Muswellbrook Shire Council

State of the Environment

Last updated 14 October 2010

muswellbrook shire council

Contents

Introduction

Muswellbrook Shire Council prepares an annual State of the Environment Report to review and assess the shire's natural and built environments. The report is a legislative requirement, which also provides a strategic tool to identify issues for addressing in Council's next Management Plan.

Muswellbrook Shire Council's State of the Environment Report reports on the status of the main environmental issues facing Muswellbrook Shire. The State of the Environment Report is structured around 6 major themes.

- Towards Sustainability
- Human Settlements
- Water
- Land
- Atmosphere
- Biodiversity

Significant environmental indicators are assessed to consider the impacts and level of sustainability that the community or Council has on the environment. Once these impacts have been assessed, an organisation such as the local council can manage its activities to improve environmental outcomes.

The environment in which we live, work and relax faces many pressures. These pressures broadly include the impact of development and human activities on the natural environment. Some of the biggest environmental issues of our time revolve around the global impact of the energy consumed through business, industry and transport on our climate and weather patterns. Other important issues include maintaining biodiversity and preventing pollution of our waters, land and air.

The current state or health of the environment is determined by how much impact these pressures have made on environment. The environment is resilient to many pressures, but often a tipping point becomes closer until finally an environmental process or system collapses. The impact on the environment by these pressures is measurable in many ways. This report provides information on key indicators that have been selected as means of measuring the state of the environment.

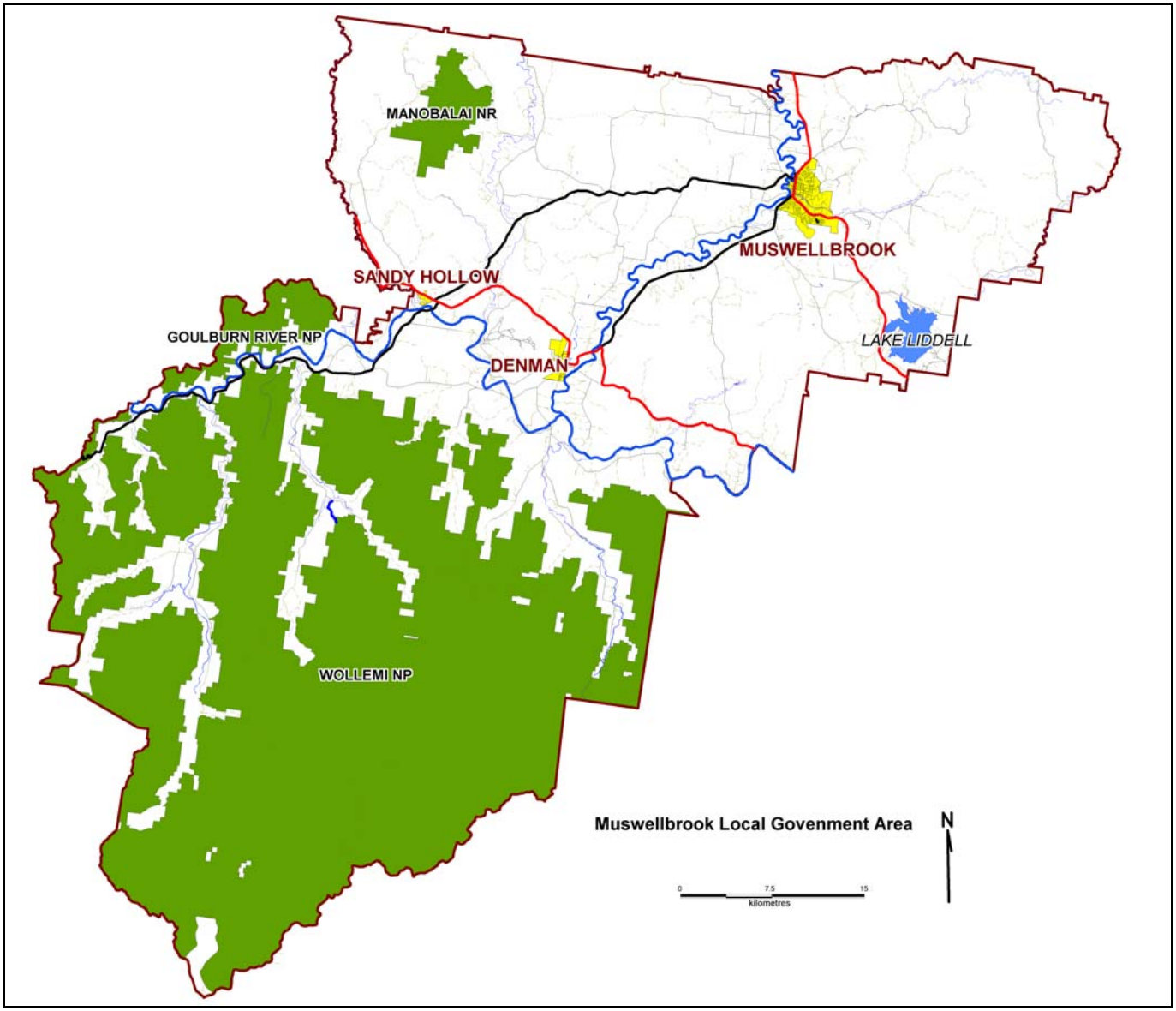
The Council and the community can respond to the state of the environment by reducing pressures and repairing the damage where possible. Although the Council and the community may have substantial motivation to make improvements to the environment, we are limited by the resources that are available and the priorities determined for those resources.

Muswellbrook Shire Council

Muswellbrook Shire Council incorporates an area of 3,404 square kilometres of which 1,446 square kilometres (42%) is National Parks and nature reserve. The Local Government Area includes the towns of Muswellbrook, Denman and the village of Sandy Hollow. Muswellbrook includes major business districts, industrial areas, rural holdings, and diverse residential areas.

Muswellbrook Shire enjoys a rich diversity of rural enterprises including, dairying, olive growing, horse breeding and award winning wine making industries. The Shire has a very strong industrial sector based around mining and power generation and associated support industries.

Muswellbrook Shire is undergoing immense development, mainly in the extractive industries. Throughout this period of regional economic growth, it is vital to ensure realistic sustainable development through the diversity of industries, improved education facilities, development of a strong skills base and continued employment opportunities.



Council's Role

Local government is the most diverse of Australia's three levels of government. It is an important player in the area of environment and heritage management in Australia, and has the responsibility for protecting the environment, planning future landscapes, providing infrastructure, managing natural resources, and conserving or managing cultural heritage through a variety of mechanisms.

The execution of Council activities has associated environmental impacts which need to be managed to reduce the level of affect. The main environmental impacts associated with Council activities generally involve the consumption of materials and resources such as energy, water, chemicals and building materials.

The protection of the environment by Local Government is facilitated by the utilisation of a variety of Acts which can be implemented in relation to a specific circumstance. The Acts which provide Council with legislative powers to manage environmental activities include the *Local Government Act (1993)*, the *Environmental Planning and Assessment Act (1979)* and the *Protection of the Environment Operations Act (1997)*. These Acts provide a range of tools which can be used by Council to address breaches of legislation.

Council's Management Plan sets out Council's environmental strategies and policy in relation to its role as an environmental steward and manager. Virtually all of the council's functions have some form of environmental implication. The State of Environment Report is used to assist in reporting progress and effectiveness of these strategies.

Towards Sustainability

Management Plan Goals

- To improve awareness and ownership of environmental issues in the Muswellbrook community so that the community can implement positive environmental behaviour and promote the principles of Ecologically Sustainable Development.

- Protect and enhance the environment through the promotion of an environmentally sustainable community; achievement of world's best practice standards in the rehabilitation of mines and extractive industries; to promote wildlife corridors and habitat areas; protect remnant vegetation; reduce mainstream flooding; promote community participation in the determination of major developments and to enhance the quality and enjoyment of the environment for present and future generations.

- To co-operatively and strategically manage growth, development and construction that recognises environmental standards, particularly air and water quality and promotes sustainability principles such as energy and water efficiency.

- To provide a comprehensive strategic planning framework to protect the environment, satisfy legislative requirements, to meet community needs and to involve the community in the decision making process.

Indicators

Indicator	08/09	09/10	Trend
Community event participation	109	~135	✔
Students contacted through school environmental education	0	~220	✔
Number of active water watch groups	6	7	✔
Megalitres of water used by Council	175	251	✘
Percentage reduction in corporate water consumption from Water Campaign baseline	39%	12 %	✘
Complete specific milestones of the International Council for Local Environment Initiative Water Campaign ™	Milestones 2 and 3 complete	Working towards Milestone 4	✔
Megawatt-hours of electricity used by Council	5299	5464	✘
Percentage of renewable energy generated by Council	0.03%	0.03%	–
Kilolitres of fuel used in Council's fleet	300.85	346.87	✘
Tonnes of equivalent CO_2 emitted by Council operations	22384	23012	✘

Key for trends:
✔ Towards sustainability
✘ Away from sustainability
– No trend
? No data

Discussion

Community Event Participation

Substantial effort has gone into encouraging the community to participate in local events during the reporting period. It has been encouraging to see more community involvement in events such as National Tree Day and Clean Up Australia Day.

National Tree Day

National Tree Day is a Planet Ark inititiave that has seen over 15 million trees planted Australia wide since its inception. It is an opportunity for schools, community groups and local residents to come together to make a positive difference to our environment. Growing local native trees, shrubs and ground covers helps to provide food and shelter for Australia's wildlife, increase native biodiversity and combat the habitat loss that threatens much of our wildlife. A total of 35 community members participated in National Tree Day in Muswellbrook Shire Council with approximately 300 trees and shrubs planted along Denman Rd between Skellatar Stock Route and Thomas Mitchell Drive on the day.

http://treeday.planetark.org

Clean Up Australia Day

Clean-Up Australia Day celebrated its 20th birthday in 2010. It was held on Sunday 7 March 2010 at a number of sites across the Shire. The day was well attended by community members, with over 4000 kg of rubbish and recyclables removed from our local parks, waterways and roadsides by approximately 100 volunteers.
Table one details sites and participants for Clean Up Australia Day 2010..

