SUSTAINABLE STREETS AND COMMUNITY PLAN (CHIPPENDALE)

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Chippendale, like most suburbs in Australia, can easily become a sustainability leader.

By retrofitting its buildings and streets to reduce summer heat, lower dangerous air and water pollution, and save money for food, energy and water, massive gains can be won.

Human health can skyrocket.

Participating businesses and residents may save over $3 million in food, energy and water bills in the first three years of the Plan.

The Plan trials proven ways to: grow food; use rain and the sun's energy; walk and bicycle safely on roads; and end waste.

The Plan seeks a joint effort between Council and the community based on honesty, mutual respect and partnership.

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EXECUTIVE SUMMARY

Whether we like it or not, human-induced climate change is a reality. Over 2000 United Nations' scientists unanimously agree: urgent worldwide action is needed to reduce the damage we've done. And it must happen by 2015. The Sustainable Streets and Community Plan (Chippendale) creates a positive vision to address the damage, a way forward for suburbs in Australia and around the world. It's a plan for village life: for art, conversations, silence and contemplation in the streets, the park, for more jobs and businesses, for more walking, cycling, and local art, food, trees, plants, birds, insects, less water and energy consumed, and less waste.

A plan to:

- cut household and business bills for participants by over $3 million dollars by 2015;
- reduce by 5 per cent Council operating and capital costs for Chippendale by 2012;
- ensure Chippendale is at the forefront of goals to meet the objectives and targets of the Council's 2030 Vision;
- trial demonstration projects for houses, units, buildings and roads;
- trial vertical gardens and pop up median strip gardens maximising space available for planting;
- lower energy, water, transport, food and health bills and demonstrate affordable solutions which may be adapted throughout the City of Sydney and elsewhere;
- trial pop up cafés, attracting businesses to the area and creating a flexible approach to grow the birth rate and life of businesses;
- cut air pollution by 2015;
- cool roads, reducing the damage caused to human health and vegetation from car pollution and very hot roads by 2015;
- cool the suburb in summer by up to 2 degrees by 2020;
- reach modest goals in stages over 10 years to 2020;
- annually review data from trial demonstration projects, and, if no longer necessary by 2020, it will cease to operate;
- support commercial urban farms producing organic vegetables and fish;
- achieve a united approach by agencies using roads for their pipes and wires to help cool roads;
- grow practical wisdom in the community and council about achieving sustainable communities;
- make annual changes based on data reviews;
- achieve a sustainable suburb by 2020; and
- provide a roadmap and a high benchmark for more sustainable suburbs in Sydney and across all local government areas in Australia.

The Plan offers residents, businesses and Council ways to create a more exciting and sustainable community: environmentally, personally and financially. It will improve health, lower use and costs for energy, water, food and transport. It will cool buildings and streets with vegetation. It will call on the vast resources and experience of Council to advise on changes and provide an opportunity to trial more resilient urban planning and management techniques.

Even before achieving these goals the process of developing them will stimulate major benefits in the community: more engaging 'conversations', more targetted for the community as an innovative future thinking, future planning suburb.

Environmental, economic and financial benefits will arise from the Plan.

In the initial years the Plan applies to buildings, streets and parks in the area bounded by Broadway, City Road, Cleveland and Abercrombie streets, Chippendale and any citizen, or agency with assets or activities there. In later years the Plan can be recreated throughout the city and beyond.

1.0 THE VISION

A fundamental key to the plan – embedded in its development – is to harness the enormous resources of its citizens. So our first step is to build and nurture strong community networks and resources, tapping into talents and motivations of Chippendale citizens. In recent severe natural and climactic weather events strong community networks proved to be the most successful defence. These work best during good times.

In 2010 urban geographers at Griffith University published a book called Lifeboat Cities. Its clear message was that Australian suburbs are at the forefront of climate change impact. They must adapt to a hotter, more varied climate. Their residents and businesses need to become more self-reliant for food, water and energy.

We must heed this book's message, and create a plan to urgently retrofit Australian suburbs to better survive the increasing environmental and economic storms. But this plan doesn't stop there. It envisions a suburb that is not only surviving, but prosperous. It embraces change as a unique and compelling opportunity.

The Sustainable Streets and Community Plan (Chippendale) provides ways for businesses to become self-reliant in six areas of village life, each of which is connected to the other:

- Food;
- Trees and plants;
- Art;
- Getting around;
- Energy, water and waste; and
- Business and residential life.

When we sleep, eat, cook, work, talk, and go about our daily lives we use the buildings, streets, food, water, air and resources around us. If those resources are dirty, dangerous, unhealthy, too hot, or too expensive, or run out, then our lives become harder, less enjoyable, and less sustainable. If Chippendale continues on its current path what's described here will be the likely outcome. Chippendale is being propelled away from – rather than towards – a healthy, sustainable village.

The plan sees and strengthens connections. The stronger the connections, the more robust the village life of Chippendale will be.

The plan:
- Will be driven by residents, workers, businesses and Aboriginal people;
- Sets tangible goals and incentives for reducing the use and cost of energy, water, stormwater, food and transport for residents, businesses, Council and other government agencies or corporations;
- Will map, monitor and report on processes and results;
- Will publicise results to a wide audience, through conventional and social media;
- Has tangible, practical goals which can be achieved by 2020; and
- Applies to public and private land.

The plan is simple: to change the hardware of Chippendale's streets, buildings and greenscapes.

A fundamental key to the plan – embedded in its development – is to harness the enormous resources of its citizens. So our first step is to build and nurture strong community networks and resources, tapping into talents and motivations of Chippendale citizens. In recent severe natural and climactic weather events strong community networks proved to be the most successful defence. These work best during good times.

By doing this we will create powerful community bonding experiences, that will drive the outcomes and provide a glue to embrace the dynamic evolution of the plan as it embarks on a 'life of its own'.

By working hand in hand with a community and council, the Plan will redesign and recreate the concept of what it means to live in an inner city area. It will raise values of property and make Chippendale a highly sought after community to live in and copy.

Once Council invests its resources in seeding the fundamental drivers, the plan gathers its own momentum. Gradually council costs will reduce, and keep falling as the sustainable snowball gathers pace.

The economic drivers will accrue not just to the suburb's community, but to the council itself.

Sustainable houses, buildings and streets are cheaper and healthier places to live, work and walk. They support stronger communities. They use mainly the water and energy that falls naturally in the suburb. They avoid importing water or energy, or exporting sewage. They use water and energy in ways that mimic the natural ecosystem, or are similar to the way water and energy was used before the land was changed to a suburb. Water and energy bills are generally stable, low and affordable. The food is mostly grown where people live and work or is from local sources, less than an hour by vehicle.

Sydney's Sustainable House – in Chippendale - is one example and will continue to be available as a model of early achievement. The house uses off-the-shelf systems, installed by local tradespeople and can be lived in by anyone without special skills or training. Up to four people may live in that house and be almost fully sustainable for water and energy. This Plan offers regulatory and financial incentives, information and education to assist more such houses, buildings and businesses to be created in Chippendale.

Chippendale facts

- ***The area covered by the Plan is 186,240 square metres, or about 18.6 hectares.***
- ***Roads take up 42,665 square metres or about 4.2 hectares of the Plan area.***

About 23 per cent of the land in the Chippendale project area is roads and footpaths. This Plan seeks to empower Council, the community and agencies to use that land so that food, water, energy and transport there is safer, healthier, more affordable, more local and is sustainable.

The Council has built rain gardens in roads across the city to harvest and store and clean rainwater, to grow plants and trees and to cool the city. Rain gardens and other road and building works are proposed to harvest and retain water, to cool the project area and, in turn, to make buildings and streets cooler in summer and to reduce the use of energy to cool buildings using electricity. With cooler streets the vegetation will grow more quickly and to its natural capacity. Cooler streets are healthier places to walk in, so naturally more people will want to use them.

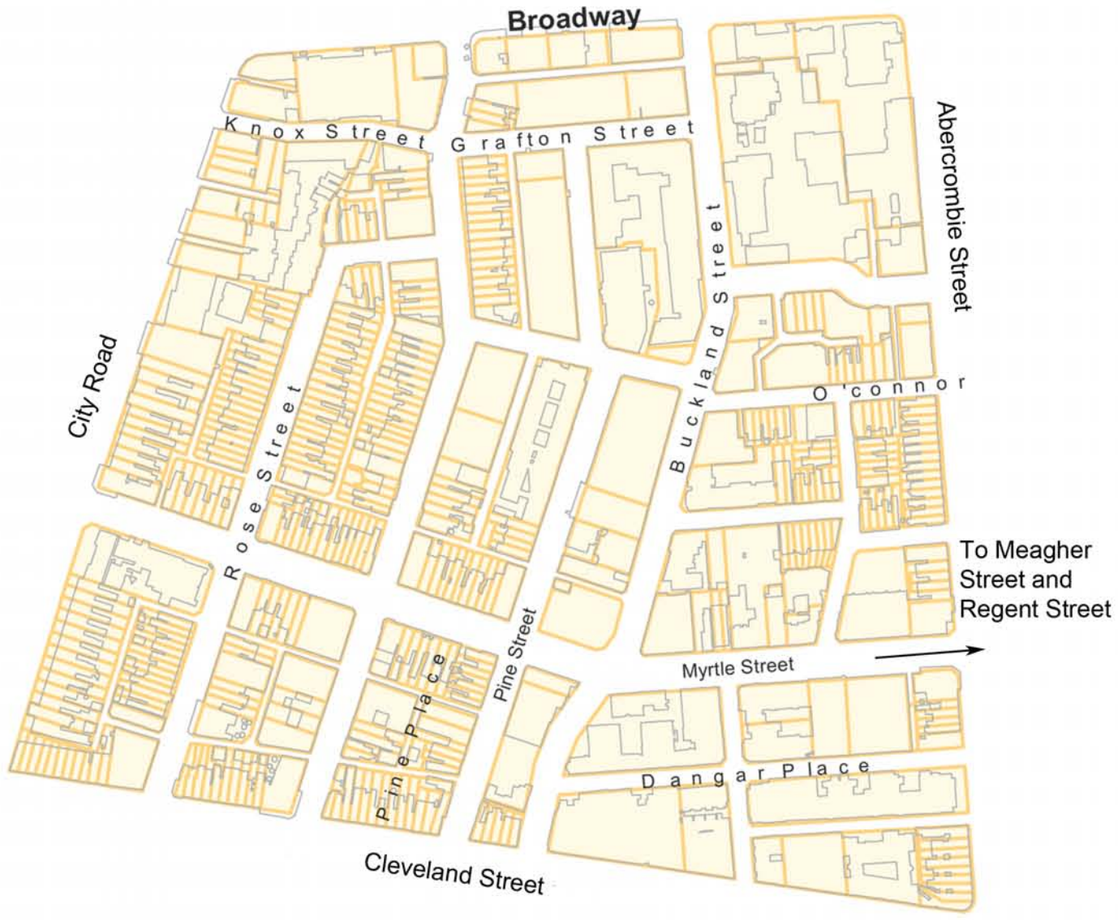
Most of the technologies, materials, designs, products, services, businesses and choices needed to achieve the objectives are readily available, proven and demonstrated.

There is nothing radical about this plan. It draws on sustainable village living that has been practised for centuries. It is now being recreated in communities around the world from New York to Cuba, Scandinavia and California.

Sweden, for instance, decided a decade ago to move towards sustainable communities. Now 70 of the 290 municipalities in Sweden have embarked on the 'The Natural Step' program. The town of Malmö is a leading example of this: www.malmo.se/sustainablecity

The Sustainable Streets and Community Plan adapts and builds on existing concepts to suit Australian conditions.

It has the potential to influence the fundamental drivers and structures of suburbs in every local government area in Australia.



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Chippendale - Google Aerial

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Chippendale - Roads

Total Area within suburb: 186,240 sq m / 18.62 ha

Potential Rainwater that may be harvested: 223.5 million litres per year

Total Area of Roads within the suburb: 42,665 sq m / 4.27 ha - about 23% of total suburb

Potential Rainwater that may be harvested: 51.2 million litres per year

HOW DOES THE PLAN WORK?

This plan provides staged trial demonstration works, gathering of data and development of permanent projects from trial projects over a ten year period to the year 2020. Annual reviews of community feedback, the data and projects will assist the implementation of projects from year to year.

The plan:

- Empowers residents, businesses and workers to use energy, water, food, transport and resources sustainably at home and at work;
- Trials a broad range of incentives, trial demonstration projects and innovative council processes, some of which have been proven elsewhere;
- Combines these initiatives in the one place and in the one plan;
- INvites the Council and community to work in an equal partnership and to grow practical wisdom for achieving a sustainable and resilient community;
- Will bring to life for the community the targets in the **2030 Vision;** and
- Is intended to be simple, affordable and easy to use by all.

2.0 CREATING AND ALIGNING SUSTAINABLE VISIONS

Let's create sustainable buildings in sustainable streets in a sustainable community, and let's do it together.

Sustainable Streets and Community Plan (Chippendale)

Local government is in an enviable position. Through subtle intervention and realignment of policies it has enormous and unrivalled power to drive massive change in the sustainability in our suburbs.

Chippendale, like the rest of our cities, is a place in need of transformation. It requires a major shift in thought and practice by 2020.

Sydney City Council through its 2030 Vision, aims to make Sydney 'green, global and connected'. The Sustainable Streets and Community Plan (Chippendale) supports the 2030 Vision, particularly its 10 targets which are:

2030 VISION TARGETS	SUSTAINABLE STREETS TRIAL PROJECTS
TARGET 1: By 2030, the City will reduce greenhouse gas emissions by 50 per cent compared to 1990 levels, and by 70 per cent compared to 1990 levels by 2050	Reduce energy use with cool, productive streets, retrofitted buildings, rate rebates, pre-approval and other incentives for green projects
TARGET 2: By 2030, the City will have capacity to meet up to 100 per cent of electricity demand by local electricity generation and 10 per cent of water supply by local water capture	Cool, productive streets, financial incentives for building retrofits will reduce energy and the cost of providing supply to meet demand
TARGET 3: By 2030, there will be at least 138,000 dwellings, 48,000 additional dwellings in the City for increased diversity of household types, including a greater share of families	-
TARGET 4: By 2030, 7.5 per cent of all City housing will be social housing, and 7.5 per cent will be affordable housing, delivered by not-for-profit or other providers	-
TARGET 5: By 2030, the City will contain at least 465,000 jobs including 97,000 additional jobs with an increased share in finance, advanced business services, education, creative industries and tourism sectors	Green jobs to build, maintain and use cool productive streets, jobs from commercial urban farms, road garden workshops, road garden part-time jobs for TAFE Outreach and asylum seekers, art plan with curator to establish green street annual art event
TARGET 6: By 2030, the use of public transport for travel to work by City Centre workers will increase to 80 per cent and the use of non-private vehicles by City residents for work trips will increase to 80 per cent	Cool, productive streets, shared zone, pop up cafes, self-irrigating pop up median strips, financial incentives for business and residents to use car share
TARGET 7: By 2030, at least 10 per cent of City trips will be made by bicycle and 50 per cent by pedestrian movement	Cool, productive streets, incentives to residents and businesses to walk, cycle and use car share, shared zone supports pedestrians
TARGET 8: By 2030, every resident will be within a 10 minute (800m) walk to fresh food markets, childcare, health services and leisure, social, learning and cultural infrastructure	Commercial urban farm, road gardens, shared zone, markets in Peace Park, local food from farmers' box services
TARGET 9: By 2030, every resident in the City of Sydney will be within a three minute walk (250m) of continuous green links that connect to the Harbour Foreshore, Harbour Parklands, Moore or Centennial or Sydney Parks	Cool, productive streets, shared zone, bicycle paths
TARGET 10: By 2030, the level of community cohesion and social interaction will have increased based on at least 45 per cent of people believing most people can be trusted.	Annual joint gardening days with community and Council road workers (garbage collectors, rangers, parking inspectors), annual community feedback reports managed by community and published on Council website, cool productive streets, shared zone, strong and respectful working relationship with Indigenous people who advise and develop and implement tree and plant plan with community, new complaints system which makes negotiation between community members a priority with council involvement the last resort, progress data to be gathered, analysed and published annually

Opportunities for a Sustainable Street

REDUCE WASTE

✕ ***PROBLEM:*** 47% municipal waste is organic household waste; anaerobic breakdown of garbage produces methane gas

✓ ***SOLUTION:*** Compost food locally

EFFECT: Reduce household waste by 442.74kg/year/home; reduce emissions from food transport

USE LESS FERTILIZER

✕ ***PROBLEM:*** Mostly fossil fuel based; 84% N2O emissions from agriculture

✓ ***SOLUTION:*** Replace with compost produced locally

EFFECT: 10-15% reduction in fossil fuel fertiliser; 5% emissions reduction from agriculture; reduction in farm costs, bigger tree canopy

WASTE

SAVE STORMWATER

✕ ***PROBLEM:*** 1200 litres of stormwater is wasted per metre per annum

✓ ***SOLUTION:*** Leaky drains, kerbside water harvesting

EFFECT: 40-60% reduction in stormwater into ocean

RE-USE WATER

✕ ***PROBLEM:*** 50% mains water consumption is to irrigate crops on farms

✓ ***SOLUTION:*** Grow food locally

EFFECT: 60-80% rainwater is used to irrigate plants where it falls

CLEAN WATER

✕ PROBLEM: Pollution washed by rainwater into rivers and the ocean

✓ SOLUTION: Absorb rainwater where it falls

EFFECT: 20% improvement in water quality, bigger tree canopy

WATER

LESS CARBON EMISSIONS

✕ PROBLEM: 23% of carbon emissions come from food production

✓ SOLUTION: Grow food locally

EFFECT: Reduce pollution from food transport

HEALTHY FOOD

✕ PROBLEM: Food chemically treated, frozen, processed

✓ SOLUTION: Grow food locally

EFFECT: Increased nutritional value of food

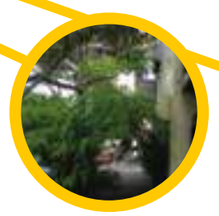
HEALTHY EXERCISE

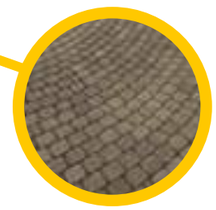
✕ PROBLEM: Obesity

✓ SOLUTION: Road gardens

EFFECT: Increased recreation opportunites locally

FOOD





CLEANER AIR

✕ PROBLEM: 600-1400 deaths per yer from air pollution

✓ SOLUTION: Roadside garVXdens

EFFECT: 5-10% reduction in particle pollution; at least 5-10% fewer premature deaths

LOWER CITY TEMPERATURES

✕ PROBLEM: City temperature is raised by 6-9 degrees by using black tar on roads

✓ SOLUTION: Pale tar, trees

EFFECT: 2-6 degrees reduction in high summer temperature

AIR

PARTNERING WITH OTHER GOVERNMENTS AND AGENCIES

Partnerships in this plan don't stop at the Council and community level.

STATE GOVERNMENT

During the 10-year plan the Council and the community will explore and implement solutions in partnership with the state government. State government is responsible for much of the pollution in and around Chippendale, so it's essential we work with them to come up with achievable solutions.

Without these essential partnerships pollution will continue and activities on the road will not be fully integrated or sustainable.

SUSTAINABLE BUILT ENVIRONMENT NATIONAL RESEARCH CENTRE, AND CRC FOR SPATIAL INFORMATION

The plan initiates a partnership with two of the world's leading transport related research programs being delivered under the direction of Professor Peter Newman and a team of researchers: the Sustainable Built Environment National Research Centre; and the CRC for Spatial Information.

Under this partnership a sum of $2000 has been donated by the research programs to the Plan's program and has enabled the installation of a temperature monitor to gather data about the heat of Chippendale roads. This device has been installed with existing Council devices operating in Buckland and Myrtle streets.

TAFE – OUTREACH

The Chippendale plan aims to involve people from TAFE Outreach, helping meet the needs of disadvantaged learners including:

- long term unemployed;
- sole parents;
- people from a non-English speaking background;
- people with a disability;
- women;
- youth at risk;
- Aboriginal people.

ORGANISATIONS – YAAMA DHIYAAN COOKING SCHOOL

Two part time gardening traineeships will be provided in the first year (ending June 2012) for Aboriginal youths and offered in partnership with Yaama Dhiyaan Cooking School.

NON-PROFITS – ASYLUM SEEKERS CENTRE

It's important to work with local agencies to help communities within their care. The Council and community will partner with the Asylum Seekers Centre's newly established 'Employment Program' in Surry Hills, which seeks volunteer and employment opportunities for asylum seekers living within the community.

OTHERS

Other partnerships will be explored in the years to 2020 with road, water, energy and other agencies and service providers.

3.0 CHIPPENDALE'S CHALLENGE: *ACT NOW*

2011-2021: The critical decade

Failing to take sufficient action today entails potentially huge risks to our economy, society and way of life into the future. This is the critical decade for action … Decisions we make from now to 2020 will determine the severity of climate change . . .

The Climate Commission, May 2011

http://climatecommission.gov.au/topics/the-critical-decade/

A United Nations' report released in the week of 21 November 2007 gave Earth's citizens and governments eight years to cut carbon pollution. Australia's carbon pollution emissions had grown 25.6 per cent above 1990 levels; back then the need to act was urgent. Now, three years later it is critical. To stop temperatures rising more than 2 degrees global emissions must start declining by 2015. With time ticking cities and suburbs must take the reins and begin the process of change.

Most of our suburbs are unsustainable, and Chippendale is no exception. Most water and energy is imported, most rainfall is wasted as runoff and most sewage pollutes waters. The air is making us and our children sick. Car-dependent and car-dominated transport increases premature mortality and poor health.

Cities cause over 60 per cent of Earth's climate pollution – not to mention, land and water pollution etc – through construction and living activities. Following are some examples of issues faced by urban environments and their effects:

POLLUTION

- Each year over 21,000 tonnes of vehicle pollution is emitted into Chippendale's air from four surrounding roads of Broadway, City Road, Cleveland and Abercrombie streets.
- Vehicle and other air pollution cause 600–1400 deaths a year in New South Wales.
- Chippendale residents cause 7250 tonnes of carbon pollution a year for electricity, natural gas and firewood, mainly through the use of coal-fired mains grid electricity.

WATER WASTAGE

- On average over 223 million litres of rainwater falls in the Chippendale Plan area and over 80 per cent of that is wasted as stormwater pollution to Sydney Harbour.
- On average over 51 million litres of rainwater falls on the roads in the area and over 90 per cent of that is wasted as stormwater pollution to Sydney Harbour.

HEAT ISLAND EFFECT

- In Melbourne, during the Black Friday heatwave and fires in 2009, twice the number of humans died prematurely from the city's higher temperatures than were killed by the bushfires: Victorian Coroner's report.
- The number of hours above 28 degrees Celsius (the current overheating threshold) tends to increase towards the centre of London, indicating that site-specific urban heat island data should be used when designing for overheating. There are two temperature monitoring stations in Chippendale and the Plan aims to add another.
- The effect of building height (highest buildings relative to a five-metre average height) is equivalent to around a 50 per cent increase in the risk of heatwave related deaths in London. This indicates the potentially low levels of thermal protection that are offered by high-rise structures: The comfort, energy and health implications of London's urban heat island are explored in Building Services Engineering Research and Technology, 32(1): 35–52. DOI: 10.1177/0143624410394530 (http://bse.sagepub.com).

These may seem like insurmountable problems. But they're not.

SYDNEY CITY COUNCIL HAS DECIDED TO ACT NOW

On 6 December 2010 Sydney City Council decided to make the Sustainable Streets and Community Plan and commence action under it in the year commencing July 2011. Part of the Council's decision reads as follows:

'Demonstration site

While the Greening Sydney Plan is being finalised, there is an opportunity to trial the sustainable streets initiatives in an inner city setting to showcase emerging technologies and the City's programs for in-road street tree planting, raingardens, aerial bundled cabling, LED street lights, use of 'green' concrete in roads and footpaths, community composting, stormwater recycling, edible verge gardens and street beautification.

It is proposed that Myrtle Street and surrounding areas in Chippendale are used by the City as a demonstration site to showcase these sustainable street technologies and programs.

Myrtle Street offers an excellent opportunity for a demonstration site following recent PCTC works, the construction of raingardens and the installation of organic food gardens in the footpath verges. This street also contains the well known Sustainable House built by 'Sustainability Coach', Michael Mobbs. There are temperature sensors in Myrtle and Buckland Streets which will provide valuable data and, in addition, the adjoining Peace Park is now being used for community composting and stormwater re-use.

