Future Environmental Sustainability Strategy Directions Paper 2020

Table of Contents

1.0 ACRONYMS 6
2.0 EXECUTIVE SUMMARY 8
3.0 INTRODUCTION 13
4.0 CARBON FOOTPRINT 14
4.1 BROAD CONTEXT 14
4.1.1 International 14
4.1.2 National 14
4.1.3 State 14
4.1.4 Local 15
4.2 NORTH SYDNEY CONTEXT 16
4.2.1 Existing emission greenhouse gas reduction targets 16
4.2.2 Existing greenhouse gas reduction activities 16
4.2.3 2019 Emissions and Water Review 17
4.2.4 NSW Government Net Zero Plan Stage 1: 2020–2030 18
4.3 PROPOSED TARGETS 18
4.3.1 Proposed Carbon Footprint Target 1 18
4.3.2 Proposed Carbon Footprint Target 2 19
4.3.3 Proposed Carbon Footprint Target 3 21
5.0 WATER CONSERVATION 22
5.1 BROAD CONTEXT 22
5.1.1 International 22
5.1.2 National 22
5.1.3 State 22
5.1.4 Local 22
5.2 NORTH SYDNEY CONTEXT 23
5.2.1 Existing water conservation targets 23
5.3 PROPOSED TARGETS 24
5.3.1 Proposed Water Conservation Target 1 24
5.3.2 Proposed Water Conservation Target 2 24
6.0 WATER QUALITY 26
6.1 BROAD CONTEXT 26
6.1.1 International 26
6.1.2 National 26

6.1.3 State 26
6.1.4 Local 26
6.2 NORTH SYDNEY CONTEXT 27
6.2.1 Existing Water Quality targets 27
6.3 PROPOSED TARGETS 29
6.3.1 Proposed Water Quality Target 1 29
6.3.2 Proposed Water Quality Target 2 29
6.3.3 Proposed Water Quality Target 3 29
7.0 COMMUNITY ENGAGEMENT 31
7.1 BROAD CONTEXT 31
7.1.1 International 31
7.1.2 National 31
7.1.3 State 31
7.1.4 Local 32
7.2 NORTH SYDNEY CONTEXT 32
7.2.1 Existing Community Engagement targets 32
7.3 PROPOSED TARGETS 33
7.3.1 Proposed Community Engagement Target 1 33
7.3.2 Proposed Community Engagement Target 2 34
8.0 URBAN ECOLOGY 35
8.1 BROAD CONTEXT 35
8.1.1 International 35
8.1.2 National 35
8.1.3 State 35
8.1.4 Local 35
8.2 NORTH SYDNEY CONTEXT 36
8.2.1 Existing Urban Ecology targets 36
8.2.2 Bushland Management 37
8.2.3 Urban habitat 37
8.2.4 Managing Weeds and Feral Animals 37
8.2.5 Canopy cover 38
8.2.6 Planning controls 38
8.3 PROPOSED TARGETS 38
8.3.1 Proposed Urban Ecology Target 1 38

8.3.2 Proposed Urban Ecology Target 2 39
8.3.3 Proposed Urban Ecology Target 3 39
9.0 RESOURCE RECOVERY 41
9.1 BROAD CONTEXT 41
9.1.1 International 41
9.1.2 National 41
9.1.3 State 42
9.1.4 Regional 42
9.1.5 Local 42
9.2 NORTH SYDNEY CONTEXT 43
9.2.1 Existing Waste targets 43
9.2.2 NSW EPA ban on mixed waste organic material 44
9.2.3 Recycling crisis 45
9.2.4 Waste contracts 45
9.2.5 Single Use Plastics Policy 45
9.3 PROPOSED TARGETS 46
9.3.1 Proposed Resource Recovery Target 1 46
9.3.2 Proposed Resource Recovery Target 2 46
9.3.3 Proposed Resource Recovery Target 3 46
9.3.3 Proposed Resource Recovery Target 4 47
10.0 SUSTAINABLE TRANSPORT 48
10.1 BROAD CONTEXT 48
10.1.1 International 48
10.1.2 National 48
10.1.3 State 48
10.1.4 Local 49
10.2 NORTH SYDNEY CONTEXT 50
10.2.1 Existing Sustainable Transport targets 50
10.2.2 Emerging transport trends 50
10.2.3 Existing Council sustainable transport initiatives 53
10.2.4 Regional bicycle network 54
10.2.5 Public Transport 55
10.2.6 Parking and Traffic 56
10.2.7 Electric vehicles and charging stations 56

10.3 PROPOSED TARGETS..... 58
10.3.1 Proposed Sustainable Transport Target 1 58
10.3.2 Proposed Sustainable Transport Target 2 59
10.3.3 Proposed Sustainable Transport Target 3 60
10.3.4 Proposed Sustainable Transport Target 4 60
10.3.5 Proposed Sustainable Transport Target 5 60

1.0 ACRONYMS

AMP	Asset Management Plan 2018 – 2028
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZG	Australian and New Zealand guidelines for fresh and marine water quality
BMP	Bushland Plan of Management (2014)
CCP	Cities for Climate Protection
CPP	Cities Power Partnership
CRC	Community Recycling Centre
DP 2018-21	North Sydney Delivery Program 2018/19-2020/21
ELP	Environmental Levy Program
EPA	Environmental Protection Agency
ESD BPP	ESD Best Practice Project
ERA	Extended Regulated Area
ESS	Environmental Sustainability Strategy 2020-2030
FESD	Future Environmental Sustainability Directions
FOGO	Food Organics Garden Organics
GHG	Greenhouse gas
GHGWMP	North Sydney Council Greenhouse Action and Water Management Plan 2015-2020
GPT	Gross Pollutant Trap
GREP	NSW Government Resource Efficiency Policy
GSC	Greater Sydney Commission
ICLEI	International Council for Local Environmental Initiatives
KPIs	Key Performance Indicators
LSPS	Local Strategic Planning Statement
MANEX	Management executive team
MUDs	Multi-unit dwellings
NCDCP 2013	North Sydney Development Control Plan 2013

NDP	North District Plan (Greater Sydney Commission)
NSROC	Northern Sydney Regional Organisation of Councils
PCG	Project Control Group
PDSMDC	Public Domain Style Manual and Design Codes (2016)
PEERS	Program for Energy and Environmental Risk Solutions
PPA	Power Purchase Agreement
SLIP	Street Light Improvement Program
SMA	Sydney Metropolitan Area
SSROC	Southern Sydney Regional Organisation of Councils
SQID	Stormwater Quality Improvement Device
TfNSW	Transport for New South Wales
WARR	Waste Avoidance and Resource Recovery

2.0 EXECUTIVE SUMMARY

North Sydney Council has been recognised as a leader in the area of environmental sustainability for many years as demonstrated by a proliferation of awards and accolades. This document provides the rationale and analysis for a series of proposed strategic environmental sustainability targets and actions to 2030 which have been summarised in Figure 2.1. The expiration of existing 2020 targets for water and energy conservation that were set in 2002 and 2004 respectively provided the impetus for this review. It was prepared in house in close collaboration with the Environmental Sustainability Strategy Project Control Group which consisted of staff from across all divisions of Council and is based on a comprehensive review of local, state, federal and international strategies, analyses and forecasting. This document will inform the development of a succinct Environmental Sustainability Strategy 2020-2030 that will provide a structured framework to help Council and the community better express and pursue their environmental sustainability goals.

Figure 2.1: Summary of existing and proposed targets

Current target/commitment	Baseline	Status	Proposed target	Baseline
Carbon Footprint				
Improve % increase in renewable energy generated by Council compared with 2016/17 levels	2016/17 44%	On track: 54% in 2019/20	By 2030, 100% of Council's electricity needs are met by renewable energy sources	2019/20 levels (54%)
50% greenhouse gas reduction of Council's operational 1996 level emissions by 2020 (North Sydney Council Greenhouse Action and Water Management Plan 2015-2020)	1996 levels	On track: 32% reduction in 2016/17	Achieve carbon neutrality by 2030 for Council operations	1996 levels
15% greenhouse gas reduction of the community's 1996 levels by 2020 (North Sydney Council Greenhouse Action and Water Management Plan 2015-2020)	1996 levels	Achieved: 18% reduction in 2016/17	25% greenhouse gas reduction of 1996 community emission levels by 2030	1996 levels

Current target/commitment	Baseline	Status	Proposed target	Baseline
Water Conservation				
50% potable water use reduction from 2001/02 baseline by 2020 (North Sydney Council Greenhouse Action and Water Management Plan 2015-2020)	2001/02 levels (205,566 kL)	On track: 44% reduction in 2016/17	50% potable water use reduction in Council operations from the 2001/02 baseline by 2030	2001/02 levels (205,566 kL)
10% potable water reduction by the North Sydney community from 2001/02 baseline by 2020 (North Sydney Council Greenhouse Action and Water Management Plan 2015-2020)	2001/02 levels (7,295,826 kL)	Not on track: 7% achieved in 2017/18	10% reduction in the North Sydney community's potable water use from the 2001/02 baseline by 2030	2001/02 levels (7,295,826 kL)
Water Quality				
70% compliance with the Australian and New Zealand Environment Conservation Council (ANZECC) guidelines for water quality at Council's water quality monitoring sites (Community Strategic Plan EN08)	Australian and New Zealand guidelines for fresh and marine water quality	On track: 65% in 2016/17	70% compliance with the Australian and New Zealand guidelines for fresh and marine water quality at Council's water quality monitoring sites by 2030	2016/17 levels (65%)
90% of stormwater is treated by Stormwater Quality Improvement Devices by 2028 (Asset Management Plan)	2016/17 levels (59%)	On track: 59% in 2016/17	90% of the stormwater is treated by Stormwater Quality Improvement Devices by 2030	2016/17 levels (59%)
N/A	N/A	N/A	By 2030, 10% more material is kept out of our waterways by Council's stormwater improvement programs than in 2019	2019 levels (3582.4 tonnes/year)

Current target/commitment	Baseline	Status	Proposed target	Baseline
Community Engagement				
Maintain 2,000 participants in residential, school, community groups and business sustainability programs (Community Strategic Plan EN07)	2,000	On track: 3,167 in 2018/19	12,000 annual participants in Council's environmental sustainability engagement activities by 2030	2018/19 levels (10,837)
Maintain % participants satisfied with environmental education programs (Community Strategic Plan EN06)	97%	On track: 92% in 2018/19	80% of participants in Council's environmental sustainability engagement activities are motivated and enabled to take actions to improve environmental sustainability outcomes	2018/19 levels (92%)
Urban Ecology				
Improved condition of bushland (Community Strategic Plan EN02)	2010 levels Bushland in good condition: 70%, fair: 22%, poor: 8%	On track: Good: 75% Fair: 17% Poor: 8% in 2018/19	80% of bushland is in good condition by 2030	2018/19 levels (Bushland in good condition: 75%, fair: 17%, poor: 8%)
N/A	N/A	N/A	Maintain number of locally native fauna and flora species found in North Sydney compared to 2010 levels by 2030	2010 levels (114 locally native fauna species. 332 native flora species)
34.4% total canopy cover (North Sydney Urban Forest Strategy 2019)	N/A	Not on track: 1997: 19%, 2001: 24%, 2008: 33.9%, 2014:30.7%, 2017: 28.2%	34.4% total canopy cover by 2030	N/A

Current target/commitment	Baseline	Status	Proposed target	Baseline
Resource Recovery				
Improve % increase in residential waste diverted from landfill compared with 2016/17 levels (Community Strategic Plan EN12)	61% in 2016/17	Not on track: 39% in 2018/19 (due to EPA's AWT facility compost ban)	70% waste diversion from landfill by 2030	2018/19 levels: 39%
Improve % increase in residential recyclables collected compared with 2016/17 (Community Strategic Plan EN11)	49% in 2016/17	Not on track: 37% in 2018/19	80% recycling rates for municipal solid waste by 2030	2018/19 levels: 37%
Sustainable Transport				
Improve % of workers taking public transport to work (Community Strategic Plan S12) Improve % of workers walking or cycling to work (Community Strategic Plan S13) Improve % of residents taking public transport to work (Community Strategic Plan S14) Improve % of residents walking or cycling to work (Community Strategic Plan S15)	2011 levels	On track: 2011: 67.6%, 2016: 70.2% 2012: 8.95% 2016: 9.90% 2011: 36.5%, 2016: 37% 2012: 12%, 2016: 13.2%	By 2030, 85% of residents and workers travel to and from work using modes of transport other than sole occupant vehicles	2016 levels (80% workers and 50% of residents)
N/A	N/A	N/A	Increase % of households with "no motor vehicles" to 25% by 2030	2016 levels (16.4%)
N/A	N/A	N/A	Reduce registrations of Internal Combustion Engine vehicles to 50% of new private vehicle sales by 2030	2019 levels (99.3%)

Current target/commitment	Baseline	Status	Proposed target	Baseline
N/A	N/A	N/A	Reduce Council's passenger and commercial fleet by 10% based on 2019 levels by 2030	2019 levels (111)
N/A	N/A	N/A	All of Council's passenger and commercial fleet, excluding specialised and earth moving equipment, is electric by 2030	2020 levels (0%)

3.0 INTRODUCTION

Sustainability is one of Council's eight core values. As such, equity, preservation, justice and precaution are important principles that help focus everything we do at North Sydney. Sustainability is a complex and multi-faceted concept involving interactions between environmental, social, economic and governance factors to achieve "peace and prosperity for people and the planet, now and into the future" (UN 2030 Agenda for Sustainable Development). This paper relates specifically to environmental sustainability and provides guidance to Council for updating existing targets and setting new ones for its own operations and the community to help meet Council's environmental goals. These include protecting native plants and animals, looking after our waterways, acting on Council's climate emergency declaration, reducing waste to landfill and using resources wisely. The proposed targets and actions will form the basis of Council's Environmental Sustainability Strategy 2020-2030.

Council's last Environmental Sustainability Strategy (Towards Sustainability Plan 2004) was incorporated into its Community Strategic Plan in 2009, and environmental sustainability actions have remained in these plans ever since. The expiration of existing 2020 targets for water and energy conservation that were set in 2002 and 2004 respectively provided the impetus for this review. A proliferation of other issue specific plans, strategies and actions, have highlighted a need for an overarching and coordinated strategy to help Council better define and achieve its environmental sustainability aspirations and obligations. Many other Councils, including the City of Sydney, City of Parramatta, Waverley Council and City of Willoughby have also developed environmental strategies for similar reasons.

