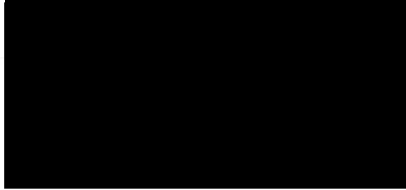




26 March 2019



Dear [REDACTED]

**Re: OIA request – documentation relating to climate change**

Thank you for your Official Information Act request received 28 February 2019 seeking the following of Waitemata District Health Board (DHB):

- *copies of all reports, memos, discussion papers, advice, plans, or policies created by your DHB (including by contractors) since 1 January 2017 concerning climate change. For the avoidance of doubt, this request is not intended to capture all email correspondence or letters referring to climate change, but it does include documents in which climate change is not the sole topic.*

Waitemata DHB serves the largest population of any DHB in New Zealand, currently standing at more than 630,000 people. We employ in excess of 7,500 staff who work from more than 80 sites across the Waitemata district and beyond.

In addition to providing care to our own resident population, our DHB is also the Northern Region provider of forensic psychiatry and child rehabilitation services and the metro Auckland provider of community child dental services and community alcohol and drug services.

Our DHB has a strong commitment to sustainability and to reducing the environmental footprint of our activities. This is evidenced through the recognition our DHB has received for our work in this area, including:

- Being the only DHB in New Zealand to have achieved CEMARS certification for carbon emissions monitoring and management.
- The Auckland Transport Match-Maker Award for the success and growth of our staff car-pooling programme.
- The achievement of Enviro-Mark Gold certification.
- The award for 'Leadership in Environmental Sustainability by a Health Sector Organisation' from the Population Health Congress.
- The On Board Award from Auckland Transport for our work on improving the uptake of public transport.
- Our safe disposal of unwanted medicines programme, preventing contamination of waterways through the inappropriate discarding of medications.
- The DHB's introduction of biodegradable cups, replacing single-use polystyrene cups.

In response to your specific questions, we have searched our files for documents relating to the DHB's climate change activities. We have identified six documents within the scope of your request.

Below is a summary of the documents we have identified and are releasing to you (enclosed):

- Appendix 1: June 2017 sustainability case for Waitemata DHB's proposed Elective Care Inpatient Building (ECIB), which has been approved and is soon to commence construction.
- Appendix 2: Sustainability Strategy 2019-22, considered by the Board on 14 November 2018.
- Appendix 3: Waitemata DHB Sustainability Policy, issued June 2017.
- Appendix 4: Emissions Management and Reduction Plan, March 2018.
- Appendix 5: Summary of CEMARS certification, June 2017.
- Appendix 6: Submission on the Productivity Commission's Low-Emissions Economy – Issues Paper, October 2017.

I trust that this information meets your requirements. Waitemata DHB, like other agencies across the state sector, supports the open disclosure of information to assist the public's understanding of how we are delivering publicly-funded healthcare.

This includes the proactive publication of anonymised Official Information Act responses on our website from 10 working days after they have been released.

If you feel that there are good reasons why your response should not be made publicly available, we will be happy to consider this.

Yours sincerely



**Dr Andrew Brant**  
**Chief Medical Officer & Deputy CEO**  
**Waitemata District Health Board**

## Waitemata DHB: ECIB - Sustainability Case

### Background

Our purpose to promote of wellness, relieve suffering and prevent ill health is driven by our promise to the Waitemata community to ensure *'Best Care for Everyone'*. Those leading the design of the new Elective Care Inpatient Building will have a direct impact on the environment that employees and patients live, work, heal and rest in – and the level of quality in which they do so. By taking an integrated whole building sustainable design approach to all new building and refurbishment projects the Waitemata DHB can ensure that it will deliver on this promise more effectively.

Healthcare facilities that incorporate sustainable design are more cost effective, are better places to heal and are better places to work.

In May 2018 a 'letter of expectations' from the Minister of Health, David Clark prioritised strong action by DHBs on climate change. At a similar time The Productivity Commission noted that the price of carbon per tonne is likely to rise ten-fold which will affect the prices of goods and services procured by Waitemata DHB.

A new build or refurbishment that incorporates sustainable design principles would help demonstrate a fuller commitment towards the expectations of the ministry and the Waitemata DHB own Outcomes Framework.

Acknowledgement and consideration of the Waitemata DHB's own Sustainability Principles<sup>1</sup> is key to delivery of a new elective care inpatient unit that successfully:

- Provides high levels of indoor environment quality resulting in improved recovery rates
- Creates a health working environment resulting in reduced staff turnover and increased productivity
- Reduces average length of patient stay
- Creates spaces conducive to a reduction in medical error rates
- Creates an indoor environment conducive to a reduction in secondary infection rates
- Results in a more resource efficient facility with reductions in waste, water, energy and carbon.
- Delivers accountability and credibility through third party building certification

The full application of the Waitemata DHB Sustainability Policy in this project will help ensure that the new facility meets Waitemata DHB's broader strategic priorities of *'Better Outcomes'* and *'Patient Experience'*.

### The case for change

The ageing healthcare infrastructure in NZ is resource intensive and poorly designed for energy, water efficiency and the wellness of people working or healing in these environments. Sustainability principles must be incorporated at the earliest stage of new build or refurbishment projects. Project without such guidance run the risk of simply providing spaces that allow tasks to be completed without extensive enough consideration for occupant wellbeing or the impacts on future operating expenditure.

Building sustainably is not about allocating budget to specific design features it is simply about the approach that must be taken in order to realise the outcomes that Waitemata DHB has already set for itself through its own objectives.

---

<sup>1</sup> WHDB Sustainability Policy, June 2017

## Benefits of an Integrated Sustainable Design Approach

Application of the sustainability principles within the ECIB Project will help ensure that a fit-for-purpose facility is delivered to patients, staff and the community. A facility that is economically sustainable in its operation and one that prioritises the wellness of its occupants.

Environmental Sustainable Design (ESD) principles aim to reduce the negative impacts on the environment, improve the health and comfort for occupants and deliver a facility that realises significant whole of life operational cost savings.

Over a dozen third party certified healthcare projects exist across Australia and New Zealand. The New South Wing of Flinders Medical Centre, South Australia realised annual savings of \$400,000 through the installation of a solar hot water system and a zoned air-conditioning system which only delivers heating and cooling directly where it is needed. At the same time thoughtful consideration of whole of life cost benefits during design phases led to the upgrade of central plant which resulted in no net increase in energy use for the new building addition.

The Queensland Health Board delivered a number of sustainability health goals for the new Sunshine Coast University Hospital. Approximately 1.5million litres of rainwater is captured from the roof for use across the facility whilst good access to views, greenery and daylight within the building enhance the patient experience and increase recovery rates. Peak energy demand was also reduced by 40% compared with a similar facility.

The Forte Health building in Christchurch is fully committed to wellness for all building occupants who ensured their building used low-VOC, low-formaldehyde certified materials and products in their fit-outs. Both tenants and patients have reported high satisfaction with the building that has been designed with occupant welfare in mind.

Research shows that insufficient health assessments have been conducted on 95% of chemicals used in construction products<sup>2</sup> – adopting the precautionary principle is a good fit for new healthcare buildings or refurbishments.

## Strategic alignment

As already detailed there are significant strategic drivers for sustainability principles to be incorporated into the design, build and operation of the new elective care and inpatient unit. At a higher strategy level, a new sustainable healthcare facility aligns with Waitemata DHB's Promise, Purpose and Priorities. At a more detailed level, a key target area of the organisation's Sustainability Policy exists to ensure that sustainability outcomes are realised within both refurbishment and new build projects. Specifically, target area 5: Designing the Built Environment deems it the responsibility of development project managers, leadership team and external contractors to ensure that a new build or a refurbishment delivers upon a set of sustainability principles.

### **Economic benefits:**

- Reduce running costs
- Save 20-30 per cent on energy and water costs
- Enhance asset value
- Optimise life-cycle economic performance • Increase access to philanthropy and government incentives
- Improve staff retention
- Demonstrate commitment to corporate social responsibility
- Enhance investor opportunities

### **Health and community benefits:**

- Improve patient and staff health and safety
- Improve patient recovery times
- Reduce the psychological impact on patients
- Prevent harmful emissions from chemicals and VOCs
- Deliver better treatment outcomes
- Improve air, thermal and acoustic environments
- Minimise strain on local infrastructure by providing access to transport
- Generate a positive impact on broader community through implementation of green practices.

### **Environmental benefits:**

- Protect ecosystems and biodiversity
- Improve air and water quality
- Reduce solid waste
- Conserve natural resources
- Reduce greenhouse gas emissions

---

<sup>2</sup> Petrovic, Materials for a Healthy Ecological and Sustainable Built Environment: Principles for Evaluation (2017) p142

It is essential that the ECIB project sets a precedent in order for all future capital projects to adopt the principles outlined within the Waitemata DHB Sustainability Policy. In doing so the development will model a way forward that will help the Waitemata DHB meet its strategic obligations related to patient health and experience, staff wellbeing and performance as well as those that result in improved operational performance across its facilities. This is an opportunity to set the precedent

### Options assessment

Integrated thinking and the solution driven design processes associated with green building can reduce the amount of risk, construction time and contract variations resulting in a project that actually costs less overall. Partial early contractor involvement (ECI) is the procurement option determined in section 5.3.4 of this business case and would work well where an Integrated Whole Building Design approach is applied.

Green Building ratings that are certified by a third party such as the New Zealand Green Building Council are used to enhance contractor accountability and to increase transparency across the project. The Green Star tool also helps evaluate a building's overall impact across nine environmental categories:



Figure 1: Green Star - healthcare v1 rating tool fact sheet & Business case

The Green Star process encourages good modelling and optimising building systems design which can lead to substantial savings in capital costs. Davis Langdon found in Australia that a 4 Green Star certified building could expect to experience a 2% – 5% saving on the up front capital cost. For example downsizing HVAC systems through energy efficient design not only produces savings in ductwork, but by reducing the requirement for bulky mechanical equipment, more floor space can be made available.

Green Star is an internationally recognised rating system for the design, construction and operation of buildings which has been applied to healthcare facilities across Australia and New Zealand. Healthcare organisations in Australia have used Green Star to help them leverage Green Bond finance. Auckland Council recently issued Green Bond to successfully raise \$200 million for electric trains and associated infrastructure.

Use of the Green Star rating tool is considered an important element of the options for an approach to integrating sustainability into the design and build for the ECIB project. These options have been evaluated with regard to their cost premium, ability to leverage external funding/financing and on their ability to assist in meeting the objectives set for the project, as determined by the Waitemata DHB stakeholders.



Approach to sustainable design	Capital cost saving/premium <sup>3</sup>	External Funding & Finance options	Savings Opportunity (Reductions)	Obj2: Increased productivity & reduced cost	Obj3: Improve patient experience	Obj4: Improve health outcomes	Obj5: An achievable solution
<b>Do Nothing</b> and allow project to run course without specific sustainability targets	Unknown/ Risk increased	None					
<b>Green Star 4 – Best Practice</b> <ul style="list-style-type: none"> <li>• Higher insulation levels</li> <li>• Good ventilation levels</li> <li>• Efficient LED lighting</li> </ul>	-2% to -5% saving compared to standard build	Green Bond eligible	40% CO <sub>2</sub> 42% Electricity 43% Water 85% Diverted from landfill				
<b>Green Star 5 – NZ Excellence</b> <ul style="list-style-type: none"> <li>• Natural day lighting</li> <li>• Waste management plan</li> <li>• Environmental Management System</li> <li>• Energy audit on design (plant, lighting)</li> <li>• Low VOC materials</li> <li>• 12 month continuous commissioning</li> <li>• Staff end of trip cycle/shower facilities</li> <li>• Solar hot water</li> </ul>	0%	EECA: 100% for energy audit on design (up to \$15,000) Green Bond eligible	43% CO <sub>2</sub> 47% Electricity 53% Water 92% Diverted from landfill				
<b>Green Star 6 – World Leadership</b> <ul style="list-style-type: none"> <li>• Photovoltaic system</li> <li>• Avoid 'Red List' materials &amp; adopt precautionary principles</li> <li>• Rain water reuse for toilets</li> <li>• Stormwater reuse</li> <li>• Landscaping</li> </ul>	6-10%+	EECA: 100% for energy audit on design (up to \$15,000) Green Bond eligible	57% CO <sub>2</sub> 72% Electricity 61% Water 88% Diverted from landfill				

A major barrier to the 'greening' of the built environment is the misconception that the capital costs of green buildings are significantly greater than those of conventional buildings. Although the research by Davis Langdon indicates a cost premium for 6 star rated buildings, project costs may come in well under this premium if features are included early on in the design process.

<sup>3</sup> The Road to Green Property, Davis Langdon, Version 2.0 June 2010, Page 09

The Green Star options include Green Star Accredited Practitioner (GSAP) appointed to the project team. This resource is conventionally provided by the architect, mechanical services or ESD consultants. The GSAP should report directly to the Sustainability Manager for the ECIB project to align process with intended outcomes and to inform future capital projects.

**Preferred solution:**

Targeting a 5 star rating (representing New Zealand Best Practise) will ensure that the project is set to take the right approach to the design and construction of the new facility. The lead consultant for sustainable design/Green Star Accredited Practitioner would ensure that integrated whole building workshops are held at an early stage during the design process. This will ensure that both stakeholders and the project team are communicating to ensure the best outcomes. Outcomes that deliver a building that is significantly cheaper to operate, reduces staff turnover and improves patient outcomes in what will be a healthy high performing healing environment.

## Sustainability Strategy 2019-22

### Recommendation:

#### a) that the board support the Sustainability Strategy

---

Prepared by: William Van Ausdal (Sustainability Manager) and Nigel Ellis (General Manager, Facilities and Development)

Endorsed by: Andrew Brant (Chief Medical Officer)

### Glossary

CEMARS	- Certified Emissions Measurement and Reduction Scheme
EECA	- Energy Efficiency & Conservation Authority
EMS	- Environmental Management System
E-MS	- Enviro-mark Solutions (subsidiary of Landcare Research, administers EMS certification)
GJ	- Unit of Energy, equal to one billion (10 <sup>9</sup> ) joules
HVAC	- Heating, ventilation and air conditioning
KWH	- Kilowatts multiplied by the time in hours
PHEV	- Plug-in hybrid electric vehicle
PVC	- Plastic vinyl resin (used for IV bags and oxygen tubing)
LED	- Light emitting diode
Watt	- Unit of power, defined as 1 joule per second

## 1. Executive Summary

The purpose of this paper is to summarise Waitemata DHBs interconnected sustainability target areas (detailed in the sustainability policy), review prior and proposed initiatives and prioritise resource efficiency measures as a strategic objectives for the business. These target areas are based on their potential financial, social and environmental impacts, and outlined in the sustainability policy.

Waitemata DHB's key sustainability target areas are:

- Waste Management
- Energy and Carbon Management
- Alternate transport
- Sustainable Procurement
- Water Management
- Designing the Built Environment

Other sub-areas of focus include enabling activities that include communication, collaboration and certification.

While there are upfront and on-going costs for sustainability-related activities, the programme is designed to be financially practicable and in fact cost-saving as a whole. Some activities have larger environmental and social benefits, but these are offset by activities which have larger economic benefits.



The cumulative costs of sustainability activities are offset by future financial savings, especially in the case of energy, waste and water efficiency, as they represent a reduction to on-going operational costs. Controlling costs via efficiency measures is even more significant as we begin to incorporate infrastructure growth, changing weather patterns, equipment failures and increase to patient numbers.

Absent appropriate resourcing and personnel, the associated financial and environmental outcomes are not achievable. In accordance with project management requirements, whole of life cost-benefit analysis will be applied towards initiatives, with additional non-monetary benefits outlined in terms of patient outcomes, staff well-being, emissions and/or environmental impact reduction.

## 2. Introduction/Background

Waitemata DHB has a commitment to sustainability through its Sustainability and Waste Management policies and has shown a commitment to sustainability through the employment of a full-time Sustainability Manager since late 2010. Waitemata DHB is the only DHB to be certified for carbon emissions monitoring and management (CEMARS) and environmental management (Enviro-Mark Gold). There are a number of completed, on-going and planned initiatives in line with five interconnected target areas.

Waitemata DHB's Sustainability Programme is supported by the Sustainability Policy, outlining scope, principles, approach and target areas. The Waitemata DHB Sustainability Policy is based around two key principles. In all activities Waitemata DHB will seek to;

- (1) Maximise efficiency  
Reducing waste through efficient purchasing and processes including wasted resources (materials, energy, water), time and money.
- (2) Minimise harm  
Minimising harm to people, the community and the environment.

An Environmental Management System ensures the sustainability programme is delivered in a comprehensive, systematic and documented manner on a continuous improvement management cycle.

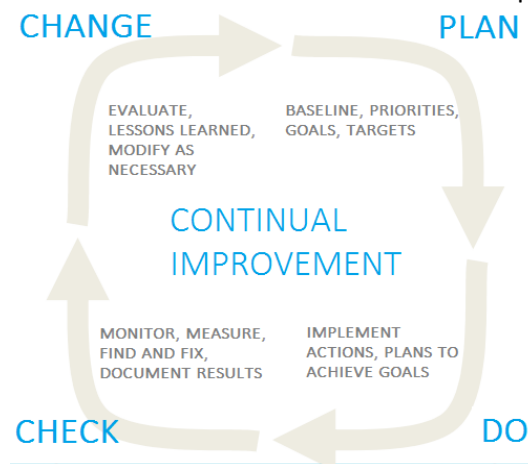


Figure 1: Environmental Management System's continual improvement system

### 3. Appendices

#### Appendix A:

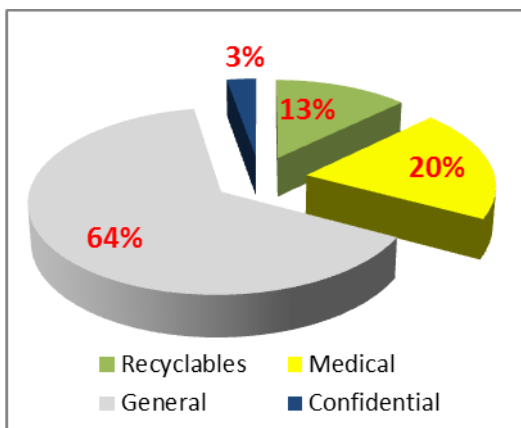
#### Target areas, completed and planned activities

##### a) Waste management

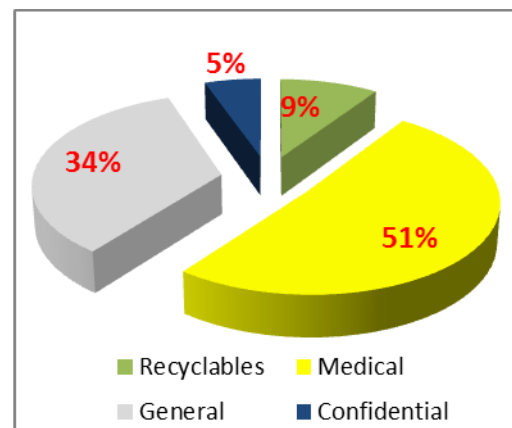


#### Overview

Waste has a number of potentially harmful effects; safety risks to patients, staff, visitors and contractors, and to the environment. The current annual production of general waste is 1450 tonnes (65% of total), medical waste is 442 tonnes (20% of total), and co-mingle recycling is 350 tonnes (15% including confidential). Medical waste incurs ~\$1164/tonne vs. ~\$224/tonne for general waste, and co-mingle recycling is a service-only charge (~\$148/tonne). Consequently, shifting preventable waste to more environmentally friendly streams is generally also preferable financially.