Mr Mobbs, a resident of Myrtle Street, has indicated his support for the project and would be willing to offer the use of his terrace house for tours, at agreed times, as part of the demonstration project. It is proposed that Mr Mobbs be engaged by Council, on a fee for service basis, to support this project with community education, seeking external grant funding, provision of technical advice, and monitoring results.'

…

It is resolved that:
(A) Myrtle Street and the surrounding areas, Chippendale, be used by the City as a demonstration site to showcase sustainable street technologies and programs;
(B) a detailed plan for the site be developed over the next six months, for funding consideration in the 2011/12 budget …".

We can cool cities and suburbs by integrating road design, transport and vegetation. Let's turn now to one of the most pressing issues, heat island effect mitigation.

4.0 URBAN HEAT ISLAND EFFECT MITIGATION

We are now paying dearly for this extra heat. One sixth of the electricity consumed in the United States goes to cool buildings, at an annual power cost of $40 billion. Moreover, a 5°F heat island greatly raises the rate at which pollutants-nitrogen oxides and volatile organic compounds emanating from cars and smokestacks – 'cook' into ozone … The Los Angeles heat island raises ozone levels 10–15 percent and contributes to millions of dollars in medical expenses.

AH Rosenfeld, JJ Romm, H Akbari and AC Lloyd, 'Painting the town white – and green', MIT Technology Review, February/March 1997

The Urban Heat Island (UHI) effect occurs when an urban area is warmer than surrounding areas. This typically happens in city suburbs and towns as the land surface is modified with materials that retain heat, such as dark roads, roofs etc. Lack of trees and greenbelts contribute to the problem. Waste heat created by energy use also contributes. Mitigation strategies include planting more trees to create canopy, using pale surfaces on roads and paths, and greening roofs. In this chapter we look at studies from around the world.

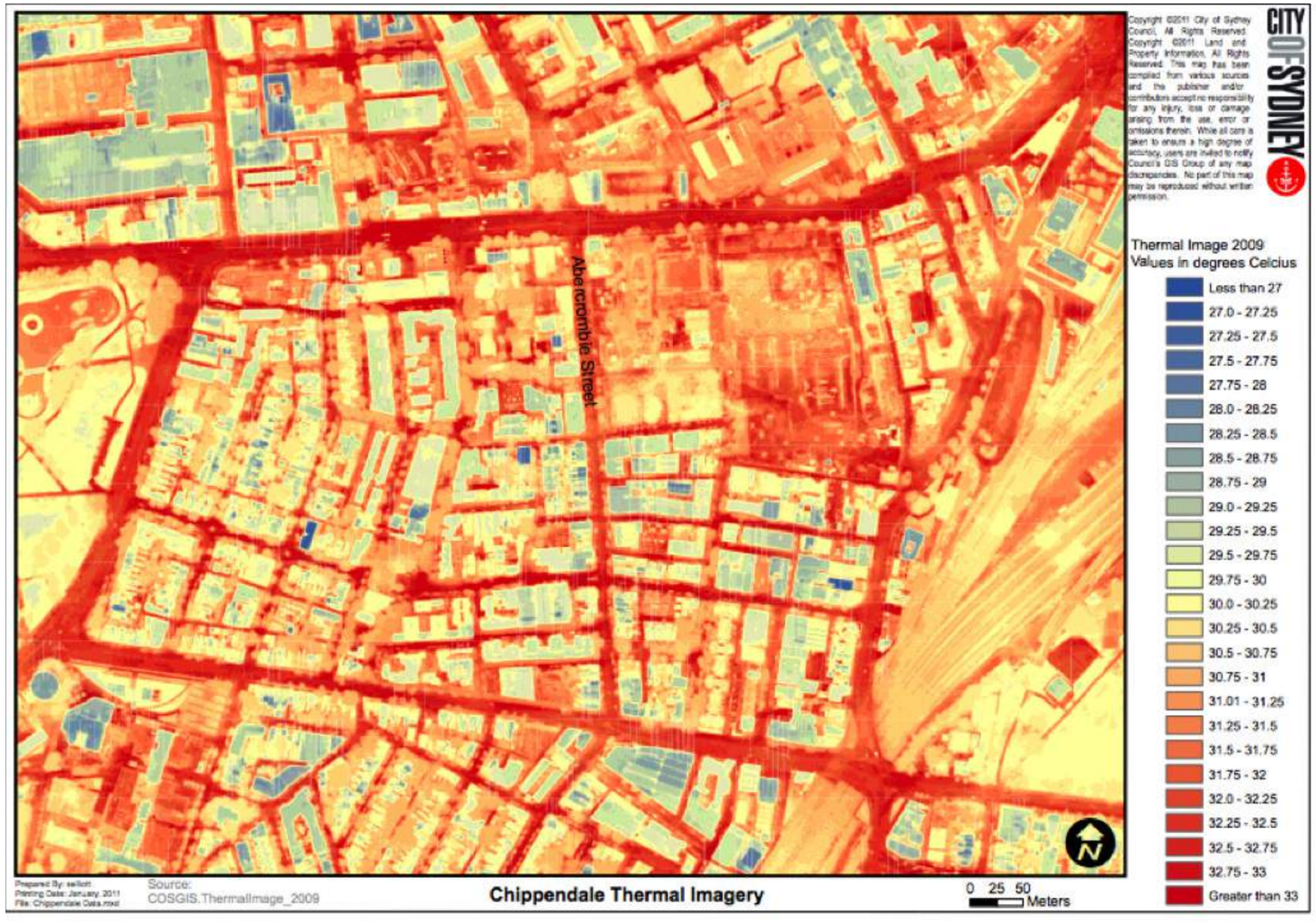
DARK ROADS

Black roads and roofs and lack of trees cause soaring summer temperatures in Chippendale. By replacing these with pale roads and roofs and creating tree canopy over half the roads we could reduce the summer heat in the suburb by 6–8 degrees!

This map shows the temperatures of the suburb's roads between 1 am and 6 am on 6 February 2009. The roads – which constitute over 23 per cent of the suburb's land area – were over 34 degrees and the houses and private land and parks were around 29 degrees. The hot roads – almost a quarter of the suburb – act like night-time radiators; they surround the suburb with hot air. They make the buildings hotter at night than they need be. Because the roads are still hot when the sun rises, that next day is hotter than it need be – inside the houses and on the streets.

The heat dries out the trees and soil and stunts tree and vegetation growth. To stay cool residents and businesses turn on air conditioners. Thus, the suburbs' roads are driving up electricity costs for everyone, and increase the pollution from coal-fired power stations, which provide the electricity. Think of all the electricity we'd save, and how much less pollution in the atmosphere simply by creating pale reflective roads and increasing tree canopy cover.

The hottest roads on the map run east-west. They have the widest and largest amount of exposed black road surface and the most exposure to the hot eastern and western sun. They are the least protected by buildings and trees.



Chippendale is 6 to 8 degrees hotter in summer than it should be.

The north-south roads are partly protected from the hot western summer sun by the buildings and have larger tree canopy (and some of the trees grow larger than others in the east-west streets).

The effect of the roads, however, no matter the direction they face, is to increase the temperature of the whole suburb. This burdens it – and all that lives within it – with an invisible island of hot, damaging air.

No law, design directions or goals have been put in place to make these hot roads cool. Until now. This plan offers affordable, easily built and maintained solutions to the Heat Island Effect of Chippendale.

And we can learn from suburbs and cities which have implemented changes to great effect. Let's look at some success stories.

PLANTS COOL SUBURBS

The suburb of Village Homes in the city of Davis, California is 6 degrees cooler than the adjoining suburbs in summer. This is because the village contains 23 acres of greenbelts, orchards, vineyards, vegetable gardens, and edible landscapes: so the tree canopy regulates the natural temperatures. Since 1978 the village has grown over 24 per cent of its food in the streets and gardens. (For more information see http://www.villagehomesdavis.org.)

One study analysed the costs and benefits of increasing numbers of street trees. By doubling the number of street trees they believe the city's temperature can be reduced by 1.2°F (.7°C). Planting the street trees would cost an estimated $625 million, with annual savings of $98.4 million, for a payback period of just over six years. (See Kerr and Yao, quoted in Rosenthal, Crauderueff and Carter.)

Chicago: reducing pale road costs

When the Green Alley Program began in 2006, the city paid about $145 per cubic yard of permeable concrete. By 2007 the cost of permeable concrete had dropped to only $45 per cubic yard. (Ordinary concrete was $50 per cubic yard, so permeable concrete may have seemed out of reach.) But the city came up with a solution. They invested in the local permeable concrete market, so the product cost came down. Permeable concrete became a more affordable option for consumers. More and more people now use permeable concrete.

(See 'Managing Wet Weather with Green Infrastructure', Municipal Handbook Green Streets, http://www.scribd.com/doc/34621945/Green-Infrastructure-Handbook-Green-Streets.)

Permeable Pavers and Permeable Concrete Chicago Alleys
(Source: Abby Hall, US EPA, p 17)

RESTORING RIVERS

In 1998 the South Korea city of Seoul removed a 12-lane freeway in the city centre and opened up a built over river. The reinstatement of the river led to an average reduction in summer temperatures of 3 degrees. Property values rose dramatically, and the river and its banks became a magnet for pedestrians, tourists, businesses and biodiversity. Traffic was reduced as were travel times. The city integrated a broad range of travel solutions, for example, varying opening and closing hours of shops and businesses and improving public transport options.

Resurfacing New York City's roadways with asphalt containing a white aggregate, taking into account an estimated cost of $59 million, saves energy consumers $57.2 million annually, a payback period of just over one year.

(Rosenthal, Crauderueff and Carter)

HEALTHIER SUBURBS AND MORE JOBS: GREENING THE GHETTO

The Sustainable South Bronx project in New York is working to reduce the Urban Heat Island effect partly by greening the roads and creating parks. Their research confirms the damage done to human health by the combination of heat, road traffic and lack of vegetation to clean and cool the air. Analysis of the impact of air pollution from vehicles suggests that potent environmental pollutants "at levels recently encountered in New York City air may adversely affect children's cognitive development … with implications for school performance": 'Effect of prenatal exposure to airborne Polycyclic Aromatic Hydrocarbons on neurodevelopment in the first 3 years of life among inner-city children' (see http://www.medscape.com/viewarticle/542481). With 1 in 4 children suffering asthma greening one of the most polluted parts of New York was seen as a necessity.

South Bronx also had the highest unemployment rate in the city of 24 per cent so Sustainable South Bronx set about training people and creating green jobs. "Greening our neighborhood increases the focus on green jobs and brings more parks and green industry to the South Bronx", says Miquela Craytor, Executive Director, Sustainable South Bronx (www.ssbx.org/ssbxblog/).

GREEN ROOFS

> *More than half of the sunlight reaching the earth is invisible to the human eye, and this invisible sunlight heats the roof. A colored surface that reflects much of the invisible sunlight is a called a cool dark color, or cool color. A cool dark color reflects more sunlight than a similar-looking conventional dark color, but less than a light-colored surface. For example, a conventional dark colored surface might reflect 20% of incoming sunlight, a cool dark colored surface, 40%; and a light-colored surface, 80%.*
>
> *US Department of Energy, 'Guidelines for selecting cool roofs', page 6*
>
> *http://www.fs.fed.us/psw/programs/uesd/uep/products/12/psw_cufr701_Gill_Adapting_Cities.pdf*

A study in urban heat mitigation using green roofing shows that savings can be substantial. One study estimated that cool roofs could reduce New York City's heat island by 1°F (.6°C). They estimated savings of $105 million per year – $23 million in direct energy savings and $82 million in indirect savings – if cool roofs were constructed on every roof in New York City (calculated at an average additional cost of $.68 per square foot, compared to traditional roofing techniques). Under certain assumptions the cool roof payback period was about six years. (See Kerr and Yao, quoted in Rosenthal, Crauderueff and Carter.)

> *"The increased planting of street trees produced the greatest cooling potential per unit area and the greatest overall benefits, while the use of light surfaces was found to offer the greatest overall cooling potential"*
>
> *"The use of higher albedo surfaces offered the most favorable cost/benefit ratio in this analysis. The maximum peak electric demand reductions were estimated as 74.29 MW from planting street trees in 50% of available space citywide; and 200.99 MW through 50% implementation of light surfaces throughout New York City."*
>
> *Rosenthal, Crauderueff and Carter*

Economic and environmental benefits of trees

Reducing the urban heat island effect is not the only benefit of trees. As research from Portland's urban forest demonstrates, the benefits are wide and far ranging:

"Portland's street and park trees provide $980,000 (US) worth of air cleaning and carbon fixing services annually, removing 25 million pounds of pollution from Portland's air supply each year. The entire urban forest canopy provides more than $3 million worth of annual air cleaning and carbon fixing services by removing almost 2 million pounds of pollutants and nearly 53 million pounds of carbon. Portland's urban tree infrastructure stores roughly 1.5 billion pounds of carbon.

Portland's street and park trees save the city over $11 million in stormwater processing by intercepting nearly half a billion gallons of stormwater annually. Citywide, the urban forest canopy intercepts 1.3 billion gallons of stormwater each year, saving almost $36 million in processing costs.

Portland's street trees are responsible for almost $750,000 in avoided energy costs, and over $13 million in property resale value is attributable to the presence of street trees.

Annual environmental benefits provided by the entire urban forest canopy exceed $38 million and will exceed $43 million when the goal of 7% more land covered by tree canopy (25% increase) is met." (p 2).

Research and references for these calculations include:

"Urban trees improve air quality passively and actively. Shade provided by trees over paved surfaces and cars reduces evaporative hydrocarbon emissions and ozone formation (Scott et al 1999). The reduction in VOC emissions extends the lifetime of paved surfaces, resulting in lower maintenance and repair costs. In addition, trees physically and chemically remove gaseous and particulate pollutants from the atmosphere (McPherson et al 2000). Small particulate matter adheres to plant surfaces, and gaseous pollutants are absorbed and may be incorporated into plant tissue.

Trees improve ambient air quality by absorbing atmospheric pollutants and lower atmospheric CO2 levels by transforming atmospheric carbon into plant tissues. Trees intercept and calm winds channelized by the urban landscape, and their transpiration and shading mitigate the urban heat island effect. Reduced demand for heating and cooling results in a net decrease in CO2 and other pollutants introduced into the atmosphere as a result of avoided emissions. In addition, trees act as carbon reservoirs by removing CO2 from the atmosphere, releasing the O2 and retaining carbon in their tissues." (p 5)

BENEFITS OF MITIGATION

If we change the colour of our roads and roofs from black to pale colours and plant trees we save money, increase bird and insect life, and increase tree and plant growth. And we cut our electricity bills. Not to mention significantly reducing our environmental footprint via less pollution.

Mitigation of the heat island effect is a major part of the Chippendale plan, and will be demonstrated throughout this Plan. But it is only one side of one story. First we'll look at the comprehensive plan for our streets.

Studies by the New York City's Office of Sustainable Design, Department of Design and Construction, have found that for every 1°F (.6°C) increase above 68°F (20°C), citywide energy consumption increased by 3300 MWh/degree/day. They concluded that potential energy savings in New York City of urban heat island mitigation strategies, including green and cool roofs, higher albedo pavement and increased tree vegetation were significant (Kerr and Yao, 2004 in Rosenthal, Crauderueff and Carter, 'Urban Heat Island mitigation can improve New York City's environment: Research on the impacts of mitigation strategies on the urban environment'

http://csud.ei.columbia.edu/sitefiles/file/SSBx_UHI_Mit_Can_Improve_NYC_Enviro%5B1%5D.pdf

New York research and solutions on green roofs

Our review of the literature, though not exhaustive, provides strong evidence that urban heat island mitigation strategies such as cool roofs, living green roofs and urban vegetation can play a role in reducing urban electricity demand, improving air quality, cooling the urban environment and diminishing stormwater runoff pollution. Though these roof projects are just a small part of emerging green building technologies, they can help to offset the carbon footprint of existing and new buildings, while providing additional value and environmental improvement.

We conclude with three recommendations for New York City with regards to the two main approaches discussed in this report, cool and green roofs: the city must support further research with community-based organizations for effective place and neighborhood-based heat island mitigation strategies; the city must continue to expand efforts to address summertime heat as a public health issue; and the city must develop and phase-in additional mechanisms and policies to support climate adaptive strategies in the built environment, and ensure they are adopted in major development projects.

New York City has taken several meaningful steps to provide incentives for the implementation of green and cool roofs, to encourage market transformation and save municipal dollars. Heat island mitigation strategies have been incorporated into the Mayor's PlaNYC 2030 long-term strategic plan. The city's new building code, effective July 2008, was amended to enable green roofs through inclusion in the code and to require all flat or low-sloped roofs to be covered by a white or Energy Star reflective roofs for at least 75 per cent of the area of the roof or setback surface, along with other green building provisions.

A green roof incentive was also incorporated into PLaNYC. The City supported a one-year property tax credit of $4.50 per square foot of roof area converted to green roof, when at least 50 percent of the available roof is greened. SSBx advocated, along with partners in the Storm Water Infrastructure Matters (S.W.I.M.) coalition, for passage through the New York State legislature of the bill that enabled this tax abatement to take effect in June 2008.

According to S.W.I.M., this incentive can potentially cover approximately 25 percent of the costs associated with the materials, labor, installation and design of a green roof. The City will need to develop a transparent and expeditious process to effectively encourage private building owners and developers to use the incentive. Plans should be further developed and dates confirmed to phase these incentives into place and to evaluate their effect, on both the environment and the creation of green-collar jobs, to support the greening and cooling of New York City's neighborhoods.

Extract from Joyce Klein Rosenthal, Rob Crauderueff and Majora Carter, 'Urban Heat Island mitigation can improve New York City's environment: Research on the impacts of mitigation strategies on the urban environment' http://csud.ei.columbia.edu/sitefiles/file/SSBx_UHI_Mit_Can_Improve_NYC_Enviro%5B1%5D.pdf, pp 34–35. For more information see Appendix A.

5.0 GETTING AROUND*:STREETS WHERE THE CAR IS A GUEST, AND PEOPLE MAY SAFELY ENJOY THEMSELVES*

A sustainable village grows conversations in the street. Talking in public is an essential ingredient of village life.

Trial demonstration projects are proposed for:

- *shared zone, walking speed for whole suburb;*
- *cool street;*
- *pop up cafés, pop up roundabout;*
- *self-irrigating pop up median strips;*
- *trial, volunteer weekend lane closures;*
- *incentives to encourage people to use car share services;*
- *engagement of the community with garbage collectors, parking inspectors and rangers with road gardening and maintenance.*

Existing Cycleways

- Council Cycleways. On Road
- Coucil Cycleways. Off Road
- Univeristy of Sydney Cycleways
- Footpath

Proposed Cycleways

- Cycleway/Road Shared Zone.
- Cycleway
- Future Path Subject to Future Crossing
- Cycleway Implementation. Bike Only Lane

Intentions for Bike Only Lane along Abercrombie Street.



The Sustainable Streets and Community Plan aims to create a suburb where pedestrians and cyclists can safely travel.

Without a transport plan the suburb will not be sustainable. Air pollution from vehicles will continue at unhealthy levels, obesity will increase with significant health and cost burdens for the residents and businesses, and the village amenity will continue to be eroded. A transport plan can both prevent these problems increasing and support the 2030 Vision.

A self-irrigating, trial pop-up median strip is proposed for one city block in Myrtle Street, from City Road to Rose Street. The trial will use a wide range of options and test them for effectiveness, cost and community support. One goal is to see whether it is possible to quickly cool a street and the adjoining buildings by using modular, off-the-shelf materials and products which are well-known to road engineers and designers. Another goal is to achieve a very low cost outcome so that the roll out of the trial, if successful, may be extended to other roads in the suburb at an affordable cost. Built from modular, easily-assembled and dis-assembled parts the trial pop-up median strip offers an affordable option for cooling the city, increasing tree canopy and harvesting stormwater.

Preliminary estimates indicate the pop up median strip may be built in about three days. Much of the landscaping may be carried out by the community. The median strip uses readily-available crash barriers which both store water and function as large pot plants in which advanced native trees and plants are grown. The plants will be chosen and planted with Aboriginal knowledge and by the local community.

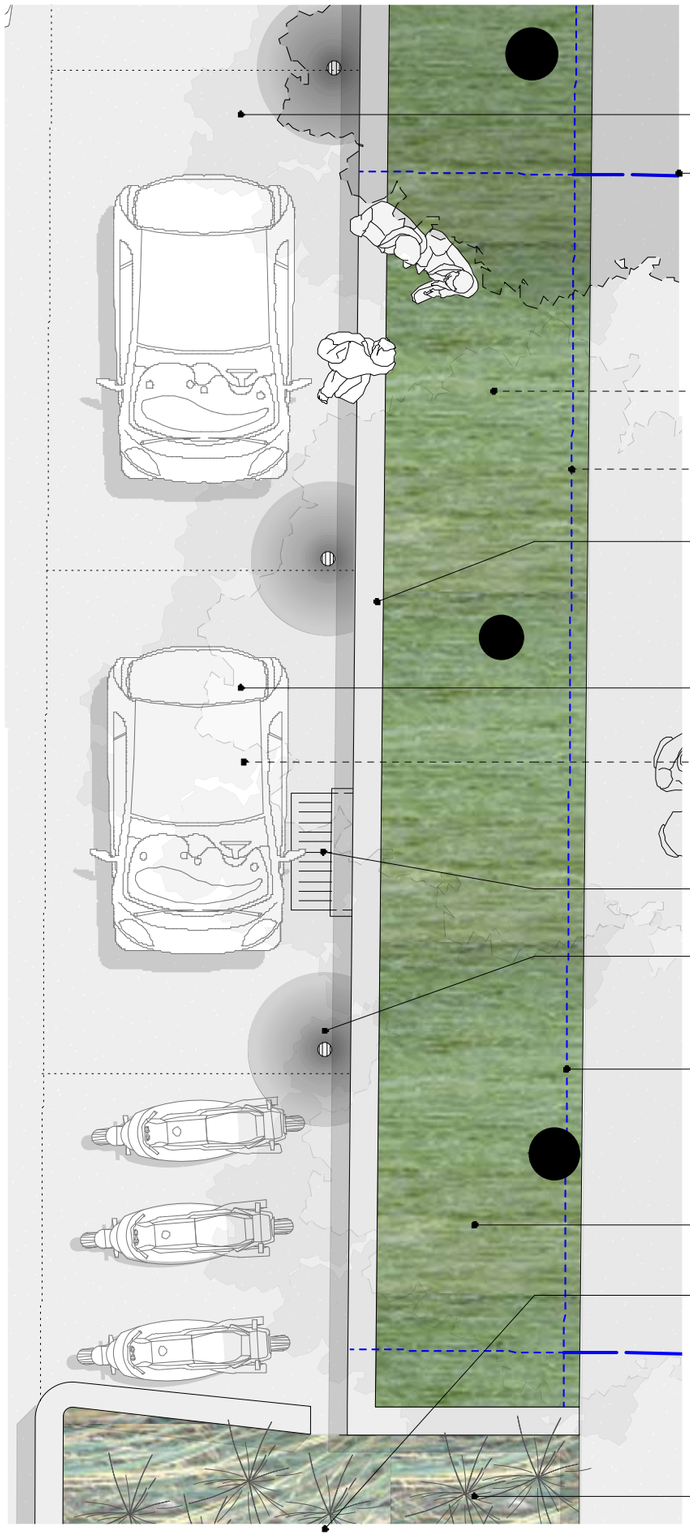
Relevant objectives and actions in the 2030 Vision adopted in this Plan include:

2030 Vision

OBJECTIVE 4.3
Promote green travel for major workplaces and venues in the City.
Action 4.3.3 Provide bike parking, showers and change facilities for walkers and cyclists at approved City of Sydney buildings.

Walking, bicycling and public transport are priorities in the 2030 Vision. They use less energy, cause less pollution, increase human health, and are more affordable than travelling by privately owned car.

This Plan aims to make the car a guest in Chippendale's streets. The suburb will be transformed into a place where children and adults may from January 2012 safely garden, walk and cycle.



