



State of the Environment (SoE) 2010/11 Supplementary Report

summary report : bringing camden together



Executive Summary

In accordance with the *Local Government Act 1993*, Camden Council has prepared a State of the Environment (SoE) Supplementary Report for the reporting period 1 July 2010 to 30 June 2011. This is the seventeenth report produced by Council that describes the environmental issues which affect the Camden Local Government Area (LGA). This SoE Supplementary Report addresses the environmental themes of land, air, water, biodiversity, waste, noise and heritage. It also reports on all major environmental impacts and related activities, including management plans relating to the environment, special environmental projects and environmental impacts of Council activities. The Report follows the Environmental Guidelines: State of the Environment Reporting by Local Government (DLG 1999) and includes a discussion on environmental issues, as well as indicators used by Council and other authorities to monitor the environment.

Chapter 1 discusses the development and objectives of *Camden 2040, Community Strategic Plan* following extensive consultation with the community of Camden. The Plan represents the vision for the future of the area and was adopted by Council in December 2010. This plan is based on sustainability principles and addressing the many opportunities and challenges that will face the Camden area from significant urban and population growth that is planned for the area in the coming decades. The Integrated Planning and Reporting Package - '*Transforming Community Vision into Action*' was formally adopted by Council on Tuesday 14 June 2011. This package includes *Camden 2040*, the Community Strategic Plan consistent with the Federal and State Plans and legal framework.

Chapter 2 examines the management of land within the Camden LGA, including aspects of urban development, urban salinity, contaminated lands and other related topics such as the impact of its rapidly growing population. Much of this population growth stems from South West Growth Centre which will comprise of approximately 110,000 dwellings, a large proportion of which will be located in the Camden LGA.

Since the last SoE Report, there are 2,178 more vehicles registered in the Camden LGA representing a growth of 4.7%. Given this accounts for vehicles registered as at 30 March 2011, it does not accurately reflect

annual growth for the full twelve months of the reporting period. The National Pollution Inventory attributes the use of motor vehicles as the primary pollutant source of the carbon monoxide emitted into Camden's air. Other diffuse sources of emissions are attributed to activities such as lawn mowing and domestic solid fuel burning. This issue is further discussed in Chapter 3: Air.

As at 30 June 2011, the collective potable water supply increased substantially to 76.4% capacity from 57.6% at 30 June 2010. Sydney Water's Water Wise Rules have remained in place since they were announced on 21 June 2009. Water Wise Rules were introduced as dam storage levels had been maintained at around 60% capacity for 12 months. Water saving initiatives and other water related issues are addressed in Chapter 4 of this SoE Report.

The biodiversity of the Macarthur Region was showcased once again through the Living Macarthur Nature Photography Competition & Exhibition 2010. This project aims to develop community knowledge and understanding of local biodiversity conservation. Apart from the photo competition itself, three 'Walk 'n' Talk' events were held throughout Macarthur which provided participants with an opportunity to experience their local environment, learn photography techniques and to take nature photographs to enter into the competition. The competition culminated in an awards ceremony held in November at the Ingleburn Community Centre in the Campbelltown LGA which displayed 207 photographs taken by 72 entrants throughout the Macarthur area. The photographic exhibition then toured the three Council areas until December 2010. Biodiversity of the Camden LGA is discussed in further detail in Chapter 5.

Approximately 12.8 tonnes of hazardous household chemical waste were collected from 387 residents through *CleanOut*, the free drop off collection service provided by NSW Office of Environment and Heritage (OEH) together with Chemsal and Camden Council. *CleanOut* has proved successful in contributing to keeping Camden's community and catchments healthy. *CleanOut* and other waste minimisation issues are discussed in Chapter 6: Waste.



The total number of noise complaints received by Council for the 2010/11 reporting period was 153, a 63% decrease from the previous year's 414 noise complaints. Once again, barking dogs complaints were the most common noise complaint received by Council but the actual number of complaints has declined dramatically. This is attributed to increased education about dog ownership and the introduction of a new complaint process that requires complainants to fill in a "Barking Dog Nuisance Complaint Form" prior to the complaint being actioned. Further, complaints about noise from "traffic" (primarily from trucks travelling along Richardson Road) caused a 1400% increase in complaints from the previous reporting period. Some of this increase is due to Springs Road being closed for redevelopment that has caused trucks to be diverted onto other roads. The issue of noise is discussed in further detail in Chapter 7.

Heritage management and conservation is about facilitating growth and change whilst retaining the history and special character of Camden. This is one of the major heritage issues Camden is currently facing as a result of having one of the highest growth rates in Sydney. In the reporting period, Council has been involved in discussions and assessments of developments to local heritage items such as Yamba Cottage, St John's Church, Hilsyde House, Rheinberger's Hill Cottage, Camden Town Farm and Wivenhoe Villa. The heritage of the Camden LGA is discussed in further detail in Chapter 8.

Aboriginal Heritage is addressed in Chapter 9. It outlines OEH's review into the engagement of Aboriginal communities in identifying objects and sites of significance and discussing the statutory instruments to manage the impacts on these heritage items. It also makes note of aboriginal items identified in studies at the rezoning stage of residential release areas such as Spring Farm, Elderslie, Oran Park and Turner Road. During the reporting period, Council determined subdivision applications which impacted on areas considered to have potential archaeological deposits relating to Aboriginal heritage. In these cases, the applicants were required to seek the necessary permits from OEH in relation to further investigation and future actions to manage any potential heritage values.

This Report continues to uphold a high standard of environmental reporting and underpins Council's ongoing commitment to providing the community with up to date and relevant information regarding the management of their local environment.

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Acknowledgment

Camden Council would like to acknowledge its Councillors, employees, relevant State Government agencies and members of the community who assisted in the compilation of information for this State of the Environment Report.



1.0 Introduction

BACKGROUND

In accordance with the *Local Government Act 1993*, Camden Council has prepared a State of the Environment (SoE) Supplementary Report for the reporting period 1 July 2010 to 30 June 2011. This Supplementary SoE Report addresses the environmental themes of land, air, water, biodiversity, waste, noise and heritage. It also reports on all major environmental impacts and related activities, including management plans relating to the environment, special environmental projects and environmental impacts of Council activities.

1.1 How to Read this Report

The 2010/11 SoE Report is the seventeenth report produced by Camden Council that describes the environmental issues that affect the Camden Local Government Area (LGA). The report provides details of environmental outcomes for the period 1 July 2010 to 30 June 2011 (known as the reporting period). The Report follows the *New South Wales (NSW) State Government SoE Reporting Guidelines (DLG 1999)* and includes discussion on environmental issues, as well as indicators used by Council and other authorities to monitor the environment.

Each chapter, based around an environmental theme, begins with a background section, providing a brief introduction and outlining any important issues that have become apparent during the reporting period. Each chapter also includes a key indicator, and in some instances, a secondary indicator may also be utilised. A detailed discussion of environmental indicators has been provided in previous Council SoE Reports (Camden Council 1999b and 1999c). Council has however, continued to refine appropriate local environmental indicators that will specifically assist in developing future environmental strategies and actions for Camden. Council's environmental indicators comply with those indicators recommended by the State Government SoE Reporting Guidelines (DLG 1999).

The practice of providing a Sector Statement at the end of each chapter is continued in this report. The Sector Statement provides a summary of the particular environmental theme of the chapter and states Council's position in relation to the importance of the theme. The Sector Statement may relate to a Council policy, statutory compliance requirement or it may generally reflect community expectations.

This is the seventh SoE Report that forms part of the all-encompassing 'Sustainable Camden Report'. The SoE Report with the Annual Report and Community Plan form Part C of the Sustainable Camden Report, which

together satisfy the statutory obligations of Council. Part A forms the Report Card which provides a broad overview of Council's performance according to the five strategic pillars of Council – Accessibility, Economic and Community Development, Environmental Systems, Governance, and Managing Urban Growth. Part B forms the Sustainability Report which provides a more detailed account of the performance across the five strategic pillars. The 'Sustainability Indicators' that are highlighted in Part B – located on Council's website www.camden.nsw.gov.au and discussed in further detail below (Section 1.4 Toward 2025) – should be considered in conjunction with the Sustainable Camden Report.

1.2 Pressure-State-Response Model

The *NSW State Government SoE Reporting Guidelines (DLG 1999)* require Council to identify and apply appropriate environmental indicators for each environmental sector discussed in the SoE Report by applying the pressure – state – response (PSR) model for environmental reporting. Council has been utilising this environmental reporting model for all of its previous SoE Reports and has explained the operation of the model on several occasions (Camden Council 1999b & 1999c).

This reporting model reflects **pressures** exerted by human activities on immediate environments. These pressures cause changes in the **state** or the condition of environmental factors. Monitoring changes in the state of an environmental theme allows relevant agencies to develop appropriate **responses** to address the environmental change.

It should also be noted that in some cases, environmental indicators might not be easily categorised into a "state", "pressure" or "response" (DLG 1999). Where possible, Council will identify the indicator as being either in the state, pressure or response category.

To assist in the identification of indicator categories the following symbols will be used:

- (P) - Pressure indicator
- (S) - State indicator
- (R) - Response indicator



1.3 Ecological Sustainable Development and Local Agenda 21

Ecological Sustainable Development (ESD) is a guiding principle aimed at improving the total quality of life for those that live now and in the future. The definition of ESD is:

“using, conserving and enhancing the community’s resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased” (Australian Commonwealth Government 1992).

All NSW local government authorities are required under the *Local Government Act 1993* to integrate the principles of ESD in their decision-making processes and their everyday operations.

Council’s current Strategic Plan *Camden 2025* reflects this ideal through its outcomes and objectives (Camden Council 1999a). Achievement of these aims will ensure Camden is a place where unique natural systems are protected and enhanced so as to be enjoyed and valued by the community (Camden Council 1999b & 1999c). During the reporting period, Council has completed the review of *Camden 2025* and the developed and adopted *Camden 2040*. During the development of *Camden 2040*, the community was engaged through a variety of events and methods to ensure that Council adequately identified and developed objectives to address the key sustainability challenges in our local area.

Council’s commitment to sustainability principles was again demonstrated through the implementation of actions identified in the Action Plan for a Sustainable Camden Council during the year. This Sustainability Action Plan contains a broad suite of actions to be undertaken by various sections of Council over the next 7 years, to ensure that Camden Council becomes a more sustainable organisation. The plan adopts a broad approach to sustainability in that it is not just environmentally focussed and looks at all aspects of Council’s operational, governance and planning functions.

Further demonstration of Council’s commitment to sustainability and ensuring it ‘gets its own house in order’ is through Council’s participation in the NSW Government’s Waste and Sustainability Improvement Payment (WaSIP) program. This program returns funding to eligible Councils that meet standards set under the program to invest in new and enhanced environmental sustainability initiatives.

To meet the ongoing and new WaSIP standards in 2010/11, Council has developed an Integrated Littering and Illegal Dumping Strategy, Sustainable Fleet Program, Sustainable Procurement Program and a Sustainable Events Policy.

Utilising funding received under the WaSIP program, Council continued its partnership with the Macarthur Centre for Sustainable Living (MCSL) to develop and deliver a range of environmental engagement and awareness-raising activities for the Camden community. Funding was also used to purchase and install energy saving devices for Narellan Library, install solar heating at Mount Annan Leisure Centre and Camden Pool, install pool blankets at Camden Pool and the conversion of electric hot water systems to gas systems for the amenities at the Mount Annan Leisure Centre.

1.4 Towards 2040

As part of the Camden Strategic Planning Process and meeting the objectives of ESD, Council had developed a set of sustainability outcomes and indicators. These indicators build upon the traditional SoE outcomes and indicators by including additional indicators that monitor economic and social elements in addition to the familiar environmental elements that have been the focus of each of Council’s SoE Reports.

The move toward sustainability reporting as opposed to specific environmental reporting recognises that sustainability involves much more than simply the environment. Issues such as public health, social capital and economic well being need to be reported on a regular basis to ensure Council is considering the overall needs of its community which include general environmental responsibilities.

Camden Council adopted the new long term strategic plan, *Camden 2040*, in December 2010. This plan is based on sustainability principles and addressing the many opportunities and challenges that will face the Camden area from significant urban and population growth that is planned for the area in the coming decades.

The Integrated Planning and Reporting Package - *‘Transforming Community Vision into Action’* was formally adopted by Council on Tuesday 14 June 2011. This package includes *Camden 2040*, the Community Strategic Plan consistent with the Federal and State Plans and legal framework.

Council needs to undertake a comprehensive review of its Sustainability Indicators to ensure consistency with the new plan, and this will be undertaken during 2011/12. The existing sustainability indicators can be viewed at the following web site: www.id.com.au/camden/ and by clicking on the Sustainability Indicators icon or via Council's website www.camden.nsw.gov.au by clicking on 'Sustainable Camden'. This website also contains a Community Profile with more information and statistics about the Camden community.

1.5 Community Involvement

Throughout the 2010/11 reporting period Council has undertaken various initiatives to endeavour to make the local community more aware of their surrounding environment and their impacts on the environment.

Community partnerships between Council and local interest groups continue to provide the local environment with many beneficial outcomes including:

- improved chances of obtaining State and Federal grant funding for environmental projects;
- community ownership and responsibility for protecting local environmental attributes; and
- better communication between Council and local residents regarding environmental policy.

1.6 Environmental Education (R)

A number of environmental education initiatives were facilitated by Council to help meet the significant demand from local residents, schools, community groups and other organisations for information and opportunities to learn about the environment.

Camden Council continued to be actively involved in the Sustainable Schools Network (SSN) and its associated initiatives. The Network assists schools in becoming more sustainable with respects to water, energy and waste within the school environment. A subcommittee of the SSN facilitated the *Sustainable Schools Expo* on 8 September 2010 at Belgenny Farm, attended by over 200 students and teachers from Macarthur and Greater Western Sydney area. The Expo focused on water conservation, waste minimisation practices, no-dig gardening, plant propagation, vegetable growing, chook care, wormfarming and paper making for a school environment. The aims of the Sustainable Schools Expo are to:

- encourage and enhance the development and implementation of Environmental Management Plans in schools;
- share ideas amongst teachers and students;
- encourage the formation of primary and high school links; and
- establish better community links.

Bushcare is an integral part of the management of bushland in Western Sydney. In addition to the works being carried out by Council and professional contractors, volunteers are making very significant contributions to the conservation and management of these valuable areas. Bushcare provides an excellent opportunity for volunteers to increase their skills and knowledge or to refresh their understanding of bush regeneration.

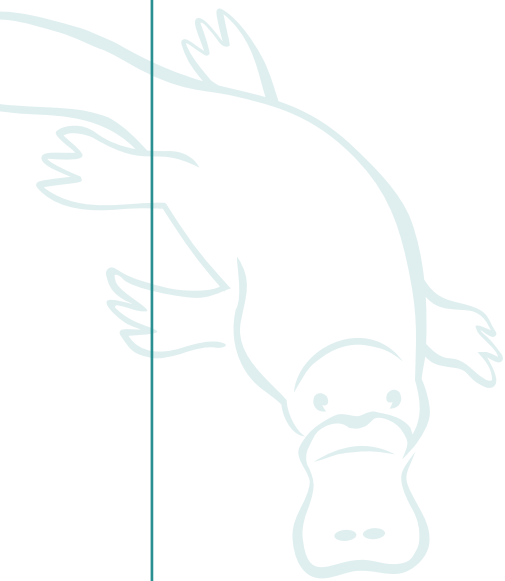
Funded by the NSW Environmental Trust's Urban Sustainability Program (USP), the Macarthur regional education for sustainability project (or 'Living Macarthur' project) is a partnership between the Camden, Campbelltown and Wollondilly Councils and MCSL. The project aims to develop and implement, over a three year period, an integrated strategy targeting behaviour change amongst householders, businesses and community groups towards sustainability. The Living Macarthur Project ended November 2010.

The Living Macarthur Nature Photography Competition & Exhibition 2010 is another project facilitated by the three Councils of the Macarthur region. This project aims to showcase the important biodiversity of the region and to develop community knowledge and understanding of local biodiversity conservation. Apart from the photo competition itself, three 'Walk 'n' Talk' events were held throughout Macarthur providing participants with an opportunity to experience their local environment, learn photography techniques as well as take nature photographs to enter into the competition. The competition culminated in an awards ceremony held during November at the Ingleburn Community Centre in the Campbelltown LGA which displayed 207 photographs taken by 72 entrants throughout the Macarthur area. The photographic exhibition then toured the three Council areas until December 2010.

Council officers facilitated sustainability workshops and presentations during this reporting period including seven sustainability-themed storytime sessions at Narellan and Camden Libraries and wormfarming presentations to local primary school students.

The environment and sustainability were key subject areas addressed through the Living Library project which is an innovative community based initiative, and aims to bring people together in one-to-one conversation, to encourage understanding, challenge negative stereotypes and reduce prejudice. Several Living Library sessions enabled discussions about the environment with the Living Book entitled 'My Green Life' during visits with schools and community groups throughout 2010/11.

Other environmental education opportunities have been provided to local schools. This has included information and educational materials on topics such as sustainable resource use and catchment management. Once again, a compact disc (CD) copy of the Sustainable Camden Report (including the SoE Report) was distributed to all schools in the LGA and to the Council Libraries. The Report has proven to be a valuable resource to students, primarily secondary and tertiary students in their environmental studies.



Key Indicator

Number of volunteer community groups and members working on local environmental issues.

Indicator Category: "S" (State)

Why use this indicator?

This indicator provides valuable encouragement to local volunteer workers who have taken on the challenge to help Council with the conservation, preservation and improvement of local environmental attributes within Camden. It also indicates whether or not Council's volunteer strategy outlined in the

Strategic Plan is working. Information provided by the indicator will provide support and additional contacts for people who would like to assist with environmental issues but may feel isolated or do not know who to contact for assistance.

Table 1.1: Volunteer Environmental Organisations and Number of Members (2009/10 to 2010/11)

Group Name	Project Base	Number of Volunteers 2009/10	Number of Volunteers 2010/11	Change from 2009/10 to 2010/11
Camden Bushcare	Tree Planting & Weed Removal	19	18	5.2% decrease
Camden Local Government Area Tree Planting Committee (formerly the Camden Tidy Town and Tree Planting Committee)	Tree Planting and Litter Reduction	13	8	38.5% decrease
Streamwatch (Mount Annan Botanic Garden)	Water Quality Testing	8	8	No change
Mount Annan Botanic Garden	Bush Regeneration	17	17	No change
Clean Up Australia Day	Litter Reduction	16 sites / 180 volunteers and 5 schools / 1300 school volunteers (+ volunteers who participated independently)	15 sites / 200 volunteers and 7 schools / 1500 school volunteers (+ volunteers who participated independently)	6.7% decrease in sites & 10% decrease in volunteers. 28.6% increase in schools & 13.3% increase in student volunteers
National Tree Day	Tree Planting	50	150	200% increase

Source: Camden Council (2011)

Discussion

Compilation of the above data (Table 1.1) provides Council and the community with information for developing new, and building on existing, community partnerships for future environmental management planning. It is this information which will allow Camden to fulfil the objectives of the Strategic Plan in terms of a Community Education and Awareness Program and will also encourage ongoing community participation.

