

NORTHLAND DISTRICT HEALTH BOARD

Te Poari Hauora Ā Rohe O Te Tai Tokerau



Sustainability Action plan



Member of

**GLOBAL GREEN and
HEALTHY HOSPITALS**

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HEALTH, SUSTAINABILITY & KAITIAKITANGA

Introduction

In 2016 the Northland DHB Executive Leadership Team (ELT) approved the role of sustainability development manager to create and execute a strategy for sustainability. This action plan is the execution document of the strategy. By approving this plan ELT has committed to reduce the environmental impact of the Northland DHB and to achieve the associated goals in this plan.

Climate change and health



“Climate change is the biggest global health threat of the 21st century”,

The Lancet

Climate change is an increasingly serious and urgent threat to health and health equity in New Zealand and worldwide. It is contributing to global disease, disability and premature death – most seriously affecting people in poor countries, and the poorest within all countries.

With action to tackle climate change there are also opportunities to improve health with a change to more active lifestyles, healthy diets, low emission vehicles and improved housing standards.

As a large organisation in Northland the Northland DHB has regional influence and can significantly contribute to climate change by reducing its carbon emissions.

Kaitiakitanga

Sustainability shares a lot of similar values towards the guardianship ‘Kaitiakitanga’ of our resources and environment. Serving a large Māori community the Northland DHB acknowledges its responsibility to tangata whenua to act together as kaitiaki in the active management of our hospitals in an environmentally sustainable way, respecting ancestral links and cultural practices.

“Kaitiakitanga, Guardianship; the duty of tangata whenua to take care of the resources and taonga in their area for present and future generations





VISION & STRATEGY

Vision and strategy

The vision of the Northland District Health Board is 'A Healthier Northland'. The Northland Health Services Plan has the triple aim of:

- Population health
- Patient experience
- Value and Sustainability

'Healthy people living in a healthy climate'

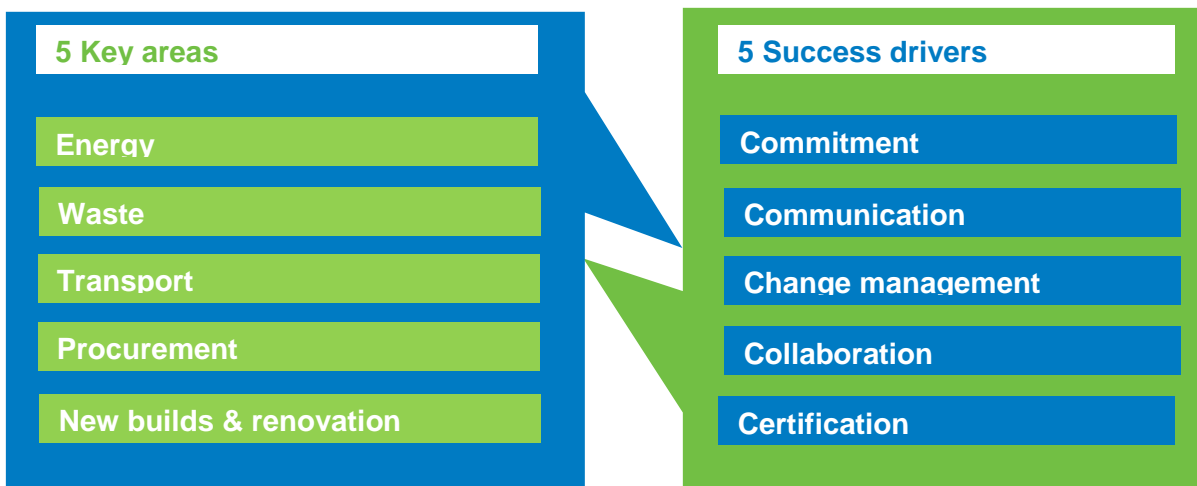
The sustainability vision of the Northland DHB aligns with the overall strategy and is defined as:

"As professionals in healthcare we continuously care for healthy people living in a healthy climate where every one of us acts as kaitiaki to take care of our resources and environment."

The sustainability triple aim strategy focuses on co-benefits between health, environment and costs.



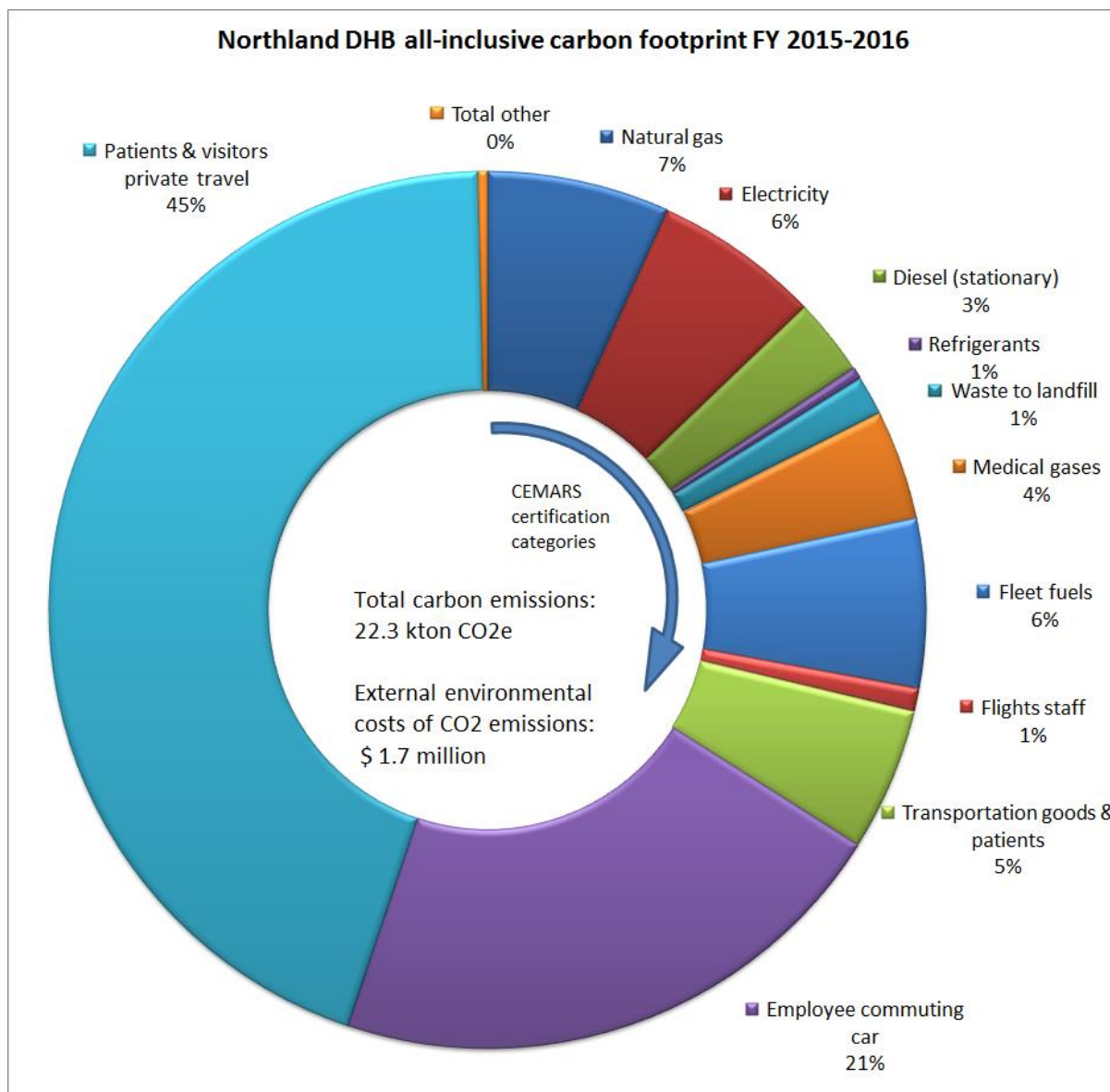
This within 5 defined key areas and 5 defined drivers for success. They were chosen for their significance, ability to influence and alignment with key areas chosen by other DHB's in New Zealand.





OUR FULL CARBON FOOTPRINT

To assess our environmental impact, two footprints have been calculated. One includes private travel of patients and employee commuting, the other showing only the categories which are mandatory in the CEMARS (Certified Emissions Measurement and Reduction Scheme) certification scheme. Private travel of both patients and employees is a significant contributor to the total footprint. While this category is not included in the mandatory categories for certification, but influencing this will have an impact.



