

July
2004



Foreword

The Environmental Wellbeing Position Paper is one of a series of reports that have been developed to assist Council and the community of Parramatta to develop a long term Strategic Plan for the LGA. This is one of three position papers; the others explore our social wellbeing and economic wellbeing.

The Environmental Wellbeing Position Paper provides an initial exploration of the natural environment of the Parramatta, to identify current pressures and impacts, as well as future trends that will affect the future wellbeing of the LGA

Table of Content

1	Parramatta Twenty25 and the Triple Bottom Line Strategies.....	3	6	What are our future challenges to a more sustainably environment?	13
1.1	Objectives	3	6.1	Population changes in Parramatta.....	13
2	Key Findings from the Environmental Wellbeing Position Paper.....	4	6.2	Environmental capacity.....	13
3	Why is environmental wellbeing important?	5	6.3	Consumption.....	14
4	Major Pressures on the Environment.....	6	6.4	Waste and pollution	14
5	Environmental Trends and Responses	7	6.5	Landuse development and intensification	14
5.1	Biodiversity.....	7	6.6	Unsustainable transport.....	15
5.2	Waterways	8	6.7	Political and economic change	15
5.3	Atmosphere.....	9	6.8	Technological change	15
5.4	Landform and Soils	9	6.9	Knowledge management	15
5.5	Consumption.....	10	6.10	Community capacity.....	15
5.6	Waste and Pollution	10	6.11	Building better partnerships	16
5.7	People.....	11	6.12	Leadership	16
5.8	Land use	12	6.13	Global crises/catastrophes.....	16
5.9	Transport.....	12			

1 Parramatta Twenty25 and the Triple Bottom Line Strategies

The position papers have been prepared to guide the development of three '**Triple Bottom Line' Strategies** (i.e. Economic, Social and Environmental) which will then be integrated into one 'city wide' strategic plan called **Parramatta Twenty25**.

The Triple Bottom Line Strategies outlines the desired future, provides a description of what that destination might look like for different issues and list the strategies required to get there.

Parramatta Twenty25 will bring these strategies together to ensure consistency, minimise conflict and maximise synergies between social, economic and environmental factors. Parramatta Twenty25 will also provide direction in the preparation of future Council Management Plans and other mechanisms for the allocation of resources.

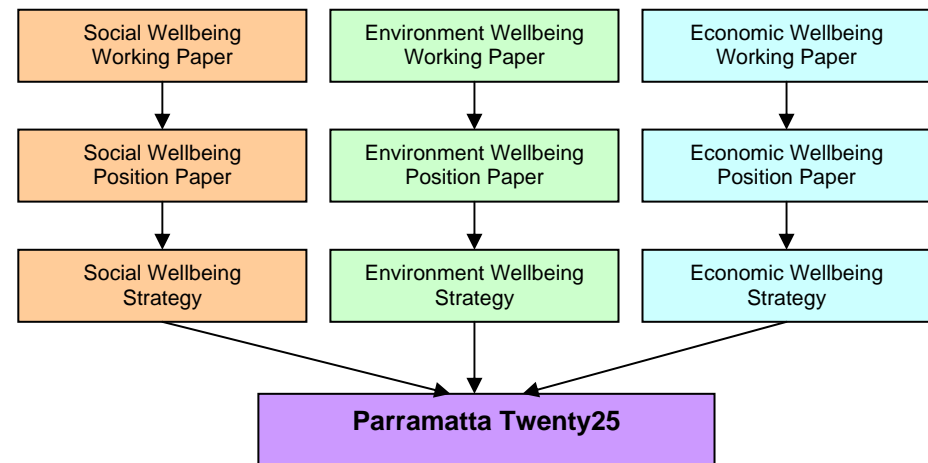
1.1 Objectives

The objectives of the Position Paper is to:

- ❖ identify the major pressures on the environment
- ❖ describe the existing trends
- ❖ identify future challenges and gaps in both knowledge and processes
- ❖ To promote discussion on the challenges we face and how we can begin to address them
- ❖ To form a basis and way forward for producing the TBL strategies

This information has been summarised from a **Working Paper** which explored the following questions:

- What is the current environment (global, national, state, local) in which we are operating?
- Where are we now?
- What are the trends or changes that are occurring?
- What are the future issues and challenges we face?
- How is Council and the community responding to these challenges?