Table 1: Sites and Participants on Clean Up Australia Day

Site	Volunteers
Karoola Park	Muswellbrook Girl Guides
Karoola Wetlands	Community volunteers
Brennan Park and Muswellbrook Indoor Sports Centre	Muswellbrook Amateur Basketball Association.
Fitzgerald Park	Community volunteers
Highbrook Park	St Josephs Aberdeen
Olympic Park	Community volunteers
Simpson Park	Community volunteers
Wollombi Park	Community volunteers
Muswellbrook Township	Community volunteers, Darryl's Bobcats, Mt Arthur Coal and Stan Ray.
Muswellbrook South	Community volunteers
Coal Road Muswellbrook	St Heliers Correctional Centre Work Crew
Denman Wetlands	Denman Scout Group

The following schools also participated in Schools Clean Up Day in Muswellbrook Shire; Muswellbrook South Public School, Muswellbrook High School, St James Muswellbrook, Denman Public School, St Josephs Denman and St Josephs Aberdeen.

www.cleanup.org.au

Upper Hunter Show

Council participated in the Bursting with Energy display at the Upper Hunter Show. On display was the Sustainability Trailer, along with a large amount of promotional material highlighting services that Council can provide and information on how to live more in a more sustainable fashion. The most popular information was information about the various rebates available and the worm farms and compost bins that Council sell. A large number of school students and the community attended the display.

School Environmental Education

In 2010 Council has taken a proactive approach by assisting and providing schools with opportunities to implement environmental programs. To assist with this Council has developed a program called “Eco-Cational Schools”.

This program makes a number of free activities available to schools

- Environment Days
- Environmental Audits
- School Environmental Management Plans
- Assignment Information

During the 09/10 reporting period three schools across the shire participated in environmental education. Martindale Public School and St Josephs Denman held Environment Days where all students at the school participated in a range of environmental education activities such as constructing worm farms, composting, interactive stories and waste audits. Muswellbrook South Public School held an environmental audit, auditing the schools energy and water consumption and the amount of waste generated. Students then explored ways to reduce consumption of water and energy and reduce waste generated. Approximately 100 school students participated in the program during the reporting period.

Solar Boat Challenge

In conjunction with local primary and high schools Council coordinates an annual Solar Boat Challenge, where teams of students design, build and race solar boats. The teams must also give a short presentation about solar power and their experiences building their boats. This initiative not only encourages school students to learn more about the uses of solar power, alternative energy, design and manufacturing skills and in turn apply this acquired knowledge but also focuses on team work and presentation skills. Approximately 120 school students took part in the solar boat challenge during the reporting period.

Solar Boat Challenge

Waterwatch

Waterwatch is a national community network of volunteers that monitor their local waterways. Waterwatch encourages all people to become active in monitoring and protecting their local waterways. Volunteers monitor their local water ways and undertake projects to improve the quality of the waterways. There are seven groups currently registered with Waterwatch in the Muswellbrook area.

Waterwatch

Council’s Corporate Water Consumption

Water Campaign Local Action Plan

In January 2004, Council made a further commitment to protecting water resources by joining ICLEI – Local Governments for Sustainability Water Campaign (ICLEI). In November 2004 Council completed Milestone 1. This program provides a strategic framework in which Council can develop and implement a number of programs to reduce both water conservation and improve water quality.

This Local Action Plan (LAP) will provide strategic direction on a number of management practices within Councils’ operations and throughout the community. This LAP aims to:

- Review current levels of corporate and community water consumption to compare current levels with 03/04 baseline data;

- Identify specific water management practices and actions based on Milestone 1 data and the suggestions of a cross section of council staff gathered through a day long facilitated workshop; and
- Continue the comprehensive integrated management of water resources for Muswellbrook Shire Council.

During 2009/2010 Council has been working toward achieving Milestone 4 of the Water Campaign ^{TM}. Milestone 4 involves implementing and quantifying water conservation and water quality actions. To achieve Milestone 4 council must have achieved 20% of its corporate and community water conservation goals.

Systems have been implemented to record water savings through all actions implemented for Milestone 4 and an automated system has been developed for reporting water use in individual parks to the relevant officer which allows for efficient tracking of water use.

The water conservation goals adopted by Council in 2009 were:

- Reduce Council's corporate potable water consumption by 20% on 2003/2004 base year levels by 2015. The base year consumption was 205 000 kL.
- Reduce the community's potable water consumption by 16% on 2003/2004 base year levels by 2015. The base year consumption was 2 624 000 kL.

The water quality goal adopted by Council in 2009 was to achieve 50 points worth of actions by 2015.

A defined number of points are allocated to improving water quality and conservation activities such as: installing water efficient toilets, flow regulators, water tanks and irrigation activities for water conservation and developing education plans to promote things such as reducing pesticide and herbicide use in private and commercial gardens that may run off into local waterways and developing and circulating educational material to promote composting and recycling.

These goals work in with the Demand Management Plan goal of 16% reduction by 2035. Achieving the Water Campaign goals will be an excellent progress report on achieving the demand management goal. Reducing residential consumption/connection/year in line with DEUS averages would achieve the majority of savings needed to reach this goal.

The following corporate water conservation actions were implemented during 2009/2010:

- Water audits were conducted at sites where water consumption is traditionally high to assess which water conservation measures would be most effective.
- AAA rated appliances are being installed in an ongoing process as part of Council's Revolving Energy fund.
- 100 % of treated effluent from council's sewerage treatment plant continues to be reused.
- The leakage at Muswellbrook Pool was determined and is currently under control.
- The disinfection method of backwash from the pool has been reviewed and changed to reduce current water loss.

The following community water conservation actions were implemented during 2009/2010 :

- The BASIX program has been implemented and encourages the installation of water efficient fittings for new residential developments.
- Council has adopted a Best Practice Pricing Policy for the Council Water Utility to encourage water conservation amongst the community.

ICLEI Water Campaign

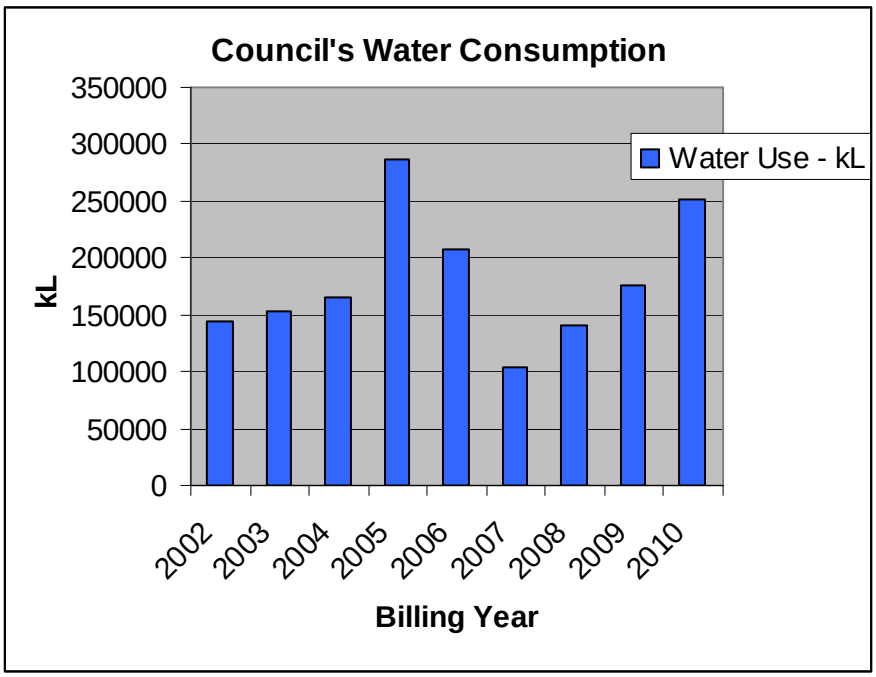


Figure 1: Council's Corporate Water Use by Billing Year

Council's Corporate Electricity Consumption

The majority of electricity in NSW is produced through coal fired power stations. More sustainable forms of energy are also available in some areas of the State such as natural gas, petroleum products, thermal, solar and wind energy. These forms of energy production are becoming more widely recognised and utilised as they become more efficient and cost effective however the combustion of coal to produce electricity remains the predominant energy source.

Council's electricity consumption for the reporting period has increased by 3% when compared to the previous reporting period. Council will continue to aim to reduce electricity consumption despite increasing its operations.

Council's Administration Building has a demonstration photovoltaic array that supplements the electricity use of the building. The average annual energy contribution from the photovoltaic panels was 2.83 MWh with a daily average of 7.76 kWh. This is sufficient power for an energy efficient household without electric hot water, stove, and air-conditioning or heating. This has saved a total of 882 kg of CO_2 emissions over the reporting period.

Council's Fuel Usage

Muswellbrook Shire Council is responsible for a large fleet of vehicles that are required to assist Council in carry out all its functions. The fleet varies from 4 cylinder cars, four wheel drives, light plants and heavy vehicles. Table two details fuel consumption of Council's fleet for the past two years.

Table 2: Council Fuel usage across fleet

Type of Fuel	07/08 Consumption	08/09 Consumption	09/10 Consumption
Unleaded	32.77 kL	28.59 kL	33.95 kL
Diesel	164.55 kL	186.98 kL	257.87 kL
LPG	23.05 kL	18.84 kL	16.45 kL
E10 Unleaded	56.92 kL	66.44 kL	38.6 kL
TOTAL	277.30 kL	300.85 kL	346.87 kL

Council fuel use has increased by 15% since the last reporting period. It had been anticipated that fuel use would decreased or remain steady compared to last year due to substantial changes in the fleet over recent years.

Consumption of LPG has reduced with replacement of some LPG vehicles. Further investigation into the composition of the fleet would be needed to ascertain reasons for these increases.

Council is continuing to select lower fuel consumption vehicles when vehicles are due for replacement.

National Greenhouse Emissions Reporting Scheme

The National Greenhouse and Energy Reporting Act 2007 (the NGER Act) came into effect on 29 September 2007. The NGER Act is administered by the Federal Government Department for Climate Change introduces a single national reporting framework for the reporting and dissemination of information about the greenhouse gas emissions, greenhouse gas projects, and energy use and production of corporations.

The first annual reporting period began on 1 July 2008. Council is not required under the Act to submit a report for the 2009/2010 reporting period because emissions from Council's operations have not exceeded any of the relevant reporting thresholds this year. See Table 3:for an estimation of Council's total CO_2 emissions.