Volunteer groups and individuals have declined over recent years. Competing priorities and demands such as family, work and sporting obligations may restrict the capacity of the community to volunteer their time.



2.0 Land

BACKGROUND

This chapter examines the management of land within the Camden LGA, including aspects of urban development, urban salinity, contaminated lands and other related topics such as the urban profile and general climate information.

The Camden LGA covers 201km² and is located approximately 61km south west of the Sydney Central Business District (CBD). The fragile natural environment, the limitations of the flood plains, the productive agricultural lands and the topography all provide constraints and opportunities in structuring urban development within the Camden LGA.

2.1 Demographics (P)

When determining land management policies for the future, population growth and the urban profile of Camden LGA are important factors considered by Council. As the population of Camden increases (refer Table 2.1), increased pressure is placed on the environment as the essential infrastructure is installed or expanded. This infrastructure includes roads, schools, drainage systems, energy and water supplies.

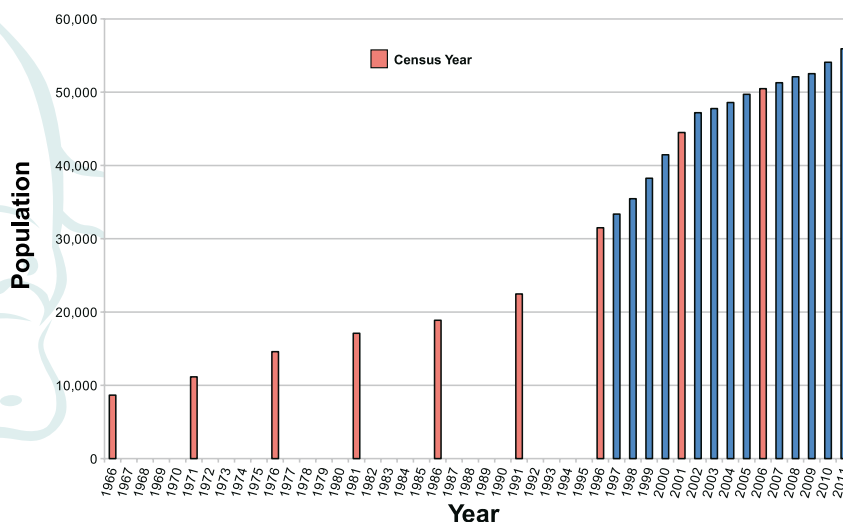
Table 2.1: Camden’s Population Growth from 1966 to 2011

Year (at 30 June)	Population	Change in population from previous year	Growth per annum (%pa)
1966*	8,661		
1971*	11,155	+2,494	5.8
1976*	14,597	+3,442	6.2
1981*	17,096	+2,499	3.4
1986*	18,870	+1,774	2.1
1991*	22,468	+3,598	3.8
1996*	31,504	+9,036	8.0
1997	33,371	+1,867	5.9
1998	35,468	+2,097	6.3
1999	38,259	+2,791	7.9
2000	41,460	+3,201	8.4
2001*	44,494	+3,034	7.3
2002	47,198	+2,704	6.1
2003	#47,763	+565	1.2
2004	#48,592	+829	1.7
2005	#49,705	+1,113	2.3
2006*	#50,485	+780	1.6
2007	#51,296	+811	1.6
2008	#52,096	+800	1.6
2009	52,529	+433	0.8
2010	54,080	+1,551	3.0
2011	55,922	+1,842	3.4

*: Census Year; #: based on Census 2001 data.

Source: Camden Council (1999b, 1999c, 2001, 2003, 2005 and 2011)

Figure 2.1: Camden’s Changing Population from 1966 to 2011



Source: Camden Council (1999b, 1999c, 2001, 2003, 2005 and 2011)

Discussion

Table 2.1 provides population figures for the Camden LGA from 1966 to 2011. Since 1996, Camden's population figures were based on Census 1996 and occupancy rates data until March 2003, when Census 2001 statistics were made available from the Australian Bureau of Statistics (ABS). Subsequently, this led to progressively inflated population figures for the early 2000s. Population figures for Camden have since been adjusted to incorporate Census 2001 data and more recently with Census 2006 data as exhibited by the population of 55,922 as at 30 June 2011. This translates to an increase in population growth rate of 3.4% for 2010/11 since the last reporting period.

Continuing urban development within the Camden LGA has the potential to exert various environmental pressures on the land, water, air, soils and biodiversity of the LGA. Examination of the population growth figures from previous SoE Reports indicates that overall population growth within Camden has increased by approximately 77.5% since 1996, an average annual growth of 5.1%. Given the potential future land releases throughout the LGA, population growth needs to be closely monitored to ensure that the environmental impacts of residential development, as well as those associated development of transport, infrastructure and open space areas, are sustainable and will meet Council's environmental conservation objectives.

2.2 Development within the Camden LGA (P)

Of the 1,751 Development Applications (DAs) registered with Camden Council during this 2010/11 reporting period 1,719 of these were approved. These include applications for awnings, tree removals, pools, change of use, new dwellings, new shops and industrial premises etc.

The total number of approved DAs has been categorised into five development types, these being subdivisions, single lot/commercial development, townhouses/integrated housing, rural development and tree removal/pruning. Single lot/commercial development includes all new buildings such as new dwellings and factory units, and also includes approved modifications.



The number of approvals for each new development category is summarised in Table 2.2.

Table 2.2: Number of Approved Development Applications during 2009/10 & 2010/11

Development Type	2009/10	2010/11
Subdivision	58	52
Single Lot/ Commercial	709	*1317
Townhouses/Integrated Housing	2	6
Rural	183	64
Tree Removal/Pruning	252	280
Total	1,204	1,719

* includes 125 modifications approved

Source: Camden Council (2011)

The balance of the applications are made up of other single lot/commercial developments such as pools (88), industrial (20), factory (9) or warehouse development (0) and advertising signs, amenities buildings, awnings, carports, dams, decking, demolition, garages, home business, retaining walls, roadworks, screened enclosures, water tanks etc.

Discussion

Table 2.2 indicates the number of approved DAs increased in 2010/11 compared to the previous year. Much of the new building development has again occurred on single lots mostly within previously released residential subdivisions.

2.3 Area of Open Space (S)

Open space in Camden consists mainly of sports grounds, parks and bushland reserves, some of which contain endangered ecological communities. It also includes areas zoned for special uses such as water management. Council's Strategic Plan identifies that an important part of managing new development in Camden is to ensure that all residents have reasonable access to recreational and community resources, including open space.

The total area of open space in the Camden LGA as at the 30 June 2011 is 2,380 hectares (ha) which is approximately 10% of the total LGA. With current population levels, this equates to approximately 426 square metres (m²) of open space per capita (ca), or 43 ha per 1000 residents. The general standard of open space provision required by the Department of Planning (DoP) is 28.3m² per capita or 2.83ha/1,000 people.

2.4 State Government Housing Strategy (P)

Under the State Government's Metropolitan Strategy, the South West Growth Centre will comprise of approximately 110,000 dwellings, a large proportion of which are to be located in the Camden LGA. The assessment and discussion of what impact this development will have on the local environment is continuing.

In December 2007, the State Government approved the rezoning of land in the Oran Park and Turner Road Precincts of the South West Growth Centre. This will enable the delivery of 7,500 new homes in Oran Park and 4,000 new homes in Turner Road over the next 10-15 years. The first dwellings commenced construction in the Oran Park East precinct in late 2010.

Austral/Leppington North was approved for rezoning by the State Government in October 2009. A small but significant portion of this precinct is situated at the northern end of the Camden LGA boundary. A review of the precinct boundary concluded to extend the Leppington North precinct south to Ingleburn Road to comprise a part of the Leppington precinct. This was completed in August 2010. Rezoning of the precinct is anticipated in the first quarter of 2012. Austral/Leppington North is held in fragmented ownership and involves high end retail and business development so the ultimate development of the precinct may take 20-30 years.

The State Government has recently reported the imminent release of the Catherine Fields South Precinct which will deliver 3,000 new homes.

2.5 Proposed Urban Release Areas (P)

The following table (Table 2.3) summarises the proposed and approved urban release areas within Camden LGA as at the end of the reporting period ie 30 June 2011.

Table 2.3: Proposed & Approved Urban Release Areas

Name of Subdivision	Area in Hectares (ha)	Proposed Number of Lots
Spring Farm Urban Release Area	500	3,990
Mount Annan South	73	670
Manooka Valley Estate – Currans Hill	72	378
Harrington Park	27	65
Elderslie Infill Release Area	180	2,000
Grasmere	48	90 rural-residential

Sickles Road – Grasmere	26	42 rural-residential
Sunnyside Drive – Ellis Lane	9	20 rural-residential
Harrington Park II & Mater Dei - LES	780	1,200 low density urban
Camden Lakeside	100	300 low density urban 80 medium density
El Caballo Blanco / Gledswood	207	840

Source: Camden Council (2011)

Spring Farm Urban Release Area

The Spring Farm Urban Release Area is located on approximately 500ha of existing agricultural land which includes a major industry of sand and soil extraction. The NSW State Government's Urban Development Program identified the potential for 3,990 residential lots to be released within Spring Farm. The Spring Farm Master Plan is shaped around the significant site constraints that encumber the land including an electricity substation and major transmission lines, management of impacts on the Hawkesbury-Nepean River System, and critical habitat such as the Elderslie Banksia Scrub Forest. The release is also challenged with providing a major road link to the Camden Bypass as well as providing appropriate public transport options to the immediate and surrounding localities.

The design of major sewerage infrastructure has recently been completed with major water main upgrades to follow the release of residential lots in late 2011. Applications for earthworks, drainage, bushland conservation works and approximately 550 residential lots have been approved to date.

Spring Farm's setting within the broader rural environment will be recognised through the conservation of bushland corridors linking William Howe and Gundungurra Reserves with the Nepean River. The bushland corridors, centrally located along creek lines will play a significant role in drainage, water quality management and native habitat conservation. Additionally, the bush corridors provide for the conservation of Elderslie Banksia Scrub Forest, Cumberland Plain Woodland and Riverflat Eucalypt Forest which have been identified as endangered ecological communities within the Spring Farm Urban Release Area. A development application was approved by Council in November 2007 to undertake restoration and conservation works for a large portion of the riparian and bush corridor land. These works have since commenced and will continue in due course as the urban landscape progresses.

Mount Annan South

Mount Annan South comprises an area of some 73ha and is anticipated to yield 670 dwellings. The estate offers a range of housing choice and includes higher density housing, as well as traditional, larger and rural residential lots. Central to the estate is a comprehensive recreation and open space system, including cycleways and walkways to maximise connectivity between areas. Existing vegetation has been retained and enhanced where possible. A natural water system, including a wet basin on the site of the current farm dam, will be maintained and embellished as part of the open space network. A vegetative odour buffer to Macarthur Resource Recovery Park (formerly Jacks Gully Waste Management Centre) is provided which along with William Howe Reserve will form part of a broader bushland corridor system. Council has issued staged development consent for the entire estate and at June 2011, 213 lots are yet to be registered.

Manooka Valley Estate – Currans Hill

The Manooka Valley Estate – Currans Hill site is the area to the north and east of the Spring Hill Estate. The proposed development of approximately 350 lots will provide a range of housing choices with lot sizes from 180m² to 1,000m². This development has been at the forefront of Council's move towards the requirement for rainwater tank installation for all new developments. The land was rezoned in early 2005 and by June 2011 a total of 118 lots have been approved.

Harrington Park

The existing Harrington Park urban release area has at June 2011 approximately 65 lots remaining. There are now over 2,148 lots sold in Harrington Park.

Elderslie Infill Release Area

Construction of major sewerage infrastructure for the Elderslie Infill Release Area was completed in late 2007. Approximately 600 residential lots have been released with the issue of Subdivision Certificates with an additional 250 in the pipeline to be released.

Harrington Grove & Mater Dei – Kirkham

In 2007 Council rezoned land to permit limited residential development at the northern end of Harrington Park and the Mater Dei property. The land is located within a heavily vegetated corridor and contains a number of heritage-listed homesteads. Innovative planning approaches have been used to ensure the satisfactory protection and management of the woodland vegetation.

The 780ha of land is expected to yield approximately 1470 dwellings in Harrington Grove and approximately 160 dwellings and 150 seniors living houses within the Mater Dei development.

Central Hills Rezoning

Council is currently rezoning land within the 'Central Hills'. This comprises two separate components being Camden Lakeside and the other El Caballo Blanco/Gledswood.

The Camden Lakeside component comprises the rezoning of land located on the corner of Camden Valley Way and Raby Road to integrate a number of housing precincts into a revised golf course design. There is 300 detached dwellings and 80 medium density dwellings proposed. The land was rezoned in February 2009 and residential development is yet to commence.

The El Caballo Blanco/Gledswood component involves the rezoning of land adjoining the southern boundary of Camden Lakeside. The rezoning will enable urban development within a landscaped setting of Gledswood Homestead and a redesigned Camden Valley Golf Resort. A total of 840 dwellings are proposed in a variety of forms ranging from detached dwellings on large rural residential lots through to residential flat buildings on selected sites. The draft LEP and Development Control Plan (DCP) were placed on public exhibition during February and March 2009. A draft Voluntary Planning Agreement is currently being negotiated to secure the conservation of vegetation and delivery of local infrastructure. The draft VPA is expected to be publicly exhibited in August/September 2011, with the land to be rezoned shortly after (subject to execution of the Voluntary Planning Agreement).

2.6 Land Condition (S)

Contaminated Land (S)

Land contamination is most often the result of past uses of a site. It can arise from activities that took place on or adjacent to a site and be the result of improper handling or disposal of chemicals/materials, accidental spillage or leakage of chemicals during manufacturing or storage. Activities not directly related to the site may also cause contamination; for example, diffuse sources such as polluted groundwater migrating under a site. Alternatively, contamination may be simply an unfortunate by-product of the particular type of land use.

Some examples of land uses which may result in land contamination include agriculture, land-filling, underground fuel storage tanks, gas works and other hazardous types of industry.

In some situations, land contamination can pose a risk to human health or the environment and preclude later development of a site unless significant remediation activities are undertaken. Council recognises that the prevention and management of contamination is of

paramount importance to ensure that changes to land use will not increase the risk to health or the environment.

The contaminated land public record facilitated by the NSW OEH is a searchable database of:

- actions taken by the Environment Protection Authority (EPA) under section 15, 17, 19, 21, 23, 26 or 28 of the *Contaminated Land Management Act 1997* (CLM Act); and
- site audit statements provided to the EPA under section 53B of the *CLM Act* on sites subject to an in-force declaration or order.

According to the Contaminated Land Public Record there are no entries found for the Camden LGA. However, if a site does not appear on the record it may still be affected by contamination. For example:

- contamination may be present but the site has not been regulated by the EPA under the *CLM Act* or the *Environmentally Hazardous Chemical Act 1985* (EHC Act);
- the EPA may be regulating contamination at the site through a licence or notice under the *Protection of the Environment Operations Act 1997* (POEO Act); and
- contamination at the site may be being managed under the planning process.

During the reporting period the previously amended *Management of Contaminated Lands Policy* has been in operation and it appears that the changes to the policy have been successful in its intent to clarify agricultural activities and facilitate a more flexible approach for site assessment.

The Policy continues to set out a framework for the management of contaminated lands within the Camden LGA, and provides practical advice for members of the community as well as professionals involved in the planning process within the LGA.

Continuing on from previous years there has been a further increase in the number of contamination investigations conducted on land in response to rezoning and subdivision applications. In all cases where contamination has been identified that exceeds health or environmental criteria, development on the affected land has not been allowed to continue until the land has been remediated or made suitable for the intended use.

Urban Salinity (S)

Salt is a natural part of the soil landscape in Western Sydney and is found in the Wianamatta and Bringelly shales and the shallow groundwater of the region. Salts are also deposited on the ground by rain. As water evaporates small deposits of salt are left behind on the ground.

Increased salinity levels can develop naturally, but where the landscape has been disturbed by agricultural or urban development, the flow and quantity of both water and salt through the environment changes dramatically.

Over time the salts can concentrate to a level where they are detrimental to soils, bricks, concrete and metal structures. Consequently, this has led to damage to roads, buildings and houses, underground pipes, paving, concrete structures and their metal reinforcing. Furthermore, salinity can be detrimental to vegetation affecting gardens, lawns and sport playing fields.

In urban areas there are many additional sources of water to dissolve and move salts. These include leaking drinking water, stormwater and sewer pipes, leaking pools, septic tanks and water from over-watering of lawns, gardens, parks and sporting fields.

Consistent with previous reporting periods there continues to be a high number of salinity investigations conducted on land for the purpose of rezoning or subdivision that has identified the presence of salinity. In all cases where salinity is identified as aggressive to construction materials, a salinity management plan or Council's Policy has been implemented.

Acid Sulfate Soils (S)

Acid sulfate soils occur when iron sulfates in the soil are exposed to air through drainage or excavation, and when mixed with water create a sulfuric acid mix. These soils are widespread in NSW and usually found in estuarine floodplains and coastal lowlands (including mangrove tidal flats, salt marshes and tea-tree swamps). The presence of acid sulfate soils can reduce farm productivity by decreasing good quality pasture for grazing animals and reducing plant growth. Furthermore, it has the potential to threaten urban development, tourism and fisheries (DLWC 2002).

All investigations of land for contamination and salinity during the reporting period have not identified the existence of acid sulphate soils. However, Council continues to monitor the situation for any changes via ongoing land investigations.

Soil Erosion (R)

Council's *Erosion and Sedimentation Control Policy* continues to be enforced by Council's Compliance Officers. As a result there has been an improvement in the management of building sites in the LGA by building and development companies and a subsequent reduction in soil loss from these sites.

Additional to the inspections of the Compliance Officers on new dwellings, subdivisions, pool constructions and additions to existing dwellings,

there is ongoing surveillance of erosion and sedimentation controls by Council's Building Surveyors. Apart from privately certified developments, Council inspects all new developments up to 5 to 6 times each during construction and again when residents arrive to ensure sediment fences remain in place until adequate ground cover is established.

There is continually increasing pressure on erosion and sedimentation control as larger houses are being built on smaller blocks with reduced setback distances. Coupled with narrow roadways, this puts a great strain on effective sediment and erosion controls (particularly of sediment fences) during the delivery of building materials, their storage and the day-to-day operations of contractors working on these building sites.

2.7 Extractive Industry Operations (P)

With regards to extraction of soil and sand resources in the Camden LGA, there were four Extraction Consents valid during 2010/11. However, only one is operational for an extraction site located at Macarthur Road, Spring Farm. Previous to this reporting period, the DoP had extended the extraction permit for this site for another 10 years. A further 600,000 cubic metres of sand and soil will be extracted from this site to supply the Camden and Sydney regions.

RESPONSES

2.8 Managing Urban Salinity (R)

Councils are recognised as the logical agency to partner with state government agencies to implement salinity management at both the local and regional levels.

Council's policy *Building in Salinity Prone Environments* was updated during the last reporting period of 2009/10. The policy update includes building structures classified as 1, 2, 3, 9 and 10 under the Building Code of Australia. Further, proposed alterations, additions or repairs to existing buildings are also required to comply with the Policy. Finally the requirement to adopt Mandatory Infrastructure Requirements and reference to a number of Local Government Salinity Booklets were also included in the Policy.