In 2017 Council's Environmental Sustainability Strategy (ESS) Project Control Group reviewed 74 Council strategic documents to identify actions, strategies and targets related to environmental sustainability. This group included representatives from all divisions of Council, including Environmental Services, Traffic and Transport Operations, Strategic Planning, Works Engineering, Parks & Reserves, Community Services, Integrated Planning & Special Projects, and Financial Services. Cumulatively the reviewed documents contained over 500 actions. Almost half did not relate to specific targets. That is, the reference documents that the actions originated from did not link the actions to KPIs in the Community Strategic Plan, or targets specific to the reference documents themselves.

The Future Environmental Sustainability Directions Paper builds on this review and was developed in close collaboration with the ESS Project Control Group. It considers Council's issue specific plans and strategies that help Council and the community to reduce their environmental footprint. These include Council's Community Strategic Plan, Local Strategic Planning Statement, Development Control Plan, Greenhouse Action and Water Management Plan, Bushland & Fauna Rehabilitation Plans, Urban Forest Strategy, Transport Strategy, and Sustainable Transport Action Plan. Proposed targets are also informed by ABS data, the North Sydney community profile, population projections, the planning priorities and actions identified in the Greater Sydney Commission's (GSC) North District Plan, relevant state and national plans and strategies, recent environmental sustainability strategies from other councils, and the Sustainable Development Goals of the United Nations 2030 Agenda for Sustainable Development.

4.0 CARBON FOOTPRINT

4.1 BROAD CONTEXT

4.1.1 International

The Paris Agreement was made under the United Nations Framework Convention on Climate Change (UNFCCC) in 2015. Its central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century to well below 2 degrees Celsius above pre-industrial levels. In addition, it pursues efforts to limit the temperature increase even further to 1.5 degrees Celsius, with all countries to set a mitigation target from 2020. In 2018, the International Panel on Climate Change (IPCC) released a report warning that global emissions need to be cut in half by 2030, and reach net zero by 2050 to limit warming to 1.5 degrees Celsius. It states that "*Pathways limiting global warming to 1.5°C with no or limited overshoot would require rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems (high confidence). These systems transitions are unprecedented in terms of scale, but not necessarily in terms of speed, and imply deep emissions reductions in all sectors, a wide portfolio of mitigation options and a significant upscaling of investments in those options (medium confidence).*"

Goal 7 of the UN's Sustainable Development Agenda is to "Ensure access to affordable, reliable, sustainable and modern energy for all". Relevant targets to help achieve this goal are: "By 2030, double the global rate of improvement in energy efficiency", and "By 2030, increase substantially the share of renewable energy in the global energy mix".

4.1.2 National

The federal government has committed to reduce emissions to 26-28% on 2005 levels by 2030 to meet Australia's Paris Agreement target.

4.1.3 State

The NSW government has committed to:

- 35% cut in emissions by 2030 compared to 2005 levels
- net-zero emissions by 2050
- 20% renewable energy by 2020
- net zero emissions from organic waste by 2030

4.1.4 Local

Examples of targets set by local councils are listed below.

Blacktown City Council has committed to:

- Net-zero emissions from the electricity, fuel and gas use in Council operations by 2030; and
- Work with its community to achieve the NSW aspirational targets of net-zero emissions by 2050.

Darebin City Council in Victoria committed to:

- Be carbon neutral by 2020 for Council operations and the community.

Ku-ring-gai Council has committed to:

- Reduce corporate greenhouse gas emissions by 50% by 2030 and 100% by 2045, based on 2000 levels.

Lismore City Council has committed to:

- 100% renewable electricity by 2023 through self-generation.

Parramatta City Council has committed to:

- Be carbon neutral by 2022;
- 60% emission reductions by 2038 (based on 2015 levels); and
- 50% of electricity demand met by renewable sources by 2038.

The City of Melbourne switched to 100% renewable energy for all of its council-owned infrastructure on 1 January 2019.

The City of Newcastle switched to 100% renewable energy to meet all of its operational electricity requirements in 2020.

The City of Sydney switched to 100% renewable energy to meet all of its electricity demand in 2020, and has committed to:

- 70% reductions in greenhouse gas emissions by 2030 based on 2006 levels; and
- Net zero emissions by 2050.

Waverley Council has committed to:

- 70% Council generated greenhouse gas emissions reductions by 2030 from 2003/04 levels;
- Be carbon neutral by 2050; and
- Divest all its fossil fuel funds by 30 August 2020.

4.2 NORTH SYDNEY CONTEXT

4.2.1 Existing emission greenhouse gas reduction targets

50% greenhouse gas reduction of Council's operational 1996 level emissions by 2020 (North Sydney Council Greenhouse Action and Water Management Plan 2015-2020)

Improve % reduction in greenhouse gas emissions generated by Council compared with 2016/17 levels (North Sydney Community Strategic Plan EN18)

Improve % increase in renewable energy generated by Council compared with 2016/17 levels (North Sydney Community Strategic Plan EN19)

15% greenhouse gas reduction of the community's 1996 levels by 2020 (North Sydney Council Greenhouse Action and Water Management Plan 2015-2020)

Improve % decrease in electricity use by residents compared with 2016/17 levels (CSP EN09)

Improve % decrease in electricity use by businesses compared with 2016/17 levels (CSP EN10)

Improve % reduction in greenhouse gas emissions generated by the community compared with 2016/17 levels (CSP EN17)

4.2.2 Existing greenhouse gas reduction activities

North Sydney Council has been proactively reducing greenhouse gas (GHG) emissions for many years in an effort to reduce its energy consumption and its impact on climate change.

Council set its first greenhouse gas reduction targets for Council operations and the community in 2002 as part of the International Council for Local Environmental Initiatives (ICLEI) Cities for Climate Protection (CCP) program and established its first Greenhouse Action Plan in the same year. This plan has been reviewed and updated several times since to provide strategic guidance and help Council to prioritise and implement its greenhouse gas reduction activities to achieve its targets.

Examples of implemented greenhouse gas reduction activities undertaken by Council include:

- Energy efficient upgrades at a number of Council buildings and facilities including:
    - Optimisation & upgrades of major HVAC & BMS
    - Lighting upgrades LED with smart controls
    - Optimisation of Pool energy management systems
- Renewable energy generation and purchase including:
    - installation of 303 kW solar photovoltaic (PV) across various Council facilities
    - heat pump hot water systems replacing gas as feasible

    - purchasing 35% renewable electricity for Council's large sites and streetlights and 50% for the Council administration building, totalling approximately 30% renewable electricity (including small sites) for all of Council's electricity consumption
- Working with the North Sydney residential and business community to reduce the carbon footprint of the whole local government area:
    - engaging with residents from more than 120 apartment buildings to implement energy efficiency upgrades in 'common areas' and where feasible individual apartments, through Council's Futureproofing Apartments program leading to average energy savings of 59% in buildings that have implemented recommendations to date
    - engaging residents in energy conservation and renewable energy generation through workshops, expos, and events
    - engaging the local business community through networking, workshops, in house support, and recognition for excellence in energy conservation and management.

4.2.3 2019 Emissions and Water Review

Consultants completed a 2019 Emissions and Water Review to assess how Council was tracking towards achieving its 2020 targets and to provide guidance for setting targets to 2030. The review demonstrated that Council achieved its operational emissions reduction target in 2013/14 with 51% less emissions than in 1996 (the baseline year). By 2016/17, Council's operational emissions had increased due to a reduction in its GreenPower purchase which offset emissions. This resulted in only 32% less emissions than in 1996.

However, the review forecasted that Council will achieve 55% emissions savings by 2020/21, which will again surpass its 50% target. This is based on a number of emissions saving initiatives that Council has commenced or committed to including:

- purchasing 35% of renewable energy for its large sites and streetlighting through a Power Purchase Agreement (PPA) which commenced in 2019,
- streetlighting upgrades starting in 2019/20, and
- installing additional solar PV systems.

The 2019 Emissions and Water Review also developed a pathway for Council operations to achieve carbon neutrality (ie: 100% emission reductions) for its operations by 2030.

In addition, the Emissions Review assessed how the North Sydney community was tracking in relation to its 2020 greenhouse gas emissions targets. It illustrated that by 2016/17 the community had already achieved 18% emission reductions, surpassing its 15% target against 1996 levels. This was achieved primarily through demand reduction and the greening of the electricity grid.

4.2.4 NSW Government Net Zero Plan Stage 1: 2020–2030

The NSW Government released Net Zero Plan Stage 1 in March 2020, in which it announced a number of measures to reduce emissions in NSW. These include new renewable energy projects, like wind and solar farms to replace retiring generators in New South Wales. This will bring up to 17,700 megawatts of cheaper, renewable power into the grid over the next two decades and will help reduce greenhouse gas emissions associated with Council's and the community's electricity use.

Other measures include investing in the deployment of fast electric vehicle charging infrastructure and incentivising vehicle fleet owners, such as car rental companies, car share companies and local councils, to procure electric vehicles. The NSW Government will also support amendments to the National Construction Code and NSW Building Sustainability Index (BASIX) to ensure new buildings are electric vehicle-ready.

Regulators, investors, shareholders and consumers are increasingly expecting businesses to take responsibility for the social and environmental impacts of their activities. Businesses without demonstrable sustainability outcomes can incur higher borrowing rates, higher operating costs, and can face risk as global trends change around them. Early action will help New South Wales manage these risks and seize opportunities so that NSW businesses can build a competitive edge. To support NSW businesses to do this, the NSW Government will develop a Green Investment Strategy – a first for any Australian government. In order to maximise green investment in New South Wales, the NSW Government will also look to establish Sydney as a world leading carbon services hub by 2030.

4.3 PROPOSED TARGETS

4.3.1 Proposed Carbon Footprint Target 1

By 2030 100% of Council's electricity needs are met by renewable energy sources

The North Sydney CSP 2018-2028 lists "% increase in renewable energy generated by Council compared with 2016/17 levels" as Sustainability Indicator EN19, however no numeric target is determined. The ESS is an opportunity to set a numeric target to increase Council's renewable energy uptake.

The 2019 Emissions and Water Review recommended that Council increase its renewable energy purchasing as a cost effective way of reducing Council's greenhouse gas emissions. In 2021 Council will have options to increase its renewable electricity purchase from 35% to 100% through further Power Purchase Agreements (PPAs) with the SSROC PEERS Program for large sites and streetlighting. Renewable electricity is already cheaper than standard grid electricity and, with more large-scale renewable energy purchase opportunities likely to become available in the future, this trend set to continue. The NSW Government's recent announcement to bring up to 17,700 megawatts of cheaper renewable power into the grid

over the next two decades will also reduce the residual amount of non-renewable generated electricity that Council would need to source through a PPA.

4.3.2 Proposed Carbon Footprint Target 2

Achieve carbon neutrality by 2030 for Council operations

Rationale

The 2015-2020 Greenhouse Action and Water Management Plan recommended that Council commits to being carbon neutral by 2030. At the time Council deferred the recommendation until the current review. The 2019 Emissions and Water Review illustrated that Council's operational 2020 targets are on track to achieve 55% emission reductions from the 1996 baseline, surpassing its 50% target. In addition, it provided contemporary datasets and a pathway for Council to achieve a carbon neutral target by 2030.

It predicted that by 2030 Council will achieve a 68% reduction of emissions compared to 1996 levels based on a business as usual approach. It also forecasted that Council can achieve carbon neutrality if it:

- increases its renewable energy purchasing in the future through further Power Purchase Agreements (PPAs) that increase the fraction of electricity sourced from renewables to 100%;
- invests in the electrification of vehicles (EVs) and charging infrastructure as these become commercially viable, and includes EV electricity in its renewable PPA sourcing;
- invests in the electrification of heat pumps for space heating and small plant equipment (such as lawn mowers); and
- purchases carbon offsets for the residual emissions, which the 2019 Review estimated at 1,375 t CO2-e to 2,692 tCO2-e depending on how much Council increases it renewable energy purchase.

Figure 4.1: Likely costs to offset to become Carbon Neutral (Extract from North Sydney Council Emissions Review 2019, 100% Renewables)

To reach carbon neutrality in 2030, Council would need to offset an estimated 2,692 t CO2-e at current 35% renewable energy PPA level, and 1,375 t CO2-e in 2030 at 100% renewable energy PPA level.

Table 4 below shows the estimated costs for carbon offsets based on the need to offset 1,375 t CO2-e, or 2,692 t CO2-e. This draws on the range of costs seen for local projects (more expensive and low supply, for example Verified Carbon Standard (VCS) credits for Tasmanian native forest protection can be bought from $9.50), and international projects (for example, VCS carbon offsets from wind farm projects in China or India from $1.50 per tonne[1]. Carbon offset projects with social benefits, e.g. REDD projects (reducing emissions from deforestation and forest degradation in developing countries), start at $4.50). At the moment, Australian Carbon Credit Units (ACCUs) are trading around $15 per tonne on the secondary market.

Table 4: Potential range of offset costs for different carbon emissions and offset sources

Type of offsets sourced	**Australian offset**		**International low cost**		**International social benefit**	
Scenario	Low cost	High cost	Low cost	High cost	Low cost	High cost
Offset price per tonne	$9.50	$20.00	$1.50	$5.00	$4.50	$15.00
1,375 t CO_2-e	$13,064	$27,503	$2,063	$6,876	$6,188	$20,627
2,692 t CO_2-e	$25,576	$53,844	$4,038	$13,461	$12,115	$40,383

[1]A recent project (Dec-17) sourced VCS offsets from a wind project in India at $3/offset – i.e. mid-range of international low-cost offset prices noted above.

The cost of offsets will depend on the type (or quality) of offset Council elects to purchase. This is summarised in an extract from the 2019 Emission Review in Figure 4.1. As a rule, higher quality offsets with local outcomes, and stringent verification come at a higher cost.

According to the Emissions Review, the offsets would cost $4,000-54,000 in 2030 under Council's current 35% renewable energy PPA levels, and $2,000-$27,500 in 2030 under a 100% renewable energy PPA. This cost is well below the $100,000 allocation Council made to GreenPower until 2018 to partially offset the greenhouse gas emissions of its electricity consumption. Carbon neutrality is therefore achievable for Council by 2030 and is consistent with its Climate Emergency resolution.