Table 3: Council's estimated CO_2 emissions

Emission Category	kt CO_2-e 08/09	kt CO_2-e 09/10	Scope
Electricity	4.768	4.918	2
Diesel	0.504	0.696	1
Automotive gasoline (petrol)	0.210	0.164	1
Methane emissions			
Waste Management Facility	14.13	14.91	1
Water and Waste	2.740	2.741	1
Total Methane emissions	16.87	17.651	1
Total 2009/2010	**22.384**	**23.455**	**1 & 2**

Council's emissions are anticipated to increase due to the nature of the emission calculations for the Waste Facility. Since methane emissions are calculated on the exponential decay of waste placed in the void in the past, emissions will therefore increase for every year waste is added to the void.

Council's petroleum fuel use has increased over 09/10 period and green house gas emissions from fuel have correspondingly increased by 18%.
Council's electricity use has increased over 09/10 period and greenhouse gas emissions from electricity use have increased by 3%.
Council's greenhouse gas emissions from waste have increased by 6%.
Overall council's total greenhouse gas emissions for the 09/10 period have increased by 5% when compared to the previous reporting period.

In 2003 Council adopted the Greenhouse Reduction Strategy. The strategy outlined greenhouse gas emission reduction targets over the 1999 figures. These targets were considered achievable at the time however during the last 10 years significant changes in Council's assets and operations as well as the methods for accounting for greenhouse gas emissions with regard to land fill waste has resulted with the original targets not being met. Greenhouse gas emissions associated with electricity and fuel usage, the only comparable figures, are as follows.

Table 4: Council's Greenhouse Reduction Strategy

Year	Tones CO_2-e
1999 inventory year	2,983
2004 re-inventory year	7,582
2010 projection (after 2004 re-inventory)	3,309
2010 actual	5,804

The decrease from the 2004 year is encouraging, however current trends are for increasing usage. Council has a Revolving Energy Fund to fund innovations that will reduce energy consumption with regular payments being made back into the fund out of savings realised. In the 2009/10 period some $370 000 was committed to assisting in the reduction of electricity consumption at some of Council most resource hungry facilities. It is hoped to see a turn around in the current trend.

Human Settlements

Management Plan Goals

- To provide residents with an efficient, reliable and effective domestic waste collection service.
- To achieve a self funded, efficient and environmentally sustainable waste management service to meet community needs and legislative requirements
- Increase public awareness of recycling, reuse and waste reduction.
- Maximise resource recovery at Muswellbrook Waste Depot by promoting source separation by providing written information to all customers therefore increasing the lifespan of council's void.
- Investigate and promote sub-regional co-operation for waste disposal.
- To maintain the open space recreation assets in accordance with agreed levels of service and within available budget.
- To provide and maintain assets which allow the sustainable delivery of selected services in the interest of fulfilling recognised social, sporting and recreational needs, to a standard which is understood and accepted by the community.
- Identify and pursue grant funding for Aboriginal Heritage Study for entire LGA.
- To maintain communication systems between Council and the Aboriginal community
- To operate and maintain an effective heritage management and assessment process.
- To provide and maintain assets which allow the sustainable delivery of selected services to a standard which is understood and accepted by the community.

Indicators

Indicator	08/09	09/10	Trend
Development Consents determined by Council	290	290	–
Tonnes of waste disposed of	22436	22571	✘
Tonnes of recycling diverted from landfill	2508	1970	✘
Approximate lifespan of council's void	10-15 years	15 – 20 years	✔
Tonnes of green waste diverted from landfill	4581	2076	✘
Number of Complaints to Council from the community	63	95	✘
Number of heritage items listed in LEP	134	134	✔
Number of grants secured to fund an Aboriginal Heritage Study	0	0	✘

Key for trends:

✔ Towards sustainability
✘ Away from sustainability
– No trend
? No data

Discussion

Population and Settlement Patterns

Muswellbrook Shire Council does not keep track of population in the Shire between National Censuses. Therefore Council relies on the data provided by the Australian Bureau of Statistics. The last National Census population count was in 2006. The data provided by the ABS for the 2006 Census is included in the tables and graphs below. As of 30 June 2008 the Australian Bureau of Statistics has estimated the population of the Shire to be 16116.

Table 5: Population distributions in Muswellbrook Shire as of 2006 Census

	0-14	*15-34*	*35-54*	*55-64*	*65+*	*Total*
Muswellbrook	2549	1451	4128	1012	1083	10223
Denman	309	178	532	175	192	1386
Rural	834	431	1716	372	274	3627
Total	3692	2060	6376	1559	1549	15236

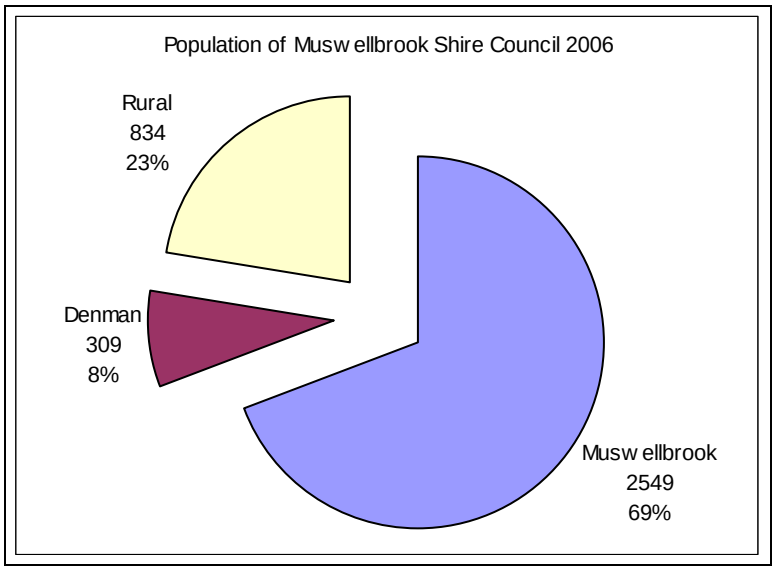


Figure 2: Population of Muswellbrook by geographical distribution

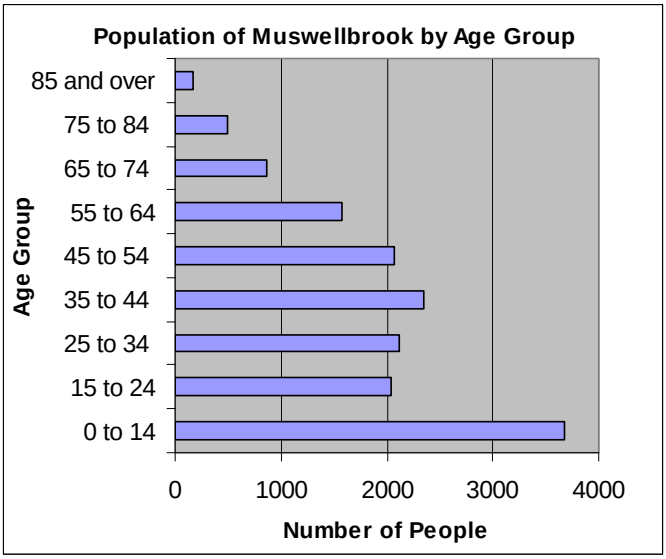


Figure 3: Population of Muswellbrook by age group

It should be also noted that the population of Muswellbrook is significantly impacted in the last reporting period by extensive Mine development and expansion. Both Mt Arthur Coal and Xstrata Mangoola Coal have been undertaking significant construction projects employing several hundred contractors. These workers typically reside in the towns during the week while working and go home to families on the weekend. Therefore they place demands on infrastructure, waste and water without necessarily adding to our official population figures. This makes it difficult to assess and justify the need or use of infrastructure and services.

Economic Development in Muswellbrook

During the 2009-2010 reporting period Muswellbrook has mainly undergone statewide development that required NSW Department of Planning approval as opposed to council approval. There were a small number of large scale developments that Council did approve including:

- A 22 lot residential subdivision at Ironbark Ridge Estate
- An upgrade to a horse stud near Sandy Hollow
- The installation of 30 horse stalls in Denman

Other council developments that began in the 2009-2010 reporting period include:

- Upgrades to the Denman Recreation Area
- Construction of the Muswellbrook Skate Park
- Upgrades to the Muswellbrook Pool.

Muswellbrook Local Environmental Plan

The Muswellbrook Local Environmental Plan 2009 was gazetted on 17 April 2009. The LEP resulted in the rezoning of all land within the Shire in accordance with the State Government's LEP template and sets new development standards for heritage conservation, environmental protection, minimum lot sizes, building density and height limits.

The LEP identifies a number of urban release areas on the fringes of Muswellbrook Township and Denman village and prescribes new development standards to control and manage development in these areas.

In order to cater for future population growth and urban expansion, the LEP has zoned additional land in West Denman for residential development which could allow up to 450 new lots to be developed. There is ample residential land in Muswellbrook for future development for approximately the next 30 years.

The LEP contains provisions relating to environmentally sensitive land – biodiversity which aims to protect the biological diversity of native flora and fauna, protect ecological processes necessary for their continued existence and encourages the recovery of threatened species, communities and populations and their habitats. Areas of environmentally sensitive land within the Shire have been mapped on an Environmentally Sensitive Land Map which supports the LEP document.

Complying Development Certificates

The number of Complying Development Certificates issued by Council and accredited certifiers in the 2009-2010 reporting period has increased slightly when compared to the previous year. This could be due to recovery from global economic downturn and the economic stimulus provided by the state and federal governments which led to substantial development in the shire.

Development Applications

The number of development applications determined by Council in the 2009-2010 reporting period has remained stable when compared to the previous reporting period. There has been a small increase in residential applications and a small decrease in commercial applications while industrial applications have remained stable. The increase in residential applications may be a direct result of the state government economic stimulus package for home buyers.