The objective of this policy is to implement measures designed to minimise the risk of salt damage on building materials used in the construction of buildings in the Camden LGA including:

- minimising moisture contact to building materials;
- increasing slab strength and resistance; and
- increasing the resistance of masonry units beneath the damp proof course.

Council's response is part of a wider State and National program to address salinity. These include

the National Action Plan for Salinity and Water Quality (NAP) and the NSW State Salinity Strategy. One of the main actions in the strategy relevant to urban salinity includes the Local Government Salinity Initiative (LGSi). The LGSi provides training, education and technical support to local government on salinity issues.

As part of the LGSi, the then DECC produced twelve booklets to be incorporated into the Local Government Salinity Kit that Council received during March 2003. The kit with amended or new booklets has been made available to the community through both Narellan and Camden libraries. Electronic copies are also available accessed through the Western Sydney Regional Organisation of Councils' (WSROC) website www.wsroc.com.au. One of the first booklets 'Introduction to Urban Salinity' has since been updated and the brochure 'Good Housekeeping to Manage Urban Salinity' translated into several languages including Chinese, Vietnamese and Italian.

As part of NSW Salinity Strategy a number of programs continue to operate such as the specialist salinity teams located throughout NSW. One of these teams includes an Urban Salinity Working Group that focuses on salinity in the urban environment and how information can be shared with local government.

2.9 Stormwater Management (R)

Over the past decade, Council, local residents, community groups and businesses have made significant efforts to improve the health of the Hawkesbury-Nepean River System and its catchment. However despite these efforts, water quality in the river and other waterways remains an issue. Stormwater run off from urban and rural areas continue to feed regular outbreaks of blue-green algae and aquatic weeds. Improved water quality can only come from a more integrated and strategic approach that involves and values community input and includes 'prevention' actions as well as 'cures'.

To improve local water quality, additional resources are required that are beyond the general capacity of Council to provide from existing budgets. The State Government recognised this as an issue for local government and amended the Local Government Act 1993 to allow Councils to raise an annual charge for stormwater management activities.

During 2010/11, Council's Stormwater Management Levy provided funding to pursue key stormwater management initiatives including:

- Water harvesting principles were incorporated into the upgrade of the Camden War Memorial Pool allowing for capture of rainwater to be filtered then used as 'make up' water in the swimming pools.

- The first stage of the Outlet Management project commenced in 2010/11 with the maintenance of existing structures including the excavation and remodeling of the outlet structures and tail out drains to ensure that outlets drain properly.
- The promotion of key stormwater messages through the display of posters in bus shelters across the LGA and of banners at community events.
- Council completed the Water Quality Monitoring Framework report and sought quotations for the water quality monitoring.
- On-going inspections and auditing of the dam wall at Lake Yandel'ora was conducted in 2010/11 with most defects rectified.
- The GPTs in the Cascades pond system have had their screens replaced to ensure that the screens are operating effectively and gross pollutants are removed before they enter the pond system.
- All new stormwater assets have been assessed and incorporated into the stormwater asset management system and funds earmarked to those assets which are in need of replacement or renewal.
- Using the information that has been supplied and incorporated into Council's Asset Management System, Council's Stormwater Asset Management Plan has been finalised.

2.10 Hawkesbury Lower Nepean Catchment Management (R)

The *Hawkesbury Lower Nepean Catchment Blueprint: A plan for sustainable management of our natural resources* (or Blueprint for short) outlines targets for natural resource management for the catchment for a 10 year term from 2002/03. This Blueprint is one of several regional plans prepared by the NSW Government. Blueprints form the basis of grant funding decision investments within the respective regions.

Every Hawkesbury Nepean Catchment Management Authority (CMA) program/project is underpinned by natural resource and investment plans and strategies. These planning documents ensure that investment in environmental improvements is well targeted, prioritised and of maximum effectiveness. These include the Catchment Action Plan, River Health Strategy, Investment Strategy and Annual Implementation Plan.

During the reporting period, the *Hawkesbury-Nepean Catchment Management Authority (HNCMA) Strategic Plan 2009-2012* was reviewed by its Board – an annual requirement since its development in April 2009. The reviewed Strategic Plan was 28 March 2011 (HNCMA 2011). This Strategic Plan is a roadmap to sustainable improvement in the catchment, based on the best

possible information available at the time. It addresses the long-term direction of the HNCMA by laying out what it is going to do and how. It identifies which investors, stakeholders and partners HNCMA will work with, what products and services (including influencing) we will provide, and how this will generate value for our investors, stakeholders and partners.

During the 2010/11 reporting period, the *Lower Hawkesbury-Nepean River Nutrient Management Strategy* was prepared by Department of Environment, Climate Change and Water (DECCW now known as OEH). The Strategy aims to address nutrient management issues by setting out actions that will be taken to improve the river's health by significantly reducing nutrient loads from a range of sources in the catchment including urban stormwater, agriculture, sewage systems and degraded land (DECCW 2010a).

DECCW also produced *State of the Catchments 2010 Overview Hawkesbury-Nepean region* (DECCW 2010b) which as the title suggests reports on the condition, pressures and management of the Hawkesbury-Nepean Catchment. The SOC report provide, for the first time, a comprehensive assessment which allows natural resource managers to make more informed decisions about prioritising investment in the Hawkesbury-Nepean region.

2.11 Hawkesbury - Nepean River Recovery Package (R)

The HNCMA partnered with the NSW Department of Primary Industries to carry out a two-year Nutrient Smart Farms project as part of the \$77.4 million Hawkesbury-Nepean River Recovery Package announced by the Australian Government during Spring 2009.

The Nutrient Smart Farms project works directly with farmers in targeted areas of the catchment to improve water quality by halting 27 tonnes per year of nitrogen entering the waterways and six tonnes per year of phosphorous. The program provides training and funding to landholders to reduce diffuse nutrient loads from agricultural activities. All agricultural industries are eligible to be involved in the project, however the initial focus is on grazing, dairy, market gardens, turf farms and small/lobby farms. Funding is available to landholders for works improving nutrient management including:

- establishing perimeter revegetation, buffer zones and filter strips for erosion control and soil conservation;
- mulching and composting;
- stock exclusion fences and off-stream watering points;
- pasture re-establishment; and
- upgrades to systems that manage dairy effluent.

The Nutrient Smart Farms project is one of seven initiatives of the Hawkesbury-Nepean River Recovery Package to help tackle the key challenges of reduced flows and elevated nutrients in the Hawkesbury-Nepean. Other initiatives include:

Water Smart Farms

This project will save 5.9 gigalitres (GL) of water per year from irrigated farms in the Sydney Basin. The saved water will be used for additional environmental flows in the Hawkesbury-Nepean system, and boost Sydney's potable water supply with a portion remaining with the entitlement holders. This project complements the objectives of the Nutrient Smart Farms project.

Improving Water Balance Accounting

By installing or upgrading up to 2,000 volumetric water meters the project will ensure the equitable and efficient management of water use, protect environmental flows from extraction and manage cumulative extraction within the sustainable yield under the *Water Management Act 2000*.

Nutrient Export Monitoring

The Hawkesbury-Nepean River Recovery Project aims to prevent an estimated 48.2 tonnes of nutrients entering the river system each year. The Nutrient Smart and Water Smart Farms projects will achieve the majority of the nutrient load reduction. Just six months after starting, the Nutrient Smart Farms project is estimated to have stopped 20 tonnes of nitrogen and five tonnes of phosphorus from entering local waterways in the lower Hawkesbury-Nepean catchment each year. To verify the reduction, this project measures the quantity of nutrients moving off farms before and after treatment by the Nutrient Smart Farms project.

Irrigation And Landscape Efficiency (ILEP) Project

The ILEP Program aims to achieve 1.06GL of water savings per year through improved technology and land management practices to promote efficient irrigation. Irrigation and landscape assessment will be offered at no cost to State government and local government facilities and with 50:50 co-funding to commercial facilities. Based on the assessment recommendations, on-ground measures will be implemented on a 50:50 cost sharing basis.

South Windsor Effluent ReUse Scheme

The project will replace 0.1GL per year of potable water now being used for open space irrigation with treated effluent from the South Windsor Sewage Treatment Plant.

Purchase of Water Licences

This initiative involves the purchase of an estimated 3GL per year of water entitlements for the environment. The Office of Environment and Heritage (OEH) is responsible for purchasing and managing water to support environmental values in targeted wetlands and rivers across NSW. Under the River Recovery Program, \$5.35 m has been made available to OEH's RiverBank fund to purchase river water licences held within the Hawkesbury-Nepean River system. OEH is developing a process to transfer to the government all or parts of existing river extraction licences issued under the Water Act 1912. This will allow purchase to progress in advance of the commencement of the Greater Metropolitan Water Sharing Plan (effective as of 1 July 2011) and the later conversion of water licences to Water Access Licences issued under the Water Management Act 2000.

2.12 NSW Office of Hawkesbury Nepean (R)

The Office of the Hawkesbury-Nepean (OHN) is a NSW Government initiative to improve the health of the Hawkesbury-Nepean river system. The functions of the OHN are defined by the *Hawkesbury-Nepean River Act 2009* and the OHN sits within the NSW Office of Water Ministry. The Act specifically confers on the Office a responsibility for coordinating works and other activities undertaken to manage aquatic weeds in the Hawkesbury-Nepean river system.

The main goals of the OHN are to:

- Coordinate and assist with implementation of river management strategies;
- Provide a single point of access for information about the river;
- Provide opportunities for public involvement in river management; and
- Promote effective management of in-stream development.

As the key access point for all services and information involving local river issues, the OHN coordinates river management activities of the relevant NSW Government agencies including:

- Office of Environment and Heritage
- Department of Planning and Infrastructure
- Department of Primary Industries
- Sydney Catchment Authority
- Sydney Water Corporation

2.13 Management of Contaminated Lands Policy (R)

In carrying out its planning functions, Council is required by legislation to consider whether a previous or current land use has caused contamination of a site.

To manage contaminated land in Camden, Council's *Management of Contaminated Lands Policy* sets out the framework for managing contaminated lands within the LGA and is a precautionary approach providing practical advice for members of the community as well as professionals involved in the planning and development processes in Camden.

Key Indicator

Breakdown of the landuse zonings in the Camden LGA by area and percentage. Indicator Category: "P" (Pressure)

Why use this indicator?

Various land uses have broad environmental impacts, particularly in the areas of catchment management, transport corridors, vegetation conservation and the protection of flora and fauna habitats. Landuse zonings determine how a community organises itself and how open space areas are distributed.

Monitoring land use will provide Council and the local community with the means to make informed and strategic decisions regarding the type of environment the community wishes to create for future generations.

The ongoing environmental pressure on rural land is recognised by Council as an issue in protecting the rural environmental characteristics of Camden.

This key indicator is designed to monitor landuse in Camden's rural sector by providing a statistical database that readily highlights rural landuse activities during the reporting period. Information produced by this indicator can assist in Council maintaining control over specific environmental issues particularly issues like water quality in local creeks, open space, salinity and loss of native vegetation cover.

The following table (Table 2.4) provides an overview of the area of land classified according to Council's land use zoning categories at the end of the reporting years for 2009/10 and 2010/11.

Table 2.4: Land Use Zoning Categories

Zoning	Land Use	Percentage of the LGA as at 30 June 2010 (%)	Percentage of the LGA as at 30 June 2011 (%)
OPEN SPACE		10%	10%
5(c)	Special Uses (Botanic Gardens Zone)		
5(c)	Future Arterial Road Widening		
5(e)	Special Uses – Water Management		
6(a)	Open Space		
6(a1)	Open Space Existing		
6(a2)	Open Space Existing		
6(b)	Open Space Proposed		
6(d)	Regional Open Space		
7(a)	Environmentally Sensitive Land Zone		
7(d1)	Environmental Protection (Scenic) Zone		
7(d1)	Environmental Protection (Scenic) Zone		
RE1	Public recreation		
RE2	Private recreation		
URBAN		24%	24%
1(c)	Rural "C" (0.4ha) Zone		
1(e)	Rural "E" (0.6ha) Zone		
1(v)	Rural Village (0.2ha) Zone		
2(a)	Residential		
2(b)	Residential Medium Density		
2(c)	Residential Craft		
2(d)	Residential "D" (Release Areas) Zone		
2(d1)	Residential		
3(a)	General Business		
3(b)	Business Special		
3(b1)	Business Support		
3(e)	Town Centre		
3(f)	Town Centre Support		
3(g)	District Business Zone		
4(a)	General Industrial Zone		
4(b)	Service Industrial Zone		
B1	Neighbourhood centre		
B2	Local Centre		
B4	Mixed Use		
IN1	General industrial		
RURAL		56%	56%
1(a)	Rural "A" (40ha) Zone		
1(b)	Rural "B" (2ha) Zone		

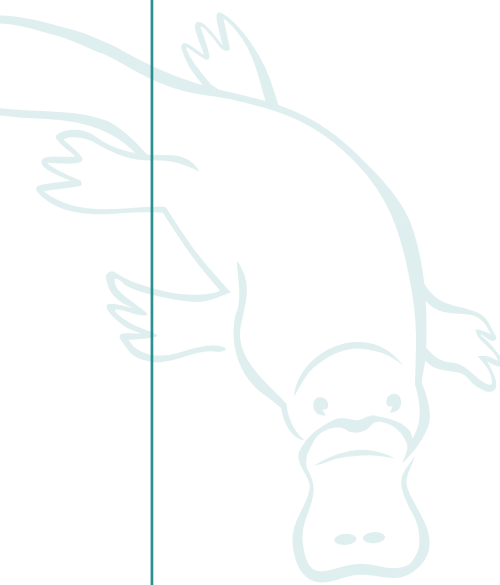
Zoning	Land Use	Percentage of the LGA as at 30 June 2010 (%)	Percentage of the LGA as at 30 June 2011 (%)
	OTHER		
5(a)	Special Uses Zone	10%	10%
5(b)	Special Uses (Arterial Road Reservation) Zone		
5(b)	Local Road Future Arterial		
5(b1)	Special Uses (Arterial Road Widening)		
5(d)	Special Uses – Proposed Local Roads Reservations		
CAMDEN LGA – TOTAL		100%	100%

Source: Camden Council (2011)

SECTOR STATEMENT

Land management within the Camden LGA is a high priority. As can be seen in this chapter, Camden’s population continues to grow and, as a result, there is still much more future development planned for the Camden LGA. Council recognises the potential impacts any development has on local land, including the rural environmental characteristics of Camden’s historical identity.

It is important that, through thorough assessment of development proposals and implementation of ESD principles, Council manage this development sustainably. The implementation of salinity and contaminated lands policies based on consultation with the community and regional partners, recognises that many management issues cross spatial and temporal boundaries.



3.0 Air

BACKGROUND

This Chapter reports on air quality within the Camden LGA and recognises sources that are contributing to poor air quality trends in the form of greenhouse gases, fine particle pollution, photochemical smog and odour.

A range of responses from Council, the community and other organisations to poor air quality occurred during the reporting period and has been outlined to determine Council's progress towards sustainability.

Air quality refers to the condition or state of the troposphere layer of earth's atmosphere – the layer that supports all life on earth. The quality of this air is dependent on its gaseous composition and processes of weather namely wind, temperature inversions and rainfall. Warm to hot summers and cool to mild winters typify the climate of the Camden LGA. Camden experiences modified maritime effects due to the intervening terrain between the LGA and the seaboard. This terrain affects the frequency of cooling sea breezes in the summer and relatively small and seasonal ranges in temperature. These climatic factors mean that the Camden area is drier than coastal areas of Sydney and experiences frosts in the cooler months.

Current practices and lifestyle choices have an impact on the composition of the gases in the air. Human activities such as land clearing, industrial production, use of private motor vehicles, consumption of household energy and lawn mowing generate many air pollutants, locally, regionally and globally. These include sulfur dioxide, nitrous oxide, carbon dioxide, ozone, hydrocarbons, particulate matter and odours. Many of these are greenhouse gases in the earth's atmosphere that also contribute to global warming.

Air quality for the Camden LGA is assessed using readings from Office of Environment and Heritage (OEHS) (formerly DECCW) air monitoring stations just outside the Camden LGA at 'Macarthur' - located in the grounds of University of Western Sydney (UWS), Campbelltown Campus, approximately 2km beyond Camden LGA's south-eastern boundary and the Bringelly Monitoring Station – located at a council reserve approximately 2km beyond Camden's LGA northern boundary. Previous readings were obtained from a monitoring station located at Camden Airport which has since been decommissioned.

Readings obtained from the monitoring stations contribute to the Air Quality Index (AQI) which replaced the Regional Pollution Index (RPI) in June 2008. The AQI is based on the five criteria pollutants - ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide and air particles (as per national standards) plus visibility (as per a standard set by NSW) at all sites in the NSW DECC air quality monitoring network (DECC 2008).

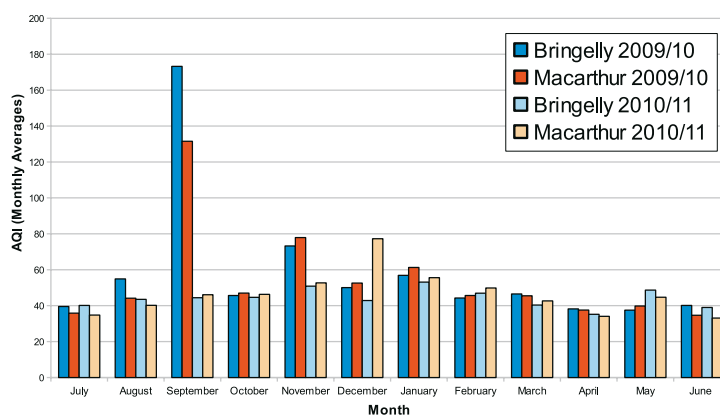
A value derived from air quality data readings allows for more meaningful comparison of pollutants affecting air quality. The index is derived using the following formula:

$$\text{AQI (pollutant)} = \frac{\text{Pollutant data reading}}{\text{Standard}} \times 100$$

3.1 Outdoor Air Quality (S)

Daily AQI measurements for both Bringelly and Macarthur sites for the past two reporting periods (represented as monthly averages) are provided for comparison in Figure 3.1. As previously reported, it is likely that the peaks in the AQI readings for September 2009 were attributed to severe dust storms that had swept over Sydney.