01 PALE ROAD Pale surface over roads , pedestrian paths and roundabout

10 ROOF WATER HARVEST through charged line from adjoining roofs to verge & potted plant water stores.

17 COMPOST STATION 4x nutrient retrieval bins trialled in the road verge with property owner approval.

18 MAINTENANCE PARTNERSHIP beween community and TAFE Outreach students to maintain compost bins & gardens.

19 PERFORMANCE MONITOR to report on water & produce quantity & quality plus any soil or damp issues.

05 LED STREET LIGHTING with integrated WiFi. To replace all existing street lighting.

14 SMALL CAR SHARING 3 car parking spaces# reserved for use by multiple car-share providers.

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11 RUNOFF WATER distributed in 150mm deep ag pipe set in planted verge parralel to footpath.

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13 INFORM-ART Art and design to engage people with water cycles using visual & kinetic installations.

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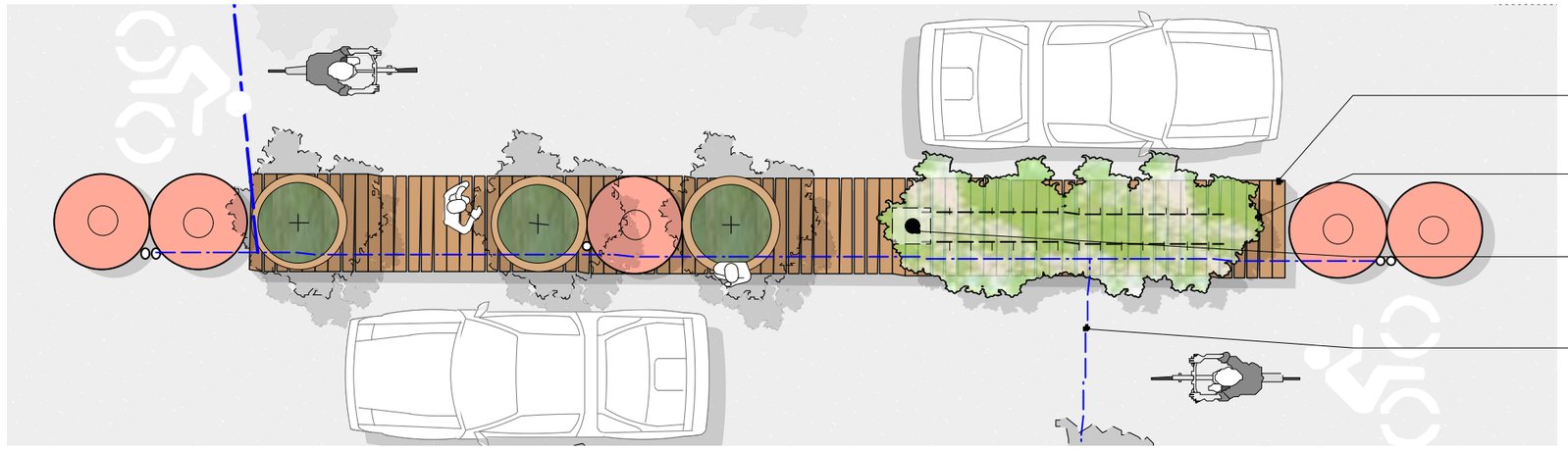
SMALL CAR SHARING
PLAN

N



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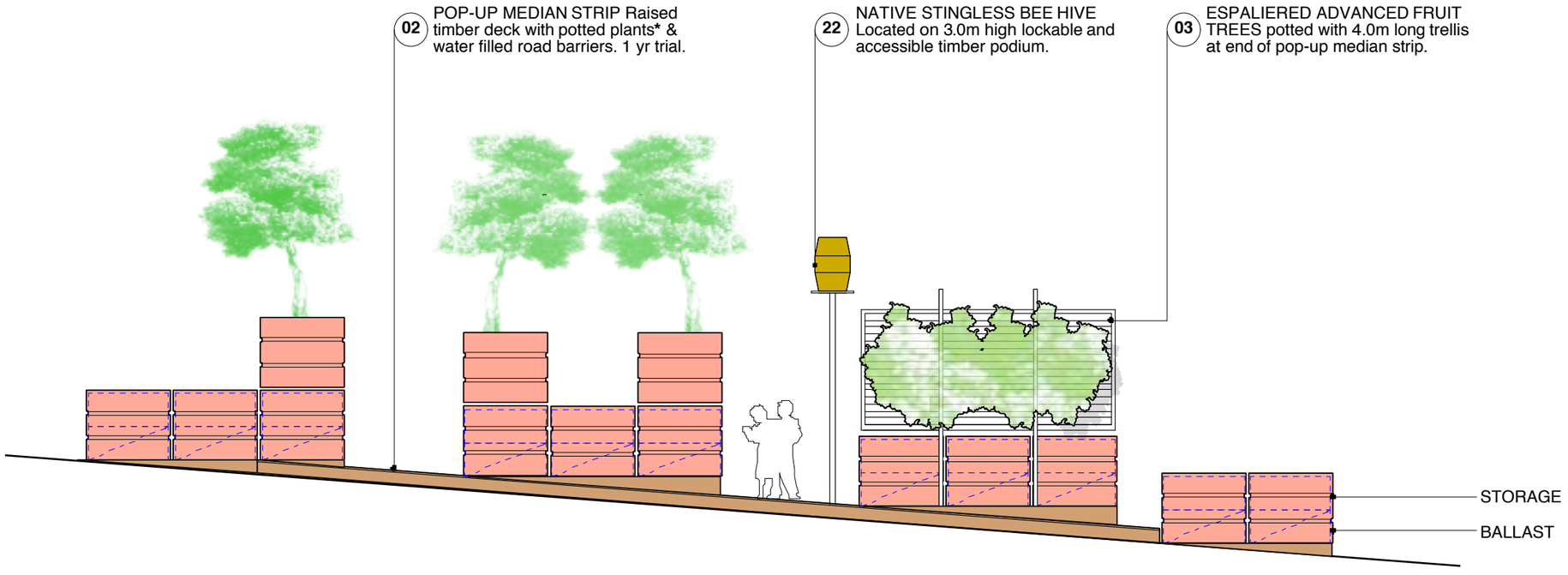
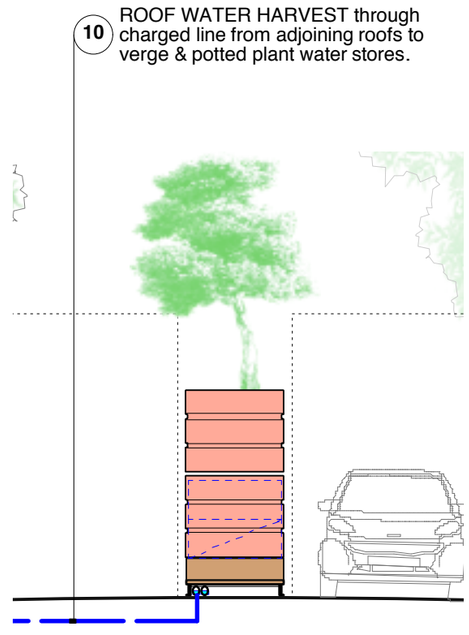
POP-UP MEDIAN STRIP PLAN
PLAN



POP-UP MEDIAN STRIP ELEVATION
SECTION



POP-UP MEDIAN STRIP SECTION
SECTION

Making the new speed limit work with Pace Cars

The Neighborhood Pace Car

Residents with a traffic problem in their street are encouraged to sign the Pace Car Pledge. They promise to drive within the speed limit, stop to let pedestrians cross and minimize their car use. They put a Pace Car sticker on the back of their car so that the motorists behind know why they are driving courteously. When there are sufficient Pace Cars on the street, traffic is calmed citywide. Pace Cars are 'mobile speed bumps' that get out of the way of emergency vehicles.
The Pace Car is a very important part of an overall strategy to make streets safer and to increase the vitality of neighborhood life. It calms drivers rather than streets and thus reduces the propensity for drivers to take risk. (The Pace Car sticker is an essential element as it informs the drivers behind why the car is being driven within the law. This reduces the chances of them becoming agitated and is part of an awareness raising process.) The Pace Car helps create an environment where adults and children are more likely to walk or use their street for play and socializing.

Engwicht - Intrigue & Uncertainty – Version 2.1 p25

The four strategies are to:

- make walking and cycling in Chippendale more attractive and practical than using a privately owned car;
- increase the places where people may walk and bicycle and where trees may be planted;
- reduce the number of cars owned and leased in Chippendale and therefore lower the demand for parking spaces inside buildings and on roads; and
- work in partnership with government and agencies to amend road design standards where they prevent the old, inner city streets of the suburb – built before the car was invented – being used to achieve a safe and healthy village.

WALKING ZONE

This plan creates a walking zone with a maximum vehicle speed limit of 15 kilometres per hour for all the roads within the project area, and a 5 kilometre per hour zone for laneways which have no footpath and where the pedestrian has right of way over the cyclist and car.

CAR PARKING

Three small car parking spaces are to be marked in each block in Myrtle and Meagher Streets from City Road to Regent. This will create an additional 12 car parking spaces.

As the concept is new successful trialling of it requires focussed enforcement and compliance from rangers upon commencement of this Plan to prevent use of the spaces by over-sized vehicles.

What does 'pop up' mean?

'Pop up' in this Plan means: a temporary trial, or something which may be quickly put up and taken down. For the least cost an idea, design, structure, incentive or installation may be 'popped up' and tested. For example, New York City uses pop up art, cafes and other installations to quickly and cheaply install cafes in the road or other works (see www.nyc.gov/html/dot/html/sidewalks/popupcafe.shtml).

If the project has merit then, after the trial it, or a variation of it, may be constructed using permanent materials, and as far as possible the temporary elements are reused in the permanent project or elsewhere. It allows the idea to be tested, reviewed and understood, all for affordable, least costs.

A 'pop up' median strip or roundabout may be built in a couple of days, is modular, reusable, removable and temporary.

INCENTIVES TO REDUCE CAR OWNERSHIP

This plan has incentives to encourage residents and businesses to give up their cars, to walk and to use bicycles. They include:

- Any person or business surrendering a car parking permit will be given a two-year free car share membership up to a minimum value of $6,000 per permit.
- Any household that surrenders two car parking permits, or a business that surrenders a car parking lease in a building for one car space, will be given a two-year car share membership up to a minimum value of $10,000.
- Any household that surrenders one of two car parking permits (one of which need not be in use) will be given a free visitors' pass to give to visitors entitling the visitors to park for a maximum of 12 hours (two parking infringements will void this entitlement).
- Any person in a residential units block or commercial building who leases their car space to a car share scheme will be given a free car share membership for a car share car located in Chippendale and paid for by Council up 2015 when this incentive will be reviewed.
- Any business that takes a car share membership from July 2011 to June 2012 will be given a free visitors' pass entitling a visitor to the business to park for a maximum of 2 hours in the streets of Chippendale (two parking infringements forfeit this pass).
- Any business that provides a free clean towel service for employees who cycle to and from work may claim a rate rebate of $500 a year and where the business is a tenant the property owner may claim on behalf of the tenant who provides the service only if the owner passes on the rate rebate to the tenantby reducing the rent by $500.

The aims of these incentives are to:

- increase the level of car share use from its present levels by over 20 per cent for both residents and businesses by 2015;
- reduce per capita car ownership;
- build on successful trials of similar initiatives elsewhere; and
- collect data on outcomes.

LIMITED OFFER

This offer of transport incentives is limited to a trial period of two years or the expenditure of $90,000 of Council funds, whichever occurs first.

The trial's purpose is to investigate options for achieving the goals of the **2030 Vision** and this Plan. Data about take-up and effectiveness will be reviewed and reported to Council in March 2012 and March 2013. Recommendations will then be made about the utility and value of the trial.

Funding for trial incentives will be sourced from car parking infringements within the project area (income from which presently grosses over $30,000 a month) and, if necessary, from general revenue.

CONDITIONS OF ELIGIBILITY

To be eligible for a car share rebate or a visitor's permit residents or businesses will need:

- proof of residency or employment in the Chippendale project area;
- proof of membership of one or more car share service providers in the area; and
- agreement to provide full details of actual car share use including of any car space within a residential units car park which the Council will publish but will keep confidential the identities of every participant.

An application form is available from Pine Street Creative Arts Centre, any Council office and on Council's website (http://www.cityofsydney.nsw.gov.au).

TRIAL CAR SHARE PROMOTION

Two (or more) events – to be held by Council before March 2012 – will promote car share and bicycle use. The Plan intends that each of these events will attract at least 50 new car share memberships by residents and at least 10 by local businesses. Council will invite all car share service providers in Australia to participate and Council will invite each to provide free trial membership enrolments on the day so people can 'learn by doing' and trial the car share service at the events.

SHARED ZONE

The Plan from December 2011 creates a trial shared zone for streets and lanes for the whole project area using least cost design and maintenance options; that is, within the area bounded by Broadway, City Road, Cleveland and Abercrombie Streets.

Within the area bounded by Broadway, City Road, Cleveland and Abercrombie streets the roads will be shared by cars, bicycles and pedestrians with all vehicles limited to a walking speed and a maximum speed of 15 kilometres per hour for cars and trucks. Cars must give way to pedestrians.

TRIAL VOLUNTARY WEEKEND LANE CLOSURES

The Sustainable Streets and Community Plan trials weekend lane closures in some streets of Chippendale. On weekends during the year ending June 2012 the lanes shown on the plan (page 5.2) may be closed to all vehicles, except residents and businesses whose properties adjoin the closure.

Any business or resident whose property adjoins the lane closure and displaying a resident parking sticker or an access sticker issued by Council may drive their car there during the closure if access is essential for emergency, health or an urgent business purpose which can only be met during the lane closure.

The closures for participating lanes commence at 5 pm on Fridays and cease at 9 am on Mondays by which times the temporary closure devices (witches hats and barriers) must be installed and removed. Witches hats, temporary road barriers and other equipment will be stored at the Pine Street Creative Arts Centre and managed by two representatives of the lane who volunteer to close the lane.

Residents and businesses can initiate lane closures for lanes adjoining their properties. Such closures are Pre-approved where they meet the following conditions:

1. Agreement by over 50 per cent of property owners may initiate weekend closures in the lanes shown in this Plan. They may do this by submitting a letter to Council four weeks before the proposed closure which includes the following:
    a. Nomination of at least two property owners to be the contact point and responsible for the closing and opening of the lane;
    b. Signatures of at least six property owners confirming they have attended a road closure workshop provided free of charge by Council and providing instruction in how to close and open a lane, how to place, remove and store witches hats, temporary road barriers, how to circulate letters of information about the land closure;
    c. An undertaking to carry out the lane closure after Council has published the proposed land closure and obtained a response;
    d. Council undertakes in this Plan to publish such notice within 14 days of receiving the letter from the residents and businesses;

San Mateo, US, car registration fees pay for green stormwater projects

Slow It, Spread It, Sink It

Estuary News, August 2009:

In San Mateo County, motorized vehicles are beginning to pay for their impacts on water quality, in six pilot 'green stormwater' projects that will slow, spread, and sink urban runoff into rain gardens, swales, and green streets and parking lots. In 2005, the state legislature authorized up to $4 in increased registration fees for vehicles in San Mateo County.

'It was important to us to have a nexus with the automobile,' says City/County Association of Governments of San Mateo County's (C/CAG) Executive Director Richard Napier. 'Why not have the autos that are putting the brake pads, the copper, the oil into the Bay pay for the programs that are trying to address their impacts?'

While other counties had attempted to get similar legislation passed, Napier says his agency's bill's success was due to the fact that it was pitched as a pilot project with a clear end date and involved a nominal amount of money. Plus, then-Assembly member Joe Simitian went to bat for the fee, says Napier, 'and we had some luck.'

After C/CAG proved to the Governor's office that they were doing good work as a result of the initial bill, says Napier, the legislation was extended until 2013.

04 FOOTPATH THRESHOLD set at top of kerb height with marked crossing. Water directed to road verge.

07 BICYCLE RACKS Secured bicycle hoops located in clusters at cross streets and intersections.

13 INFORM-ART Art and design to engage people with water cycles using visual & kinetic installations.

17 COMPOST STATION 4x nutrient retrieval bins trialled in the road verge with property owner approval.

06 CYCLE LANE connecting Glebe, Newtown, Ultimo and Camperdown through Victoria Park.

21 ADVANCED NATIVE Trees nominated & positioned by aboriginal elders & planted by community.

25 POP-UP VERTICAL GARDENS* Strip planting along blank Nth facing wall. Deep root access at path edge.

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26 VOLUNTARY LANE CLOSURE on weekends by adjoining land owner

01 PALE ROAD Pale surface over roads , pedestrian paths and roundabout

16 POP-UP CAFE relocatable. 2x gas points. Trial for community planting day and other local events.

23 UNDERSTORY PLANTING Edible and productive planting* along Myrtle street verge.

08 AQUAKERB deep-watering storm water diverter. Located in base of gutter at approximately 4.0m centers.

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24 CROSS-ROAD TREE nominated by aboriginal elder to replace existing palm tree. Maximum canopy cover.

City Road

Myrtle Street

Rose Street

1 std parking bay

1.5 std parking bays

PARKING
Existing car spaces -19
Proposed car spaces - 21

ROAD VERGE: EDIBLE & PRODUCTIVE PLANTS
Midgenberry, Lemongrass, Strawberries, Watercress, Nasturtium, Wood Sorrel, Chickweed, Warrigal greens, Lemon Teatree, Salvia, Dwarf beans, Garlic, Parsley, native Raspberry, Lemon trees, Lime tree, Ffinger Lime, Caffre Lime, Banana tree, Paw Paw, Lilli Pilli, Pineapple Sage [any sages]
Grevillias: Anigozanthos Rampaging Roy; Grevillea Deua Flame; Banksia Ericifolia; Grevillea Canberra Gem; Grevillea Poorinda Royal Mantle; Grevillea Bronze Rambler; Hibbertia scandens; Grevillea John Evans; Baekea Linarifolia

TREES IN POP-UP MEDIAN STRIP
200 litre advanced specimens as available from list provided by aboriginal elders with native plant knowledge and specified in tree and plant section of plan. Successful tree transplanted in stage 2.

N

MYRTLE STREET - STAGE 01 FRAMEWORK PLAN

PLAN

e. An undertaking to provide a report on Council's website on the impacts of the closure upon access to the properties affected by the closure within one week of the closure(s) being carried out;

f. A plan showing the area to be closed and the location of the witches hats and temporary road barriers;

g. An emergency passage of at least 2.5 metres width shall be maintained for the whole of the length of any lane closure.

This plan implements weekend lane closures in the first year and further weekend closures subject to review of the trial.

TRIAL POP UP MEDIAN STRIPS AND ROUNDABOUTS

A pop up median strip will be trialled in Stage One (by June 2012) as shown in the drawings in this chapter. In Stage Two (July 2012 to June 2013) trial pop up median strips may become permanent, and other pop up median strips may be trialled in the suburb.

A pop up roundabout will be trialled in Stage One at the intersection of Shepherd and Daniels streets as shown in the drawings.

STREET CLEANERS, PARKING INSPECTORS, RANGERS AND THE COMMUNITY

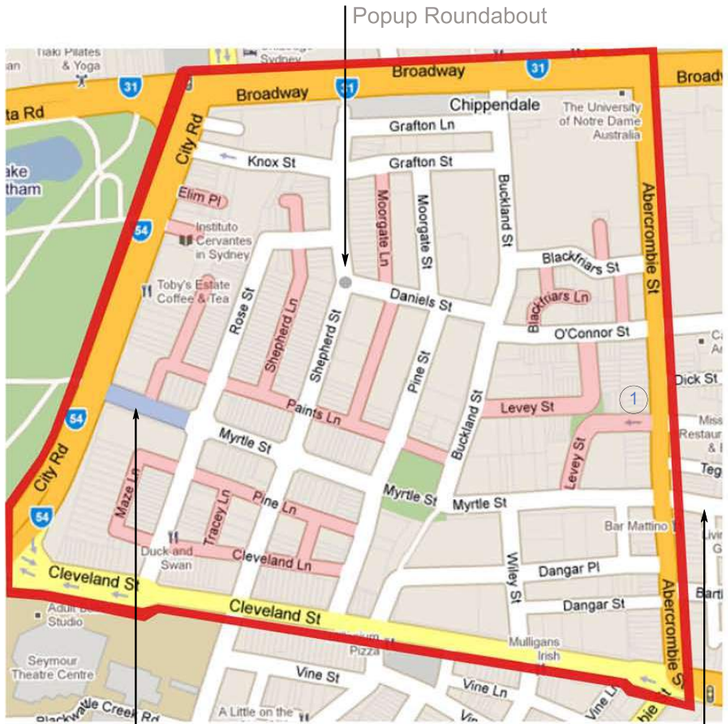
Changes in the Plan to roads and Peace Park require us to re-visit the roles, powers and duties of citizens and Council.

Parking inspectors, street cleaners and rangers work in the city's streets. Thus, the streets are the front office of the Council and these workers are key ambassadors; the eyes, ears and face of Council. These workers have the potential to significantly support this Plan. If the Plan is to be successful it's essential to review these roles within a consultative process with the following goals included. By October 2011 the Plan aims to:

- increase levels of engagement, understanding and cooperation between the community and garbage collectors, parking inspectors, street cleaners and rangers, and any contractors working in the streets and parks;
- prevent the theft and damage to fruit trees and road verge gardens;
- promote harvesting of road verge produce by garbage collectors, parking inspectors, street cleaners and rangers;
- achieve joint planting days in road gardens;
- achieve the recycling of leaves and fallen branches to local road compost and mulch bins;
- see published results of Council imposing fines for parking in car share parking places and small car car parking spaces; and
- have a mechanism whereby the General Manager collects data on outcomes for these goals and publishes them in the General Manager's annual report about the Plan. This annual report is due to Council commencing February 2012 and annually thereafter.

POLLUTION LEVY

The following initiatives will be explored with the state government and solutions implemented in Year Two (2012–13).



Chippendale Area:
Bounded by Broadway, Abercrombie Street, Cleveland Street and City Road

CAR REGISTRATION FEES TO PAY FOR CAR POLLUTION OF WATER AND LAND

Car owners will pay for vehicle pollution via a $5 fee for vehicles registered in Chippendale. This will be matched by proportional state funding for bus pollution from state transport agencies.

Commencing October 2011 the registration fees so raised and the proportion of the state's contribution will be paid quarterly to the Council for the purposes of this Plan except where the state first publishes an account

Getting around

- Voluntary Lane Closures
- Shared Zone for Pedestrians, Cyclists, Cars
- Cool Streets in Summer: Pale roads, more tree cover, pale roofs.
- Trial Bicycle Lanes and Routes
- Car Spaces Reserved for Small Cars

Trials

1. Popup Cafe - 7m long, 1.5 m wide: Levey Street and Abercrombie Street and as part of pop up median strip trial in Myrtle Street from City Road to Rose Street

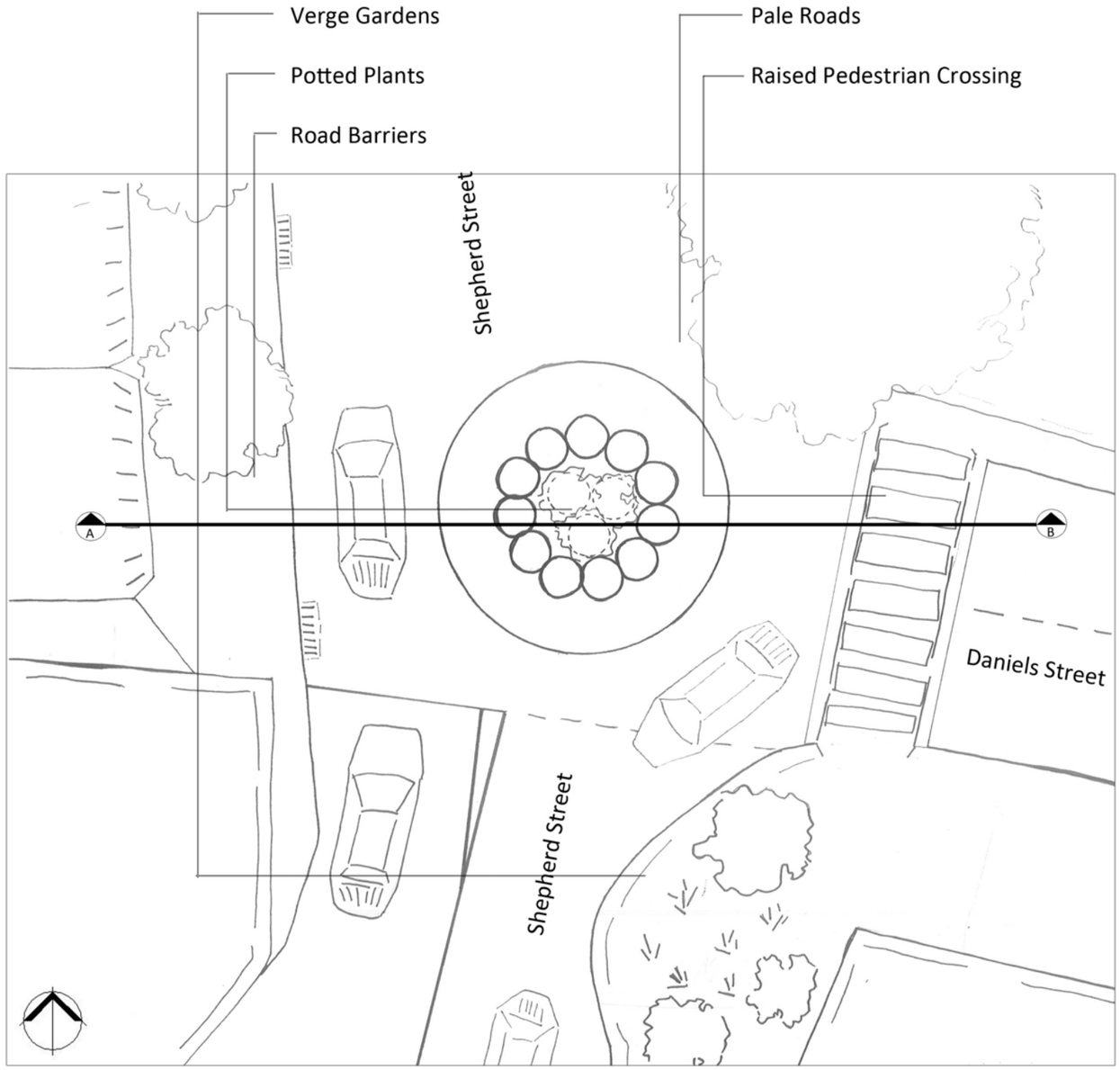
2. Shared Zone: All roads and lanes in the whole of the area to which the Plan applies. Maximum speed limit 15 kph; cars give way to pedestrians

3. Weekend Lane Volunteer Popup Closures: When residents and businesses wish to they may close a lane with no footpath but allow local cars/deliveries through.