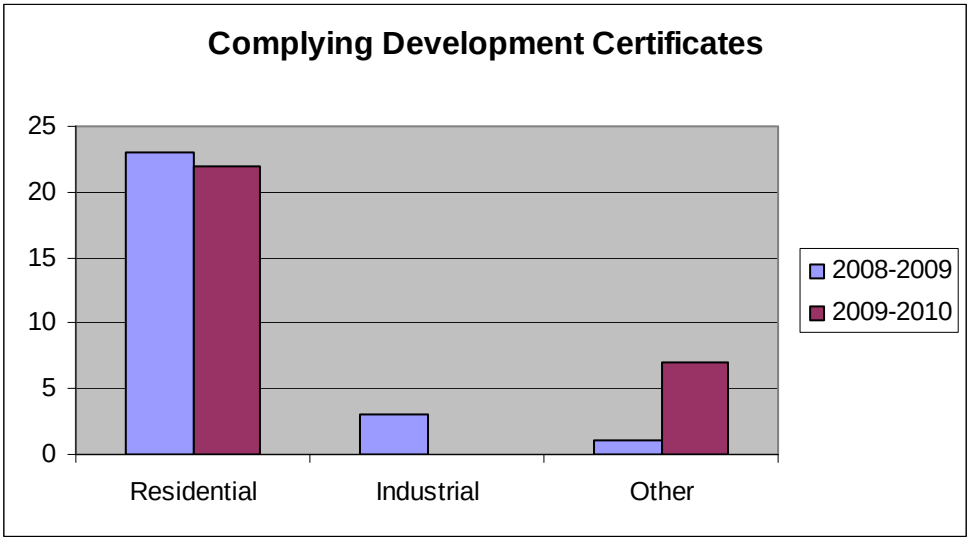


Figure 4: Complying Development Certificates Issued

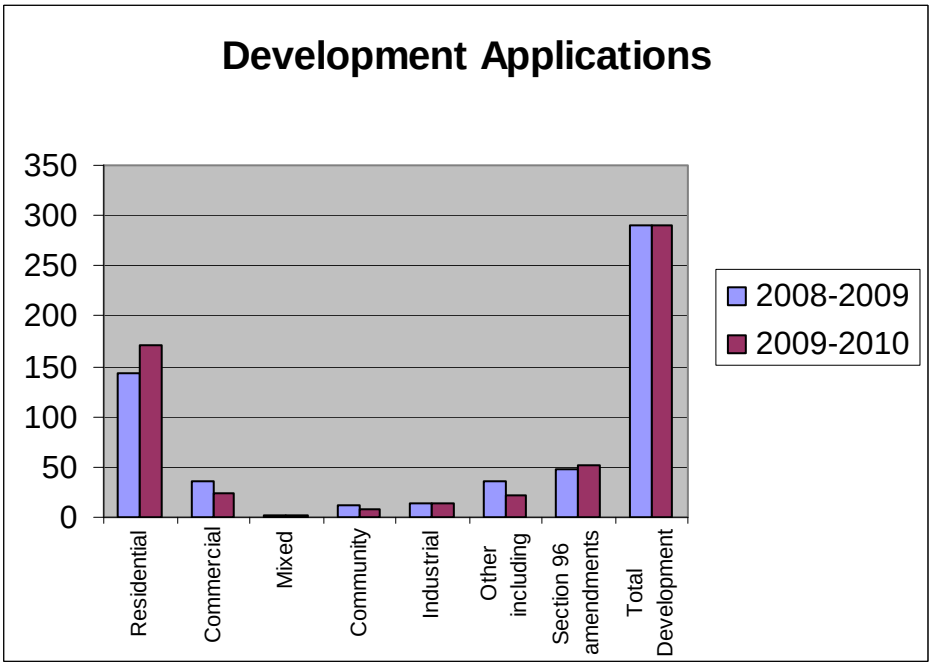


Figure 5: Development Applications Issued

Major Projects

The NSW Department of Planning assesses major projects in the Muswellbrook Shire. In 2009/10 reporting period the following projects were approved by the department.

Table 6: Major projects approved by Department of Planning in Muswellbrook LGA 2009/10

Project	Approved
Lidell Power Station East West Gas Supply Pipeline	20/07/2009
Lidell Power Station North South Gas Supply Pipeline	24/07/2009
Drayton Mine: Modification 1	16/10/2009
Mangoola Mine: Modification 3	4/11/2009
Bayswater B Power Station: Concept Plan Application – New Baseload Power Station	12/01/2010
Kyoto Energy Park : Project Application	31/01/2010
Mangoola Mine : Modification 5 – Night time works	23/02/2010

A further 4 projects applications were received by the department in the reporting period.
Details of major projects in the shire can be found at the Department of Planning website.

Other development is carried out in the Shire under the provisions of the Infrastructure State Environmental Planning Policy (SEPP). These include work on a range of infrastructure facilities including roads, water and sewer, energy transmission line, railways track work and school redevelopments. Each authority must comply with strict guidelines; however Council is not involved in the approval process for these developments and is not always informed about such projects.
Council is aware that significant infrastructure work is being carried out in the shire and in the most part this is related to the development of coal mining.

Waste

Muswellbrook Shire Council provides a waste disposal service and facilities to the community. The sustainable reuse and/or disposal of waste products have therefore become a major focus of resources for all local governments. Reducing waste to landfill extends the life of Council's voids. This in turn reduces the need to find and develop new waste disposal areas. During the last reporting period the void had a 10 – 15 year lifespan. With the purchase of a landfill compactor during this reporting period the lifespan of the void has increased to a 15 – 20 year lifespan.

Council's collection service includes kerbside collection of household waste, recyclable material and garden organics to urban and several rural areas of Muswellbrook, Denman and Sandy Hollow. The Muswellbrook Waste Management Facility receives waste from kerbside collection through the three bin system as well as waste brought to the Muswellbrook and Denman Transfer Stations. Several Waste contractors also dispose of waste at the facility.

A total of 21 332.23 tonnes was collected from the Muswellbrook Shire at the Waste Management Facility in the 08/09 year. A further 2 499.7 tonnes was collected from Upper Hunter Shire kerbside collections. Of the total from Muswellbrook Shire, 15 957.11 tonnes was disposed of in the landfill, 2 520.12 tonnes was recycled through the Materials Recovery Facility and metal recycling and 2855 tonnes was green waste.

Waste to landfill has increased this year with an additional 611 tonnes or 4% of waste disposed of to landfill in comparison to the 08/09 reporting period. The amount of recycling has remained fairly consistent over several years as a percentage of total waste when compared to the 08/09 reporting period. Green waste collected in 09/10 has decreased by 1727 tonnes when compared to the 08/09 reporting period.

Although there has been an increase in the population since the last reporting period the increase in waste to landfill is more than the population increase should account for. This highlights the need for an education program for the entire community about reducing waste and increasing recycling if the void is expected to serve the community for the next 15 to 20 years. Council has arranged for a community education program about waste reduction to begin in the next reporting period.

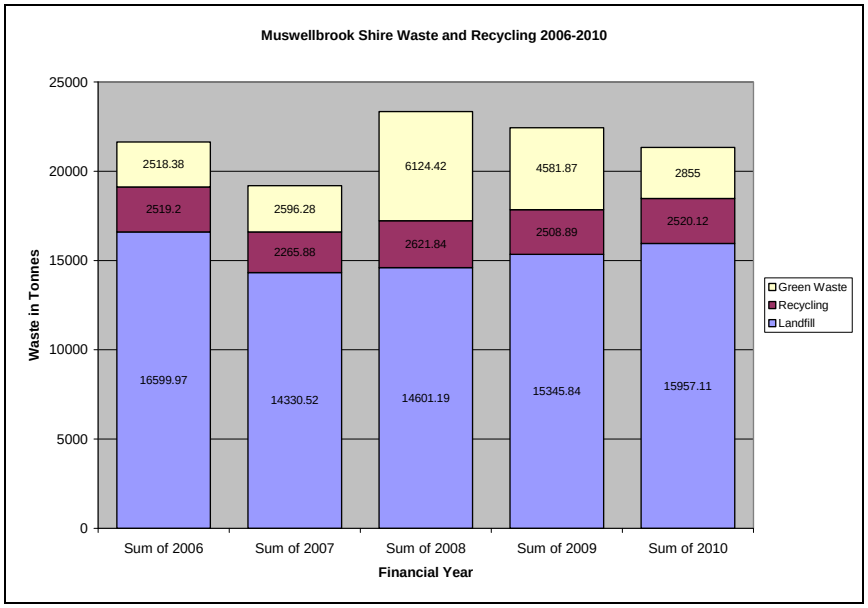


Figure 6: Amount of total waste disposed From Muswellbrook Shire

E-Waste

Electronic Waste or e-waste can come in many forms. There are many types of plastics and metals found in equipment such as

- Computers
- Photocopiers
- Printers
- Faxes
- Monitors
- Batteries

Some of these plastics and metals can be highly toxic and environmentally damaging.
http://www.cleanup.org.au/PDF/au/e_waste-fact-sheet.pdf

In 2008 Council held its first E-Waste Collection Day. Due to the success of this collection day, Council has made this an annual event. Council held an E-Waste Collection Day in December 2009 at the Muswellbrook Indoor Sports Centre. There was a total of 12.1 tonnes of e-waste collected and diverted from landfill. Almost 12 tonnes of this waste was recycled.
E-Waste

Hoarder's Haven

Hoarder's Haven is a successful and innovative way of reducing the amount of waste that goes to landfill. Items that are in good condition and are reusable are either donated by members of the public using the waste depot or are salvaged from collected waste by waste depot staff. Items available at Hoarder's Haven include such things as furniture, antiques and sporting equipment.
Hoarder's Haven is open on demand at the waste collection depot.
Hoarder's Haven

Amenity

Amenity can be defined as what people value about a place and how it affects their quality of life. The qualities of a place vary from person to person and with cultural and socio-economic differences. Things that can affect the amenity of an area include the physical landscape, open spaces, recreational areas, accessibility and level of noise.

Council provides and manages selected recreation services to the community, with active and passive recreation for all age groups the aim. These facilities include

- Playgrounds
- Parks
- Swimming Pools
- Sports Fields
- Golf Course
- Pathways and
- Cycle Ways

Community Complaints

Council receives a large number of complaints from the community regarding issues that affect the amenity of the local area. Traditionally environmental complaints mainly relate to noise and dust. Odour and illegal dumping of waste are the other two categories that Council commonly deals with.

Issues such as noise pollution which can be described as any noise that has a negative effect on daily life, odour which is difficult to regulate and very subjective and dust which is a major issue in this area due to the high number of extractive industries and state approved developments which are in close vicinity to housing.

See table 5 and figure 6 for the number and types of complaints received by Council during this reporting period. There has been an increase in complaints about odour, dust, erosion and sediment control and illegal dumping since the last reporting period. Overall complaints to council have increased by 51% when compared to last years

reporting period. This may be due to Council's new service request system which has resulted in better recording of complaints.

In attributing any value to complaint numbers, it must be considered that the number of complaints or reported incidents does not necessarily reflect the state of the environment and in of itself is a poor indicator. The higher level of complaints received and recorded is impacted by the perception in the community that Council is able to address the cause of complaints, improved systems for recording and dealing with complaints, and the communities unwillingness to "put-up" with less than desirable condition. Of course it may also reflect that these matters are inherently changing in frequency and or magnitude. Table six details complaint types and numbers received by council.