Waste and recycling stream as a proportion of total volume



Waste and recycling streams as a proportion of total cost

Table 1: Environmental Management System's continual improvement system

#### Objectives

To reduce the proportion of medical waste and waste to landfill.

#### Current status, benchmark and trends

Costs: \$ 1.3 – 1.5 million / year disposal, excluding rubbish liners  
2242 Tonnes of waste and recycling p.a.

#### Targets

Using current numbers and the Green Health Guideline as a reference, the DHB currently manages waste and recycling at an "intermediate level", and "beginner level" for medical waste. If waste and recycling were to improve to the targets outlined by the Green Health Guideline, or **65%->60% for general waste** and **20%->15% for medical waste**, there would be savings from disposal fees, as well as improving our environmental performance and reduce carbon emissions.

- Increase recycling from 15% to 25% total composition
- Reduce medical waste tonnage from 20% to 15% total composition
- Reduce general waste tonnage from 64% to 60% total composition

Potential Savings 2017/18	General	Medical	Recycling
Current (annual tonnage)**	1450	442	350
Proportion	65%*	20%*	13% (15% w/confidential)
Target Volume	1345	336	449
Target Proportion	60%	15%	22% (25% w/confidential)
Target Difference (tonnes)	-105	-106	+99
Avg. cost/tonne	\$224	\$1164	\$148
Savings per annum	\$23,520	\$123,384	-\$14,652
<b>Potential savings related to target</b>	<b>\$132K</b>		

\* based on May 2018, assumes current operations

\*\* total waste stream based on patient events, so will vary according to service demand.

#### What has already been done?

- Waste management policy
- Organisation-wide recycling (300+ tonnes p.a.)
- Recycling in theatres, site-based waste audits, waste minimisation training, desk cube and office recycling receptacles (waste minimisation)
- PVC I.V. bag, scissors, battery recycling in 8 clinical areas
- Surgical equipment recycling in ESC
- Cafeteria composting (2.5 tonnes per month)
- Waste and recycling audits in 35+ locations
- Education, signage and communications

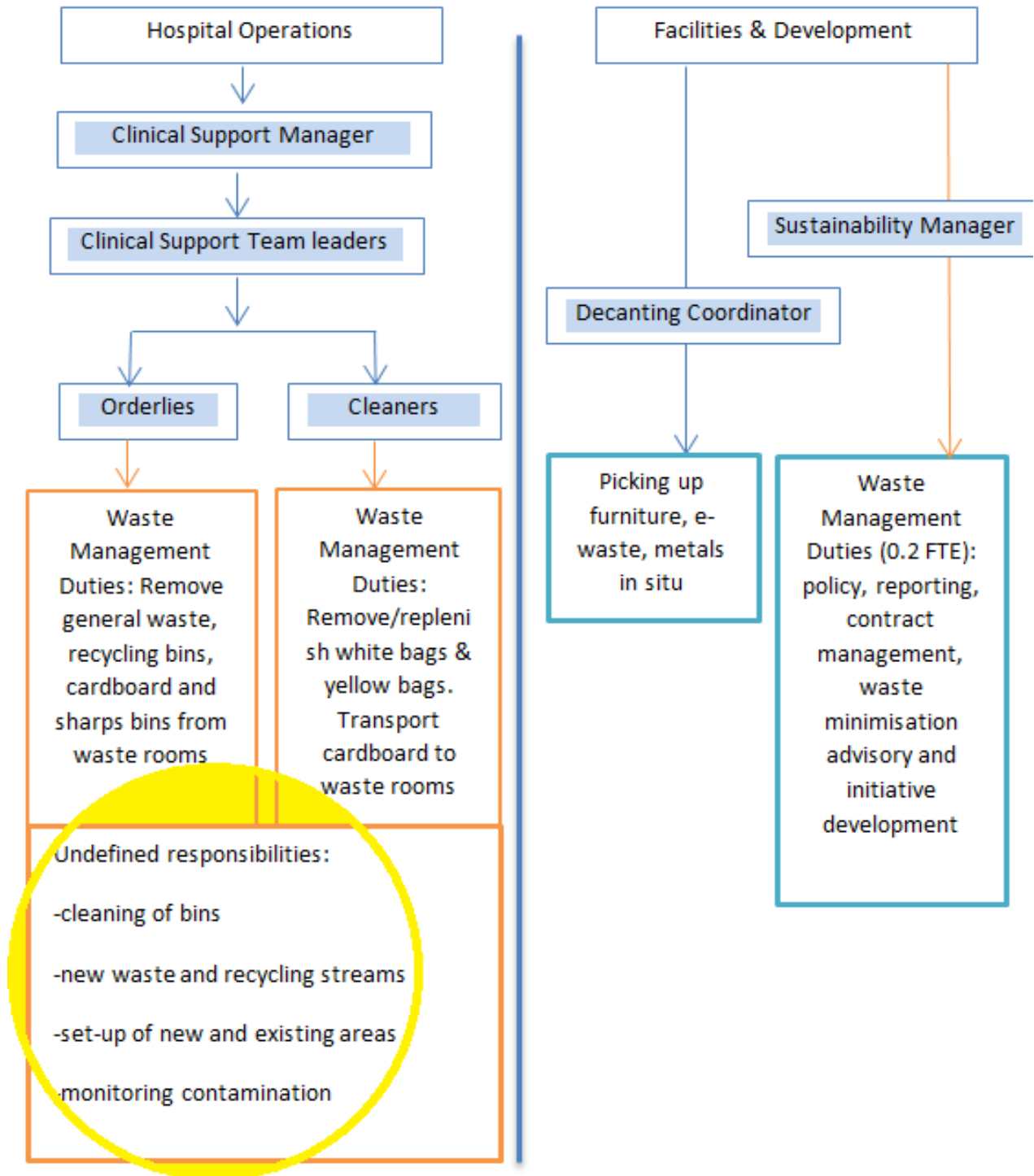
#### Top priority actions

1. Behavioural and educational campaign for medical waste, general waste and recycling
2. Employ a waste and recycling officer
3. Upstream coordination regarding tendering, packaging and materials
4. Investigate savings related to Air hand dryers in public toilets

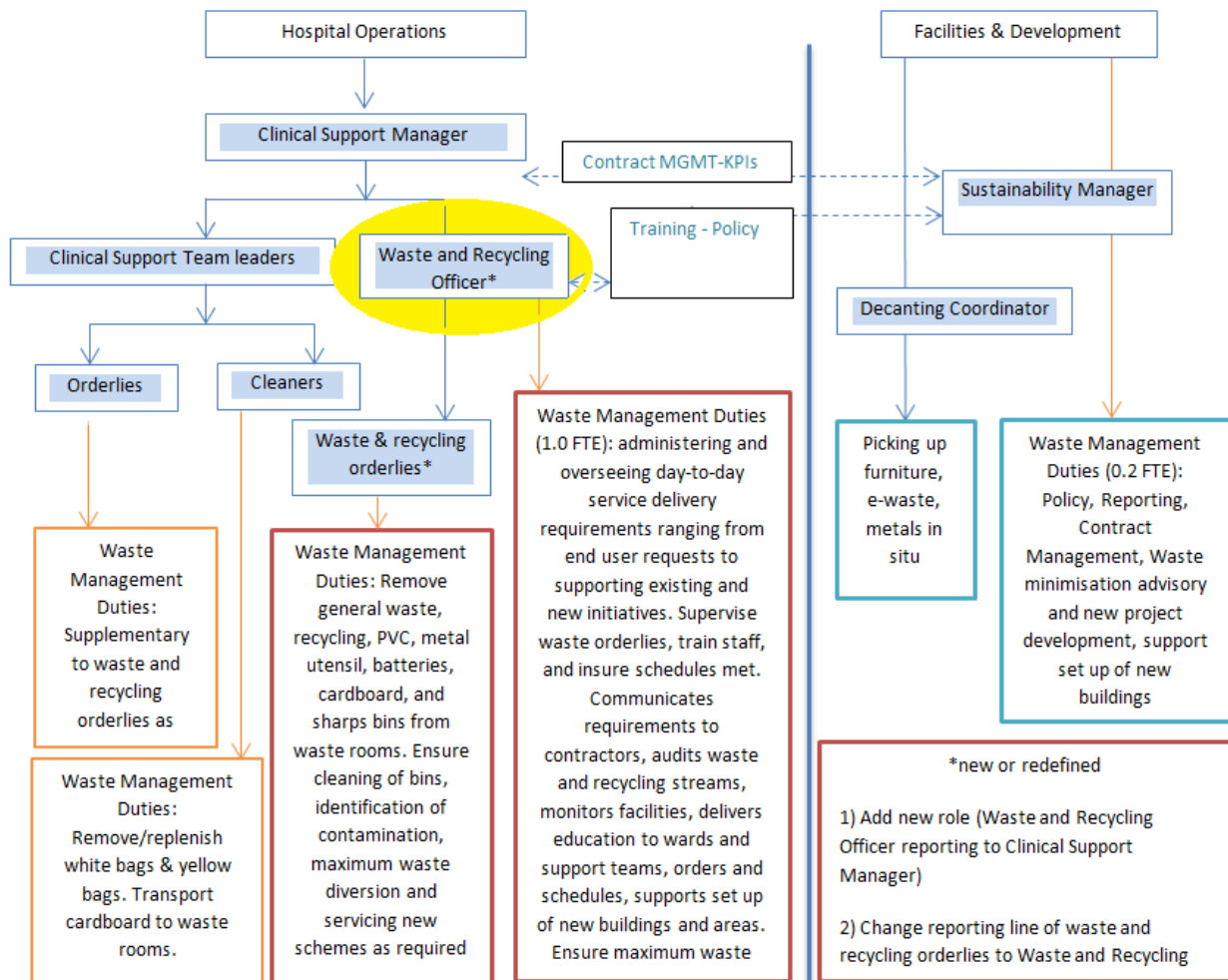
Managing rising costs requires an additional operational focus on waste minimisation – such as reducing waste at source, correct sorting of materials by busy healthcare practitioners, servicing of waste receptacles, and dealing with logistical issues related to waste and recycling within wards.

To reduce the proportion and total volumes of medical and general waste to landfill, the appointment of a Waste and Recycling Officer is recommended (see diagrams below) to ensure that waste and recycling systems operate efficiently, that handling and disposal of waste is organised, that waste minimisation standards are met, and maximum waste is diverted from landfill. This role has been in place at Auckland DHB for two years with significant improvements to service and waste reduction, and a similar role has recently been approved at Counties Manukau DHB.

**Current Waste Management Resourcing**



## Proposed Waste Management Resourcing



## b) Energy and Carbon Management



### Overview

Energy consumption is another significant financial and environmental aspect for Waitemata DHB and is a key contributor to the DHB's carbon footprint. Energy efficiency can have a large impact on both reducing costs and reducing our environmental impact. The scope of energy management in this section includes electricity, gas and fuels, encompassing the areas of lighting, heating and cooling of buildings and electrical office and clinical equipment.

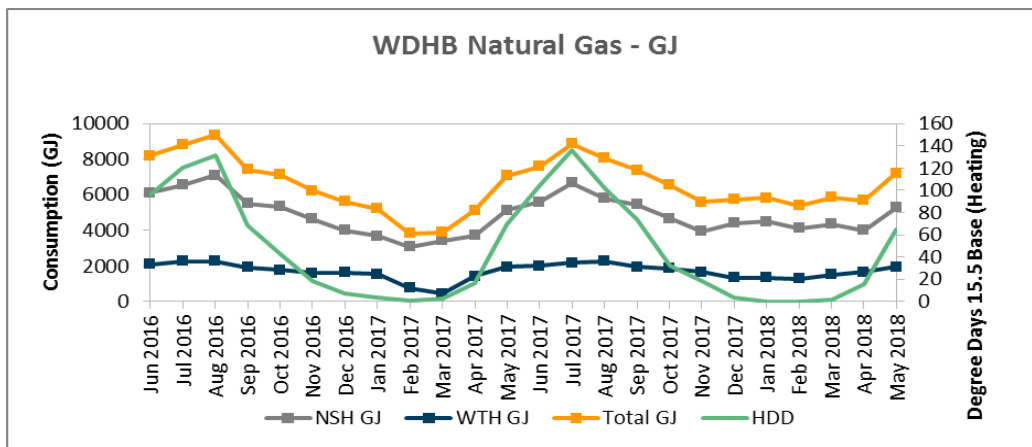
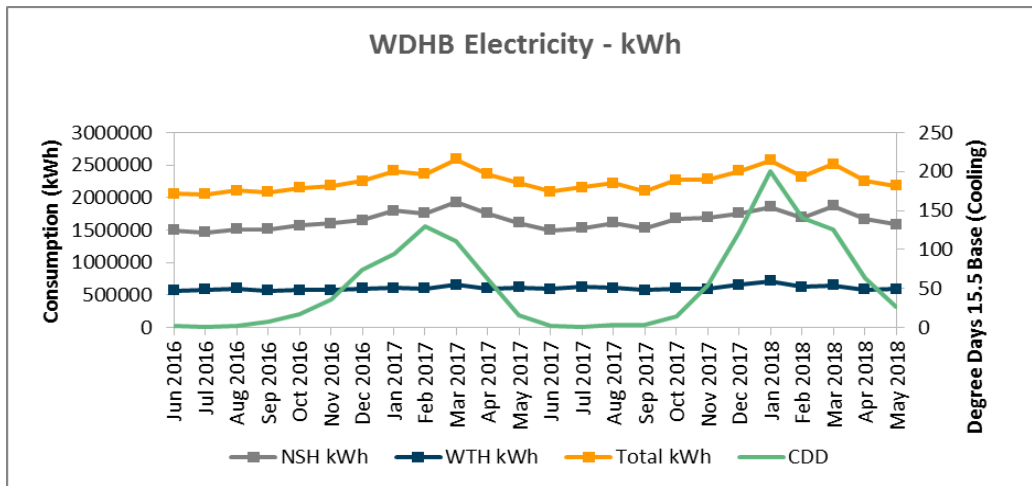
### Objective

To improve energy efficiency and reduce organisational carbon footprint

### Current status, benchmark and trends

**Costs: ~\$5.1-5.5M /year (NSH and WTH; +2.1% electricity; +3.55% gas from May 2017- May 2018)**

**Consumption: ~28 GWh electricity, ~85k GJ gas**





There is a trend of increased use of energy because of growth, more electronic medical equipment and individual AC installations. Warmer temperatures also put additional pressure on AC usage, and decreased gas heating.

**What has already been done?**

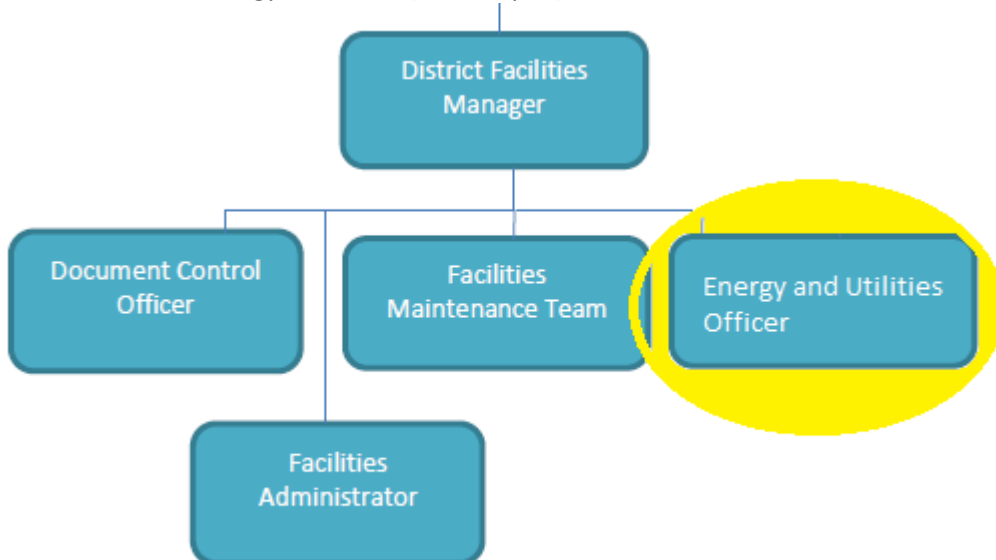
- LED upgrades to Clinical Records, CT and MRI, Dayrooms, Patient service centre, Ward 3, Mason, Plant rooms
- Energy Audits for NSH, Mason, WTH, Wilson Home
- Utilities monitoring system (software reporting usage data)
- EECA Collaboration signed with subsidy established for 3 years (\$150K total subsidy)
- CEMARS certification (certified emissions management and reductions scheme)
- Carpooling policy and scheme (18 car parks), staff travel planning, alternate travel expos, electric bike and vehicle trials
- PC Sleep programme (4000+ PCs, \$150k p.a. savings)
- Volatile gas education and reduction (Desflurane gas in theatres)
- Electricity sub-metering at hospitals

**Targets**

<b>Goal Energy</b>	<ul style="list-style-type: none"> <li>• Verify at least 0.5 GWh saved p.a. (electricity), as per EECA Collaboration</li> </ul>
<b>Monitor</b>	<ul style="list-style-type: none"> <li>• Absolute quantity electricity, gas in kWh and GJ</li> <li>• Relative energy use in kWh /m2, by site</li> </ul>

**Top priority actions**

1. Appointment of an energy and utilities officer (energy optimisation, leak detection, etc.). This role has been in place at Counties Manukau DHB for two years, with significant improvements to service and energy reduction (~\$250k p.a.).



2. LED retrofits, wards, car parks or offices
3. Electric vehicle implementation via car sharing programme and purchasing

## c) Transport



### Overview

Waitemata DHB maintains a Travel Plan and works towards reducing single occupant car trips, this includes the encouragement of staff, patients and visitors to walk or use car pools, public transport or bicycles whenever possible. The vehicle fleet is also managed to maximise efficiency and minimise fuel consumption

### Objective

- To increase the efficiency of transport fleet and use of alternate transport

### Current status, benchmark and trends

	Sole Drivers	Public Transport	Active Transport	Carpool
2008	75%	4%	6%	15%
2017	73%	7%	9%	9%

Employee commuting mode type, based on 2017 Survey

There is a trend in the workforce towards using public transport and active transport (bike and walking to work), due to congestion, convenience, and associated costs.

### Fleet Fuel Costs: ~\$500K/year

Consumption: 320K litres for 433 fleet vehicles

### What has already been done?

- Carpooling car parks and policy
- Bike cage NSH and WTH
- Travel brochures, focus groups and travel survey conducted

### Targets

- Increase alternate transport from public and active transport use by staff commuting to work from 16% to 20%
- Reduce the use of transport fuel used, averaged against total fleet

### Top priority actions:

1. Install charging infrastructure and introduce hybrid and electric vehicles into fleet

### Vehicle total cost of ownership tool



Running Costs (vehicle/p.a.)	Standard	Electric
Fuel	\$1,307	\$ -

Electricity	\$ -	\$181
Servicing	\$700	\$ -
Annual Running Costs	\$2,007	\$181
Savings (running costs) per vehicle		<b>\$1,826</b>

Savings offset additional costs within 5 years and reduce emissions.