>75% dominated by transport movements of patients, commute and business travel

Total emissions: 22.3 kt [ktonne] CO₂e

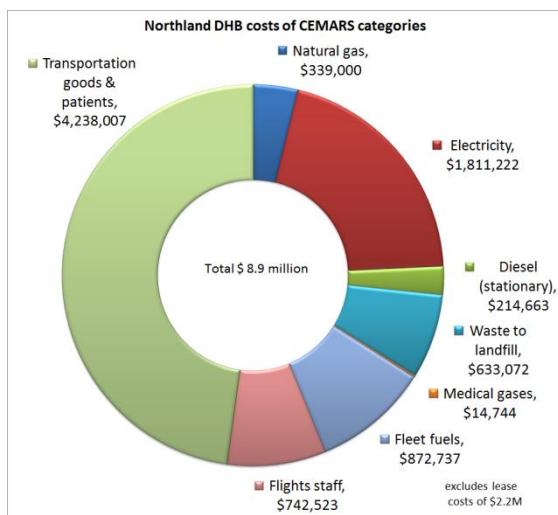
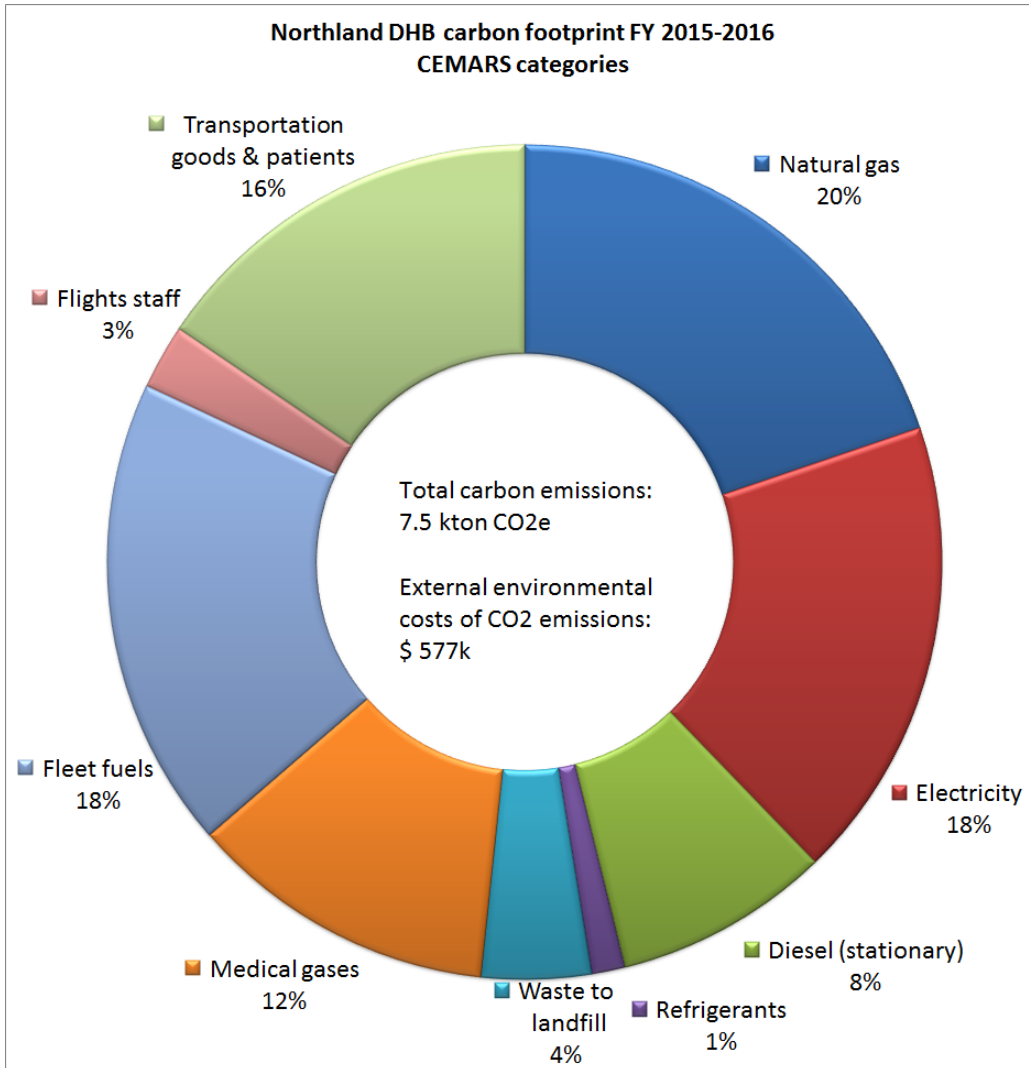
Total “external” environmental costs: NZ\$ 1.7 million*

*External costs (or the environmental cost indicator) are based on European methodology to value environmental external costs per environmental effect. It is based on the hypothetical prevention costs of measures (e.g. carbon capture) that have to be taken to reduce current emissions to a sustainable level and achieve the emission target. The costs give an indication of the costs the society should be willing to pay to mitigate that specific environmental impact. For global warming the value equates to NZ\$ 0,077 /kg CO₂e.



OUR CEMARS CERTIFICATION CARBON FOOTPRINT

The CEMARS certification scheme includes categories which are significant to the organisation, those which can be influenced by the Northland DHB's organisational boundaries. It does not include all the categories shown in the larger footprint. Our CEMARS categories are displayed in the following graph:



Building energy related emissions are a dominant factor in Northland DHB's carbon footprint, followed by transport.

Almost 50% dominated by building energy emissions

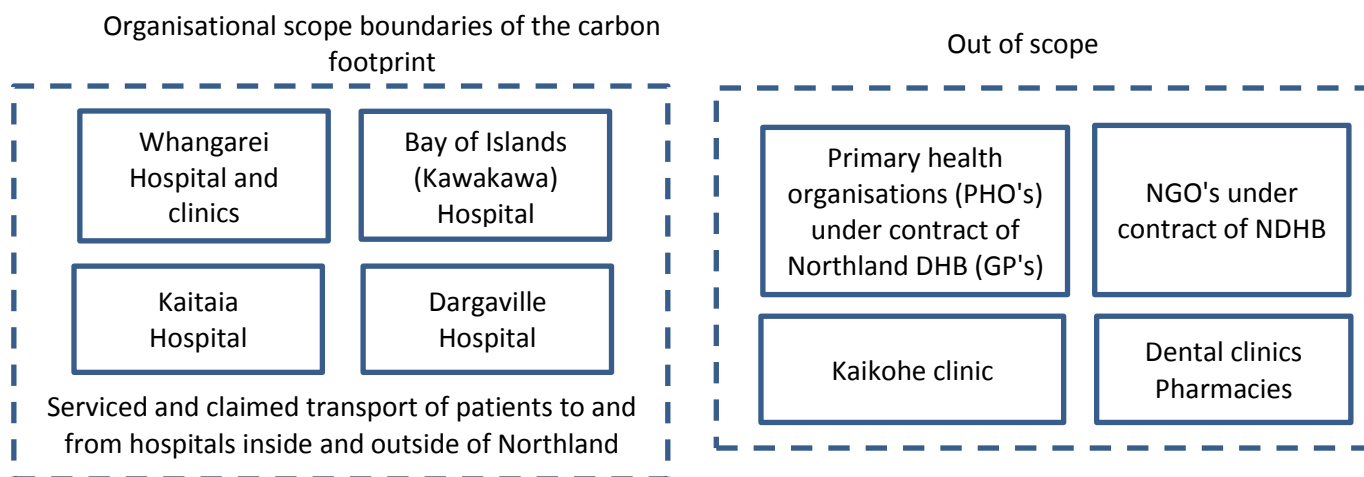
37% transport based

Costs of transport and electricity are high compared to their footprint. Gas, diesel and medical gases are cheap compared to their footprint impact. The total associated cost of the carbon footprint is \$ 8.9 million.



DATA RELATED TO THE CARBON FOOTPRINT

The organisational boundaries



These footprints have been calculated around the organisational boundaries of Northland DHB's four hospitals - Whangarei, Bay of Islands (Kawakawa), Dargaville and Kaitaia. Outside the scope of these footprints are general practices, NGO's under contract of the Northland DHB, dental clinics, pharmacies and clinics outside the four main hospitals.

Data

See a summary of the carbon footprint below. The full data sheet is included in appendix A. The data is collected for the financial year 2015-2016 and the CEMARS categories have been audited by Enviro-mark solutions.

Carbon footprint summary		Qty	UOM	Cost NDHB	CO2e
					[ton]
Energy use					
CEMARS	Natural gas	7,057,930	kWh	\$339,000	1,482
CEMARS	Electricity	9,758,364	kWh	\$1,811,222	1,347
CEMARS	Diesel (stationary)	233,633	Litre	\$214,663	626
CEMARS	Refrigerants	1,630	kg	\$0	98
Waste generation					
CEMARS	Waste to landfill	738	Tonne	\$633,072	318
Other					
CEMARS	Medical gases	6,017	kg	\$14,744	896
Transportation					
CEMARS	Fleet fuels	568,249	Litre	\$872,737	1,370
CEMARS	Flights staff	1,343,961	km	\$742,523	188
CEMARS	Transportation goods & patients	4,141,186	km	\$4,238,007	1,164
	Employee commuting car	20,172,702	km	\$0	4,660
	Patients & visitors private travel	43,441,081	km	\$0	9,791
	Total other (paper, taxis, rental cars, private car use for business, public transport)			\$231,912	79
Water					
	Water	87,900,686	Litre	\$257,265	



THE FOOTPRINT IN PICTURES

Staff commutes



Private and serviced transport patients



Fleet fuels



Flights



7 flights / day
35x around the world / year

Energy consumption



Equals 1400 households

Diesel for heating



1640 barrels / year



~ 1 million foam cups / year

> 37,000 packs of paper / year



Waste to landfill



2 truckloads / day



738 tonne/ year

Water



1.7 million Litres / week

Medical gases

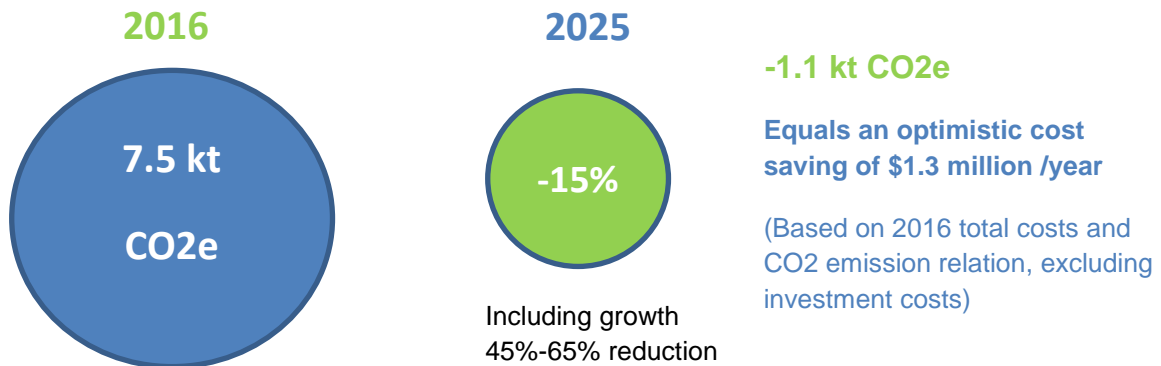


12% of our footprint



OUR GOALS

Northland DHB CEMARS emissions goal:

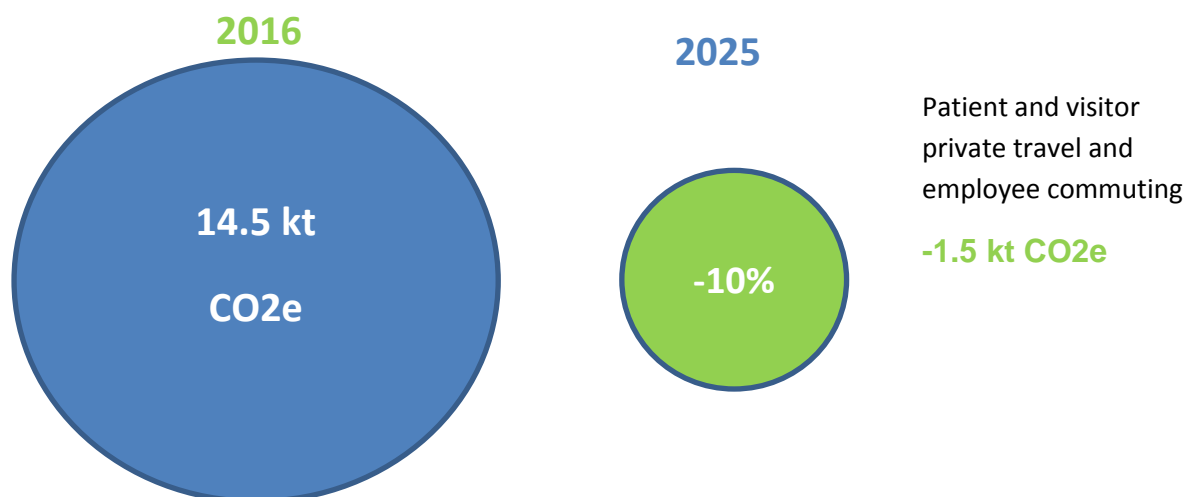


The ultimate goal is to reduce our carbon emissions by as much as we can. The proposed target is a 15% absolute carbon emission reduction in 2025. This is compared to Northland DHBs 2016 CEMARS certification mandatory emission categories measured in kt CO₂e. Considering the yearly and future expected growth of the hospitals, and projecting the growth of the last 3 years to the future, this -15% goal would actually involve a total estimated 45%-65% reduction in our current emissions profile - a significant challenge that would require a collective commitment. In 2020 the current target can be re-evaluated and adjusted in relation to actual growth numbers and achievements.

The current goal is equal to a reduction of 1.1 kt CO₂e, the absolute target for 2025 is to keep our emissions below 6.4 kt CO₂e.

The emissions include: gas, electricity, stationary diesel, company fleet fuels, refrigerants, medical gases, waste to landfill, flights, transportation & distribution of patients and goods and NTA claims of patients.

Our ambition towards employee commuting and patient private travel by car:



Northland is a very transport intensive region. The ambition is to reduce the car use emissions of patient and visitor private travel and employee commuting by 10% in 2025 compared to 2016.

Northland DHB has less influence on these emissions and they are difficult to monitor but considering their large footprint a small reduction can have a significant impact.



MONITORING & REPORTING

Key Performance Indicators (KPIs)

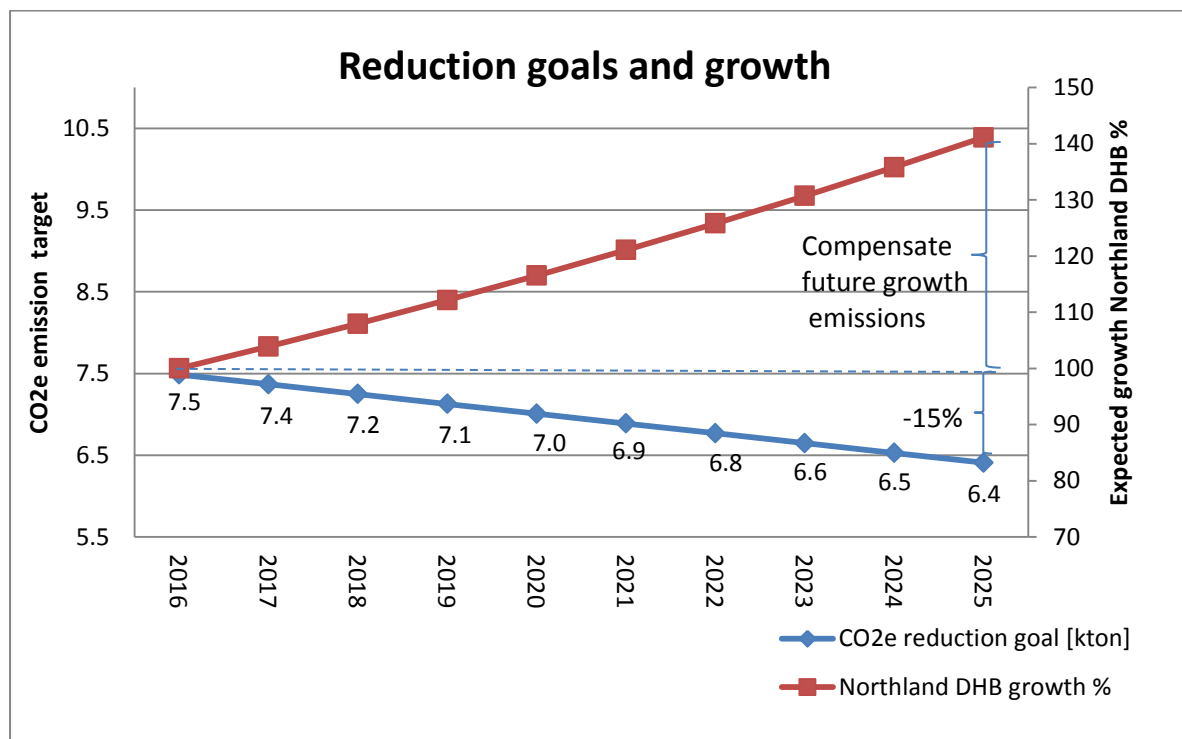
In order to monitor emissions against the organisations anticipated continued growth, the following metrics are utilised as KPIs:

	2016 Benchmark	2025 Goal
	<ul style="list-style-type: none"> ▶ CEMARS emissions: 7.5 kt CO₂e (7,488 tCO₂e), equals: <ul style="list-style-type: none"> • 22.7 tCO₂e / M\$ • 3.60 tCO₂e / FTE • 67 kgCO₂e / PA • 111 kgCO₂e / m² building** ▶ Patient and commuting: 14.5 kt 	<ul style="list-style-type: none"> ▶ CEMARS emissions -15%: ≤ 6.4 kt CO₂e ▶ Patient private travel and commuting transport emissions: -10% ≤ 13 kt CO₂e
KPI	Total CEMARS carbon emissions in kt CO ₂ e	
Monitor	<ul style="list-style-type: none"> • TCO₂e per \$M gross turnover (total funding) • Total carbon footprint per FTE (full time equivalent employee) • Total carbon footprint per PA (patient activity: inpatient and day cases activity) • Total carbon footprint per m² (floor area in meters squared) 	

Reporting:

A yearly report will be published, aligned with the annual year report, on emission status, results and activities.

Monitoring graphs:





Since opportunities, influence and actions that can be taken are different per category, sub-goals and key performance indicators (KPI's) are assigned to each key area to achieve the overall goal of 15% reduction.

These are summarized in the table below:

Key area	Current emission in tCO ₂ e	Goal 2025	Emission reduction in tCO ₂ e
Total emission	7,488	-15%	1,123
To be met by:			
Energy	3,455	-13%	449
Waste	318	-30%	95
Transport	2,722	-16%	436
Medical gases	896	-17%	152
Total			1,132

In the following chapters the key areas, priorities and actions will be discussed.



5 KEY AREAS, 5 DRIVERS FOR SUCCESS

To achieve our goals 5 key areas are chosen and 5 drivers for success have been identified. These are:

<h3>Key areas</h3>	<p>Energy</p>  <p>Reduce greenhouse gas emissions from electricity, gas and stationary diesel. Use or procure renewable energy.</p>	<p>Waste</p>  <p>Zero waste to landfill. Reduce waste streams, recycle and reuse.</p>	<p>Transport</p>  <p>Eliminate wasteful and avoidable transport of staff and patient, reduce emission profile of travel.</p>	
	<p>Procurement</p>  <p>Include sustainability criteria in tenders and procurement contracts.</p>	<p>Buildings</p>  <p>Healthy, comfortable, energy efficient and future proof buildings. Walking and cycling infrastructure.</p>	<h3>Success drivers</h3>	<p>Commitment</p>  <p>Show leadership and create commitment within all layers of the organisation.</p>
	<p>Communication</p>  <p>Inform, educate and create awareness, involvement and ownership for sustainability.</p>	<p>Change management</p>  <p>Sustainability practices in policies, strategies, guidelines and reporting of the Northland DHB.</p>		<p>Collaboration</p>  <p>Exchange information, learn from each other's best practices and engage more partners.</p>



TOP PRIORITY ACTION AREAS

The priority actions per key area and success driver will be discussed in the following chapters. Overlaying the carbon footprint, associated costs, positive health impacts and opportunities, the following long term and short term actions have been labelled as top priority from these chapters:

Long term:



- Eliminate wasteful and avoidable travel of patients, business travel and commute,
- Support new ways of healthcare that contribute to a lower carbon footprint,
- Support information technology opportunities in all processes of the Northland DHB (Wi-Fi access, video conferencing tools, tele-health, clinical e-consultation and other social media and software tools to interact with patients),
- Switch to lower emission and more active transport.



- Smarter cooling and heating of buildings,
- Energy efficient new building stock and refurbishments.

Short term:

- Diesel conversion of boilers for Kaitaia hospital;
- Good housekeeping in waste segregation and improvement of recycling volumes;
 - Waste audit,
 - Solve logistical barriers,
 - Introduce recycling infrastructure,
 - Behavioural campaign,
- Wi-Fi quality and availability;
- Create business case for electric vehicles and possibly e-bikes in the fleet;
- Start working with EECA on building related energy reduction;
 - Install sub-meters and energy management system,
 - Bay of Islands redevelopment,
 - Energy audit,
 - Check peak power contracts with actual peak demands and solar combo,
- Create awareness and commitment with staff.