4.3.3 Proposed Carbon Footprint Target 3

25% greenhouse gas reduction of 1996 community emission levels by 2030

Rationale

Council has strived for a 25% reduction in greenhouse gas emissions in the North Sydney community since setting its first targets through the ICLEI process in 2002. Originally the target was set to be achieved by 2020. This target was revised down through the 2015 Greenhouse Gas and Water Management Action Plan in response to poor (5%) reductions in 2012/13 from the 1996 baseline.

The 2019 Emissions and Water Review illustrated that by 2016/17 the community had already achieved 18% emission reductions compared to 1996 levels. It projected that a 20% reduction is likely to be achieved by 2030 assuming a business as usual approach through continued demand reduction and the increasing proportion of renewable energy as part of the electricity grid. To help the community reach the original 25% abatement target, additional engagement with the residential and business community to promote and support energy efficiency, electrification, rooftop solar, a transition to electric vehicles, battery storage and purchasing of clean energy will be required.

A 2015 “Renewable Energy Feasibility Study for the North Sydney Community” estimated the raw, maximum practical capacity for abatement across a number of abatement areas. It demonstrated that a more ambitious target could be met by working with the community to promote higher levels of renewable energy purchasing, more widespread uptake of rooftop PV and an accelerated LED lighting program. Renewable heat, via solar and heat pump water heating can also make a modest but important contribution to abatement in the LGA. Additional investment is likely to be required to coordinate these programs.

5.0 WATER CONSERVATION

5.1 BROAD CONTEXT

5.1.1 International

Goal 6 of the UN's Sustainable Development Agenda is to "Ensure access to water and sanitation for all". A relevant target to help achieve this goal is to "By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity".

5.1.2 National

The National Water Initiative is the framework for Australia's national water policy. It operates under a set of objectives including "policy settings which facilitate water use efficiency and innovation in urban and rural areas", but does not provide specific targets.

5.1.3 State

The Metropolitan Water Plan is the NSW Government's plan to ensure sufficient water to meet the needs of the people and environment of the Greater Sydney region now and for the future. The plan does not include water reduction targets, but sets trigger points for implementation of actions based on dam levels. For example, level 2 water restrictions came into force on 10 December 2019 when dam levels dropped to 40% of capacity. According to Sydney Water, greater Sydney is currently experiencing the worst drought on record.

Objective 34 of the Greater Sydney Commission's North District Plan also does not provide targets but specifies that water flows should be captured, used and re-used.

5.1.4 Local

Examples of targets set by local councils are listed below.

Parramatta City Council has committed to:

- No net increase in its community and Council's own potable water consumption by 2038 (based on 2015 levels).

The City of Sydney has committed to:

- Zero increase in its corporate potable water use by 2030 from 2006 baseline, achieved through water efficiency and recycled water; and
- Annual potable water use of 180L/m2 of irrigated open space.

Waverley Council has committed to:

- 50% reduction of its own corporate 2005/06 levels of mains water consumption by 2020; and
- Zero increase of the community's 2005/06 levels of mains water consumption by 2030.

Willoughby Council has committed to:

- Ensure Council's water use does not exceed 120,000kL per year; and
- Encourage and assist their community to have no net increase in community water consumption per head of population (110kL per person per year).

5.2 NORTH SYDNEY CONTEXT

5.2.1 Existing water conservation targets

10% potable water reduction by the North Sydney community from 2001/02 baseline by 2020 (North Sydney Council Greenhouse Action and Water Management Plan 2015-2020)

50% potable water use reduction from 2001/02 baseline by 2020 (North Sydney Council Greenhouse Action and Water Management Plan 2015-2020)

Improve % reduction in water use by Council compared with 2016/17 levels (Community Strategic Plan EN16)

Improve megalitres of recycled water from rainwater tanks, stormwater harvesting or other recycling facilities at parks/open spaces, Council buildings and community facilities (Community Strategic Plan EN20)

In 2004 North Sydney set water reduction targets for Council and community water use as part of the ICLEI Water Campaign program. Progress against these targets has been regularly reviewed and pathways developed to achieve the reduction targets.

The original community water consumption target for 2020 was 25% from the 2001/02 baseline. This target was reduced to 10% in 2015 based on the recommendations of the North Sydney Council Greenhouse Action and Water Management Plan 2015-2020 and community water consumption patterns. An "Emissions and Water Review" conducted in 2019 found that the North Sydney community achieved its 10% reduction target in 2016/17. However, it fell below this level in 2017/18 and is not on track to achieve its target by 2020.

The Review also demonstrated that by 2016/17 Council had achieved a reduction in potable water use of 44% against the 2001/02 baseline. It projected that Council will achieve a 42% reduction in 2020 based on expected rainfall and consumption levels. The investment in a significant stormwater harvesting and reuse system at Cammeray Golf Course between 2007 and 2010 played a major role in reducing Council's potable water consumption, replacing a

significant amount of potable water use at the golf course, North Sydney Oval, St Leonards, Primrose, Tunks and Forsyth Parks. A major risk going forward is the Western Harbour Tunnel and Beaches Link proposal potentially jeopardising this system for several years during construction, as current plans identify the site of the dam to be relocated. Council is advocating to Transport for NSW to ensure a new stormwater reuse system is built and operational before the existing system is taken offline.

5.3 PROPOSED TARGETS

5.3.1 Proposed Water Conservation Target 1

50% potable water use reduction in Council operations from the 2001/02 baseline by 2030

Rationale

Council achieved its existing target of 50% from 2001/02 baseline levels in 2009/10 - 2011/12 and 2013/14 - 2015/16, but only achieved 44% water savings in 2016/17. The 2019 Emissions and Water Review predicted that Council is likely to only achieve a 36% reduction from 2001/02 levels by 2030 if no additional water reduction measures are implemented, and assuming that the stormwater harvesting system is not affected by the Western Harbour Tunnel and Beaches Link. However, an audit of water saving opportunities in buildings was completed in 2020 and another for parks and reserves is scheduled for 2020. These identify and prioritise implementation of additional measures to be funded largely through Council's Environment Levy, and will help Council to return to its 50% reduction target by 2030.

5.3.2 Proposed Water Conservation Target 2

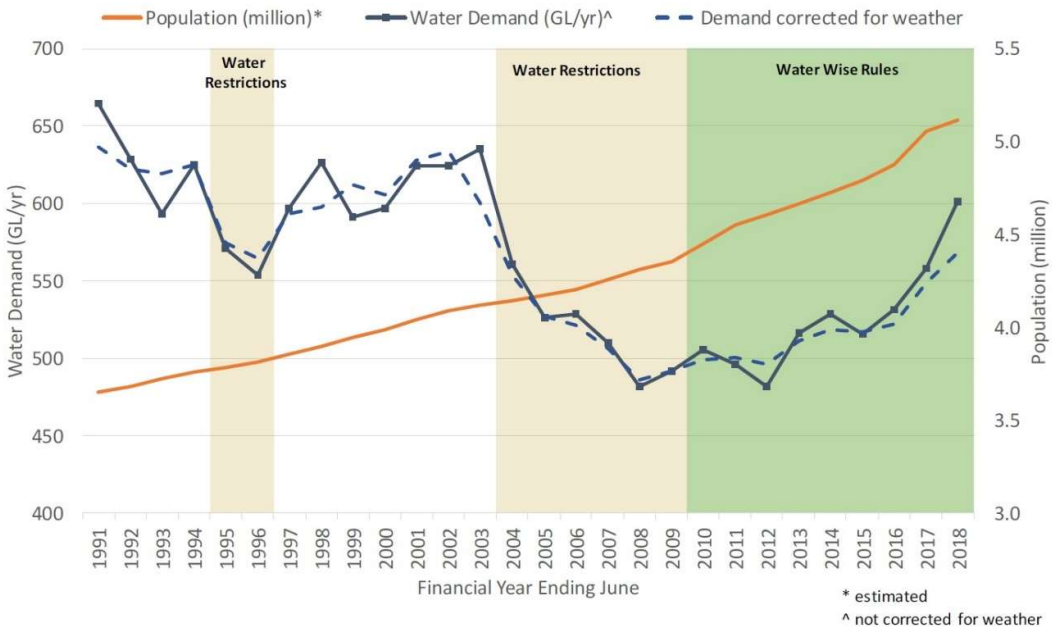
10% reduction in the North Sydney community's potable water use from the 2001/02 baseline by 2030

Rationale

A 10% community potable water reduction target from 2001/02 levels would extend Council's current adopted target to 2030. While the 2019 water review predicted that population increases would mean that by 2030 consumption is likely drop to just a 1% reduction from the 2001/02 baseline, these projections did not consider water restrictions that came into force after the review. As illustrated in Figure 5.1, experience from previous water restrictions demonstrates that they significantly decrease water usage despite population growth. For example, level 1 and 2 water restrictions, that were in place between 1 October 2003 and 1 June 2005, led to a 10% reduced water usage in North Sydney. At the height of level 3 water restrictions in 2008, potable water consumption in North Sydney dropped to 17% of the 2001/02 baseline. It should be noted that these projections assume

that the stormwater harvesting system, which also supplies Cammeray Golf Course with non-potable water for irrigation, is not affected by the Western Harbour Tunnel and Beaches Link.

Figure 5.1: Total water demand in the Sydney Water network (Source: Sydney Water, Water Conservation Report 2017-2018)



6.0 WATER QUALITY

6.1 BROAD CONTEXT

6.1.1 International

Goal 6 of the UN's Sustainable Development Agenda is to "Ensure access to water and sanitation for all". Relevant targets to help achieve this goal are:

> 6.3 "By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally"
>
> 6.6 "By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes"
>
> 6.B Support and strengthen the participation of local communities in improving water and sanitation management

6.1.2 National

The federal government provides default guideline values for assessing water quality through the "Australian and New Zealand guidelines for fresh and marine water quality" (ANZG) and supersedes the previous Australian and New Zealand Environment and Conservation Council (ANZECC) Guidelines for Fresh and Marine Water Quality (2000). For urban areas like North Sydney the ANZG recommends targets that achieve 80% species protection compared to a minimally impacted reference-site.

6.1.3 State

The state government has established the NSW Water Quality and River Flow Objectives which are consistent with, and provide further guidance on, the implementation of the national framework.

6.1.4 Local

Examples of targets set by local councils are listed below.

The City of Sydney has committed to:

- 50% reduction in the annual solid pollution load discharged to waterways via stormwater by 2030
- 5% reduction in annual nutrient load discharged to waterways via stormwater by 2030

Waverley Council has committed to:

- Minimise sediments and suspended solids in stormwater discharged into waterways by 2020
- Minimise bacterial pollution in stormwater discharged into waterways by 2020
- Minimise nutrients in stormwater discharged into remnant vegetation by 2020

Willoughby City Council has committed to:

- No reduction in water quality of sites assessed through the Water Quality Monitoring (WQM) program by 2028.

6.2 NORTH SYDNEY CONTEXT

6.2.1 Existing Water Quality targets

Improve % compliance with the Australian and New Zealand Environment Conservation Council (ANZECC) guidelines for water quality at Council's water quality monitoring sites (Community Strategic Plan EN08)

Improve Tonnes of rubbish removed by Council pollution control devices (Community Strategic Plan S08)

Improve % households collecting waste water (Community Strategic Plan EN15)

90% of stormwater is treated by Stormwater Quality Improvement Devices by 2028 (Asset Management Plan)

Each Gross Pollutant Trap is cleaned on average 17 times per annum to minimise litter bypass by 2028 (Asset Management Plan)

Maintain, upgrade and replace Gross Pollutant Traps to effectively capture storm water pollution and debris from entering the Harbour (Asset Management Plan)

Ensure stormwater flows mimic natural systems (ESD Best Practice Project – Water)

Minimise stormwater discharge to receiving waters (ESD Best Practice Project – Water)

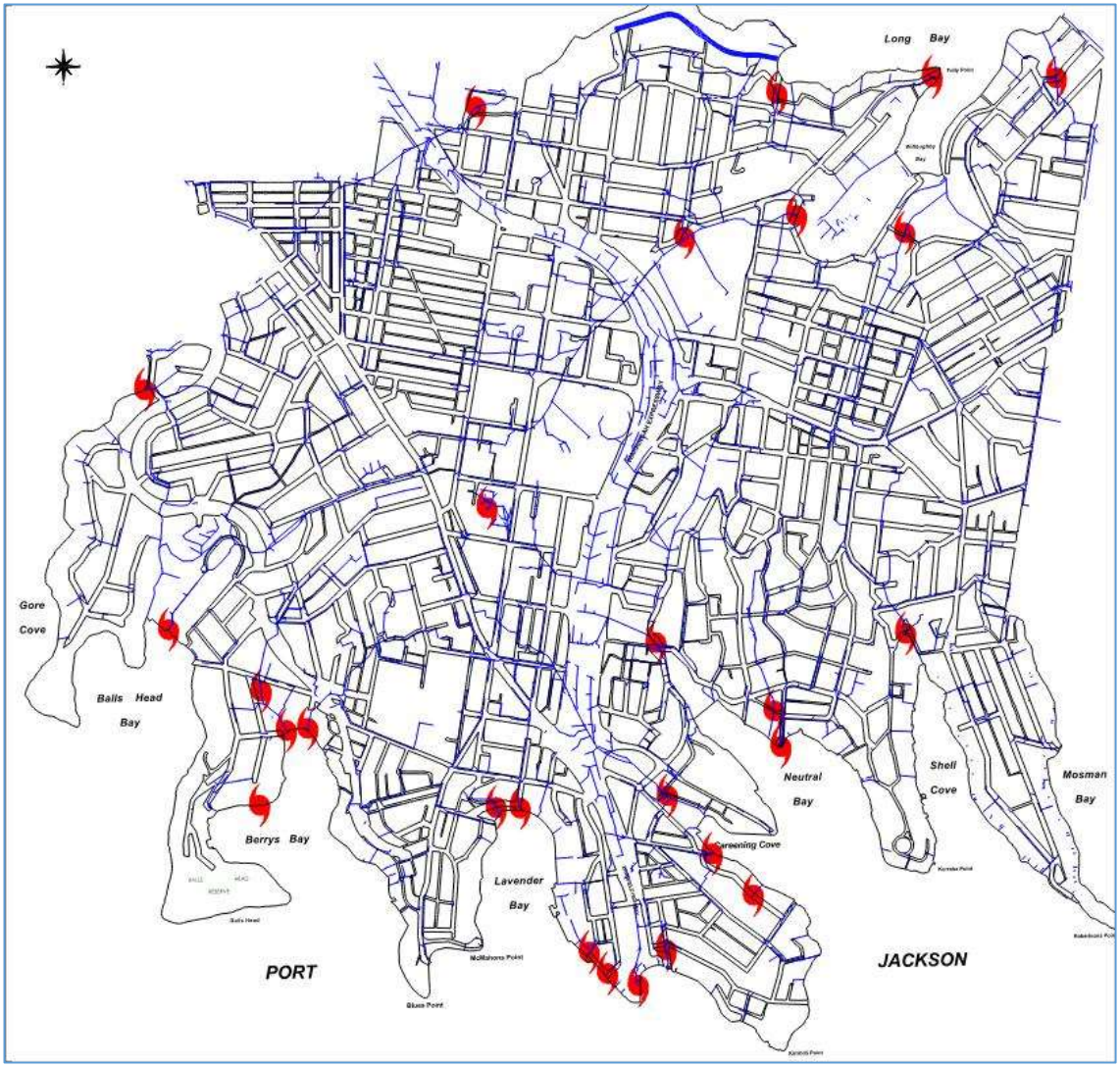
Maximise stormwater quality (ESD Best Practice Project – Water)