2 Key Findings from the Environmental Wellbeing Position Paper

- 1 Numerous Council and Government policies, plans and pieces of legislation detail many of the necessary actions to improve the environment
- 2 Overall there are significant successful environmental programs being undertaken. These activities are making a difference to protecting and rehabilitating the environment
- 3 Despite the successes there continues to be ongoing pressure on the environment
- 4 There is a lack of specific data across all environmental indicators which makes it difficult for the community to be aware of the difference they have made or the state of the environment
- 5 Despite the lack of data, it is evident that we are not living sustainably and our resource consumption is greater than we can sustain in the long term
- 6 Despite the level of planning, there is insufficient long-term planning to address the significant pressures of population growth and consumerism.
- 7 There is a need to reduce our rate of consumption, waste and pollution
- 8 There is a need for greater protection and rehabilitation of our biodiversity, waterways, soils and land
- 9 There is a need for the community to adopt a more ecologically sustainable lifestyle and have greater participation in environmental protection and decision making
- 10 There is a need for better coordination between government, business and community and a clearer understanding of the agreed priority actions required for Parramatta



3 Why is environmental wellbeing important?

There is a direct relationship between our actions and a serious decline in environmental quality. Whether it be through extraction of resources from the earth, the generation of waste and pollution or inefficient land use, our behaviour results directly in social and economic decline.

We cannot separate environmental, economic and social wellbeing. As Figure 1 shows, many everyday activities that we take for granted invariably lead to decline in our lives. It is for this reason that Parramatta City Council has adopted a Triple Bottom Line approach for managing the City.

The case for environmental sustainability is compelling. Recent climate change, especially through the burning of fossil fuels, has driven atmospheric carbon dioxide concentrations to their highest levels in 420,000 years (Worldwatch Institute 2004).

Carbon dioxide is less able to be absorbed since the world has lost nearly half its forested area in the past 8000 years, the majority in the 20th century. At least 20 percent of all freshwater species globally are extinct or at risk and freshwater systems suffer from huge increases in water withdrawals for human use, extensive pollution and draining of wetlands.

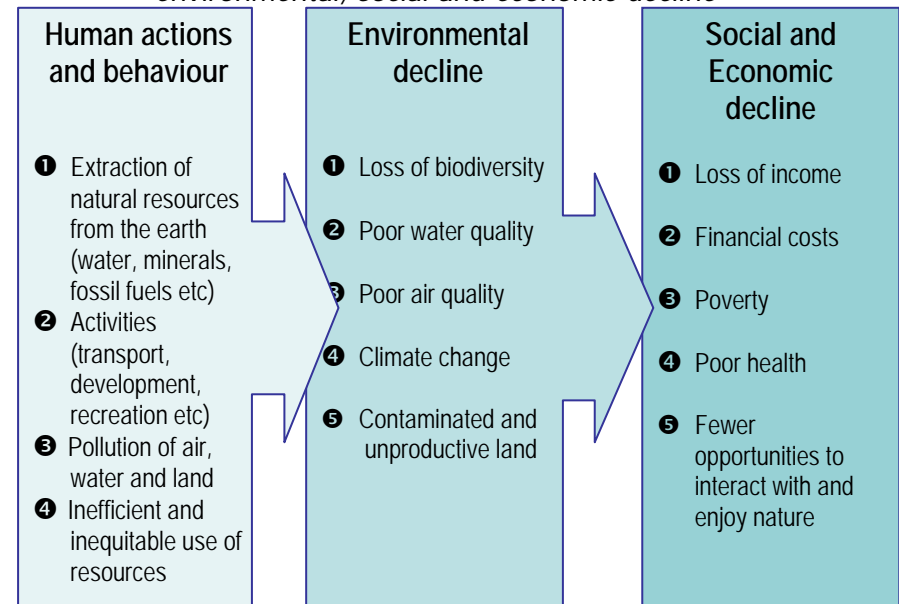
Water scarcity may be the most under-rated global environmental challenge of our time. It is estimated that in less than 25 years two thirds of the world's people will be living in water-stressed countries (World Business Council for Sustainable Development).