Table 7: Type and Number of Community Complaints

Complaints	2008/2009	2009/2010
Odour	4	13
Noise	50	36
Dust	6	13
Erosion/Sediment Control	0	2
Illegal Dumping	3	33
TOTAL	**63**	**95**

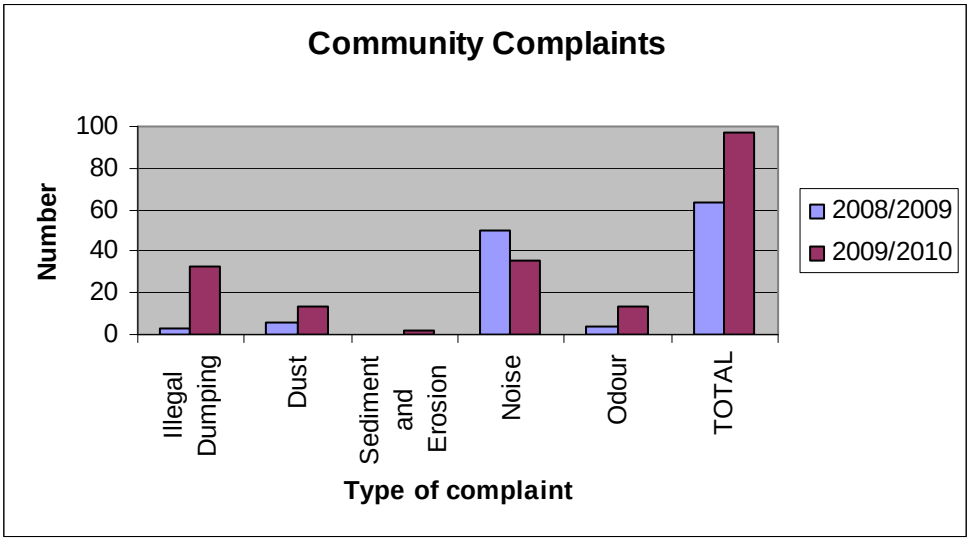


Figure 7: Type and Number of Community Complaint

Illegal dumping, odour, dust and sediment and erosion complaints have increased since the last reporting period, while complaints about noise have decreased.

In general the increase in Illegal dumping gives Council greater opportunities to investigate and prosecute offenders, especially when specific information is provided. Dust Complaints increased along with several significant earth works developments occurring during hot, dry and windy periods on site within or on the edge of urban areas.

Several of the odour complaints relate mainly to rural activities occurring close to town and are a by-product of adjacent incompatible land uses. Council seeks to ensure the best agricultural practices to reduce odour are implemented.

Council manages many of these environmental issues through the following measures:

Complaints Protocol – enables Council to adequately deal with and monitor complaints;

Sediment and Erosion Surveys – Council undertakes monthly Sediment and Erosion Surveys of construction sites to ensure these common sources of sediment are maintained at appropriate standards;

Litter and Illegal Dumping Identification Protocol – enables all Council staff to easily report regular littering and illegal dumping site for regulatory follow-up and specific cleanup action for event such as Clean-up Australia Day;

Noise Guide for Local Governments – Council undertakes responses to and management of noise complaints as per the recommendations in this document.
http://www.environment.nsw.gov.au/noise/nglg.htm

NSW Industrial Noise Policy – used in the management of commercial and industrial noise emissions and the determination of noise limits for operations and activities.
http://www.environment.nsw.gov.au/noise/industrial.htm

Noise Monitoring – as per specific approvals all mining operations are required to monitor and manage the level of noise emissions. The relevant approvals for the mining operations also require that the data and interpretations be reported to the community and Council on a regular basis

Complaints about dust can be addressed by council if the source of the dust is from a source other than a mine and prevention notices can be issued. Dust from mining industry operations should be reported to the relevant mine community information line.

Dust Monitoring – Mining industry operations are required to monitor and manage the levels of dust. The relevant approvals for the mining operations also require that the data and interpretations be reported to the community and Council on a regular basis. Council is supporting the Upper Hunter Air Quality Monitoring Network that is due for commencement in late 2010.
http://www.environment.nsw.gov.au/aqms/upperhunterQnA.htm

Complaints about Major Projects

In relation to complaints about Major Projects, including mining and the power stations, Council has adopted a policy outlined in Council's Guidelines for Community Consultative Committees. The policy requires the complainant to make the complaint to the Operating Company in the first instance. Phone numbers for each operation are regularly published in the local newspapers and are available on Council's website.

Where the complainant is not satisfied with response or actions by Operating Company, the Operating Company will refer the complaint to Muswellbrook Council (Environmental Services Department, Environment Manager). The individual may also refer the matter to Council directly.

Heritage

As part of Council's commitment to heritage management, an agreement is maintained between NSW Heritage Office and Council to support the current heritage advisory service. This agreement ensures that Councils Heritage Advisor attends Council and is accessible to the community on at least one day per month.
http://www.heritage.nsw.gov.au/

During this reporting period there have been no new heritage sites have been added to the Heritage Register. Council will continue to maintain and monitor heritage issues across the Shire

Provisions for heritage assessment have been included in the Local Environment Plan and Development Control Plans 2009. Under the LEP the objectives are

- To conserve the environmental heritage of Muswellbrook, and
- To conserve the heritage significance of heritage items and heritage conservation areas including associated fabric, settings and views, and
- To conserve archaeological sites, and
- To conserve place of Aboriginal heritage significance.

Local Environment Plan

Muswellbrook Shire Council has adopted a Heritage Strategy as part of Council's commitment to heritage management, and an agreement between NSW Heritage Office and Council to support the current heritage

advisory service. This agreement ensures that Councils Heritage Advisor attends Council and is accessible to the community on at least one day per month.

The Heritage Strategy outlines actions to be followed by Council to promote heritage conservation throughout the Muswellbrook Shire Council area.

The Muswellbrook Local Environmental Plan 2009 was gazetted in April 2009, and lists 134 items of environmental heritage and identifies three (3) heritage conservation areas within the Muswellbrook Shire Council area.

Aboriginal Heritage

Council formed the Aboriginal Reconciliation Committee in 1997 to ensure that council maintains effective communication systems with the local Aboriginal people. The committee consists of representatives from council, the Aboriginal community, government and non government Aboriginal service providers, NSW Police and the Local Ministers Association.

The heritage of Aboriginal people is an important aspect of development assessment which is considered by Muswellbrook Shire Council. Developments undertaken must consider and preserve where possible the sites and artifacts considered to be of cultural significance to the local Aboriginal tribes. Council provides listings of proposed developments to the Wanaruah Land Council to facilitate consultation regarding the potential for Aboriginal Heritage impacts arising from development, if any impacts are found to occur the Wanaruah Land Council can then advise on the development.

Council applied for two grants worth a combined total of $78,000 to undertake a Shire Wide Aboriginal Heritage Strategy during the reporting period however these applications were unsuccessful. Council will continue to explore funding opportunities for such a project so that the strategy can be completed.

Aboriginal Heritage

European Heritage

Muswellbrook Local Government Area has an extensive and well documented European heritage. This has resulted in a large number of sites and structures which have heritage value. The management and preservation of these sites and structures is important to Council and is managed through the maintenance of a Heritage Inventory.

The most significant impact on heritage items is caused by inadequate management of the item which allows the destruction or damage to the building or site. The most common threat to heritage buildings is through the lack of maintenance allowing them to become derelict and possibly unsafe requiring extensive restoration works or even demolition.

A number of heritage homesteads in the area are located in close proximity to open cut coal mining which are often subject to blasting vibrations. This could result in further damage to these buildings and sites if not managed correctly.
European Heritage Information

Transport

Council is responsible for the management of a large road network consisting of State, Regional and Local roads. The network includes approximately 69 km of state highways, 39km of regional road, and 583 km of local roads. Council undertakes road maintenance and improvement activities on the network using a combination of its own workforce and specialist contractors.

The road network carries traffic generation by extractive industries, industrial estates, commercial and agricultural activities, and residential suburbs. The main towns served are Muswellbrook and Denman.

In addition to State and National highways, the Shire is also served by a rail network, providing freight and passenger services to industrial and residential sectors. Council lobbies State and Federal governments to ensure the provision of adequate road and rail infrastructure.

Public transport in the form of buses in the urban area of Muswellbrook is a viable and operational form of public transport. However across the broader local government area the distance between populated areas of Muswellbrook, Denman and Sandy Hollow along with the cluster settlements makes public transport a non viable option. This spread of settlements requires a reliance on private transport to link residents to essential infrastructure and services.
Transport

Paved Road Surfaces

During this reporting period Council accepted a total of 813 lineal metres of constructed road length, all sealed equating to 1600.5m2 of paved road space. Council does not maintain, except under contract to the RTA or keep inventory, relating to state roads.

The Bicycle Plan

The construction of cycle ways and walkways within newly developed areas within the local government area was introduced by Council to promote the use of sustainable transport methods within the local community. Council will continue to expand the linkages of cycle ways to encourage the use of bicycles to provide low cost, sustainable transport. Council currently manages 10.1 km of shared pathways, there are no dedicated Bicycle Paths within the Council and they are all shared paths. There are plans to add further shared paths in the future.

Water Resources

Management Plan Goals

To operate water supply and sewerage systems to provide agreed levels of service by
- Operating the water and sewerage systems according to the strategic business plan.
- Carrying out the first stage of operational strategies of the Integrated Water Cycle Management (IWCM) Strategy by June 2010.

To provide environmentally sustainable Water and Sewerage services that
- Are affordable
- Meet best value
- Represent industry best practice

The sustainable management of water resources throughout Australia has become a major focus for all populations and organisations. The issue of water supply to communities, industry and the environment has become an ever increasing challenge. The reliance on surface water resources has caused an increase in use of other water sources such as ground water and reuse water such as greywater.

Council provides water treatment and reticulated water supply services to the urban areas of Muswellbrook, Denman and Sandy Hollow and sewerage reticulation and treatment to the urban areas of Muswellbrook and Denman. The fully regulated Hunter River provides a highly reliable source for both Muswellbrook and Denman whilst Sandy Hollow relies on the Goulburn River. The Goulburn River is primarily hard water and as yet there is no softening process being applied.