The priority actions per key area and success driver will be discussed in the following pages. In appendix B a bucket list of all actions is listed and the summary of the budget request is listed in appendix C.



ENERGY



Objective

Reduce greenhouse gas emissions from electricity, gas and stationary diesel.
Use or procure renewable energy.

Current status, benchmark and trends

Costs: \$ 2.4 M /year

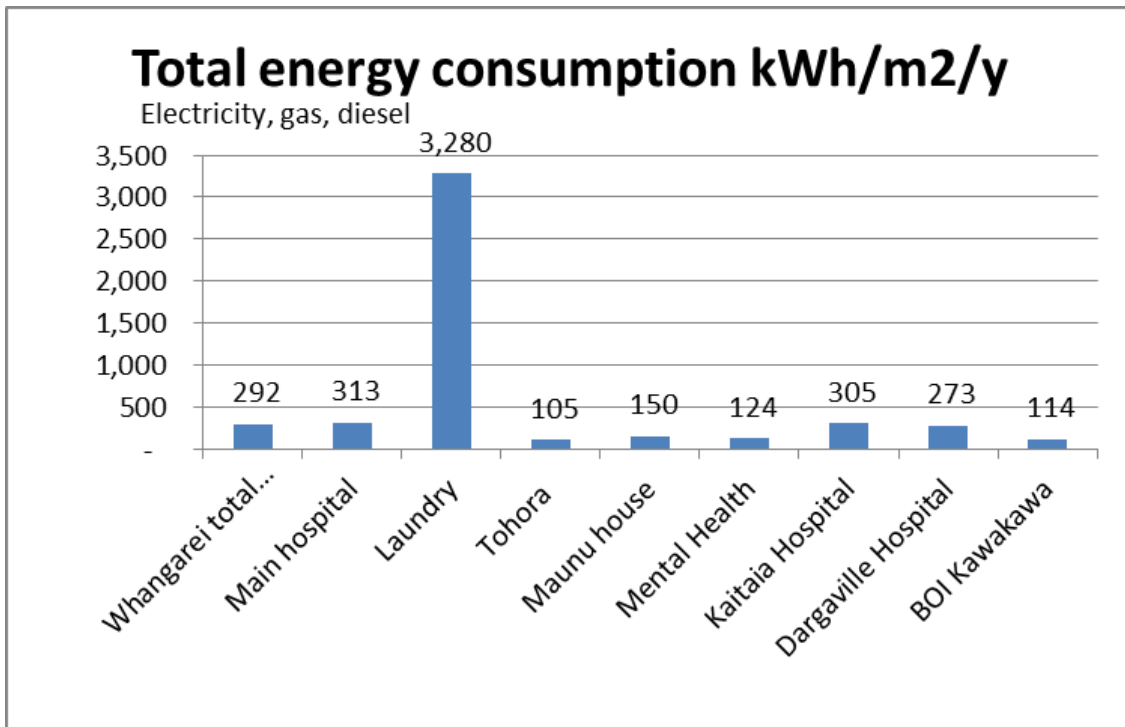
+2.5-3% / year

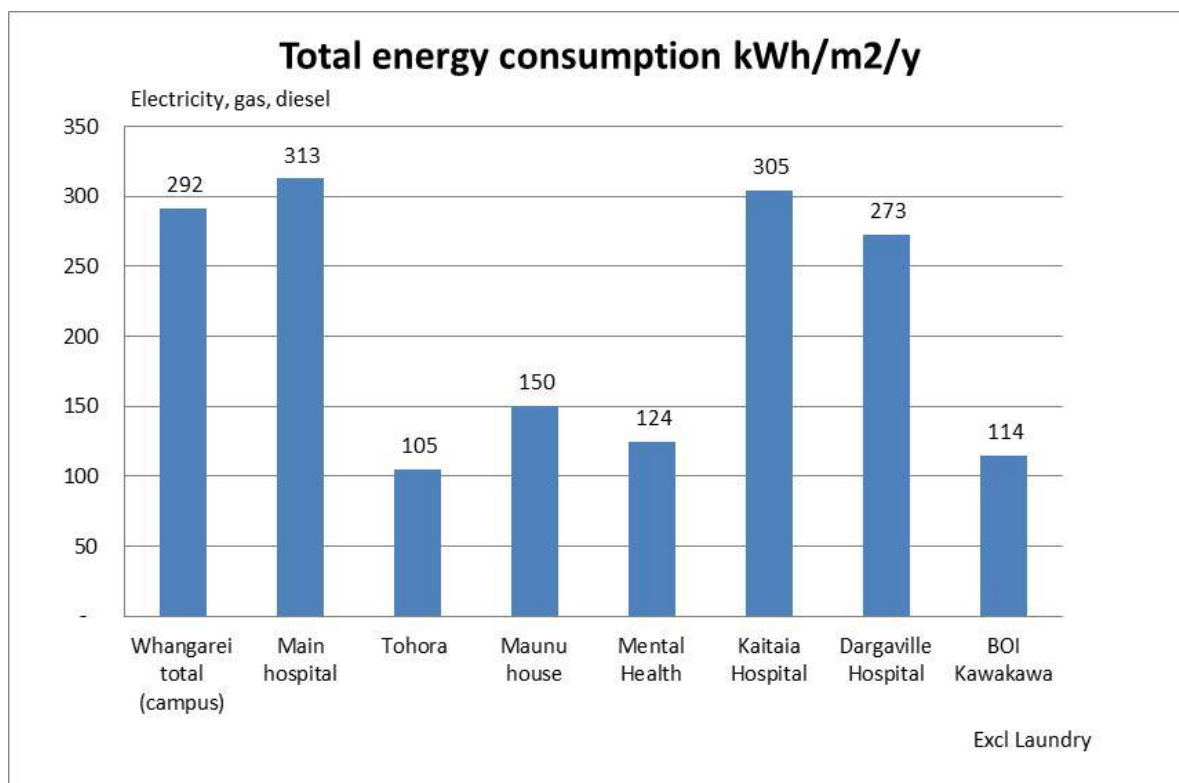


Consumption: 9.8 GWh electricity, 7.1 GWh gas, 233,633 litre diesel

After transportation costs the energy costs are the highest cost in Northland DHB's footprint. There is some insight into the consumption profile and generally there is little control over settings. Past years show an increase of 2.5% to 3.1 % per year and similar percentages in price increase. There is a future trend of increased use of energy with growth of the hospitals, more electronic medical equipment and more individual air-conditioning installations/higher comfort expectations. Higher prices will occur with the removal of carbon emission subsidies the Northland DHB has profited from in the past.

The graphs show the average energy consumption per m2 building per year. In the second graph the laundry is excluded.





Northern European Hospitals use on average 320 kWh/m² (total energy), we are currently just below this figure with all our hospitals, most likely due to our moderate climate and lack of fully climate controlled buildings. A comparison to other DHB's is not currently possible as their data doesn't include all energy users and use different benchmarks. We are able to compare some figures below;

- Waitakere Hospital - Electricity 89 kWh/bed day , gas 274 GJ/bed day (Northland DHB electricity 100 kWh/bed day)
- Northshore Hospital - Electricity 93kWh/bed day, gas 0.30 GJ/bed day (gas Northland DHB 0.27GJ/bed day)
- Manukau- Electricity 250kWh/m² (Whangarei hospital electricity 144 kWh/m²)
- Middlemore Hospital - Electricity 151kWh/m²

A zero energy hospital?

To compensate for our energy use it would require; 86,000 m² solar PV panels (10 rugby fields), two large windmills on land or one offshore. Compensation of our electricity use only would require; 46,000 m² solar PV panels or one large windmill on land.

What has already been done?

- Conversion of diesel heaters to electric at Bay of Islands and Dargaville Hospitals, Led lights in all frequently used parts of the hospitals,
- 4-Green Star new office building Whangarei (Tohorā House),
- Chiller, tower and fan improvements and refrigerant conversions,
- Theatre roof insulation.



Goal & KPI

	2020	2025
Goal Energy use	<ul style="list-style-type: none"> Relative -10% /m2 Absolute -6% below 2016 level (roughly saving \$ 144k /year) 	<ul style="list-style-type: none"> Relative -20% /m2 Absolute -13% below 2016 level (roughly saving \$ 312k /year)
KPI	Total energy carbon emissions: tCO2e, relative: tCO2e/m2	
Monitor	<ul style="list-style-type: none"> Absolute quantity electricity, gas, stationary diesel in kWh and litres, Relative energy use in kWh /m2 	

Opportunities

- Electrification of diesel boilers,
- New buildings energy efficient,
- Behavioural change,
- Smarter controls and measurement,
- Peak power reduction with solar PV,
- Dropping prices of solar PV.

Threats

- Growth of the hospitals,
- Major changes investment intensive,
- Energy price increase forecasted,
- Current building stock difficult (uneconomical) to change.

Top 5 priority actions

1. Change diesel heating at Kaitaia Hospital to electric,
2. Install energy management system and sub-meters for increased control and insight in usage. Optimize building management system,
3. Sign EECA energy collaboration agreement and create short energy plan for support, audits, guidance and funding,
4. Smarten-up heating and cooling systems,
5. Behavioural change campaign on heating, cooling, lights, monitors.

Requirements and conditions

- Procurement and installation of an Energy Management System,
- Review options smarter control heating and cooling,
- Energy audit.

Budget request

- EMS system and monitoring software: estimate \$30,000 investment and max \$20,000.- /year. (40% funding by EECA possible) (Waitemata \$20,000 + \$50,000/year monitoring software),
- Energy audit: \$25,000 (other 40% funded by EECA),
- Support feasibility studies and business cases: \$15,000 (other 40% funded by EECA),
- Measures by approval of separate business case.



WASTE



Objective

Zero waste to landfill. Reduce waste streams, recycle and reuse.

