NORTHLAND DISTRICT HEALTH BOARD
Te Poari Hauora Ā Rohe O Te Tai Tokerau

Carbon footprint & year overview

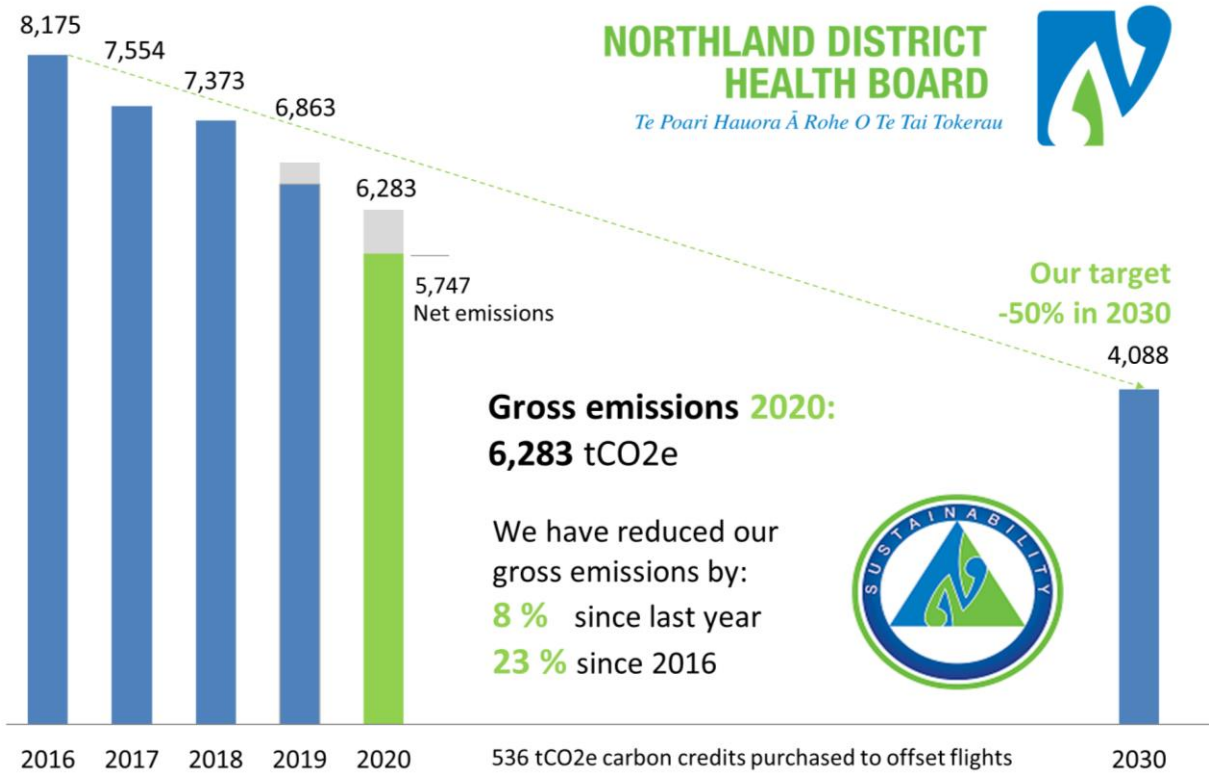
Financial year 2020

Member of GLOBAL GREEN and HEALTHY HOSPITALS
www.greenhospitals.net

HEALTH CARE Climate Challenge
2020 Gold Award – Greenhouse Gas Reduction (energy)

This carbon footprint for the Northland District Health Board (DHB) has been calculated for the financial reporting year from 1 July 2019 until 30 June 2020.

Northland DHB continues its success run with four consecutive years of carbon emission reductions to remain on track to achieve the 2030 target.