On current predictions of urban growth and water consumption, most of Australia's capital cities will run out of drinking water within the next 20 years (Centre for Water and Waste Technology).

These are not problems isolated to far-flung parts of the world. They are problems affecting our local communities daily. How we manage them will have a critical impact on the quality of our lives and those of future generations.

This document outlines the state of Parramatta's environment and the current and future challenges facing Parramatta. It presents the many challenges in which we all need to work together in creating a sustainable city.

Figure 1
Relationship between human actions and behaviours and environmental, social and economic decline



4 Major Pressures on the Environment

There are several pressures that are directly impacting on the future of Parramatta's environment.

The United Nations Population Division predicts a **population** of 7.5 billion people by 2020 – more than 55 percent of which will be living in an urban environment. Australia's population alone is expected to reach almost 23 million by the same year. Sydney will be struggling to cope with five million people, and Parramatta with a swelling population of 161, 000 people.

The increase in population occurs in a world driven predominantly by **economic expansionism** or competitive capitalism. Global society seemingly believes that human welfare and happiness can be equated with material consumption -- and that there are no ecological constraints on economic production or consumption. But evidence suggests that the global expansionist model is unsustainable and is having a dramatic impact on the future of our global and local environment.

With the increase in world population and the current economic expansionist outlook, there is a consequent increase in **development of land** for housing, industry and transport. Forecast demand for new housing in Sydney is 25,500 dwellings on average per year over the next 10 years (DIPNR, 2004). Policies that are in place to promote Parramatta as a strategic centre at the heart of Sydney have brought about a large amount of residential intensification and commercial development in the LGA. This development is imposing additional pressures on established neighbourhoods and the natural environment.

Parramatta CBD is well served by rail and bus networks. However, **public transport** links between Parramatta and residential areas of Western Sydney, particularly the expanding northwest sector, are poor. As a consequence, Parramatta has a high proportion of private car use that impacts heavily on air and water quality, contributes significant levels of greenhouse gas emissions, and reduces visual amenity.

Conflict over natural resources is a further challenge. Struggles over natural resources such as oil, water, timber and minerals can occur at a global, international and state level. Even at a local level conflict is possible. For example, with the current drought affecting many parts of Sydney there is conflict over water usage for residential, recreational or environmental needs.



5 Environmental Trends and Responses

Global warming, increasing population, rampant energy use, loss of bushland, declining biodiversity, increasing waste generation and poor air and water quality are just some of the key issues affecting us locally as a result of these pressures. Following is a snapshot of the environmental issues affecting Parramatta, what we are doing and the trends that are occurring.

5.1 Biodiversity

Biodiversity is the broad range of aquatic and terrestrial living organisms. Biodiversity supports society's economic, cultural and spiritual needs. Fundamental changes have occurred to biodiversity since settlement, including loss of bushland, loss and extinction of species, changes to habitats, introduced species, pathogens and viruses and changes to genetic and species diversity.

Parramatta, with its underlying geology and topography, contains highly diverse ecological communities and species. Based on the number of endangered communities and species it is clear that biodiversity has declined over the last 200 years. Unfortunately there is little data to determine any more recent trends.

State and Federal government agencies have several plans, policies, legislation and conventions in place to manage biodiversity such as National Strategy for the Conservation of Australia's Biological Diversity (1996), NSW Biodiversity Strategy (1999), Environment Protection and Biodiversity Conservation Act (1999) and Threatened Species conservation Act 1995.