Figure 3.1: AQI monthly averages for Bringelly & Macarthur monitoring sites for 2009/10 & 2010/11

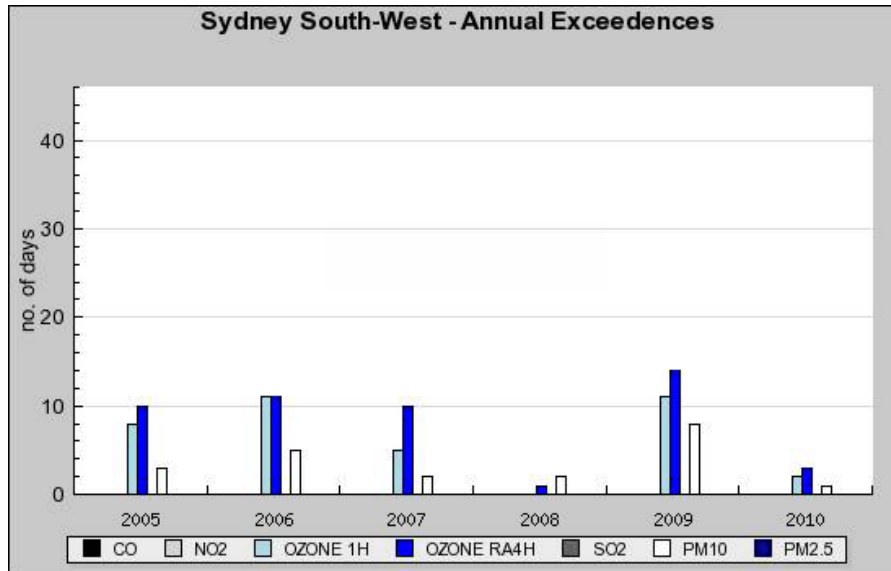


Source: OEHS (2011)

Air quality can also be expressed as 'exceedences' for each pollutant type as determined by the National Environment Protection Measure (NEPM) except for visibility which is set by OEH. Provided here in this

report is the updated graph for the Sydney South West region showing the number of days per year from 2005 to 2010 that each of the pollutants exceeded the goals and standards (OEH 2011).

Figure 3.2: Annual exceedences in air pollutants for the Sydney South West region 2005-2010



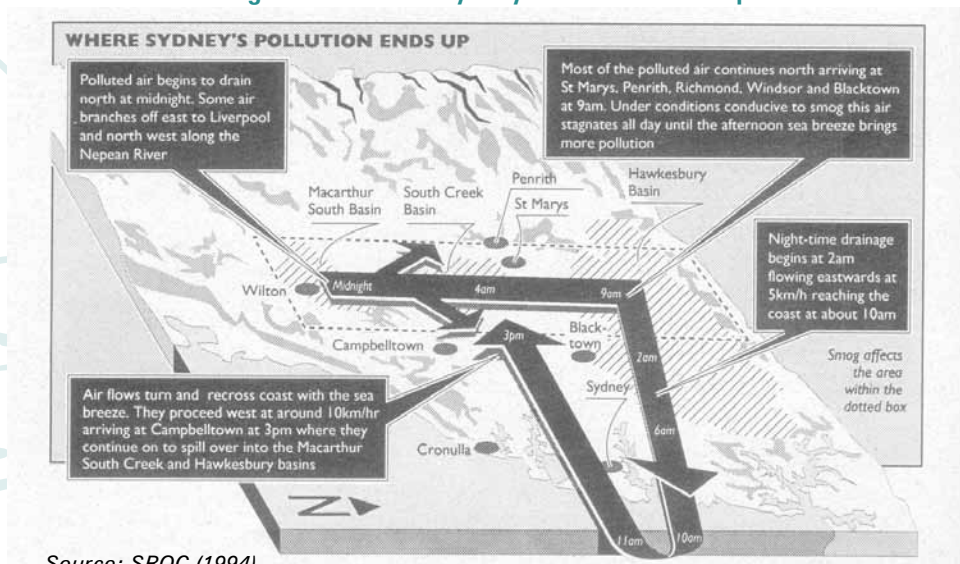
Source: OEH (2011)

Discussion

As demonstrated by the graph (Figure 3.2) air quality improved from 2009 to 2010 with the number of exceedences dramatically decreasing for ozone and particulate matter. No exceedences were recorded for carbon monoxide, nitrogen dioxide and sulfur dioxide.

Furthermore, Sydney's south-west region, which includes Camden, tends to collect air pollutants from the surrounding region because of the daily pattern of air flow in the Sydney basin, as demonstrated in Figure 3.3.

Figure 3.3: Where Sydney's Pollution ends up



Source: SROC (1994)

Emission data is also available on the National Pollutant Inventory (NPI) – an inventory facilitated by the Australian Government to track pollution across Australia and ensure that the community has access to information about the emission and transfer of toxic substances which may affect them locally.

At the time of reporting, figures for the 2010/11 SoE Report for the Camden LGA were not available on the online inventory. As an indicator of the types of pollutants that are emitted in the Camden LGA, the figures for the 2009/10 reporting period are provided below.

In the Camden LGA, 5 industrial facilities provide information directly to the NPI while the state government estimates emission levels from smaller facilities and mobile and non-industrial sources (such as emissions from activities like private vehicle use and lawn mowing) (Australian Government 2011).

According to the NPI, the 3,300,000 kilograms (kg) of carbon monoxide (CO) emitted in the Camden LGA during this period (2009/10), predominantly from motor vehicles, ranked it above any other emitted substance. Total volatile organic compounds ranked as the next highest emissions of 800,000kg in the same period.

It is likely that the figures recorded by the NPI do not reflect actual emission levels due to the low number of premises taking part in the voluntary reporting. However the data may still be useful in indicating the type and possible proportions of emissions. The emissions are attributed to mostly diffuse sources such as motor vehicles, lawn mowing and domestic solid fuel burning. As discussed in the following section, Section 3.2, the community of Camden LGA depends heavily on private motor vehicles for transportation in a region lacking in public transport options. Subsequently, emissions of carbon monoxide and total volatile organic compounds are likely to increase as Camden's growing population continues to rely on private motor vehicles for transportation.

Much of the Camden LGA hosts agricultural activities, some of which contribute odours such as fertilisers and poultry farming. Urban development edging closer to agricultural uses has resulted in increased complaints in respect of odours. Complaints received by Council in relation to odour, wood smoke, dust or other air pollutants decreased by 30% to 42 during 2010/11 from 60 complaints received during 2009/10 although not all specifically stemmed from farming practices (Camden Council 2011). Council officers investigate the complaints to ensure that the best management practices are undertaken in accordance with pollution laws and guidelines.

3.2 Transport and Accessibility (P)

Pressures on the atmospheric environment in the LGA include pollutants from motor vehicles, particularly with increasing private car use and traffic congestion. Motor vehicle emissions contribute to the production of both pollutants and greenhouse gas emissions. While public transport systems also contribute to greenhouse emissions, bus and rail transport is more efficient in terms of fuel use and emission levels.

The community of Camden is heavily reliant upon private motor vehicles for local movements. This dependence is accentuated by non-connective subdivisions as well as the expressed community desire to have distinct urban villages. The viability of public transport in such urban layout is limited, whilst pedestrian and cycle alternatives are often impractical due to distance of travel.

Many residents commute outside the area for work. Most use a private motor vehicle and do not carry passengers. Many roads within the LGA are of regional significance and are already nearing capacity at certain times of the day. The widening of the F5 Freeway from two to four lanes between Camden Valley Way, Prestons and St Andrews Road, Ingleburn to four lanes in each direction are complete. Works are underway to widen the F5 from two to three lanes between St Andrews Road and Narellan Road. These works are expected to provide numerous benefits for both northbound commuters from Camden and long-distance traffic. These benefits include:

- Improved travel times and safety for local and long-distance traffic,
- Improved road surface, and
- Extra lanes to improve traffic flow and to alleviate congestion.

In addition to the above measures, the NSW Roads and Traffic Authority (RTA) has been progressing studies for the future upgrades of Camden Valley Way, Bringelly Road and The Northern Road. The status of these works is as follows:

- The RTA has designed the upgrade of Camden Valley Way from Bringelly Road to Gregory Hills Drive.
- The RTA has entered into an agreement with the private sector to upgrade Camden Valley Way between Narellan Road and Gregory Hills Drive. These upgrades are currently underway.
- The RTA has undertaken a Value Management Workshop for the future upgrade of Bringelly Road and has commenced the design.
- The RTA has released a Community Update for the upgrade of The Northern Road.

The above projects indicate the commitment for the future transport needs within the main growth sectors of the Camden region. The upgrades include dedicated provision for pedestrians, cyclists and public transport and will result in overall community benefits.

Local transport patterns exert pressure on the local environment through higher levels of air pollution and congested road networks. Council has supported the local demand for increased public transport services to the Camden area and has lobbied State and Federal Governments for public transport infrastructure to be included in future urban land releases.

The following data provided by the RTA highlights the current situation relating to motor vehicle use in the Camden LGA.

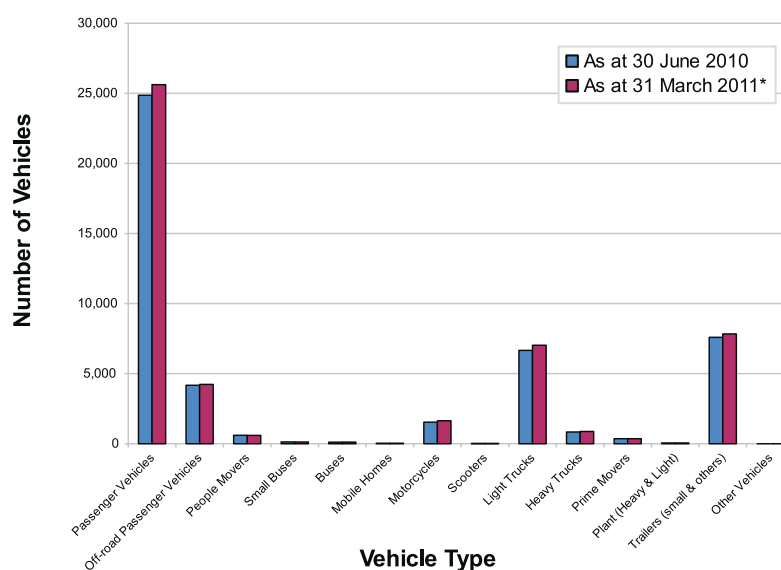
Table 3.1: Vehicles Registered in the Camden LGA as at 30 June 2010 & 31 March 2011

Vehicle Type	Reporting Period	
	2009/10 (as at 30 June 2010)	2010/11 (as at 31 March 2011)
Passenger Vehicles	24,863	25,617
Off-road Passenger Vehicles	4,173	4,232
People Movers	605	598
Small Buses	127	121
Buses	113	115
Mobile Homes	34	36
Motorcycles	1,538	1,638
Scooters	26	24
Light Trucks	6,664	7,024
Heavy Trucks	838	876
Prime Movers	359	362
Plant (Heavy & Light)	53	55
Trailers (small & others)	7,591	7,834
Other Vehicles	1	1
Total	46,985	48,533

NB. Data regarding vehicles registered in the Camden LGA as at 30 June 2011 was unavailable from the RTA therefore is reported as at 30 March 2011.

Source: RTA (2011b)

Figure 3.4: Number of Motor Vehicles registered in the Camden LGA 2009/10 & 2010/11 (P)



NB. Data regarding vehicles registered in the Camden LGA as at 30 June 2011 was unavailable from the RTA therefore is reported as at 30 March 2011. Source: RTA (2011b)

Discussion

Previous SoE Reports have provided comparative data regarding the number and diversity of vehicles as to fuel types. Unfortunately, the data for the 2010/11 reporting period was not available from the RTA.

Since the last SoE Report, there are 2,178 more vehicles registered in the Camden LGA a substantial growth of 4.7%. Given this accounts for vehicles registered as at 30 March 2011, it does not accurately reflect annual growth. Figures provided by the RTA are estimates based on the count of registered vehicles by postcode of the garaging addresses. The estimate is derived by applying the proportion by population of each postcode falling into a given LGA (RTA 2011b).

RESPONSES

3.3 Accessible Camden (R)

The vision for an accessible Camden includes a system of roads, paths and other communication links that provide ease of access within and between Camden's places, services and facilities. It includes a public transport system and alternate modes of transport designed to reduce the number of car-based commuters and to serve those who do not drive. Good access is obtained to the broader Sydney Region either by car or public transport (Camden Council 1999a).

Delivery of this vision is an ongoing task. During 2010/11 Council continued to be actively involved in the planning for the South West Growth Centre which will deliver road and public transport improvements to Camden over time. In addition, Council has responded to State Government initiatives for improved bus networks in Camden and continued to lobby for more direct and reliable priority bus services for Camden residents.

The Integrated Transport Strategy for the Camden-Campbelltown region was adopted by both Councils and is being used to assist the Councils in relation to various local and regional transport issues.

3.4 Provision of Cycleways in Camden (R)

Cycleways provide a healthy, non-polluting and safe transport network. Hence it is important that Council continue to provide safe cycling routes throughout the LGA. Council has produced a Recreational Trail Network Strategy in 2010 which will inform the development of an updated Bike Plan programmed to be finalised in 2011/12.

Council's investment priority continues to be links between Camden and Narellan, in line with the current Camden Council Bicycle Plan and the Sydney Metropolitan Strategy - Southwest Subregion (Action SW D3.1.1) (DoP 2008). Funding was secured in February 2011 to contribute towards the penultimate section of the Camden to Narellan Shared Path adjacent to Rotary Cowpasture Reserve. Construction was completed in July 2011. Design is underway to install on-road cycle lanes on Springs Road and RTA funding has been secured to extend the cycle lanes along the southern section of Macarthur Road. Design is also underway for a shared path on the northern side of Lodges Road. A shared path was constructed on the southern side of Gregory Hills Drive by Dartwest in early 2011, planned to eventually form part of a strategic cycle link between Oran Park with Campbelltown Station.

Council has secured grant funding for detailed planning of the Australian Botanic Garden Recreational Path. This trail, providing access for pedestrians and cyclists, is a key element of a longer trail proposed to extend from Camden, through Spring Farm and the Australian Botanic Garden, Mount Annan, over the F5 and onto Campbelltown. Further grant funding has been sought to commence construction next year.

3.5 BASIX Implementation (R)

Building Sustainability Index (BASIX) for new homes has been in effect since the NSW Government introduced it during July 2004. The BASIX Scheme is a web based tool that calculates the performance of a home in relation to its thermal comfort, water efficiency and energy efficiency.

The BASIX Scheme is implemented through a State Environmental Planning Policy (SEPP). The main feature of this Policy is to replace any previously existing Council development controls relating to energy and water efficiency. During 2010/11, 601 dwellings were approved under the BASIX requirements or through Council's Energy Efficiency policies.

The imposition of the BASIX scheme will continue to show positive results in reducing household water and energy demands and consumption.

During September 2010, the draft Environmental Planning & Assessment Regulation 2010 proposed a fee for issuing a BASIX Certificate and other changes to BASIX. It also proposed to introduce a requirement that a BASIX Completion Receipt be submitted online before an Occupation Certificate can be issued, and the removal of 'BASIX Optional Development'. Department of Planning and Infrastructure exhibited the draft Regulation until 5 November 2010. As of 1 July 2011, payment of the fee will be required for BASIX Certificates issued for all new dwellings (new single houses, townhouses, apartments, residential flat buildings and secondary dwellings).

3.6 Sustainable Camden – Sustainable Fuel (R)

Motor vehicles are the single most significant source of air pollutants. Diesel vehicles in particular produce about 60% of the particulate matter emitted by road transport (RTA 2004). Substitution of traditional diesel with an alternative fuel in motor vehicles has the potential to reduce pollutant emissions and thereby improve air quality and human health.

Biodiesel is a diesel alternative that is made up of vegetable oils such as sunflower, canola, coconut, recycled cooking grease and/or animal fats. It is widely reported to produce lower levels of harmful waste products than traditional diesel fuel mixes. Biodiesel is the only alternative fuel that can be used directly in any existing, unmodified diesel engine. It has similar properties to petroleum diesel fuel and can therefore be blended in any ratio with petroleum diesel fuel.

During the reporting period, Council continued to use B20 (20% Biodiesel) to fuel its Waste Fleet, consuming 251,543 litres (L) at a cost of \$334,965. In addition, in May 2011, Council upgraded its biodiesel fuel dispensing systems with the installation of an 11,000L below ground tank.

3.7 Energy Savings Action Plan and Energy Efficiency Action Plan (R)

Prior to the development of the Energy Savings Action Plan (ESAP), in 2005 Council adopted an Energy Efficiency Action Plan (EEAP) which outlined a number of vital strategies to help Council meet the greenhouse gas reduction targets set as part of the Cities for Climate Protection (CCP) Program.

The table on the following page summarises all actions taken on these strategies to June 2011.

During the reporting period, Council completed the installation of a solar water heating system for the pool water at Mount Annan Leisure Centre to boost and essentially partially replace, the existing electric water heating system. This system is estimated to reduce energy demand from pool water heating by up to 800,000 kWh annually and reduce annual power bills by \$14,000.

In addition, the existing electric hot water systems were converted to gas systems for the amenities at the Mount Annan Leisure Centre during 2010/11. This system is estimated to reduce the power consumption for the amenities hot water supply by approximately 70% and generate power bill savings of approximately \$5,000 annually.

Other energy saving initiatives completed during the reporting period include the installation of solar heating and pool blankets at Camden Pool and the installation of reflective blinds at Narellan Library.



Table 3.2: Summary of Council's Energy Savings actions

Strategy – 2010 Target	2005 Level	June 2011 Level
Utilise 20% biodiesel (B20) across 50% of Council's diesel fleet	1 waste collection vehicle	12 of Council's waste collection vehicles
Liaise with Council's Energy provider to upgrade streetlights to best available technology		All new street lights must use T5 efficient light fittings.
50% passenger vehicle fleet 4 cylinder vehicles	0	71%
Trial passenger vehicles with alternative fuel source/s	Nil	E10 Ethanol blend fuel available on corporate fuel card purchases Increasing % of diesel fuel vehicles in fleet Since June 2009 E10 fuel volume has tripled by 224% whilst unleaded fuel reduced by 5%
Plant 2000 trees to offset emissions from vehicle and buildings	Not available	2000 trees & shrubs planted with National Tree Day August 2009 200 trees planted for World Environment Day 400 Trees and groundcovers planted at Town Farm 200 Trees planted at Bicentennial Park North 2000 trees & shrubs given away during Narellan Rhythms Festival Total: 4800 trees & shrubs planted
Encourage energy efficient behaviour of staff		Earth Hour activities Energy saving reminders to staff Bus shelter posters promoting alternative transport and general energy efficiency Walk to Work Day encouraged
Subscribe to Energy performance reporting service for Council facilities		Insufficient funds to purchase energy performance data.
Upgrade all lighting in Council owned facilities to best available technology	Zero use of energy efficient light fittings	Zero installation of energy efficient lighting fittings
Engage MCSL to co-ordinate community greenhouse gas abatement campaign		Community workshop planned and delivered

Source: Camden Council (2011)

Key Indicator

Number of buildings which incorporate energy efficient design principles.

Indicator Category: "R" (Response)

Why use this indicator?

This indicator provides Council with a monitoring tool for which information can be readily collected. Council's energy efficient design requirements for all new building work require properties to achieve minimum energy efficiency rating of 3.5 using the Nationwide Home Energy Rating Software (NatHers) system.

By reducing dependence on fossil fuel for heating and cooling and by requiring buildings to be inherently more energy efficient, Council can influence the extent of overall greenhouse emissions in the broader region.