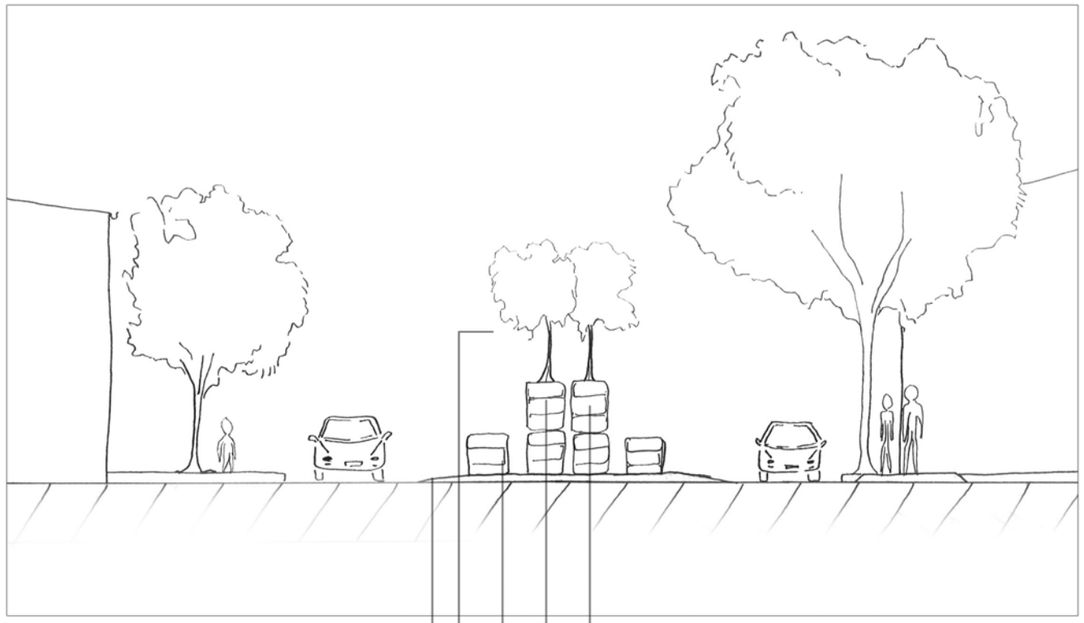
4. Lanes 5km/h Speed Limit

To Regent Street.
Pale road surface from City Road along Myrtle to Abercrombie and from Abercrombie along Meagher to Regent Street

For specifics on all elements, see notes for Trial Pop-Up Median Strip:



Plan

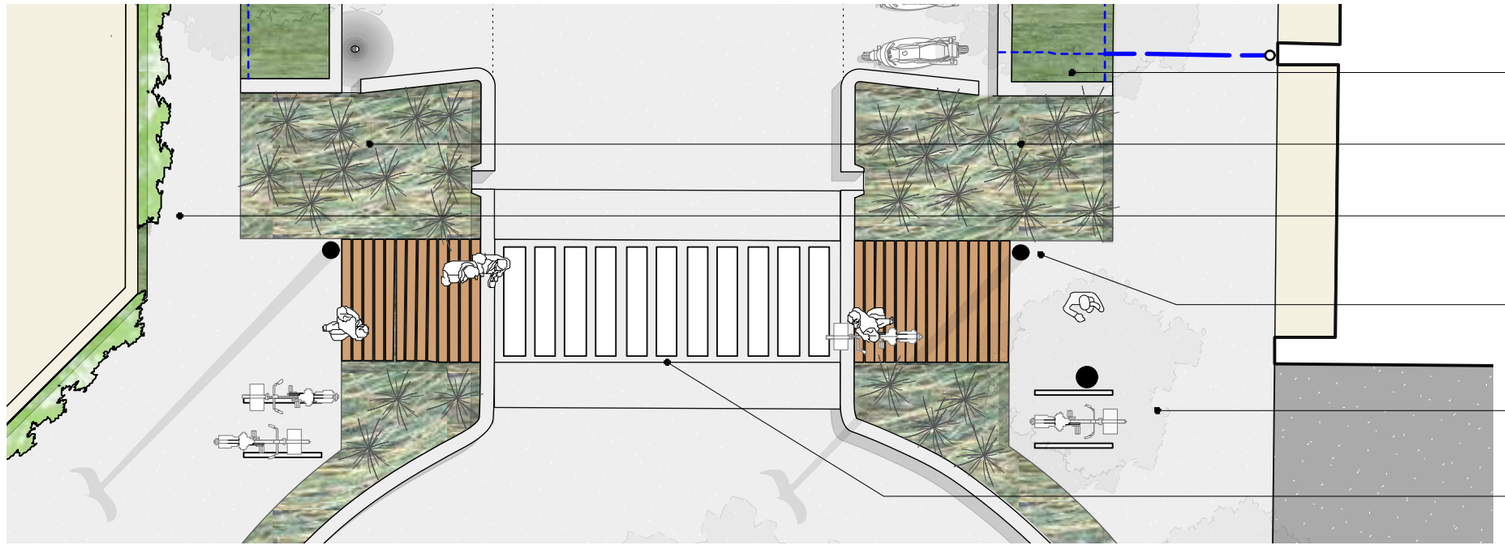


Section

For notes on all elements:

- Inform-Art
- Potted Plants
- Road Barriers
- Tree Height
- Timber Deck

Trial Pop-Up Roundabout



23 UNDERSTORY PLANTING Edible and productive planting* along Myrtle street verge.

20 RAIN GARDEN Inundated water storage garden located at lower end of street. Planted with edible plants*

25 POP-UP VERTICAL GARDENS* Strip planting along blank Nth facing wall. Deep root access at path edge.

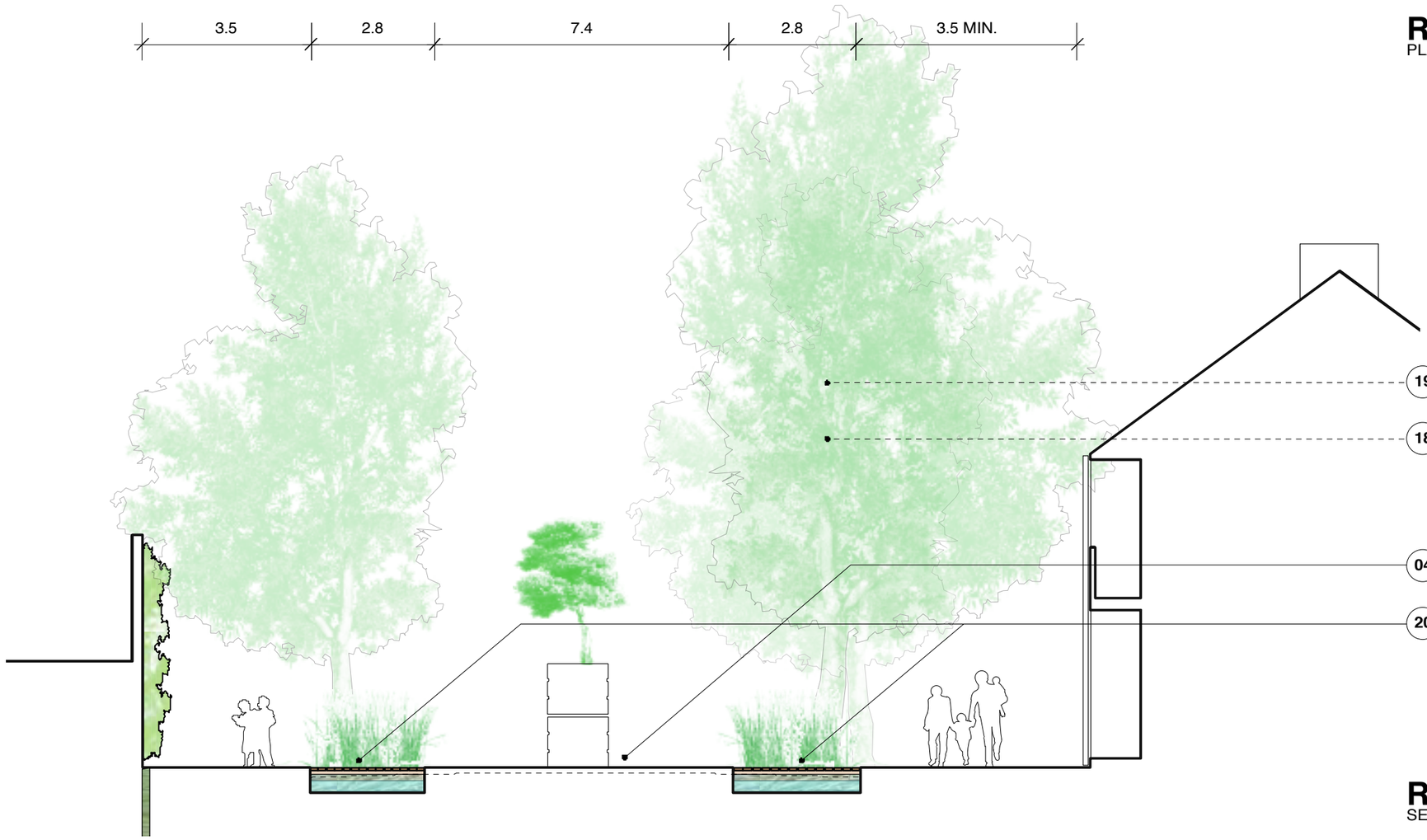
05 LED STREET LIGHTING with integrated WiFi. To replace all existing street lighting.

07 BICYCLE RACKS Secured bicycle hoops located in clusters at cross streets and intersections.

04 FOOTPATH THRESHOLD set at top of kerb height with marked crossing. Water directed to road verge.

3.5 | 2.8 | 7.4 | 2.8 | 3.5 MIN.

RAIN GARDEN
PLAN



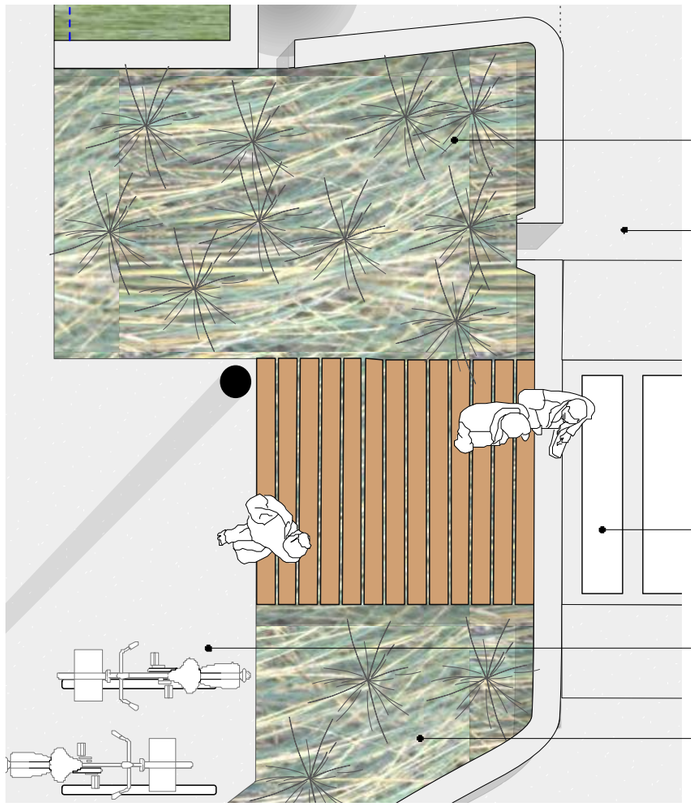
19 PERFORMANCE MONITOR to report on water & produce quantity & quality plus any soil or damp issues.

18 MAINTENANCE PARTNERSHIP beween community and TAFE Outreach students to maintain compost bins & gardens.

04 FOOTPATH THRESHOLD set at top of kerb height with marked crossing. Water directed to road verge.

20 RAIN GARDEN Inundated water storage garden located at lower end of street. Planted with edible plants*

RAIN GARDEN
SECTION



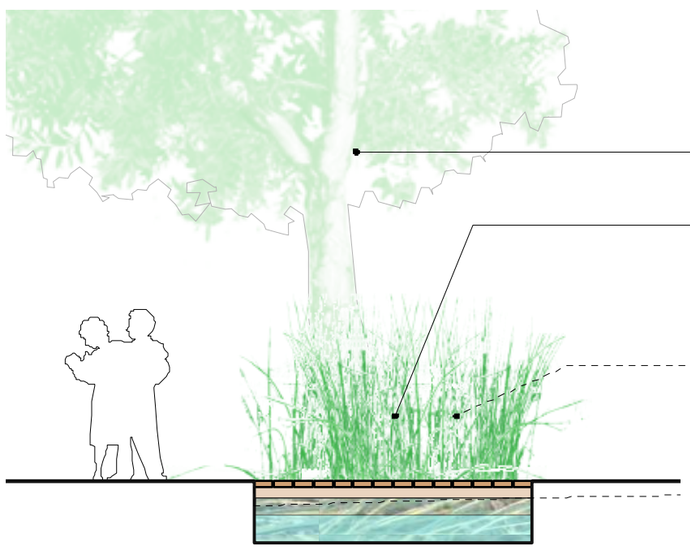
20 RAIN GARDEN Inundated water storage garden located at lower end of street. Planted with edible plants*

01 PALE ROAD Pale surface over roads , pedestrian paths and roundabout

04 FOOTPATH THRESHOLD set at top of kerb height with marked crossing. Water directed to road verge.

07 BICYCLE RACKS Secured bicycle hoops located in clusters at cross streets and intersections.

13 INFORM-ART Art and design to engage people with water cycles using visual & kinetic installations.

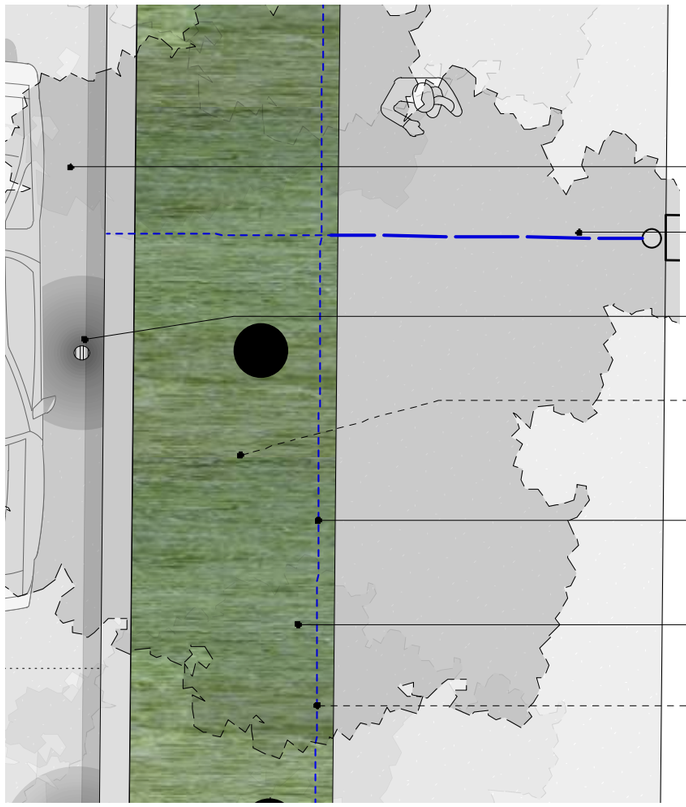


21 ADVANCED NATIVE Trees nominated & positioned by aboriginal elders & planted by community.

20 RAIN GARDEN Inundated water storage garden located at lower end of street. Planted with edible plants*

18 MAINTENANCE PARTNERSHIP beween community and TAFE Outreach students to maintain compost bins & gardens.

RAIN GARDEN



01 PALE ROAD Pale surface over roads , pedestrian paths and roundabout

10 ROOF WATER HARVEST through charged line from adjoining roofs to verge & potted plant water stores.

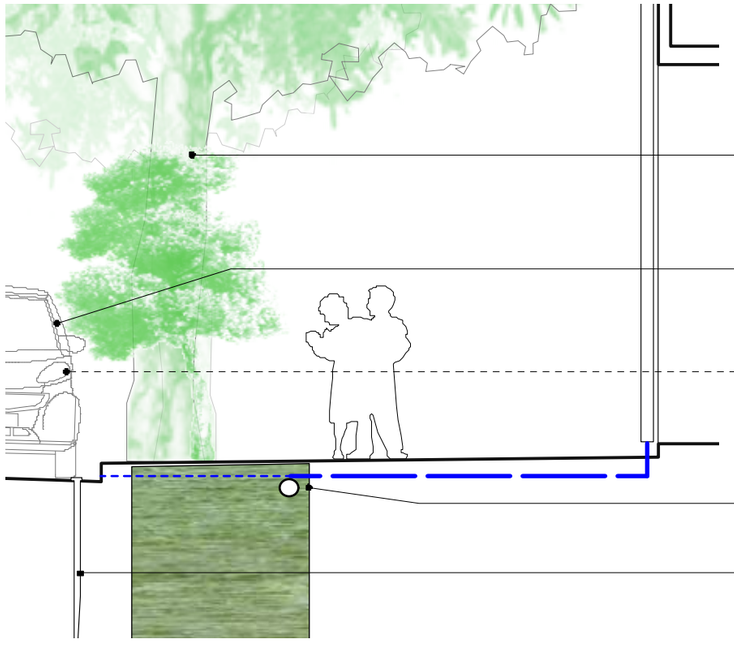
08 AQUAKERB deep-watering storm water diverter. Located in base of gutter at approximately 4.0m centers.

18 MAINTENANCE PARTNERSHIP beween community and TAFE Outreach students to maintain compost bins & gardens.

11 RUNOFF WATER distributed in 150mm deep ag pipe set in planted verge parralel to footpath.

12 VERGE GARDENS* to replace hard-paved areas along the northern side of the street.

19 PERFORMANCE MONITOR to report on water & produce quantity & quality plus any soil or damp issues.



21 ADVANCED NATIVE Trees nominated & positioned by aboriginal elders & planted by community.

14 SMALL CAR SHARING 3 car parking spaces# reserved for use by multiple car-share providers.

15 FREE CAR SHARE access trialled for first-time use by local residents and business owners.

11 RUNOFF WATER distributed in 150mm deep ag pipe set in planted verge parralel to footpath.

08 AQUAKERB deep-watering storm water diverter. Located in base of gutter at approximately 4.0m centers.

RUNOFF WATER

showing those monies, or a portion of them that is not given to Council, have been spent in the project area on projects related to this Plan or the equivalent funds have been spent by a state government agency or corporation on a related project(s) in the area of the Plan.

This system obtains money to pay for works and projects in this Plan which are partly required due to pollution from privately and publicly owned vehicles in Chippendale including council and council contractor vehicles.

The General Manager will report progress to Council and where there is no progress will provide reasons and suggest solutions.

SYDNEY WATER AND COUNCIL TO TRIAL WATER SAVING OPTIONS FOR ROADS AND BUILDINGS

Council will invite Sydney Water to partner with it in trial demonstration projects in this Plan during the year ending June 2012.

Council will offer to partner with Sydney Water and the businesses and residents of Chippendale to trial demonstration projects to cool the suburb in summer by increasing vegetation and tree canopy cover, improve air quality, reducing water use for internal and external uses. A range of projects are proposed as part of this Plan.

Project goals:
- Reduce water and energy use and water and energy bills
- Cool Sydney's suburbs, improve health of communities
- Whole of road, whole of government and agencies approach

How does the Plan support the 2030 Vision?

The goals of this Transport Plan support Targets 1, 6, 7, 8, 9 and 10 of the 2030 Vision, and are to:

- *cool the streets by integrating the road design with the tree and plant design;*
- *make all the streets and lanes within the project area pedestrian- and cyclist-friendly, and safer than in the existing streets and lanes, and to create roads where the car is a guest;*
- *increase walking and bicycle use at least by the Target levels in the 2030 Vision and preferably by 2015;*
- *reduce car parking infringements by 20 per cent over 2011 levels by 2015;*
- *increase car share use by residents, businesses and workers by 20 per cent over 2011 levels by 2015;*
- *reduce per capita and total car ownership by 10 per cent over 2011 levels by 2015;*
- *reduce car and vehicle pollution each year commencing from 2015 and measured against baseline data to be created during the initial year of the Plan.*

STRATEGIC VALUE TO SYDNEY WATER AND SYDNEY'S RESOURCES:

less demand for water for irrigation, less evaporation and pollution of reservoir and channel waters.

Sydney Water will:
- Fund and support a trial of a trial stormwater grate bypass: for use in the one block trial of a sustainable road. The grate will be capable of fitting on grates in Sydney, the Blue Mountains and Wollongong. It will direct rainwater from the 1 in 2 year events (ie low flows) past the stormwater pit to be used in making the road verges self irrigating. Cost estimate for design, trial and monitoring: $10,000;
- End stormwater charges in the project area for any property installing or which has installed a tank to store in excess of 21,0000 lites of rainwater and to use that water entirely for internal uses;
- Promptly facilitate the disconnection from mains water or sewer of any residential or commercial property which volunteers to disconnect and upon disconnection end fixed charges for those services;
- Supply water meters free of charge to any residential unit which volunteers to install the meter and commence paying water usage charges to Sydney Water; and
- Publish data on water and energy and financial savings achieved from these trial projects.

COOL STREET

This plan creates a cool road in Myrtle Street from City Road to Abercrombie and in Meagher Street from Abercrombie to Regent Street. Those two streets will be surfaced with a pale road media and data published in the General Manager's report to Council in February 2012 about the impact of the works on temperatures, tree canopy, imapct on air conditioning use and comfort levels in adjoining properties.