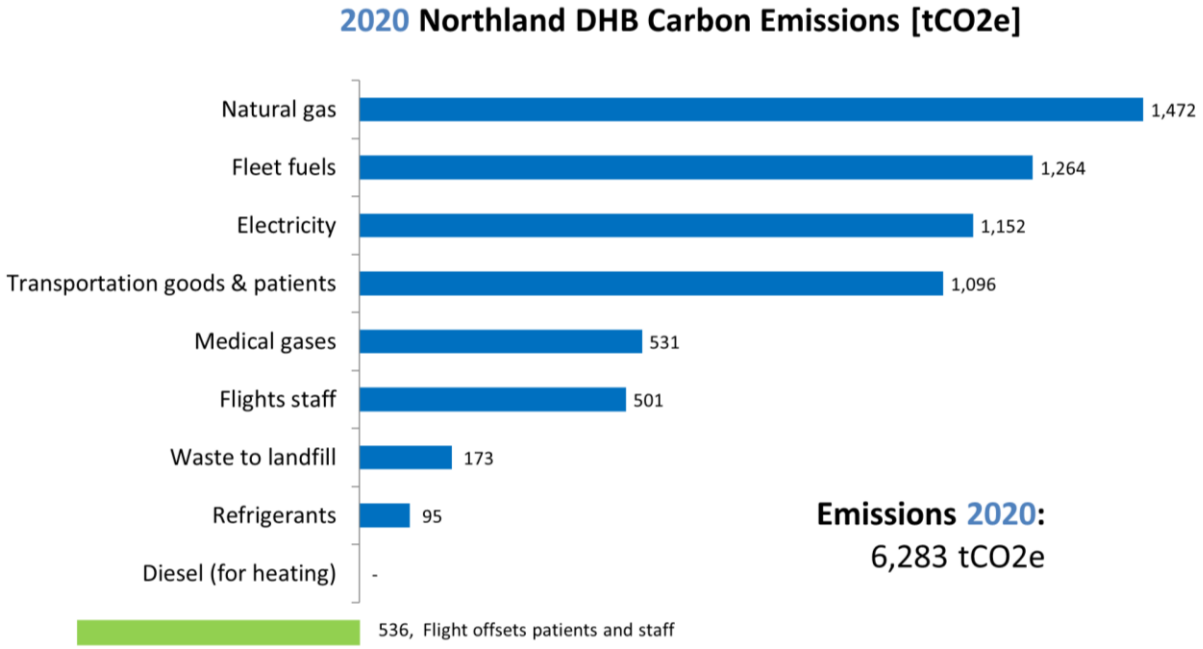


Northland DHB's emissions for 2020 were 6,283tCO2e. This was eight percent lower than 2019, and 23 percent lower than the benchmark year 2016. Reductions in emissions have occurred over four consecutive years, despite significant growth and activity with a 37 percent increase in funding and a 33 increase in staff, now up to total 2,723 FTE.

With a target to halve Northland DHB emissions in 2030, the current emission reduction rate is below the allocated carbon budget, and we remain on track to achieve this.

Northland DHB emissions down 23% compared with 2016 despite >34% growth

Our emissions



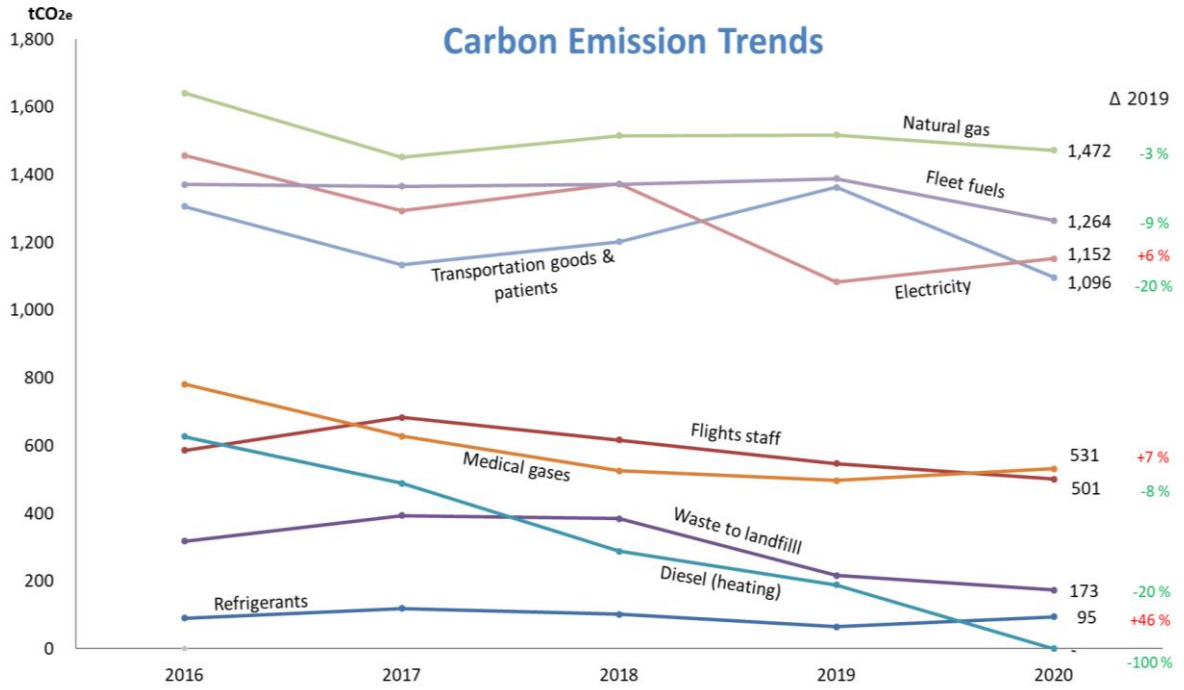
New inclusions and changes to the emissions inventory