Table 3.3: Number of buildings incorporating energy efficient design principles

Period	Number of buildings in the LGA	Number of energy efficient dwellings	Percentage of all buildings
2000/01	14,489	3,297	23%
2001/02	15,336	4,055	26%
2002/03	15,639	4,440	28%
2003/04	15,888	4,940	31%
2004/05	16,220	5,193	32%
2005/06	16,466	5,439	33%
2006/07	16,693	5,666	34%
2007/08	16,935	5,926	35%
2008/09	17,123	6,114	36%
2009/10	17,614	6,605	37%
2010/11	18,215	7,206	40%

Source: Camden Council (2011)

Discussion

As can be seen in the above table, the number of buildings incorporating energy efficient design principles has increased slightly since the last reporting period. The reduction of greenhouse gas emissions through energy efficiency policy implementation will provide a valuable contribution by Council and the community to a regional greenhouse reduction program. Greenhouse gas emissions will continue to be reduced locally through initiatives such as Council's biodiesel use in its waste collection vehicles and through increases in the proportion of 4 cylinder passenger vehicles in Council's fleet. Further gains can be achieved through Council encouraging the community to consider more environmentally-friendly heating or opting for energy efficient water heating options for example.

Furthermore, Council has participated in the Fridge Buyback program since 2008 – a residential energy savings program that aims to persuade residents to give up their old second fridge to reduce their power bills and help save the environment. During 2010/11, 86 fridges were collected from the Camden LGA contributing to Camden's overall savings of 1,584t of greenhouse gases, the removal of 15.8t chlorofluorocarbons (CFCs) and 17.6 t of metal recycled through the Fridge Buyback program.

SECTOR STATEMENT

There are many aspects of local air quality that are beyond the control of Council. The prevailing winds and topography of the Sydney basin push much of the air pollution generated elsewhere in the Sydney region into the Camden area. Consequently, Council has limited options for positively influencing major air pollution issues. However, at the local level Council's commitment to energy efficient housing, improving local transport services and the development of ESD practices will assist in limiting the growth of pollutant-generating activities, thereby providing a valuable contribution to the State Government's air pollution control strategies.

4.0 Water

BACKGROUND

The following chapter provides an overview of water quality issues that affect Camden's aquatic environment and the initiatives Council has undertaken to improve the health of the waterways during the reporting period.

Camden is located in the Hawkesbury-Nepean River catchment area. The catchment consists of an area of over 22,000m² that drains to the Hawkesbury-Nepean River. The Hawkesbury-Nepean River system supports 800,000 people in over 20 local government areas. The Nepean River is the focus of the Camden landscape and home to the platypus, the symbol of 'Sustainable Camden'.

A broad range of activities are supported by the Hawkesbury-Nepean River system. The river underpins the significant agricultural activity of the catchment that supplies fresh vegetables, fruit and flowers to Sydney markets and most of the State's egg and poultry meat supplies. The region supplies most of Sydney's drinking water and hosts the second largest oyster and prawn producing areas in NSW. It supports extensive horse breeding and turf industries. Recreation and tourism are also major industries of the River attracting over 10 million visits per year.

Use of the Hawkesbury-Nepean River system for the above activities is heavily dependent on the quality of the water. Water quality within Camden is influenced by many factors both within the LGA and in the broader Hawkesbury-Nepean catchment area. In recognition of this, Camden Council continues to work with other Councils, state authorities and stakeholders to integrate water monitoring and management objectives.

4.1 Water Supplies (P)

As at 30 June 2011, the collective water supply increased substantially to 76.4% capacity from 57.6% at 30 June 2010. This marked increase is attributed to good rainfall and collective water saving and recycling practices.

Sydney Water's Water Wise Rules remained in place since they were announced on 21 June 2009. Water Wise Rules were introduced as dam storage levels had been maintained at around 60% capacity for 12 months.

Water Wise Rules are simple, common sense actions that apply to all Sydney Water customers in Sydney, the Illawarra and the Blue Mountains. This includes residents, businesses, local councils and government agencies. They are:

- All hoses must now have a trigger nozzle;
- To avoid the heat of the day, watering is allowed before 10am and after 4pm;
- No hosing of hard surfaces such as paths and driveways. Washing vehicles is allowed; and
- Fire hoses must only be used for fire fighting activities only.

Fines of \$220 for all breaches of water saving rules by individuals still apply. Businesses face a fine of \$550 for each breach. Fines of \$2,200 for water theft also apply (Sydney Water 2009b).

4.2 Stormwater Pollution (P)

Non-point source pollution emanates from numerous diffuse sources including road drainage run-off, general run-off from open spaces and hard surface areas, unprotected development sites etc. This type of water pollution is difficult to control and relies on public education to prevent fertilisers, greenwaste and other various materials from entering the stormwater drainage system. In particular, pollutants from urban settings may contain heavy metals and carcinogenic substances as well as harmful objects such as broken glass, syringes and ingestible plastic. When prevention fails and these materials wash into the stormwater drainage system, Gross Pollutant Traps (GPTs) are an effective means of capturing the majority of the solid pollutants. The volume of solid wastes entering waterways from non-point sources can be monitored by measuring the amount of material removed from GPTs during regular maintenance.

Approximately 65 cubic metres (m³) of rubbish (silt, cans, plastic bottles and bags, leaf litter, paper, cardboard and cartons etc) were removed from GPTs during the year. The following table (Table 4.1) provides details of the rubbish removed and from which location.

Table 4.1: Location & quantities of rubbish removed from GPTs during 2010/11

Location	Amount of rubbish removed (m ³)	Number and type of GPT from which rubbish is removed
Harrington Park	32.0	36 pits
Currans Hill	8.0	17 pits
Mt Annan	6.0	16 pits
Lake Annan	16.0	1 structure
Grasmere	3.0	5 pits
Total	65	

Source: Camden Council (2011)

A total of 5.5 cubic metres (m³) of plastic bottles & bags, paper, cans, bottles, grass cuttings, leaf litter, building waste was also removed from pit baskets at Narellan/ Narellan Vale (2.0m³), Camden Acres (2.5m³) and Horben Vale (1m³).

Stormwater pit cleaning activities during 2010/11 removed over 160m³ of leaf litter, plastic bottles, cartons, glass bottles, paper and silt from the CBDs of Camden and Narellan and residential areas of the LGA. An additional 250m³ of litter was manually picked up from wetlands in Harrington Park and Smeaton Grange.

4.3 On-site Sewage Management

Point source water pollution refers to pollution emanating from a single source, for example, an illegal drainage pipe into a stormwater line. Locating point source pollution is often difficult and time consuming. Council relies on observations, monitoring and auditing of commercial premises and public cooperation to help detect and remedy illegal discharges into our waterways.

On-site sewage management systems (ie septic tank systems) make up a large group of potential point source pollutant discharges which can, if not managed properly, have a significant adverse impact on both public health and the environment. For this reason, Council registers the location and types of all on-site wastewater management systems in the Camden LGA and undertakes an inspection program to assess the operation and maintenance of these systems and the risk of system failure.

During the 2010/11 reporting period, Council commenced the implementation of a new educational program. This program has been designed to promote the approval requirements for any minor or major works to an existing On-site Sewage Management (OSSM) Systems and or new OSSM system. The

program has been focused on capturing a broad range of responsible parties including but not limited to property owners, system manufacturers, distributors, plumbers and real-estate agents.

The aim of the program is to eliminate the undertaking of illegal works on OSSM systems. Illegal works often result in sub-standard systems which pose a risk to public health and the environment.

Table 4.2 below indicates the percentage risk of system failure, and subsequent point source pollution, for on-site sewage management systems in the Camden LGA.

The three categories of risk are based on an inspection and assessment of the site and treatment system installed. Systems are categorised as 'high', 'moderate' or 'low' risk depending on a range of environmental factors. Systems designated 'high' risk require an inspection every two years, 'moderate' systems are inspected every four years and those rated as 'low' are inspected every six years.

The fourth category 'not issued' relates to OSSM systems that Council has inspected during the 2010/11 reporting period but for which Council has not issued an approval to operate. This category covers systems that are currently operating unsatisfactorily. Council is working with the owners of these systems to ensure that appropriate works are undertaken to ensure that these systems are operating in a satisfactory manner, enabling Council to issue an approval to operate the system.

During the 2010/11 reporting period 47 new applications to "Install a Sewage Management System" were lodged with Council. Of these applications all forty seven were approved. It is estimated that there are approximately 3,000 on-site sewage management systems operating in the Camden LGA.

Table 4.2: Breakdown of the percentage of environmental risks for the on-site sewerage systems inspected in the Camden LGA

Reporting Period	Percentage of inspections by category of risk (%)				Total
	High	Medium	Low	Not issued	
To 30 June 2003	11	14	75	This information was not available	100
To 30 June 2004	-	-	-	This information was not available	-
To 30 June 2005	0	13	87	This information was not available	100
To 30 June 2006	21	29	50	This information was not available	100
To 30 June 2007	18	25	41	16	100
To 30 June 2008	17.4	22.3	50.4	8.7	100
To 30 June 2009	23	18.5	58.5	0	100
To 30 June 2010	20	25	55	0	100
To 30 June 2011	16	14	70	0	100

Source: Camden Council (2011)

Discussion

Existing OSSM systems are being inspected for compliance with the *Environment & Health Protection Guidelines: On-site Sewage Management for Single Households* (DLG 1998) prescribed under the legislation. Council made significant changes to the Draft Sewage Management Strategy designed to streamline the application process for the applicant and Council whilst ensuring the protection of public health and the environment. Subsequently, Council adopted the *Sewage Management Strategy* on the 26 June 2006, effective as of 17 July 2006. Council is in the process of further reviewing this strategy.

4.4 Water Quality Monitoring (S)

No recreational water quality testing was carried out during this reporting period.

4.5 Blue-green Algae (S)

Blue-green algae (also known as cyanobacteria) are a group of algae that are commonly found in fresh water. Some of the species of algae that make up this group may produce toxins that pose a health risk to both humans and animals.

Generally, blue-green algae require suitable levels of nutrients, warm water, still conditions and low salinity in order to bloom. Such blooms are often noticeable as a paint-like scum on the water's surface, or as green flecks in the water.

Due to lack of resources, it was late in the season of 2010/11 before blue-green algae testing was carried out. Testing on 21 April 2011 revealed only one problem area at Harrington Park Lake 2 which was on amber alert. Subsequent testing revealed that levels had subsided

RESPONSES

4.6 West Camden STP Amplification and Recycled Water Pipeline (R)

The West Camden Sewage Treatment Plant (STP) releases treated wastewater to the upper reaches of the Nepean River via Matahil Creek. The plant is being upgraded as part of Sydney Water's long-term water and wastewater strategy, WaterPlan 21 and their commitment to improving the quality of wastewater being released into the Nepean River.

The STP's catchment is 5,900 hectares with a current population of 40,000 residents. It serves the towns and villages of Camden, Camden South, Elderslie, Narellan Vale, Harrington Park, Currans Hill, Smeaton Grange, Mount Annan, The Oaks and Oakdale. The planned upgrade will also cater for future population growth in those suburbs, projected to be 80,000 during the next 20 years.

Several project components at West Camden STP are complete and have undergone testing to ensure they operate efficiently. Construction of the recycled water pipeline is now complete. It has been constructed from Elizabeth Macarthur Agricultural Institute (EMAI), along Remembrance Drive, Wire Lane, through public reserves, along Burragorang Road, Cawdor Road and Sheathers Lane to the STP.

Some recycled water is being used by Council to irrigate parks and playing fields. Using recycled water improves the river's health by reducing the volume of water extracted for irrigation and decreasing the amount of nutrients released into local waterways.

The pipeline will supply almost two billion litres of recycled water each year. Across greater Sydney more than 20 schemes recycle around 22 billion litres of wastewater a year for home use, irrigation, agriculture and industry, including Sydney Water's own sewage treatment plant operations. By 2015 recycling will increase to 70 billion litres a year (Sydney Water 2009a).

4.7 Biosolids Upgrade and Amplification Project (R)

Sydney Water is planning to implement a Biosolids Upgrade and Amplification Project at West Camden Water Recycling Plant (WRP).

This project will allow West Camden WRP to better service the population growth in the Camden area by improving and amplifying the biosolids treatment facilities at the plant.

The work includes:

- constructing one new digester similar to the existing and two small pre-treatment digesters;
- refurbishing existing digesters to improve heating and mixing; and
- constructing a biosolids transfer pumping station (Sydney Water 2011).

4.8 Water Sensitive Urban Design (R)

In order to reduce the impacts of urbanisation upon the environment, Camden Council has incorporated Water Sensitive Urban Design (WSUD) elements into all major urban developments. WSUD is part of the contemporary trend towards more 'sustainable' development solutions that protect the environment. By incorporating appropriate measures in the design and operation of residential and commercial development, it is possible to:

- maintain and restore natural water balance,
- reduce flood risk in urban areas,
- reduce erosion of waterways, slopes and banks,

- improve water quality in streams and groundwater and protect and restore aquatic habitats,
- make more efficient use of water resources,
- reduce the cost of providing and maintaining water infrastructure, and
- protect the scenic, landscape and recreational values of streams.

Traditional water supply, stormwater and wastewater management practices were largely based on centralised collection, conveyance, treatment and disposal of water flows. By contrast, WSUD promotes a decentralised approach that is more attuned to natural hydrological and ecological processes. It places greater emphasis on on-site collection, treatment and utilisation of water flows as part of an integrated 'treatment train' that may be applied in addition to, or in lieu of, conventional storm water measures. Elements in the treatment train may include:

- use of roof water for toilet flushing, laundry use, hot water systems or irrigation,
- collection and reuse of surface runoff and greywater for irrigation purposes,
- specially designed landscaping for cleansing runoff and conserving water,
- protection of native vegetation to minimise site disturbance and conserve habitat, and
- protection of stream corridors for their environmental, recreational and cultural values.

WSUD calls for and requires designers to respond to the constraints and opportunities of each individual site. Consequently, careful consideration must be given to site characteristics such as soil type, slope, groundwater conditions, rainfall, and the scale and density of development (WSUD 2006).

The downstream main feature pond at The Cascades was desilted during the reporting period. The sediments recovered during the process were tested and reused as landscaping materials at Springs Reserve. In addition Council completed rectification works of the stormwater inlet pits to the Cascade Pond System including the replacement of GPT screens and repair of trash baskets.

The Harrington Park Water Quality Management System is a series of waterbodies, parklands and playing fields which provide water quality and flood mitigation treatments for Narellan Creek, prior to its journey to the Nepean River. Council has been implementing stages of the system since the construction of the first water body during 1998.

Works were also completed on the Smeaton Grange Bioretention System which includes a sand filter within the Narellan Creek drainage channel, upstream of the

Harrington Park Water Quality Management System.

Stormwater harvesting involves diversion of stormwater flows which would normally discharge into a creek or drain, storing and treating the captured water to irrigate open space areas. Stormwater harvesting systems have been installed at Harrington and Fairfax Reserves at Harrington Park, Wandarrah and Birriwa Reserves at Mount Annan and Elizabeth Park, Narellan Vale. Regular testing of the treated stormwater is carried out to ensure compliance with required health standards. During 2010/11 a stormwater harvesting system has been incorporated in the upgrade of the Camden War Memorial Pool. Captured rainwater is filtered before being used to top up water levels in the swimming pools.

Works were completed on the installation of sub-surface irrigation systems at Ron Dine and Hayter Reserves Camden except for a second playing field at Hayter Reserve where ground salinity presents a problem. Funded by NSW Environmental Trust grant, the second field was reconstructed in December 2009 using recycled organic topdress prior to installing the sub-surface irrigation. From November 2009 when Sydney Water finalised the connection for the supply of recycled water to both reserves, 100% of the water utilised is recycled from the Camden Sewage Treatment Plant. This has resulted in potable water consumption savings of approximately 10ML of water at Ron Dine and 8ML of water at Hayter Reserve annually.

An audit of stormwater outlets within the Camden and Camden South areas has been completed. Additionally the project will prioritise existing outlets for the installation of stormwater quality treatment devices to be installed over the coming years. During the 2010/11 reporting period, accessible outlets were identified and a contractor engaged for the maintenance, excavation and remodeling of the outlet structures and tail out drains to ensure that outlets drain properly.

4.9 Potable Water Savings

The collective consumption of potable water by Council's buildings, facilities and reserves is at 187 kilolitres (kL)/day compared to over 400 kL/day prior to the installation and implementation of water saving systems and initiatives such as those discussed earlier.

During the 2010 /11 reporting period, Council continued to implement its Water Savings Action Plan, adopted 11 December 2006. A 10,000L rainwater tank was purchased to be installed at Kirkham Park Rugby League Oval. It will be used for toilet flushing. The water savings will be in the order of 50% of the facilities total consumption.

Key Indicator

Levels of phosphorus and nitrogen present in tested waters.
Indicator category: "S" (State)

Why use this indicator?

Phosphorus and nitrogen form part of the chemical load that urban, industrial and rural lands shed in surface flows following rain. The existence of excessive amounts of these nutrients can lead to algal blooms and the leaching of toxic substances into the water body. Low levels of these elements would indicate that sources of pollution from the above landuses were being adequately managed and that local creek and river water quality was not suffering. The indicators are relatively low in cost to monitor and produce simple results that can be easily reported back to the community. The following table summarises the mean levels for available phosphorus only.

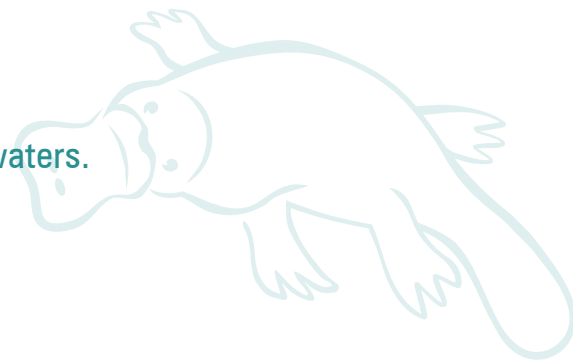


Table 4.3: Mean Levels of Available Phosphorus in Tested Waters

Testing Location	2009/10 Available Phosphorus (AP) mg/L	2010/11 Available Phosphorus (AP) mg/L
Lake Gilinganadum, Front Dam, Mount Annan Botanic Gardens	N/A	0.01
Lake Howe, Wattle Garden, Mount Annan Botanic Garden	N/A	0.08
Nursery Dam, Mount Annan Botanic Garden	N/A	0.05

Note: The accepted standard for AP is 0.05mg/L and the accepted standard for N is 0.60mg/L.

N/A: data not available

Source: Streamwatch (2011)

Discussion

Over the recent years, testing of water quality by Streamwatch groups has declined dramatically both in the number of groups participating and the number of water quality parameters tested. Furthermore, it should be noted that all three Streamwatch sites noted here are isolated water bodies within the Australian Botanic Garden, Mount Annan (formerly Mount Annan Botanic Garden) and are not necessarily indicative of the water quality across the Camden LGA. Alternative indicators to monitor Camden's water quality will need to be considered for future reports.

SECTOR STATEMENT

Urban development within Camden and neighbouring catchments continues to impact upon the quality and availability of water in Camden LGA. Water quality data obtained through programs such as Streamwatch can also provide a greater awareness of the impacts on our local waterways. Management initiatives by Council continue to address a wide variety of water quality issues including stormwater treatment, riparian zone management, point source pollution and education in agricultural enterprises.

5.0 Biodiversity

BACKGROUND

Biodiversity refers to the variety of all life forms - the different plants, animals, microorganisms, the genes they contain, and the ecosystems they form. The conservation of biodiversity is essential for supporting human life on Earth. Biodiversity maintains ecosystem productivity and function, thus improving ecosystem stability during climate change and providing a mechanism for the absorption of waste products (State of the Environment Advisory Council 1996).