TRIAL POP UP CAFES

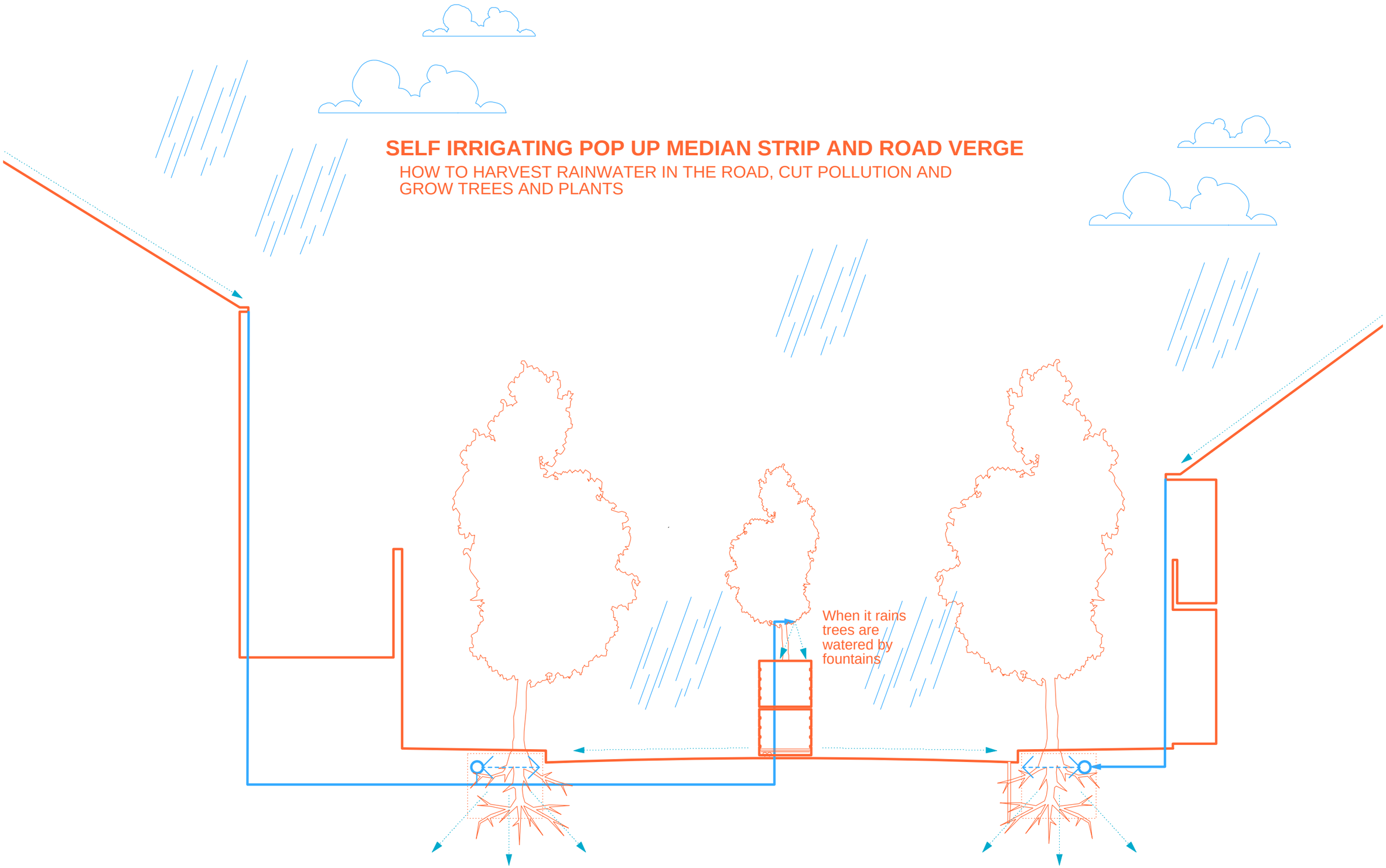
This plan creates pop up cafes to be trialled in at least at two locations (Myrtle Street between City Road and Rose Street, and in Levey at the intersection with Abercrombie). For further details see the food chapter of this Plan.

LEAST COST DESIGN, CONSTRUCTION AND MAINTENANCE

All construction drawings and specifications for road and other trial projects will demonstrate least cost for all project aspects with peer and community review conducted during the design process. Community participation in

SELF IRRIGATING POP UP MEDIAN STRIP AND ROAD VERGE

HOW TO HARVEST RAINWATER IN THE ROAD, CUT POLLUTION AND GROW TREES AND PLANTS



design workshops is essential to achieve least cost projects and community engagement.

For example, we estimate that over 2 million litres of rainwater can be kept where it falls on the Single Block Trial Demonstration Project at a capital cost of less than $300. This will pay for the purchasing and installation of agricultural pipe installed with labour and maintenance freely provided by community gardeners. That will enable the road verges to be self-irrigating and meet the needs of plants.

Each drawing submitted to Council for approval for a trial project in this Plan will include the following statement on the title block:

This drawing includes or is supported by other documents with:

- *specifications for use of local materials and community labour provided or recycled freely from local compost, recycled bricks, tar, concrete, timber or other materials;*
- *specifications for the use of local community labour for the installation, construction and maintenance of vegetation, street furniture, compost bins, or other items;*
- *specifications for all materials used during construction, including food and beverages consumed by the community and contractors (if any) to be recycled;*
- *an estimate of maintenance costs and responsibilities by the community and/or Council;*
- *a certificate submitted with any invoice relating to all drawings and documents which includes this statement: 'The works, services and materials the subject of this invoice were provided to ensure least cost construction and maintenance including specific provision for community delivery of maintenance services and were peer reviewed by the community and any nominated third party prior to the submission of this invoice.'*

DEMONSTRATION PROJECT TIMELINES

Immediately
- voluntary trial weekend lane closures for volunteering locals.

December 2011
- trial shared zone for entire project area.

Stage One construction by January 2012
- cool one city block using full range of options for growing food, self-irrigating pop up median strip and verges, low cost rain gardens, over 40 per cent tree canopy cover and other techniques;
- cool over 12 city blocks using pale road surface.

Stage Two construction by January 2013
- design to be developed from the outcomes and monitoring of Stage One works.

COST

The total cost of the trials in this transport plan is estimated at $390,000. Those monies will firstly be drawn from car parking fines relating to the area in the Plan. Such fines produce an income exceeding approximately $360,000 a year.

Trees 'drink' more water each day than several households

A mature tree needs over 1000 litres a day to achieve natural growth and stay healthy. Nineteen existing trees are in the trial demonstration block and another 16 young trees are proposed. The total daily water demand from these trees will exceed 50,000 litres a day.

BENEFITS

The benefits will be quantified within the annual report to Council by the General Manager. They are expected to include the following for Myrtle Street between City Road and Abercrombie and Meagher Street between Abercrombie and Regent Street:

- about 2 degree temperature drop in summer days exceeding 30 degrees;
- a saving of about 5–10 per cent in air conditioning bills in residential and commercial properties adjoining the cool road, or an estimated saving in bills totalling $10,000–$20,000 in the first year;
- a reduction in Myrtle and Meagher streets in car-made air pollution (including particulates) by 2–5 per cent;
- the prevention of over 4 million litres of stormwater polluting Blackwattle Bay;
- a saving of at least $5,000 for participants from avoided car ownership costs due to increased use of car share, walking and bicycling instead of private car use;
- for those growing food and buying through local farmer box schemes or from the markets in Peace Park a saving in food bills of over $500 a year (in avoided transport, food wastage, garbage and related costs);
- quieter streets with more conversations;
- growing understanding among all ages and nationalities of residents, businesses and workers of the 2030 Vision and the need for it to succeed.

In the report the General Manager will provide an estimate of the value of these savings if they were applied across the Council area.

Ask not what your council can do for you.

Ask, what can you do for your neighbours, house, building, street or council?

6.0 FOOD: *GROW FOOD, HEALTH AND COMMUNITY*

In Australia, the food supply chain is responsible for approximately 23 per cent of Australia's greenhouse gas emissions, making it the second-highest emissions generating activity after power stations. This includes direct emissions from agriculture, and those attributed to energy, transport, food production, processing and distribution.

New South Wales Office of Environment and Heritage

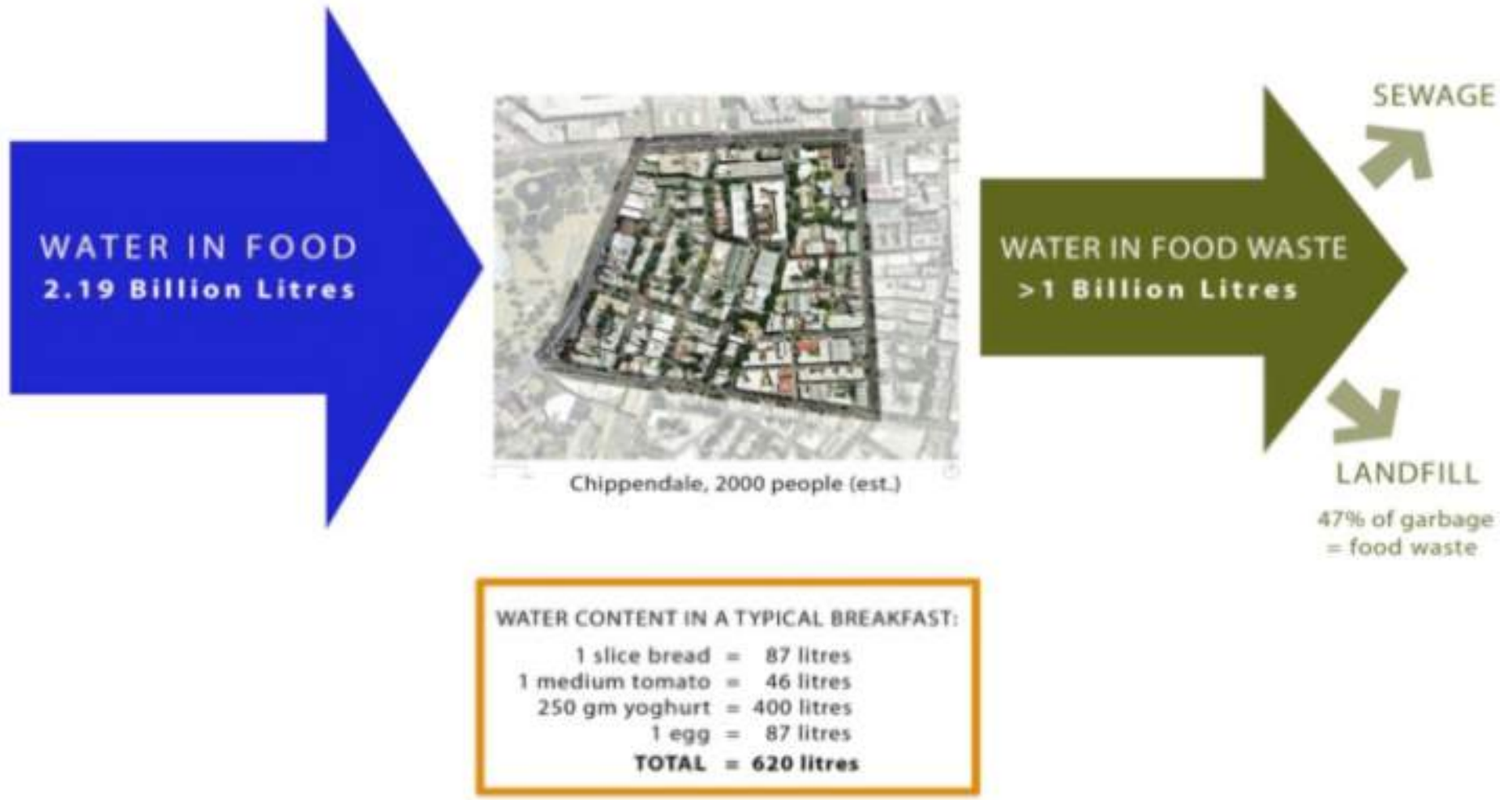
www.lovfoodhatewaste.nsw.gov.au

The Sustainable Streets and Community Plan (Chippendale):

- *encourages locals to purchase food from a world's best practice commercial urban farm;*
- *encourages residents and businesses to buy food brought from local farmers within 150 kilometres of Sydney by two options: a small farmer's market in Peace Park, and a food box service;*
- *provides over 2000 native trees and plants and fruit trees, herbs and vegetables to be planted and maintained by the community in road gardens, vertical gardens, roof gardens over 20 city blocks by June 2012;*
- *provides pre-approvals for public composting and road gardens using simple checklists;*
- *introduces 10 native stingless bee hives to road verge gardens to be installed and maintained by the community;*
- *ceases pesticide spraying in road verges;*
- *trials two pre-approved vertical gardens on the footpath; and*
- *trials pre-approved road verge gardens and public composting.*

F O O D W A T E R

43 times more water is used for food than is imported for domestic/office use



WATER CONTENT IN A TYPICAL BREAKFAST:

1 slice bread	=	87 litres
1 medium tomato	=	46 litres
250 gm yoghurt	=	400 litres
1 egg	=	87 litres
TOTAL	=	**620 litres**

A COMMERCIAL URBAN FARM

Any commercial urban farm within walking distance of the project area (about 400 metres) will be supported by Council if it offers food with the lowest embodied energy and water, or 'food miles' available to Chippendale, adjoining suburbs and the city's central business district. The support will be provided if any farm demonstrates world best practice as follows:

- All produce will be certified organic.
- It will grow over 30,000 kilograms of vegetables and 10,000 kilograms of fish within walking distance of the suburb.
- Water will be harvested from the roof of the farm preventing that water becoming stormwater that would pollute Sydney Harbour.
- Energy will be produced on-site from renewable sources.
- Excess water will be sold and used for gardening and irrigation.
- Data published daily and showing: water and energy use; surplus water; vehicle movements; food production will be available publicly on the internet. Data will be compared with 'business as usual' models, demonstrating major environmental savings. For example, a tonne of commercial lettuce will typically contribute to over 2 tonnes of climate pollution, but lettuce from an urban farm within the city council's area will produce negligible amounts.
- The farm will offer produce to the general market. Those who purchase the food will be able to demonstrate they have reduced the climate and ecological footprint for their food consumption by up to 100 per cent.

The Sydney City Council will:

- apply its Ethical Food Policy and give priority to purchasing food from any urban farm providing food grown as described above, but only so long as the food producer publishes daily data about energy and water use and vehicle movements, and maintains certificates of currency for its organic production;
- give priority to any development or other application required for the project and will make a determination in the shortest feasible period and in any case no longer than 60 days after the application was received;
- give priority to and coordinate and convene meetings or approvals required by other government agencies.

PRE-APPROVED COMPOSTING

Before you can have a garden you need soil. So composting to grow soil is an essential part of this Plan.

Any resident or building owner may install a compost bin on the road outside their building provided they first obtain agreement from each occupant of the properties on either side of theirs.

This trial supports achievement of a key performance indicator for the Council's management of its vehicle fleet which is:

> *Manage the light and heavy vehicle fleets to reduce CO2 emissions and encourage low emission driving behaviour. By 2014 reduce emissions by 20% across the City's fleet*

RATE REBATES FOR COMPOSTING

In Chippendale public compost bin users must register their use of the bin with Council.

After a compost bin user registers they are entitled to an annual rate rebate for the first two years of the initial period of the Plan (July 2011–June 2013) and in the amount of $300 each year and for so long as the registrant complies with the conditions below.

To register property owners or their tenants must first:

- complete a road gardening workshop provided by Council;
- replace their existing Council issued garbage bin with a bin that is half the size or less
- register on the Council's website for the project and provide via that website (or, where the registrant has no internet access, then a postal return to the Pine Street Creative Arts Centre) a monthly statement:

- of the amount of organic matter they have contributed to the road garden compost bins;
- of the amount of compost from the bins they have placed on local gardens; and
- to certify that they have maintained at least one road garden compost bin once that month;

This rebate applies as long as the registrant places all their garbage in the smaller bin only and continues to use the Council's recycling bins for recyclable materials.

The General Manager's annual report will contain an assessment of the costs and benefits of the rate rebate. It will also make recommendations for future rate rebates beyond the initial two-year trial period.

Smaller is better.

A small garbage truck (10 cubic metres) costs ratepayers about $11,000 a year to run and puts 1062 kilograms of pollution into the air. With a $40 a tonne carbon price $805 will be added to that cost. A large garbage truck (19 cubic metres) costs $16,405 a year to run and pollutes 1431 kilograms. The $40 carbon price adds $1306 to the running cost.

for more information see the Appendix B.

Danks Street Depot: cuts food waste and saves money

Two 400-litre compost bins operate at Danks Street Depot restaurant in Waterloo: one in a cupboard, and one outside on the road verge. Restaurant staff and other tenants put food waste and napkins into the bins. The bins cost $600; that amount has been recovered in the first three months of its operation.

At no cost each year the two bins turn over 6 tonnes of food waste into 2 tonnes of soil. They save a tonne of carbon pollution out of Earth's air. Nutrients from the road verge bin nourish nearby trees and plants, partly remedying the damage done by the road and footpath to soil and vegetation health. The bins save for the owner, Jared Ingersoll, more than $500 a year.

COUNCIL COMPOSTING RESPONSIBILITIES

Council will in the year ending June 2012:

- install and maintain in Peace Park – with the participation of the residents, workers and businesses – a minimum of 10 compost bins with a minimum storage capacity of 2900 litres;
- provide at least four gardening and composting workshops at Pine Street Creative Centre for residents and businesses wishing to register for use of the compost bins.

FUNDS FOR COMPOSTING, FOOD AND OTHER TRIALS

Funds for these composting, food and other trials will be drawn partly from existing funds created for such purposes. Money which council obtains

from domestic waste rates in excess of the costs of managing the waste is quarantined to be used for improvements in waste management. The amount of money in this fund increased by $746,000 in the last financial year, which sum is to be available to support the initiatives in this Plan to reduce waste.

For the City's income from rates and domestic waste visit the Council's web page:

- http://www.cityofsydney.nsw.gov.au/council/formspoliciespublication/documents/CityofSydneyStatutoryReturnsandFinancialStatements2009-10.pdf at pp 104, 117.

- For further details, calculations, data and sources please refer to Council's web page for this Plan: www.tobecreated

NEW COUNCIL AND COMMUNITY WEB PAGE

To increase trust within the community and between the community and Council. Council will create a new web page which will offer the following features:

- Council officers will be able to use the web page to contact residents and businesses which have planted trees, or are responsible for road compost bins, or are receiving a rate rebate or other incentive under this Plan; and the community members who are carrying out those activities or receiving a rate rebate or other benefits will be able to contact council members.
- Each resident or business wishing to plant a tree or compost on the road must first qualify themselves by taking the workshop courses offered by Council and upon completion of the course that person or business will be given access to the Council's web page
- Photographs, documents and information may easily be put onto and obtained from the web page which will be designed to satisfy the needs of internet users with slow access to the internet
- Access to the council's web page and training on using it will be provided at the council workshop and free advice will be available at the Pine Street Creative Arts Centre
- Complaints and questions and suggestions about road gardens, composting, trees and vegetation will first be raised between residents and businesses on a one to one basis, and this webpage may be used as a source of information and ideas for dealing with issues which arise in the community
- Council will moderate the web page

Flatirons Neighborhood Farm: 'Seed to Table in Zero Miles'

The Flatirons Neighborhood Farm was set up in 2008 in the urban University Hill area of Boulder, Colorado. The multi-plot farm uses over 6000 square feet of urban yard space donated by neighbours and feeds over 20 families in the area. Families buy half or whole shares of vegetables or do work shares of four to five hours a week. A Regular Share costs $325 and feeds 1–2 people for 20 weeks. A Large Share costs $575 and feeds 3–4 people for 20 weeks. The produce is all distributed locally to Community Supported Agriculture shareholders, restaurants and organisations supporting families in need.

See http://flatironsfarm.org for more information.

PRE-APPROVED ROAD VERGE GARDENS

Any resident or building owner may build road verge gardens if they include the following features:

- At least one pedestrian crossing across a road verge garden will be provided by road verge gardeners every 30 metres. These will be at least 500 millimetres (mm) wide and, where practical, 750 mm to 1000 mm wide.
- Leaky drains will only be installed with the consent of the property owner whose property is adjacent to the drain. Leaky drains leak rainwater into the ground using agricultural pipe with holes in it. They will be similar to the design provided at Council workshops where training in installing the drains will be provided.
- Raised garden beds will be similar to the Guidelines in the photograph below, but need not be exactly the same.

IS ROAD VERGE FOOD SAFE?

Verge gardens are to be built and maintained by residents. The first thing people ask about gardening by the side of the road is 'Is it safe?'

Phil Mulvey, Environmental & Earth Sciences (www.environmentalearthsciences.com), advises that road food is safe:

> *During the 1990s a lot of research was done on lead emission from car exhausts on Main Roads. It was found that on busy roads lead emissions were limited to 30 cm high and within 15 metres of the edge of the road. There was no noticeable impact on less frequently used non arterial residential streets from car exhausts. The removal of lead from fuel in Australia has resulted in lead no longer being a health issue for emissions. Hydrocarbons and benzene degrade rapidly and do not impact plants, in fact they are a growth stimulant at low levels.*
> *Road verges may historically have elevated metal levels and PAHs levels in soil from runoff of zinc roofing and from fill from unknown sources. This applies to all soil in the inner city area. Plants have protection mechanisms to prevent the uptake of lead. Copper and zinc are trace elements and can be taken up but this is beneficial for humans. It is recommended for all root crops grown in home or public gardens that the roots be washed and peeled before consumption. Furthermore as recommended by the Department of Health all food for consumption should be washed prior to consumption. If this simple common procedure is undertaken health impacts from food grown on roadside verges and other simple public land is not expected to cause any health issues.*

Tree Rebate: Portland, Oregon

Portlanders who plant trees on their property can get a rebate from the city of as much as $50 for native tree species. The city via its Grey-to-Green Canopy program, aims to help get 50,000 street trees and 33,000 yard trees planted over a five-year period.

As some verge gardeners have learned (usually the hard way) it's important to work closely with Council. When this Plan is made Council will:

- promptly direct its staff and contractors not to spray pesticides on the road verges of Chippendale;
- promptly issue a direction to its staff and contractors to work in partnership with the residents and businesses of Chippendale to ensure the road verge gardens are supported (the direction will be published on the Council's website);
- commence and continue to quantify the costs and benefits of the current arrangements for management of Peace Park, road verges and Victoria Park and this Plan for at least the first three years of the operation of the Plan;
- publish on its website each December the costs and benefits data gathered from the monitoring. The information will include: distance travelled to and from the project area by contractors and the energy and water used in the travel, materials and operations in the parks in the area.

The residents, businesses and workers of Chippendale, who garden in the road are entitled to a rate rebate:

- plan, garden and communicate according to the pre-approved methods and designs in the Schedule;
- provide and maintain at least two local points of contact accessible to any person, including for each contact: a website, phone number and street address; and
- attend at least one gardening and compost workshop each year provided by Council.

CESSATION OF PESTICIDE SPRAYING

Council has an Ethical Food Policy which commits it to buying pesticide-free food. To help achieve this the Council upon commencement of this Plan ceases pesticide spraying of road verge and gardens in the whole of Chippendale.

At its workshops Council will provide and demonstrate how to deal with garden pests without insecticides and its contractors will attend those workshops to learn these skills.

PRE-APPROVED VERTICAL GARDENS

The two vertical gardens, one for Café Guilia and one for Toby's Estate Cafe, are pre-approved by this Plan for a trial demonstration project in the year ending June 2012.

The Plan will trial and demonstrate vertical gardens so other businesses and property owners may copy them. The trials will show how to:

- cool main street business and other buildings, making them more comfortable and cutting cooling costs;
- grow food on the street for any person to harvest;
- harvest rainwater and make road gardens self-irrigating using devices like ‘flow through planter beds’;
- serve the needs of those seeking disabled access and all who run a business, pause, talk, contemplate, eat and enjoy the street.

These garden designs include structures external to a building. They will be situated on the road side edge of the footpath or fixed, with the building walls kept clear.

Any resident or building owner may build other vertical gardens, which are also pre-approved. But they must submit drawings to Council accompanied by a signed statement on drawings stating that they meet the requirements below:

a. The structure and plants do not impede pedestrian and wheelchair access.

b. The structure is certified by an engineer as safe for the particular installation.

c. Kerbside drainage is not impeded and the horizontal plane of the gutter is left clear for at least 250 mm from the edge of the gutter’s vertical edge, and the pedestrian level of the café surface is the same as the pedestrian surface of the kerb edge.

d. Productive and decorative plants are both used and the fruits, leaves or foliage are available for harvesting by any person. A sign invites anyone to harvest there.

e. Rainwater is used to water the plants and, preferably is applied in a self-irrigating mode without the use of pumps (see, for example, the ‘flow through planter beds’ design below).

f. The structure must make use of recycled materials where possible and be light coloured to reflect sunlight and ensure lowest possible temperature for the soil.

g. The following plants will be included: one grapevine able to fruit in the humid Sydney climate; one passionfruit; two rosemary; one citrus; six strawberry; one midgenberry.

h. Clear visible sight lines must be maintained for both pedestrians, cyclists, persons in wheelchairs and users of the street and footpath.

i. Generally, the structure will be fixed to the pavement to allow pedestrians and wheelchairs to move freely under or beside it and the building it is either fixed to or adjacent to.