Based on EECA's annual cost of vehicle ownership tool: \$0.088c/kwh, fuel cost \$1.71/L, service cost \$700 (EV no oil, spark plugs, filters), yearly mileage 10,000 km or 40km/working day. Toyota Yaris (\$21K/vehicle) vs. Nissan Leaf (\$30K/vehicle) – 4.9 year payback - excludes tyres and registration.

2. Promote alternate transport facilities and services
3. Investigate options for business and/or private ride sharing
4. Investigate e-bike sharing options for staff

#### d) Sustainable Procurement

##### Overview

The procurement activities of Waitemata DHB have the ability to have significant and far-reaching effects on the community, the economy and our environment. Smart and responsible procurement can assist to maximise our efficiency and reduce potential harm.

##### What has already been done?

- Sustainable procurement policy (via hA)
- Compostable cup implementation and AoG integration (2.5 million+ cups p.a.)

##### Objective

- To include sustainability criteria in tenders and procurement contracts e.g. appliances, buildings, packaging, energy, fleet, food.

##### Target

To integrate sustainability criteria into two large volume and high risk tenders/contract documents.

##### Top priority actions

1. Advocate for **sustainable procurement policies** within procurement organisations
2. Create a strategic **list of priority healthcare consumables** to address (such as high risk, high volume, and potential for change)
3. Proactively **monitor high-priority tenders** of DHB's, hA, HPL, AOG, Pharmac
4. Recommend **sustainability criteria** in high-priority tenders (e.g. hA waste, Pharmac IV bags, HPL, AoG energy, vehicles, office supplies).

## e) New Builds and Renovations

### Overview

Waitemata DHB currently does not utilise standardised sustainable design principles during the development and delivery of new builds and refurbishments (using rather the 'Capital Projects Management Guideline' and 'Australasian Health Facility Guidelines'). Further collaborative research between Auckland University and Waitemata DHB reviewed existing environmental sustainability-related practices in healthcare facilities. Savings from reduced medication, faster patient recovery and reduced staff turnover are expected to significantly outweigh the savings in energy and water, although long-term operational and health benefits, but will only be tested as the boundaries of sustainability in buildings continue to be expanded, and invested in. For example, patients exposed to increased intensity of sunlight experience "less perceived stress, marginally less pain, took 22% less analgesic medication per hour, and had 21% less pain medication costs". From 428 Green Star certified projects in Australia, Green Star certified buildings produce **45% fewer greenhouse gas emissions, 50% less electricity and use 51% less potable water** than if they had been built to meet minimum industry requirements.

### Current status, benchmark and trends

Heating and cooling of hospital buildings is a great cost and emission source as mentioned under the energy section. Overall the energy performance and comfort level of the Waitemata DHB buildings and hospitals is behind international best-practice.

### Objective

- To work under the umbrella of the Northern Regional Alliance to explore a shared '*Green and Healthy Building Guideline for Capital Projects and Refurbishments for the Northern Region*' and align existing policies such as the 'Capital Projects Management Guidelines' AND 'Guideline Facilities and Development Refurbishment Policy'
- Integrate *Green and Healthy Building Guidelines* into clinical, commercial and infrastructure project delivery processes (incl. architectural, building services, project management, structural, interior design, acoustics and/or landscape architecture).
- Establish a commitment to provide as part of any business case for new builds or refurbishments over \$10M, costing for both infrastructure and administration related to a Greenstar Rating (4 Star, best-practice)
- Establish commitment to require any new builds or refurbishments over \$1M (build costs of \$500K) to utilise sustainable design principles, embedded in the 'Capital Projects Management Guidelines', and 'Guideline Facilities and Development Refurbishment Policy'

### Top priority actions

1. Coordinate the development of a Green and healthy hospital standardisation guideline for new builds and refurbishments (developed and integrated into DHB processes)
2. Deliver input for site master planning concerning energy efficiency of buildings, on site walking, cycling infrastructure, outdoor patient and visitor experience.

## f) Water Management



### Overview

Water is a valuable resource that we consume and subsequently convert a large portion into waste (wastewater/trade waste). Water consumption can be reduced through improved technologies and directly by the actions of staff, contractors, patients and visitors.

### What has already been done?

- Site-based water balance assessment
- Leak remediation
- Install more efficient industrial dish washers (procurement in process)
- Incorporate water use into utilities management software

### Objective

- To better understand and reduce water consumption patterns.

### Water Costs: ~\$1M/year

Consumption: ~250 million litres/year

### Top priority actions:

- Monitoring on-going
- Investigate low-flow showers
- Investigate alternative legionella regime (alternative to flushing)
- Maintain accurate water consumption monitoring

## g) Other areas

There are supportive areas of sustainability initiatives worth mentioning:

### What has already been done?

- Enviro-Mark Gold certification, best-practice environmental management
- Sustainability newsletter, communications, signage, training
- Sustainability Manager since 2010

### Commitment

To show leadership and create commitment within all layers of the organization.

### Top priority actions:

1. Grow a network of champions and sustainability supporters
2. Establish ELT/SMT commitment to prioritise sustainability initiatives

### Communications

To inform, educate and create awareness, involvement and ownership for sustainability.

**Top priority actions:**

1. Quarterly Newsletter, website and intranet communications
2. Sustainability in annual and MoH reporting

**Change management**

Incorporate sustainability practices in policies, strategies, guidelines, reporting and core business practice of the Waitemata DHB.

**Top priority actions:**

1. Policies (sustainability manual, transport, recycling in theatres, waste management, etc.)
2. Audit and finance committee reporting
3. Maintain action plan and associated budget

**Collaboration**

Exchange information, learn from each other's best practices and engage partners by working together (Sustainable Health Sector National Network, Global Green and Healthy Hospitals, Auckland Transport, Auckland Council, Auckland DHB, Counties Manukau DHB, Northland DHB).

**Certification**

Maintain existing certified environmental management system and verified carbon foot print.



**Appendix B:**

**Waitemata DHB EMS Objectives, Targets and Programmes for 2018/19**

<b>POLICY TARGET AREA</b>	<b>OBJECTIVES</b>	<b>TARGETS</b>	<b>PROGRAMMES</b>	<b>MEASUREMENT</b>	<b>ENVIRONMENTAL PERFORMANCE INDICATOR (EPI)</b>
Sustainable Procurement	To improve Waitemata DHB Sustainability through good purchasing decisions.	To embed sustainability criteria in one large volume and high risk tenders/contract documents and embed criteria in procurement process	Sustainability Officer to work with Health Alliance to ensure that sustainability has been included in at least one tender and that sustainability criteria embedded in tender, assessment framework and processes	Sustainability Officer to maintain copies of tenders that contain sustainability clauses.	Number of tenders that include environmental certification requirements or significant consideration to environmental performance.
Energy & Carbon Management	To reduce the carbon footprint of Waitemata DHB and improve energy efficiency.	Decrease electricity consumption by 0.5 GWh p.a. of electricity savings to IPMVP standards through maintenance, equipment and continuous monitoring.	Lighting review programme, efficiency based maintenance and equipment upgrades. Energy efficiency messaging to staff and monitoring to identify areas for improvement (LED retrofits, medical gas management, electricity sub-metering at hospitals)	Electricity and gas consumption updated monthly and utility management software implemented.	GWh and CO2e decrease, project based
		Reduce the use of transport fuel used 1%, averaged against total fleet.	Electric vehicle implementation via car sharing programme, with intention to switch to electric vehicles, including charging infrastructure.	Number of km travelled via electric vehicle or litres (emissions) of fuel saved	Emissions (kg Co2e) or fuel (L) reduction
		Increase alternate transport use by staff commuting to work by 5%.	Increase alternate transport accessibility for staff commuting to work, including electric bikes for work (including charging, shower/change information, feeder shuttle to train	2020 Survey compared to 2017 survey results	Assessment next financial year (TBD)

			station, bike storage)		
Waste Management	To reduce the proportion of Waitemata DHB medical waste and waste to landfill.	Reduce overall medical waste tonnage from 21% to 20% total composition (based on 2017-18 figures)	In theatre/ward waste minimisation programme. Clinical staff education. New signage and review of medical waste bin placement.	Waste tonnage reports updated monthly	kg % of total waste and recycling composition
		Reduce overall general waste tonnage from 62% to 60% total composition (based on 2017-18 figures)	In theatre/ward waste minimisation programme. Clinical staff education. Investigate food composting in cafeterias, new signage.	Waste tonnage reports updated monthly	kg % of total waste and recycling composition
		Increase proportion of overall waste that is recycled from 14% (based on 2017-18) figures to 17%	Maintain PVC recycling. Staff communications relating to recycling, both through Waitemata weekly and posters. Single-use metal item, surgical equipment and battery recycling.	Waste tonnage reports updated monthly	kg % of total waste and recycling composition
Water Management	To better understand the Waitemata DHB water consumption patterns.	Maintain an accurate water consumption monitoring programme.	Data collation from Watercare website and monthly invoices. Remedying leaks as identified.	Water consumption updated monthly and utility management software implemented.	KL/bed day
Designing the Built Environment	To improve the sustainability of Waitemata DHB buildings.	Sustainability aspects considered in new building projects, as per the Project Management Manual.	Integrate <i>Green and Healthy Building Guidelines</i> into clinical, commercial and infrastructure project delivery processes (incl. architectural, building services, project management, structural, interior design, acoustics and/or landscape architecture)Ensure consideration of	Utilise best-practice advise and product and material specification guidelines.	Sustainability considerations included within 'Capital Projects Management Guidelines' AND 'Guideline Facilities and Development Refurbishment Policy'

			sustainability is included within 'Capital Projects Management Guidelines' AND 'Guideline Facilities and Development Refurbishment Policy'		
Network - Other	Provide a means for staff to become involved and take ownership of Sustainability projects in their areas.	Recruit 10 new Sustainability Champions throughout the organisation.	Sustainability Newsletter and Articles in the Waitemata Weekly quarterly. Articles in Healthlines Magazine where appropriate. Sustainability Manager to attend departmental meetings when requested.	Maintain accurate records of current WDHB Sustainability Champions. Examples of Waitemata Weekly and Healthlines articles relating to sustainability to be kept. Copy of sustainability training presentation to be held.	Number of new Sustainability Champions.
Emergency preparedness and response - Other	Provide evidence that the DHB has established robust emergency system.	Emergency and Fire Planning reviewed annually as part of Enviro-Mark Audit.	Maintained by Nursing and Midwifery The DHB has a range of emergency plans in place using an all hazards approach and a generic response approach that works with all incident types and can be scaled up and down as required.	Maintain evidence of current WDHB policies, processes, and contacts.	Number of major environmental incidents

# Sustainability Policy

1.	Overview .....	1
	Purpose .....	1
	Scope .....	1
2.	Sustainability Policy .....	2
	Overview .....	2
	Principles .....	2
	Approach .....	2
	Key Target Areas .....	2
3.	Target Area 1: Sustainable Procurement .....	3
	Introduction.....	3
	Responsibilities .....	3
	Policy .....	3
4.	Target Area 2: Energy and Carbon Management .....	4
	Introduction.....	4
	Responsibilities .....	4
	Policy .....	4
5.	Target Area 3: Waste Management.....	5
	Introduction.....	5
	Responsibilities .....	5
	Policy .....	5
6.	Target Area 4: Water Management.....	6
	Introduction.....	6
	Responsibilities .....	7
	Policy .....	7
7.	Target Area 5: Designing the Built Environment .....	7
	Introduction.....	7
	Responsibilities .....	7
	Policy .....	7
8.	References.....	8

## 1. Overview

### Purpose

Waitemata DHB has a commitment to sustainability through the employment of a full-time Sustainability Manager to work across the organisation. This document sets out the policy for Waitemata DHB to work in a sustainable manner with a focus on five key target areas of Sustainable Procurement, Energy and Carbon Management, Waste Management, Water Management and Designing the Built Environment, to ensure that environmental health and sustainability goals are implemented facility- or system-wide and applied to all departments.

### Scope

The contents of this policy apply to all staff and areas within Waitemata DHB, external agencies working on behalf or for Waitemata DHB, contractors and sub-contractors. It places particular responsibilities on some roles and areas.

It is important to note that the term Sustainability refers to economic, social and environmental considerations. It is not purely about the natural environment, nor is it separate to economic considerations. This policy however does focus more on the environmental aspects because these tend not to be captured through other work streams.

<b>Issued by</b>	Sustainability Manager	<b>Issued Date</b>	June 2017	<b>Classification</b>	01001-05-018
<b>Authorised by</b>	Chief Financial Officer	<b>Review Period</b>	36 months	<b>Page</b>	1 of 8

This information is correct at date of issue. Always check on Waitemata DHB Controlled Documents site that this is the most recent version.

# Sustainability Policy

## 2. Sustainability Policy

### Overview

Waitemata DHB is committed to providing the *Best Care for Everyone*.

Waitemata DHB acknowledges that people are at the center of everything we do. People live within a social community and an economy, all of which exists within, and relies upon, the natural environment.

To Waitemata DHB, sustainability means operating in a way that meets the needs of the people without jeopardizing the fabric of the social community, the economy or the natural environment, so that future generations continue to be able to meet their needs. It is about long-term thinking.

Waitemata DHB acknowledges that a healthy natural environment and a well-constructed built environment results in a positive impact on overall community health, through improved mental health and well-being, improved opportunities for physical activity, improved social contact and improved children's development.

### Principles

The Waitemata DHB Sustainability Policy is based around two key principles. In all activities Waitemata DHB will seek to;

- (1) Maximise efficiency  
*Reducing waste through efficient purchasing and processes including wasted resources (materials, energy, water), time and money.*
- (2) Minimise harm  
*Minimising harm to people, the community and the environment.*

### Approach

To maximise efficiency and minimise harm Waitemata DHB will take the following approaches;

- Communicate and consult – internally and externally on sustainability activities and results
- Collaborate, and build partnerships – by building networks with external groups and organisations
- Assess – by continually evaluating activities
- Manage risks – by having policies and procedures that consider and mitigate potential environmental impacts and discharges to air, land, and water
- Ensure compliance – with all relevant environmental legislation and standards, by having in place processes to maintain ongoing compliance
- Evaluate – via third-party environmental certification and/or internal assessments
- Measure and manage – by measuring our activities so they can be effectively managed and reviewed
- Educate and take action – by providing information and training to staff on sustainability, and
- Take action – by developing robust business cases, projects and programmes to achieve sustainability outcomes

### Key Target Areas

Waitemata DHB identifies five key interconnected target areas for Sustainability. These target areas are chosen based on their potential financial, efficiency, social and environmental impacts.

Waitemata DHB's key sustainability target areas are:

- Sustainable Procurement
- Energy and Carbon Management
- Waste Management
- Water Management
- Designing the Built Environment.

<b>Issued by</b>	Sustainability Manager	<b>Issued Date</b>	June 2017	<b>Classification</b>	01001-05-018
<b>Authorised by</b>	Chief Financial Officer	<b>Review Period</b>	36 months	<b>Page</b>	2 of 8

This information is correct at date of issue. Always check on Waitemata DHB Controlled Documents site that this is the most recent version.

# Sustainability Policy

Waitemata DHB will support local and central government strategies and targets in these areas.

The following sections outline the policies for each of these areas. However, it should be noted that these target areas are overlapping and should not be viewed or actioned in isolation.

## 3. Target Area 1: Sustainable Procurement

### Introduction

The procurement activities of Waitemata DHB have the ability to have significant and far-reaching effects on the community, the economy and our environment. Smart and responsible procurement can assist to maximise our efficiency and reduce potential harm.

### Responsibilities

All Waitemata DHB and external staff involved in procurement, managers and healthAlliance.

### Policy

Procurement must be undertaken within the parameters outlined in the current Waitemata DHB Procurement Manual and the Equipment and Supplies Selection Policy.

Waitemata DHB is committed to Sustainability and life-cycle costing is to be used in the monetary cost components, including potential lifespan of product/replacement period, operational costs and the end of life disposal costs (refer to Target Area 3: Waste Management and Appendix A). A high priority will be given to substitute goods, materials or services with safer alternatives, especially if identified to contain substances of high concern (such as carcinogenic, mutagenic or toxic, environmentally persistent, bio-accumulative or warranting similar concern).

Procurement of goods and services is to take into consideration the impacts on energy and resource use for the organisation (see sections below Target Area 2: Energy and Carbon Management, Target Area 3: Waste Management and Target Area 4: Water Management).

Standard sustainability clauses should be included in all new contracts, examples are shown below;

- “The supplier shall endeavour to carry out works in a sustainable manner with particular regard for protection of the natural environment. The supplier shall comply will all relevant environmental legislation and guidelines relating to the products or services supplied.”
- “The supplier shall identify opportunities for improving the sustainability of the products or services supplied and ensure these are reported to the Waitemata DHB appointed contract manager.”
- “The supplier shall provide details of any environmental certification held e.g. Environmental Choice, carboNZero, Enviro-Mark, Forest Stewardship Certification, Organic, etc.”

These clauses are intended to simply highlight our interest in sustainability to our suppliers.

Where all other factors are comparable consideration should be taken in the following areas;

- Purchasing locally produced products
- Purchasing from local suppliers
- Purchasing products or services that have a third party environmental certification or ‘tick’.
- Environmental impact of the production of the product/service
- Purchasing goods, materials or services that use recycled products/materials
- Purchasing goods, materials or services that require less resources to manufacture (materials, energy and water)
- Purchasing goods and materials that have less packaging
- Purchasing goods, materials or services that support wider WDHB social initiatives

<b>Issued by</b>	Sustainability Manager	<b>Issued Date</b>	June 2017	<b>Classification</b>	01001-05-018
<b>Authorised by</b>	Chief Financial Officer	<b>Review Period</b>	36 months	<b>Page</b>	3 of 8



## Sustainability Policy

The Sustainability Manager is available to provide life-cycle costing's and evaluation of products and services for decision-making.

Sustainable Procurement activities will be reported to the Sustainability Manager to ensure they are captured for evaluation.

### 4. Target Area 2: Energy and Carbon Management

#### Introduction

Energy consumption is a significant financial and environmental issue for Waitemata DHB and is a key contributor to our carbon footprint. Energy efficiency can have a large impact on both reducing costs and reducing our environmental impact. The New Zealand Energy Strategy, 2011 sets a target for improving energy use per full-time staff equivalent in the public sector based on 2010 data.

The scope of energy and carbon management in this section includes electricity, gas and fuels, therefore encompassing the areas of;

- Lighting
- Heating and cooling of buildings
- Refrigeration
- Electrical office and clinical equipment
- Fleet management
- Travel management
- Building design

#### Responsibilities

All staff and areas within Waitemata DHB, external staff (healthAlliance), contractors and sub-contractors. Facilities maintenance staff, Project Managers, Fleet Management and departmental management staff.

#### Policy

Energy will be managed efficiently in order to;

- Limit unnecessary utilisation and waste
- Reduce pollution, particularly carbon emissions
- Improve efficiency and life of plant and equipment
- Improve conditions for staff, patients and visitors

All staff will undertake energy saving practises (e.g. switch-off/un-plug) whilst maintaining high standards of service and safety.

Purchasing by internal and external (healthAlliance) staff

- Energy consumption will be a factor in the purchase of new equipment by and on behalf of Waitemata DHB by evaluating the energy star rating or equivalent
- Energy efficiency will be considered in new or replacement capital investments of plant, buildings and vehicles. On-going operational costs will be considered alongside initial capital expenditure, with a primary focus on total cost of ownership (whole-of-life costing).