In urban areas like North Sydney, impervious surfaces like roads and roofs have significantly changed natural flows, increasing the amount and velocity of surface water reaching the receiving waterways. Stormwater drains have largely replaced creeks and waterways to manage this increased flow and reduce the likelihood of flooding. In the North Sydney LGA, stormwater flows into Middle Harbour and Port Jackson, some via bushland areas like Smoothey Park and Tunks Park. Increased runoff and pollution from a variety of sources also cumulatively reduce water quality. Development sites throughout the LGA are regulated by

Council to ensure stormwater pollution controls are in place and are effective, and water pollution incidents are investigated. Council monitors several locations throughout the LGA to help us better understand and manage the many factors that contribute to water quality.

To minimise our impact on the harbour and our bushland, Council operates proactive street sweeping and pit cleaning programs. Council has also installed 26 Stormwater Quality Improvement Devices (SQIDs) including Gross Pollutant Traps (GPTs) to intercept litter and other debris as a last defence before entering our waterways (see Figure 6.1). They currently capture 59% of stormwater in the North Sydney catchment and removed 527.6 tonnes of material in 2019. Approximately 80% of this was composted. Water sensitive urban design systems, like rain gardens and bio retention swales, have also been installed to increase water permeating into the soil, reducing flooding and nutrient and sediment load. In addition, catchment education and litter prevention initiatives, in particular Council's HarbourCare volunteer program, engage the community in actions they can take to help reduce water pollution. These programs removed a combined total of 3582.4 tonnes of waste materials from Councils stormwater system in 2019.

Figure 6.1: North Sydney Council Stormwater Catchments (Source: North Sydney Council)



6.3 PROPOSED TARGETS

6.3.1 Proposed Water Quality Target 1

70% compliance with the Australian and New Zealand guidelines for fresh and marine water quality at Council's water quality monitoring sites by 2030

Rationale

This is an existing target of Council's Community Strategic Plan (CSP EN08) that provides direction to help Council achieve an improved water quality outcome.

6.3.2 Proposed Water Quality Target 2

90% of the stormwater is treated by Stormwater Quality Improvement Devices by 2030

Rationale

This is an existing target in Council's Asset Management Plan that will also help Council achieve the third proposed water quality target. Council currently treats 640ha out of 1,090ha (59%) of the LGA. The construction of additional SQIDs at key identified locations as recommended in the Asset Management Plan will take Council to 80% of the catchment being treated. These works are dependent on funding through Council's capital works program. To achieve the 90% target Council will also need to work with owners of properties that are currently discharging untreated stormwater directly into waterways or bushland areas to connect to the stormwater system.

6.3.3 Proposed Water Quality Target 3

By 2030, 10% more material is kept out of our waterways by Council's stormwater improvement programs than in 2019

Rationale

An existing measure in Council's Community Strategic Plan is to "Improve Tonnes of rubbish removed by Council pollution control devices". The proposed target considers Council's efforts to reduce stormwater pollution more holistically and provides a specific value for this measure.

In 2019 Council removed 3582.4 tonnes of materials from the stormwater system. A 10% increase equates to 3940.6 tonnes. As seen in Figure 6.3, the target is achievable assuming that the strategies in Council's Asset Management Plan are implemented to construct new pollution control devices to capture 90% of the catchment. It also assumes continual improvement of Council's other stormwater improvement programs resulting in increased waste removal rates.

Figure 6.2: Tonnes of materials intercepted or removed from the North Sydney stormwater system in 2019 (Source: North Sydney Council data)

Method of waste removal	Removed in 2019 Tonnes/yr	Improvements on 2019 waste removal rates	2030 projections Tonnes/yr
Street drain pit cleaning	414.5	5%	435.2
Street sweeping	2633.7	5%	2765.4
SQID cleaning (59% of catchment is captured)	527.6	90% of catchment is captured	808.6
Harbourcare	6.7	5%	7.1
TOTALS	3582.4		4016.2

7.0 COMMUNITY ENGAGEMENT

7.1 BROAD CONTEXT

7.1.1 International

Goal 4 of the UN's Sustainable Development Agenda is “Quality Education”. A relevant target to help achieve this goal is: “4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development”.

Goal 12 of the UN's Sustainable Development Agenda is “Ensure sustainable consumption and production patterns”. A relevant target to help achieve this goal is: 12.8 “By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature”.

7.1.2 National

The federal government has no specific targets around community engagement in sustainability.

7.1.3 State

Planning Priority N4 of the Greater Sydney Commission’s North District Plan is “Fostering healthy, creative, culturally rich and socially connected communities”.

The NSW government commissioned "Make the Change Framework for Education and Engagement for Sustainability 2014-2021" has established a number of goals and indicators. Its vision is "effective education and engagement that builds sustainable communities and enhances and maintains the NSW environment".

The Australian Association of Environmental Education NSW (AAEE) is the peak professional body for environmental educators in NSW. It has developed the following best practice sustainability education and engagement principles for sustainability education and engagement projects:

1. Operate within and promote the values of sustainability - defined as ‘balancing the community’s economic and social needs within the planet’s ecological limits’;
2. Encourage the community to be active citizens in caring for our environment;
3. Respect and reflect local Aboriginal culture and heritage and include cultural and place-based learning;
4. Reflect and address the needs of target audiences and engage these participants through critical thinking, problem solving and action;

5. Have reflection, monitoring and evaluation built into their design, to allow for continuous improvement;
6. Are achieved by seeking collaborators from the target audience, local Aboriginal community and organisations from different sectors.

7.1.4 Local

Examples of targets set by local councils are listed below.

Willoughby City Council has committed to:

- Ensure access to sustainability education for all members of our community, regardless of socio-demographic profile; and
- Ensure that a minimum of 80% of participants believe they can improve sustainability in Willoughby through individual/community actions.

Waverley Council's Sustainable Communities Framework set out five strategic directions, including to:

- Strengthen community capacity to live and work sustainably; and
- Build long-term behaviour change and engagement programs to make sustainability second nature.

7.2 NORTH SYDNEY CONTEXT

7.2.1 Existing Community Engagement targets

Maintain % participants satisfied with environmental education programs (Community Strategic Plan EN06) Maintain 2,000 participants in residential, school, community groups and business sustainability programs (Community Strategic Plan EN07)

North Sydney Council has a long history of working with the community to achieve positive outcomes for the environment through individual and collective action. To help residents adopt a more sustainable lifestyle, Council coordinates a range of activities designed to suit different target groups, levels of engagement and areas of interest.

According to UNESCO (United Nations Educational, Scientific and Cultural Organization) "education alone cannot achieve a more sustainable future; however, without education and learning for sustainable development, we will not be able to reach that goal". Council subscribes to this sentiment and employs environmental education to help achieve its environmental sustainability targets.

Council offers more than 100 short workshops, events, and activities every year. Many of these are hosted at Council's award winning Coal Loader Centre for Sustainability. These activities are complimented with support materials provided through monthly e-newsletters and on Council's website.

Programs like Harvest North Sydney, Futureproofing Apartments, NSchools and Council's Sustainable Business program offer more in depth learning and are structured to achieve attributable and quantifiable outcomes. Through the Harvest North Sydney Program for example, more than 70 food gardens, including many communal apartment building gardens, have been established in the last 6 years, reducing food miles and packaging, and building community.

For residents able to engage in more regular activities, Council coordinates volunteer programs like Bushcare, community gardens and Harbourcare which have cumulatively contributed 57,500 hours in the last 10 years to improving local environmental outcomes.

North Sydney Schools are supported through a variety of initiatives, including an annual grants program which has operated for 10 years resulting in projects like rainwater tanks, kitchen gardens, biodiversity trails, litter audits and student engagement programs.

7.3 PROPOSED TARGETS

7.3.1 Proposed Community Engagement Target 1

12,000 annual participants in Council's environmental sustainability engagement activities by 2030

Rationale

Participation rates are an indicator of the relevance and value of Council's sustainability engagement programs to our community. Council's existing target did not capture participants in its environmental volunteering programs, sustainable transport engagement programs or Council coordinated sustainability activations at the Coal Loader. Including participation in these activities is a truer reflection of Council's efforts in engaging our community in sustainability initiatives. The target maintains participation levels at 2018/19 levels, as summarised in Figure 7.1, and adds 6% for expected population increase between 2020 and 2030.

Figure 7.1: Number of participants in North Sydney Council's Environmental Sustainability Activities (Source: North Sydney Council attendance records)

2019 Activities	Participant numbers
Green Events and programs	3167
Streets Alive and community gardens	1377
Bushland management	981
Coal Loader tours and activities	2200
Sustainable transport	3112
2019 Total	**10837**
2030 Projections	
2019 total + 6% population increase projections	11487
5% additional engagement through continual improvement	542
2030 Projected total	**12029**

7.3.2 Proposed Community Engagement Target 2

90% of participants in Council's environmental sustainability engagement activities are motivated and enabled to take actions to improve environmental sustainability outcomes

Rationale

This target ensures that Council's environmental sustainability community engagement programs remain effective and responsive to the changing needs of our community.

Evaluation of Council's green living workshop and events program consistently shows that more than 80% of participants are motivated to take action as a result of Council's community sustainability programs (93% in 2018/19). The proposed target provides a uniform measure that can be applied across all relevant sustainability engagement programs including volunteer programs like Bushcare and community gardens.

8.0 URBAN ECOLOGY

8.1 BROAD CONTEXT

8.1.1 International

Goal 15 of the UN's Sustainable Development Agenda is to “protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss”. Relevant targets to help achieve this goal are: 15.5 “Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species” and 15.8 “By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species”.

The United Nations Convention on Biological Diversity provides a framework for global action to conserve and use biological diversity in a sustainable manner. The Convention is supported by 20 Aichi Biodiversity Targets to 2020.

8.1.2 National

Australia's Biodiversity Conservation Strategy 2010-2030 contains 10 interim national targets but only for the first five years to 2015.

8.1.3 State

The state government does not have any specific targets around biodiversity, but has established a Biodiversity Indicator Program for NSW to assess the status of biodiversity and ecological integrity.

The NSW Government's Greater Sydney Regional Strategic Weed Management Plan 2017-2022 focuses on managing weeds to improve the region’s biosecurity in response to the NSW Biosecurity Strategy 2013-2021 and NSW Biosecurity Act 2015. The plan provides a vision, goals, outcomes, objectives and strategies, but no set targets for weed management. It’s Greater Sydney Regional Strategic Pest Management Plan 2018-2023 identifies regional priorities for pest animal management and outlines how Government agencies, community groups and individual landholders will share responsibility and work together across land tenures to prevent, eradicate, contain and manage the impacts of pest animals.

The Greater Sydney Commission has set a target of 40% tree canopy cover across Sydney.

8.1.4 Local

Examples of targets set by local councils are listed below.

The City of Sydney has committed that:

- The average total canopy cover is increased by 50 per cent by 2030 from a 2008 baseline
- Habitat sites in the city are protected and the area of bush restoration sites is increased by 100 per cent by 2023 from a 2012 baseline of 4.2 hectares
- Indigenous fauna species diversity, abundance and distribution is maintained or increased by 2023 based on a 2012 baseline
- A progressive increase in the number of habitat features for priority fauna species is established along potential habitat linkages by 2023

Parramatta City Council has committed to:

- Protect and enhance the health of our unique natural ecosystem of plants and animals
- Increase canopy cover to 40% by 2050 (based on 2016 levels)

Waverley Council has committed to:

- Ensure no loss of remnant vegetation based on 2009/10 numbers
- 40% of remnant vegetation in good condition by 2020

By 2030, Willoughby City Council has committed to:

- An increase in the number of suitable areas, being managed as bushland.
- No deterioration of bushland conditions as a result of urban activities.
- An increase in urban tree canopy cover on private and public land.

8.2 NORTH SYDNEY CONTEXT

8.2.1 Existing Urban Ecology targets

100% bushland under active management (Community Strategic Plan EN01)

Improved condition of bushland (Community Strategic Plan EN02)

Maintain proportion of North Sydney with native vegetation (Community Strategic Plan EN03)

No. of fauna species listed as threatened is stable (Community Strategic Plan EN04)

No. fauna species listed as endangered is stable (Community Strategic Plan EN05)

34.4% total canopy cover (North Sydney Urban Forest Strategy 2019)

8.2.2 Bushland Management

Less than 5% of the original (pre European settlement) bushland vegetation remains in North Sydney and primarily occurs in narrow, fragmented reserves that are vulnerable to urban pressures. Much of this is on the harbour foreshore; where places of natural beauty combine with spectacular views. Despite the small, fragmented and highly impacted character of bushland in North Sydney, a surprising diversity of species and vegetation community types remain, due largely to the ongoing active management of all bushland areas involving staff, contractors and local volunteers, guided by Council's Bushland Rehabilitation Plans and its Bushland Plan of Management. In addition, Council carries out bushland rehabilitation and monitoring, grows local provenance plants in its community nursery, delivers biodiversity education and managed community volunteer programs including "Bushcare", "Wildlife Watch" and "Adopt-a-Plot".