Current status, benchmark and trends

77 tonne medical waste, total 738 tonne waste to landfill / year. Recycling volumes unknown

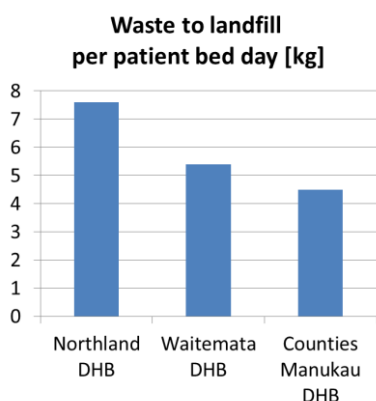
Costs: \$ 633k /year incl. logistics and rubbish bags. Landfill fees only are \$135k/year

Staff perception is a need and opportunity for significant improvement. Audits in 2012 showed a lot of general waste in medical waste streams and >50% recycle possibilities of content. Our hospitals do not have a structural system for cardboard, paper or plastic recycling. There are logistical problems with space, storage and access of the waste collection area. There are some individuals and services who are collecting recyclables, for example; theatre wraps for bird recovery, milk bottles and use of compostable potato starch pill dispensers.

Waste data:

Northland DHB	Counties Manukau	Waitemata
<ul style="list-style-type: none"> Waste 7.58 kg/PBD* 6.8 kg general waste/PBD (5.9 kg/PA**) 0.8 kg medical waste/PBD (0.7 kg/PA) 	<ul style="list-style-type: none"> Waste 4.5 kg/PBD 3.8 kg general waste /PA** 0.7 kg medical waste/PA, 0.8 kg recycling/PA. 	<ul style="list-style-type: none"> Waste 5.4 kg/PBD 4.1 kg general waste /PDB 1.3 kg medical waste /PDB.
<ul style="list-style-type: none"> 90% general waste 10% medical waste Recycling volumes unknown 	<ul style="list-style-type: none"> 71% general waste, 14% medical waste, 15% recycling 	<ul style="list-style-type: none"> 61% general waste 19% medical waste 15% recycling, 5% confidential paper

*PBD= patient bed day, **PA= patient activity (PBD + day cases)



Our medical waste is average compared to Counties Manukau and Waitemata but our general waste is very high compared to other DHB's. This is likely due to a lack of recycling infrastructure.

Goal &KPI

	2020	2025
Goal Waste reduction	<ul style="list-style-type: none"> 20% reduction in waste to landfill (cost saving range \$26k –\$126k /y) 20% reduction paper use (cost saving paper +/- \$ 33k /y) 	<ul style="list-style-type: none"> 30% reduction in waste to landfill (cost saving range \$39K – \$189k /y) 50% reduction paper use (cost saving paper +/- \$ 83k /y)
KPI	Waste to landfill in tonnes	
Monitor	<ul style="list-style-type: none"> Absolute volumes waste to landfill and paper Waste stream percentages general, medical, recycling Relative waste in kg/PBD and kg/PA 	

Opportunities

- Quick wins in cost with improved segregation and recycling,
- External Healthcare waste recycling programs which are emerging in New Zealand.

Threats

- Logistical issues with space, access of waste collection area and across public road movements,
- External recycling infrastructure not as advanced and accessible compared to Auckland area,
- Limited space for bins in theatre and hospital.

Top 5 priority actions

1. Perform waste audit,
2. Map and analyse waste streams and analyse opportunities for reduction and recycling,
3. Review and improve logistical issues for waste storage at entrance and on site collection process and hardware (include baling, compacting, processing options),
4. Install the necessary infrastructure and recycling bins,
5. Behavioural and educational campaign for recycling.

Requirements and conditions

- Recycling hardware, bins, trolleys,
- Solution logistical barrier waste collection area and on site movements.

Budget request:

- Hardware like different bins and porter collection cart:
 - o Approval asked to spend up to \$ 30,000,
- Other by separate business case approval.



TRANSPORT



Objective

Significantly reduce the carbon emissions of commuting, patient and business travel. Eliminate wasteful and avoidable transport by air and road. Reduce emission profile of travel (more electric vehicles). Promote active ways of commuting and reduce (single) car use.

Current status, benchmark and trends

Costs: > \$ 6 Million /year



Trend: \$\$ up

75% of the all-inclusive carbon footprint consists of transport movements

Over 75% of the all-inclusive carbon footprint of the Northland DHB consists of transport movements by patients, commuting and business travel. Transport is also the biggest part in costs of the total footprint. Fuel prices are continuing to rise and the impact will be much greater on the DHB with any reduction to subsidy from the carbon emission trading scheme.

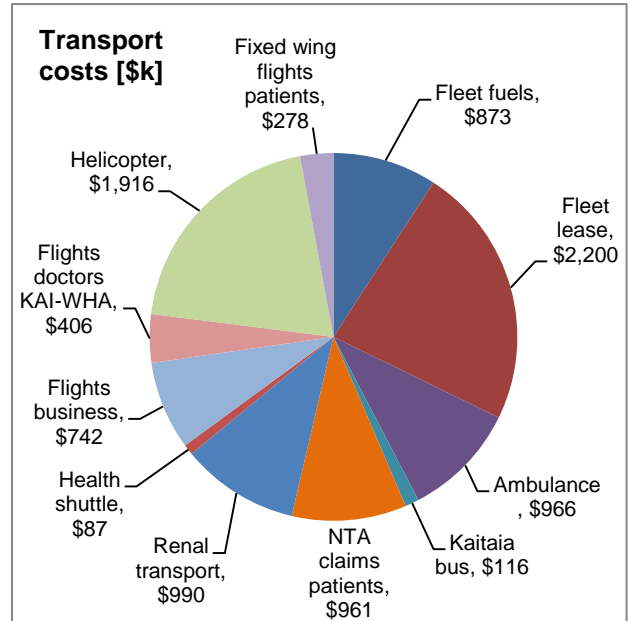
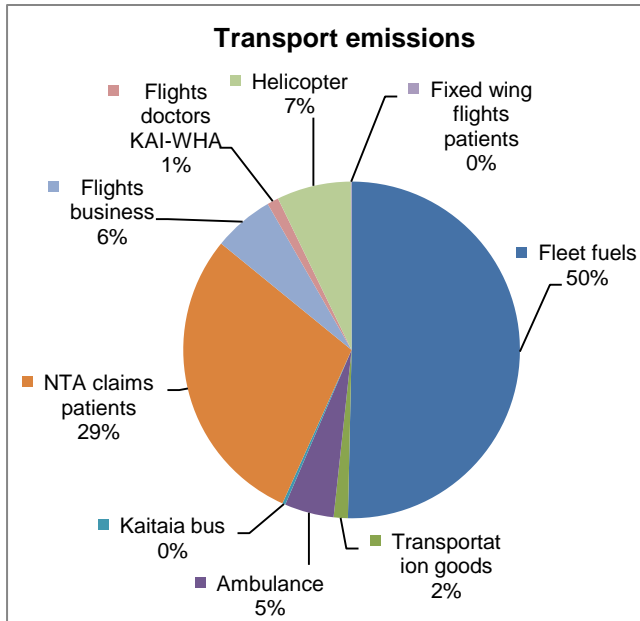
CEMARS certification transport categories overview:

	Emission tCO2e	Value	Northland DHB costs
Road			
Fleet fuels	1,370	568,249 litre	\$873k*
Fleet lease	NA	NA	\$2,200k
NTA claims patients	793	3,432,971 km	\$961k
Ambulance	129	418,579 km	\$966k
Transportation goods	37	100,228 km	?
Kaitia bus	8	77,810 km	\$116k
Renal transport	incl in fleet fuels	1,172,983 km	\$990k**
Health shuttle	incl in fleet fuels	81,324 km	\$87k**
Air			
Helicopter	194	485 hrs	\$1,916k
Flights business	158	1,343,961 km	\$742k
Flights doctors KAI-WHA	30	187,668 km	\$406k
Fixed wing flights patients	2	15,234 km	\$278k

*fuel only, **excl lease and fuel

Outside of CEMARS certification

Employee commuting	4,660	20,172,702 km	\$0
Patients and visitors private travel by car	9,791	43,441,081 km	\$0



Goal &KPI

	2020	2025
Goal Transport	7% reduction in carbon emissions in certification included transport categories	16% reduction in carbon emissions in certification included transport categories
KPI	Total tCO2e emissions of certification included transport categories	
Monitor	Fleet fuels in litres and transport km of included categories	

Transport categories which are part of the CEMARS certification schedule are fleet fuels, business and doctors air travel, distribution and transportation of goods (Kaitaia truck, couriers) and patients; patient shuttle, renal transport, ambulance, helicopter, patient flights and NTA patient private travel claims. Employee commuting and private travel from patients and visitors are not included.

Since patient travel and employee commuting is such a big part of the total footprint, efforts to reduce these transport movements should be part of emission reduction efforts.

Sub-goals:

- Reduce patient travel kilometres,
- Reduce car travel kilometres,
- Increase active commuting,
- Reduce single car occupancy commute,
- Increase use of electric vehicles (EV's).



Opportunities

- IT technologies in clinical and non-clinical communication, support tele-health and remote diagnosis tools,
- Active walking and (e-) bike commutes,
- Electric vehicles,
- External commuting programs,
- Different working methodologies (work and e-consult from home, more community based care).

Threats

- Growth of Northland and Northland DHB,
- Unsafe or lack of walking / cycling infrastructure and on-site facilities,
- Behavioural change with current transport routines difficult.

Top 5 priority actions:

1. Create infrastructure and pilot electric vehicles, bikes and electric bikes in the fleet,
2. Promote and support video conferencing, remote working, tele-health, clinical e-consultation. Remove barriers in e.g. WIFI availability, quality, device access and software use,
3. Promote facilities on site for staff for secure storage and shower/change rooms/lockers,
4. Campaigns and possible incentives for active transport,
5. Analyse options for internal and external business and/or private ride sharing.

Requirements and conditions:

- Wi-Fi infrastructure, IT support and investments in smart devices and equipment,
- Investments in EV infrastructure, active transport facilities and fleet.