This chapter provides an overview of the issues and initiatives undertaken by Council relating to the preservation and enhancement of biodiversity in the Camden LGA.

5.1 Native Vegetation (S)

The Camden LGA is centred on the town of Camden, on the banks of the Nepean River, in the south-west region of the Cumberland Plain. The area, with its rich fertile Nepean River floodplains and undulating Wianamatta Shale hills, was named 'The Cowpastures' in the 1790s after cattle that had escaped from Sydney were discovered running wild here.

As part of the Cumberland Plain Woodland (CPW), the original vegetation was characterised by trees of Grey Box (*Eucalyptus moluccana*), Narrow-leaved Ironbark (*Eucalyptus crebra*) and Forest Red Gum (*Eucalyptus teretecornis*). The ground cover was grassy with predominantly Kangaroo Grass (*Themeda australis*) and *Poa labillardieri* and *Sporobolus creber*. Patches of shrub understorey included *Bursaria spinosa*, *Olearia viscidula* and *Indigofera australia*. CPW was also found on the eastern side of Nepean River near Cobbitty, Narellan and further north. Nowadays, examples of Cumberland Plain Woodland with native pasture remain in the Elizabeth Macarthur Agricultural Research Institute (Benson & Howell 1990), at Mater Dei and Harrington Grove.

A very localised patch of dry rainforest near Cobbitty was reported in the 1860s. The plants recorded here were not found anywhere else nearby – the nearest being the Hunter Valley. Many of the original flora species are either extinct or degraded by grazing stock and rabbits or from competition with the naturalised African Olive (*Olea europaea subspecies africana*) (Benson & Howell 1990).

Along the Nepean River tall eucalypt forests grew on the alluvial banks and freshwater swamps in flood-prone swales. Following settlement, most of this alluvial forest disappeared, except for the small area fenced off known as 'Camden Park'.

This remnant includes species of Blue Box (*Eucalyptus baueriana*) and Broad-leaved Apple (*Angophora subvelutina*) (Benson & Howell 1990).

River Oaks (*Casuarina cunninghamiana*) and Water Gums (*Tristaniopsis laurina*)

are found along the water's edge but changes in flooding patterns and increasing nutrients in the river have allowed exotic weeds to naturalise and dominate the understorey. The restricted but locally abundant Camden White Gum or Nepean River Gum (*Eucalyptus benthamii*) is also found in the sandy alluvial soils of the Camden LGA.

Freshwater swamps filled the low-lying floodplain depressions but on low-lying flats around Narellan was Swamp Oak (*Casuarina glauca*) growing in what seems to be a response to saline ground water (Benson & Howell 1990).

Unique to the area is Elderslie Banksia Scrub Forest, dominated by Coastal Banksia *Banksia integrifolia ssp integrifolia* and other sandstone region species which do not occur in the surrounding Cumberland Plain communities (DECC 2005).

5.2 Threats to Native Vegetation (P)

There are many threats with various degrees and magnitude of impact on Australian native vegetation in both rural and urban areas. These threats include broadscale clearing for new agricultural land use, urban development and road expansion. It also includes overgrazing, chemical run-off, irrigation and dryland salinity, unsustainable firewood collection, competition from weeds and rubbish dumping.

During the reporting year 283 DAs were assessed for works which impacted in some way on vegetation. This required the inspection of some 764 individual trees. On average 7 tree-related DAs were assessed each week. There has been a 9% increase in the number of applications compared with the previous year and above the 5 year average of 261 tree applications per year.



Table 5.1: Development Applications affecting Trees

Reporting Period	Applications	No. Trees approved for removal	No. Trees approved for pruning
2003/04	312	612	105
2004/05	287	540	106
2005/06	253	532	82
2006/07	320	812	166
2007/08	212	454	109
2008/09	279	612	133
2009/10	245	638	144
2010/11	283	628	136

Source: Camden Council (2011)

Where approval is given for tree removal a condition of approval is added requiring a replacement tree to be planted at the subject property. Approximately 20% of applications for tree removal affect local native vegetation. Prosecutions for illegal tree removal/clearing during the reporting year have resulted in substantial fines being imposed along with orders requiring the remediation of the damage through tree planting.

The following table shows the distribution of applications received by location. By far, the built-up urban areas account for most of the tree pruning/removal activity in Camden.

Table 5.2: Development Applications affecting Trees by location

Suburb	2009/10	2010/11
Camden South	51	57
Camden	33	42
Narellan	25	30
Elderslie	37	30
Grasmere	16	9
Mount Annan	16	19
Leppington	8	13
Narellan Vale	16	20
Cobbitty	8	11
Catherine Field	8	7
Currans Hill	7	8
Kirkham	2	6
Rossmore	5	2
Spring Farm	-	1
Harrington Park	5	10
Smeaton Grange	1	2
Bringelly	4	3
Ellis Lane	3	40
Totals	245	310

Source: Camden Council (2011)

5.3 Threatened Species Conservation (R)

Swamp Oak Floodplain Forest and River-Flat Eucalypt Forest are listed as Endangered Ecological Communities (EECs) under the *Threatened Species Conservation Act 1995 (TSC Act 1995)* as occurring on the Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions are located in the Camden LGA. Other EECs also found in the Camden LGA are Elderslie Banksia Scrub Forest, Western Sydney Dry Rainforest, Moist Shale Woodlands and the now critically endangered Cumberland Plain Woodland (effective as of 9 December 2009) (DSEWPC 2010).

With regards to individual flora species, 573 have been identified in the Camden LGA – both native and exotic species. Of these, 26 species are threatened or protected species under Division 2 of the TSC Act 1995 (Refer to Table 5.3) including the Camden White Gum (*E. benthamii*) and Brown Pomaderris (*Pomaderris brunne*), both classified 'Vulnerable (V)' and the White-flowered Wax Plant (*Cynanchum elegans*) and the small shrub *Pimelea spicata*, both classed as 'Endangered (E1)' under the TSC Act 1995 (NSW Government 2005).

Table 5.3: Threatened Species – Category of threatened species

Code	Categories of threatened species
E1	Endangered (<i>Threatened Species Conservation Act 1995</i>)
E2	Endangered Population (<i>Threatened Species Conservation Act 1995</i>)
E4	Presumed Extinct (<i>Threatened Species Conservation Act 1995</i>)
E4A	Critically Endangered (<i>Threatened Species Conservation Act 1995</i>)
V	Vulnerable (<i>Threatened Species Conservation Act 1995</i>)
FE	Endangered (<i>Fisheries Management Act 1994</i>)
FEP	Endangered Population (<i>Fisheries Management Act 1994</i>)
FV	Vulnerable (<i>Fisheries Management Act 1994</i>)
FX	Presumed Extinct (<i>Fisheries Management Act 1994</i>)
P	Protected (<i>National Parks and Wildlife Act 1974</i>)
P13	Protected Plants (<i>National Parks and Wildlife Act 1974</i>)
U	Unprotected

Source: NPWS (2008)

An Endangered Population (Flora) of the vine *Marsdenia viridiflora* is listed as occurring in the Camden LGA.

5.4 Wildlife and Habitat (S)

Various agencies have recorded a collective total of 247 animal species in the Camden LGA. This includes amphibians, reptiles, birds, fish, insects, mammals and molluscs. Of these, 189 animals are classed as either threatened under the *TSC Act 1995* or as protected under the *NP&W Act 1974*. The remaining 58 are introduced species, which can aggressively compete with native fauna species for food and habitats for eg Common starling and blackbird, European carp and rabbits. Approximately 70% of the 189 threatened or protected species recorded in the Camden LGA are bird species.

In many cases, there are numerous threats impacting on native animals. It includes habitat loss that comes

with broad scale land clearing, predominantly for urban development in the Camden LGA. The introduction of exotic species or pests that prey on or compete for food, shelter or nesting spaces also poses a huge impact on the abundance and diversity of native fauna not to mention the diseases and parasites introduced by these exotic species. Urbanisation also affects native (and domestic) animals directly eg road kills, electrocution by power transmission cables and poisoning by humans (whether accidentally or incidentally).

Table 5.4 displays 15 species of fauna that are presently considered vulnerable or endangered and which are known to occur in the Camden LGA. Specifically, all species listed in the table are classed as vulnerable bar the Cumberland Land Snail classed as an endangered species under the *TSC Act 1995*.

Table 5.4: Threatened Fauna Species Present in the Camden LGA

Common Name	Scientific Name	Threatened Species Code	Habitat
Birds (Aves)			
Hooded Robin	<i>Mealanodryas cucullata</i>	V	Large areas of Woodland.
Blue-Billed Duck	<i>Oxyura australis</i>	V	Deep, permanent freshwater lakes and lagoons and swamps with extensive reed beds.
Freckled Duck	<i>Stictonetta naevosa</i>	V	Swamps heavily infested with Cumbungi, farm dams.
Diamond Firetail	<i>Stagonopleura guttata</i>	V	Inhabits open eucalypt and woodlands feeding on grass seeds. Has been observed at Gundungurra Reserve by Council's Natural Resource Officer in October 2002. No other records.
Speckled Warbler	<i>Pyrrholaemus sagittaus</i>	V	Large Areas of Woodland.
Molluscs (Mollusca)			
Cumberland Land Snail	<i>Meridolum corneovirens</i>	E1	Open woodland, found under fallen logs and debris, and under bark and leaf litter of Eucalypt trees, feeds on fungi. Has been found in Camden LGA at Spring Farm, Mount Annan, Harrington Park and Mater Dei property.
Mammals (Mammalia)			
Common Bentwing Bat	<i>Miniopterus schreibersii oceanensis</i>	V	Well timbered areas and areas where there are caves, old buildings, stormwater drains. Recorded at Elderslie.
Large-footed Myotis	<i>Myotis adversus</i>	V	Roosts on caves, tunnels, old buildings and in dense foliage. Inhabits sites near water bodies where it forages on aquatic pests. Recorded at Mater Dei complex at Camden.
Greater Broad-nosed Bat	<i>Scotoneanux ruepellii</i>	V	Generally roosts in tree hollows and forages along tree-lined creeks between woodland and open paddocks. Recorded at Elderslie, Spring Farm and Mater Dei complex.

Grey-headed Flying Fox	<i>Pteropus poliocephalus</i>	V	Sub-tropical and temperate rainforest, tall sclerophyll forest, woodlands. Forage on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca, Banksia and Rainforest fruit. Can travel hundreds of kilometres depending on food availability. Recorded at Spring Farm and Elderslie.
Eastern Freetail Bat	<i>Mormopterus norfolkensis</i>	V	Inhabits woodlands, forages above the canopy and roosts in tree hollows and bark. Recorded at Elderslie and Spring Farm.
Large-eared Pied Bat	<i>Chalinobolus dwyeri</i>	V	Inhabits woodlands and roosts in cave, tunnels and tree hollows. Recorded at Elderslie.
Eastern Pigmy Possum	<i>Cercartetus nanus</i>	V	
Species classed as threatened under the <i>NSW Fisheries Management Act 1994</i>			
Adams Emerald Dragonfly	<i>Arcaeophya adamsii</i>	V	
Macquarie Perch	<i>Macquaria australasica</i>	V	

Source: NPWS (2001), GEC (1999), Conacher & Travers (2001), and Conacher Travers (2002)

5.5 Distribution and Abundance of Aquatic and Terrestrial Weeds (S)

Alligator Weed

Alligator weed poses a serious threat to the Camden LGA waterways and terrestrial areas. The Nepean River has light to moderate infestations along the banks. There are heavy infestations located in Leppington on private properties and in Kemps Creek. Camden Town Farm still has a light infestation which has been treated twice in the last year.

A new incursion of Alligator Weed was detected in Narellan Creek at Harrington Park which includes the water detention basin system. This is a heavy infestation and the original source of the infestation is unknown. A treatment program has been implemented by Council with an aim to contain and reduce the infestation. A terrestrial infestation of Alligator Weed was also detected at Ron Dine reserve in Camden South. This infestation has been treated and ongoing monitoring is in place to prevent further spread in this area.

Salvinia

Salvinia molesta remains present in a large dam and small creek on private property in the Kirkham area. This dam and small creek form part of the Narellan creek catchment. The South Creek catchment area also has some light infestations both in South Creek itself and in farm dams on properties adjoining the creek. Landholders have engaged in control measures to suppress and destroy the infestations. Ongoing monitoring of these areas will continue through future inspection programs.

Water hyacinth

Several infestations of Water Hyacinth (*Eichhornia crassipes*) were observed in the LGA during the 2010/11 reporting period. A number of properties along the upper Rileys Creek catchment have infestations of Water Hyacinth in dams. This weed has not been observed in the creek itself. The possibility of spread of this weed into the creek is high, thus landholders have been educated and given instruction to eradicate and destroy the weed.

The possibility of growth from dormant seeds in a creek in Spring Farm and a number of farm dams in the Leppington area remains a possibility, although inspections during the reporting period have revealed no such regrowth.

Other Aquatic Weeds

During 2010/11 infestations of *Ludwigia peruviana* were monitored. New infestations of this weed were detected at Harrington Park. The infestation at Harrington Park has been treated. The regional weeds committee is still awaiting the announcement of the new Noxious Weed declarations from the NSW Department of Primary Industries. Should this weed be declared as a Noxious Weed, control measures will be placed on occupiers of land who have this weed present on their land.



Terrestrial Weeds

Infestations of terrestrial weeds including Privet, African Boxthorn, Sweet Briar, African Olive and Blackberry were further reduced in distribution and abundance over the last year. Considering these weeds having various distributions throughout the LGA, Council and other land managers are making concerted efforts to prevent the spread of many of these weeds.

Noxious weed control works have been conducted by Council on numerous public land sites throughout the Camden LGA. The most common noxious weeds present on Council owned reserves are Blackberry and African Boxthorn.

RESPONSES

5.6 Plantings and Bush Regeneration Activities (R)

As mentioned in the previous SoE Report, Council had altered its key indicator for this chapter to reflect the total number of trees planted in the LGA during the reporting period. Tree planting data is more readily collected and will provide the community with information as to the number of trees planted and the locations of these trees.

Council did not have access to specific figures relating to plantings that were undertaken as part of various large scale development projects for this reporting period.

The following responses have been undertaken by Council during the 2010/11 reporting period. Each table presents specific data for each type and location of trees planted within the LGA during the reporting period.

Street and Park Trees

The following table provides a summary of the number of street and park trees removed and new plantings within the LGA during the reporting period in comparison to the last reporting period. It denotes a 50% decline in the number of tree removals and replacements but approximately a similar number of new plantings from the previous reporting period. Also, mainly due to the Growth Centres Development and other Developments such as Spring Farm, Harrington Grove, Elderslie and Mount Annan, there are approximately 3,000 street trees being planted annually. Furthermore, there are significant numbers of trees and shrubs being planted in landscaping projects by developers, particularly in riparian areas, parks and reserves.

Table 5.5: Street and Park Trees

Type	2009/10	2010/11
Removal & Replacements	263	130
New Plantings	265	255

Source: Camden Council (2011)

Revegetation

Table 5.6: Number of plants planted at revegetation sites during 2010/11

Site	Trees	Shrubs	Ground-covers	Total
Kings Bush Reserve	100	-	-	100
Bicentennial Park north, (Ferguson's land)	540	80	-	620
Gundungurra Reserve (National Tree Day 2010)	2000	500	-	2500
Benwerrin Pond	3	-	-	3
Camden Town Farm (Nepean Riparian Corridor)	200	-	-	200
Total	2,843	580	0	3,423

Source: Camden Council (2011)

Bushland Restoration

The following table provides information regarding the areas of Reserves that have undergone restoration during the reporting period. The type of activity performed at each site is noted in the right-hand column.

Table 5.7: Bushland Restoration activity and area during 2010/11

Site	Area in Hectares (ha)	Activity
Kings Bush Reserve	2.5	M, Sp, R
Sickles Creek Reserve / Benwerrin Pond	0.2	M, R
Bicentennial Park north (Ferguson's land)	5.0	P, M, Sp, R
Gundungurra Reserve	2.5	Sp, R
Camden Town Farm	1.5	M, R
Total	11.7	

Sp: Herbicide Spraying, R: Revegetation, DS: Direct Seeding, P: Primary Weeding, S: Secondary Weeding; Er: Erosion Control, M: Maintenance
Source: Camden Council (2011)

Community Volunteers

Table 5.8 provides an overview of the sites where volunteers have undertaken biodiversity restoration works during the reporting periods of 2009/10 and 2010/11.

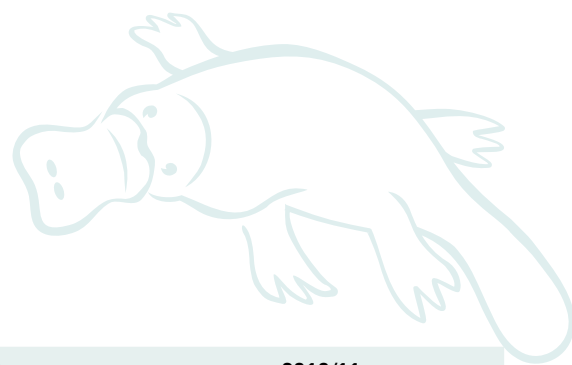


Table 5.8: Community Volunteers Activity for 2009/10 and 2010/11

Site/Activity	Group	2009/10		2010/11	
		No. of Volunteers	Volunteer Hours (hr)	No. of Volunteers	Volunteer Hours (hr)
National Tree Day, 2 August 2009 Bicentennial Equestrian Park	Community	50	150	-	-
National Tree Day, 1 August 2010 Gundungurra Reserve	Community	-	-	150	450
Gundungurra Reserve	Green Corps Volunteers	-	-	10	30
Kings Bush Reserve, Camden	Camden Bushcare	12	200.5	11	178
Kings Bush Reserve, Camden	Green Corps Volunteers	10	660	10	240
Sickles Creek Reserve & Benwerrin Pond, Grasmere	Camden Bushcare and community	7	45	4	28
Bicentennial Park north (Ferguson's land)	Camden Bushcare	0	0	4	28
Bicentennial Park north (Ferguson's land)	Green Corps Volunteers	10	180	10	460
World Environment Day at Bicentennial Equestrian Park	Green Corps and Men Shed Volunteers	20	100	0	0
Bicentennial Park north (Ferguson's land)	Corporate Volunteers	-	-	20	120
Camden Town Farm	Green Corps Volunteers	10	480	10	90
Currans Hill Public School	Green Corps Volunteers	10	210	10	60
Total		129	2025.5	239	1684

Source: Camden Council (2011)

National Tree Day

National Tree Day was celebrated on 1 August 2010 at Gundungurra Reserve, Narellan Vale. Approximately 150 volunteers contributed 450 hours in planting a total of 2,500 native seedlings. The seedlings consisted of tubestock plants of endemic tree species.

5.7 Natural Assets Policy (R)

The Natural Assets Policy, discussed in detail in the previous report, remained effective for the 2010/11

reporting period. The Policy introduces a variety of initiatives to ensure that the natural resource assets of the Camden LGA are managed for the long-term sustainability of the region.