As the water and sewerage supply authority Council faces a number of challenges in maintaining a high level of service, these include
- Augmentation of water and sewerage facilities to meet population growth
- Improving the serviceability and economic life of assets by regular maintenance and rehabilitation;
- Improving the quality and reliability of Sandy Hollow's water supply
- Fluoridation of Denman and Sandy Hollow water supplies.

Water and Sewerage Services

Indicators

Indicator	08/09	09/10	Trend
Percentage compliance with NHMRC Drinking water Guidelines	99%	99%	✔
Megalitres of drinking water consumed	2095	2508	✘
Percentage reduction in community water consumption from Water Campaign baseline	20%	4%	✘
Megalitres of sewage effluent reuse	994	922	✔
Percentage of sewage effluent reuse	100%	100%	✔
Percentage of water monitoring samples indicate Hunter River water use suitable for Primary Contact	25%	12%	✘
Percentage of water monitoring samples indicate Hunter River water use suitable for Secondary Contact or Stock Watering	82%	87%	✔

Key for trends:
✔ Towards sustainability
✘ Away from sustainability
– No trend
? No data

Discussion

Drinking Water Quality

Council has maintained a sampling and testing program in accordance with the NHMRC Guidelines as it is the local water authority. Overall the water quality has decreased marginally when compared to the last reporting period. This is mainly due to water treatment plant malfunctions and issues with turbidity and hardness that arise from using the Hunter River as a water source. Table seven details water quality compliance for the 2009/10 reporting period.

Table 8: Water Quality Compliance

Physical and Chemical	Muswellbrook	Denman	Sandy Hollow
Physical	95%	95%	54%
Chemical	98%	100%	94%
Key Characteristics			
Turbidity	84%	92%	72%
pH	96%	99%	94%
Colour	100%	100%	100%
Microbiological			
E.Coli	100%	100%	100%
Total Coliforms	99%	100%	96%

Reasons for Non-Compliance

Muswellbrook
The 5% non compliance of physical factors in Muswellbrook is due to

- High hardness which could not be treated because of changes made to the treatment process to treat high turbidity of the river water (source water) during periods of heavy rain
- High turbidity reading due to dirty water in a small part of the distribution system

The 2% non compliance of chemical parameters is mostly due to low chlorine readings.
The 1% non compliance of microbiological factors is due to sample contamination at the time of sampling.

Denman
The 5% non compliance of physical parameters is due to increased hardness and total dissolved solids, turbidity and pH and this is due to a plant malfunction.

Sandy Hollow
Non compliance of physical and chemical parameters are due to the source water being hard water – there is no softening process. Low chlorine levels are due to a plant failure.
4% non compliance of microbiological factors was due to a period of low chlorine levels and possible sample contamination at the time of sampling.

Drinking Water Consumption

Through the Water Campaign, Council has set a goal to reduce the community water consumption by 16% on the 2003/2004 baseline level by 2015. Overall the water consumption in the Shire has increased by 6% on the base line data. Community water use increased by 5% in Muswellbrook and 20% in Denman. Sandy Hollow was the only location to achieve a water reduction and achieved a 17% reduction when compared to the baseline data. This highlights the need for a community water conservation education plan especially in Muswellbrook and Denman. During the reporting period council extracted 2353.51 ML of water from the Hunter River to supply water to the community. Table eight details water consumption across the LGA.

Table 9: Water Consumption across the LGA

Location	Water Consumption (ML)	Water Campaign baseline community water consumption(ML)	Percentage reduction from baseline
Muswellbrook	1882	1792	-5%
Denman	248	206	-20%
Sandy Hollow	20	24	17%
Total	2150	2022	-6%

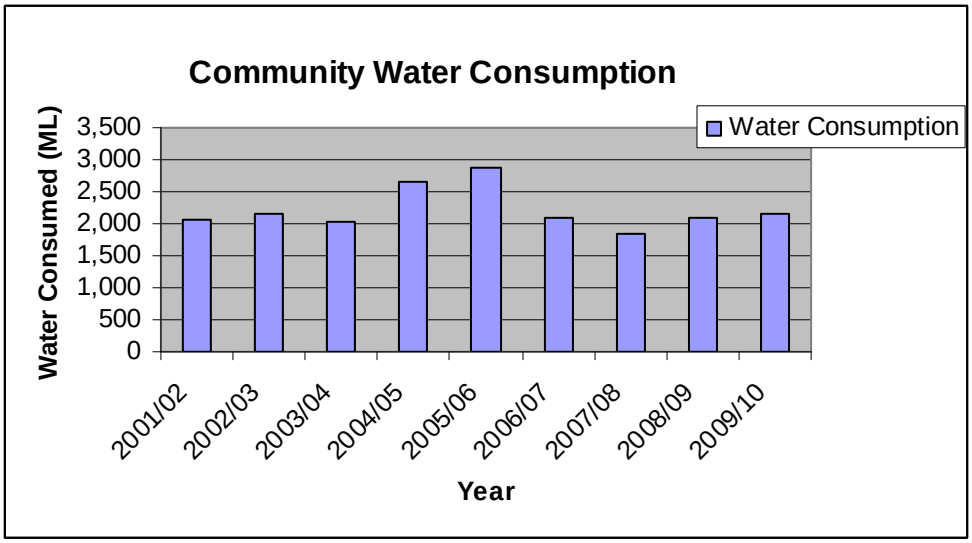


Figure 8: Water Consumption compared across past reporting periods

Integrated Water Cycle Management Strategy

Muswellbrook Shire Council is continually planning its water, sewerage and stormwater business activities. The Integrated Water Cycle Management Strategy aims to maximise the benefit derived from available water resources through the efficient and appropriate management of urban water services. It also encourages the evaluation of opportunities to minimise the impact of the urban water services on the available water resources through the identification and assessment of potential management solutions to address a range of catchment, water resources and urban issues.

An IWCM Strategy considers issues such as

- The future urban water services needs and customer expectations
- The availability of water including water sources such as rainwater, effluent and stormwater;
- The high consumption of town water on a per head of population basis when in comparison to state medians and similar sized populations and
- The impact of town water use on other water users including the environment and future generations.

Demand Management

The Demand Management Strategy provides the water supply managers of Muswellbrook Shire Council an action plan to improve water use efficiency in the Muswellbrook Shire Council local government area.

The potential benefits of a demand management program include improving the efficiency of water resource use and also delaying capital works for new infrastructure by extending the life of current infrastructure and therefore reducing the operational costs of providing town water services. This in turn leads to lower water supply rates for the consumer, a more secure water supply into the future and leaves more water for environmental uses. Balancing investment in demand management initiatives with supply side investments is a best practice management approach for a water utility.

The purpose of the plan is to provide an investment program for the implementation of effective demand management measures in the Muswellbrook Shire Council service area

Drought Management

The Drought Management Strategy establishes how Muswellbrook Shire Council will manage its water supply scheme during periods of drought.

The main drought management issues faced by Muswellbrook Shire Council are:

- The need to supply minimum water requirements to all water supply service areas in order to meet health and sanitary water requirements in the event of total loss of water supply.
- A high residential potable water consumption per connected property compared with other Hunter River local water utilities
- The need to manage community perceptions about availability of water, river flows and restrictions placed on other water users (e.g. agricultural and industry) during drought
- The expected population growth across all the Local Government Area that will increase total water demands; and
- The need to cater for shift workers when applying water restrictions

Treated Effluent Reuse

Council has a target of 100% effluent reuse. This results in nil discharges from either the Muswellbrook or Denman Sewerage Treatment Plants. Council has achieved its target of 100% effluent reuse through its proactive reuse program with local mining companies and golf clubs.

Table 10: Amount of Treated Effluent Reused

Amount of Treated Effluent Reused	ML
Mt Arthur (Bayswater)	700
Muswellbrook Golf Club	143
Denman Golf Club	79
TOTAL	**922**

Hunter River Water Monitoring

Council maintains a monitoring program of water quality in the Hunter River and tributaries. The results are published monthly in local newspapers. The Water quality is expressed as a star rating for turbidity, salinity and faecal coliforms and a water use suitability in terms of primary contact (swimming), secondary contact (boating and fishing), stock watering and drinking.

Look out for the advertisements in local papers to see what the water quality was like from the day of sampling.

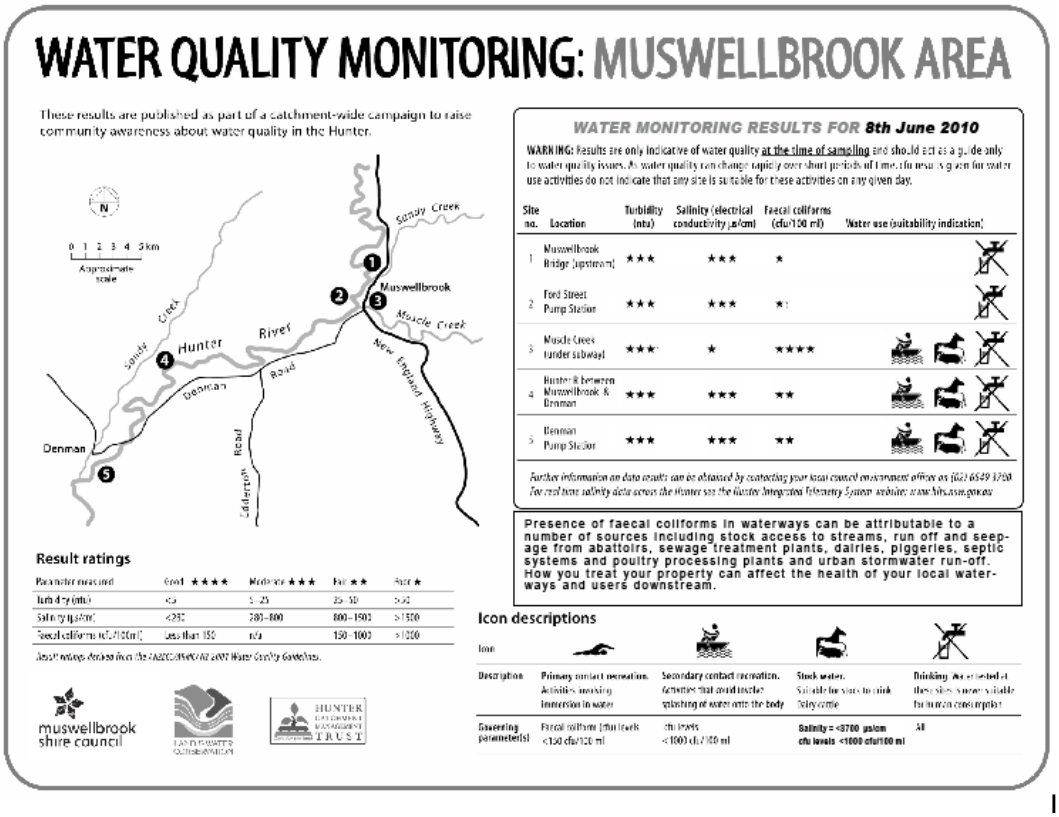


Figure 9: Water Quality advertisement from June 2010

Overall the water quality monitoring sites have been suitable for swimming and primary contact for 12% of the time down 13% from last year. The water use suitability for boating and stock watering has improved since the previous year from 82% to 87.5% of the time.