Budget request:

Proposed initial investment under the regular fleet budget account:

- | | |
|--|-----------------------------|
| • 6 EV slow charging stations: | \$15.000, |
| • 2 EV compact cars:
similar to Hyundai I30 price part of regular fleet replacement), | \$44.000 (\$22.000 a piece) |
| • 1 EV or plug in hybrid large vehicle (7 person): | \$40.000, |
| • 2 fleet bicycles for business use: | \$800, |
| • 2 electric bicycles for business use and staff to try for a week: | \$6000. |

2017 EECA contestable fund application under Kaipara Community Trust or similar will be reviewed. The new AoG contract with electric vehicles will also be reviewed.



PROCUREMENT

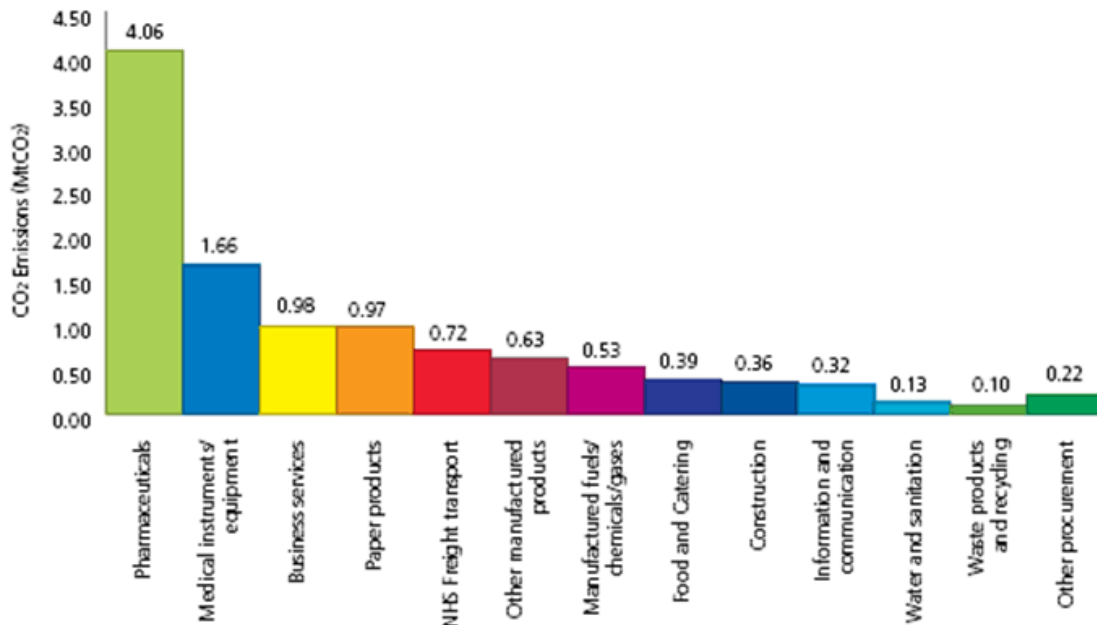


Objective:

Include sustainability criteria in tenders and procurement contracts for e.g. appliances, buildings, packaging, energy, fleet, food. Incorporate sustainable procurement policies.

Current status, benchmark and trends

Counties Manukau DHB has been working with Health Alliance on “green” criteria for Health Alliance contracts. The new Northland DHB food contract that will go out to tender early 2017 will have evaluation criteria on local sourced food. There is little data in New Zealand about emission factors of procured products. In England **procurement takes up 57% of the total carbon footprint of the health sector**. The procurement of pharmaceuticals is by far the highest emitter within procurement emissions of hospitals. Although procurement is not a category in the CEMARS certification it is included as a key area since the environmental impact procurement has is very significant.



Breakdown of NHS England 2004 procurement emissions, NHS Sustainable Development Unit

Opportunities

- Northland DHB together with other DHB's and government has a lot of buying power.

Threats

- Not all contracts are directly executed by Northland DHB so influence of the Northland DHB is less and requires more coordination.



Goal &KPI

2020: Every major procurement contract of the Northland DHB has sustainability criteria.

Top priority actions:

1. Involvement in renewal of expiring Northland DHB procurement contracts (food and cleaning),
2. Set-up a structural process with Health Alliance to incorporate sustainability criteria in tenders and collaborate with other DHB's on procurement initiatives and criteria in joint contracts,
3. Assess procurement contracts of the Northland DHB,
4. Develop a (regional, DHB wide) sustainability procurement policy.

Requirements and conditions

Cooperation and support of Health Alliance and other providers where the Northland DHB is not the main procurer of products and services.

Budget request

-



NEW BUILDS & RENOVATIONS



Objective:

Energy efficient buildings with a low material impact which are comfortable, healthy, future proof and contribute to a positive experience. Facilitate safe walking and cycling infrastructure and facilities.

Current status, benchmark and trends

Heating and cooling of hospital buildings is a great cost and emission source as mentioned under the energy section. The Tohorā house office building in Whangarei has a 4 Green Star rating. Overall the energy performance and comfort level of the Northland DHB buildings and hospitals is poor.

Opportunities

- Bay of Islands development,
- Site master planning Whangarei,
- New constructions Whangarei site.

Threats

- Increased installation of individual air conditioning,
- No financial investment for measures,
- Investments on current building stock mostly uneconomical,
- Only one opportunity to do it right.

Goal &KPI

2017:

- Involvement arranged in BOI development and site master planning,
- Funding arranged for above building code sustainability measures of Bay of Islands redevelopment.

Top priority actions:

1. Design review and sustainability criteria for Bay of Islands redevelopment,
2. Discuss funding possibilities with EECA,
3. Input into site master planning concerning energy efficiency of buildings, on site walking, cycling infrastructure, outdoor patient and visitor experience,
4. Policy for minimum building standards,
5. Renal reject water use for buildings.

Requirements and conditions:

Budget to perform a design review and business case on Bay of Islands redevelopment: proposed to include in current architect/engineering contract.

Budget:

\$0 (include in current contracts for developments)



OTHER AREAS

There are a few areas which are not a key focus area but are worth mentioning:

- **Medical gases**
- **Food**
- **Water**

Medical gases

In the CEMARS carbon footprint of the Northland DHB medical gases take up a significant percentage with 12%. These emissions are mostly caused by the use of Entonox and Nitrous Oxide as anaesthetic gases and for pain relief during labour. Although there are no affordable alternatives, other DHB's have accomplished significant reductions (up to 40%) in emissions with staff training, avoiding overuse, behavioural change and accessibility restrictions. To be able to meet our overall goal a reduction of 17% needs to be achieved.

Food

The environmental impacts of food production and agriculture are very high. For an average kiwi household one third of the carbon footprint is food related mostly due to meat consumption. Northland DHB can make a difference in encouraging procurement of local food. Another option is the use of the available grounds for fruit and vegetable production.

Water

Our water consumption is about 88 million litres per year, about 1.7 million litres / week. A lot of water is being used for renal dialysis and the laundry. Opportunities exist to use the reject water from renal dialysis (this is water that is being rejected as not pure enough before it goes to a renal patient).



COMMITMENT



Objective

Show leadership and create commitment within all layers of the organisation. Set goals, accountabilities. Advocate for action on climate change and health impacts.

Current status, benchmark and trends

Sustainability has not structurally been incorporated in the Northland DHB. A sustainability development manager has been appointed to develop a strategy and execute the program.

Opportunities

- Frequently involve ELT and staff for support,
- Ask staff to participate in actions.

Threats

- No support or apathy for sustainability as non-core business.

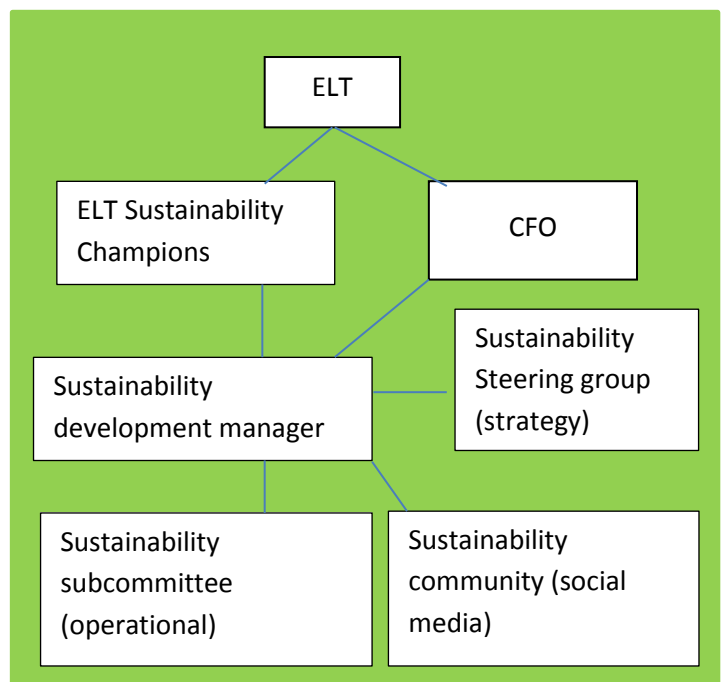
Goal &KPI

2017:

- Governance structure in place,
- Approved action plan,
- Champion and supporter network developed.

Top 5 priority actions:

1. Appoint an ELT champion. Establish a sustainability subcommittee and steering group,
2. Create a network of champions and sustainability supporters,
3. Create ELT commitment to execute action plan,
4. Develop a sense of ownership with staff by communication and involvement in actions e.g. 'Adopt an action campaign',
5. Advocate for national and political action and support in regards to the impact of climate change on the health sector.



Requirements and conditions:

ELT support.

Budget:

-



COMMUNICATION



Objective

Inform, educate and create awareness, involvement and ownership for sustainability with publications, campaigns and events.

Current status, benchmark and trends

No communication presence or structure is set-up for sustainability.

Opportunities

- Communication is a powerful tool to create awareness and deliver education,
- Use of social media.

Threats

- Overkill in sustainability communication compared to health topics.

Goal &KPI

2017:

- Online branding and communication presence for sustainability at Northland DHB,
- Structural communication outings are set-up
 - Bi-monthly update in weekly snapshot,
 - Communication material created to support sustainability initiatives,
 - Intranet, internet site and social media developed,
 - General sustainability presentation (Grand round or other) created,
 - Regular updates on website with footprint, monitoring data and other progress and project information,
 - Campaign to support focus areas,
 - External communication and press releases set up,
- Sustainability paragraph in the annual 2016-2017 report of the Northland DHB.