The principal objectives of the Policy are to:

- Facilitate ecologically sustainable development through the substantial retention and long term management of natural assets in Camden,
- Protect the environment of Camden by ensuring that

the impacts of future land uses are considered in a cumulative and total catchment management context,

- Protect, conserve and restore native vegetation in parcels of a size, quality and configuration which will enable the existing plant and animal communities to survive in the long term,
- Maintain the natural hydrological processes of the landscape to ensure the survival of aquatic ecosystems and the mitigation of salinity risk, and
- Provide an offsetting mechanism to provide flexibility in the implementation of this policy.

The Policy requires that proponents minimise their impact upon natural systems and offset any impacts that do occur as a result of development activities.

Council has reviewed the operation of the Policy and the relevant provisions of the Policy are being incorporated into the Camden Development Control Plan 2011.

5.8 Weed Eradication (R)

Successful noxious weed eradication programs have been implemented on public and private land during the reporting period. Numerous private landholders received instruction to control or eradicate noxious weeds. The abundance of both terrestrial and aquatic weed infestations has been reduced.

Council has engaged in extensive inspection programs throughout the year. Over 150km of riparian areas were inspected and over 120 private property inspections were carried out throughout the reporting period. Council has engaged in education programs including displays at Camden Show and implementing an educational working group for the Alligator Weed issue in the Leppington area.

Table 5.9: Summary of Noxious Weed Inspections 1998 to 2011

Reporting period	No. of Inspections	No. of properties inspected	No. of Section 18 notices issued
1998/99	181	176	0
1999/00	288	226	2
2000/01	243	201	28
2001/02	175	110	32
2002/03	187	126	42
2003/04	158	117	32
2004/05	306	224	36
2005/06	367	316	38
2006/07	302	298	1

Reporting period	No. of Inspections	No. of properties inspected	No. of Section 18 notices issued
2007/08	308	273	1
2008/09	301	287	1
2009/10	>300	*N/a	*N/a
2010/11	N/a	121	4

*N/a: data set incomplete. Source: Camden Council (2011)

Alligator weed infestations were again treated throughout the reporting period, between October and May in collaboration with Wollondilly Shire, Campbelltown and Liverpool City Councils. Treatment of Alligator Weed in the Nepean River during this reporting period was more effective with the use of metsulfuron producing a 95% kill rate, which is higher than in previous years. Consistent inspection and more efficient recording of aquatic weed infestations, mainly Alligator Weed in the upper Nepean, has resulted in reduction of the weed over the last 12 months. This has come about by quality control of measures for both contractors and Noxious Weeds Officers physically recording the outbreaks and sharing the data more effectively. Infestations are mapped using a GPS camera and topographic maps. No other noxious aquatic weeds were observed in the Nepean River within the Camden LGA during the reporting period.

Camden LGA is undergoing major residential and commercial development which will continue into the future for sometime. Camden Council has a significant portion of the South West Growth area which has fast tracked large areas of land for subdivision. Council has taken this opportunity to ensure that existing noxious weeds are suppressed and preventative measures are put in place by all applicants proposing to develop land within the Camden LGA. Conditions are also placed on the approval in relation to trucks and machinery entering/leaving the site, ensuring the contractors minimise any risks of the weeds being spread. This process has significantly reduced the noxious weeds present in road reserves, bushland and open space in the new development areas.

Key Indicator

Number of trees planted during reporting period.
Indicator category: "R" (Response)

Why use this indicator?

Data from this indicator may be used by a wide section of the community, including wildlife volunteers, interested individuals and those who prepare biodiversity reports for development proposals. The number of trees planted by Council, community volunteers, landholders and residents is more easily recorded by Council than the previous biodiversity indicator. Numbers of trees planted also provides a sound basis to measure the rate of tree restoration undertaken within the LGA.



Table 5.10: Number of trees planted in the LGA during 2010/11

Location	Number of trees planted 2009/10	Number of trees Planted 2010/11	Comments
Street and Park trees	320	345	Council Activity
Revegetation (excludes shrubs & grasses)	633	2,843	Community, corporate volunteers & Council works
National Tree Day	2,000	2,500	Community volunteers & Council works
Total Trees	2,953	5,688	

Source: Camden Council (2011)

Discussion

The number of trees planted during 2010/11 has increased by 18% since the previous reporting period. This increase is attributed largely to the increased number of plantings that took place at National Tree Day and in revegetation projects compared to the previous reporting period.

SECTOR STATEMENT

Council continues to be involved in the management of biodiversity in the LGA, not only in terms of land and water management as outlined in previous sections of this report, but also through the management of flora and fauna. Weed eradication programs have extended to aquatic environments and continue to identify and control weeds throughout the LGA, as well as fostering important partnerships between Council and the community.

Council's Natural Assets Policy remains effective and together with the restoration and education programs such as Bushcare and the biodiversity education project 'Living Macarthur Nature Photography Competition and Exhibition', there is a positive contribution towards the management of Camden's local biodiversity.

6.0 Waste

BACKGROUND

This chapter reports on the management of waste within the Camden LGA. Discussion focuses on waste issues raised by the collection statistics, and future directions of Council's waste operations.

Council's municipal waste collection consists of a three-bin system collected weekly – greenwaste, recycling and general garbage – which is designed to maximise the amount of resources diverted from landfill and recovered for reuse or recycling.

Council also undertakes an on-call bulky household waste collection across the LGA – the Kerbside Clean Up, and collects waste material in public place collection points (street and park bins). The commercial garbage and recycling services are available to businesses within the Camden LGA.

In 2005 Camden, Campbelltown City, Wollondilly and Wingecarribee Councils entered into a 15-year contract with WSN Environmental Solutions Ltd to dispose of their combined waste, with the exclusion of hazardous and clinical waste. In February 2011, SITA Environmental Solutions acquired WSN Environmental Solutions Ltd.

During 2010/11 reporting period the collected materials were transported to the Alternative Waste Technology (AWT) Facility at Spring Farm Resource Recovery Park (originally Jacks Gully Waste and Recycling Centre) now operated by SITA Environmental Solutions.

SITA receives the community's recyclables at the

Materials Recycling Facility (MRF) and its green waste at the Equilibrium Organics Facility, which is processed via tunnel composting, designed to produce high quality compost and mulch.

In addition, Spring Farm Resource Recovery Park generates enough renewable energy from processed waste to power its own operations for extended periods.

6.1 Breakdown of Waste Produced by Camden LGA (P)

The following waste statistics (Table 6.1 & Figure 6.1) are provided by SITA Environmental Solutions and represent those materials disposed of by Council's Waste Management Unit. The statistics are based on the weights recorded by the weighbridge at these facilities.

These figures are for the material from Council's Waste Management Unit's collection only, and are not an exhaustive representation of the waste generated within the LGA. This is because the commercial waste and recycling service provided by Council does not service all businesses in the Camden area, many of which are serviced by private contractors. In addition, residents and commercial operators are able to dispose of waste privately at Spring Farm Resource Recovery Park. As the facility also receives waste from surrounding areas, no statistics are available on these quantities of waste.

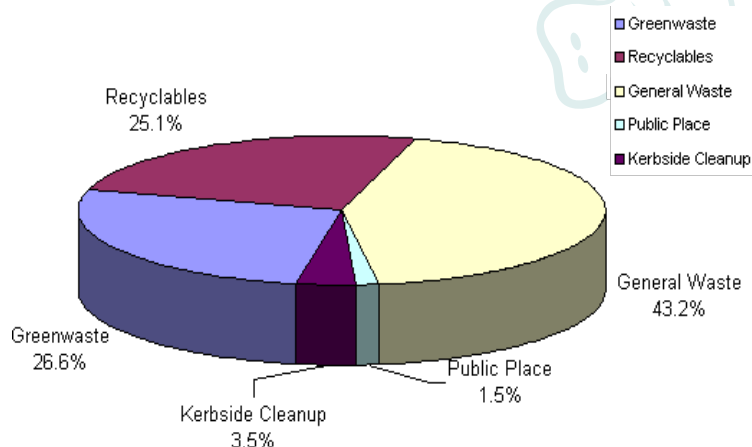
The 'Clean Up' component represents the total weight of materials collected as part of the new on-call Kerbside Clean Up. The Kerbside Clean Up Collection service is discussed in further detail in Section 6.2.

Table 6.1: Breakdown of materials managed by Camden Council 2009/10 and 2010/11

Waste Type	Tonnes (t) 2009/10	Tonnes (t) 2010/11	Variation (%) since 2009/10
Domestic Garden Waste (greenwaste)	5,994	7,717	16.4
Domestic Recyclables (paper, cardboard, glass, plastics, steel and aluminium)	6,659	6,752	1.4
Domestic Waste	11,462	11,635	1.5
Public Place (includes Commercial Waste Collections)	293	407	28.0
Kerbside Clean Up General Waste	739	946	1.6
Kerbside Clean Up Metals for Recycling	192	188	-2.1

Source: Camden Council (2011)

Figure 6.1: Breakdown of municipal waste materials collected by Camden Council for 2010/11 (presented as percentages of the total waste collection by weight)



Source: Camden Council (2011)

Discussion

As the population in the Camden LGA increases, it could be expected that the amount of waste collected by Council would increase by approximately the same percentage. However, as demonstrated in Table 6.1, domestic waste and recycling volumes increased by a lesser percentage than the population increase. Essentially, each person is producing less total waste than in the previous period (see the Key Indicator discussion in this chapter for more detail).

The increase in greenwaste indicates larger tonnages from the previous year which had a decline in vegetation growth from a comparatively drier period.

There has been a large increase in the amount of waste collected as part of the Kerbside Clean Up. This is a result of better knowledge of Council's on-call clean up system, introduced in September 2005. The tonnes of material collected will continue to increase in future years as residents become more familiar with the service.

The categories of waste collected by Council have been limited in this report to the material collected by Council's Waste Management Unit. This is to allow for a better representation of the waste generated by the residential population of Camden LGA.

RESPONSES

6.2 Domestic Kerbside Clean Up Collection (R)

In response to the needs of the community to dispose of bulky or excess domestic waste that cannot be collected in the weekly municipal waste service, Council provides residents with two free Clean Up services per year. During September 2005, this operation changed from biannual scheduled clean ups to an on-call service where residents are able to book cleanups as required. Residents are allocated two services per financial year and additional services can be booked for a fee. Metals are collected separately for recycling.

During the reporting period, the Kerbside Clean Up on-call service completed a total number of 6,853 services, comprising of approximately 946t of general waste and 188t of metals. This was an increase of 14.7% in the number of collections from the previous reporting year and a slight decrease in the volume of metal collected.

Table 6.2: Council's Kerbside Clean Up Results

	2009/10	2010/11	Percentage Change (%)
No. of Services	5,848	6,853	14.7
General Waste (tonnes)	739	946	21.9
Metals (tonnes)	192	188	-2.3

Source: Camden Council (2011)

6.3 Household Hazardous Waste Collection (R)

To encourage the community to responsibly dispose of unwanted household chemicals and other hazardous materials, the OEH and Chemsal worked together with Camden Council to provide a 'Household Chemical CleanOut'. A free drop off collection service was held at Onslow Park, Camden on Sunday 6 February 2011.

At this collection, 387 residents handed in 12,816.5kg of unwanted or outdated chemicals and materials from in and around their homes, garages and garden sheds. The bulk of materials dropped off by residents included paints (49%), batteries (11%) and oils (20%).

Compared to the previous CleanOut held during 2009, there was an increase of 118 participants, resulting in increase of 4090.1kg additional material collected. This increase could be attributed to an increase in population growth as promotion remained consistent from the 2010 collection.

CleanOut has proved to again be a successful program, however due to advertisement restrictions such as OEH not providing brochures, the CleanOut program does not meet its full potential. This form of advertisement is the key medium for our residents to obtain the message of the program. This is a concern considering 'CleanOut' is a major contributor for dealing with hazardous chemicals in a safe and environmentally friendly manner and assisting to keep Camden's catchments and communities healthy.

Table 6.3: Household Chemical CleanOut figures

Reporting Period	Domestic Chemical Clean Out in tonnes (t)	Number of residents who attended
2008/09	14.2	485
2009/10	8.7	269
2010/11	12.8	387

Source: Camden Council (2011)

6.4 Public Event Waste Initiatives (R)

The opportunity for Camden residents to participate in environmentally sustainable initiatives has been provided by means of waste and recycling stations available for hire by event organisers and within Council. These consist of a three-bin system (garbage, recycling, garbage) covered by a colour-coded bin cap, with clear signage as to the materials to be deposited.

A total of 500 public event bins were hired for 42 events such as the Camden Show and the Camden Festival, as well as small events, throughout the 2010/11 reporting period. It is hoped that with further use and education,

these will provide an effective means for regular public place recycling in the Camden area.

6.5 Regional Initiatives (R)

As discussed in previous SoE Reports, the Sharps Education Program came about to manage the increasing numbers of sharps and syringes found in public places and the recycling stream and the associated health risks. The program was initially developed as a collaborative effort between Camden and Campbelltown Councils and relevant health agencies. The cost to Council in running the program was viewed as minimal in comparison to the health threat to the community and staff from improperly discarded sharps. This program has been running since 2007 in association with a nominated contractor who carries out the collection and disposal functions.

Five pharmacies in the LGA have a collection container located at their stores so that residents can safely dispose of used needles and syringes (Table 6.4). The pharmacies are provided with a 64L clinical 'Sharps' collection bins and placed onto a scheduled rotation for servicing. Council also continues to promote this service via its website. To date in the financial year of 2010/11 a total of 29kgs of clinical waste, from the 5 participating pharmacies, has been collected and disposed.

Table 6.4: Location of the Clinical Waste Containers

Name of Pharmacy	Location
Camden Pharmacy	91 Argyle Street Camden 2570
Pharmacy Express	Mount Annan Market Place Mount Annan 2567
Sinclair's Day & Night	122-130 Argyle Street Camden 2570
Priceline Narellan Chemist	Shop 44, Narellan Town Centre Narellan 2567
Health & Savings Pharmacy	Shop 4 & 5 Harrington Plaza Fairwater Drive Harrington Park 2567
Council's Assets Branch	Millwood Avenue Narellan 2570

Source: Camden Council (2011)

Council's Assets Branch also has a container located at its depot for clinical waste collected during street cleansing and litter collections.

6.6 Clean Up Australia Day (R)

Clean Up Australia Day 2011 was held on Sunday March 2011 at 15 community registered sites within the Camden LGA. The majority of these groups have been involved before, with many of them supervised by the same site coordinators as in past years.

There was good support for the event with attendance quite strong at most sites and approximately 200 volunteers in total. In addition to those who registered there were a small number of people who were participating independently of registered Clean Up groups. Local schools were also encouraged to get involved with 7 schools participating in School Clean Up Day on Friday March 2011.

Council provided support to the program in the form of promotion, assistance in registering sites, by being present on the day for trouble shooting activities, and collecting and disposing of the bags of material. Approximately 2.75 tonnes or 175 garbage bags of material were disposed of by Council compared to the 1.05 tonne collected the previous year. The collected materials were delivered to the Spring Farm Resource Recovery Park by Council for processing. This is in addition to the material collected and disposed of by schools.

Key Indicator

Reduction in domestic waste sent to landfill as measured against 1989-1990 base figures.
Indicator Category: "R" (Response)

Why use this indicator?

This indicator has been reported since 1989; therefore, there is considerable historical data available to compare the current trends. The base year against which any reduction is measured is 1989/90. For Council to initiate waste education campaigns there needs to be an understanding of the waste issues which are occurring.

Table 6.5: Domestic Waste Produced per capita per year

Reporting Period	Domestic Waste in tonnes (t)	Population	Kilogram/ capita/year (Kg/ca/yr)
1989/90	6,572	16,382	390.40
1997/98	6,502	35,471	183.30
1998/99	7,278	38,259	190.24
1999/00	8,056	41,460	194.31
2000/01	9,053	44,494	203.50
2001/02	10,221	47,198	216.56
2002/03	9,610	*47,763	201.20
2003/04	9,355	48,492	192.92
2004/05	**10,228	49,705	205.77
2005/06	10,497	50,485	207.92
2006/07	10,677	51,296	208.14
2007/08	11,182	52,142	214.45
2008/09	11,263	52,529	214.40
2009/10	11,462	54,080	211.95
2010/11	11,635	55,922	208.06

* based on Census 2001 data;

** Note: Error in the 2004/05 SoE Report. Figure has been adjusted for this reporting period.

Source: Camden Council (2011)

Table 6.6: Domestic Recycling Produced per capita per year

Reporting Period	Domestic Recycling in tonnes (t)	Population	Kilogram/ capita/year (Kg/ca/yr)
1997/98	2,903	35,471	81.84
1998/99	3,462	38,259	90.49
1999/00	3,821	41,460	92.16
2000/01	4,278	44,494	96.15
2001/02	4,535	47,198	96.08
2002/03	4,861	*47,763	101.77
2003/04	4,879	48,592	100.41
2004/05	5,337	49,705	107.37
2005/06	5,568	50,485	110.29
2006/07	6,015	51,296	117.26
2007/08	6,453	52,142	123.76
2008/09	6,489	52,529	123.53
2009/10	6,659	54,080	123.13
2010/11	6,752	55,922	120.74

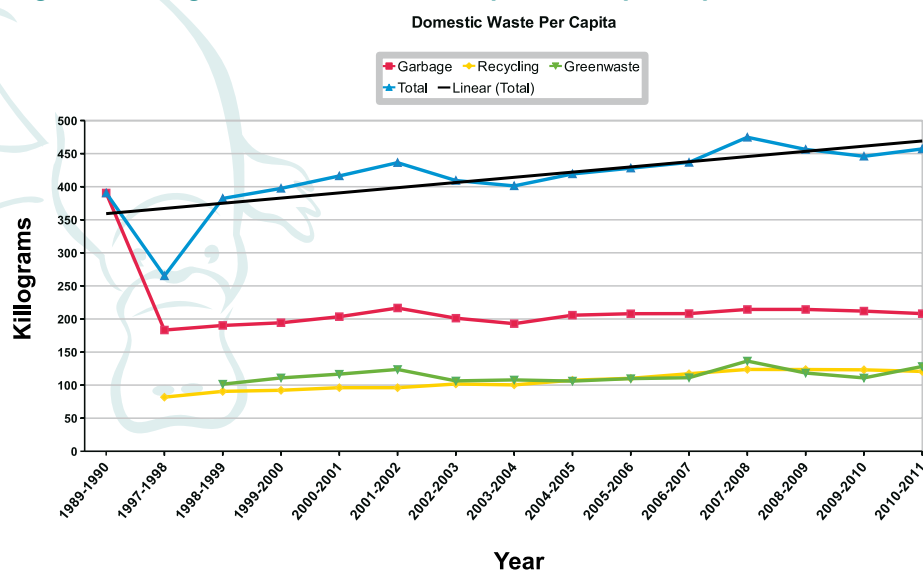
*: based on Census 2001 data. Source: Camden Council (2011)

Table 6.7: Domestic Green Waste Produced per capita per year

Reporting Period	Domestic Garden Waste in tonnes (t)	Population	Kilogram/ capita/year (Kg/ca/yr)
1998/99	3,883	38,259	101.49
1999/00	4,601	41,460	110.97
2000/01	5,187	44,494	116.58
2001/02	5,838	47,198	123.69
2002/03	5,079	*47,763	106.34
2003/04	5,232	48,492	107.89
2004/05	5,275	49,705	106.13
2005/06	5,544	50,485	109.81
2006/07	5,708	51,296	111.28
2007/08	7,114	52,142	136.44
2008/09	6,216	52,529	118.35
2009/10	5,994	54,080	110.84
2010/11	7,171	55,922	128.23

*: based on Census 2001 data. Source: Camden Council (2011)

Figure 6.2: Kilograms of Domestic Waste produced by each person since 1989.