Land

Management Plan Goals

- Manage community concerns in regard to environmental management of major industries in the Local Government Area.

Indicators

Indicator	08/09	09/10	Trend
Total Number of Contaminated Site remediated	0	0	✔
Number of sites with Notices under the Contaminated Land Management Act	0	0	✔
Coal Mining: Change in Total Active Mining and Emplacement area	No data	No data	?
Coal Mining: Rehabilitation to clearing ratio	No Data	0.2:1	?

Key for trends:
✔ Towards sustainability
✘ Away from sustainability
– No trend
? No data

Discussion

Contaminated Land

Many past land use practices have resulted in the contamination of the land and water around many developments. Contaminated soil can pose a serious health risk and the risk to the environment may affect local waterways and groundwater. The regulation of land contamination by Council is primarily through the planning process. State Environmental Planning Policy 55 Remediation of Land contains several provisions for Council to consider the potential of land to be contaminated before it is redeveloped or rezoned. The SEPP also requires property owners or developers to notify Council when they undertake contamination remediation works and give details of the results of any remediation.

Council holds details of information about past land uses that may have led to contamination and details of any remediation.
During the 2009 2010 reporting period:

- No SEPP55 Category 1 DAs received
- 3 SEPP55 Category 2 notifications c16 received
- 1 SEPP55 Validation notifications c18 received

Council will continue to monitor the redevelopment of land to ensure contaminated land is not redeveloped without due consideration of past uses.

In addition the DECCW also regulates contaminated land that poses a significant risk of harm to human health or the environment. Under the Contaminated Land Management Act, DECCW can regulate major contaminated sites. DECCW holds a Record of Contaminated Land Notices. No notices are recorded for the Muswellbrook Shire Council area.

Coal Mining

Coal Mining is a significant industry in the Muswellbrook Shire covering over 173 Square kilometres in approved mining developments. All mines are required to publish an Annual Environmental Management Report which is available from each mine.

In this State of Environment Report some data has been collated to give a picture of the overall state of the mining industry in relation to land disturbance and rehabilitation. The data from each mine is relevant to the last reporting period of each AEMR and may not be concurrent with other mines or the reporting period of this SoE. However, annual change will remain a good relevant indicator of the industry as a whole.

Coal mining flanks the New England Highway North of Singleton with five projects to the west of the Highway around Muswellbrook and one mine under construction north of Denman.

One mine, Dartbrook, is an underground mine in Care and Maintenance mode with no active mining currently occurring. Mt Pleasant Mine, North West of Muswellbrook is yet to commence substantial works. Five mines are currently in operation, although one of these is essentially three mines being operated as one.

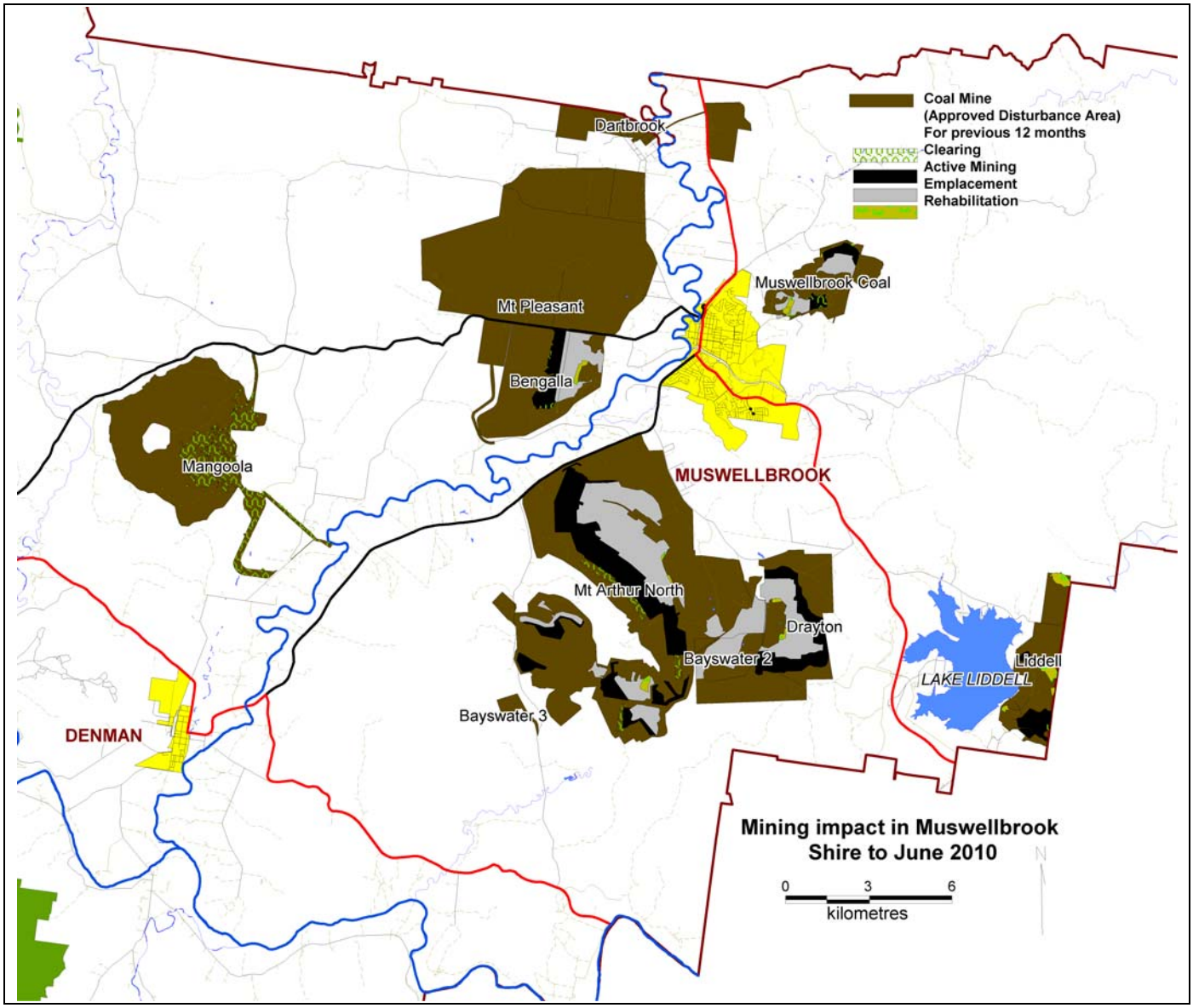


Figure 10: Mining Impact in Muswellbrook Shire to June 2010

The Indicators chosen to track mining land disturbance and rehabilitation are Change in Total Active Mining and Emplacement area and Rehabilitation to clearing ratio.

Change in Total Active Mining and Emplacement area is the difference between the total active mining and emplacement area of the current year minus the total active mining and emplacement area of the previous year divided by the previous year's area multiplied by 100. This will indicate whether overall mining activity is growing or declining. A positive number indicates growth and negative indicates decline. As this indicator requires two years of data it is not possible to report at this time as the areas for the previous year have not been established.

The total active mining and emplacement area for the 2009/2010 reporting period is 23.38 sq km.

The Rehabilitation to Clearing Ratio is the ratio of rehabilitated area to cleared area. In any given year land is cleared for new mining and land is rehabilitated when mining is completed. Where the land cleared over the shire is greater than the land rehabilitated, more land is being disturbed and exposed to erosion than is being stabilised and returned to a sustainable landform. It is considered that a ratio above 1 represents positive efforts in rehabilitating mining landscapes.

While rehabilitation takes significant time, the land can be stabilised and grass cover established reasonably quickly. Therefore any land identified as rehabilitated, may still require maintenance such as weeding or replanting of grasses, shrubs or trees. Long term monitoring of the success of any rehabilitation is not reported in the State of Environment Report.

Further information on environmental issues relating to mining can be sourced from individual mine's AEMR available from the mining company, usually on their website.

Future Projects

Council is continuing to develop its Contaminated Land Information System to provide greater extent of information about contaminated Land Management in the Shire,

Council will further investigate what information can be provided in an efficient and effective manner to inform the community about other land related environmental indicators.

Atmosphere

Management Plan Goals

- Monitor air quality by participating in a weekly air quality monitoring program run by ANSTO and by liaising with local industries who conduct their own air quality monitoring.
- Participate in Upper Hunter Cumulative Impact Study.
- To bring about the inclusion of the Upper Hunter in real time air quality monitoring.

Indicators

Indicator	08/09	09/10	Trend
Average $PM_{2.5}$ total weight nanograms per cubic metre	5393	6572	✘
Number of $PM_{2.5}$ sampling days above NEPM 24 hour reporting threshold	0	2 - 3	✘

Key for trends:
✔ Towards sustainability
✘ Away from sustainability
– No trend
? No data

Discussion

Air Sampling

Council participates in a $PM_{2.5}$ air quality monitoring program with the Australian Nuclear Science and Technology Organisation (ANSTO). The program analyses particulate matter less than 2.5 micrometres in diameter for a 24 hour period twice weekly. The air sampling unit is located at the Water Treatment Plant in Scott St, Muswellbrook.

The data has been compared with previous results and the National Environmental Protection (Ambient Air Quality) Measure PM2.5 Equivalence Program Advisory Reporting Standards.

The results indicate that the fine particulate matter concentrations are below the NEPM Advisory Reporting Standards. Ambient air quality in the 2009/2010 reporting period has not continued the steady improvement seen in the previous two years. Higher readings in September and November contributed substantially to this increase in the annual average for the year.