Top priority actions:

- Develop sustainability communication branding and online presence,
- Set-up structural communication strategy and planning,
- Communication assistance for first campaigns.

Requirements and conditions

Support from communication team.

Budget:

Request of \$ 3,000,- to support communication material, workshops and campaigns



CHANGE MANAGEMENT



Objective

Incorporate sustainability practices in policies, strategies, guidelines, reporting and core business practice of the Northland DHB. Create awareness and willingness to contribute to change. Develop a sense of ownership.

Current status, benchmark and trends

Sustainability is not part of the core processes of the Northland DHB or prominently present in the mission, reporting or policies. There are individual actions of staff to reduce or recycle waste.

Opportunities

- Structurally incorporate sustainability into the organisation,
- Involve staff and departments to help drive change,
- Support new ways of healthcare that contribute to a lower carbon footprint.

Threats

- It is a long process that takes years,
- Timing of action is crucial in line with Northland DHB's policy and strategy updates,
- Resistance to change where there are no personal benefits.

Goal &KPI

2017: Behavioural campaign around waste reduction and segregation. Involve staff in (smaller) actions.

Top priority actions:

1. Behavioural change campaign for specific topics (energy, waste, transport),
2. Actively involve staff in promoted initiatives e.g. by creating a social media network. Assign actions to responsible departments and individuals,
3. Review input for Northland Health Services plan,
4. Only passive action is taken on opportunities to incorporate sustainability in procedures and programs,
5. Start pilot with different ways of care that support a low carbon economy (eg. renal patients and tele-health technology to avoid transport movements).

Requirements and conditions

Internal support.

Budget:

-



COLLABORATION



Objective or aim:

Exchange information, learn from each other's best practices and engage more partners by working together with global to local health providers, Northland partners and stakeholders.

Current status, benchmark and trends

The Global Green and Healthy Hospitals (GGHH) network is an active network and resource of sustainability and healthcare related topics, the Climate and Health Alliance coordinates the Australia and New Zealand network. The Sustainable Health Sector National Network unites New Zealand DHB's and health organisations in a quarterly teleconference. In Northland no active network is present.



Opportunities

- Learn from global and other DHB's best practices over the past years,
- Develop a Northland network to exchange information of Northland specific issues and collaborate on opportunities,
- Encourage other community groups and organisations to work on sustainability.

Threats

- Not enough in common with other organisations to be of value for Northland DHB

Goal &KPI

- Join the Global Green and Healthy Hospitals network,
- Actively participate in the New Zealand Sustainable Health Sector National Network (SHSNN),
- Set-up a sustainability collaboration of Northland organisations, businesses and stakeholders.



Top priority actions:

1. Join and research available tools, data and information of the networks,
2. Create a Northland network and meet quarterly,
3. Share our strategy and actions with community and Northland groups.



Envisioned members of the Northland network:



Requirements and conditions

- Membership fees: \$0. No fees are associated with the proposed memberships,
- Travel expenses for visits or events: to be separately approved,
- Northland stakeholders event or workshop: part of communication budget.

Budget:

-



CERTIFICATION



Objective or aim

Get CEMARS certification to have a verified and certified structural emission management system to manage our greenhouse gas emissions. Certification shows Northland DHB's commitment and allows management and monitoring based on verified measurements.



CEMARS® certification

Measures and verifies the greenhouse gas emissions and is focused on emission reduction without being fixed to a target. It puts in place strategies and tools to manage and reduce impacts. Certification is in accordance with ISO 14064-1:2006. Compliance with the programme is independently verified annually to maintain certification.

Current status, benchmark and trends

No certification or energy management system is present at the Northland DHB. Auckland, Counties Manukau, Canterbury and Capital Coast DHB's have or are in the process of CEMARS certification. Waitemata DHB has Enviro-Mark certification but is considering CEMARS. A discussion document is drafted for the Ministry of Health to request all DHB's, health Alliance and Pharmac to become CEMARS certified.

Opportunities

- Use CEMARS certification to measure and manage emission and cost reduction,
- Create insight and awareness of biggest emissions,
- Benchmark results with other DHB's.

Threats

- Value of certification versus certification costs.

Goal & KPI

2016: Start data collection and create & audit the footprint without a full certification process.

2017: Apply for CEMARS certification.

Top priority actions:

1. Collect data necessary for certification and create the first footprint,
2. Coordinate and start certification process with Enviro-Mark,
3. Set up a monitoring schedule. Monitor minimal 4 x per year,
4. Set up a performance graphs of actual versus planned reduction.



Requirements and conditions

- Access and/or support to collect the necessary data from different software systems and departments,
- Commitment to get CEMARS certified.

Budget:

- 2016: Audit only 2016 carbon footprint - \$6,000
- Annual from 2017: Certification costs for CEMARS is +/- \$25.000 /year.

Future actions

In the future (2018 or later) it can be decided if besides focus on mitigating greenhouse gas emissions, offsetting of the Northland DHB's footprint is desired and CarbonZero certification can be applied for.





THE FUTURE, CLIMATE MITIGATION AND ADAPTATION

This action plan has been created to assist Northland DHB towards reduction of their environmental impact. It lists priority actions, key areas and success drivers including a carbon footprint benchmark and goals for action over the next couple of years. On a yearly basis new priority areas and actions can be defined based on progress made and to review the necessity to create a new version of this document.

The action plan currently focusses mainly on climate mitigation, so reducing our impact, but in the future it is also important to start looking at a strategy for adaptation to the impacts that climate change is causing on the healthcare system.

Now all that is left is to do is do what needs to be done and move towards 21st century healthcare.

Margriet Geesink
February 2017

20th Century Healthcare	21st Century Healthcare
Doctor-centred	Patient-centred
Patients as passive compliers	Patient as co-producer
Hospitals/ centralised delivery	Systems of care
Bureaucratic controls	Networks
Driven by finance	Driven by knowledge acquisition
High carbon	Low carbon
Focused on effectiveness	Focused on value and waste
Challenges met by growth	Challenges met by transformation

1 Muir Gray and Frances Mortimer, Centre for Sustainable Healthcare



Appendix A: Detailed data of the carbon footprint

Detailed Carbon Footprint Year 2015-2016 per scope											
	Description	Value	Unit	CO2e emission factor		CO2e emission	Cost NDHB	Datasource	Accuracy	Comments	
Scope 1				Qty	Unit	(ton CO2e)					
CEMARS	Gas heating	7,057,930	kWh	0.21	kg CO2e/kWh	1,482	\$339,000	Facilities management & Oracle	High, meter readings	Whangarei only connected to gas.	
CEMARS	Diesel heating	233,633	Litre	2.68	kg CO2e/L	626	\$214,663	Allied petroleum supplier	High, supplier data delivered litres and costs	Diesel boilers only at Kaitaia & Dargaville hospital	
CEMARS	Company fleet fuels	568,249	Litre	2.36/2.72	kg CO2e/L	1,370	\$872,737	BP and Mobil fuel card report. Facilities management	High, fuel card reports BP and Mobil	14% diesel use. Lease costs NZ\$ 2.2 Million	
CEMARS	Medical gases	6,017	kg	298/1	kgCO2e/kg	896	\$14,744	BOC supplier data	High, based on delivered goods	Entonox, N2O and CO2 use	
CEMARS	Refrigerants	1,630	kg	varies	kg CO2e/kg	98	?	Airzone contractor	Low-medium, estimate charge kg and leakage %	No data on top ups, estimates based on charges	
Scope 2											
CEMARS	Electricity	9,758,364	kWh	0.138	kg CO2e/kWh	1,347	\$1,811,222	Contact, Genesis supplier	High, meter readings	Large meters and small NDHB related meters	
Total scope 1 & 2						5,819	\$3,252,367				
CEMARS						5,819	\$3,252,367				
						ton CO2e	cost NDHB				
Scope 3 up											
	Paper landfilled	18,648	kg	0.963	kg CO2e/kg	18	\$0	Health Alliance database	Medium, invoices of procured goods, estimate % landfilled	Procured paper 93,240 kg @ \$166,035. Assumed 20% confidential to landfill with medical waste	
	Employee commuting -car	20,172,702	km	0.231	kg CO2e/km	4,660	\$0	Payroll + estimate	Medium to low. Estimate based on suburb location of staff, 25% unknown. Estimates of car use, working days and staff into FTE ratio.	Paid parking income not included	
	Employee commuting - public transport	108,358	km	0.1	kgCO2e/km	11	\$0	Payroll + estimate	Low, estimate based on staff location and percentage of public transport use		
CEMARS	Flights- domestic	653,534	km	0.16	kg CO2e/km	105	\$269,817	FCm travel agency	High, ISO GHGP extract of database	detailed cabin class emission profile used from datasheet	
CEMARS	Flights- international short haul (<3700km)	312,919	km	0.0942	kg CO2e/km	28	\$53,315	FCm travel agency	High, ISO GHGP extract of database	detailed cabin class emission profile used from datasheet	
CEMARS	Flights - international long haul (>3700km)	189,840	km	0.111	kg CO2e/km	25	\$13,092	FCm travel agency	High, ISO GHGP extract of database	detailed cabin class emission profile used from datasheet	
CEMARS	Flights Doctors plane GBA WHA-	187,668	km	0.16	kg CO2e/km	30	\$406,299	Fac management	High, based on booked passengers.		
CEMARS	Waste to landfill	737,852	kg	0.361/1.13	kg CO2e/kg	318	\$633,072	Report Northlandwaste general waste. Oracle invoices waste. Medical report and landfill contractors	Medium high. Uncertainty if all waste from different contracts is included	Ahipara waste to landfill data from Kaitai hospital estimated. Cost include all costs under account numbers incl collections rental bags. Dump fees only are \$135k.	
CEMARS	Transportation and distribution, truck run	100,228	km	0.374	kg CO2e/km	37	?	Health Alliance	Medium -high. Daily truck run included, other couriers excluded	Manganui Haulage truck. Dargaville courier excluded based on minimas	
CEMARS de minimis	Business travel in private cars	163,410	km	0.231	kg CO2e/km	38	\$117,655	Payroll, Belinda Edwards	High, reimbursements of claims		
CEMARS de minimis	Rental cars	5,719	km	0.231	kg CO2e/km	1	\$6,000	FCm travel agency	High, ISO GHGP extract of database	Cost estimate \$50/day 123 days	
CEMARS de minimis	Taxis	\$108,257	\$	0.102	kg CO2e/\$	11	\$108,257	Oracle	Medium, extract from Oracle from contracted taxiservices. Other reimbursements unknown	Includes staff and patients	
	Transmission and distribution losses	9592619/7057930	kWh	0.0113/0.0225	kg CO2e/kWh	269	\$0	Report Voluntary GHG reporting	Medium, unknown if losses are included in energy usage	Possibly included in electricity use. Unknown. Cost included in gas and electricity invoices	
Total scope 3 up						5,551	\$1,607,507				
CEMARS						543	\$1,375,595				
						ton CO2e	cost NDHB				
Scope 3 down											
CEMARS	Transportation Serviced patient	418,579	km	0.307	kg CO2e/km	129	\$965,910	Belinda Edwards	High based on invoices		
CEMARS	Transportation Serviced external	77,810	km	0.1	kg CO2e/km	8	\$116,069	Belinda Edwards	High based on invoices		
CEMARS	Transportation-Serviced patient	485	hrs	400.9	kg CO2e/hr	194	\$1,916,054	Belinda Edwards	High based on invoices		
CEMARS	Transportation - Fixed wing flights	15,234	km	0.16	kg CO2e/km	2	\$278,742	Belinda Edwards	High based on invoices and patient logbook		
CEMARS	Transportation NTA claims	3,432,971	km	0.231	kg CO2e/km	793	\$961,232	Belinda Edwards, NTA claims	High based on reimbursements		
	Private travel patients and visitors	43,441,081	km	0.231	kg CO2e/km	9,791		NTA claims + Annual report statistics, estimate sustainability manager	Low, estimate based on NTA claims + hospital visits statistics, 70% private travel with car and estimate average travel distance 19 km one way		
Total scope 3 down						10,917	\$4,238,007				
CEMARS						1,126	\$4,238,007				
						ton CO2e	cost NDHB				
Total full footprint						22,287	\$9,097,881				
Total CEMARS footprint						7,488	\$8,865,968				
						ton CO2e	cost NDHB				
Water											
	Water usage	87,900,686	Litre	-	-	-	34	\$267,265	Oracle database	Medium high, cost of invoices	Not part of carbon footprint