Council has its own Biodiversity Management Plan, Planting Strategy, Waterways Masterplans, Development Control Plans and Plans of Management.

Actual works undertaken by Council and the community include:

- Rehabilitation works to bushland and waterways
- Bushland restoration involving 250 people involved in bushcare groups
- Community events such as Lake Parramatta Community Open Day and World Environment Day
- Tree planting days, such as National Tree Day. Council also gives away over 3,500 trees each year at environmental events and its Nursery Open Day.
- School environmental education programs such as Schools Environmental Enhancement and Development (SEED) program involving about 20 schools, events and competitions held by Council, such as the Biodiversity Postcard Competition, Biodiversity Celebration Day and school holiday program activities.
- The Wildlife Information and Rescue Service (WIRES) and Sydney Metropolitan Wildlife Service are both active in the LGA.

There are 326 hectares of remnant vegetation in the LGA. Within this there are 11 different ecological communities (eight of state or national significance); 622 plant species, (12 of state or national significance) and 213 native animal species (13 of state or national significance).

5.2 Waterways

Water is fundamental to sustaining life. Waterways are a source of habitat, recreation, relaxation. The Parramatta LGA is located within four catchments: the Upper Parramatta River, Mid Parramatta River, Duck River and Lane Cove River catchments. Some 65 kilometres of rivers and creeks pass through the LGA.

Changes in the catchment such as loss of vegetation cover, more impervious surfaces and polluted runoff have resulted in declining water quality, increased flooding, changes in water volumes and velocities, all of which impact on aquatic flora and fauna.

While there is limited water-quality information across the LGA, a Stream Health assessment undertaken by Council shows that only 13 percent of stream sites sampled were in good or very good condition. The Upper Parramatta River Catchment Trust collects some data for the area it administers. It found large seasonal changes in dissolved oxygen levels and annual mean values for nutrient concentrations to be twice that recommended for the protection of aquatic ecosystems. It also found large metal loads such as copper in our waterways.

Groundwater occurs in an underground network of aquifers. Groundwater often makes its way to our waterways. Contamination of soil and groundwater from old buried waste, underground tanks and chemical leakage is known to have occurred at several sites across the LGA.

Flooding is another serious problem. Though the climate in Parramatta is temperate, the area has experienced periods of above average rainfall. The late 1980s brought two major floods.

There are several national and state policies and legislative requirements relating to waterways. Examples of these include:

The NSW State Rivers and Estuaries Policy (1991), Fisheries Policy and Guidelines, NSW Water Management Act 2001, Groundwater Protection Policy (1998) Flood Prone Land Policy (2001) and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Despite these numerous plans there is very little coordination at a catchment level.

Council also has numerous plans to protect the Council's different waterways including:

- Waterways Strategy – Rivers of Opportunity
- Catchment and Sub-Catchment Management Plans
- Stormwater Asset Plans
- Stormwater Management Plans
- Waterways Masterplans
- Floodplain Risk Management Plans

Council and the community are actively working to improve our waterways including:

- Stream rehabilitation works including erosion control, bank stabilisation and replanting
- Streamwatch Program involving eight local schools and two community groups.
- Local school visits by the Council's staff to conduct stormwater education activities.

Based on a 2001 community survey, which showed that people regard water quality to be a high priority, Council has realigned and provided dedicated funding to implement its waterways plans.

In the Upper Parramatta River catchment alone it has been estimated that more than 6500 residential properties would experience flooding in a probable maximum flood.

5.3 Atmosphere

The two main issues affecting our atmosphere are air quality and global warming. Air pollution problems within the Greater Metropolitan Region are smog and brown haze or particle pollution. These have an adverse impact on human health, causing respiratory and cardiovascular disease as well as asthma.

The National Pollutant Inventory (2004) indicates that air pollution generated in Parramatta LGA is mainly through petroleum refining and from motor vehicles. Levels of carbon monoxide, lead and sulfur dioxide are declining, nitrogen dioxide levels are relatively stable, and levels of ozone and particulate matter do not indicate any discernible trend.