Actions speak louder than policy: Bee hive give-away

New South Wales's Ku-ring-gai Council runs The Wild Things program with real on-the-ground actions to restore biodiversity. As part of the program the Council grows and gives away native stingless bee hives, shows how bee hives are split, and conducts workshops on how to care for natives stingless bees.

The initiative includes the Pools to Ponds program where residents volunteer to change their pools to ponds to increase biodiversity and cut water and energy use; and the council program supports and educates residents how to grow and care for blue tongue lizards, which they release into the bush.

See http://www.kmc.nsw.gov.au/www/html/1190-wildthings.asp for more information.

j. Successful applicants and the Council will sign an agreement similar to the maintenance agreement at www.cityofsydney.nsw.gov.au (Note: the agreement takes the same form as this pre-approval schedule. It will be placed on the website.)

k. The applicant will remove the structure at the end of the trial period if the council so requests in writing with reasons given for the request.

l. If the Council asks for the structure's removal it will pay for the removal up to a maximum sum of $3000.

m. To promote the trial of the two vertical gardens Council will subsidise the cost up to a maximum of $3000 for each trial. The subsidy will be payable within seven days after confirmation that the pre-approved checklist has been complied with in the drawings submitted. The subsidy moneys are repayable immediately if the structure and planting has not been completed within a month of the drawings being returned approved by the Council.

n. Each café owner will provide a monthly report of up to five bullet points to Council including complaints or supportive comments received or lessons learnt. This report will be published without amendment on the Council's website within 7 days of it being submitted to Council.

o. Each café owner will take part in the soil, water and plant testing programme to be conducted for all trial demonstration projects. This includes observing the quality and quantity of edible fruit, leaves and water.

p. Council will grant approval and will use its best endeavours to obtain any approvals which may be required from any other agency or body to enable the gardens to be in place no later than October 2011.

The outcomes of these two trial demonstration projects will be reported to Council in February 2012. Recommendations made about expanding the trial or varying it will be made in the year commencing July 2012.

NATIVE STINGLESS BEE HIVES

Ten native bee hives will be located in the streets on raised platforms. Three hives will be placed in the one block trial in Myrtle (between City Road and Rose Street). Three will be in Peace Park, and four will be placed in Meagher Street between Abercrombie and Regent streets.

The bee hives are safe for humans as the bees do not sting.

Besides making honey, bees increase the productivity of the local plants and trees. They also increase the food available for birds and insects, adding to the biodiversity of the area.

The hives need no maintenance; the bees find their own water and food. About every 18 months to two years, if they wish to, the community may split the hives into two hives, and donate the new hives to other suburbs. Thus, after 10 years, there may be over 80 natives stingless bee hives in other suburbs. Insects, flowers, trees and plants will be strongly supported at almost zero cost to anyone. Simple timber box hives can be made by local craftspeople and TAFE Outreach, with which Council has existing working arrangements. Using recycled timber crates and recycled materials the only costs, if any, are expected to be less than $100 a hive box.

The Sugarbag honey, if harvested, has a wholesale price of over $300 a kilogram. The potential exists for a local social or other enterprise to be created to harvest and sell the honey.

Bee hive maintenance will be carried out by the community and will be taught as part of the community gardening workshops in Chippendale at least twice a year at the Pine Street Creative Arts Centre.

After the first three years, with some 30 or more hives in the suburb and adjoining suburbs the level of biodiversity is expected to rise significantly. Levels will be monitored as part of the development of this Plan.

Blacktown TAFE: English in the Garden

Students at Blacktown College of TAFE built and maintained an organic, no-dig vegetable garden in the College grounds. Most of the students were refugees and not literate. They have developed their English language skills through instruction in organic gardening and 'learning by doing'. Students share their knowledge and experiences with others and this enhances their sense of well-being. The next step is to set up a vegetable garden for pre-school children.

This project would not have been possible without the participation of many groups and organisations including Blacktown City Council, Blacktown Migrant Resource Centre, Western Sydney Institute of TAFE (NSW Government), State Government Equity Initiatives, WSN Environmental Solutions, Australia's Open Garden Scheme, National Centre for Vocational Education Research, Commonwealth Department of Education Science and Training.

PRE-APPROVED POP UP CAFES

Any café owner or building owner with a café may build and operate a pop up cafe if they submit drawings to Council. These must be accompanied by a signed statement which specifies that they meet the requirements below. The structure for the pop up cafe:

- if it has a platform and is not on matting, grass or other material placed on the road surface – will be as flush with the sidewalk as possible (a minimum of 3 metres to provide wheelchair access);
- will not impede kerbside drainage;
- will allow for easy access to the space underneath;
- is load-bearing to at least 340 kilograms per 1 square metre;
- is publicly accessible, with appropriate signage to indicate this;
- has vertical elements (for example, planters, umbrellas) so that it is visible from vehicles;

- is finished with quality recycled or sustainably produced or harvested products;
- includes at least one edible, productive planting;
- includes a continuous physical barrier along the street facing perimeter while maintaining clear visual sightlines to the street;
- is open to pedestrians and the public on the sidewalk-facing side;
- is not wider than 2.8 metres;
- has a maximum length no longer than the frontage of the café it is outside;
- has chairs and tables that can be moved, these must be brought indoors or locked and stacked outside each night;

Cafe owners or building owners must sign an agreement substantially in the form of the maintenance agreement at: [website to be inserted when created]. This agreement requires that the adjacent property owner, installing entity, or some other entity will generally be responsible for maintaining that material and providing appropriate insurance.

TRIAL FARMERS MARKETS, PEACE PARK

In the year ending June 2012 Council will trial a mini-farmers market in Peace Park to be leased or licensed to stall holders on the following basis:

- A maximum of two stalls in an area not exceeding 20 m2;
- To sell only produce brought directly to site from local farms and sold using local or farm labour
- To be operated by a person or persons living in or within 1 k of Chippendale or by a farmer;
- To operate between the hours of 6 am to 3 pm Saturdays
- All waste food composted in the park or road compost bins.

COMMUNITY GARDEN WORKSHOPS AND PARTNERSHIP DAYS

Council members and the community will garden together. By gardening as a group we will grow goodwill in the Chippendale village community. We will share knowledge, equipment and work together in training workshops.

A sustainable villiage fosters conversation in the street; an essential ingredient of village life.

PARTNERSHIP DAYS

Twice a year commencing in 2011 Sydney Council will run a partnership day. Council staff can volunteer along with local residents, businesses and workers. This day allows staff from waste, cleaning, parks, planning, sustainability, communications, financial and other departments to meet and garden with volunteers from the community. Together staff and residents can grow, trust and understand each other, to share a wealth of information, and innovation beyond quantification in any financial budget.

GARDENING AND FINANCIAL INCENTIVES WORKSHOPS

At least twice a year Council will provide gardening workshops at the Pine Street Creative Centre. The following subjects will be demonstrated in the centre and the streets:

- Road verge composting.
- Design and installation and maintenance of leaky road verge drains.
- How to register and use the Council website where data will be provided by participating residents and businesses on composting, car and bicycle use, energy and water use and other matters.
- How to split and maintain native stingless bee hives.
- How to build and maintain a vertical garden.
- How to plant and maintain fruit and other trees, plants and herbs.
- How to build a road garden and install and maintain access.
- How to maintain the road verge gardens and Peace Park.
- How to claim and remain qualified for rate rebates and other financial and regulatory incentives to use less energy and water and to cut waste.
- How to prepare and submit data to the Council's website about trial demonstration projects and other Plan actions including complaints and suggestions for improvement in the implementation of the Plan.

GARDENING TRAINEESHIPS: YAAMA DHIYAAN COOKING SCHOOL

Two part time gardening traineeships will be provided in the first year (ending June 2012) for Aboriginal youths and offered in partnership with Yaama Dhiyaan Cooking School. Trainees will learn to garden in the Chippendale road gardens and other gardens.

WORKING WITH ASYLUM SEEKERS

Asylum seekers with appropriate visas can attain skills setting up and maintaining gardens and working on art projects in Chippendale. Asylum seekers also bring to the project their own sets of skills and life experience. For example, some may come from agricultural backgrounds, and may teach locals about traditional farming methods.

RESEARCH

Council will in the year ending June 2012 publish research about the trials in this Plan which includes data from monitoring carried out on at least the following:

- Impact of road gardens on soil and water quality
- Any impacts of the trials on water flows, rising damp, and the quantity of water harvested by the trials.

Further data and benchmark information if provided for in the Plan in other chapters.

Q: Why is this plan supporting local food?

A: Food is the second greatest contributor to climate change after coal-fired power stations.

No success story – Aboriginal Australians are jailed at highest rates ever

Here are some sobering statics:

- *Aboriginal Australians make up about 2.5 per cent of the national population.*
- *Aboriginal Australians make up about 25 per cent of the prison population.*
- *Aboriginal Australian juveniles are about 53 per cent of all juveniles in custody.*
- *Two hundred and twenty-five Aboriginal juveniles are 14 years or younger.*
- *New South Wales has the highest total number of Aboriginal people in prison: 2139.*
- *Between 2000 and 2010, the number of black males in custody increased by 55 per cent.*
- *The number of black females increased by 47 per cent.*

Senate Report, 'Doing Time – Time for Doing: Indigenous youth in the criminal justice system', June 2011.

These appalling statistics need to be addressed at every level.

7.0: A NATIVE PLANT PLAN THAT RESPECTS INDIGENOUS CULTURE

We respect 40,000 years of culture to help us grow edible, resilient vegetation and increase biodiversity

The plan encourages Indigenous people to share their traditional knowledge of local plant species.

But we don't want this to be a token gesture. The re-greening of Chippendale should be a genuine reflection of Indigenous knowledge, expertise and culture. We want to re-engage through this Plan with traditional owners and actively involve them in the implementation of this Plan.

The Plan aims to provide guidance and educational information for all, especially traditional knowledge about the choice, use and values of plants, vegetation and trees that is not otherwise readily available.

Only the trees listed in this plan may be planted in the project area. In the event of conflict with any Council plan, policy or standard conditions of consent, this plan prevails.

Any person from anywhere is welcome to harvest the plants, trees, fruits, herbs and leaves of the edible road gardens.

Nature doesn't know about property limits; it answers only to the boundaries of nature.

Chippendale Plan

HOW DO I USE THIS TREE AND PLANT PLAN?

STEP 1: CHECK THE MAP IN THIS PLAN AND SEE WHERE YOUR PLACE IS ON IT.

Looking at the map, ask:

- Is my place – residence or business – in a north–south or an east–west street?
- Is my place on the shady or sunny side of the street?
- Do I have a garden, or can I plant one at my place or on the road verge or in the road?

STEP 2: CHOOSE YOUR TREE OR PLANT

Look at the list of plants and trees in this Plan (see page XX). This will tell you what plants and trees suit your location.

STEP 3: AGREE TO SOME RULES

Council provides the trees and plants free of charge for you to plant in the street in front of your place or your garden BUT to get these you must:

- attend a free gardening workshop provided by Council on how to make and maintain a leaky drain, how to choose, plant and maintain trees and plants, how to water, fertilise, compost, prune and mulch trees and plants;
- give Council a copy of your, or your property owner's, rate notice, and sign a form which gives Council your name, address and if you are not the property owner, the property owner must also sign the form;
- agree to plant and maintain the plant or tree according to the 'How to plant' guide given with the tree or plant;
- agree that, to keep the plant or tree, you will either send Council a photograph of the tree or plant you have planted or ask a Council officer to inspect your plant or tree within two weeks of being given the plant or tree;
- plant trees and other plants with a pot volume or weight up to a maximum of 50 litres or kilograms (in exceptional circumstances plants above that size or weight can be chosen by Council from those listed in this Plan and planted by Council);
- agree to consult with any resident or business adjoining or opposite the planting; and
- not, in the Council's opinion, unreasonably withhold agreement to prevent the Council planting the tree or association if Council chooses to plant it. If you have reasonable reservations about the planting, these will prevail in the choice of the plant or tree.

SUPPORTING BIODIVERSITY

Our plan for biodiversity supports the **2030 Vision** which states:

> *Native Biodiversity: A green liveable city, that recognizes the importance of trees and quality open space that supports diverse and abundant ecosystems.*

> *The tree and plants in the lists support each other in many ways, not all of which are understood by science. Trees and plants – indeed entire ecologies, birds, insects etc – grow in association with each other, not in isolation. So if we plan these associations well – using traditional and other knowledge – we can expect better pollination, a strong exchange of nutrients, to attract beneficial insects, birds and other natural connections necessary for growth. Thus, trees and plants in your garden can support living environments in your street. Nature doesn't know about property limits; it answers only to the boundaries of nature.*

SUPPORTING THE 2030 VISION

The trees and plants are chosen on advice from Indigenous advisers because the **2030 Vision** promised such reconciliation, which fundamentally involves consultation. It states:

> We acknowledge the Gadigal and Wangal people of the Eora nation, the traditional owners of this land. We are grateful for their past, present and future contribution to the richness of Australian society.
> The City of Sydney recognises Sydney's Indigenous heritage and contemporary culture. The City of Sydney is deeply committed to establishing a process of reconciliation in partnership with its Aboriginal and Torres Strait Islander residents. Aboriginal people have lived in the area and around Sydney Harbour for many thousands of years, living near fresh food and clean water. Campsites were usually located close to the shore, especially during summer when fish and shellfish were the main foods. Many of the City's main roads, such as George Street, Oxford Street and King Street, Newtown are constructed on what were probably Aboriginal walking tracks, which served as trading routes between farmed grasslands or bountiful fishing areas.

The **2030 Vision** includes the following objectives and actions:

> OBJECTIVE 6.3
> Provide a rich layer of accessible community-level social infrastructure, services and programs across the City.
>
> Strategic social planning and implementation capacity is strong and integrated across the City of Sydney's activities.
>
> The City of Sydney is a partner in services provision and multi-disciplinary programs addressing inequality, social disadvantage and homelessness.
>
> Equitable and accessible: Community facilities are provided so that Villages and Activity Hubs are the focus for new and redeveloped facility provision.
>
> Integrated and innovative:
> The City of Sydney is a leader in new models of social infrastructure provision and delivery.
>
> Action 6.3.3
> Establish partnerships and programs to improve social conditions and outcomes among particular communities.
>
> Objective 7.1
> Encourage the appreciation and development of Aboriginal and Torres Strait Islander cultural heritage and its contemporary expression.
>
> Action 7.1.4
> Continue consultation and initiate partnerships to bring a new focus on the understanding and celebration of Indigenous culture in the City.
>
> OBJECTIVE 9.2
> Define and improve the City's streets, squares, parks and open space, and enhance their role for pedestrians and in public life.
>
> Action 9.2.5 Investigate ways to increase community engagement in improving local streets and lanes such as 'Beautiful Lanes, Green Streets' program.
>
> Action 9.2.6 Investigate further strategies to activate the public domain.

The Aboriginal and Torres Strait Islander communities in the city were consulted for the preparation of this tree and plant plan, including: Auntie Beryl and the Yaama Dhiyaan Indigenous cooking school, Frances Bodkin,

Mount Annan Botanical Gardens, the authors of the Eora Journey which is part of the City's 2030 Vision, and the Metropolitan Lands Council.

Frances Bodkin – one of Australia's experts in native plants and their associations – helped Council choose appropriate associations, and robust, low maintenance, safe trees and plants. They were also chosen for the food they provide birds, insects and humans and for their capacity to adapt to the changing climate.

HOW DO AUSTRALIAN PLANTS GROW?

WHAT IS THE MOST IMPORTANT FACTOR?

The most important factor in considering trees for street planting is the survival potential of the tree. For example, does it have the right amount of moisture and sunlight, and is it planted with the right companions?

DO PLANTS GROW ALONE OR TOGETHER?

As Indigenous elder Frances Bodkin states, "The Australian bushland is not merely a mass of plants growing next to each other, but is rather a community within which there are relationships between organisms that sometimes are not immediately obvious."

HOW DO PLANTS DEPEND ON OTHER PLANTS, INSECTS, AND ASSOCIATIONS?

Frances provides an example of plant, insect and other associations,

> *The ants care for and transport the butterfly larvae from the galleries within the ants' nest where they stay during the day, to the tops of the trees where they feed at night. At daybreak the ants bring the larvae back to the nest gallery, clean them, then after sunset they take larvae back to the treetops. When the larvae pupate, the ants care for and keep the chrysalids clean until the tree begins to flower, then the ants carry them into the treetop where the butterfly hatches out and is attracted to the flowers where it sets about pollinating them.*

WHAT OTHER RELATIONSHIPS DO PLANTS DEPEND ON?

Relationships between plants growing within a particular community can be beneficial to all members of that community. The Aboriginal people of this area recognised the importance of these communal associations to the strength of the medicines they used. Many eucalypts need acacias growing nearby for their antiseptic and other medicinal uses to be effective. Many acacias need eucalypts to enhance their food production. Many smaller, flowering and fruiting plants need the leaf litter of both acacia and eucalypt species to produce better fruit, or to attract the soil microrrhizal associations needed for the uptake of nutrients.

HOW DOES THE KNOWLEDGE OF PLANT ASSOCIATIONS MAKE PLANTS GROW BETTER?

By using the knowledge of how various plant communities co-exist, members of those communities have a greatly enhanced chance of survival. So less care is needed to sustain them, they don't need nearly as much hand watering, mulching, and fertilising. The trees themselves will be less likely to drop branches in times of stress, and also their roots will be less likely to travel to seek water underneath buildings or other structures.

WHAT PLANTS ARE MEDICINES FOR HUMANS?

As we incorporate plants and their associations in streetscaping, interest in their medicinal uses will blossom. Particularly in simpler remedies we can use everyday.

HOW CAN PLANTS GROW RESPECT FOR NATURE IN HUMANS?

No doubt these streetscapes will enhance life within the community of Chippendale. But if we look beyond we can invite schools in the surrounding areas to bring children to the suburb to study natural science first-hand. Through this the children will gain a great deal of respect and curiosity for this wonderful land of ours.

> ***Tree and plant associations:*** by Frances Bodkin
>
> *Streets in Chippendale will include associations of native trees (safe ones, that is – not the type that shed branches) under which native fruits and vegetables can be grown. That means: no more streets where single species are planted. Plants will be paired to produce the best results for the ecosystem and the people.*
>
> *Associations are much more likely to survive rather than monocultures simply because the decaying leaves of the various trees provide nutrient for the plants growing underneath, as well as the microrhizal associations in the soil which aid in the survival of the entire association. The smaller plants also provide nutrient for the trees, thus the roots will not travel as far to seek the nutrient.*
>
> *By having the tree species varied along streets, it means that the flowering seasons will also be varied, and the native bees will have a rich source of nectar and pollen all year round, and therefore a source of low GI honey will also be available for food and for medicine.*
>
> *When the native trees produce good viable seed their leaves and bark produce a hormone which prevents growth beneath them. This occurs at varying times, for some, it is about once every four or five years, for others it may be once every 20 years, and evidence can be seen of this if, when driving through natural bushland, you will see a mature tree with*

Road verge planting for local Indigenous school

Auntie Beryl and staff of Yaama Dhiyaan, the indigenous cooking school in Darlington, the suburb adjoining Chippendale, have shared their knowledge and forged a relationship between Chippendale residents, the school and the students.

Native trees and plants are grown and harvested by the school's chefs, students and the community. More trees and plants have been included in this plan with Auntie Beryl's advice.

having to use insecticides. Not all insects are bad. Also, insects attract native birds, and the plant associations provide more than adequate shelter and food sources.

This plan will be an ideal educational source for school children to become interested in the natural sciences by studying its development throughout their school years. It will show plants and trees growing as a continuum, rather than a piecemeal or discontinuum.

When deciding what plants to choose and where to put them, you've got to consider micro-climates within the suburb. A critical factor is the amount and duration of sunlight that falls on streets and verges. Streets which run north–south get less western sun than roads which run east–west. The northern side of a street that runs east west gets less sun than the southern side of the street. The more sun, the more food plants you may grow.

For further details, calculations, data and sources please refer to Council's website for this Plan: www.tobecreated

Plants and trees may be planted on private land to support those on the street or vice versa.

Below is an example of how you can choose plants for your road and property to achieve associations in the street and adjoining gardens and private land. For more information see Appendix C.

ASSOCIATIONS FOR WETTER AREAS : DRIER AREAS:

Acmena smithii – Myrtaceae – Tjeray'il – Lillypilly

Occurring in rainforest and moist forest, along watercourses, in sheltered gullies and at the base of cliff faces near rock shelters, on well-drained clay soils. An evergreen tree which grows to a height of 20 metres.

Eucalyptus agglomerata – Myrtaceae – Bai'ayli – Blue-leafed Stringybark

Occurring naturally in tall forest, on steep slopes, in well-drained soils over sandstone or shale, and in sunny positions in open forests. An evergreen tree which may grow to a height of 30 metres.

ASSOCIATIONS (FOR MAXIMUM MEDICINAL VALUES):

Eucalyptus piperita* – Eucalyptus punctata – Eucalyptus sparsifolia* – Eucalyptus crebra* – Eucalyptus sieberi* – Eucalyptus radiata – Eucalyptus pilularis

**Do not drop their branches. (Twigs are shed occasionally when under stress.)*

ASSOCIATIONS FOR NORTH–SOUTH STREETS

Eucalyptus acmenoides – Myrtaceae – Bai'ayli – White Mahogany; Yellow Stringybark

Occurring naturally in open forest, on moist, but well-drained loams over shale, on ridges and hills, in sunny positions. An evergreen tree which may grow to a height of 30 metres.

ASSOCIATIONS (FOR MAXIMUM MEDICINAL VALUES)

Blossoms eaten by Grey-headed Flying Fox Pteropus poliocephalus; Little Red Flying Fox Pteropus scapulatus

Syncarpia glomulifera* – Eucalyptus paniculata* – Eucalyptus punctata – Eucalyptus deanei
* Do not drop branches.

ASSOCIATIONS FOR SHADY, MOIST AREAS

Acacia decurrens – Mimosaceae – Boo-kerrikin – Black Wattle; Green Wattle, Queen Wattle, Early Black Wattle, Sydney Green Wattle;

Occurring in hilly country in open forest, in association with Eucalyptus punctata and Eucalyptus crebra, on well-drained clays over slate. An evergreen tree which grows to a height of 15 metres.

ASSOCIATIONS

White cockatoos eat the immature seeds. Pollinated by native bees.
Eucalyptus crebra* – Eucalyptus punctata

**Does not drop branches.*

Acacia myrtifolia – Mimosaceae – Red Stem Wattle; Silver Wattle; Myrtle Wattle

Occurring in disjunct communities in dry, open eucalypt forest and woodland on sandy, well-drained soils over sandstone. An evergreen shrub which grows to a height of 3 metres.

ASSOCIATIONS

Native bees harvest the nectar which is rich in amino acids from glands on the phyllodes.
Angophora costata* – Eucalyptus piperita* – Eucalyptus sieberi* – Angophora bakeri* – Corymbia gummifera – Leptospermum laevigatum*

**Do not drop branches.*

ASSOCIATIONS

Native bees harvest the nectar which is rich in amino acids from glands on the phyllodes.

Angophora costata* – Eucalyptus piperita* – Eucalyptus sieberi* – Angophora bakeri* – Corymbia gummifera – Leptospermum laevigatum*

**Do not drop branches.*

FOOD TREES AND PLANTS FOR ROAD GARDENS INCLUDE THE FOLLOWING (COMMON NAMES ARE USED):

banana tree
caffre lime tree
chickweed
dwarf beans
fejoia tree
finger lime tree
garlic
lemon grass
lemon tea tree
lemon tree
lilli pilli,
lime tree
macadamia tree
midgenberry
nasturtium
native raspberry
olive tree
parsley
paw paw
pineapple sage - any sages
grevillias (eg especially those to support small birds: Anigozanthos Rampaging Roy; Grevillea Deua Flame; Banksia ericifolia; Grevillea Canberra Gem; Grevillea Poorinda Royal Mantle; Grevillea Bronze Rambler; Hibbertia scandens; Grevillea John Evans; Baekea Linarifolia)
salvias
strawberries
warrigal greens
watercress
wood sorrel

EUCALYPTUS AGGLOMERATA
Bai'ayli
Blue Leafed Stringybark.
An evergreen tree which may grow to a height of 30m and 1m wide at the base.