Equipment management and maintenance

- Information technology (IT) equipment will be purchased and set for maximum energy efficiency, e.g. enabling PC sleep mode in non 24/7 areas
- Ward/department level equipment will be checked by staff in their area on a routine basis to ensure correct operation, e.g. check fridge seals, fridge temperatures, ensure equipment with vents/fans are clean
- Fridges will be defrosted and cleaned regularly by cleaning staff

<b>Issued by</b>	Sustainability Manager	<b>Issued Date</b>	June 2017	<b>Classification</b>	01001-05-018
<b>Authorised by</b>	Chief Financial Officer	<b>Review Period</b>	36 months	<b>Page</b>	4 of 8

## Sustainability Policy

- Building maintenance and faults e.g. leaks will be reported to facilities management as soon as they are identified.

### Facilities

- Energy efficiency will be maximised with proven technologies in new builds or refurbishment projects. Where funding is available an energy audit will be conducted on significant new buildings at the concept design stage
- All lighting is to be Light Emitting Diode (LED)
- All motor drives will comply with IEC 34.3 Efficiency
- Plant and equipment will be regularly serviced and maintained according to supplier specifications
- Plant and equipment replacement will take into consideration energy efficiency.

### Vehicle Fleet Management

- Vehicle fleet will be managed to maximise efficiency and minimise fuel consumption
- Fleet upgrades will consider fuel efficiency and emissions ratings
- Fleet use and fuel consumption will be monitored and reviewed regularly to identify efficiencies.

### Travel Planning

- Waitemata DHB will maintain a Travel Plan and continue programmes to work towards reducing single occupant car trips.
- Encourage staff, patients and visitors to walk or use car pools, public transport or bicycles whenever possible.

Waitemata DHB will set an annual target to reduce energy consumption and our carbon footprint, and put in place initiatives to achieve the target.

Energy consumption data will be provided to the Sustainability Manager in order to measure and monitor Waitemata DHB's energy use and carbon footprint in order to evaluate initiatives, report and identify opportunities for continual improvement.

## 5. Target Area 3: Waste Management

### Introduction

Waste represents not only a solid mass but wasted time, energy, resources and materials. Waste management and minimisation is about improving efficiency within the organisation. The Auckland Council sets a target of a reduction in waste of 30% to landfill by 2027. The scope of waste management in this section relates to both solid waste and trade waste (please refer to Waste Management Policy for details regarding physical waste management and requirements).

Waste has a number of potentially harmful effects; safety risks to patients, staff, visitors and contractors, and to the environment. A significant portion of healthcare waste is considered hazardous, approximately 17%, while 66% of our waste is categorised as general waste and goes directly to landfill. This contributes to greenhouse gas emissions through its transportation and then through methane production once in the ground.

### Responsibilities

All staff and areas within Waitemata DHB. Individual managers are responsible for staff training, reducing the creation of waste, minimising disposal through reuse and recycling and ensuring safe disposal of all other wastes as outlined in this document.

### Policy

The waste management policy has a four tier hierarchy;

- Improving efficiency (avoiding waste)
- Reducing waste

<b>Issued by</b>	Sustainability Manager	<b>Issued Date</b>	June 2017	<b>Classification</b>	01001-05-018
<b>Authorised by</b>	Chief Financial Officer	<b>Review Period</b>	36 months	<b>Page</b>	5 of 8

This information is correct at date of issue. Always check on Waitemata DHB Controlled Documents site that this is the most recent version.

## Sustainability Policy

- Reuse and recycling
- Safe and appropriate management of waste for disposal.

All procedures for the management and disposal of waste will;

- Seek to minimise waste generated and therefore costs and environmental impacts
- Seek to minimise the toxicity of waste generated
- Seek to minimise risk of waste handling to staff.

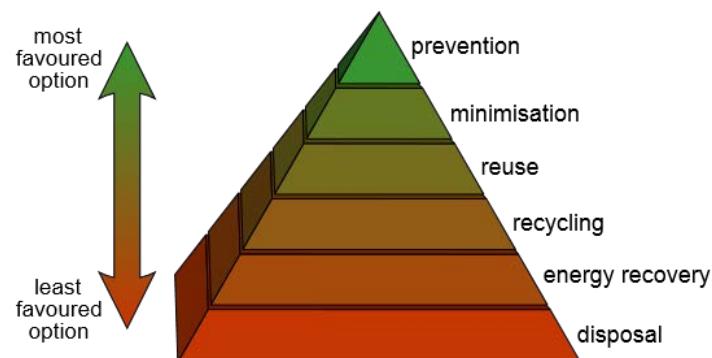
**Appendix A** contains a copy of the full Waste Management Policy, including waste procedures, waste segregation and classification, safe and appropriate disposal, waste transport, storage and risk management. It is the responsibility of departmental management to induct all staff in the details contained in Appendix A regarding waste procedures.

Procurement decisions will be evaluated for their effect on waste collection and disposal systems, including the financial and environmental costs of disposing of waste, including consideration of disposal near the point of generation (refer to Target Area 1: Sustainable Procurement).

All waste is to be segregated at the point of generation, by the staff involved, into the appropriate labelled container in order to reduce handling for the purposes of efficiency and safety. All staff have a responsibility for minimising waste and correct segregation.

All human tissue/body parts will be treated in a manner that upholds the spiritual, cultural, and physical dignity of the person from whom the waste was generated.

Waitemata DHB will set annual waste minimisation targets, and put in place initiatives to achieve them, guided by the waste hierarchy (illustrated below), to extract maximum practical benefits and minimise waste. Where reduction is not feasible, the reuse of waste (including food waste) will take precedence over general recycling streams, with energy recovery or disposal being the least favourable options.



The Sustainability Manager will measure and monitor Waitemata DHB's waste in order to evaluate initiatives, report and to identify opportunities for continual improvement.

## 6. Target Area 4: Water Management

### Introduction

Water is a valuable resource that we consume and subsequently convert a large portion into waste (wastewater/trade waste). Watercare has set a regional target for Auckland to reduce water consumption by 15% by 2025.

Water consumption can be reduced through improved technologies and directly by the actions of staff, contractors, patients and visitors.

<b>Issued by</b>	Sustainability Manager	<b>Issued Date</b>	June 2017	<b>Classification</b>	01001-05-018
<b>Authorised by</b>	Chief Financial Officer	<b>Review Period</b>	36 months	<b>Page</b>	6 of 8

This information is correct at date of issue. Always check on Waitemata DHB Controlled Documents site that this is the most recent version.

## Sustainability Policy

### Responsibilities

All staff and areas within Waitemata DHB, including internal and external staff purchasing equipment and facilities maintenance staff.

### Policy

Waitemata DHB will incorporate the most water efficient, technologically proven devices in all new buildings and refurbishments.

Waitemata DHB will maximise rainwater reuse in its facilities.

Waitemata DHB will consider water consumption as a factor in the purchase of new equipment, particularly appliances and cleaning equipment by evaluating water efficiency labelling against other factors.

Waitemata DHB will set an annual target to reduce water consumption, and put in place initiatives to achieve the target.

The Sustainability Manager will measure and monitor Waitemata DHB's water use in order to evaluate initiatives, report and to identify opportunities for continual improvement.

## 7. Target Area 5: Designing the Built Environment

### Introduction

Green building principles can be built into new facilities and into existing facilities during refurbishments. This has the potential to increase comfort levels for staff, patients and visitors, reduce on going running and maintenance costs and reduce the environmental impact of Waitemata DHB.

### Responsibilities

Facilities and Development Project Managers, Executive Leadership Team and all other Waitemata DHB staff and external contractors involved in refurbishments and new buildings.

### Policy

Sustainability principles will be taken into account at the concept design stage. The following areas will be considered;

- Land use – optimise site potential through effective orientation, landscaping, access to transport and minimising impact on sensitive ecology
- Materials – materials selection should follow the Sustainable Procurement principles above (refer Target Area 1) including consideration of life-cycle impacts and toxicity
- Energy Efficiency – energy efficiency should be considered from the outset to reduce ongoing energy costs and environmental impact. Current best practise should be followed with the use of proven technologies (refer Target Area 2)
- Waste management – providing the necessary space for effective waste segregation at the point of generation (refer Target Area 3)
- Water management – providing low flow devices as standard, reducing dependence on water supply through rainwater reuse (refer Target Area 4)
- Indoor environmental quality – where appropriate maximise daylighting, ventilation and moisture control. Minimise toxic building materials and therefore volatile organic compound (VOC) emissions
- Air and water discharges – design to reduce air and water discharges to the environment and employ current best practise treatment systems.

Where available and funding allows, a green building rating assessment should be carried out during the design phase of significant new projects.

Pollution prevention will be employed during the construction phase including;

<b>Issued by</b>	Sustainability Manager	<b>Issued Date</b>	June 2017	<b>Classification</b>	01001-05-018
<b>Authorised by</b>	Chief Financial Officer	<b>Review Period</b>	36 months	<b>Page</b>	7 of 8

This information is correct at date of issue. Always check on Waitemata DHB Controlled Documents site that this is the most recent version.

## Sustainability Policy

- Planning measures to prevent disturbance to natural environments and sensitive areas
- Planning to minimise earthworks
- Handling and storage of hazardous substances to reduce the likelihood of spills and have in place protection measures i.e. bunding, and equipment in the event of a spill.

Sustainable design and construction activities will be reported to the Sustainability Manager to ensure they are captured for evaluation.

### 8. References

Type	Title/Description
<b>Legislation</b>	Waste Minimisation Act 2008 Health & Disability Act 1994 Resource Management Act 1991 Health and Safety in Employment Act 1992 Hazardous Substances and New Organisms Act 1996 Land Transport Act 1998 Land Transport Rule, Dangerous Goods 1999 (Dangerous Goods Rule)
<b>Standards</b>	<ul style="list-style-type: none"> <li>• NZS 4304: 2002 Management of Healthcare Waste</li> <li>• NZ 8142: 2001 Infection Control Audit Workbook.</li> <li>• NZS 5433:1&amp;2 2012 Transport of dangerous goods on land</li> <li>• NZS 9201:23 2004 Model General Bylaws - Trade Waste</li> <li>• AS/NZS 4261: 1994 (A1) Reusable containers for the collection of sharp items</li> <li>• AS/NZS 4452: 1997 The storage and handling of Toxic Substances</li> <li>• AS/NZS 2243:2 2010 Safety in Laboratories: Chemical aspects</li> </ul>
<b>Local Authority Regulations</b>	Auckland Waste Minimisation and Management Plan 2012 Auckland Regional Water Demand Management Plan 2011 Auckland Trade Waste Bylaw 1991 North Shore City Council Bylaw: Part 9 Trade Waste. 2000
<b>Publications</b>	New Zealand Waste Strategy, 2010 New Zealand Energy Strategy, 2011 Solid Waste Analysis Protocol, 2002 Health and Disability Commissioners Act and Code of Consumers' Rights 1996, 2009 review Health Information Privacy Code 1994, 2007 review International Electro-technical Commission Standard 34.2 – Efficiency Rating for Electric Motors World Health Organisation Guidelines for Drug Donations, 1999 World Health Organisation Healthy Hospitals, Healthy Planet, Healthy People' 2009 Treaty of Waitangi

<b>Issued by</b>	Sustainability Manager	<b>Issued Date</b>	June 2017	<b>Classification</b>	01001-05-018
<b>Authorised by</b>	Chief Financial Officer	<b>Review Period</b>	36 months	<b>Page</b>	8 of 8

This information is correct at date of issue. Always check on Waitemata DHB Controlled Documents site that this is the most recent version.

# Emissions Management and Reduction Plan

---

CEMARS and the carboNZero programme



## Waitemata District Health Board

Person responsible: William Van Ausdal

Prepared by: William Van Ausdal

Dated: March 2018

Version: 1.0

Verification Status: Unverified (pre-audit)

For the period: July 2016 - June 2017

Base year: July 2016 - June 2017





---

*Approved for release by:*

A square image containing a handwritten signature in black ink, which appears to be "W. Van Ausdal".

William Van Ausdal

---



# Contents

1	Introduction .....	4
2	Rationale .....	4
3	Top management commitment .....	5
4	Person responsible.....	5
5	Awareness raising and training.....	5
6	Significant emissions sources.....	5
7	Targets for emissions reduction.....	6
8	Specific emissions reduction projects.....	11
9	Unintended environmental impacts .....	12
10	Key performance indicators.....	14
11	Monitoring and reporting .....	14
12	Emissions reduction calculations .....	15
13	Performance against plan .....	15



# 1 Introduction

This report is the annual greenhouse gas (GHG) Emissions Management and Reduction Plan prepared for Waitemata District Health Board and forms the manage step part of the organisation's application for Programme certification.<sup>12</sup>

## 2 Rationale

Health services have several broad areas of interest in climate change. The first is the direct and indirect impact of climate change on health. This is well described in the IPCC 5th assessment Working Group 2 report (Chapter 11), including health impacts of heat waves, floods, droughts, vector-borne diseases, food-borne disease, air quality, water quality, food supply and security, and ecological changes, and impacts on physical and mental health, and nutrition. Health equity and ethical issues are also of considerable importance. There are also potential co-benefits for health from a low emission society and economy including improved air quality, social well-being, physical health and obesity reduction (New Zealand Productivity Commission's low-emissions economy issues paper prepared by the Auckland Regional Public Health Service (ARPHS) and endorsed by the Chief Executives of the Auckland, Waitemata, Counties Manukau, and Northland District Health Boards (DHBs).)

The Waitemata DHB Sustainability Policy is based around two key principles. In all activities Waitemata DHB will seek to;

- (1) Maximise efficiency - Reducing waste through efficient purchasing and processes including wasted resources (materials, energy, water), time and money.
- (2) Minimise harm - Minimising harm to people, the community and the environment.

Waitemata DHB identifies five key interconnected target areas for Sustainability. These target areas are chosen based on their potential financial, efficiency, social and environmental impacts.

Waitemata DHB's key sustainability target areas are:

- Sustainable Procurement
- Energy and Carbon Management
- Waste Management
- Water Management
- Designing the Built Environment.

Waitemata DHB will set an annual target to reduce energy consumption and our carbon footprint, and put in place initiatives to achieve the target.

Energy consumption data will be provided to the Sustainability Manager in order to measure and monitor Waitemata DHB's energy use and carbon footprint in order to evaluate initiatives, report and identify opportunities for continual improvement.

---

<sup>1</sup>Throughout this document 'emissions' means 'GHG emissions'.

<sup>2</sup>Programme means the Certified Emissions Measurement And Reduction Scheme (CEMARS) and carbonZero certification programme.

### 3 Top management commitment

Waitemata DHB's Senior Management Team approved of the Sustainability Action Plan to pursue CEMARS certification (with appropriate budget). Previous commitments via the Sustainability Policy and Submission to the Productivity Commission's Low-emissions Economy also illustrate the top-management commitment to carbon management.

### 4 Person responsible

Sustainability manager has responsibility to support the General Manager- Facilities and Development, by carrying out the on-going sustainability related tasks (including carbon accounting to the ISO: 14064 standard), as well as proactively identifying and driving new sustainability programmes, to deliver positive outcomes for the organisation and the environment.

### 5 Awareness raising and training

Sustainability Newsletter, Staff Newsletter, and on-the-ground presentations as required or requested.

### 6 Significant emissions sources

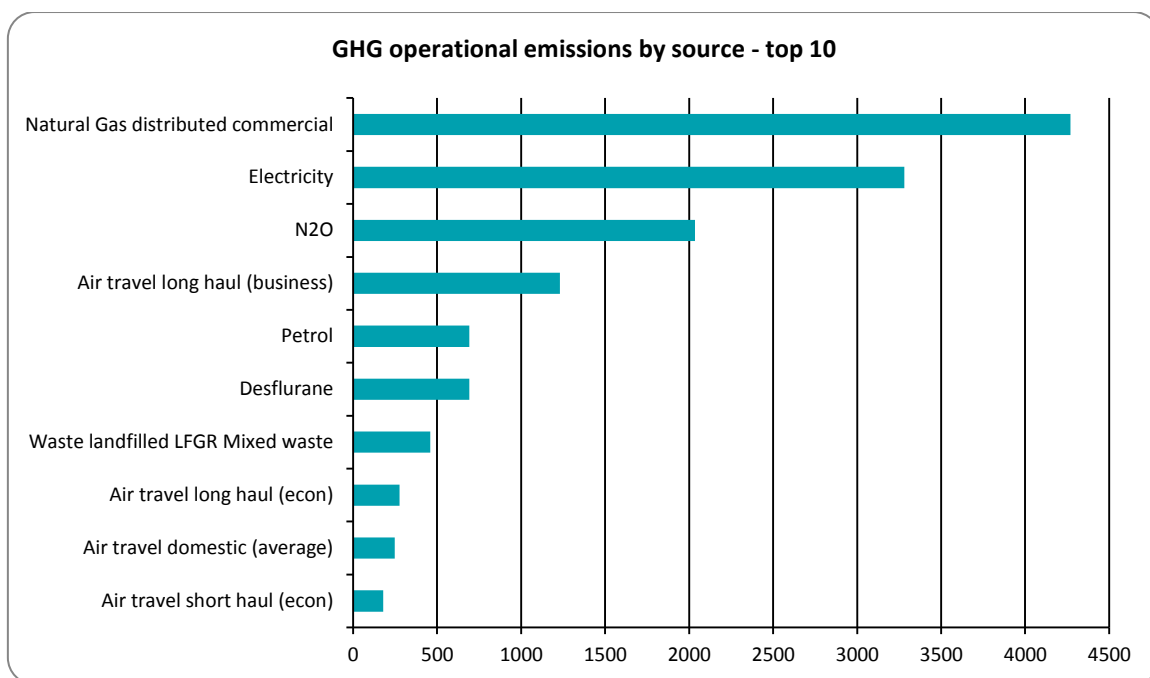


Figure 1: GHG emissions by source.

The EMRP addresses the top emissions sources (refer to emissions source diagram in EIR), and which the organisation has direct control. These are in line with other Auckland-region DHB's, including:

TRAVEL (shuttle, fleet, air travel, taxi)

WASTE (general, medical)

ENERGY (electricity, gas, diesel) and WATER

MEDICAL GASES (NO<sub>2</sub>, CO<sub>2</sub>, desflurane, sevoflurane)



PAPER

REFRIGERANTS

The DHB has committed to improvements in energy efficiency, although there are also liabilities in fleet, travel, waste, medical gas, paper which will also be explored. Data quality overall is sound, although medical gases are provided in bulk format from procurement and refrigerants holdings are known for NSH-only.

## 7 Targets for emissions reduction

The organisation is committed to managing and reducing its emissions in accordance with the Programme requirements. Table 1 provides details of the emission reduction targets to be implemented. These are 'SMART' targets (specific, measurable, achievable, realistic, time-constrained).