While the Intergovernmental Panel on Climate Change (IPCC) has developed scenarios of how the global climate system might respond to a range of different atmospheric concentrations of greenhouse gases, our understanding of how future climate change may affect Australia is very low. However, the areas that are vulnerable to climate change include changes in rainfall patterns, the frequency, duration and intensity of extreme weather events, sea level rise, floods and droughts and distribution ranges for flora and fauna.

There are some government plans and policies relating to the atmosphere such as the NSW Greenhouse Action Plan (1998), National Greenhouse Strategy and the Ozone Protection and Synthetic Greenhouse Gas Legislation Amendment Bill 2003. Unfortunately the Federal Government has not ratified the Kyoto Protocol and current plans are unlikely to be sufficient to address this potential global crisis.

Council has adopted its Greenhouse Gas Reduction Plan and Local Air Quality Management Plan.

Council and the community are undertaking some initiatives to reduce our impacts on air quality and greenhouse gas emissions (refer to consumption and waste and pollution below). It is not known how well our community engages in reducing greenhouse gas emissions and there are only limited initiatives undertaken by businesses.

The amount of greenhouse gases produced by the LGA during 1998 was equivalent to more than 2.6 million tonnes of carbon dioxide. The highest source of emissions was from the industrial sector.

5.4 Landform and Soils

Parramatta's landform is generally dominated by the Hawkesbury Sandstone Plateau in the north, folding under the Cumberland Plain shales along the Parramatta River. Soils therefore vary from sandy loams in the north to clay-based loams in the south. With the meeting of two dominant geological forms, transition soils are created that support the endangered ecological vegetation communities that exist in our LGA.

Healthy soils are essential for maintaining our biodiversity. Increased water flow in the catchment has resulted in increased loss of top soil, erosion and sedimentation. This has led to declining water quality, blocking of waterways and drainage systems, smothering of aquatic fauna and declining recreational amenity. Some land has been developed which is unstable.

Erosion and loss of topsoil are two significant issues impacting on both waterways and bushland. The Upper Parramatta Catchment Trust has recorded 4000 tonnes of sediment coming from the upper catchment in one year. More unknown is the impact of urban salinity, soil contamination and acid sulphate soils.

There are only limited government plans and policies relating to soils and landform such as NSW Salinity Strategy (2000) , NSW State Soils Policy (1987), National Action Plan for Salinity and Water Quality and the Soil Conservation Act 1938.

Council also has limited plans to protect the landform and soils of Parramatta such as:

- Waterways Masterplans
- Development Control Plans (Soil and Sedimentation controls for new developments)

5.5 Consumption

Energy consumption, transport, agriculture and industrial processes are some of the sources of over 165 million tonnes of CO₂-e¹ emissions across NSW. In Parramatta it has been estimated that 2,615,325 tonnes of CO₂-e is generated annually. This has resulted in a significant increase in carbon dioxide and other greenhouse gas concentrations in the atmosphere, bringing a 10-20cm sea-level rise and 0.6°C increase in atmospheric temperature over the 20th century (NSW Greenhouse Office 2004). By 2039, the CSIRO projects that much of NSW could be 0.4 to 2 °C warmer.

There are very limited policies or controls that have any real impact on our consumption levels. Some guidance comes from the NSW Government Energy Management Policy (1998) and the Sustainable

¹ equivalent emission in Carbon Dioxide - a greenhouse gas

Energy Development Act 1995 and the NSW Metropolitan Water Plan.

Council has limited plans that address consumption, with the exception of the Greenhouse Gas Reduction Plan and Local Air Quality Management Plan. It is in the process of developing a Waste Minimisation and Resource Recovery Plan and Water Conservation Plan which will cover these areas of consumption.