EUCALYPTUS ACMENOIDES
Bai'ayli
White Mahogany; Yellow Stringybark;
In exceptional circumstances it may grow to 60 metres in height, though is mostly seen between 20 and 35 metres tall.

ACACIA DECURRENS
Boo-kerrikin
Black Wattle; Green Wattle, Queen Wattle, Early Black Wattle, Sydney Green Wattle;
An evergreen tree which grows to a height of 15m.

ACACIA MYRTIFOLIA
Red Stem Wattle; Silver Wattle; Myrtle Wattle
An evergreen shrub which grows to a height of 3m with a 2–3 m spread

EUCALYPTUS PUNCTATA
Grey Gum
When conditions are favorable this tree can grow up to 35 metres in height.

EUCALYPTUS CREBRA
Narrow-leaved ironbark, Narrowleaf red ironbark
This Ironbark tree can grow up to 35 m high.

8.0: GREEN BUILDINGS

Cut Chippendale's energy and water bills by over $3 million in three years, use the rain and sun that falls freely, and end all food waste by 2020

The Sustainable Streets and Community Plan (Chippendale) Energy, Water and Waste Plan supports the **2030 Vision,** which includes the following objectives and actions:

> Objective 2.2
> Water is celebrated and retained for re-use. A City that sees waste as a valuable resource.
>
> Objective 2.3
> An urban management strategy that focuses on sustainable new development and retrofitting existing development.
>
> ACTION 2.3.3
> Investigate ways to accelerate retrofitting of existing buildings for better environmental performance.
>
> Investigate ways to accelerate the uptake of the Green Power purchase within the City.

Extend the work of existing programs that make a positive contribution to improved resource efficiency across the City.

PRE-APPROVED SUSTAINABLE DESIGNS FOR HOUSES, UNITS, OFFICES

Pre-approved sustainable designs for houses, units and offices will fast-track sustainable development in Chippendale. The sustainable elements of projects are pre-approved if they:

- disconnect from mains water and sewer;
- harvest rainwater for cooking, drinking, showers, baths, hot water;
- reuse recycled sewage for toilet flushing, clothes washing, gardening, irrigation (see more details below);
- install a solar hot water heater or instant gas hot water heater;
- install solar photovoltaic panels;
- install small co-generation systems up to a 30 kWh capacity.

If these projects also include the following works and services they qualify for a rate rebate for an initial period of 10 years. An extension of the rebate is to be reviewed by Council in 2020, having regard to its costs and benefits:

- for residences: $1000 in the first year and $500 a year thereafter;
- for businesses: $3000 in a building of 200 square metres of net lettable area or larger for each of the first 10 years of this plan; and
- for each unit of a block of residential units (maximum total 50 units in year one, after year one the number and amount of the rebate will be recommended in the report to Council in February 2012): $500.

SEWAGE

All buildings that are new or renovated in the year ending 2012 in the project area are to provide a second pipe to toilets and clothes washing machines. This pipe need not be used but will enable recycled water (whether rainwater, greywater or treated sewage) to be used in those outlets when the building owner or tenant wishes. The second pipe may be installed at the same time as the first pipe to the outlet. This will reduce the additional cost of the second pipe and minor involves a small amount of additional labour.

REDUCING CHIPPENDALE'S ORGANIC WASTE

Types of waste	Estimates
Household waste	> 63,000 tonnes pa
Café, restaurant, hotel waste	> 120,000 tonnes pa
Average cost to households of food wasted	> $1036 pa + disposal costs
Average household food waste	315 kilograms pa
Food waste as % of household waste	47%

GETTING THE MIX RIGHT: COMMUNITY GARDENING, COUNCIL AND CONTRACT SERVICES

When the energy, labour and other input and output costs and benefits are compared, studies show that community gardening – particularly where locals garden outside in the street – and vegetation maintenance has far lower labour costs, travel miles, petrol and energy costs than Council or contract services.

While more research is required to obtain data for Chippendale (this Plan provides for further research), local gardening is more sustainable than imported gardening products or services. If a suitably trained local can walk out their front door and plant and maintain vegetation they will not be driving utes, or bringing trucks to and from the site. They will obtain, use and manage resources more efficiently than a person who comes from kilometres away, and who may take two to four or more vehicle trips to and from the same location.

The early research for this Plan indicates this is so and is summed up in the table on the following page. The benefits from community gardening which are consistently shown in studies include: reduction of obesity due to physical activity and greater 'social glue' or connectivity.

Café Guilia – cuts waste at no cost

Over the last few years local Café Guilia has worked with suppliers and the community to cut waste at no cost to the business or suppliers. Successes include: Food waste is put into milk crates and, after dropping off farm produce at the cafe, a farmer puts the milk crates on the empty truck and takes the waste to his farm for composting. This reduces the use and cost of oil and gas based fertilisers for the farmer, cuts out food and waste miles, and improves the quality of the soil and food grown.

The café and the farmer worked together to choose the product, and the farmer bought recyclable, collapsible food crates. This crate reduced demand for holding space at the café and the cost and resource demand for cardboard boxes. Savings to the farmer in cardboard box purchases paid for the cost of the crates in three months.

Leftover bones are frozen and given to local dog owners for pet food.

PARK MILES ARE GREATER THAN COMMUNITY GARDEN MILES

Peace Park maintenance costs (data to be completed in year one)	$40,000 pa Full costs estimated to exceed $150,000
Peace Park pollution from maintenance (data to be completed in year one)	> 17 tonnes of carbon dioxide pa
Road gardens costs (equivalent size to Peace Park)	< $5000 pa
Road gardens and public composting reduced pollution from avoided garbage and other Council activities	154–179 tonnes pa
Road gardens – avoided food and maintenance costs	– $77,000 pa

Broadly speaking our communities can deliver tree and vegetation services in three ways: by the community, the council or contractors, or by a mix of these three.

This Plan trials a more even mix of services and where possible locals will do all planting and maintaining of gardens in place of imported services.

Of course some activities require outside help: tree lopping, planting of advanced trees, and the Plan provides for those services to continue.

BENEFITS

By reducing food waste in Chippendale (with composting and other measures) the Plan supports Council's vision. This will enable Council and contractors to use only the smallest garbage trucks in the fleet (with a storage volume no greater than 10 cubic metres).
This means:

- Chippendale will be quieter, safer with cleaner air to breathe;
- roadways and paths can support more trees, verge gardens and plants;
- bicycle paths can be created; and
- ratepayers and business garbage costs in Chippendale may be reduced before 2020.

WATER

Chippendale is keeping rainwater where it falls to sustain trees, plants and to cool the street. In several streets – at a capital cost of less than $300 – over 1 million litres of stormwater is being kept in existing road verges to make them self-irrigating. For this low sum residents purchased agricultural pipe – it has holes in it to leak water into surrounding soil – and buried the pipe. They provided free labour and used tools donated by local businesses. Those roofs discharging rainwater into the road verges have made the verges self-irrigating and a participating roof contributes about 20,000 litres a year, or some 54 litres a day on average, to sustain trees and plants. A mature tree will use over 1000 litres a day to sustain itself so the self-irrigating road verges are increasing the health and canopy of some trees and plants and cooling some of the road and properties.

9.0: ART: *INSPIRE AND EXPLAIN*

A curator to create an annual art event celebrating sustainable streets.

WHAT IS THE GOAL OF THE ART PLAN?

The Art Plan supports Targets 1 to 10 of the **2030 Vision.**

WHY HAVE AN ART PLAN?

Chippendale is perfectly located as a 'walk through' inner city suburb and is already becoming known as an art precinct. So it's the perfect place to foster and nurture art.

Art engages local communities and connects them to their environment, inspiring them to care for and support themselves. For example:

- Brisbane City Council inspired a respect for the Brisbane River and Moreton Bay. It aimed to overcome pollution and poor treatment of those valuable resources. This was largely achieved by the Brisbane River Festival which, through music, art, education, sculpture, dance and food raised community awareness of those waters and their biodiversity. The result has been a significant improvement in the quality and enjoyment of the waterways and the community around them.
- Art can attract audiences. Sculpture by the Sea along Sydney's coast is an example of how art has drawn many thousands of people to experience the magic and beauty of the natural coastline reminding us each year of the values of that resource in an urban environment.
- The artwork for the Restoring the Waters project in Sydney's west highlighted the restoration of a lost creek and in the process enabled the community to care for and understand their environment.
- The Victoria Park development in Zetland has art that is both aesthetic and functional. The art assists in the filtration and aeration of stormwater.

This Art Plan aims to create a continuing Sustainable Art project in Chippendale. It's an opportunity to inspire a sense of wonder about all of our city's buildings, streets and community. This Plan proposes a new type of ecological approach where art is integrated and embedded in the urban fabric.

Art can help us imagine a sustainable city, and find innovative ways to reduce the negative impacts of the cars, pollution and other perceived dangers or failures of city living.

Artists can be involved in the transformation of Chippendale into a sustainable suburb. They can use their skills to amplify, interpret and educate. Art can help make visible the otherwise invisible environmental processes of environmental remediation. It can transform technical mundanities into poetic and meaningful experiences. Imagine, for example, street and pavement fountains that spring to life when it rains, and celebrate the water that falls in the streets and nurtures local trees, plants and insects.

The chief aim of this Art Plan is to revere, respect and celebrate the street.

The curator will be charged with attracting artists to produce energetic art located in and for the street. Artwork will be showcased in the area bounded by Broadway, City Road, Cleveland and Abercrombie streets. It will support the sustainable works, services and projects created in this area by the Plan.

The Plan will speak to the whole city. In time, the artwork will attract visitors from near and far. It will become a model for achieving community-based sustainability.

The art plan requires a curator/coordinator to develop and implement it.

In the first year the curator/coordinator will develop an art strategic plan. This will outline an annual art project aimed to celebrate the Chippendale Sustainable Streets and Community project. It will engage local workers, businesses and residents of Chippendale and the city beyond in the life of our streets. The Plan will primarily focus on the street and life that depends on it. Art will also be included in each trial demonstration project whether it is on private or public land.

The plan so developed will commence in the second year and the art and plan will be implemented from July 2012–June 2013.

The art plan will become one of the City Art projects under the umbrella of Council's art department. Funding from July 2011–June 2012 will cover curatorial and artist fees as well as project costs. These funds will be in addition to those for the functional aspects of the project. The plan and funds for the second and following years will be part of the annual review of this plan.

Cost of art plan:
- Year One: $125,000;
- Years Two to 2020: to be determined in the initial review.

10.0 MONEY, JOBS, BUSINESS: *EASIER AND CHEAPER TO GO GREEN*

This Plan aims to achieve sustainable buildings in sustainable streets. Residents and businesses are invited by this Plan to choose to 'go green' instead of 'business as usual'.

This Plan aims to achieve sustainable buildings in sustainable streets. Residents and businesses are invited by this Plan to choose to 'go green' instead of 'business as usual'.

It stands to reason that if it is easier and cheaper to build and live green then residents and businesses will naturally follow that path. The Plan therefore invites residents and businesses to choose one or more from a mix of incentives to go green:

- rate rebates;
- financial incentives; and
- pre-approvals for sustainable projects.

The financial and regulatory incentives are anticipated in the 2030 Vision which includes the following objectives and actions:

ACTION 1.1.5
Establish a Precinct Management Team to work with landowners, businesses and other stakeholders to strengthen precincts.

ACTION 1.5.1
Undertake continuous improvements to approvals and licensing processes.

ACTION 1.4.1
Support local community economic development and continuous learning.

OBJECTIVE 2.4
Demonstrate leadership in environmental performance through the City of Sydney's operations and activities.

ACTION 2.4.1 Investigate the application of carbon minimisation criteria to procurements and contracts.

ACTION 2.4.2 Investigate best practice initiatives to prepare the City for the social and other impacts of global warming, such as peak fuel impacts, storms and flooding.

ACTION 2.4.3 Work with other sectors to promote sustainable environmental industries and develop economic and educational benefits.

ACTION 2.4.4 Continue to develop and implement education and support initiatives to assist residents, businesses, workers and visitors to reduce their environmental impacts.

ENVIRONMENTAL COSTS

There are several types of costs for using water, energy, food and waste:

- costs to the environment of polluted air and water and land; and
- health costs to humans, plants, insects and animals from the pollution and use of resources.

Generally, it costs more to 'go green' than to build and live in the usual way. But once extra money has been spent to buy and install green systems, our energy, water, food and waste bills are lower. Not to mention our impact on the environment.

WHAT DOES IT COST TO GO GREEN?

The purchase and construction costs to make a house sustainable for energy and water are between $15,000 and $30,000. Once the infrastructure is in place a household of two to four people can reduce their energy and water bills from about $3000 to about $300–$500 a year. Savings can be much higher for some projects.

It costs about $50,000 to make an office of 50 workers sustainable. These costs may be three or more times higher for some projects. Offices are far easier, and more cost-effective to make sustainable than houses, mainly because water use is far lower – there are fewer showers and no clothes washing – and the premises are often used five days a week instead of seven.

Cafes and restaurants are the hardest to make sustainable due to the large amount of water, energy, food and waste and limited space available for tanks and sustainable systems. Costs are difficult to estimate here due to the broad range of sites.

None of the costs given here include obtaining Council approvals. For housing, council costs can account for up to a tenth of the construction costs, and for offices up to a twentieth.

WHAT DOES IT COST COUNCIL TO ASSIST THE COMMUNITY TO GO GREEN?

Carefully constructed financial incentives may reduce food and other waste, cut back on wear and tear on roads and infrastructure, and empower the community to donate labour and materials that save the Council contracting and labour costs.

Perhaps the most cost effective option for any Council wishing to go green is that of simplifying its rules and administration.

Simpler rules bring substantial savings in time and labour to council due to the removal of avoidable administrative labour costs. While the costs to council of administering it's rules are unclear they are known for the private sector. For example, the time taken to prepare and negotiate approvals for sustainable projects is estimated to cost applicants at least $10,000 for a house and over $50,000 for a business, and the costs to Council (and ratepayers) is of a similar order. It's reasonable to assume the Council's costs are of a similar order to applicants.

There is a long history of local government approvals being simplified using 'deemed to comply' rules, checklists (eg BASIX in New South Wales). The approvals process may thus be made cheaper and more efficient. In New York City, for example, a range of pre-approvals are available for 'pop up' cafes, pop up art and other actions intended to green the city's transport system.

SOURCES OF FUNDING FOR COUNCIL COSTS OF PLAN

Sources of funding for Council costs of this Plan include:

- Parking fines in Chippendale which gross over an estimated $360,000 a year
- The money obtained via domestic waste rates in excess of the costs of managing the waste is quarantined to be used for improvements in waste management. The amount of money in this fund increased by $746,000 in the last financial year, which sum is to be available to support the initiatives in this Plan to reduce waste.

For the City's income from rates and domestic waste visit the Council's web page:

- http://www.cityofsydney.nsw.gov.au/council/formspoliciespublication/documents/CityofSydneyStatutoryReturnsandFinancialStatements2009-10.pdf has, on pp 104, 117.
- For further details, calculations, data and sources please refer to Council's web page for this Plan: www.tobecreated

CUTTING COSTS FOR COUNCIL AND THE COMMUNITY

This Plan cuts costs for both the Council and the community to go green.

The incentives aim to compensate for the minimum capital cost which people are prepared to pay to go sustainable - in a house the limit is $15,000 and an office it's about $30,000; Connection Research (2007), The Sustainable Home in Australia in 2007: An Australian Consumer Management Report, www.connectionresearch.com.au.

As people become increasingly concerned about climate change, their values change and they appear to be prepared to pay more. But, with scientists having given 2015 as the date by which climate pollution must reduce or Earth may face catastrophic changes it's clear Council's must make it easier, cheaper and quicker for sustainable projects to be approved and built.

Four common barriers to going sustainable are:

- additional costs;
- high cost and time involved in the Council approval process;
- lack of space; and
- complex and largely unsympathetic, intricate web of rules, laws and standards.

COSTS AND BENEFITS FAVOUR SUSTAINABLE BUILDINGS IN SUSTAINABLE STREETS IN A SUSTAINABLE COMMUNITY

RATE REBATES

This Plan offers financial incentives for a limited period for a range of pilot projects. The incentives will enable Council to reward the property owners and tenants who choose to conserve limited, precious resources of water and energy, to clean the city air, grow food, and cut running and living costs of the trial projects.

The Plan rewards participating owners and tenants according to their level of participation in the Plan and the costs and benefits resulting from their participation.

A total of $150,000 in rebates is offered for green building projects in Year One on a first come, first served basis. Further rebates can be offered at the discretion of the Chief Executive Officer. They will be based on data

Demonstration projects, Leadership, Whole of agency approach, Data, Communication

Elements necessary for a successful green streets program:

- *Pilot projects are critical.*
  The most successful municipal green street programs to date all began with well documented and monitored pilot projects. These projects have often been at least partially grant funded and receive the participation of locally active watershed groups working with the city infrastructure programs. The pilot projects are necessary to demonstrate that green streets can work in the local environment, can be relied upon, and fit with existing infrastructure. Pilot projects will help to dispel myths and resolve concerns.
- *Leadership in sustainability from the top.*
  The cities with the strongest green streets programs are those with mayors and city councils that have fully bought into sustainable infrastructure. Council passed green policies and mayoral sustainability mandates or mission statements are needed to institutionalize green street approaches and bring it beyond the token green project.
- *Buy-in from all municipal infrastructure departments.*
  By their nature, green streets cross many municipal programs. Green street practices impact stormwater management, street design, underground utilities, public lighting, green space planning, public work maintenance, and budgeting. When developing green streets, all of the relevant agencies must be represented. Also, coordination between the agencies on project planning is important for keeping green infrastructure construction costs low. Superior green street design at less cost occurs when sewer and water line replacement projects can be done in tandem with street redevelopment. These types of coordination efforts must happen at the long-term planning stage.
- *Documentation.*
  Green street projects need to be documented on two levels, the design and construction level and on a citywide tracking level. Due to the different street types and siting conditions, green street designs will take on many variations. By documenting the costs, construction, and design, the costs of similar future projects can be minimized and construction or design problems can be avoided or addressed. Tracking green street practices across the city is crucial for managing maintenance and quantifying aggregate benefits.
- *Public outreach.*
  Traditional pollution prevention outreach goes hand in hand with green street programs. Properly disposing of litter, yard waste, and hazardous chemicals and appropriately applying yard chemicals will help prolong the life of green street practices. An information campaign should also give the public an understanding of how green infrastructure works and the benefits and trade offs. In many cases, remedial maintenance of green street practices will be performed by neighboring property owners; they need to know how to maintain the practices to keep them performing optimally.

Used with kind permission of US EPA, 'Managing Wet Weather with Green Infrastructure' Municipal Handbook Green Streets, December 2008, EPA-833-F-08-009, page 16.

provided under the terms of the rebates granted. Where data demonstrates savings of resources achieved by a trial project which, in the opinion of the Chief Executive Officer, are exceptional and confer a public benefit, then further financial or other incentives may be offered to the owners or tenants of the project.

TRIAL DEMONSTRATION PROJECTS

Offices, residential units, cafes, businesses and houses may offer to trial sustainable energy, water, food and transport systems in the year ending June 2012.

Qualifying office projects will receive a rate rebate for each year to 2020: Minimum $5000 each year. Qualifying residential projects will receive a minimum rebate of $500 each year to 2020. A higher rebate may be offered by the Chief Executive Officer as per specifications above. The rebate takes effect once a qualifying project is complete in the next rates invoice (either quarterly or annually).

Rebates for Year 2 and following years depend on the report and recommendations of the Chief Executive Officer, to be submitted in February 2012.

The owner and tenants will offer to Council at least four of the following nine options:

1. paint roof a pale colour (with a heat reflection rating of over 80 per cent, to be chosen from the list in the schedule) that reflects sunlight and heat;
2. self-sufficient for water and disconnecting from mains water and sewer by using rainwater and reusing sewage (to flush toilets, to irrigate road, roof or vertical gardens) except residential units: for the first year of operation of this Plan each unit does not need to disconnect or achieve self sufficiency;
3. self sufficient for electrical energy using co or trigeneration and/or solar panels;
4. use at least one car share car in place of, or in addition to, any existing company or private car.
5. for so long as the energy, water, sewage systems operate the owner provides Council with data on use and costs with a ‘back to base’ system which records data continually and posts it live to an internet site and electronically lets Council and the owner know what the usage is for the last day, week, month or year;
6. buy local food from local farmers directly or by a food box service which publicly discloses each week how much of the box purchase money is paid to the farmers;
7. a vertical garden on the street frontage of the building or, where feasible, the other walls of the building; this design is pre-approved if it copies the designs preapproved for Café Guilia and Toby’s Estate Café;
8. a roof garden;
9. a retrofit of water and energy fixtures, fittings and appliances.

In return for the offer by the owner and tenants to trial the options above the Council will:

1. work in partnership with the owners and tenants to overcome unforeseen costs, obstacles or barriers to the implementation of the trial in the year ending June 2012;
2. issue any Council approval within 40 days of receiving the application, actively assist with obtaining the quickest possible decision where needed from other agencies, including approvals for vertical gardens, sustainable buildings, pop up cafes, and other initiatives in the plan designed to cut approvals costs and times, and charge no application fee.
3. reduce the rates for the building where the trial is conducted by at least $5000 a year for so long as the sustainable systems remain in place and data is provided about: the amount of food purchased from local farmers and the percentage of those moneys received by the farmers, the amount and cost of energy and water used – reports are given to Council on any increase in capital value of the property resulting from the lower operating costs of the sustainable systems;
4. offer other incentives to be identified and suggested by those participating in the trial and agreed to by the Chief Executive Officer having regard to the goals of this Plan;
5. coordinate and assist participants to obtain related approvals required from any one or more of these and other agencies: Energy Australia, Origin Energy, Sydney Water, the Roads and Traffic Authority, NSW Health;
6. use its best endeavours to buy in bulk the equipment, fittings, fixtures and services needed to supply and install some or all of items needed for trial demonstration projects with the aim of reducing the costs to participants and including items such as: solar hot water heaters, solar photovoltaic panels, pale roof paint, water and energy efficient appliances;
7. negotiate with all car share service providers to increase the availability, ease of use and to reduce, where feasible, the cost of car share use;
8. provide bicycle racks for 10 bicycles outside or proximate to the participating building within 10 days of the participant requesting them;
9. where a participant asks for publicity about the participation of that individual project, such publicity shall not, without the express agreement of the participant first obtained, disclose the identity of the owner or occupants of the building.

Council will determine any application for items 1 to 9 above within four weeks after the period for public comments has closed. This will include a deemed approval except when the height or appearance of any building structure is involved, or in the case of a change of use or other matter unrelated to the sustainable systems.

Any application for a sewage system must demonstrate the water will be sterile where it is to be reused in the building or to irrigate gardens above or below ground (on site or off site: Council preapproves the trial of the use of recycled treated sewage in road gardens, and at Victoria Park and Peace park. It must include a 24 hour ‘back to base’ monitoring system that continuously records the amount of water treated, the water quality (suspended matter and salt levels), and is odour-free.