**Table 1:** Emission reduction targets.

Emissions reduction initiative	Target	Baseline (tCO <sub>2</sub> e)	Target(tCO <sub>2</sub> e)	Target date	Metrics/ KPI	Responsibility	Rationale
a. An absolute reduction in Scope 1 and Scope 2 GHG emissions (combined); or	- 1.58%	11,271.92	11,093.69	30/06/2019	Absolute total tCO <sub>2</sub> e	Sustainability Manager	Achievable through the application of the reduction projects discussed further below.
a....or Scope 1, Scope 2 and mandatory Scope 3 emissions to be achieved within 5 years from the Base Year	- 1.46%	13,909.25	13,706.72	30/06/2019	Absolute total tCO <sub>2</sub> e	Sustainability Manager	Achievable through the application of the reduction projects discussed further below.
Emissions specific 'subtargets':							
Waitemata District Health Board>Air travel domestic (average)	0%	248.15	248.15	30/06/2019	FTE	Finance	
Waitemata District Health Board>Air travel long haul (business)	0%	1,231.02	1,231.02	30/06/2019	FTE	Finance	
Waitemata District Health Board>Air travel long haul (econ)	0%	276.86	276.86	30/06/2019	FTE	Finance	
Waitemata District Health Board>Air travel short haul (econ)	0%	178.23	178.23	30/06/2019	FTE	Finance	
Waitemata District Health Board>Air travel short haul b/f class	0%	50.56	50.56	30/06/2019	FTE	Finance	
Waitemata District Health Board>CO <sub>2</sub>	0%	1.68	1.68	30/06/2019	Patients	Sustainability Manager	
Waitemata District Health	0%	690.88	621.79	30/06/2019	Patients	Clinical Director	Alternative to desflurane exists

Emissions reduction initiative	Target	Baseline (tCO <sub>2</sub> e)	Target(tCO <sub>2</sub> e)	Target date	Metrics/ KPI	Responsibility	Rationale
Board>Desflurane						Anaesthesia	
Waitemata District Health Board>Sevoflurane	0%	29.12	26.21	30/06/2019	Patients	Clinical Director Anaesthesia	Alternative to sevoflurane exists
Waitemata District Health Board>Diesel	1%	88.58	87.69	30/06/2019	Floor space	Fleet Manager	averaged against total fleet (~2k litres of fuel reduction according to 2015-16, ~3 vehicles)
Waitemata District Health Board>HCFC-22 (R-22, Genetron 22 or Freon 22)	0%	5.43	5.43	30/06/2019	Floor space	Sustainability Manager	
Waitemata District Health Board>HFC-134a	0%	45.05	45.05	30/06/2019	Floor space	Sustainability Manager	
Waitemata District Health Board>N <sub>2</sub> O	0%	2,035.04	2,035.04	30/06/2019	Patients	Head of Division Midwifery	Nitrous oxide may be managed with tighter controls to reduce usage
Waitemata District Health Board>Petrol	1%	691.28	684.37	30/06/2019	Revenue	Fleet Manager	averaged against total fleet (~2k litres of fuel reduction according to 2015-16, ~3 vehicles)
Waitemata District Health Board>Petrol premium	0%	9.68	9.68	30/06/2019	Revenue	Fleet Manager	
Waitemata District Health Board>R-407C	0%	93.14	93.14	30/06/2019	Floor space	Facilities Manager	
Waitemata District Health Board>R-410A	0%	25.47	25.47	30/06/2019	Floor space	Facilities Manager	
Waitemata District Health Board/Northshore Hospital>Diesel	0%	85.44	85.44	30/06/2019	Floor	Facilities	

Emissions reduction initiative	Target	Baseline (tCO <sub>2</sub> e)	Target(tCO <sub>2</sub> e)	Target date	Metrics/ KPI	Responsibility	Rationale
stationary combustion					space	Manager	
Waitemata District Health Board/Northshore Hospital>Electricity	3%	2,412.40	2,340.03	30/06/2019	Floor space	Facilities Manager	Energy Audits, Utilities monitoring system, LED upgrades, Computer sleep
Waitemata District Health Board/Northshore Hospital>Natural Gas distributed commercial	0%	3,135.22	3,135.22	30/06/2019	Floor space	Facilities Manager	Exposed steam and heating lines and valves lose heat and can be improved
Waitemata District Health Board/Northshore Hospital>Paper use office virgin fibre	0%	20.96	20.96	30/06/2019	Revenue	Sustainability Manager	
Waitemata District Health Board/Northshore Hospital>Waste landfilled LFGR Mixed waste	4%	373.47	358.53	30/06/2019	Revenue	Sustainability Manager	Behavioural and educational campaign for medical waste, general waste and recycling, cafeteria composting
Waitemata District Health Board/Northshore Hospital>Waste landfilled LFGR Paper and textiles	4%	96.57	92.71	30/06/2019	Revenue	Sustainability Manager	Behavioural and educational campaign for medical waste, general waste and recycling, PVC recycling (I.V. bags), batteries, metals (scissors/forceps)
Waitemata District Health Board/Northshore Hospital>Water supply	5%	9.36	8.89	30/06/2019	Floor space	Facilities Manager	Conduct water audits for NSH and WTH (identify leaks), Incorporate water use into utilities management software, Install more efficient industrial dish washers (procurement in process)
Waitemata District Health Board/Waitakere Hospital>Electricity	3%	868.66	842.60	30/06/2019	Floor space	Facilities Manager	Energy Audits, Utilities monitoring system, LED upgrades, Computer sleep

Emissions reduction initiative	Target	Baseline (tCO <sub>2</sub> e)	Target(tCO <sub>2</sub> e)	Target date	Metrics/ KPI	Responsibility	Rationale
Waitemata District Health Board/Waitakere Hospital>Natural Gas distributed commercial	0%	1,054.86	1,054.86	30/06/2019	Floor space	Facilities Manager	Exposed steam and heating lines and valves lose heat and can be improved
Waitemata District Health Board/Waitakere Hospital>Paper use office virgin fibre	0%	7.32	7.32	30/06/2019	Revenue	Sustainability Manager	Achievable through the application of the reduction projects discussed further below.
Waitemata District Health Board/Waitakere Hospital>Waste landfilled LFGR Mixed waste	4%	85.61	82.18	30/06/2019	Revenue	Sustainability Manager	Behavioural and educational campaign for medical waste, general waste and recycling, cafeteria composting
Waitemata District Health Board/Waitakere Hospital>Waste landfilled LFGR Paper and textiles	4%	34.33	32.96	30/06/2019	Revenue	Sustainability Manager	Behavioural and educational campaign for medical waste, general waste and recycling, PVC recycling (I.V. bags), batteries, metals (scissors/forceps)
Waitemata District Health Board/Waitakere Hospital>Water supply	5%	4.57	4.35	30/06/2019	Floor space	Facilities Manager	Conduct water audits for NSH and WTH (identify leaks), Incorporate water use into utilities management software, Install more efficient industrial dish washers (procurement in process)
Waitemata District Health Board>Taxi (regular)	0%	20.32	20.32	30/06/2019	FTE	Finance	

## 8 Specific emissions reduction projects

In order to achieve the reduction targets identified in Table 1 specific projects have been evaluated to achieve these targets. These are detailed below.

**Table 2:** Projects to reduce emissions.

Objective	Actions	Responsibility	Completion date
Reduce general and medical waste	Behavioural and educational campaign for waste and recycling	Sustainability Manager	30/06/2018
Reduce general and medical waste	Cafeteria composting	Sustainability Manager	30/06/2018
Reduce general and medical waste	PVC recycling (I.V. bags)	Sustainability Manager	30/06/2018
Reduce general and medical waste	Batteries, metals (scissors/forceps) recycling	Sustainability Manager	30/06/2019
Reduce electricity use	LED upgrades	Facilities Manager	30/06/2019
Reduce electricity use	Computer sleep	Sustainability Manager	30/06/2018
Reduce transport fuel use	Incorporate electric vehicles in fleet	Fleet Manager	30/06/2019
Reduce water use	Install more efficient industrial dish washers (procurement in process)	Food services manager	30/06/2019
Reduce medical gas	Investigate best-practice alternative to desflurane and sevoflurane	Clinical Director Anaesthesia	30/06/2019
Reduce natural gas	Investigate insulation of exposed steam and heating lines and valves	Facilities Manager	30/06/2019
Reduce medical gas	Investigate storage, best-practice use of nitrous oxide	Head of Division Midwifery	30/06/2019

Table 3: highlights emission sources that contributed to poor data quality in the Emissions Inventory Report and describes the actions that will be taken to improve the data quality in future inventories.

**Table 3:** Projects to improve data quality.

Emissions source	Actions to improve data quality	Responsibility	Completion date
Travel - air	Survey CME individual expenditure	Sustainability Manager	30/06/2019



Emissions source	Actions to improve data quality	Responsibility	Completion date
Energy - Electricity	Map floor space against ICP (NSH/WTH)	Sustainability Manager	30/06/2019
Medical Gas - NO2	Secure data (validate from supplier and understand discrepancies)	Sustainability Manager	30/06/2019
Refrigerants	Get readings off chillers (holdings)	Sustainability Manager	30/06/2019
Stationary - Diesel	Extrapolate usage per reporting period via previous fill ups	Sustainability Manager	30/06/2019

The emissions inventory identified various emissions liabilities. Table 4 details the actions that will be taken to prevent GHG emissions from these potential emissions sources.

**Table 4:** Projects to prevent emissions and reduce liabilities.

Emissions source	Actions to reduce liabilities	Responsibility	Completion date
*Air conditioning units and chillers include regular servicing (thus no additional requirements)			

## 9 Unintended environmental impacts

ENVIRONMENTAL IMPACTS	Behavioural and educational campaign for waste and recycling	Cafeteria composting	PVC recycling (I.V. bags)	LED upgrades	Computer sleep	Incorporate electric vehicles in fleet	Install more efficient industrial dish washers (procurement in process)
Resource use							
Electricity consumption							
Fuel consumption							
Water consumption							
Wastewater discharge							

ENVIRONMENTAL IMPACTS	Behavioural and educational campaign for waste and recycling	Cafeteria composting	PVC recycling (I.V. bags)	LED upgrades	Computer sleep	Incorporate electric vehicles in fleet	Install more efficient industrial dish washers (procurement in process)
Waste to landfill							
Air, land and water quality							
Transport congestion							
Biodiversity							
Land use							
Flooding							
Local economy							
<b>Dark Green</b>	Significant positive impact						
<b>Light Green</b>	Some positive impact						
<b>White</b>	No change						
<b>Yellow</b>	Some adverse impact						
<b>Red</b>	Significant adverse impact						
<i>*conducted via a simple assessment of the proposed emissions reduction projects, there are no</i>							

ENVIRONMENTAL IMPACTS	Behavioural and educational campaign for waste and recycling	Cafeteria composting	PVC recycling (I.V. bags)	LED upgrades	Computer sleep	Incorporate electric vehicles in fleet	Install more efficient industrial dish washers (procurement in process)
<i>relevant unintended environmental impacts, state this to be the case.</i>							

## 10 Key performance indicators

Table 5: KPIs.

KPI	2017
Expenditure - 1623683	1,626,975.00
FTE - 6215	6,215.00
Turnover/revenue (\$Millions)	1,624.00

Table 6: GHG emissions per KPI.

Total gross GHG emissions per Turnover/revenue (\$Millions)	2017
Total gross GHG emissions per Expenditure - 1623683	0.0086
Total mandatory GHG emissions per Expenditure - 1623683	0.0086
Total gross GHG emissions per FTE - 6215	2.25
Total mandatory GHG emissions per FTE - 6215	2.25
Total gross GHG emissions per Turnover/revenue (\$Millions)	8.62
Total mandatory GHG emissions per Turnover/revenue (\$Millions)	8.60

GHG foot printing, investigation of feasible projects and reduction targets will also be part of the initial KPIs (qualitative) for the baseline year (by tonnes and %, base lined against floor area and bed days).

## 11 Monitoring and reporting

GHG emissions reductions (by tonnes and %, base lined against floor area) will be monitored and reported annually via the CEMARS process by the Sustainability Manager, reporting to the GM - Facilities and Development.

## 12 Emissions reduction calculations

Table 7: GHG inventory results.

	2017
Scope 1	8,072.42
Scope 2	3,281.06
Scope 3 Mandatory	2,609.05
Scope 3 Additional	28.28
Scope 3 One time	0.00
Total gross emissions	13,990.81
Reporting reductions	
5-year average (tCO <sub>2</sub> e)	13,990.81
5-year average (tCO <sub>2</sub> e) (scope 1 & 2)	11,353.48
Emissions intensity reductions	
Turnover/revenue (\$Millions)	1,624.00
GDP deflator values Yr1 prices (assumed)	
Adjusted turnover (\$M)	
Emissions intensity (tCO <sub>2</sub> e/\$M)	8.62
5-year average emissions intensity (tCO <sub>2</sub> e/\$M)	8.62
Percentage change in absolute emissions	(no data)
Percentage change in emissions intensity	(no data)

## 13 Performance against plan

Not applicable as this is the base year. Whilst target setting has commenced, performance will be addressed in subsequent recertification years.



# Summary of CEMARS certification

## Waitemata District Health Board

Year 1 of 3 year certificate period

Waitemata District Health Board meets the requirements of CEMARS® certification having measured its greenhouse gas emissions in accordance with ISO 14064-1:2006 and committed to managing and reducing its emissions in respect of the operational emissions of its Northshore and Waitakere Hospital sites.



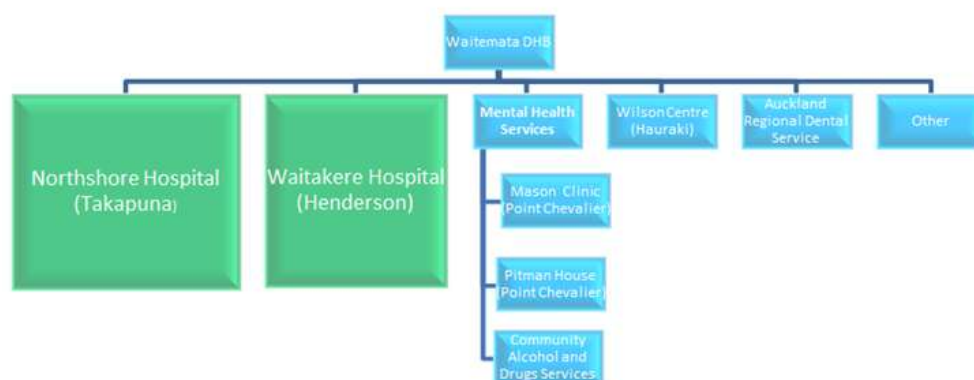
**Introduction<sup>1</sup>** – Waitemata DHB serves the North Shore, Waitakere and Rodney communities. It is New Zealand’s largest DHB by population, serving approximately 591,000 people. Waitemata DHB has the fastest growing population of NZ’s 20 DHBs. Its catchment population is currently expected to reach 680,400 by 2025, and 728,000 by 2030. WDH B employs over 6,800 people, and provides secondary hospital and community services from the North Shore and Waitakere hospitals, the Mason Clinic and 30 community sites throughout the district.

Waitemata DHB is committed to providing the Best Care for Everyone. Waitemata DHB acknowledges that people are at the centre of everything we do. People live within a social community and an economy, all of which ultimately exist within, and rely upon, the natural environment. Waitemata DHB is also Enviro-Mark Gold certified.

To Waitemata DHB, sustainability means operating in a way that meets the needs of the people without jeopardising the fabric of the social community, the economy or the natural environment, so that future generations continue to be able to meet their needs. It is about long-term thinking.

Waitemata DHB acknowledges that a healthy natural environment and a well-constructed built environment results in a positive impact on overall community health through improved mental health and well-being, improved opportunities for physical activity, improved social contact and improved children’s development.

**Boundary** – Figure 1 below shows the organisational structure used for describing the organisation’s greenhouse gas (GHG) emissions inventory, and what business units were included in the inventory in the context of the entire organisational profile. The parts of the structure (business units) in green have been identified as being within this emissions inventory. Business units excluded from the inventory are shown in blue.



**Figure 1:** Organisational structure showing business units included and excluded.

<sup>1</sup> **Disclaimer:** This Disclosure Statement is a summary of the verified information considered for certification and the certification decision. It should not be taken to represent the full submission for certification. Whilst every effort has been made to ensure that the information in this Disclosure Statement is accurate and complete, Enviro-Mark Solutions Limited does not, to the maximum extent permitted by law, give any warranty or guarantee relating to the accuracy or reliability of the information.



# Summary of CEMARS certification

## Waitemata District Health Board

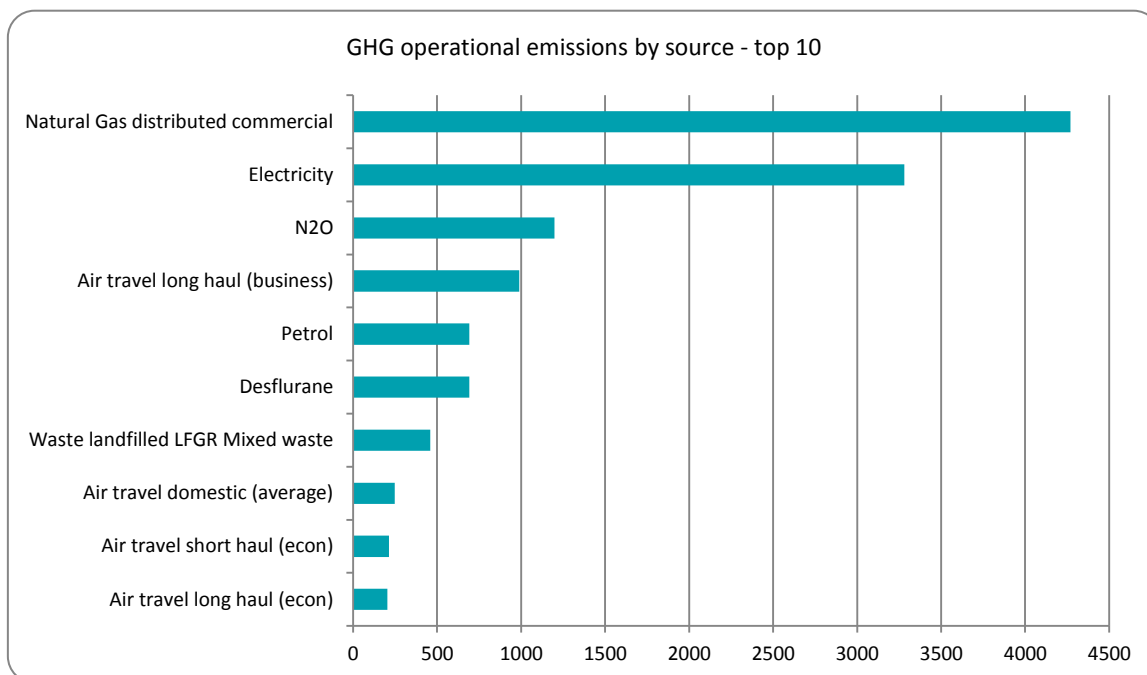
Year 1 of 3 year certificate period

**Consolidation approach** – The operational control consolidation approach has been used to account for operational emissions with reference to the methodology described in the GHG Protocol and ISO 14064-1:2006 standards.

**Base year** – 01/7/2016 to 30/6/2017

**Measurement period** – 01/7/2016 to 30/6/2017

**Emissions source inclusions** – The operational GHG emissions for the organisation by emissions source are shown in Figure 2 below.