Current initiatives aiming at reducing consumption includes:

- Water conservation for both residential and commercial premises
- Stormwater reuse for watering of councils parks and sporting fields
- Energy reduction measures in commercial buildings within the CBD
- Energy awareness and reduction program in Council buildings
- Community awareness of energy and water conservation

There is no readily available data on our levels of consumption across the LGA of resources such as energy, water, minerals or other consumer products. However, demands from our consumer society mean these levels of consumption are likely to increase placing greater pressures on our natural resources. It is obvious that the community will need to reduce its demand on these finite resources if we are to be more sustainable.

5.6 Waste and Pollution

There are numerous waste products that make their way into the environment, including chemical and other liquid and gaseous pollution, dust, noise and light pollution. Very little is known on the quantity of many of these waste products.

In 2003-2004, a total of 54,929 tonnes of waste were produced by residents in Parramatta LGA. This is an increase of 1587 tonnes from 2002-2003. Of the total amount produced, 35,404 tonnes were domestic waste, 12,961 tonnes recyclable material and 6564 tonnes garden waste. An additional 5099 tonnes was collected through Council's public waste collection service.

There are numerous policies and legislative controls relating to pollution and waste. Examples of these include the NSW 25-year Air Quality Management Plan, NSW Waste Reduction and Purchasing Policy (WRAPP) 1997, National Waste Minimisation and Recycling Strategy, Environmentally Hazardous Chemicals Act 1985, Protection of the Environment Operations Act 1997 (POEO Act) and the Waste Avoidance and Resource Recovery Act 2001.

To manage waste and pollution Council:

- is formulating a Waste Minimisation and Resource Recovery Plan
- has an internal operating procedures manual for the management of water pollution, hazardous materials and dumped waste incidents
- manages pollution and waste from new development through its Development Control Plan

Council and the community are actively working to reduce waste and pollution through:

- Significant waste collection and recycling program
- Council's clean-up service. More than 200 services are conducted each week for the community.
- Chemical Clean Out Day.
- Waste education activities for schools and the general community.

- Enforcement of littering such as dumped rubbish and littering from motor vehicles.
- Clean Up Schools Day. In 2004, 17 schools and 5,650 students participated on the day.
- Clean Up Australia Day, a popular event particularly for larger community groups and businesses. In 2004, there were 19 registered Clean Up sites and around 180 participants in the Parramatta LGA.
- An active pollution reporting system. The community is quick to report water pollution incidents to Council and Council has an effective response mechanism in place.
- Construction of pollution control devices to prevent pollution entering waterways
- Education programs to reduce dust pollution and improve soil and sediment controls on building sites
- Input/output directory for industrial sites at Cammelia

5.7 People

Parramatta's population is estimated to increase from 143,000 in 2001 to 161,000 in 2019 (Urban Frontiers, 2003), with a significant proportion of this in the Primary Centre.

There is little work done on assessing how we can maintain our environmental amenity and natural resources with the increasing population and its associated impacts.

Human health is influenced by physical, social and natural factors. Chemicals in land, water and air impact on our health. Blood feeding insects such as mosquitos are a cause of transmission of vector-borne diseases caused by bacteria, viruses or protozoa. This is likely to become more prevalent as climate changes.

Natural disasters are likely to result in loss of life, injury, sociological impacts, damage to property and disruption to services. With changes to our land and climate this is likely to increase.

5.8 Land use

To cater for this increased population there will be a need for further residential intensification and commercial development in the LGA. This development, along with changes to land use through the need for recreational space and industry and commercial activities, will have a dramatic impact on the future landscape of the LGA.

The State government has released its Metropolitan Strategy Discussion Paper which explores how to manage growth and its related housing, economy, transport, environment and infrastructure needs.

Council has several plans covering land use, including the Parramatta Local Environment Plan 2001, Development Control Plans and its Residential Strategy.

Numerous activities that are being undertaken to address the consequences of land use on the environment. These are described elsewhere in this report.

5.9 Transport

Parramatta is well served by rail and bus networks. However, public transport links between Parramatta and residential areas of Western Sydney, particularly the expanding northwest sector, are poor. As a consequence, Parramatta has a high proportion of private car use which is continuing to grow (Metropolitan Strategy

Discussion Paper). This increase impacts heavily on air and water quality, contributes significant levels of greenhouse gas emissions, and reduces visual amenity.