Source: Camden Council (2011)

(Note the gap in data between 1989/90 and 1997/98 – recycling was introduced in 1997/98.)

Discussion

The introduction of recycling in 1997/98 resulted in a large drop in the amount of waste sent to landfill by each individual as shown in Table 6.5.

However since this initial decrease, the amount of waste, recycling and greenwaste collected per person has been slowly increasing. The amount of waste produced by each person in the Camden LGA over time is depicted in Figure 6.2. The overall trend (shown by the black line) is towards an increase in the total amount of waste produced by each person.

In order to reverse the increase in total waste disposal in the Camden area, members of the community need to each reduce the amount of waste they produce. An increase in the proportion of material recycled rather than sent to landfill would be positive, however the ideal is a reduction in the total amount of waste of any category. Council will continue to work towards educating and supporting the community to achieve these goals.

Greenwaste has also been included in this report to give a broader picture of the variation in disposal over time. It is evident that greenwaste production per capita has fluctuated, probably as a result of rainfall patterns in the area. Greenwaste forms a significant part of the waste stream and its collection for recycling means an additional 24.5% of the total municipal waste stream has been diverted from landfill.

SECTOR STATEMENT

The waste statistics from the Camden LGA for 2010/11 demonstrate that the waste collection system has remained effective in diverting waste from landfill over the period. Through recycling and greenwaste collection, 54.5% of the total waste stream has been diverted.

As the population has grown, the total amount of waste generated and the waste production per capita in all three streams have shown an increasing trend. With further rapid increases in population expected it is necessary to reduce the rate per capita to ease the burden placed on the environment by waste disposal and recycling.

In accordance with State Government waste management directives, Council remains strongly committed to initiatives to minimise waste through waste avoidance, reduction and recycling initiatives.

7.0 Noise

BACKGROUND

This section of the report provides an overview of current noise issues within the Camden LGA and identifies the activities undertaken by Council to help reduce the impact of noise on residents.

'Noise' is often defined as unwanted or offensive sound that is disagreeable and discordant with normal daily activity. It can intrude and interfere with wanted sound such as that in conversation or viewing television (WHO 1999). In an urban environment such as the Camden LGA, community noise or environmental noise can be one of the most common pollutants. Noise pollution in the Camden LGA includes the primary sources of road and air traffic, industries, construction, public works and domestic living.

There is sufficient evidence to substantiate that noise can cause annoyance (including fear and mild anger), affect sleep, rest and conversation, impinge on children's school performance, lead to fatigue, irritability, headaches and other symptoms of stress. Prolonged exposure to loud noise can cause permanent hearing loss (EPA 1997).

There are two main factors that contribute to the problem of increasing noise levels in the Camden LGA. They include:

- an increasing population, with resultant increases in domestic noise; and
- activities associated with urban living, particularly increased volumes of traffic on roads and in the air (EPA 1997).

The aim of environmental noise control is to minimise the occurrence of offensive noise in the community. Environmental noise issues mostly relate to domestic noise complaints including barking dogs and household noise emissions (including loud music and air conditioners), with traffic noise and general rural noise sources accounting for the remainder. It is for this reason that the key indicator selected for this environmental theme is the number of general noise complaints received by Council.

7.1 Ambient Noise Survey (S)

Camden 2025 Strategic Plan provides, as an action under the Environmental Systems chapter, that an ambient noise survey be undertaken to ascertain overall background sound levels throughout the LGA. This survey was undertaken and the results were reported in the SoE Supplementary Report 2001 (Camden Council 2001). A second ambient noise survey was conducted in August-September 2006. This survey allowed Council to compare the results of both surveys and determine any changes over time. The monitoring locations chosen were the same or in similar locations as those sampled in 2001, which provided a representative sample of varying noise levels that can be found in the Camden LGA.

A comparison of the 2001 and 2006 results showed that noise levels have changed at some locations during certain time periods. The report indicated that changes of up to 2 decibels (dB(A)) between 2001 and 2006 monitoring results are not considered significant, however in some instances there is a greater variance. Factors contributing to the increased noise levels include changes in monitoring locations, environmental factors such as crickets, changes in traffic volumes, introduction of mechanical plant and change in operations at commercial or industrial premises. The increased levels were recorded in developing areas such as Smeaton Grange and around Carrington Hospital. Background creep has been well managed with many locations recording decreased background noise levels.

The following table summarises noise complaints received by Council during this reporting period (refer to Table 7.1). Noise complaints received during the previous reporting period (2009/10) have been included for comparison.



Table 7.1: Summary of Noise Complaints registered with Council

Category of Noise	Number of Complaints 2009/10	Number of Complaints 2010/11	Complaint Category
Air Conditioner	10	9	Domestic
Airport	0	1	Industrial
Alarm	0	6	Domestic
Animals (other than dogs)	2	8	Domestic
Barking Dogs	342	70	Barking Dogs
Children	0	1	Domestic
Commercial	11	5	Industrial
Loud Music	12	12	Domestic
Other	12	7	Unclassified
Recreational	0	4	Domestic
Traffic (Vehicles)	1	14	Traffic
Trail Bikes	14	3	Domestic
Building Site	6	11	Industrial
Pool Pump	3	1	Domestic
Public Address System	1	1	Industrial
Total	414	153	

Source: Camden Council (2011)

As noted in Table 7.1, Council received 153 complaints relating to local noise pollution issues during the reporting period.

The OEH Environment Line (also known as the 131 555 *Pollution Line*) is a statewide complaints receipt system. For the 2010/11 reporting period, 14 noise incidents (complaints) were received by the OEH. Out of these, 9 incident calls were referred back to Council as the Appropriate Regulatory Authority (ARA). The remaining 5 incident calls were addressed by the OEH as the ARA.



7.2 Management of Local Noise Issues (R)

The collection of noise-related data assists Council develop new methods and strategies to better plan and manage local noise issues.

In recognition of the importance of noise control, Council has an Environmental Noise Policy that commenced on 18 June 2008.

The Environmental Noise Policy provides a framework and criteria for the assessment of noise impacts from, and on development and describes the procedure to be followed in the preparation of an acoustic report that may be required as part of the Development Application process. The Policy is guided by

information contained within the NSW Government's noise publications and includes recommendations for control measures which can be incorporated into a development activity to reduce the potential noise impact on the surrounding environment.

The Policy also recognises the importance of community noise within residential communities and establishes appropriate noise criteria or management techniques by which noise impacts can be regulated and minimised.

Key Indicator

Number of general noise complaints received by Council.

Indicator Category: "S" (State)

Why use this indicator?

Sufficient data regarding environmental noise issues in the Camden LGA is provided by the number of complaints received by Council. Noise monitoring data is not generally available therefore noise complaints

are being used to obtain a pattern over time regarding the impact of noise on residents and the effect of Council policies and programs.

Table 7.2: General Noise Complaints – Source by Percentage (%)

Reporting Period	Domestic	Traffic	Industrial	Barking dogs
2005/06*	21.9	1.0	6.0	71.2
2006/07*	15.0	1.5	7.5	74.8
2007/08*	10.3	2.0	5.6	82.0
2008/09*	7.6	0.8	3.5	87.8
2009/10*	12.3	0.2	4.3	83.0
2010/11*	16.0	5.0	6.5	35.2

*: % calculation excludes the unclassified complaints

Source: Camden Council (2011)

Discussion

The total number of complaints recorded in this reporting period was 153 which was an approximate decrease of 63% from the previous year's 414 noise complaints.

Whilst the actual number of barking dog complaints declined dramatically from 432 in 2009/10 to 70 during 2010/11 - representing a 79.5% decrease (refer Table 7.1), barking dogs complaints were still the most common noise complaint received by Council (as indicated in Table 7.2). The reason for this has been attributed to increased education about responsible dog ownership and the introduction of a new complaint process that requires complainants to fill in a "Barking Dog Nuisance Complaint Form" prior to the complaint being actioned.

Table 7.1 shows the total number of 'domestic' complaints (eg air conditioners, pool pumps, alarms) increased by 7.3% (from the 2009/10 reporting period)

Traffic-related noise complaints received by Council during 2010/11 (primarily from trucks travelling along Richardson Road) has increased by 1400% from the previous reporting period. Some of the increase is due to Springs Road being closed for redevelopment that has caused trucks to be diverted onto other roads.

Finally, the number of complaints from 'industrial' activities (eg airport, commercial, building sites) has remained the same as the previous reporting period.

However, the number of industrial noise complaints, specifically from building sites, has nearly doubled since 2009/10.

It is important to note that the identification of complaints is a reactive indicator only and does not provide information as to why or the scope of noise is being emitted and what can be done to control or mitigate noise impact to a satisfactory level. It is anticipated that Council's Environmental Noise Policy will assist in the area of noise control and mitigation.

SECTOR STATEMENT

As the population of Camden grows and transport networks expand, Council has invested time and money into the development of the Environmental Noise Policy, specific noise indicators and the compilation of data systems to ensure the effective management of environmental noise. In addition Council recognises that quantification of the background noise levels in the Camden LGA is an important step in the minimisation of background creep – a problem faced by many growing LGAs as new development results in an increase in background noise. As Council continues to refine data management and recording systems, this will allow Council to become better informed about the impact of noise from new development and to respond with new strategies for the management of noise.

8.0 Heritage

BACKGROUND

Camden has and is continuing to experience considerable growth since the 1980s. Despite this growth, the area has maintained its unique character, derived from its historical buildings and picturesque rural landscapes. The current challenge is to manage significant urban growth while at the same time preserve the unique rural and heritage qualities which characterises Camden.

8.1 General Heritage (S)

During the reporting period, DAs that involved a heritage place such as a heritage item, a place located within a heritage conservation area, or a place identified by Council as having potential heritage significance; were assessed by Council's Heritage Officer. The assessment ensured that the proposed development minimised any adverse impact on the place and maintained or enhanced the heritage significance of the place.

The types of development referred for assessment included alterations and additions to buildings, subdivisions, new buildings in the vicinity of a heritage items or in a conservation area, mixed use proposals, new uses of heritage buildings and signage. Figures relating to the number of DA approvals affiliated with heritage sites were not available for this SoE Report.

Heritage advice from Council's Heritage Officer was also provided at an early stage on a number of heritage places, to guiding best practice heritage management for new work.

RESPONSES

8.2 Local Planning Provisions (R)

Heritage objectives and requirements are outlined in Camden Local Environmental Plan 2010 (LEP) and DCP 2011. These plans identify local heritage places that are significant to the Camden community.

Development Applications of these heritage places have been assessed against the provisions of the LEP and DCP.

In the reporting period, Council has been involved in discussions and assessments of developments to local items such as Yamba Cottage, St John's Church, Hilsyde House, Rheinberger's Hill Cottage, Camden Town Farm and Wivenhoe Villa.

8.3 State Heritage Listings (R)

The *NSW Heritage Act 1977* identifies certain places within NSW are that are significant to the NSW population.

Properties within the Camden area which are listed on the State Heritage register include:

- Belgenny Farm
- Camelot House
- Denbigh homestead
- Gledswood homestead
- Harrington Park House
- Kirkham Stables and precinct
- Macquarie Grove cottage
- Nant Gwylan cottage and garden
- Orielson Homestead
- Raby Homestead
- Studley Park House, and
- Sydney Water Upper Canal System.

In the reporting period, Council has been involved in a number of discussions focussed on securing the long term conservation of many of the State items. The discussions have been at varying levels from strategic and conceptual plans, through to assessment of development applications. These discussions and assessments have included the State items of Gledswood, Oran Park House, Denbigh, Harrington Park, Orielson and Raby homestead.

Council continues to advocate the use of Heritage Agreements to facilitate both development and conservation outcomes of the State listed items.

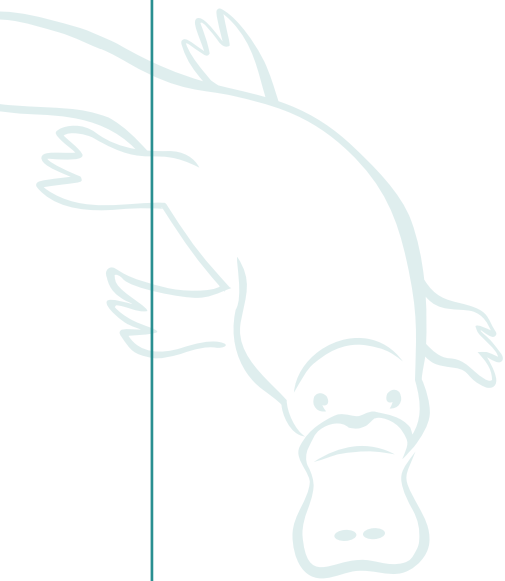
SECTOR STATEMENT

Heritage management and conservation is not about precluding development or change. It is about facilitating appropriate growth and change whilst retaining the history and special character of Camden. This is one of the major heritage issues Camden is currently facing as a result of having one of the highest growth rates in Sydney.

In managing this change, Council is active in facilitating positive conservation outcomes for heritage places. A number of agreements and conditions have been put in place as part of major development proposals affecting places of heritage significance. These agreements have secured immediate to long term conservation outcomes. Other positive outcomes include opportunities for new uses of heritage places.

Existing voluntary planning agreements (VPAs) have secured the conservation of places such as Harrington Park House, Orierton, Wivenhoe and Yamba. Council will continue to pursue agreements of this nature in order to achieve the long term conservation outcome for heritage places in the Camden area. Draft VPAs are in the process of being prepared for Denbigh and Gledswood Homesteads.

Council is committed to ensuring places of Local and State significance are retained and conserved whilst facilitating urban growth and the development of new communities, so that the unique qualities which characterise the Camden area are conserved.



9.0 Aboriginal Heritage

BACKGROUND

Aboriginal people are the cultural owners and managers of information relating to their heritage. It is vital to Aboriginal people and to the richness of Camden's heritage, that these important spiritual and cultural links to land are maintained by preserving and protecting places of cultural significance.

9.1 General Aboriginal Heritage (S)

The principal legislation which deals with Aboriginal Heritage in NSW are the *Environmental Planning and Assessment Act*, the *National Parks and Wildlife Amendment Act* and the *Heritage Act*. Aboriginal Heritage must be considered in all planning proposals and development applications.

The NSW Office of Environment and Heritage (OEH) administer a register of Aboriginal Items called the Aboriginal Heritage Inventory Management System (AHIMS). This is not a comprehensive list of all Aboriginal items but is a starting point for investigation. It includes aboriginal items identified in studies at the rezoning stage of residential release areas such as Spring Farm, Elderslie, Oran Park and Turner Road.

The OEH have prepared guidelines to assist in the assessment of the likelihood of aboriginal heritage items being found on a site.

An Aboriginal Heritage Impact Permit (AHIP) is required from OEH for any activity likely to have an impact on Aboriginal objects and places before work takes place.

During the reporting period, Council determined subdivision applications which impacted on areas considered to have potential archaeological deposits relating to Aboriginal heritage. In these cases the applicants were required to seek the necessary permits from OEH in relation to further investigation and future actions to manage any potential heritage values.

Figures relating to the number of DA approvals affiliated with Aboriginal heritage sites or potential sites were not available for this SoE Report.

9.2 Aboriginal Community consultation (S)

The *National Parks and Wildlife Act* requires proponents to involve Aboriginal people and communities who express interest in a particular site to assist with the identification of objects and places and in determining their significance. The aim of the requirements is to ensure that any identified Aboriginal values associated with a proposed project site are appropriately managed.

SECTOR STATEMENT

Council is committed to ensuring the protection of local Aboriginal heritage whilst facilitating urban growth and the development of new communities within the Camden LGA.

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Acronyms & Abbreviations

ABS	Australian Bureau of Statistics	L	Litre
AHIMS	Aboriginal Heritage Inventory Management System	LEP	Local Environmental Plan
AHIP	Aboriginal Heritage Impact Permit	LGA	Local Government Area
AP	Available Phosphorus	LGSI	Local Government Salinity Initiative
AQI	Air Quality Index	MCSL	Macarthur Centre for Sustainable Living
ARA	Appropriate Regulatory Authority	m	metres
AWT	Alternate Waste Technology	m ²	square metre
B20	20% biodiesel blended with 80% petroleum diesel	m ³	cubic metre
BASIX	Building Sustainability Index	mg/L	milligrams per litre
ca	capita	MRF	Materials Recovery Facility
CBD	Central Business District	NAP	National Action Plan for Salinity and Water Quality
CCP	Cities for Climate Protection	N/a	Not applicable
CD	Compact Disc	NatHers	Nationwide House Energy Rating Software
CFC	chlorofluorocarbon	NEPM	National Environment Protection Measure
<i>CLM Act</i>	<i>Contaminated Land Management Act 1997</i>	<i>NP&W Act</i>	<i>National Parks & Wildlife Act 1974</i>
CMA	Catchment Management Authority	NPI	National Pollution Inventory
CO	Carbon Monoxide	NSW	New South Wales
CPW	Cumberland Plain Woodland	OEH	Office of Environment and Heritage
DA	Development Application	OHN	Office of the Hawkesbury-Nepean
dB	Decibel(s)	OSSM	On-site Sewage Management
DCP	Development Control Plan	°C	degree Celsius
DECC	Department of Environment and Climate Change NSW	%	percent
DECCW	Department of Environment, Climate Change and Water NSW	pH	potential of Hydrogen (Scale)
DLWC	Department of Land and Water Conservation	<i>POEO Act</i>	<i>Protection of the Environment Operations Act 1997</i>
DoP	Department of Planning	(PSR) Model	Pressure-State-Response Model
EEAP	Energy Efficiency Action Plan	(P)	Pressure Indicator
EEC	Endangered Ecological Communities	(R)	Response Indicator
<i>EHC Act</i>	<i>Environmentally Hazardous Chemical Act 1985</i>	(S)	State Indicator
EMAI Institute	Elizabeth Macarthur Agricultural	RPI	Regional Pollution Index
EPA NSW	Environment Protection Authority,	RTA	Roads and Traffic Authority, NSW
ESAP	Energy Savings Action Plan	SEPP	State Environmental Planning Policy
ESD	Ecological Sustainable Development	SoE	State of the Environment
F5	Freeway (Hume Highway)	SSN	Sustainable Schools Network
GL	gigalitre	STP	Sewage Treatment Plant
GPT	Gross Pollutant Trap	<i>TSC Act</i>	<i>Threatened Species Management Act 1995</i>
ha	hectare	t	Tonne
HNCMA	Hawkesbury-Nepean Catchment Management Authority	USP	Urban Sustainability Program
hr	hour	UWS	University of Western Sydney
ILEP	Irrigation And Landscape Efficiency	VPA	Voluntary Planning Agreement
kg	kilogram	WaSIP Payment	Waste and Sustainability Improvement
kg/ca/yr	kilogram/capita/year	WRP	Water Recycling Plant
kL	Kilolitre	WSROC	Western Sydney Regional Organisation of Councils
		WSUD	Water Sensitive Urban Design
		yr	year



Notes