8.2.3 Urban habitat

Increasing pressure on the landscape from human activity has resulted in a rapid decline in suitable habitat for animals that call North Sydney home. Council runs a number of initiatives in order to provide a helping hand to our native wildlife. These include providing native plants, native bees and nestboxes to residents through the Native Havens program to provide shelter, food, nesting sites and improved connectivity between bushland reserves. Council also makes suitable dead trees on public land safe in order to retain existing, or install specially carved, tree hollows.

To help provide habitat for wildlife on our augmented foreshore areas, Council has also been working in partnership with several Sydney-based universities for over 20 years. As a result, pioneering 'habitat panels' have been developed and fixed to the harbour walls along Sawmillers Reserve and Bradfield Park in North Sydney, making it the largest retrofit of a Living Seawall in Australia, and potentially the world. The 'habitat panels' increase attachment space for intertidal species like oysters, which are vital to maintaining water quality and providing food and habitat for fish and other marine wildlife.

8.2.4 Managing Weeds and Feral Animals

Some exotic plants are vigorous invaders, growing faster than native species and usually producing much more seed. Once weeds take over an area the character of the bushland changes, diminishing habitat for native wildlife and altering ecological fire regimes. Council works to eradicate high risk weed infestations and regenerate bushland with indigenous species. Biosecurity Weeds (formerly referred to as Noxious Weeds) must also be removed from private property. Where an owner/occupier is issued with a biosecurity directive (ie. weed notice), they have a legal obligation to control the weed in the manner described by the risk rating.

To reduce the impacts of feral animals, Council has worked with other public land managers in the Sydney north region to implement coordinated fox baiting since 2000. Over the years the program has contributed to significant improvements in the sustainability and diversity of native wildlife occurring in remnant urban bushland across the Sydney north region.

8.2.5 Canopy cover

Trees and shrubs, including exotic species, provide habitat and connectivity for wildlife as well as a range of other environmental benefits including energy conservation through shade and cooling, reduction of atmospheric contaminants, carbon sequestration, and reduction in stormwater runoff. In 2014 Council had 17,214 street trees based on its street tree audit. The total number of trees, including those on parklands, private property, non-Council managed public land and bushland, could be up to six times this figure. Canopy cover however has declined from 33.9% in 2008 to 28.2% in 2017, primarily in suburban areas and on private land. Council is committed to reversing this trend and developed an Urban Forest Strategy in 2019 to provide a roadmap to achieve this increase in canopy cover for the LGA.

8.2.6 Planning controls

One of the greatest threats to biodiversity conservation in North Sydney is the fragmented nature of our remnant bushland areas. Bridging these divides is key to the survival of native fauna and flora, particularly in the face of a rapidly changing climate. Section 15 (Bushland) of Council's Development Control Plan seeks to address this issue through the creation of a bushland buffer zone that extends 300m from each bushland reserve boundary (land zoned E2 Environmental Conservation). Within this zone, all developments involving a landscape plan must use local native plants and incorporate habitat features in their landscape design.

Requirements for tree protection and tree planting in relation to land development are set out in Section 16 (Tree and Vegetation Management). This section also contains Councils 'Tree Management Order' controls for the removal or pruning of trees or vegetation.

8.3 PROPOSED TARGETS

8.3.1 Proposed Urban Ecology Target 1

80% of bushland is in good condition by 2030

Rationale

Council's Community Strategic Plan 2018-2028 lists "Improved condition of bushland" as Sustainability Indicator EN2. However, no baseline or target is listed. The ESS is an opportunity to provide this guidance to Council.

Council's 2010 Natural Area Survey identified and mapped the 48.8 ha of bushland, in Council's care and control. At the time, 70% of this bushland was in good condition, 22% was in fair condition, and 8% was in poor condition. In 2018/19 this had increased to 75% in good condition, 17% in fair and 8% in poor condition. Based on this trajectory, a target of 80% of

bushland being in good condition by 2030 is achievable based on a business as usual approach.

8.3.2 Proposed Urban Ecology Target 2

Maintain number of locally native fauna and flora species found in North Sydney compared to 2010 levels by 2030

Rationale

This target amalgamates indicators EN03, EN04 and EN05 of Council's Community Strategic Plan to represent Council's efforts to protect our local biodiversity.

The 2010 Natural Area Survey identified 347 native vascular plant species and subspecies as having been previously been recorded in the North Sydney LGA, however fifteen of these had not been recorded for at least 25 years and may be locally extinct. The survey found one endangered remnant plant species present in North Sydney: *Acacia terminalis* subspecies *terminalis*, the Sunshine Wattle.

A total of 190 native terrestrial vertebrate species were recorded in North Sydney, including four frog species, 20 reptile species, 148 bird species and 18 mammal species. Only 114 of these species occurred consistently in the area. Based on this and more recent surveys, seven threatened species listed under the Biodiversity Conservation Act regularly occur in the North Sydney local government area:

- Powerful Owl
- Grey-headed Flying Fox
- Eastern Bent-wing Bat
- Little Bent-wing Bat
- Large-footed Myotis
- Yellow-bellied Sheathtail Bat
- White-bellied Sea Eagle

8.3.3 Proposed Urban Ecology Target 3

34.4% total canopy cover by 2030

Rationale

Urban forest can be defined as the totality of trees and shrubs on all public and private land in and around urban areas and is measured as a canopy cover percentage of the total area. Council's Urban Forest Strategy analysed North Sydney's canopy cover over time as summarise in Table 1 and determined a 34.4% total canopy cover target averaged across the

whole Council area. While this falls short of the Greater Sydney Commission's 40% tree canopy cover target, Council's analysis is in line with international standards and is based on prevailing land use as summarised in Table 2.

Figure 8.1: Canopy cover summary and changes over time (Source: North Sydney Council Urban Forest Strategy 2019)

Description	**% of LGA**	**Target Canopy Cover**	**1997 %**	**2001 %**	**2008 %**	**2014 %**	**2017 %**	**Total Decline Since 2008**
Overall Canopy Cover	100	**34.4%**	**19**	**24**	**33.9**	**30.7**	**28.2**	**5.7**
CBD	10	**15%**			16.5	13.5	14.2	2.3
Urban	48.3	**25%**			32.4	28.8	26.9	5.6
Suburban	41.7	**50%**			39.8	37	33	**6.8**
Public Land	25.7				50.5	52.8	50	0.5
Private Land	58				31.6	26.4	24	**7.5**
Roads	16.3	**30%**			28.1	26.1	23.4	4.7

Figure 8.2: Target canopy cover calculation (Source: North Sydney Council Urban Forest Strategy 2019)

Land use	Recommended % Canopy Cover over this land-use	Proportion of NS land area covered by this land-use %	Contribution to target % Cover for North Sydney
CBD	15	10	1.5
Urban	25	48.3	12.1
Suburban	50	41.7	20.8
Overall Target % Cover for North Sydney			**34.4**

9.0 RESOURCE RECOVERY

9.1 BROAD CONTEXT

9.1.1 International

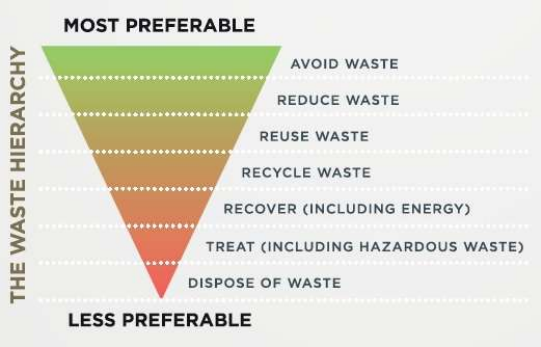
Goal 12 of the UN's Sustainable Development Agenda is to "Ensure sustainable consumption and production patterns". Relevant targets to help achieve this goal are: 12.3 "By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses" and 12.5 "By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse".

9.1.2 National

The federal government's National Waste Policy Action Plan 2019 has set the following targets:

1. Ban on export of waste plastic, paper, glass and tyres, commencing in the second half of 2020
2. Reduce total waste generated in Australia by 10% per person by 2030
3. 80% average resource recovery rate from all waste streams following the waste hierarchy by 2030
4. Significantly increase the use of recycled content by governments and industry
5. Phase out problematic and unnecessary plastics by 2025
6. Halve the amount of organic waste sent to landfill for disposal by 2030
7. Make comprehensive, economy-wide and timely data publicly available to support better consumer, investment and policy decisions

The National Waste Policy 2018 has a focus on high order uses, while building on the idea of continually reusing, recycling and reprocessing materials, and incorporates the following waste hierarchy:



National Waste Policy also established Australia's 2025 National Packaging Targets to create a new sustainable pathway for the way we manage packaging in Australia.

The four Targets are:

- 100% of packaging being reusable, recyclable or compostable by 2025
- 70% of plastic packaging being recycled or composted by 2025
- 50% of average recycled content included in packaging by 2025
- The phase out of problematic and unnecessary single-use plastic packaging by 2025.

9.1.3 State

The NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2014-21 has set a number of waste targets, to be achieved by 2021-22 including the following:

- reduce the rate of waste generation per capita
- increase recycling rates for municipal, commercial and industrial solid waste to 70%
- increase recycling rates for construction and demolition waste to 80%
- increase the waste diverted from landfill to 75%

The NSW government is currently reviewing these waste targets through the development of a new Waste Strategy for NSW to align with the 2019 National Waste Policy Action Plan. A 20-Year-Waste Strategy Discussion Paper is expected to be released for consultation in 2020, with a draft strategy to follow. One of the 3 focus areas for the strategy and accompanying policies is Sustainability, specifically that the NSW waste industry is self-sustaining, delivers improved environmental outcomes and avoids the human health impacts associated with poorly managed waste.

The Greater Sydney Commission's North District Plan list "Reducing carbon emissions and managing energy, water, waste efficiently" as Planning Priority N21.

9.1.4 Regional

Northern Sydney Regional Organisation of Councils (NSROC) Regional Waste Strategy 2014-21 assists NSROC councils, including North Sydney, to develop key actions to deliver the region's vision and objectives for waste management. The strategy is informed by the NSW WARR Strategy and includes the following targets:

- 70% landfill diversion target by 2021-22 based on regional 2010-11 data.
- 1% per capita reduction in waste generation by 2021-22 based on regional 2013/14 data

9.1.5 Local

Examples of targets set by local councils are listed below.

By 2030, the City of Sydney has committed to:

- To divert 90% of waste from City parks, streets, and public places from landfill
- To divert 90% of waste from City-managed properties from landfill

- To divert 90% of waste from construction and demolition, generated and managed by City operations, from landfill.
- To divert 90% of waste (with a minimum of 35% as source-separated recycling) from landfill.
- To divert 90% of waste from operating businesses in the local government area from landfill
- To divert 90% of waste from construction and demolition activities in the local government area from landfill.

Parramatta City Council has committed to:

- Reduce resource consumption from 8.2kg to 6.1kg per person by 2038 (based on 2015 levels)
- Increase diversion from landfill to 85% by 2038
- Reduce the volume of litter by 40% by 2020

Waverley Council has committed to:

- No net increase in waste generation from 2004/05 levels; and
- 90% resource recovery of residential and commercial waste by 2030.

Willoughby City Council has committed to:

- >70% waste diversion by 2021/22; and
- 5% reduction in illegal dumps removed by Council per annum.

9.2 NORTH SYDNEY CONTEXT

9.2.1 Existing Waste targets

Improve % increase in residential recyclables collected compared with 2016/17 (Community Strategic Plan EN11)

Improve % increase in residential waste diverted from landfill compared with 2016/17 levels (Community Strategic Plan EN12)

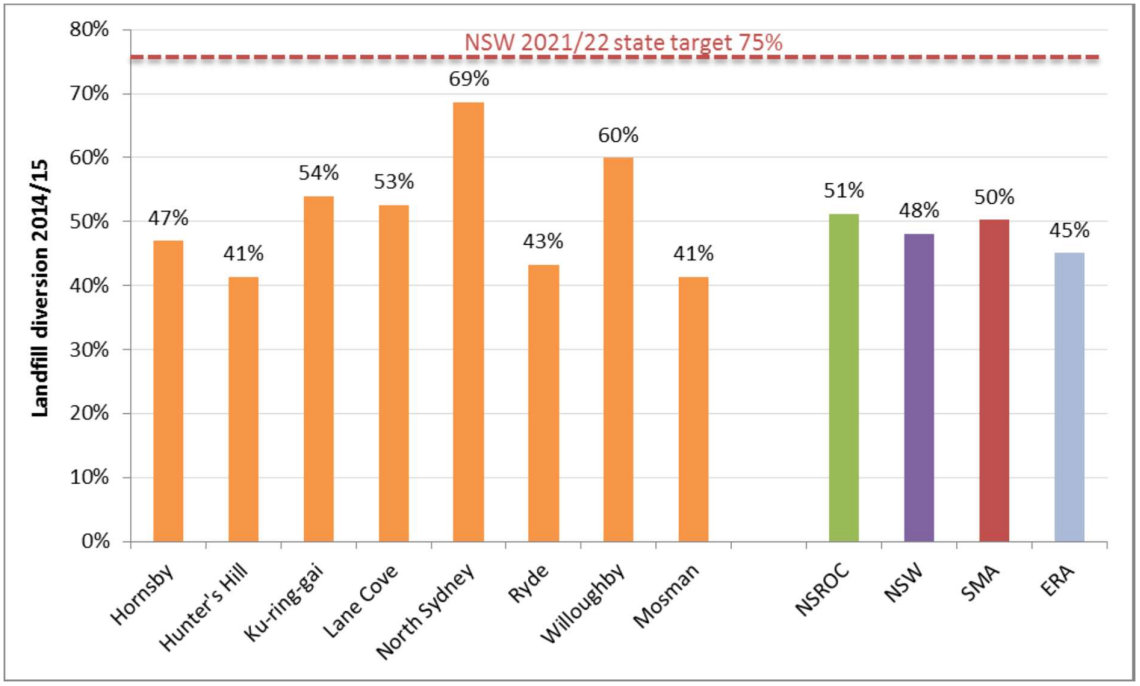
North Sydney Council has a long history of demonstrating leadership in waste management and landfill diversion rates have consequently been amongst the highest in the state and certainly in the region (see Figure 9.1). Council has been at the forefront of waste processing and has consistently been rated highly in striving to meet and exceed the NSW EPA's landfill diversion targets. In order to maximise landfill diversion, Council has successfully implemented education programs and strategic collection and disposal contracts.