**Figure 2:** GHG emissions by emissions source (tCO<sub>2</sub>e).

Emissions as tonnes of carbon dioxide equivalents (tCO<sub>2</sub>e) for this period were:

Emissions summary by scopes		Units
<b>Scope 1 total</b>	<b>7,254.58</b>	<b>tCO<sub>2</sub>e</b>
<b>Scope 2 total</b>	<b>3,281.06</b>	<b>tCO<sub>2</sub>e</b>
<b>Scope 3 total</b>	<b>2,431.28</b>	<b>tCO<sub>2</sub>e</b>
Mandatory scope 3	2,403.00	tCO <sub>2</sub> e
Additional scope 3	28.28	tCO <sub>2</sub> e
One-time scope 3	0.00	tCO <sub>2</sub> e
<b>Total inventory:</b>	<b>12,966.91</b>	<b>tCO<sub>2</sub>e</b>

**Emissions source exclusions** – The following emissions sources were excluded from the inventory for this measurement period:

GHG emissions source	GHG emissions level scope	Reason for exclusion
Postage and couriers	Scope 3 mandatory	<i>de minimis</i>
Specimens and	Scope 3	Regional contracts for the courier service, frequent deliveries yet very small volume. This service is often shared with Auckland DHB and CMDHB so is



# Summary of CEMARS certification

## Waitemata District Health Board

Year 1 of 3 year certificate period

GHG emissions source	GHG emissions level scope	Reason for exclusion
sample collections	mandatory	difficult to assess total activity for Waitemata DHB. Anticipated to be <i>de minimis</i> .
Contracted services	Scope 3 additional	Services such as cleaners and laundry service excluded due to being contracted out, not a mandatory requirement to be included in the inventory
Rental cars	Scope 1	<i>de minimis</i>
Private Car (staff mileage claims)	Scope 3 Mandatory	<i>de minimis</i>
Refrigerant holdings in domestic heat pumps	Scope 1, Liability	Numerous domestic size heat pumps and deemed to be less than 3kg of refrigerant holdings, not a mandatory requirement to be included in the inventory
Waste water	Scope 3 mandatory	<i>de minimis</i>

**Emissions reduction commitments** – A GHG emissions management plan and reduction targets have been developed. The current target is to reduce absolute total Scope 1, Scope 2 and mandatory Scope 3 emissions by 2% by Jun 2019. Projects to reduce emissions include:

- Behavioural and educational campaign for waste and recycling
- LED lighting upgrades
- Incorporate electric vehicles in fleet
- Investigate best-practice alternative to desflurane and sevoflurane medical gases
- Investigate insulation of exposed steam and heating lines and valves

**Verified by** – Enviro-Mark Solutions Limited

**Data quality score** – High

**Threshold of materiality** – Excluded emissions do not exceed 5% of the total footprint within the organisation boundary stated.

**Level of assurance** – Reasonable Scope 1 & 2, Limited Scope 3

**Certification status** – CEMARS certified organisation

**Certificate number** – 2018035J, Year 1 of 3 year certificate period

**Valid until** – 31 May 2021

North Shore Hospital, 124 Shakespeare Road, Takapuna 0622, Auckland, New Zealand  
 Telephone: +64 (0)9 486 8930. Email: <http://www.waitematadhb.govt.nz/contact-us>  
 Web: [www.waitematadhb.govt.nz](http://www.waitematadhb.govt.nz)

9 October 2017

[info@productivity.govt.nz](mailto:info@productivity.govt.nz)

### Submission to the Productivity Commission's Low-emissions Economy – Issues Paper

Thank you for the opportunity to provide a response to the New Zealand Productivity Commission's low-emissions economy issues paper.

The following submission has been prepared by the Auckland Regional Public Health Service (ARPHS) and is endorsed by the Chief Executives of the Auckland, Waitemata, Counties Manukau, and Northland District Health Boards (DHBs).

The primary contact point for this submission is:

Andrew Phillipps  
 Senior Policy Analyst  
 Auckland Regional Public Health Service  
 09 623 4600 (ext. 27105)  
[aphillipps@adhb.govt.nz](mailto:aphillipps@adhb.govt.nz)

Yours sincerely,

**Ailsa Claire**  
**Chief Executive**  
**Auckland District Health Board**

**Dr Dale Bramley**  
**Chief Executive**  
**Waitemata District Health Board**

**Dr Gloria Johnson**  
**Acting Chief Executive**  
**Counties Manukau Health**

**Dr Nick Chamberlain**  
**Chief Executive**  
**Northland District Health Board**

**Jane McEntee**  
**General Manager**  
**Auckland Regional Public Health Service**

**Dr David Sinclair**  
**Medical Officer of Health**  
**Auckland Regional Public Health Service**





### Executive summary

1. Health services are major end-users of carbon and energy-intensive products and services, and therefore have the potential to play an important role in climate change mitigation and adaptation. DHBs are already developing policies and strategies to manage and mitigate against greenhouse gas (GHG) emissions. However, further reductions in health sector emissions could be supported by future-focused policy and financial frameworks that enable DHBs and the health sector to make long term investments that result in the provision of low emission health services. Similar legislation to the UK's Climate Change Act could help to underpin and protect this investment approach.
2. Factors affecting the *demand* for emissions, and the way in which policies and institutional arrangements can reduce consumption of high emission goods and services by end-use sectors, is an important consideration when seeking to create a low emissions economy. It is therefore recommended the Inquiry examine the potential influence and impact that end-use sectors could have on reducing New Zealand's domestic GHG emissions.
3. Beyond recognising the health sectors potential contribution to reducing GHG emissions, this submission provides responses to selected questions from the Issues Paper, and recommends using economic analytical frameworks which can deal with the science, complexity, uncertainty, and scale of changes needed to deal with climate change better than current frameworks.
4. Key discussion points include:
  - A recommendation that the Commission incorporates Nicholas Stern's detailed analysis of why the economics, ethics and equity of climate change mitigation and adaptation cannot be separated.
  - A recommendation that the Commission considers the potential role of large "end use sectors" such as the health sector and demand-side strategies.
  - Purchase incentives are considered the most effective tools in promoting the uptake of electric vehicles (EVs). ARPHS and the DHBs believe there are several benefits for augmenting financial incentives that allow government and private organisations to replace their existing conventional vehicle fleets with EVs.
  - In Auckland, public transport will need to play a major role in alleviating congestion and improving the efficiency of the transport network. ARPHS and the DHBs support increased investment in active and public transport modes that take best advantage of the underlying urban form.
  - ARPHS and the DHBs sustainability advisors, in consultation with Auckland Council, are looking at ways to reduce health service waste.
  - Low emission policies, particularly those aimed at the transport and household energy use sectors, are likely to provide co-benefits for health, including improved air quality, social well-being, physical health, and obesity reduction.
  - Consideration of the potential effects on health and well-being of lower socio-economic households needs to be at the forefront when evaluating the impacts of price-based mechanisms. Any carbon

pricing initiatives should be structured in a way that supports and protects low income households from hardship while transitioning to a low emissions economy.

### *Health services needs to be part of planning New Zealand's Low Emissions Future*

5. Health services are an important part of New Zealand's economy, with 9.5% of GDP allocated to health services (excluding capital expenditure) in 2013.<sup>1</sup> Health services are major end-users of carbon and energy-intense products and services, and operate major facilities with substantial energy and resource use. Health services need to be part of the preparation for New Zealand's low emissions future, and should be able to exert pressure on suppliers through procurement policy.

### *General comment on the Issues Paper*

6. The transition to a low emissions economy raises complex social, ethical and practical issues, which cannot be separated from economic considerations. We note that although equity and social cohesion are included in the Inquiry's terms of reference, these are only briefly mentioned as a potential downside of policies such as emission pricing, which is inadequate. We recommend that the Commission incorporates Nicholas Stern's detailed analysis of why the economics, ethics and equity of climate change mitigation and adaptation cannot be separated.<sup>2</sup>
7. Stern makes explicit links between the ethics, equity and economics of climate change mitigation and adaptation, and the UN Sustainable Development Goals (SDGs). This approach is being adopted by some companies; for example Auckland International Airport Ltd<sup>3</sup> in its corporate social responsibility strategy. The SDGs are directly relevant to many aspects of health status and health services. In the context of climate change response and sustainable development Stern states that:

*"To do this we must start by being clear about six things:*

*(1) the scale of the necessary emissions reductions [which is massive and largely against trend];*

*(2) that the transition to low-carbon requires radical change;*

*(3) that it will have many attractive features beyond reducing climate risk;*

*(4) that the next two decades, when the low-carbon transition must be strong, coincide with a strong structural transformation in the world and national economies in terms of changing balance of output, rapid urbanization, and so on, and that good management of the investments for the structural transformation (including avoiding waste, pollution, and congestion) will also provide a very powerful contribution to emissions reductions;*

*(5) that the low-carbon transition is a sustainable growth story with great potential for overcoming poverty in the next few decades; and*

*(6) that substantial investment resources and new technologies are required.*

*As an attempt at high-carbon growth will self-destruct in the deeply hostile physical environment it is likely to create, there is little point in "equitable access to a train wreck."<sup>4</sup>*

<sup>1</sup> OECD. (2015). *How does health spending in New Zealand compare?* Retrieved from <https://www.oecd.org/els/health-systems/Country-Note-NEW%20ZEALAND-OECD-Health-Statistics-2015.pdf>

<sup>2</sup> Stern, Nicholas (2013). *Why Are We Waiting?: The Logic, Urgency, and Promise of Tackling Climate Change*; (Chapters 5 and 6). MIT Press. Kindle Edition

<sup>3</sup> AIAL. (2016). *Corporate Responsibility Report*. Retrieved from [https://corporate.aucklandairport.co.nz/~/\\_media/Files/Corporate/Social-Responsibility/CSR-Report-June-2016.ashx?la=en](https://corporate.aucklandairport.co.nz/~/_media/Files/Corporate/Social-Responsibility/CSR-Report-June-2016.ashx?la=en)

<sup>4</sup> Stern, N. (2013). *Op cit.* (p 294)

8. A key underlying consideration is the economic framework the Commission uses. Anthropogenic climate change has been described as a market failure with global consequences, for example in the Stern review and subsequent research. On that basis, we would therefore expect major limitations in the ability of existing market structures to address climate change and the massive reduction in emissions needed. It is not simply a case of internalising existing externalities. Climate change is pushing the economy and ecology further from equilibrium, and decisions made over the last decades and from now on will not be about marginal effects; rather the future pathway has to contend with uncertainty and discontinuity. This means that standard economic analysis based on general equilibrium and marginalism and reliance on growth *per se* will not be adequate. The “integrated assessment models” used to assess economic impacts of climate change have grossly underestimated risk because of the orthodox economic assumptions and methods used.<sup>5</sup> Instead, it is recommended that economic models are based solidly on physical sciences (e.g. ecological economic concepts are far closer to science than neoclassical environmental and resource economics models; the economy needs to be analysed as a complex social phenomena embedded in a constrained biophysical environment and a “full world”.<sup>6</sup>)
9. Similarly, the ethics and approach to inter-temporal valuation need to be carefully thought through, since the commonly used method of discounting is often done without consideration of assumptions, framework or ethics, and frequently ignores behavioural science research findings on how people actually make inter-temporal decisions, e.g. that prospect theory has greater validity than utility theory.<sup>7</sup> Health benefits should be discounted at a lower rate because they exhibit a lower social time preference.<sup>8</sup>
10. The New Zealand Treasury’s default discounting rate of 8% per annum is not appropriate for use for long term planning and is not consistent with the rate used by many OECD countries for this purpose (e.g. the UK uses 3% for long term projects and most EU countries use similar rates). This high discounting rate is a major obstacle to the long term planning needed for the transition to a low emissions economy, including for the health sector. Stern (2006 and 2013) makes an extensive analysis of inter-temporal valuation, which we strongly recommend that the Commission incorporates in its analysis. This includes using discounting frameworks concomitant with the climate impact, uncertainty and time scale of the project (e.g. < 1-2% (or even negative rates) for projects with climate change implications). Current low or negative interest rates on government bonds internationally and ongoing stagnation could be used to encourage longer term climate-adapted infrastructure development. Adopting a science-based approach to economic evaluation would make a profound difference.
11. The paragraph on page 3 states that the Commission will not, in general, be considering adaptation. However, we consider that it will be important to consider the economic impacts of adaptation on the

---

<sup>5</sup> Stern, N. (2013). “The Structure of Economic Modeling of the Potential Impacts of Climate Change: Grafting Gross Underestimation of Risk onto Already Narrow Science Models.” *Journal of Economic Literature* 51: 838–859

<sup>6</sup> Daly, H., & Farley J. (2004). *Ecological Economics*. Washington DC, Island Press. Ch 7.

<sup>7</sup> Kahneman, D., & Tversky, A. (2000). *Choices, values and frames*. NY, Cambridge University Press; White J, Dow S, *Intertemporal choices in health*, in Roberto CA and Kawachi I (eds) (2016) *Behavioral economics and public health*, NY, OUP, Chapter 2.

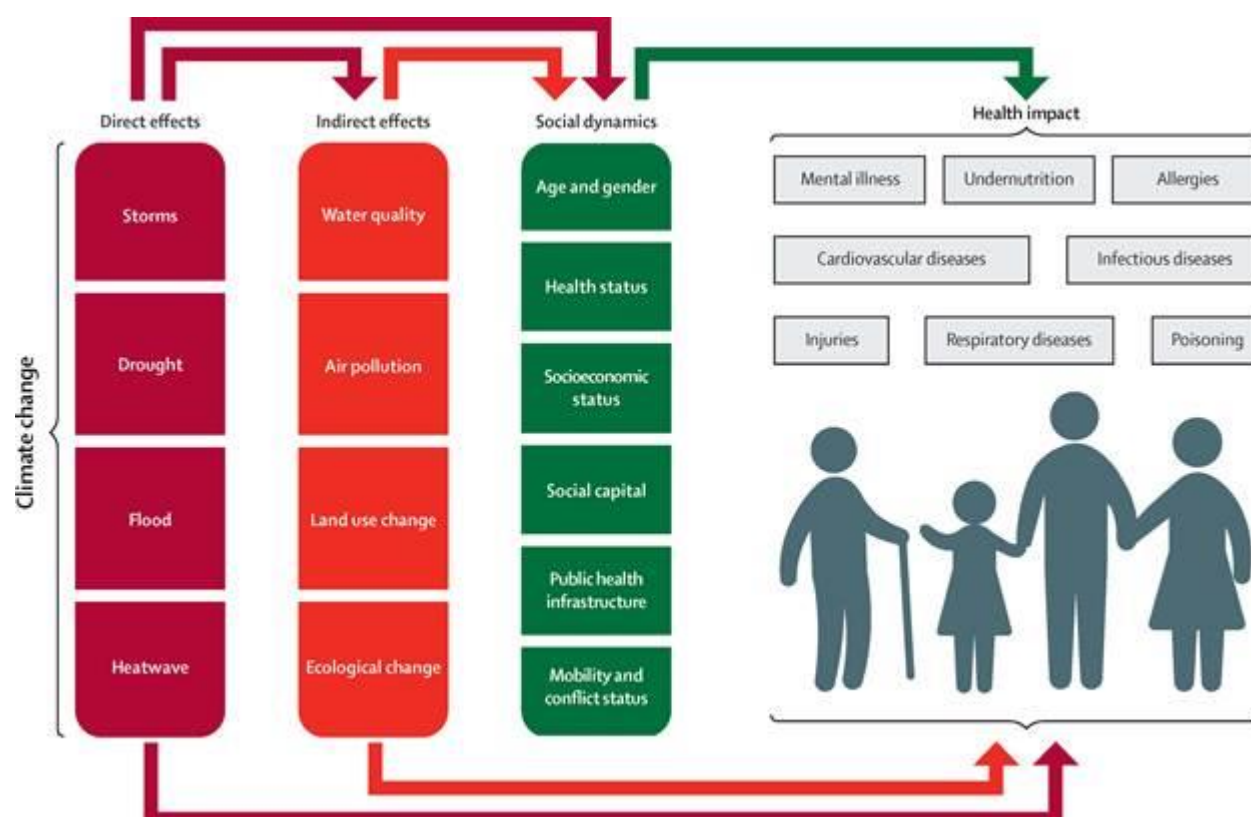
<sup>8</sup> Oliver, A. (2013). A normative perspective on discounting health outcomes. *Journal of Health Services Research & Policy*, 18(3): 186-189.

country's low emission pathways, e.g. infrastructure choices which need to be made as part of adaptation.

12. The Issues Paper focuses primarily on topics of generation of emissions, emission sources and mitigation opportunities, and the policies and institutional arrangements which support reduced emissions and mitigation. The focus is on the *production* of emissions in the *supply* of goods, services and infrastructure. There is much less attention on the factors affecting the “*consumption*” of emissions, and the way in which policies and institutional arrangements can reduce *demand* for high emission goods and services by end-user sectors. A useful paper by Creutzig et al (2016)<sup>9</sup> describes demand-side issues and solutions for “end use sectors”. We recommend that the Commission fully incorporates this perspective into its analysis.

### *The health sector's contribution to reducing greenhouse gas emissions*

13. Health services have several broad areas of interest in climate change. The first is the direct and indirect impact of climate change on health (Figure 1). This is well described in the IPCC 5<sup>th</sup> assessment Working Group 2 report (Chapter 11), including health impacts of heat waves, floods, droughts, vector-borne diseases, food-borne disease, air quality, water quality, food supply and security, and ecological changes, and impacts on physical and mental health, and nutrition. Health equity and ethical issues are also of considerable importance. There are also potential co-benefits for health from a low emission society and economy including improved air quality, social well-being, physical health and obesity reduction.



**Figure 1: Health impacts of climate change (Lancet Commission on Health and Climate Change)**

<sup>9</sup> Creutzig, F., Fernandez, B., Haberl, H. et al. (2016). Beyond technology: Demand-side solutions for climate change mitigation. *Annual Review of Environment and Resources*, 41: 173-198.

14. The second area is mitigation, the main topic of the Commission's Issues Paper. The health sector will need to make major changes to reduce its emissions and environmental footprint as part of mitigation and adaptation. Long term planning is essential for DHBs over the next several decades because of population growth, developments in medical technology, changing patterns of care, and large infrastructure and hospital re-developments. Long term policy, financial and planning frameworks which support a low emission economy and society are essential. DHBs need to be able to plan and provide low emission services rather than being left with high emission facilities and services because of short term financial considerations. A long term framework which facilitates climate change mitigation and adaptation is needed from government, as the health sector's primary funder.
15. Internationally, health service GHG emissions are well recognised, and there are many active programmes for reducing health services' carbon footprint (e.g. HCHW Europe<sup>10</sup>). For example, the UK National Health Service (NHS) has a very active programme through its Sustainable Development Unit (SDU)<sup>11</sup>, which has included assessment of the NHS's carbon footprint, which amounts to about 5% of the UK's gross GHG emissions. The NHS SDU programme facilitates integration of the clinical, social, financial and environmental responsibilities of health services to act as good local corporate citizens.
16. While progress is being made here, New Zealand's health services are not international leaders in climate change response, despite requirements in the New Zealand Public Health and Disability Act 2000 for each DHB "to exhibit a sense of environmental responsibility by having regard to the environmental implications of its operations" (section 22(j)), and "to promote the reduction of adverse social and environmental effects on the health of people and communities" (section 23(h)). Current Ministry of Health and Treasury policy and financial frameworks constrain DHBs from making relevant long term investments for low emission health services.
17. Demand-side approaches are of particular relevance to the health sector since it is a major user of goods and services with high embedded carbon, as well as constructing and operating large energy-and technology-intense hospital facilities. For example, the UK NHS SDU carbon footprint assessment identified pharmaceuticals as the largest contributor to the NHS's emissions. New Zealand's health services are particularly dependent on imported materials, medical supplies, equipment and technology, much of which has a high carbon footprint and is air-freighted.
18. Some of the important emission-related aspects of DHB activities include:
- Energy – both as user of electricity, and generator of electricity and heat
  - Construction/demolition
  - Operations of facilities

---

<sup>10</sup> Healthcare Without Harm (2016). Reducing Healthcare's Climate Footprint: Opportunities for European Hospitals and Health Systems. Retrieved from [https://noharm-europe.org/sites/default/files/documents-files/4746/HCHWEurope\\_Climate\\_Report\\_Dec2016.pdf](https://noharm-europe.org/sites/default/files/documents-files/4746/HCHWEurope_Climate_Report_Dec2016.pdf)

<sup>11</sup> <http://www.sduhealth.org.uk/>

- Procurement
- Pharmaceuticals
- Waste
- Food
- Transport (including freight)
- Waste anaesthetic gases are an additional source of GHG emissions from health services. Some of these gases are potent GHGs (e.g. desflurane has a GWP100 of >2000 times that of CO<sub>2</sub>) and nitrous oxide is commonly used in large quantities. These gases account for around 5% of acute hospital emissions in the UK. There are now several programmes in New Zealand hospitals to reduce these emissions, and anaesthetic gases can be included in CEMARS assessments.