POTENTIAL BENEFITS

SUSTAINABLE WATER USE

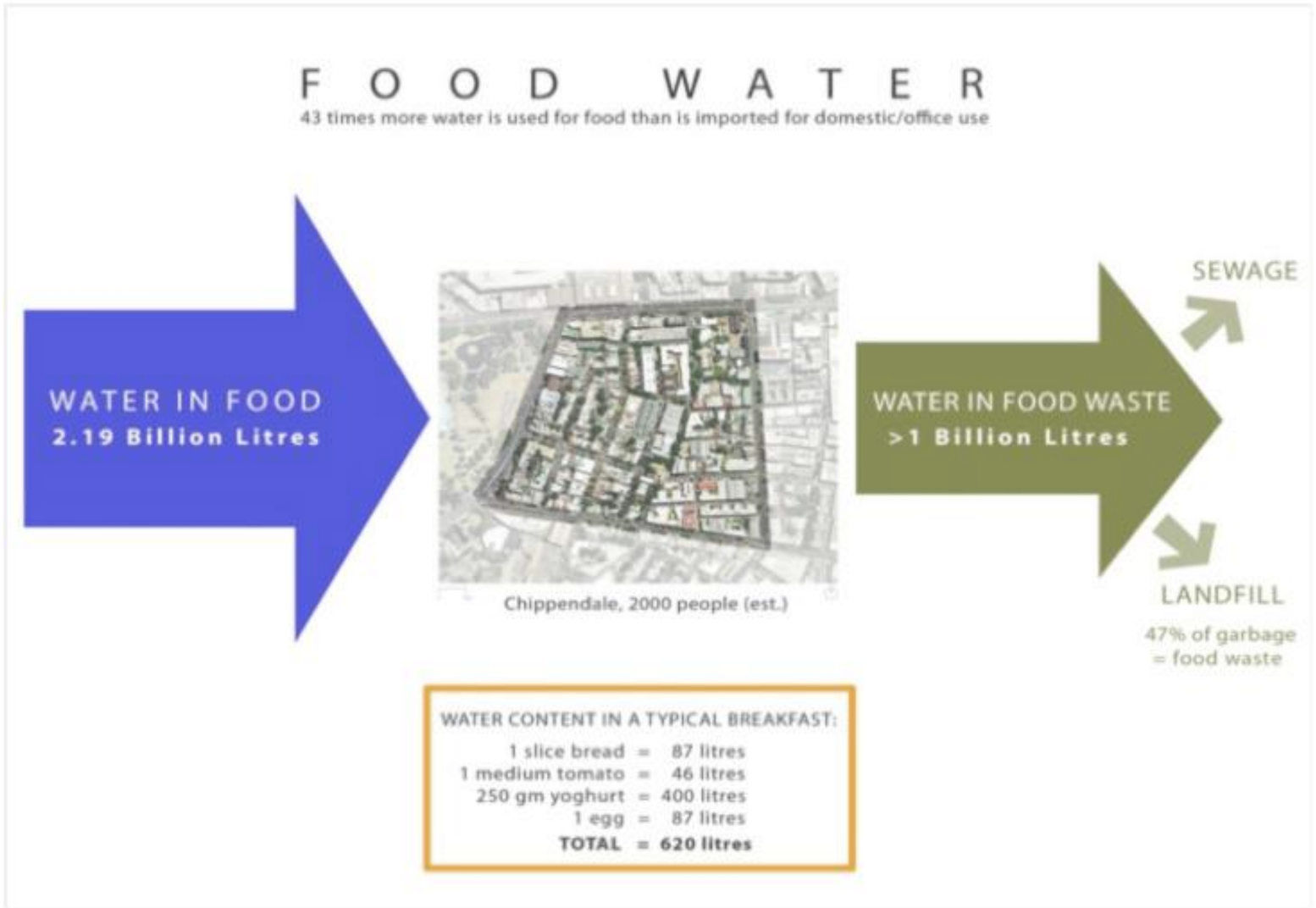
By harvesting rainwater from roofs and roads and using up to 80 per cent of it Chippendale may use water far more sustainably. That water will help grow local food on rooftops, vertical gardens, road verges and in gardens. Rainwater will also provide drinking and other household and office water.

CUT POLLUTION, INCREASE HEALTH, CUT ENERGY BILLS

By planting roadside trees and plants Chippendale will achieve:

- a 5–10 per cent reduction in air pollution;
- 5–10 per cent fewer premature deaths;
- lower summer night time temperatures by 1 degree or more; and
- reduced living and business energy bills in summer by 5–20 per cent.

REASONS FOR THIS APPROACH



SAVE NEARLY $3 MILLION IN THE FIRST 10 YEARS

Making houses in Chippendale more self-sufficient will lead to a reduction in energy consumption, costs, and savings. Let's assume for example that 10 per cent of the project area's residents (200 of an estimated 2000 people, or some 90 households) retrofit a house like Sydney's Sustainable House (http://sustainablehouse.com.au). Let's further assume that 10 per cent reduce their energy consumption by 20 per cent, and 10 per cent install a 1.5 kW solar array to produce 3 kWH of electricity per day. Even if only 10 per cent of residents take up this challenge they would achieve the following:

- over the first 10 years, total savings from making these changes (allowing for capital costs) would be nearly $3 million;
- residents who made sustainable changes to their houses would collectively save $500,000 per year (after costs were paid);
- reductions in peak demand for coal-fired power;
- savings for Council and ratepayers to be identified in the annual General Manager's report to Council

11.0 HOW DO WE KNOW IF THE PLAN IS WORKING?

RESEARCH, DATA AND MONITORING

The Council will obtain data from key early demonstration projects which will persuade owners and tenants of buildings to install and use sustainable systems. By June 2012 we'll have a clear picture of what works and does not. Once we can see what works Council can 'fast track' sustainable projects, so that further incentives, such as rate rebates and simpler approvals procedures, can be offered commencing July 2012 if needed to achieve the goals of this Plan.

The annual collection and analysis of data is vital to the success of the plan. Without data conclusions may not be reached whether the plan is achieving its goals, and management of projects will be uninformed by facts.

Generally, a sustainable city environment demonstrates biodiversity, self-reliance for water and energy, natural temperatures before urban development are mimicked, and there is no waste. In a city that is sustainable the trends are stable, not growing, for the use of resources and costs are stable for water, energy, and infrastructure.

Using progress reviews each year the Plan quantifies whether the suburb may become sustainable.

During the preparation and operation of the plan data will be gathered in trend form to demonstrate whether, using 2011 as the baseline for data, over time, and year by year:

- roads are, or will be, cooler;
- water and energy are imported or not imported, or are stored or run off;
- buildings cost less to cool and heat;
- bird and insect life increases and diversifies;
- the number of cars, bikes, car parking spaces grows or reduces;
- walking and cycling increases;
- sustainable houses, offices and buildings become the main form of development;
- infrastructure (roads, drains, parks) costs more or less to operate, use and build;
- per capita and total use of imported energy, water, food and resources declines, and per capita and total waste declines;
- per capita and total operating costs for council to maintain Peace Park, Victoria Park and the roads and verges of Chippendale increases or declines.

By publishing this data annually it's expected the plan will enable and empower future initiatives that are more likely to achieve a sustainable city.

The reports will enable Council to revise the Plan at any time to reflect community and council feedback.

In 2019 the Plan is to be reviewed with a report by the Chief Executive Officer to Council due in February 2020. That person will look at whether the achievements to date merit the Plan being continued beyond 2020 and, if the goals have not been achieved, to answer the question, 'why?'

COMMUNICATIONS

Communication will be essential to increase the level of social self-reliance within the community. In particular, the trial promotes a trusting social environment where suggestions, complaints and development of ideas can be treated equally and respectfully.

COMMUNICATIONS PROCESSES

Feedback to council and communication with neighbours is essential to effectively implement the plan. The process seeks to achieve the following Target in the 2030 Vision:

> TARGET 10: By 2030, the level of community cohesion and social interaction will have increased based on at least 45 per cent of people believing most people can be trusted.

When citizens, particularly residential and business neighbours, talk to each other about their own works, services and actions they are more likely to develop trust. It's an efficient and positive way to discuss suggestions or resolve problems.

So how do we deal with issues such as garbage, garbage collection, waste and waste collection, composting, development, trees, vegetation, noise, gardening in the roads, parks and public land and any other matter relating to this Plan?

Step 1: First put the issue directly to the neighbour, or the owner, person or agency involved.

Step 2: If more action is required, the issue will be put to an agency, council department or group. In each case Council will first ask whether Step 1 has been completed. If it hasn't the Council will not pursue the matter further until that's been done.

Once the person or agency involved has been spoken to directly the council will only pursue the matter further if the matter cannot be solved without Council.

Any Council contractor to whom a resident or business seeks to complain to, suggest or to seek information will in every case respond in ways which resolve the complaint. With every invoice to Council the resident or business shall provide a list of each such communication and the action resulting.

Generally a single complaint about a road verge garden, plant, tree, compost bin, leaky drain, artwork, or other work, service or event relating to this Plan will not be sufficient for these items to be removed, undone or amended. The only exception is where there is an immediate risk to human life or property.

Council will give written notice of any proposed action such as removal or amendment and it will first be placed on the item or area the subject of the complaint stating the proposed action and the reason, and inviting comments within 14 days of the date of the notice to Council by use of the secure email contact point created for this project or by post.

The effectiveness of this complaint, suggestion and information process will be assessed in the annual reports to Council by the Chief Executive Officer and the community.

FOOD, SOIL, HEAT MONITORING

The impacts of the trial on soil moisture, tree growth and canopy spread, ground water flow, rising damp, water quality will be monitored in partnership with TAFE Outreach, local residents and businesses and an expert in soil hydrology.

SO HOW CAN WE MAKE IT WORK?

So how do we ensure laws, policies or plans work? First we must make sure they're administered transparently with a can-do attitude, keeping in mind their aims. To work best, they need flexibility, so the community and council can innovate. Community acceptance is also key.

Does the community have a capacity to sustain itself? The ultimate answer lies in whether it volunteers to do so.

So the council and community need to realise from the outset that this Plan is a flexible, evolving thing. It's to be reviewed at least annually. The Plan assumes that most of council and the community wish to sustain the resources they depend on, to be prudent about how they use limited natural resources. The alternative – to do nothing, to wait, to waste and pollute more – is a certain decline in food quantity and quality, health, wealth and trust. Using the tools in this Plan the community and Council have the ability and the practical guidance to make better choices for the future of our planet and children.

12.0 COSTS AND BENEFITS

The benefits (and savings) of the works and services in the Plan exceed the costs for Council, the residents and businesses.

One of the significant parts of this plan – and the most difficult to quantify – will be volunteer work by the community and businesses. This is a key way of saving money. Such costs and savings will be quantified by the General Manager in their annual reports.

Of the costs we can quantify in Year One (July 2011 to June 2012) we expect:

COSTS

Cost to Council:	$870,000
Cost to partner – Biophilic Cities Research Team:	$2000 plus research services to be donated
Cost to Sydney Water and other agencies:	Funds, if any, to be determined by other agencies
Cost to developers of trial demonstration projects:	Funds, if any, to be determined by developers

COUNCIL:

ANNUAL INCOME:

Car parking fines	$360,000
Surplus waste rates	[to be provided by Council]
Rates	[Chippendale - to be provided by council]

REPORTS ON COSTS AND BENEFITS

MEASURABLE RESULTS

The measurable results for Year One, and the expenditure by Council in Year Two (July 2012 to June 2013) will be recommended in a report by the Chief Executive Officer to Council by February 2012. This will measure outcomes and recommend future actions and budget allocations for inclusion each year until 2020.

BENEFITS

Stormwater pollution savings (buildings, roads)	Estimated minimum of 20 million litres stopped from polluting Sydney Harbour:
Reduced summer temperatures in one city street (Myrtle Street from City Road to Abercrombie and Meagher Street from Abercrombie to Regent)	By up to 2 degrees by 2015
Reduced depreciations: costs for roads, stormwater, sewage and vegetation	To be quantified in annual report
Reduced energy and water bills for community	To be quantified in annual report
Increased levels of trust (Target 10, 2030 Vision)	surveys to be published
Increased viability of main street businesses	(reduction in waste costs, air conditioning costs, increased patronage due to cooler streets)
Home & road composting (based on report of composting trials in Randwick, Waverley, Woollahra Councils, Hyder Consulting 2010)	A home and road composting programme extended to 40% of the project area (including businesses) will reduce Council pollution emissions by more than 13% compared to the current waste management system A home and road composting programme extended to 40% of the project area will reduce overall Council operational costs by 15% compared to the current waste management system At a 40% participation rate, an estimated annual saving to Council of $57,117 could be achieved through diversion of food waste from the current residual waste management system. (Assumptions: 6–15% in operational savings; > $1195 per tonne of CO2 emissions saved through diverting food waste.)

QUALITATIVE RESULTS

Two surveys will be included in the February 2012 report:

- Council survey: to be submitted to Council by the Chief Executive Officer and containing contributions by each council departmental head stating the contribution, if any, by their department towards achieving the plan goals, and identifying any rules which may have been a cost or administrative burden for the council or the community which requires review; and
- Community survey: using the new Council web page the community will be invited to submit one survey or more to the Chief Executive Officer by 30 January 2012 and which states:
- the contribution by the community towards achieving the plan goals, and any rules which may have been a cost or administrative burden for the council or the community and which require review, and
- all surveys must include data and analysis which addresses Target 10 of the 2030 Vision, being: “TARGET 10: By 2030, the level of community cohesion and social interaction will have increased based on at least 45 per cent of people believing most people can be trusted.”

BENCHMARKS

A benchmarks document is to be filled out by Council and will be available on the website: [to be inserted]. This template for this document is contained in Appendix D.

13.0 WHY WE MUST ACT TODAY

Climate change presents a risk to the survival of the human race and other species. Consequently, it is a deadly serious issue.

Walker v Minister for Planning [2007] NSWLEC 741 at 161

Existing climate pollution is a partial cause of storms, floods, droughts, crop failures, higher energy and food and water bills. Federal government reforms, such as the proposed carbon tax, only deal with pollution that will be caused in the future. The Climate Institute reports Australian climate pollution by 2020 will rise about 10 per cent from 2007 levels under federal government climate policy.

Each day more pollution from cities and suburbs like Chippendale is added to Earth's air and waters. Earth's temperatures are rising faster and faster because of human pollution, most of which is from cities and suburbs like Sydney and Chippendale.

Existing and new pollution may cause Earth's temperatures to rise above 2 degrees. The UN's 2000 scientists agree, without one dissenting opinion, that a 2 degree temperature rise will change the Earth's and Australia's climate and culture beyond recognition.

Chippendale's pollution and the damage it does is substantial. Its effect on climate change is potentially serious, and may even be irreversible.

When local councils and developers make decisions and provide services they should act in accordance with the precautionary principle. This means:

> *lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation …*
> *and*
> *… the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations*
>
> *Protection of the Environment (Administration) Act 1991 (NSW), s 6(2)*

There is a threat of serious or irreversible environmental damage from the suburb's food consumption, the accumulating pollution in Sydney Harbour from the suburb's stormwater pollution, and the import of water and energy from declining resources several hundred kilometres away.

Not all this suburb's pollution may be fully controlled by the Council or the Chippendale community. Residents aren't directly responsible for all the car pollution in the major roads surrounding the suburb. This lack of complete control which Chippendale, and any community, has over all the pollution it suffers, heightens the urgent need for the Council and community to reduce the pollution they do cause or can control.

Trees and vegetation in Chippendale improve air quality by absorbing carbon dioxide pollution from cars. By planting more trees and plants Chippendale will clean up some air pollution and reduce the damage it is causing to the health of the residents and workers there.

And by planting more trees to shade the suburb the trees will lower Chippendale's summer temperatures, and the trees will live longer and grow more vigorously, too.

Climate scientists state Earth's cities have until 2015 to reduce the amount of climate pollution. If we don't we've been warned we risk the loss of our culture and way of life. Latest data suggests climate change is happening faster than predicted, with significant impacts occurring now and increasing in the next 10 years.

To reduce the serious threat the actions in the Plan need to be implemented urgently – this year. "Business as usual' is not an option.

Accordingly, the Plan provides for immediate, affordable trial demonstration projects to be implemented and monitored in the year ending June 2012. While modest, they are practical, achievable beginnings.

By using this Plan the citizens of the village of Chippendale, and Council, will be the change its citizens and council wish to see in their suburb and in other cities and suburbs across the planet.

Rate of car share use – residents			
Rate of car share use – businesses			
Cars kept out of Chippendale due to car share			
Car parking infringements			
No data but by observation it appears most parking infringements are related to business			
Revenue from car parking fines			
Cost of car ownership			
Cost of car share use			
Car pollution	daily air pollution from traffic in City Road, Cleveland Street, Broadway and Abercrombie Street and within the project area		

APPENDIX A: RESEARCH ON URBAN HEAT ISLAND EFFECT

Extract from Urban Heat Island Mitigation Can Improve New York City's Environment:
Research on the Impacts of Mitigation Strategies, used with kind permission

… A 2006 modeling study for the New York State Energy Research and Development Authority (NYSERDA) analyzed a set of heat island mitigation strategies for New York City, through a set of scenarios using increased urban forestry, living roofs, and light surfaces to reduce surface and near surface air temperatures and energy consumption (Slosberg et al., 2006). The investigators modeled New York City's urban heat island during heat wave events using temperature data obtained during three heat waves in the summer of 2002. A goal of the study was to use neighborhood case study sites and different scenarios of mitigation to assess the potential interaction between heat islands, land use categorization, peak electric load and the public health impacts from air pollutants such as ozone.

The NYSERDA investigators found that the use of these three mitigation techniques could reduce surface and near surface air temperatures in New York City, leading to the reduction of peak electric load during heat waves. The increased planting of street trees produced the greatest cooling potential per unit area and the greatest overall benefits, while the use of light surfaces was found to offer the greatest overall cooling potential, because "64% of New York City's surface area could be lightened, whereas only 17% of the City's surface area could be planted with new street trees" (Slosberg et al., 2006).

The use of higher albedo surfaces offered the most favorable cost/benefit ratio in this analysis. The maximum peak electric demand reductions were estimated as 74.29 MW from planting street trees in 50% of available space citywide; and 200.99 MW through 50% implementation of light surfaces throughout New York City (Ibid)."

Urban Heat Island Mitigation Can Improve New York City's Environment: research on the impacts of mitigation strategies on the urban environment pp 24, 25

Highly reflective roof	*0.60 – 0.70*
Corrugated roof	*0.10 – 0.15*
Coloured paint	*0.15 – 0.35*
White paint	*0.50 – 0.90*
Tar and gravel	*0.03 – 0.18*
Red/brown tile roof	*0.10 – 0.35*

'albedo, which is the measure of a material's reflectance. Albedo is measured on a scale from 0 to 1, with 0 signifying that a material does not reflect any solar energy and 1 signifying that a material reflects all solar energy. Figure 5 demonstrates the albedo of various materials common to urban environments (EPA, 2005a). The Solar Reflectance Index (SRI) measures a material's temperature in the sun. SRI is calculated by multiplying a material's albedo by its emittance. A material's emittance is also measured on a scale from 0 to 1, where 0 signifies a material that does not emit any absorbed heat and 1 indicates that it emits all absorbed heat (EPA, 2005a). Due to their low albedo, dark colored roofs can reach temperatures of up to 190°F (87.8°C) during the summer months. Metal surfaced roofs, including black roofs covered with an aluminum coating, do not have low albedos, but do have lower thermal emittances, which range from 20 percent to 60 percent (.2 to .6), as opposed to over 80 percent (.8) for traditional roofs. For this reason they can also have extremely high summertime temperatures, which range from 140°F (38°C) to 170°F (49°C). Both low albedo and low emittance roofs significantly contribute to the nocturnal heat island effect because they absorb and retain heat during the day, and re radiate some of this heat at night (EPA, 2005b; Garland, 1997).

APPENDIX B
2008–2009 DOMESTIC GARBAGE TRUCKS (FUEL DATA)

Plant no	Body size	Km pa	Fuel total pa (diesel)	Cost/L	Total cost pa	L/100 km	Carbon dioxide emissions (g/km)	Carbon dioxide emissions (tonnes pa)	Environmental cost*	
									$/tonne	$ pa
314	10 cm3	18,948	7,456	1.39	10,371	39.35	1062	20.13	40.00	805
316	19 cm3	21,366	11,089	1.31	14,532	51.90	1401	29.94	40.00	1198
317	19 cm3	22,824	12,097	1.35	16,405	53.	1431	32.66	40.00	1306
319	19 cm3	21,107	11,601	1.31	15,258	54.96	1484	31.32	40.00	1253
320	19 cm3	20,745	10,559	1.34	14,193	50.90	1374	28.51	40.00	1140
	Total	84,450	52,802		70,759		6752	142.56		5702
	Average	16,890	10,560	1.34	14,151	50	1350	28.51		1140

*A carbon value of $40 per tonne for reduction in carbon dioxide emissions to the atmosphere has been assumed.

APPENDIX C: PLANT LIST *BY FRANCES BODKIN*

ACMENA SMITHII – MYRTACEAE – TJERAY'IL – LILLYPILLY

Stem: erect, elegant, with widely spreading, low branches, and brown, scaly bark. Leaves: dark green, glossy, lanceolate to ovate, acuminate, to 10 cm long, and 2 cm wide. Flowers: greenish, small, fluffy, occurring in terminal clusters, and appearing in summer. Fruit: white, pink or purple berry, globular, to 1.5 cm across, containing a solitary, round seed to 0.5 cm across.

EUCALYPTUS AGGLOMERATA – MYRTACEAE – BAI'AYLI – BLUE-LEAFED STRINGYBARK

Stem: Erect, straight with spreading branches. Bark: Persistent, thick, fibrous, stringy, furrowed, greyish brown bark. Leaves: Juvenile – dark green, alternate, petioled, ovate, to 15 cm long, mature – glossy bluish green, alternate, petioled, broadly lanceolate, to 14 cm long and 3 cm wide. Flowers: Greenish white, fluffy, to 1.5 cm across, occurring in axillary clusters of eleven to fifteen blooms, and appearing spring. Fruit: Green, subglobular, angled, valved capsules, to 0.5cm across and 1cm wide, containing brownish black, deltoid seeds. Fire response: Resprouts from epicormic buds.

EUCALYPTUS ACMENOIDES – MYRTACEAE – BAI'AYLI – WHITE MAHOGANY; YELLOW STRINGYBARK

Stem: Erect, and straight, with spreading branches. Bark: Persistent greyish brown, fibrous, stringy bark. Leaves: Juvenile – dark, glossy green, with paler undersurface, ovate-lanceolate, to 15 cm long and 5 cm wide, opposite, becoming alternate, sessile, stem-clasping. Mature – dark green, with paler undersurface, 18 cm long and 3 cm wide, alternate, lanceolate, petioled. Buds: 0.7 cm long and 0.4 cm wide, obovoid, stalked, yellowish green, with pointed cap. Flowers: White, fluffy, to 0.5 cm across, occurring in axillary clusters of 4 to 13, and appearing spring and summer. Fruit: Green, ovoid to barrel shaped capsules, with slightly exerted valves, to 0.8 cm long and 0.7 cm wide. Fire response: Resprouts from epicormic buds.

ACACIA DECURRENS – MIMOSACEAE – BOO-KERRIKIN – BLACK WATTLE; GREEN WATTLE; QUEEN WATTLE; EARLY BLACK WATTLE; SYDNEY GREEN WATTLE

Stem: Solitary, erect, sturdy, with widely spreading branches, young branches winged and smooth grey or green young bark, black and crumbly when old. Phyllodes: Dark green, with paler undersurface, bipinnate, with 5–12 pairs pinnae to 7 cm long, and 15–40 pairs pinnules, to 1.5 cm long. Flowers: Bright yellow to deep golden yellow balls, occurring in axillary or terminal clusters of 6–15 balls, and appearing late winter to early spring. Fragrant. Fruit: Reddish brown, flat, straight pods, to 10 cm long and 0.8 cm wide, containing black, glossy, oval seeds to 0.45 cm long and 0.2 cm wide. Fire response: Killed by fire, but soil stored seed germination is enhanced by fire.

ACACIA MYRTIFOLIA – MIMOSACEAE – RED STEM WATTLE; SILVER WATTLE; MYRTLE WATTLE

Stem: Erect, with widely spreading, angular branches and reddish bark. Phyllodes: Dark green, oval or lanceolate, narrowing at both ends, oblique, to 6 cm long and 3 cm wide, prominently mid ribbed. Flowers: Cream or yellow balls, to 1 cm across, occurring in axillary clusters, and appearing summer. Fruit: Dark brown pods, linear, curved, woody, twisted, to 10 cm long and 1 cm wide, containing glossy brown, oblong seeds to 0.45 cm long and 0.22 cm wide. Fire response: Killed by fire, but soil stored seeds germinate following high intensity fire.

APPENDIX D: BENCHMARKS

This document is a template to be completed by Council and will be available on the website: [to be inserted]

Transport	2011	2012	Trend
Car parking spaces on street			
Car parking spaces in project area			
Strata car parking spaces			
Average pollution per car (X), then multiply number of car parking spaces by (X) to get average pollution per car space. Assume each car space turns over 8 times/day			
Per capita ownership of cars	about 0.5 per person		stable and among the lowest in Australia
Population			
Residents			
Businesses and workers			
Businesses:			
Workers			
Bikes			
Bike parking O rings			
Car share cars			
Car share spaces			
Car parking permits			
Dwellings with two car parking permits			
Rate of car share use – residents			
Rate of car share use – businesses			
Cars kept out of Chippendale due to car share			
Car parking infringements			
No data but by observation it appears most parking infringements are related to business			
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APPENDIX E: ACKNOWLEDGEMENTS

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