Figure nine shows the monthly average total weight of PM2.5 samples for each month July 2009 to June 2010. The data shows the average of samples for each month, except those in October and November, were below 7,000 ng/m^3. The maximum daily reading was 380090 ng/m^3 on 23 September during a statewide dust storm. This figure has been removed from the data for statistical purposes. The next highest maximum daily reading was 41397 ng/m^3 on 29 November 2009. October and November 2009 were subject to regular weather forecasts for raised dust across northern NSW and this is reflected in the data.

Nine of the twelve months of the reporting period were close to or below the long term $PM_{2.5}$ average for each month.

The National Environmental Protection (Ambient Air Quality) Measure includes a $PM_{2.5}$ Equivalence Program to determine appropriate monitoring protocols for measuring $PM_{2.5}$ concentrations. Included in the measure are

Advisory Reporting Standards. These standards do not provide any particular health guideline value but rather are a reference for the State Government to report to the National Environmental Protection Council.
Further information on the NEPM is available at www.ephc.gov.au

The Advisory Reporting Standards for $PM_{2.5}$ are 25000 ng/m3 for 1 day and 8000 ng/m3 for the annual average.

During the twelve months to June 2010 the monthly average $PM_{2.5}$ concentrations for Muswellbrook has been below the annual average reporting Standards. The maximum value however was above the 1 day threshold. This includes one day in September and up to 2 days in November.

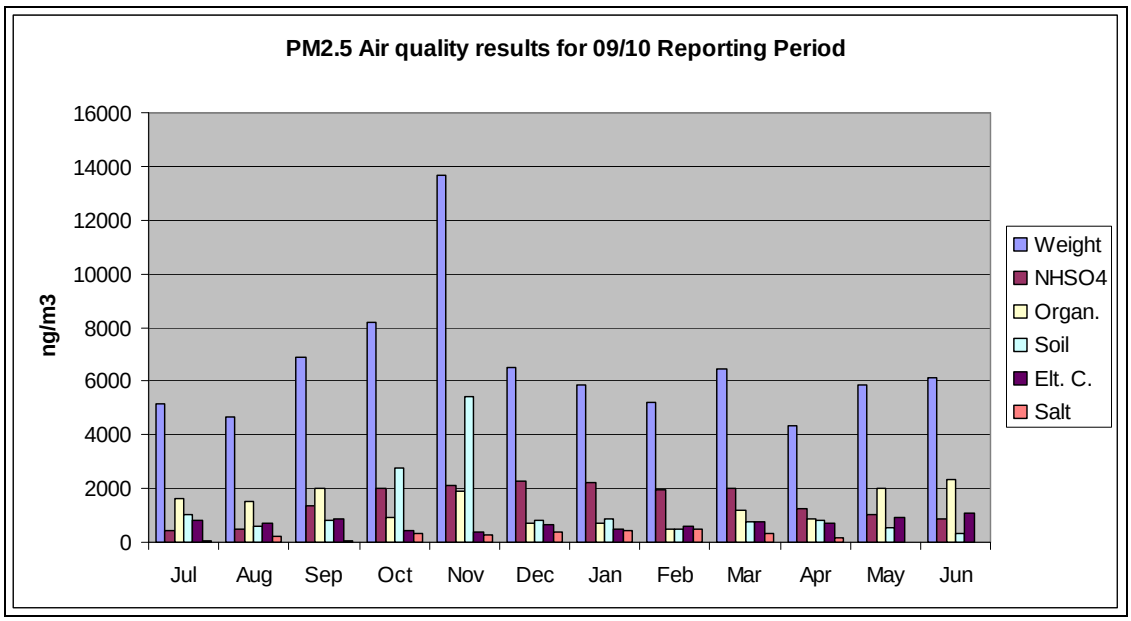


Figure 11: Average monthly results for 09/10 reporting periods by parameters

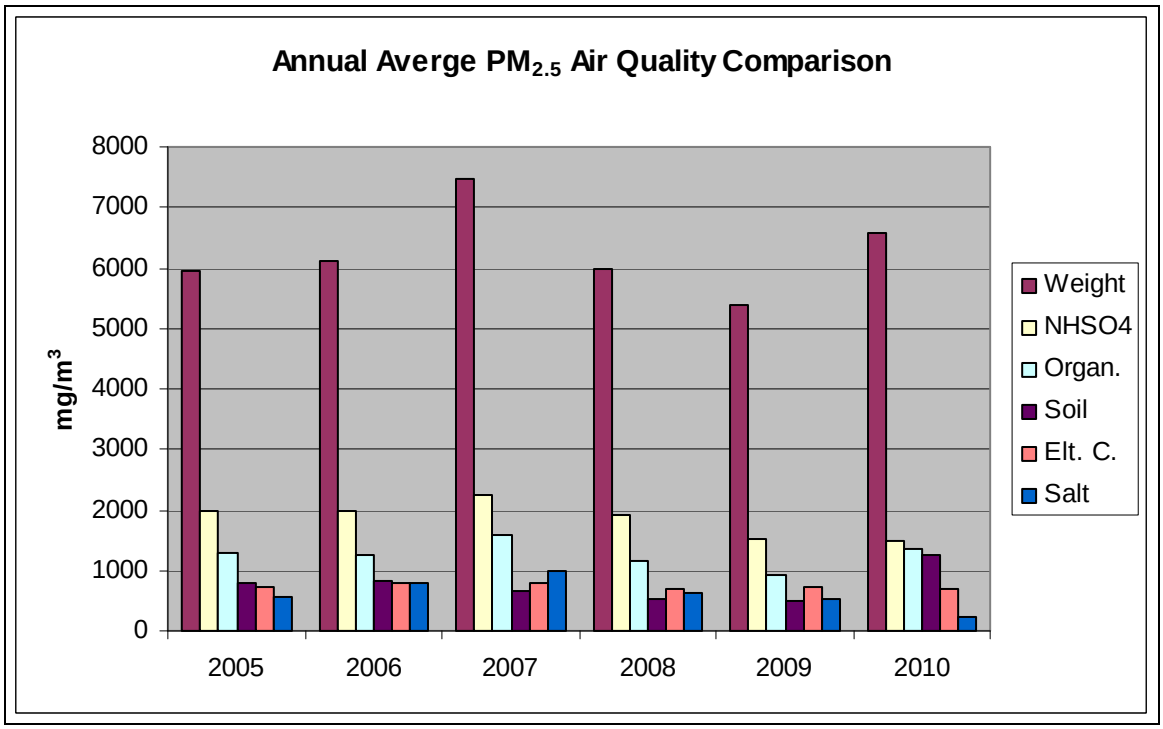


Figure 12: Average Annual results for 2005 to 2010 reporting periods by parameters

Table 11: Comparison of Air Sampling Results

Average ng/m^3	2006/07	2007/08	2008/09	2009/10
Weight	6870	5608	5393	6572
$NHSO_4$	1982	1803	1523	1504
Organics	1342	860	911	1357
Soil	640	436	503	1268
Elt C	796	676	731	705
Salt	687	471	516	225

Table 11: shows the annual average value for total weight, ammonium sulphate, organics, soil, elemental carbon and sea salt. When compared to the previous reporting period there has been an increase in the annual average values for total weight, organics and soil. When compared to the previous reporting period there has been a decrease in ammonium sulphate, elemental carbon and sea salt.

Muswellbrook Council has limited resources to analyse and assess the data collected through this monitoring program; however, this data has been a useful resource for identifying changes in ambient air quality for fine particulates.

Overall it is considered that the data indicates that the 2009/2010 reporting period had elevated levels for fine particulates in comparison to previous years however this was possibly impacted by the presence of statewide dust storms in September and November.

This data is made available to a range of research facilities studying the effects of fine dust in mining related regions.

Future Projects

Council will continue to support this air quality monitoring program and make the data available to a range of research facilities studying the effects of fine dust in mining related regions.

Council is endeavoring to see a network of real time monitoring stations established in the shire to provide more data to the community.

Biodiversity

Management Plan Goals

- To promote the re-establishment of native vegetation.
- To protect the natural resources of the Muswellbrook Shire through the provisions of the Environmental Protection Agency to promote the principles of Ecologically Sustainable Development.
- To protect and maintain natural vegetation corridors and parcels of remnant vegetation
- Support the control of noxious weeds within the Shire

Indicators

Indicator	08/09	09/10	Trend
Records of endangered species, populations and vulnerable species listed in the Wildlife Atlas (flora)	147	202	✔
Records of endangered and vulnerable species listed in the Wildlife Atlas (fauna)	1044	1273	✔

Key for trends:
✔ Towards sustainability
✘ Away from sustainability
– No trend
? No data

Discussion

Biodiversity is the variety of life, the different plants, animals and micro-organisms, their genes and the ecosystems of which they are part. Australia is one of the most diverse countries on the planet. It is home to more than one million species of plants and animals, many of which are found nowhere else.

NPWS Wildlife Atlas

The Wildlife Atlas is a database of sightings and observations of plants and animals in NSW. Anyone can report a sighting to the Atlas. While not all occurrences of the threatened or endangered species will be represented on the atlas, it is considered somewhat representative. Council is reporting on the listing in the atlas in an attempt to understand what information is available about threatened and endangered species in the Shire.

The Wildlife Atlas is an important resource for discovering information about a range of species in the shire. Maps of sights can be produced and further information about the species is available. Only a summary of the data is presented here.

For this reporting period the number of records for each all species has been highlighted. The number of species is not expected to change significantly as the Atlas holds records from earliest observations. Change in the classification of the species may be reflected in the data. However the number of records for any species may increase with time. Any increase in the number of records may indicate more sightings and therefore it may be assumed that there are more individuals of the species. Alternatively, additional records may reflect activity in ecological assessment and therefore the identification of a threatened or vulnerable species may indicate that some form of conservation activity is likely to take place. There has been a substantial increase in the records during the reporting period and this may reflect an increase in interest amongst the general population in the conservation of threatened and endangered species which has resulted in increased reporting of sightings to the Wildlife Atlas. Table eleven details records of species listed on the NPWS Wildlife Atlas for Muswellbrook LGA.

Table 12: Numbers of records an species listed on NPWS Wildlife Atlas for Muswellbrook LGA

Listing	Number of Species	Number of Records/ species
FLORA		
Endangered - TSC Act (E1)	7	30/7
Endangered - TSC Act (E2)	4	142/4
Vulnerable - TSC Act (V)	10	30/10
FAUNA		
Endangered - TSC Act (E1)	8	57/8
Endangered - TSC Act (E2)	0	0/0
Vulnerable - TSC Act (V)	43	1216/43

Visit
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