Council provides a suite of resource recovery education programs and workshops to the community. Additionally, in conjunction with, and on behalf of, four other NSROC councils, North Sydney Council operates a Community Recycling Centre (CRC) in Artarmon. The CRC is designed to accept certain hazardous household wastes such as gas bottles, fire

extinguishers, paint (oil and water based), used oils (household and motor), fluorescent light globes and tubes, used batteries (household and lead acid car), used x-ray films and e-waste. Collected materials are processed for resource recovery and any residuals are disposed of safely with minimal environmental impact.

For over a decade, Council consistently advocated for container deposit legislation and introduced the first kerbside e-waste collection system in NSW. Council is currently working with the service provider, TOMRA Cleanaway, to identify suitable sites to install "Return and Earn" reverse vending machines. North Sydney was also the first Council to introduce a volume-based garbage charge system that encouraged the uptake of reduced-size garbage bins to incentivise residents to recycle more and reduce the amount of waste destined for landfill. At the same time Council took a radical approach to halve the amount waste residents were entitled to present for collections from 2 x 60 L carry bin collections per week to 1x 60 L collection per week being the standard service.

Figure 9.1: 2014/15 Landfill Diversion Performance Comparison (Source: Northern Sydney Regional Waste Strategy 2017 - 2021 Directions Report)



Note: ERA = Extended Regulated Area; SMA = Sydney Metropolitan Area

9.2.2 NSW EPA ban on mixed waste organic material

Until recently, all mixed solid waste received in Councils red bins was processed through an alternative waste facility, where organic material was separated, composted and utilised for mine site rehabilitation and on agricultural land. This contributed to Council achieving a 61% general waste diversion rate from landfill in 2016/17.

In October 2018 the NSW EPA banned the use of Mixed Waste Organics Outputs for application on agricultural, mining rehabilitation or forestry land due to human health and

ecological risks associated with chemical and physical contaminants found in the product. This means that the materials collected from the red lid bin are now disposed to landfill as the processing of the materials is no longer an option under Council's current Waste Disposal and Processing Contract. This will significantly reduce Council's landfill diversion rate going forward.

9.2.3 Recycling crisis

In 2017 China announced it would no longer accept recyclable materials from around the globe including Australia due to the contamination levels of materials exported to China. This is known as the China National Sword Policy, which tightened quality standards, now requiring imported materials to comply with their stringent 0.5% contamination rate on all recyclable materials including paper/cardboard, glass and mixed plastics. This rate is regarded as a virtual ban, because it is considered to be unachievable using currently available processing techniques.

In North Sydney, Council's recycling goes to VISY, who have commercial arrangements with manufacturers that reprocess most of our recycling in Australia. This means that we are currently not directly affected by the China Sword Policy, but this may change in the future at VISY's discretion and as local markets dictate.

9.2.4 Waste contracts

On 1 July 2019 Council commenced a 7-year waste collection contract for the collection of general waste, recycling, green waste and bulky clean up waste, with options to extend the term for another 3 more years. Additionally, Council's general waste disposal and processing contract commenced 1 July 2019 for a 5-year term with options to extend the term for another 5 years. Given the State Government's recent ban on the application of mixed waste organic material on land, Council's waste diversion opportunities are significantly compromised. As the processing of the materials is no longer an option under the current contract, general waste will be landfilled for up to 5 years.

9.2.5 Single Use Plastics Policy

Council adopted a Single Use Plastics Policy on 23 September 2019, which implements a single-use plastics ban for Council operations, events and venues. It applies to any disposable plastic items, including made from polystyrene, that are designed to be used once and then discarded. This includes, but is not limited to, disposable cups and lids, straws, bags, cutlery, plates, bottled water, take away containers, single serve sachets and unnecessary packaging. It applies to all Councillors, staff and suppliers involved in Council procurement and/or activities conducted in Council owned venues, facilities, parks, reserves, sportsgrounds and pools, as well as commercial tenants of Council properties. The policy is consistent with the Australian Packaging Covenant to help ensure that North Sydney plays a leadership role in working towards the 2025 National Packaging Targets.

9.3 PROPOSED TARGETS

9.3.1 Proposed Resource Recovery Target 1

10% reduction in tonnes of waste generation per household from 2019/20 levels before 2030

Rationale

This target is consistent with the federal government's National Waste Policy Action Plan, and will ensure that North Sydney continues to play an active role in reducing Australia's waste generation rates.

9.3.2 Proposed Resource Recovery Target 2

80% recycling rates for municipal solid waste by 2030

Rationale

Council's CSP 2018-2028 lists "Improve % increase in residential recyclables collected compared with 2016/17 levels" as Sustainability Indicator EN11. However, no numeric 2028 target is available. The ESS is an opportunity to provide this guidance to Council.

An 80% recycling rate by 2030 is recommended and is consistent with the national target and past and current state government imposed recycling targets (52% in 2010/11 and 70% 2021/22).

9.3.3 Proposed Resource Recovery Target 3

70% waste diversion from landfill by 2030

Rationale

Both the City of Sydney and Waverley Council have currently committed to more ambitious 90% waste diversion from landfill targets. While North Sydney has traditionally achieved greater diversion rates than these Councils, their targets were set before the current recycling crisis and the ban on mixed waste organic material. Given the current uncertainties and challenges in the waste industry, a 90% waste diversion from landfill target is unlikely to be achieved.

Similarly, the national 80% resource recovery target is considered aspirational and unachievable locally. To ensure higher recovery rates across the state the NSW government needs to look at state wide solutions such as local processing/sorting facilities and secure long term end of cycle markets and contracts. However, even if significant investment is made at a state and federal level, it is likely that more than 10 years are required to deliver adequate alternative waste treatment infrastructure to efficiently manage waste from the red bin through resource recovery. A 70% reduction target for North Sydney is the 2014/15 status quo (current recovery is 37% through kerbside recycling and greenwaste collections) and is within the context of the uncertainty surrounding the industry as there are no realistic processing options available.

Council plays a key role in ensuring that the waste services available for our residents cover a wide range of waste items, are convenient, cost effective and facilitate the diversion of waste from landfill. Refining current methods of processing waste will partially assist Council to achieve a target of 70% waste diversion by 2030. Council also needs to look at new ways of managing its waste. However, what resources Council can recover critically depends on federal and state government policy and legislation, the infrastructure available and whether markets exist for recovered materials.

The NSW EPA supports food scraps collection and services to reduce the volume of organic material in mixed waste. However metropolitan Councils like North Sydney with increasing numbers of multi-unit dwellings (MUDs) are concerned that there would be high levels of contamination. North Sydney has committed to explore options for conducting a food waste diversion trial. For this to succeed in North Sydney, a collection and processing mechanism must be demonstrated and costed to create a viable product for which there is an identifiable end market. The addition of food waste into a bin requires a more advanced form of processing. Penrith, which is the only metropolitan Council providing significant FOGO services, does not offer the service to MUDs.

9.3.3 Proposed Resource Recovery Target 4

Council's operations will be free of unnecessary single use plastics before 2025

Rationale

This target is consistent with Council's Single Use Plastics Policy and the Australian Packaging Covenant. In 2019, before the policy came into force, Council purchased 62,646 unnecessary single use plastics items consisting largely of glasses, take away coffee cups and lids, and single serve food sachets. Early implementation of the policy and the development of a guide to alternatives has already seen a significant shift towards reusable and home compostable alternatives and a subsequent reduction in single use items.

10.0 SUSTAINABLE TRANSPORT

10.1 BROAD CONTEXT

10.1.1 International

Goal 11 of the UN's Sustainable Development Agenda is to "Make cities and human settlements inclusive, safe, resilient and sustainable". A relevant target to help achieve this goal is: 11.2 "By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons".

10.1.2 National

The federal government has no specific targets around sustainable transport. In 2016 the Department of Infrastructure and Regional Development predicted transport trends to 2040 which provide an evidence base for national transport action. They included the following:

- Based on passenger kilometres travelled, public transport usage is projected to grow by 32 per cent across all capital cities between 2011 and 2030.
- Inner-urban areas of Australia's cities provide the best opportunities to increase the uptake of active transport. Most value would be gained from focusing on networks around key activity centres, up to 1.5 kilometres for walking and up to five kilometres for cycling.

10.1.3 State

In its "Future Transport 2056 Strategy", the NSW Government has set 12 Customer Outcomes for Greater Sydney by 2056 including:

- Future forms of mobility are made available to customers and integrated with other modes of transport
- Walking or cycling is the most convenient option for short trips around centres and local areas, supported by a safe road environment and suitable pathways
- A resilient transport system that contributes to the NSW Government's objective of net-zero emissions by 2050

In addition, the state government has set a 10% target for new general purpose passenger fleet cars leased or purchased from 2020/21 to be electric or hybrid vehicles in its "NSW Electric Vehicle and Hybrid Vehicle Plan". It has also committed to support EV charging through strategic land use planning and guides to help councils to prepare for EV charging.

The Greater Sydney Commission's North District Plan list "Providing housing supply, choice and affordability, with access to jobs, services and public transport" as Planning Priority N5, "Delivering integrated land use and transport planning and a 30-minute city" as Planning

Priority N12, and "Leveraging inter-regional transport connections" as Planning Priority N14. It also listed "Reduced transport related greenhouse gas emissions" as a potential indicator for Planning Priority N21.

The Australian Capital Government has committed to:

- Reducing transport emissions by 25 per cent from 2020 levels by 2025
- At least 50% of all newly leased ACT Government fleet passenger vehicles being zero emissions vehicles in 2019-20 (where fit for purpose)
- All newly leased ACT Government fleet passenger vehicles being zero emissions vehicles from 2020-21

10.1.4 Local

Examples of targets set by local councils are listed below.

By 2030, the City of Sydney has committed to:

- Zero increase in emissions from the City's own fleet of vehicles by 2021, from 2014 levels
- 33% of trips to work during the AM peak undertaken by walking by 2030, by city residents
- 10% of total trips made in the city are undertaken by bicycle by 2030, by city residents
- 80% of trips to work during the AM peak are undertaken by public transport by 2030, by city residents and those travelling to Central Sydney from elsewhere
- 30% of city residents who drive [with an unrestricted drivers licence] are members of a car sharing scheme by 2030

Hornsby Council has a draft "Electric Vehicle (EV) charging stations on public land policy" to provide criteria for their provision, installation, management, maintenance and removal.

By 2038, Northern Beaches Council has committed to:

- 25% of all trips being made by public transport
- Double the active travel trips; especially for households, commuters and school students
- 30% reduction in trips by cars
- 30% reduction in carbon emissions from transport

Parramatta City Council has committed to:

- 10% of trips being made by walking in cycling by 2038.

10.2 NORTH SYDNEY CONTEXT

10.2.1 Existing Sustainable Transport targets

Improve % of workers taking public transport to work (Community Strategic Plan S12)

Improve % of workers walking or cycling to work (Community Strategic Plan S13)

Improve % of residents taking public transport to work (Community Strategic Plan S14)

Improve % of residents walking or cycling to work (Community Strategic Plan S15)

Maintain No. cars registered in North Sydney (Community Strategic Plan S16)

Improve No. car share memberships in North Sydney (Community Strategic Plan S17)

Improve % residents satisfied with pedestrian and cycle paths (Community Strategic Plan S18)

Improve Length of pedestrian and cycling paths (* sufficient to improve the % of all trips in LGA made by walking and cycling) (Community Strategic Plan S19)

Deliver an accessible, safe and connected cycle network by 2020 (North Sydney Integrated Cycling Strategy)

Make cycling an attractive choice for short trips within the LGA (North Sydney Integrated Cycling Strategy)

Increase and diversify participation in cycling (people of all ages and abilities will view cycling as a safe, everyday transport option) (North Sydney Integrated Cycling Strategy)

Based on the Resilient Sydney 2016/17 dataset in Figure 10.1, transport represented 18.5% of the North Sydney local government area's greenhouse gas emissions. While this is a lower percentage of transport-related GHG emissions than many other areas of Sydney, it still represents the second most significant portion of emissions generated in North Sydney after electricity consumption. An increase in walking, cycling and public transport use, as well as reduced and shorter car trips, car share utilisation and fuel efficient vehicles, including electric vehicles, would help to reduce local greenhouse gas emissions.

10.2.2 Emerging transport trends

The North Sydney Transport Strategy summarised several key mode share statistics from the 2011 census which helped to inform its development. These have been updated with 2016 census data:

- Resident cycling mode share to and from work grew by almost 40% from 2006 to 2016.

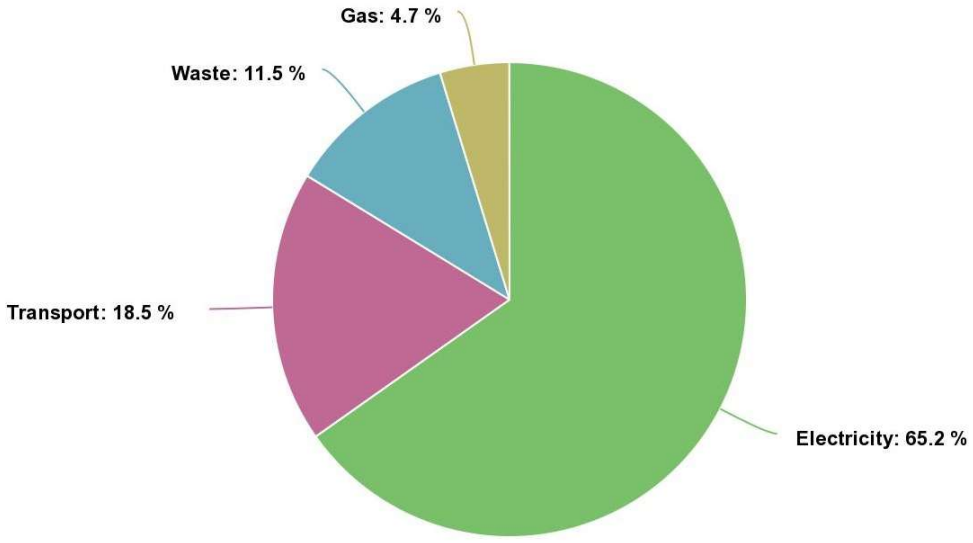
- 68.2% of residents and 70.2% of workers travelled to work using other modes of transport than sole occupant vehicles in 2016.