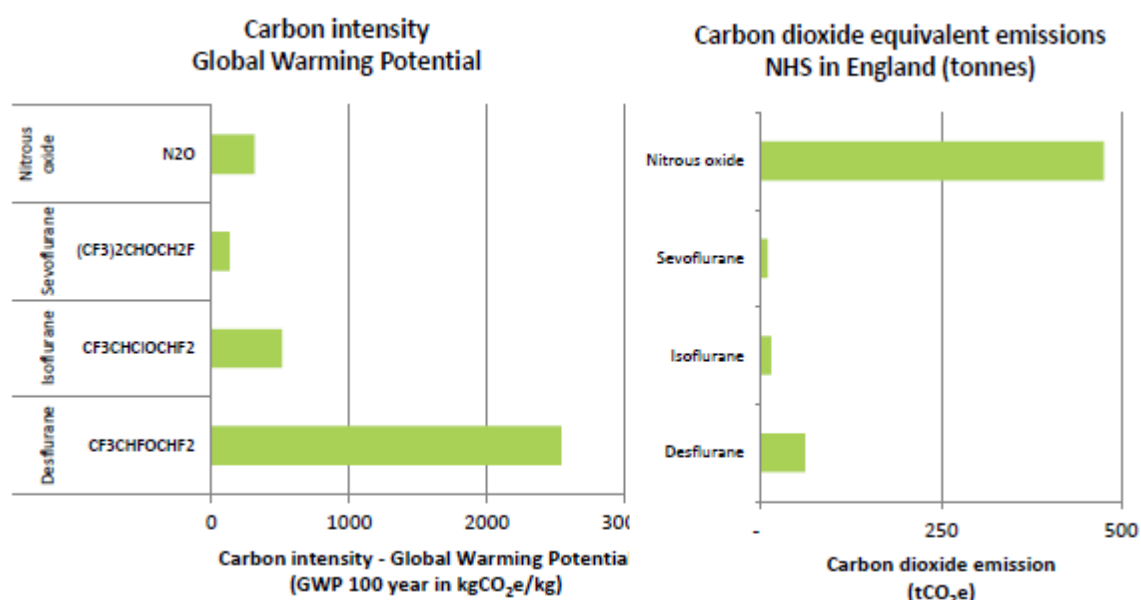


Figure 2: Contribution of anaesthetic cases to health sector emissions, UK NHS SDU

19. Several DHBs have undertaken Certified Emissions Measurement and Reduction Scheme (CEMARS) assessments. CMDHB and ADHB are CEMARS certified organisations and are both measuring and managing their GHG emissions. Other DHBs are carbon accounting (NDHB) or have gained other forms of environmental accrediting (WDHB). Many more are developing business cases to support the recruitment of sustainability managers and to develop the policy and strategies to manage and mitigate against GHG emissions.
20. The remainder of this submission addresses selected questions raised in the Issues Paper.



### Q8 – What are the main barriers to the uptake of electric vehicles in New Zealand?

### Q9 – What policies would best encourage the uptake of electric vehicles in New Zealand?

21. A US study by Egbue and Long found that although the sustainability and environmental benefits of EVs influence EV adoption, potential buyers ranked these benefits behind cost and performance.<sup>12</sup>
22. The comparative analysis carried out for the United States by Jin, Searle and Lutsey (2014) indicates purchase incentives are the most pertinent and the most effective tools in promoting EV sales.<sup>13</sup>
23. In particular, an incentive provided for one-car families in the lowest incomes brackets would also be beneficial as this sector is likely to be driving the oldest cars. As an example, we note the State of California has introduced a number of financial incentives in an attempt to have more low to middle income households purchase EVs.<sup>14 15</sup>
24. ARPHS and the DHBs support the electrification of DHB vehicle fleets, and we are aware of a few DHBs which have started on this track, including a joint project between Christchurch City Council and the Canterbury DHB. However, Ministry of Health funding frameworks, constrained budgets and initial outlay costs make transitioning to an EV fleet difficult to justify, even if existing contestable funds become available to DHBs. Therefore additional consideration needs to be given to providing extra funding opportunities to make such a transition financially viable.
25. ARPHS and the DHBs consider there are several benefits for augmenting incentives that allow government and private organisations to replace their existing conventional vehicle fleets with EVs. Uptake of EVs in government/private fleets will have the additional benefit of expanding the second-hand availability of EVs when those fleet vehicles are sold off and replaced. Uptake of EVs by large established organisations may also provide some certainty and support to infrastructure providers when it comes to knowing where to locate infrastructure such as charging stations.
26. Another advantage is that government/private fleets would be highly visible to the public, and provide a strong lead by example message. DHB fleets would be an excellent example.
27. This view is supported by the International Energy Agency's recognition of the benefits of EV fleet procurement programs:<sup>16</sup>

*“Fleet operators, both in public authorities and the private sector, can contribute significantly to the deployment of EVs: first through the demand signals that they can send to the market, and second thanks to their broader role as amplifiers in promoting and facilitating the uptake of electric cars by their staff and customers” (page 17).*

<sup>12</sup> Egbue, O., & Long, S. (2012). *Barriers to widespread adoption of electric vehicles: An analysis of consumer attitudes and perceptions*. Retrieved from <http://dx.doi.org/10.1016/j.enpol.2012.06.009>

<sup>13</sup> [https://www.iea.org/publications/freepublications/publication/Global\\_EV\\_Outlook\\_2016.pdf](https://www.iea.org/publications/freepublications/publication/Global_EV_Outlook_2016.pdf)

<sup>14</sup> CleanTechnica. (2015). *Incentives Of Up To \$12,000 In California To Get Low-Income People To Upgrade To Fuel-Efficient Cars From Gas Hogs*. Retrieved from <https://cleantechnica.com/2015/06/18/incentives-12000-california-get-low-income-people-upgrade-fuel-efficient-cars-gas-hogs/>

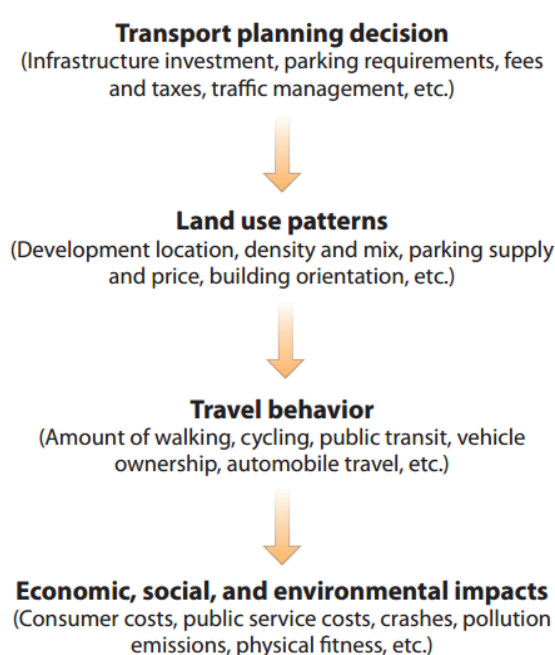
<sup>15</sup> Electrek. (2016). *California increases EV rebate by \$500 for lower-income buyers, makes earners over \$150k ineligible*. Retrieved from <https://electrek.co/2016/10/18/california-increases-ev-rebate-by-500-for-lower-income-buyers-makes-earners-over-150k-ineligible/>

<sup>16</sup> International Energy Agency. (2017). *Global EV Outlook 2017*. Retrieved from <https://www.iea.org/topics/transport/>

28. Aiming the incentives at sectors where travel by car is needed for service delivery (i.e. community nurses visiting patients), will help to increase the number of EVs as a proportion of the national fleet, rather than increase the per capita vehicle ownership rate.
29. The latest International Energy Agency's Global EV Outlook report provides a useful review of the policy options adopted internationally to incentivise the uptake of EVs.

**Q10 – In addition to encouraging the use of electric vehicles, what are the main opportunities and barriers to reducing emissions in transport?**

30. The urban form and the quality of the built environment can help to reduce GHG emissions from transport by enabling high accessibility to low-carbon modes. Spatial characteristics such as density, land use, connectivity, and accessibility can affect transport emissions.<sup>17</sup>
31. The WHO<sup>18</sup> notes that urban planning and health behaviour studies consistently find that how communities are built influences whether or not people use public transport, drive, walk or cycle to get to their destination. Importantly, transport planning decisions influence the way land is used, the development of built environments and the behaviours that follow from communities, families and individuals. The built environments and the behaviours that transport investment incentivise have a well-established evidence-based impact on social, economic and health outcomes.<sup>19</sup>



20

32. There needs to be strong coordination between land use and public transportation routes to reduce private vehicle use (e.g. the Auckland Unitary Plan's impetus on a quality compact urban form should help to facilitate improved and more effective public transport initiatives).

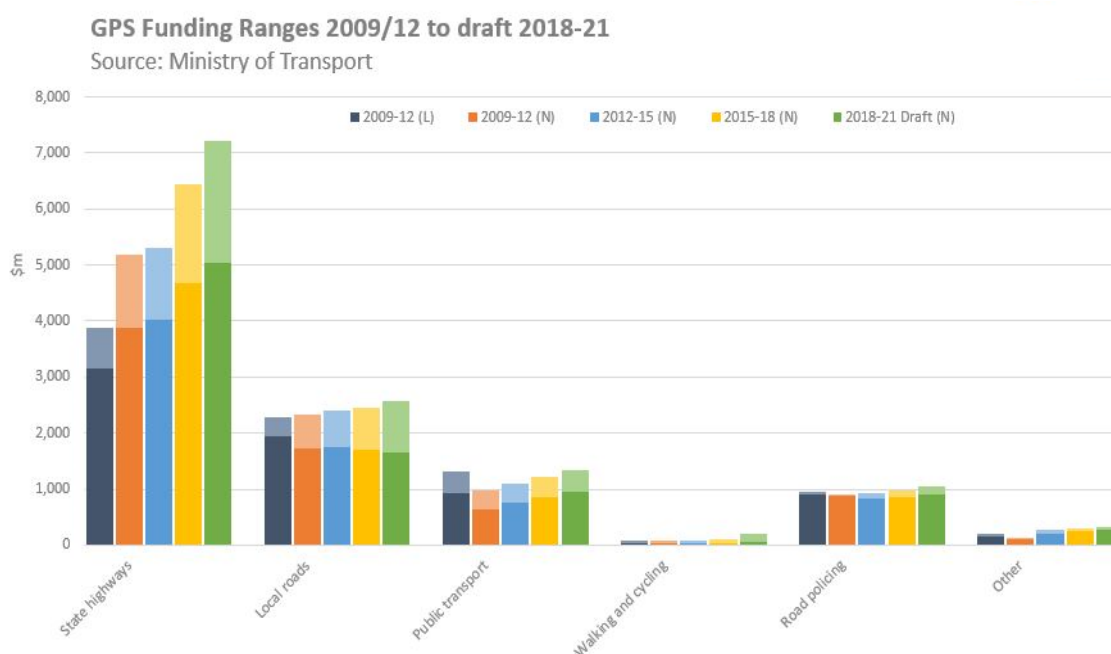
<sup>17</sup> Creutzig, F., Fernandez, B., Haberl, H. et al. (2016). Beyond technology: Demand-side solutions for climate change mitigation. *Annual Review of Environment and Resources*, 41: 173-198.

<sup>18</sup> World Health Organisation. (2006). *Promoting physical activity and active living in urban environments*. Retrieved from [http://www.euro.who.int/\\_data/assets/pdf\\_file/0009/98424/E89498.pdf](http://www.euro.who.int/_data/assets/pdf_file/0009/98424/E89498.pdf)

<sup>19</sup> Todd Litman. (2013). Transportation and Public Health. *Annual Review of Public Health*, 34: 217-233.

<sup>20</sup> *Ibid*

33. There is an opportunity in New Zealand to increase the level of investment in active and public transport modes. Tracking the proportion of investments in activity classes over time in previous Government Policy Statements on Land Transport indicates a serious skew towards state highway investment. Although major investment was required in highways for all of New Zealand, the investment trends highlight the relative under investment in public transport.



34. Public transport will need to play a major part in alleviating congestion and improving the efficiency of the transport network in Auckland; thereby helping to reduce GHG emissions from the transport sector. Increased allocation of funding towards active and public transport modes needs to be accompanied with good planning, design and decision-making.

35. Policies also need to directly incentivise emission reducing behaviour from end users, and ARPHS and the DHBs support other measures, such as:

- Vehicle emission standards
- Regional fuel tax or other alternative pricing of private motorised transport, such as congestion charging.
- Greater use of workplace travel demand strategies such as carpooling, teleconferencing, flexible working arrangements, including working from home.

**Q 16 - What policies and initiatives would best promote the design and use of buildings that produce low greenhouse gas emissions?**

36. In addition to the issues and options noted on pages 31-32 of the Issues Paper, ARPHS and the DHBs would like to emphasise the health and emissions co-benefits which arise from improved thermal performance of residential buildings (see under question 33 below). This has been very well demonstrated by New Zealand research of He Kainga Oranga, the Housing and Healthy Research

programme at the Wellington School of Medicine.<sup>21</sup> Many homes are poorly insulated, damp and unhealthy, but recent amendments to the Residential Tenancies Act on insulation only require an out-of-date standard. We support requirements for a Warrant of Fitness for residential tenancies covering all rental housing.

37. For hospitals and related buildings and infrastructure, we support high standards for low carbon and energy efficient buildings. The operational cost savings should offset any increase in construction costs, although many improvements in thermal performance and energy use come from design. We know of proposals for a “climate-smart” construction programme for Dunedin Hospital’s re-build, and gathering interest among other DHBs for low carbon/energy efficient/climate change ready construction. This will need support from the Ministry of Health and Treasury to facilitate this transition to low carbon infrastructure.

### *Q17 – What are the main opportunities and barriers to reducing emissions in waste?*

38. In the Auckland region, Auckland Council has adopted a “Zero waste to landfill” strategy, and is currently revising its waste management strategy, under the Waste Minimisation Act 2008. ARPHS and the DHB sustainability advisors support the direction of the Council’s plan, and are looking at ways of working with the Council to reduce health service waste, and hence its environmental impact.
39. The Zero Waste concept is linked to a range of conceptual tools and methods, such as, life cycle assessment and product stewardship, which aim, among other things, to design waste out of products and services, hence preventing emissions. Waste reduction can also be made through changes in production, packaging, change of pattern of use, re-use and recycling, and end of use. To support this, large organisations such as DHBs could use their purchasing leverage to require supply of products with low or zero waste through RFP and purchasing specifications.
40. Food waste from health services contributes to methane production. Several DHBs are developing programmes for reducing food waste and for collection and composting. Support for local food production may also reduce emissions from “food miles”.
41. For the purpose of reducing methane emissions, ARPHS and the DHBs support the potential elimination of organic material from landfills through the investigation of alternative waste management options like composting, incineration or anaerobic digestion. However, any schemes enabling the separation of household food waste need to manage the nuisance creation potential from the accumulation, collection, storage and processing of domestic food waste. ARPHS is responsible for the management of the public health aspects of legionella infections and note the importance of appropriately managing the potential legionella risk from the inappropriate handling, storage and transportation of processed materials. We note that Auckland Council has a proposal for separation and collection of domestic organic waste in parallel with domestic waste and recycling collection, aimed in part at reducing GHG emissions.

---

<sup>21</sup> <http://www.healthyhousing.org.nz/>

42. With our role in air quality issues, we would advise caution about waste to energy schemes, especially for municipal mixed solid wastes. There have been proposals in New Zealand in the past, e.g. for conversion of a disused coal fired power station for incineration and energy recovery, but these have major potential down-sides with emissions of toxic materials such as mercury, cadmium, lead and persistent organic pollutants.<sup>22</sup>
43. ARPHS and the DHBs support the principles of reduction and recycling as a way of minimising waste. However, separating and diverting waste is, to a certain extent, a pointless exercise unless there is strong demand for diverted and recycled materials. The market demand for recycled, reclaimed and new products resulting from waste needs to be understood before committing to such measures. Councils and other organisations procurement policies could be used to stimulate demand for recycled products.
44. ARPHS and the DHBs consider there are opportunities available to reduce the volume of demolition and construction waste to landfill. Building de-construction has merit both for the beneficial impact upon materials salvage, and the reduction of risk from presence of hazardous materials like asbestos. Many DIY enthusiasts would value the opportunity to salvage unused or under-used construction material, but there needs to be sensible pricing and accessible venues to facilitate this.
45. Health care waste management is covered under NZ Standard, NZS 4304:2002. This is in the early stages of much needed revision because of technology and practice changes in the last 15 years.