Council has prepared its own Parramatta City Centre Strategic Transport Plan, Bike Plan, Pedestrian Access and Mobility Plan (PAMP) and Transport Management Action Plan (TMAP) to examine the long term transport solutions for the LGA. Parramatta has a target modal split of 48 percent public transport, 12 percent walk/cycle and 40 percent car use by 2021.

Community groups such as Camwest and the NSW Bicycle Association are active in promoting public transport. The State Government are also working on significant transport infrastructure in Parramatta, including the Parramatta Station upgrade and bus interchange.



6 What are our future challenges to a more sustainably environment?

6.1 Population changes in Parramatta

Parramatta's increasing population means that we will need to carefully plan and manage our urban development and transport needs. The increase in population will result in significantly more pressure on our natural resources, generation of more waste and increased likelihood of air, water and land pollution. All indications are that we are not living sustainably. Our ecological footprint shows we require 15 times the size of Parramatta to support ourselves.

6.2 Environmental capacity

Over the years, the natural environment in Parramatta has lost its capacity to cope with the pressures from an urban society. Trends at a national, state and regional level all show a decline in the major environmental variables. While it is impossible to return our environment to its original condition, we need to understand the level of capacity it has, and ensure that this level does not drop in the future. Areas requiring careful management include:

6.2.1 Biodiversity

Many of the achievements have made a difference to Parramatta's biodiversity. But there is room for improvement. For example, we have little information on current and emerging issues such as land use intensification on biodiversity. Regrettably, there is a lack of data on more recent trends in biodiversity and no reliable information on the effectiveness of more recent regeneration, waterways and bushland management programs.

Protection and enhancement of native vegetation corridors and the animals it supports on public and private land is critical for the protection of our remaining diversity. This will require the protection of certain land and aquatic plants and animals and the management of introduced weeds and feral pests.

There are also opportunities for the greening of our urban environment through connections of bushland and waterways with parks and reserves and private backyards.

6.2.2 Waterways

Despite the successes, the declining health of our waterways is still a major concern. Serious pressures on our waterways remain because of our urban catchment and the extent of human activities within the area. As our jurisdictional boundaries are not catchment-based, Council has little influence on the activities that occur upstream which impact on our waterways.

Our waterways and associated water quality and biodiversity are undergoing continual decline as a result of the ongoing changes in the catchment. Major rehabilitation is required to ensure that our waterways remain a functioning ecosystem.

6.2.3 Atmosphere

We have achieved much with greenhouse gas targets however Council's role is only small in relation to the broader need to reduce energy consumption and car use if we are to improve our environment.

The impact of air quality on the health of our community is likely to continue to be a future issue. It is not possible to directly rehabilitate air or our atmosphere. As a result we need to manage our human activities such as pollution. Transport planning will be a

significant challenge in the coming years, particularly with a growing population. Other sources of pollution such as industrial emissions and more common residential emissions, such as from lawn mowers and wood heaters, will need to be managed.

6.2.4 Landform and Soils

Minimisation of loss or disturbance to our topsoils is a significant challenge for Parramatta. Equally, developing a greater understanding of the impact of urban salinity and soil contamination is required.

6.3 Consumption

The community has a huge challenge in managing its levels of consumption. There is also considerable uncertainty about the future of our water supply with a growing urban population in Parramatta. Major changes to our daily water usage will be required to meet the challenges of drought. The State government will be required to do significantly more to address other major water users such as industry and private businesses.

With the huge uncertainty of impacts that climate change may impose on our environment, society and economy, Parramatta will need to address both its consumption of energy and where we source our energy from.

Consumption of other non-renewable resources such as timber and minerals which are converted into products is also increasing as our development and population changes.