- More workers arrived in the North Sydney LGA by train (42.3%) than single occupant vehicle journeys (29.8%) in 2016.

- Walking, cycling and public transport patronage was growing at rates well in excess of population growth in 2016.

- 16.4% of North Sydney households did not own a car in 2016, while only 24.2% of households owned more than 1 car.

Figure 10.1: All Emissions by Source for 2016-17 for North Sydney LGA (Source: Resilient Sydney Platform - www.resilientsydney.com.au)



The Transport Strategy also highlighted that we are experiencing the most rapid transformation in the transport sector in decades and that this is likely to lead to:

- Significant reductions in per capita travel demand (trip frequency and distance);
- Reductions in per capita non-residential floor space requirements;
- Improved access to information and increased travel/modal flexibility;
- Reduced private vehicle ownership and associated parking demand;
- Increased demand for electric vehicle charging facilities;
- Improved road safety; and
- Significant increase in congestion, should access to more efficient private vehicle travel not be off-set by corresponding congestion management measures.

In line with these trends, Council adopted the modal hierarchy summarised in Figure 10.4 to help prioritise Council's infrastructure planning and management decisions. In combination, the predicted changes to emerging transport technologies, related lifestyle choices and Council's planning response will help reduce North Sydney's transport related greenhouse gas emissions into the future.

Figure 10.2: North Sydney resident travel to work modes 2016 (Source: Based on Australian Bureau of Statistics, Census of Population and Housing 2016)

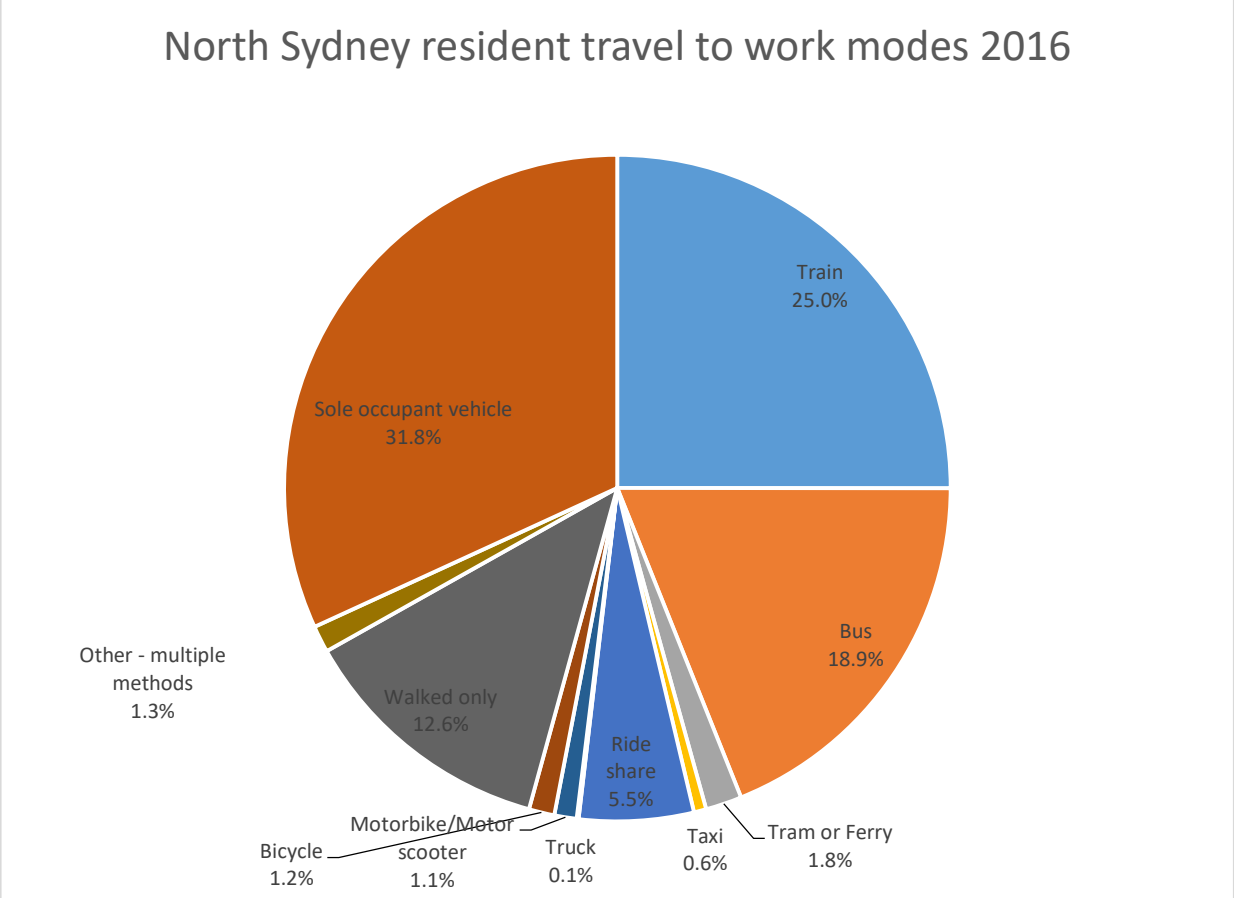


Figure 10.3: North Sydney workers travel to work modes 2016 (Source: Based on Australian Bureau of Statistics, Census of Population and Housing 2016)

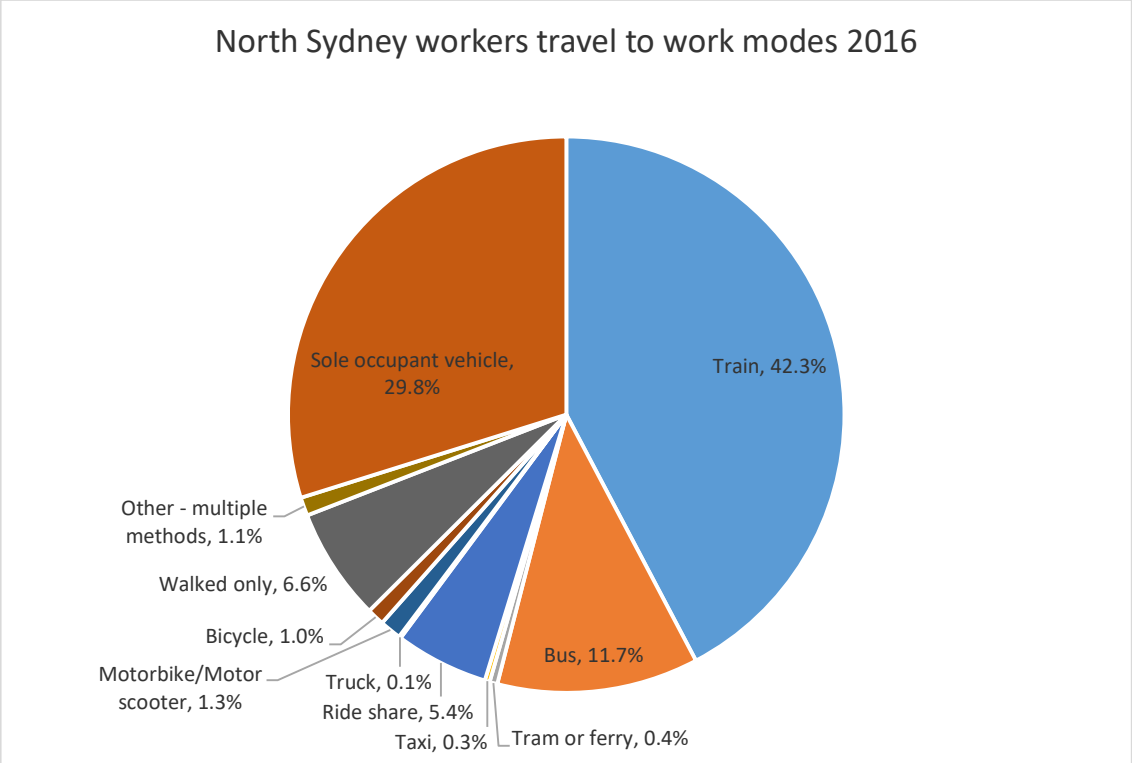


Figure 10.4: North Sydney Council's Modal Hierarchy for Sustainable Transport (Source: North Sydney Transport Strategy, 2017)

10.2.3 Existing Council sustainable transport initiatives

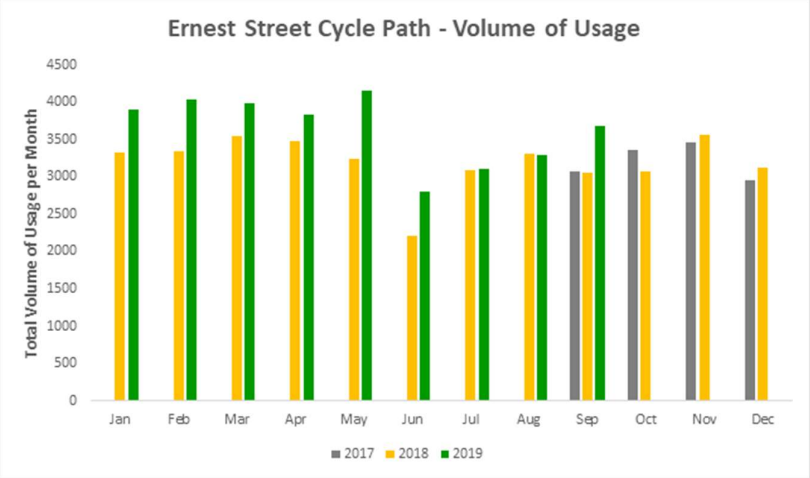
Council's planning controls provide for increasingly dense, diverse and walkable mixed use and neighbourhood centres linked by connected regional cycling and public transport networks. Walking is our most fundamental travel mode and supports all other modes of travel. Population growth within the walkable catchments of North Sydney commercial, mixed use and neighbourhood centres should result in the percentage of "walking only" trips in North Sydney either being maintained or growing. In addition to these "walking only" journeys, most journeys to, from and within the CBD comprise a walking component and, as

such, the improvement of walking infrastructure in the CBD is critical to reducing the environmental impacts of travel to, from and within the LGA.

Cycling is a growth market, with 100% mode share growth expected as a result of the implementation of the North Sydney Integrated Cycling Strategy. Council installed 7.5 kilometres of cycle paths or cycle route upgrades between 2015-2019, including the North Sydney Integrate Cycling Strategy's Regional Routes 2 and 3, as well as more than 120 bike parking rails across the LGA over the same period. Use of cycle paths has grown significantly as more parts of the network have been completed. Figure 10.5 demonstrates an average annual 17% increase in usage over time along a cycle path in Ernest Street, Cammeray since September 2017.

Council has supported the growth of the car share market by increasing dedicated car share spaces from 25 in 2008 to 146 in 2019. Lower car ownership is also encouraged through Council's planning controls by increasing the percentage of housing supplied with zero parking.

Figure 10.5: Cycle path usage in Ernest Street, Cammeray (Source: Council owned bicycle counter, Ernest Street between Merlin Street and Park Avenue)



10.2.4 Regional bicycle network

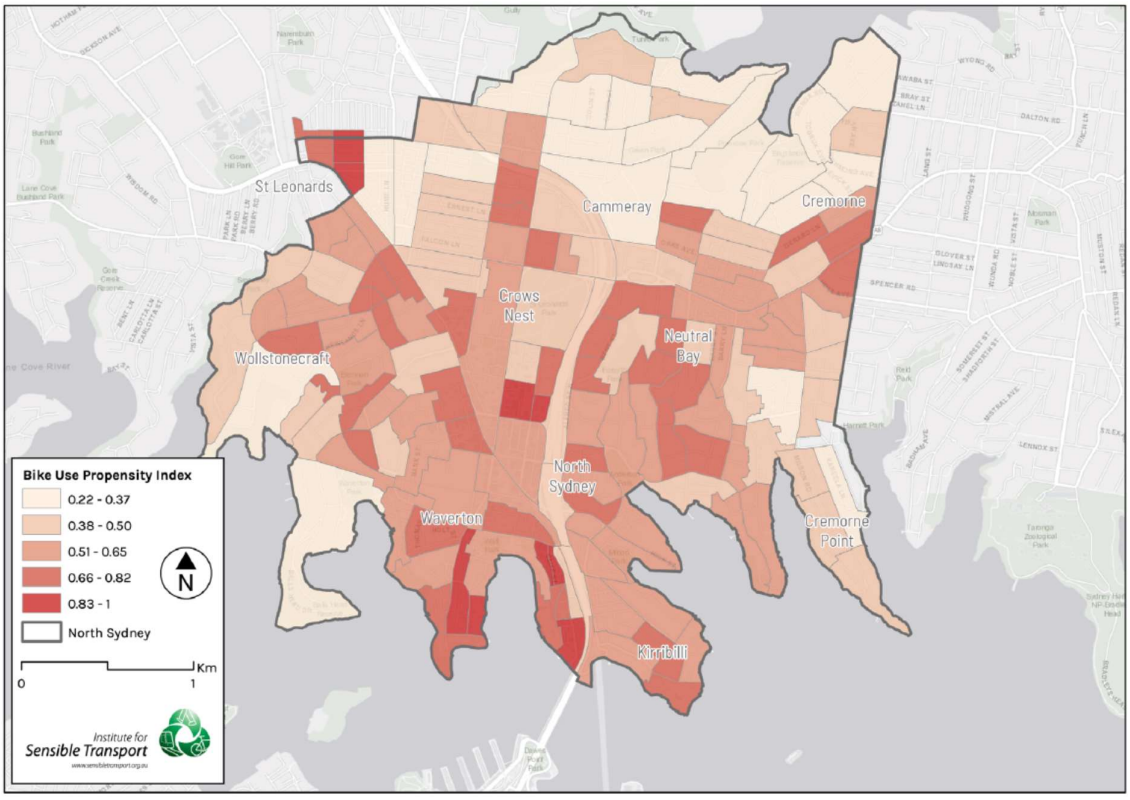
Council has been working with the NSW State Government to plan for regional cycling connections both within the North Sydney LGA and to surrounding areas. This planning has focussed around the delivery of high-quality regional links that will make it possible for people of all ages and abilities to choose cycling as a transport option, particularly for short trips (5km or less). Network planning is based around data prepared by Transport for NSW which indicates that up to 70% of the community will consider cycling for transport if a network of separated paths providing safe and convenient access is provided.