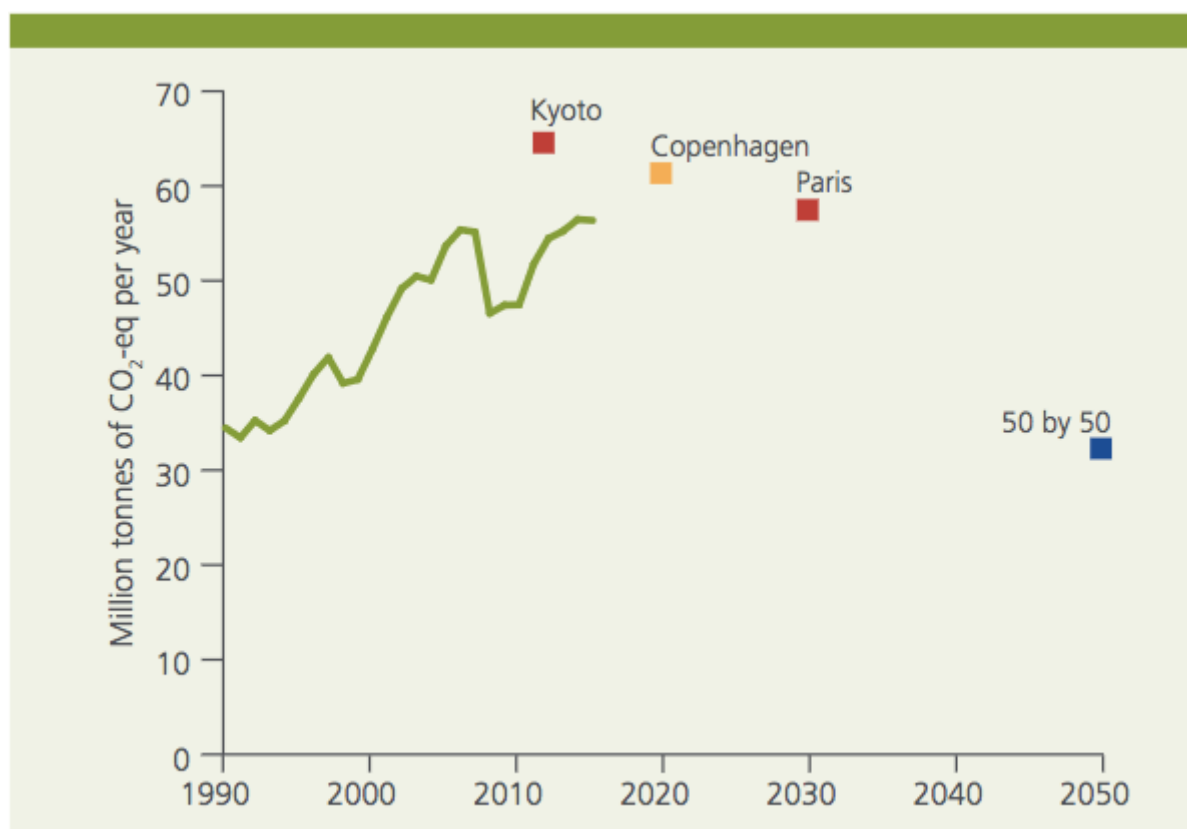
***Q27 – What approaches, such as regulatory frameworks or policy settings, would help embed wide support among New Zealanders for effective reduction of domestic greenhouse gas emissions?***

46. For effective reduction of domestic GHG emissions New Zealand will need to provide a clear legislative framework that enables people, communities, businesses and the government to plan for the long-term. The current primary means of reducing GHG emissions in New Zealand is the Emissions Trading Scheme, and under this policy, reductions in our emissions have not been able to offset the growing emissions from transport, industry, and agriculture, and in fact, GHG emissions per capita is the fifth highest in the OECD as illustrated in the Issues Paper. What is required is a framework that enables New Zealand to bend the curve, and not be solely reliant on offshore credits to meet domestic emission targets.<sup>23</sup>

---

<sup>22</sup> National Research Council (USA) (2000). Waste Incineration and Public Health, Washington DC, National Academy Press

<sup>23</sup> Parliamentary Commissioner of the Environment. (2017). *Stepping Stones to Paris and beyond*. Retrieved from <http://www.pce.parliament.nz/publications/stepping-stones-to-paris-and-beyond-climate-change-progress-and-predictability>



Data: NZ Greenhouse Gas Inventory

47. An example of best practice from overseas is the UK's Climate Change Act, passed in 2008. This Act provides an effective framework as it legislates a 2050 emissions target, which creates a chain reaction of liability for other associated government legislation, policy, and plans (existing and new). Furthermore, transparent reporting and accountability are embedded in the framework, clarifying to the public, business and government about what has to be done to ensure a sustainable decline of GHG emissions. Finally, such a framework also addresses the practical concern of climate change being a long-term problem.<sup>24</sup>
48. ARPHS and the DHBs recommend a similar framework be implemented in New Zealand, one that recognises the different dynamics of our emissions profile, and enables consistent and long-term planning across multiple terms of government in how best to meet our emission targets. Furthermore, there is a need for domestic targets to be met with domestic structural changes, as these will have a long-term impact compared to purchasing international credits, which is a short-term solution to a long term problem.

<sup>24</sup> Client Earth. (2009). *The UK Climate Change Act 2008 - Lessons for national climate laws*

**Q33 –What are the main co-benefits of policies to support a low-emissions transition in New Zealand? How should they be valued and incorporated into decision making?**

49. Policies that support a transition to a low emissions economy will have additional and independent effects on health, most of them beneficial,<sup>25</sup> and these benefits will be experienced in the near term.<sup>26</sup> Paragraphs 13, 31 and 36 of this submission briefly touched on some of these potential co-benefits.
50. Climate change mitigation policies aimed at the household energy use, urban land transport, electricity generation, and food and agriculture sectors can result in health co-benefits. ARPHS and the DHBs consider low emission policies aimed at the transport and household energy use sectors are particularly relevant to the Auckland region.

Urban land transport

51. As mentioned on page 25 of the Issues Paper, improving the efficiency of the transport system and reducing the use of cars can reduce harmful emissions and lower levels of traffic congestion.
52. In summer, transport is the biggest cause of air pollution in Auckland, emitting approximately 3.1 tonnes of PM<sub>10</sub> per day.<sup>27</sup> PM<sub>10</sub> is the best available indicator of the sources and effects of other pollutants. Considering other emissions apart from CO<sub>2</sub>, primary tail pipe emissions from transport that are of concern to health include PM<sub>2.5</sub>, nitrogen dioxide, carbon monoxide, black carbon, benzene and polycyclic aromatic hydrocarbons.
53. The health effects from exposure to these harmful emissions are largely respiratory and cardiovascular. The cost of this pollution is high. Using 2006 as the base year, the Updated Health and Air Pollution in New Zealand (HAPINZ) 2012 study<sup>28</sup> calculated the health impacts and social costs associated with emissions from motor vehicles in the Auckland region. The study found that each year in the Auckland region, as a consequence of motor vehicle emissions:
- 126 adults over 30 years old die prematurely.
  - Approximately 28 cardiac and 57 respiratory hospital admissions occur.
  - There are approximately 215,000 restricted activity days for all ages.
  - Social costs (for all of the above) of \$465 million.
54. Congestion produces numerous economic and public health costs. It should be noted that uptake of active and public transport modes have a definitive advantage over electric vehicles if combating congestion is a

<sup>25</sup> Watts, G. (2009). *The health benefits of tackling climate change - An Executive Summary for The Lancet Series*. Retrieved from [http://www.who.int/globalchange/publications/tackling\\_climate\\_change/en/](http://www.who.int/globalchange/publications/tackling_climate_change/en/)

<sup>26</sup> Watts, N., Adger, N., Ayeb-Karlsson, S. et al. (2017). The Lancet Countdown: tracking progress on health and climate change. *Lancet*, 389: 1151-1164.

<sup>27</sup> Auckland Council. (2017). Air quality report card, Auckland area 2016. Retrieved from <https://www.aucklandcouncil.govt.nz/environment/state-of-auckland-research-report-cards/Documents/air-quality-report-card-auckland-area-2016.pdf>

<sup>28</sup> Kuschel, G., Metcalfe, J., Wilton, E., Guria, J., Hales, S., Rolfe, K. & Woodward, A. (2012). Updated Health and Air Pollution in New Zealand Study, Vol 1: Summary Report. Emission Impossible Ltd, Auckland.



priority. A recent NZIER report<sup>29</sup> estimated the benefits of decongestion to the current network capacity in Auckland would be between \$0.9 billion to \$1.3 billion (1% to 1.4% of Auckland's GDP).

55. A NZTA report<sup>30</sup> considered the benefits of shifting trips from car-based modes to public transport. It found that the remaining users of the road would benefit from decreased congestion, air pollution and costs. The average benefit to remaining road users applies to the peak-hour traffic, and is \$1.41/vehicle-km for Auckland as shown in the table below.

#### Peak period average benefits to remaining road users (2008 \$)

	Auckland	Wellington	Christchurch	Other
Average benefits including travel time, VOC and CO <sub>2</sub> (/vehicle-km)	\$1.41	\$1.08	\$0.10	\$0.00

56. A recent report on the roads of New Zealand and Australia<sup>31</sup> identified Auckland as performing very poorly on reliability as road users needed to budget up to an additional 45% in their travel times in order to arrive at their destinations on time during afternoon peak hours. It is not only the duration of journeys that needs to be improved but also reducing the variability of arrival times in Auckland.

#### ***Sydney, Auckland and Wellington are the worst performing cities in their respective groups***

##### Key Congestion Measures – By City, Weekdays

City	Average Speed (Km / Hr)	Travel Time Delay (%)	Reliability (%)		Scheduling (%)	
			Morning Peak (6am to 10am)	Afternoon Peak (3pm to 7pm)	Morning Peak (6am to 10am)	Afternoon Peak (3pm to 7pm)
	<i>How fast does traffic in the city travel?</i>	<i>How much is traffic delayed from free-flow conditions?</i>	<i>What is the statistical reliability of travel times in the morning peak period?</i>	<i>What is the statistical reliability of travel times in the afternoon peak period?</i>	<i>How much time does a consumer need to budget during the morning peak period, relative to free-flow?</i>	<i>How much time does a consumer need to budget during the afternoon peak period, relative to free-flow?</i>
Sydney	29	31%	14%	9%	49%	50%
Melbourne	34	23%	11%	8%	34%	41%
Brisbane	52	12%	8%	6%	23%	23%
Perth	58	14%	7%	6%	22%	25%
Auckland	42	22%	12%	10%	37%	45%
Adelaide	28	11%	7%	3%	16%	17%
Canberra	61	9%	7%	4%	15%	14%
Hobart	42	8%	6%	4%	12%	15%
Wellington	55	10%	9%	9%	21%	20%
Darwin	36	4%	1%	2%	5%	6%

City Group: ● Group 1 ● Group 2 ● Group 3

Note: As analysis was based on 600km of the most congested roads, comparisons are better drawn among cities within the same group based on population size.

32

<sup>29</sup> New Zealand Institute of Economic Research. (2017). *Benefits from Auckland road decongestion*. Retrieved from <https://nzier.org.nz/publication/benefits-from-auckland-road-decongestion>

<sup>30</sup> Ensor, M et al. (2010). *Forecasting the benefits from providing interface between cycling and public transport*. New Zealand Transport Agency

<sup>31</sup> Austroads. (2016). *Congestion and Reliability Review*. Austroads. ISBN 978-1-925451-49-8

<sup>32</sup> *Ibid*



57. Spending longer periods sitting in traffic helps contribute to sedentary lifestyles. A longitudinal study from a representative sample of the British Household Panel survey<sup>33</sup> found that switching from active travel or public transport to private motor transport was associated with a significant increase in body mass index (BMI). This relationship also held in the reverse direction. The results were adjusted for socioeconomic status and health related covariates. The implication of these findings suggests that a shift in the proportion of commuters using more active modes of travel could contribute to efforts to reduce population mean BMI.

#### Household energy use

58. As stated in the Issues Paper, improving the energy efficiency of buildings has co-benefits of improved comfort and health for occupants. People who live in homes with adequate insulation and heating are less vulnerable to cold related illnesses and respiratory diseases during winter.

59. Unfortunately, a high proportion of New Zealand's rental accommodation stock is of poor quality, damp, mouldy, poorly insulated, and in poor repair.<sup>34</sup> Statistics NZ data indicates that just under half of all renters reported they had a problem with dampness or mould<sup>35</sup>, despite the Housing Improvement Regulations 1947 that establish the requirement for a home free of dampness.

60. The results from the recent House Condition Survey<sup>36</sup> report conducted by the Building Research Association of New Zealand suggest that there is still much room for improvement. The survey indicates that:

- 47% of houses have less than 80% coverage of 120mm insulation in the roof space, and 19% of houses have less than 80% coverage of subfloor areas – indicating that 53% of houses could benefit from retrofitted insulation in the roof space and/or subfloor.
- Of those households surveyed, 5% did not usually heat living areas at all in winter, and almost half did not usually heat any occupied bedrooms in winter.
- Rental properties surveyed were twice as likely to smell damp than owner-occupied houses, and nearly three times as likely to feel damp.
- Mould was visible in nearly half of all houses surveyed (slightly more common in rentals).

61. The link between cold, damp and mouldy housing and poor health has been made in multiple New Zealand<sup>37</sup> and international studies.<sup>38</sup> Each year New Zealand hospitals admit around 45,000 children for

<sup>33</sup> Martin A, Panter J, Suhrcke M, et al. (2015). Impact of changes in mode of travel to work on changes in body mass index: evidence from the British Household Panel Survey. *J Epidemiol Community Health*, 69: 753-761.

<sup>34</sup> Statistics NZ (2016). Perceptions of housing quality in 2014/15 from the 2014 New Zealand General Social Survey. Retrieved from: Statistics NZ. [http://www.stats.govt.nz/browse\\_for\\_stats/people\\_and\\_communities/housing/perceptions-housing-quality-2014-15.aspx](http://www.stats.govt.nz/browse_for_stats/people_and_communities/housing/perceptions-housing-quality-2014-15.aspx)

<sup>35</sup> *Ibid*

<sup>36</sup> [https://www.branz.co.nz/cms\\_show\\_download.php?id=50335e67bb00f3e0464097be1d4d71ac8a85f6bf](https://www.branz.co.nz/cms_show_download.php?id=50335e67bb00f3e0464097be1d4d71ac8a85f6bf)

<sup>37</sup> Howden-Chapman P, Pierse N, Nicholls S, Gillespie-Bennett J, Viggers J, Cunningham M, et al. (2008). Effects of improved home heating on asthma in community dwelling children: Randomised community study. *Br Med J*, 337: 852–855.

<sup>38</sup> Jaakkola JJK, Hwang B-F, Jaakkola MS. (2010). Home dampness and molds as determinants of allergic rhinitis in childhood: A 6-year, population-based cohort study. *Am J Epidemiol*, 172(4): 451–9.

conditions that are exacerbated by poor quality housing (contributing factors include overcrowding, dampness, mould, fuel poverty, informal temporary housing arrangements).<sup>39</sup>

62. Improving the energy efficiency of homes will help to reduce demand pressures on New Zealand's healthcare system. It will also reduce heating costs for households. New Zealand research has demonstrated that retrofitting houses with insulation is good value for money.<sup>40</sup>
63. Regulations help to overcome market failures such as split incentives.<sup>41</sup> New Zealand parliament recently enacted the Residential Tenancies Amendment bill and associated Regulations, which requires ceiling and underfloor insulation to be retrofitted for income-related rent tenancies by 1 July 2016 and all other rental homes by 1 July 2019. Unfortunately the improvement in the thermal efficiency of New Zealand's existing housing stock is unlikely to be as pronounced and immediate as it could have been due to the Regulations only requiring homes with existing insulation installed before 1 July 2016 to have a level of insulation that is based on 1978 standards; provided the insulation is in a reasonable condition (as outlined in section 17 of the Regulations).
64. It cannot be assumed that every low emission policy will provide health co-benefits or other co-benefits, and care is needed to avoid unintended consequences.<sup>42</sup> For example, ARPHS supported the recent Energy Innovation (Electric Vehicles and Other Matters) Amendment Bill's intent to introduce incentives to encourage the uptake of EVs, but did not support the specific policy of allowing EVs to access special vehicle lanes as we have concerns that this policy would adversely affect the efficiency of existing transport network in Auckland, and therefore potentially have a negative effect on GHG emissions.
65. Any cost-benefit analysis applied during an evaluation of a low emissions policy needs to be comprehensive and holistic, accurately calculating the relevant health benefits and/or costs, with a weighting proportional to the impact.

***Q35 – What measures should exist (and at what scale and duration) to support businesses and households who have limited ability to avoid serious losses as a result of New Zealand's transition to a low-emissions economy?***

66. The Issues Paper considers emission pricing policies could raise household costs for basic needs such as food and fuel. Consideration of the potential effects on health and well-being of lower socio-economic households needs to be at the forefront when evaluating the impacts of price-based mechanisms.

<sup>39</sup> The Royal Australasian College of Physicians (2017). Make it the norm: Equity through the social determinants of health. Retrieved from <https://www.racp.edu.au/docs/default-source/default-document-library/make-it-the-norm-pres-letter.pdf?sfvrsn=4>

<sup>40</sup> Chapman, R., Howden-Chapman, P., Viggers, H., O'Dea, D. & Kennedy, M. (2009). Retrofitting houses with insulation: a cost-benefit analysis of a randomised community trial. *Journal of Epidemiology and Community Health*, 63(4): 271–277.

<sup>41</sup> Watts, N., Adger, N., Agnolucci, P. et al. (2015). Health and climate change: policy responses to protect public health. *Lancet*, 386: 1861-1914.

<sup>42</sup> Watts, N., Adger, N., Ayeb-Karlsson, S. et al. (2017). The Lancet Countdown: tracking progress on health and climate change. *Lancet*, 389: 1151-1164.

67. Dhar et al (2009) note that carbon pricing may be regressive or progressive in nature.<sup>43</sup> Regressive pricing would mean that there would be increased economic demands on households as the increased cost of carbon is passed on through rising prices, and in these circumstances inequalities in health and well-being would worsen. Dhar et al (2009) highlight several examples where increased pricing on carbon based commodities would have an adverse impact on low income households if regressive in nature, including:
- A potential increase in fuel poverty as low households spend a greater percentage of their income on household fuel and power;
  - If the price of petrol increases and people are unable to switch to more carbon-efficient modes of private or public transport due to lack of infrastructure, access, or affordability, then their ability to access employment, health facilities, and social and recreational activities is sharply impaired. Alternatively, households may reduce spending on essentials such as nutritious food, household heating, electricity and water to compensate for the rising cost of travel.
68. ARPHS and the DHBs therefore consider any carbon pricing initiatives should be structured in a way that supports and protects low income households from hardship while transitioning to a low emissions economy. For example, Dhar et al (2009) note that the revenue from carbon taxation can be recycled to help insulate housing and improve public transport in high deprivation areas, or used to subsidise heating fuels for those living in the poorest and coldest areas.

### **Q37 - Should New Zealand adopt the two baskets approach?**

69. The Issues Paper outlines a case for a “two basket” approach but without considering the atmospheric chemistry of methane, the most important of the relatively short lived GHGs in the NZ inventory. The predominant pathway for methane degradation is by hydroxylation and oxidation to produce CO<sub>2</sub>. Hence emitted methane has a double effect, first as methane (with a half-life of around 9 years but high greenhouse effect) and then as longer-lived CO<sub>2</sub>, in effect compounding the effect of the methane.
70. A second consideration is that the half-life for methane is a significant proportion of the time remaining for emission time horizons of 2030 and 2050. Around 1/3 of methane emitted in 2017 will still be in the atmosphere in 2030.
71. While distinct pathways for reducing methane and CO<sub>2</sub> emissions need to be considered, methane should not be discounted as an important GHG because of its shorter half-life.

### **Conclusion**

Thank you for the opportunity to submit on the low-emissions economy issues paper.

---

<sup>43</sup> Dhar, D., Macmillan, A., Lindsay, G., & Woodward, A. (2009). Carbon pricing in New Zealand: implications for public health. *The New Zealand Medical Journal*, 122(1290): 105-115.

## Appendix 1 - Auckland Regional Public Health Service

Auckland Regional Public Health Service (ARPHS) provides public health services for the three district health boards (DHBs) in the Auckland region (Counties Manukau Health and Auckland and Waitemata District Health Boards).

ARPHS has a statutory obligation under the New Zealand Public Health and Disability Act 2000 to improve, promote and protect the health of people and communities in the Auckland region. The Medical Officer of Health has an enforcement and regulatory role under the Health Act 1956 and other legislative designations to protect the health of the community.

ARPHS' primary role is to improve population health. It actively seeks to influence any initiatives or proposals that may affect population health in the Auckland region to maximise their positive impact and minimise possible negative effects on population health.

The Auckland region faces a number of public health challenges through changing demographics, increasingly diverse communities, increasing incidence of lifestyle-related health conditions such as obesity and type 2 diabetes, infrastructure requirements, the balancing of transport needs, and the reconciliation of urban design and urban intensification issues.