6.4 Waste and pollution

Our level of consumption means there will be an increased level of waste generated. Despite the increase in recycling of products the pressure of consumerism is resulting in continued increases in the use of resources and material that eventually becomes waste or pollution. Council will need to examine how it can reduce waste generated in Parramatta and look at the most sustainable methods for waste disposal.

While there is significant effort on managing residential waste it is not known how much waste is produced by the industrial or commercial sector in Parramatta. Steps need to be taken by the state and federal government and industry to reduce waste and incorporate extended producer responsibility and businesses need to take greater responsibility in the wastes they produce.

A further challenge is to reduce or manage other forms of pollution such as water and air pollution. There are ongoing problems of pollution from both diffuse sources (such as urban runoff) and point sources (such as industrial discharges, sewer overflows and spills). In particular it is critical that pollution is controlled at the source. There is very little known about other forms of pollution such as light and noise.

6.5 Landuse development and intensification

Development is a key threat to the environment. It requires huge amounts of natural resource such as timber, steel and water. Increasing building density is reducing pervious surfaces and increasing run-off. This development, along with the associated pollution and waste it generates, causes loss of plants and animals,

decline in water supply and quality as well as air quality and contributes to climate change.

The increase in population and intensification of development will result in significantly more pressure on our natural resources, generation of more waste and increased likelihood of air, water and land pollution. As a result we will need to carefully plan and manage our urban development needs.

6.6 Unsustainable transport

Continued reliance on cars as the major transport mechanism will continue to put pressure on the environment through declining air quality and associated health problems. Ensuring that land-use patterns encourage public transport is a significant challenge.

In order to improve air quality and reduce pollution from roads it is imperative that greater use of cleaner fuels is undertaken and public transport is enhanced. Development also needs to be better designed and located near public transport nodes.

6.7 Political and economic change

Changes in federal and state government could present many future challenges, particularly regarding funding for environmental programs at a local level. Changes in local government boundaries could impact on the amount and type of natural environment we will need to manage and the types of environmental services that we will need to deliver to our new community. The trend for corporatisation and privatisation of government bodies could impact on how environmental services are funded and operated.

6.8 Technological change

New technology is likely to give Council, the community and business fresh opportunities to introduce more efficient and sustainable methods of managing resources. Cleaner industry and new business in sustainable products and services, such as amelioration of contaminated land or green energy, also have the potential to deliver improved economic growth without having a negative impact on the environment. The challenge is stay informed of changes in technology.

6.9 Knowledge management

Council does not fully understand the community values, attitudes, knowledge and expectations on the environment. There is also a lack of any real data on the local environmental trends. This information is critical if we are to determine the effectiveness of any improvement programs.

6.10 Community capacity

There is a great challenge for Council to build our community's capacity to help manage and protect our local environment, and make informed decisions based on the principles of sustainability.

There is a need for greater coordination and structured approach to community engagement and education in environmental issues. While there is good volunteerism in bushcare there needs to be greater involvement in other areas -- especially waterways, air quality and greenhouse gas reduction.

6.11 Building better partnerships

Achieving Environmental Well-Being in Parramatta will require extensive collaboration amongst stakeholders. Council needs to lead these partnerships such as building greater links to non-government bodies such as Australian Conservation Foundation or Nature Conservation Council. Partnerships could also be sought with other government bodies such as Roads & Traffic Authority; Department of Environment and Conservation and Department of Infrastructure, Planning and Natural Resources; and water and energy utilities providers to ensure that shared priorities and vision is developed.

6.12 Leadership

Council, State Government and businesses need to show leadership in their own environmental performance. This needs to include improved staff training and awareness of environmental issues and improvements to performance in energy and water consumption, reduced waste and more sustainable purchasing.

Improved and broad-reaching policies and procedures need to be implemented to address environmental performance. Sustainable environmental funding is also needed to ensure that environmental management is seen as a necessity rather than a luxury.

6.13 Global crises/catastrophes

Global crises, including unknown events due to climate change or severe drought, could have devastating effects on the community of Parramatta. It is a matter of being prepared.