The NSW State Government have also been steadily increasing levels of funding and support for cycling routes. For North Sydney, this means that there is significant potential to grow and diversify cycling participation and increase the number of trips that are made by bike,

thereby reducing car usage and taking pressure off public transport. Council will continue to work with the NSW State Government to plan the Regional Network and will support this process through the delivery of local network connections to ensure that the whole community is connected to the cycle network.

Council will look to prioritise routes that provide the greatest impact and benefit in terms of enabling uptake of transport cycling. Figure 10.6 identifies the parts of the LGA which have the greatest latent demand/potential for cycling.

Figure 10.6: North Sydney Cycling Propensity Map (Source: Mapping Bike Use and Car Share Propensity (2020), Institute for Sensible Transport commissioned by North Sydney Council)



10.2.5 Public Transport

Sydney Metro's Victoria Cross Station will have a transformational impact on the look, feel and function of the North Sydney CBD. There are enormous placemaking, walking, cycling and public transport integration opportunities that arise from the Metro that require more focused transport planning analysis that considers the North Sydney CBD more holistically. The North Sydney CBD Transport Masterplan was prepared to explore these opportunities and to identify improved travel safety and amenity issues arising from the delivery of Victoria Cross Metro Station.

The Masterplan Vision is that:

By 2036, public domain, accessibility, travel safety and amenity will be improved to create a more attractive, vibrant, active and flourishing North Sydney CBD.

The following Masterplan principles were identified to help deliver this vision:

1. Prioritising the delivery of walking infrastructure that best accommodates significant local trip growth.
2. Minimising local traffic growth.
3. Creating slow speed traffic environments within the CBD.
4. Encouraging regional through traffic to use alternative routes to by-pass the CBD.

As well as the Metro, Council worked closely with the Transport for NSW B-Line team to ensure that Northern Beaches bus network improvements were supported by a program of local works to support the greater uptake of Military Road bus services.

10.2.6 Parking and Traffic

There is a clear link between parking supply and traffic generation as described in the Roads and Maritime Services' Guide to Traffic Generating Development. Providing new parking and traffic infrastructure to "accommodate" parking demand and traffic growth results in: induced traffic demand (the Lewis-Mogridge Position, 1990); increased congestion at upstream and downstream pinch-points; and reduced uptake of walking, cycling and public transport (the Downs-Thomson Paradox, 1990). Council will assess the suitability of existing and proposed parking and traffic infrastructure to deliver the community's vision for transport in North Sydney. It will identify where the targeted application of parking policy and demand management initiatives may support reduced car ownership and use, provide more equitable access to parking and reduce traffic volumes in North Sydney.

10.2.7 Electric vehicles and charging stations

While implementation of the modal hierarchy of Council's Transport Strategy, including the activities discussed above, will significantly reduce trips by private vehicles, they still make up a significant proportion of transport modes of North Sydney residents travelling to work (see Figure 10.2). As acknowledged by the Australian Government's "National Strategy for Electric Vehicles" and the NSW Government's "NSW Electric Vehicle and Hybrid Plan", switching from traditional internal combustion engine (ICE) cars to electric vehicles (EVs) would reduce greenhouse gas emissions, improve local amenity through quieter and cleaner operation, and improve air quality through low or zero tailpipe emissions. The Council commissioned 2019 Emissions and Water Review as outlined in chapter 4 also recommended that Council invests in the electrification of vehicles (EVs) and charging infrastructure as these become commercially viable, and includes EV electricity in its renewable Power Purchase Agreement sourcing in order to achieve carbon neutrality. Replacing remaining travel by ICE cars with travel by electric vehicles (EVs) in North Sydney is therefore consistent with the environmental sustainability intent of this action plan.

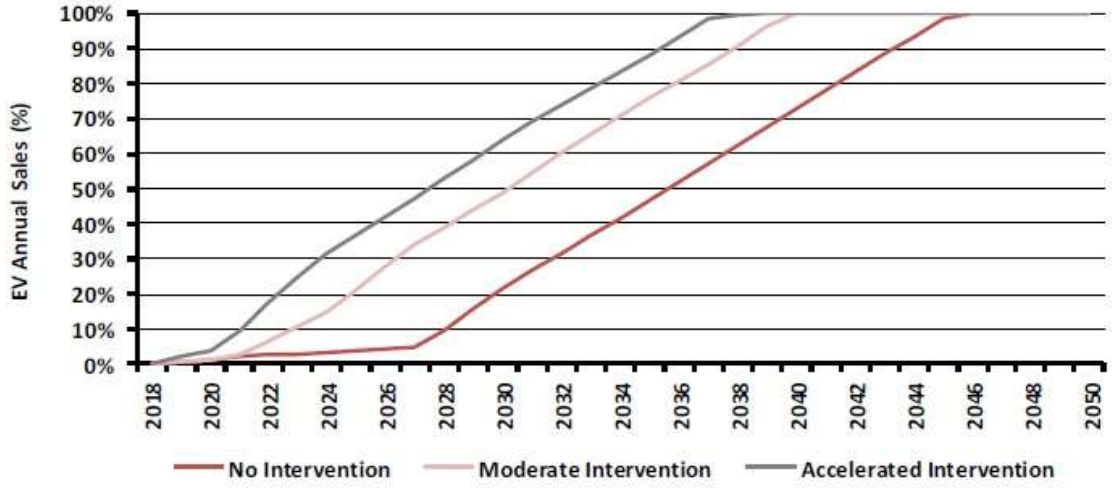
The extent of greenhouse gas emission reductions from electric vehicles is affected by the amount of renewable energy in their electricity supply. To expedite the greenhouse gas emission reduction potential of electric vehicles, Council should encourage renewable energy generation, including from solar PV, where electric vehicles are charged. In addition, Council should advocate to the state and federal government to increase the renewable energy mix of the electricity grid to account for the large proportion of North Sydney residents who are renting or living in strata and multi unit dwellings where renewable energy generation options are more challenging to implement.

The Australian Renewable Energy Agency's 2018 "Australian Electric Vehicle Market Study" predicts an uptake of 20-60% of new Plug-in Electric Vehicle (PEV) and hybrid sales by 2030, and 70-100% by 2040 (see Figure 10.7). Uptake is likely to be higher and faster in North Sydney with drivers on the north shore already leading the adoption of electric cars in 2016 based to the ABS's motor vehicle census. Crows Nest had the second highest concentration of PEV ownership in the state after Gordon.

While North Sydney Council has already installed ten EV chargers across all of its parking stations in 2019, this increase in PEV ownership will necessitate more residential charging infrastructure where the study shows PEV drivers prefer to charge. Council's development controls will therefore play an important role in supporting and accelerating PEV uptake. Currently only commercial and mixed use development and development of the public domain are encouraged to be designed and constructed so that electric vehicle charging points can be installed at a later time.

The study also predicts that 30% of drivers will not have access to home or workplace charging, putting pressure on the accelerated development of public charging infrastructure. Given North Sydney's dense built form and finite on and off street parking mean that this proportion is likely to be higher in North Sydney. According to the study, petrol station operators, major domestic operators, automotive associations, regulated electricity networks and energy retailers are in the strongest positions to build this public charging network. Councils like Hornsby are developing policies to guide the provision, installation and management of electric vehicle charging stations on public land within 500m of town centres. This will encourage regional EV drivers from the M1 to charge on the fringes of Sydney and utilise public transport to areas like North Sydney. To help facilitate a local transition to low emission electric vehicles, North Sydney's public charging infrastructure strategy should differ from Hornsby's so as to better accommodate the needs of resident EV owners that don't have access to home charging.

Figure 10.7: Projected annual PEV sales in Australia (Source: "Australian Electric Vehicle Market Study 2018", Australian Renewable Energy Agency)



10.3 PROPOSED TARGETS

10.3.1 Proposed Sustainable Transport Target 1

By 2030, 85% of residents and workers travel to and from work using modes of transport other than sole occupant vehicles

Rationale

This target amalgamates strategies 12 to 15 of the North Sydney Community Strategic Plan. However, no baselines or targets are listed so the ESS is an opportunity to provide this guidance to Council. According to the 2011 census, 67.0% of residents and 67.6% of workers travelled to and from work using other modes of transport than sole occupant vehicles. By 2016 these statistics had increased to 68.2% and 70.2% respectively. If mode shift continues at current rates, an average mode share of 74.9% should be achieved by the 2031 census by these two groups.

The following initiatives should help to increase mode shift beyond this “business as usual” target:

- consolidating major development in centres well serviced by public transport (Council);
- improving local walking and cycling infrastructure (Council);
- delivery of Sydney’s Principal Bicycle Network (TfNSW ~3% mode share increase based on Council’s experience with cycle path volumes at Ernest Street);

- delivery of public transport infrastructure projects such as B-Line, Metro and Metro West (TfNSW ~5% local mode share increases based on estimates in the North Sydney CBD Transport Masterplan); and
- traffic demand management initiatives, including limiting residential parking and traffic growth (Council)

Delivery of all of these initiatives is likely to result in target 85% mode share by 2030. This would require advocacy and additional investment by Council in the delivery of walking, cycling and public transport infrastructure as well as the considered management of residential parking supplies.

10.3.2 Proposed Sustainable Transport Target 2

Increase number of households with "no motor vehicles" to 25% by 2030

Rationale

Strategy 16 in Council's Community Strategic Plan is to "maintain the number of cars in North Sydney" despite projected population increase. As census data does not capture this information adequately (ie: there is uncertainty around how many vehicles are implicated in the "3 or more vehicles" category in Figure 10.8), an amended target has been developed to reflect the same intent.

Figure 10.8: ABS Car ownership data (Source: Australian Bureau of Statistics, Census of Population and Housing 2006 and 2016)

North Sydney Council area - Households (Enumerated)	2016		2011		2006	
Number of cars	Number	%	Number	%	Number	%
No motor vehicles	5,398	16.4	5,183	16.5	5,154	17.1
1 motor vehicle	16,552	50.4	15,838	50.5	14,508	48.1
2 motor vehicles	6,565	20.0	6,327	20.2	5,782	19.2
3 or more motor vehicles	1,365	4.2	1,100	3.5	1,034	3.4
Not stated	2,969	9.0	2,917	9.3	3,693	12.2
Total households	**29,880**	**100.0**	**28,448**	**100.0**	**26,478**	**100.0**

While Figure 10.8 demonstrates that the number of households in North Sydney that own "no motor vehicle" has declined since 2006, a number of factors are expected to reverse this trend to 2030, including:

- increased in public transport use through the introduction of the Metro to Crows Nest and North Sydney;
- coordinated residential and jobs growth around Crows Nest and Victoria Cross Metro stations;
- expected increase in utilisation of car share schemes; and

- the possible introduction of autonomous vehicles (robo-taxis) into the transport mix.

10.3.3 Proposed Sustainable Transport Target 3

Reduce registrations of Internal Combustion Engine vehicles to 50% of new private vehicle sales by 2030

Rationale

The 50% target follows the moderate intervention model of the Australian Electric Vehicle Market Study (see Figure 10.6) and is expected to be achievable. While the EV market is still in its infancy in 2020, uptake is already comparatively high locally with drivers on the north shore leading the adoption of electric cars based to the ABS's 2016 motor vehicle census.

10.3.4 Proposed Sustainable Transport Target 4

Reduce Council's passenger and commercial fleet by 10% based on 2019 level by 2030

Rationale

Planned improvements to the efficiency of Councils fleet utilisation could lead to a 10% reduction in Council's fleet by 2025. These include outsourcing of equipment that has minimal task use, more cross sharing of vehicles across departments to reduce idle time of equipment, and efficiencies through the new pool vehicles booking systems at Council. In 2018 Council's passenger and commercial fleet totalled 111 vehicles.

Council could reduce its fleet by 20% by following the lead of other councils who include private leaseback vehicles as pool vehicles, and by reducing vehicle entitlements in employment contracts.

10.3.5 Proposed Sustainable Transport Target 5

All of Council's passenger and commercial fleet, excluding specialised and earth moving equipment, is electric by 2030

Rationale

Council has a fleet of hybrid passenger vehicles and trucks and regularly reviews the market and assesses the suitability of PEVs to Council's fleet and operations but currently has no PEVs in its fleet. The 2019 Emissions and Water Review predicted the following rate of Council's fleet replacement to EV based on a business as usual scenario:

- 10% of the passenger fleet to EV by FY 2022/23
- 30% of the passenger fleet to EV by FY 2025/26
- 50% of the passenger fleet to EV by FY 2029/30
- 5% of the commercial fleet to EV by 2025/26
- 20% of the commercial fleet to EV by 2029/30

In light of Council's subsequent declaration of a climate emergency, Council could commit to pursue more ambitious fleet replacement targets. The Australian Electric Vehicle Market Study recommends that major fleet operators, including local government, increase fleet purchases of PEVs, develop a bulk buying strategy in 2019 and agree with manufacturers to import additional PEV models to help stimulate the electric vehicle industry and contribute to a second-hand EV market to make them more accessible to the wider community. As noted in the Government's "NSW Electric Vehicle and Hybrid Plan" EVs in Australia are expected to reach cost parity as soon as 2020/21, when EVs' total cost of operation, including purchase price and running costs, is expected to be comparable with conventional vehicles.

For fleet managers like Council, cost parity may lag behind this prediction as savings in maintenance and fuel costs would be reduced due to fleet cars needing to be replaced before the 6 year optimum payback period as a result of above average wear and tear after 3 to 4 years. This may result in an increased budget allocation requirement in the short term. Despite this, other jurisdictions like the ACT have already demonstrated significant leadership in this area, exceeding the proposed North Sydney Council target. Currently no suitable electric solutions exist, and those that are in development for earth moving equipment are not a market focus. They have therefore been excluded through this target.