Appendix B: Bucket list of actions per key area

ENERGY

- **Change diesel heating Kaitaia to electric;**
- **Install energy management system and sub-meters for increased control and insight in usage. Optimize building management system;**
- **Sign EECA energy collaboration agreement and create short energy plan for support, audits, guidance and funding;**
- **Smarten-up heating and cooling systems;**
- **Behavioural change campaign on heating, cooling, lights, monitors;**
- Review business case solar with peak shaving opportunities ;
- Adjust sensor outdoor lights Tohora ;
- Lux light level measurements of areas with LED lights;
- Review temperature settings, summer and winter settings;
- Automatic PC and monitor off at night? already done also in hospital?;
- Review structural cooling/power unit instead of individual AC's;
- Review peak load distribution and contracts;
- Review voltage drop opportunities;
- Discuss minimum 6 Homestar rating for new homes with WDC;
- Review business case for improved airtightness and building insulation;
- Introduce policy for individual AC installations?;
- General strategy of occupancy rates per buildings and consolidation of buildings, work from home options;
- Behavioural change to use less towels per patient;
- Change fridges with water bottles in Vibe Café for tap (also noise complaints);
- Reduce storage and transfer of data and email.

WASTE

- **Perform waste audit;**
- **Map and analyse waste streams and analyse opportunities for reduction and recycling;**
- **Review and improve logistical issues for waste storage at entrance and on site collection process and hardware (include baling, compacting, processing options);**
- **Install the necessary infrastructure and recycling bins;**
- **Behavioural and educational campaign for recycling;**
- Improve waste data collection;
- Better recycling of plastics, paper and cardboard (eg milk bottles);
- Replace PS and disposable cups, take your own cup;
- Submit funding application for recycling infrastructure;
- Develop proposal waste minimisation fund;
- Double sided printing, follow me, secure printing;
- Replace chilled water bottles with taps and refillable bottles. More water fountains to avoid cups for cold water patient areas;
- Divert organic waste, worm farm /composting bins;
- Review Baxter reuse IV bags program and hygienic pads and nappies recycling;
- Review Interwaste recycle programs for wrapping, recyclable metal disposables;
- Review medical waste convertors (Eneruel);
- Create a Northland DHB waste stream video.;
- Review waste compacting and baling options;



- Sales of plastics/cardboard;
- Renal rejected water reuse;
- Reusable goods Community trust, Take my hand, SPCA;
- Reduce/replace clinical disposables, plastic cutlery, cups;
- Review purchase of recyclable items;
- E-waste repurposing;
- Develop a waste procedure manual or integrated waste policy (minimisation, H&S, infection control);
- Medical mining: titanium/steel recovery, human reusable.

TRANSPORT

- **Create infrastructure and pilot electric vehicles, bikes and electric bikes in the fleet**
- **Promote and support video conferencing, remote working, tele-health, clinical e-consultation. Remove barriers in e.g. WIFI availability, quality, device access and software use;**
- **Promote facilities on site for staff for secure storage and shower/change rooms/lockers;**
- **Campaigns and possible incentives for active transport ;**
- **Analyse options for internal and external business and/or private ride sharing;**
- Discuss cycling/ walking safety issues around hospitals with councils;
- Develop a commuting plan and policy;
- Create map of cycling, walking infra of hospital including facilities;
- Campaign to switch cycling, walking, shuttle, electric bicycle, electric vehicle;
- Perform travel survey to collect data on current commuting methods and willingness to change to other options;
- Support working from home 1-2 days where applicable.

PROCUREMENT

- **Involvement in renewal of expiring Northland DHB procurement contracts (food and cleaning);**
- **Set-up a structural process with Health Alliance to incorporate sustainability criteria in tenders and collaborate with other DHB's on procurement initiatives and criteria in joint contracts;**
- **Assess procurement contracts of the Northland DHB;**
- **Develop a (regional, DHB wide) sustainability procurement policy;**
- Research sustainable procurement possibilities and influence of pharmaceuticals.

NEW BUILDS AND RENOVATION

- **Design review for BOI development;**
- **Discuss funding possibilities with EECA;**
- **Develop BOI development sustainability procurement/tender criteria;**
- **Deliver input for site master planning concerning energy efficiency of buildings, on site walking, cycling infrastructure, outdoor patient and visitor experience;**
- **Renal reject water use for buildings;**
- Develop business cases for future renovation or building projects.

OTHER

- **Medical gas use reduction plan;**



- Staff involvement in projects around hospital, eg river clean up, planting;
- Planting fruit trees along cycleway and river;
- Left-over food to charities;
- Staff gardens.

COMMITMENT

- **Appoint an ELT champion. Establish a sustainability subcommittee and steering group;**
- **Create a network of champions and sustainability supporters;**
- **Create ELT commitment to execute action plan;**
- **Develop a sense of ownership with staff by communication and involvement in actions E.g. “Adopt an action campaign”;**
- **Advocate for national and political action and support in regards to the impact of climate change on the health sector;**
- Advocate for action of all DHB towards mitigation of climate change impacts.

COMMUNICATION

- **Develop sustainability communication branding and online presence;**
- **Set-up structural communication strategy and planning;**
- **Communication assistance for first campaigns;**
- Create a video to support campaigns (eg. the medical waste stream supply chain).
- Hold a Northland sustainability network event.

CHANGE MANAGEMENT

- **Behavioural change campaign for specific topics (energy, waste, transport);**
- **Actively involve staff in promoted initiatives e.g. by creating a social media network. Assign actions to responsible departments and individuals;**
- **Review input for Northland Health Services plan;**
- **Only passive action is taken on opportunities to incorporate sustainability in procedures and programs;**
- **Start pilot with different ways of care that support a low carbon economy (eg. renal patients and tele-health technology to avoid transport movements);**
- Develop training or e-learning on sustainability;
- Analyse all policies, guidelines, publications;
- Develop plan for structural incorporation in all processes;
- Incorporate actions from action plan into overall policies.

COLLABORATION

- **Join and research available tools, data and information of the networks;**
- **Create a Northland network and meet quarterly;**
- Organize a Northland specific or New Zealand district Health Board specific event for information exchange.

CERTIFICATION

- **Collect data necessary for certification and create the first footprint;**
- **Coordinate and start certification process with Enviro-Mark;**
- **Set up a monitoring schedule. Monitor minimal 4 x per year;**
- **Set up a performance graphs of actual versus planned reduction;**



Appendix C: Budget request overview

Budget request to run the program:

	Investment	Yearly costs	Comments
Energy			
EMS system	\$30,000.-	\$20,000.-	40% funding by EECA possible
Energy audit	\$25,000.-	-	40% funding by EECA possible
Feasibility studies and business cases	\$15,000.-	-	40% funding by EECA possible
Measures	By BC approval		
Waste			
Hardware bins, trolleys	\$30,000.-	-	
Other	By BC approval		
Transport			
6 EV slow charging stations:	Fleet account		
2 electric vehicles:	Fleet account		
1 large EV (7 person van):	Fleet account		
2 fleet bicycles for business use:	Fleet account		
2 electric bicycles for business use and staff to try for a week	Fleet account		
Procurement	-		
Buildings			
BOI design review	Proposed to include in current architect /engineering contract.		
Commitment	-		
Communication			
Communication material, workshops and campaigns	\$3,000.-		
Change management	-		
Collaboration			
Travel expense	Separate approval		
Certification			
Certification and audit CEMARS		\$25,000	
Total	\$103,000.-	\$45,000.-	

In addition to the indicated yearly costs, a reservation for 2018 and onwards of \$30,000 is recommended for the program to fund research, audits and other necessary activities.