- Manaia House building, the new community mental health building in Whangarei, has been included in the inventory;
- Helicopter transport now includes all invoiced helicopter flights including those claimed back to the Ministry of Health and other DHBs. Previous years corrected to include the additional flights;
- Refrigerants now only include large chiller top ups and excludes fridges and pre-charged single split units to standardise reporting throughout DHB's. Previous years corrected;
- For the 2020 financial year, Northland DHB will offset flight emissions from patient flights, patient helicopter transport and staff flights booked through the DHB's travel agency;

The same Ministry for the Environment emission factors were used for the previous year, as no update was released.

Emission trends

- Natural gas consumption used for steam, hot water and ambient heating in the hospital and laundry was reduced by three percent compared with last year, but remains the largest emission category;
- Fleet fuel consumption dropped by nine percent. Broken down per fuel type diesel consumption increased four percent due to increased renal patient transport demand. Outside of the lockdown period petrol consumption decreased by seven percent and decreased to 14 percent for the full year, including the lockdown.
  After tripling in the previous year, Zoom use for teleconferencing has tripled this financial year again with a tenfold increase during the lockdown period. Another E-bike was added to the e-bike fleet, and for the first time an electric ATV was introduced;



- Electricity consumption increased by six percent. The main drivers were the inclusion of the new Manaia House building, the Kaitaia diesel boiler conversion which increased the electricity consumption and the BOI building extension;
- The transportation of goods & patients category consists of the distribution of goods and patients travel by ambulance, helicopter, flights, bus and the most dominant contribution National Travel Assistance (NTA) claims of patients travelling in their own car mostly to Auckland. Ambulance and patient flights dropped. Helicopter use increased but the overall 20 percent reduction is due to reduced patient NTA travel claims both outside and during the lockdown period;
- Staff flights showed a significant reduction in passenger kilometres flown, resulting in eight percent lower emissions. Cancelled flights where credits were issued to rebook were included in the inventory. This means actual flight emissions in this reporting year are lower, and some future flights have already been included in this year's inventory;
- Medical gases include nitrous oxide, Entonox, carbon dioxide, Desflurane and Sevoflurane. While nitrous oxide use increased last year the reduction trend in medical gas emissions is due to excellent work done over the last years by theatre staff to reduce the use of Desflurane, the most damaging medical gas. The previous four years consumption has been reduced by 93 percent;
- Waste to landfill reduced by 10 percent but the total emissions reduced by 20 percent due to diversion of waste from a landfill with no GHG recovery. Recycling bins and programmes are continuously being introduced to the hospitals;
- Refrigerant emissions went up significantly due to some large chiller repairs and top ups. The introduction of more R32 low emission refrigerant continued;
- With the diesel boiler conversions to electric heat pumps in the district hospitals completed in the previous year, for the first time, we ordered no diesel for stationary heating. With the boiler conversions complete we now have three fully electric district hospitals.

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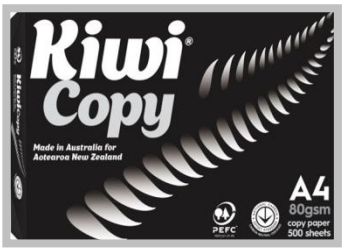
10% reduction in waste

58 tonnes of waste now recycled. Donation of surplus equipment. Carbon neutral paper, sugarcane plates and bowls. Māori waste signage.



Northland DHB first DHB to offset patient and staff flights

First electric ATV, more E-bikes and trials, increased tele-health like remote dental assessments and remote working.

2020 SUSTAINABILITY HIGHLIGHTS

All diesel for heating has been phased out

93% less medical gas use in theatres in four years avoiding 2.2 million car km.

The impact of COVID-19 on our carbon footprint

The Northland DHB hospitals as essential service remained open during the lockdown and other Alert Levels with an increased activity level to deliver an adequate response. However, in some areas there were major changes and reductions in travel observed that influenced the carbon footprint.

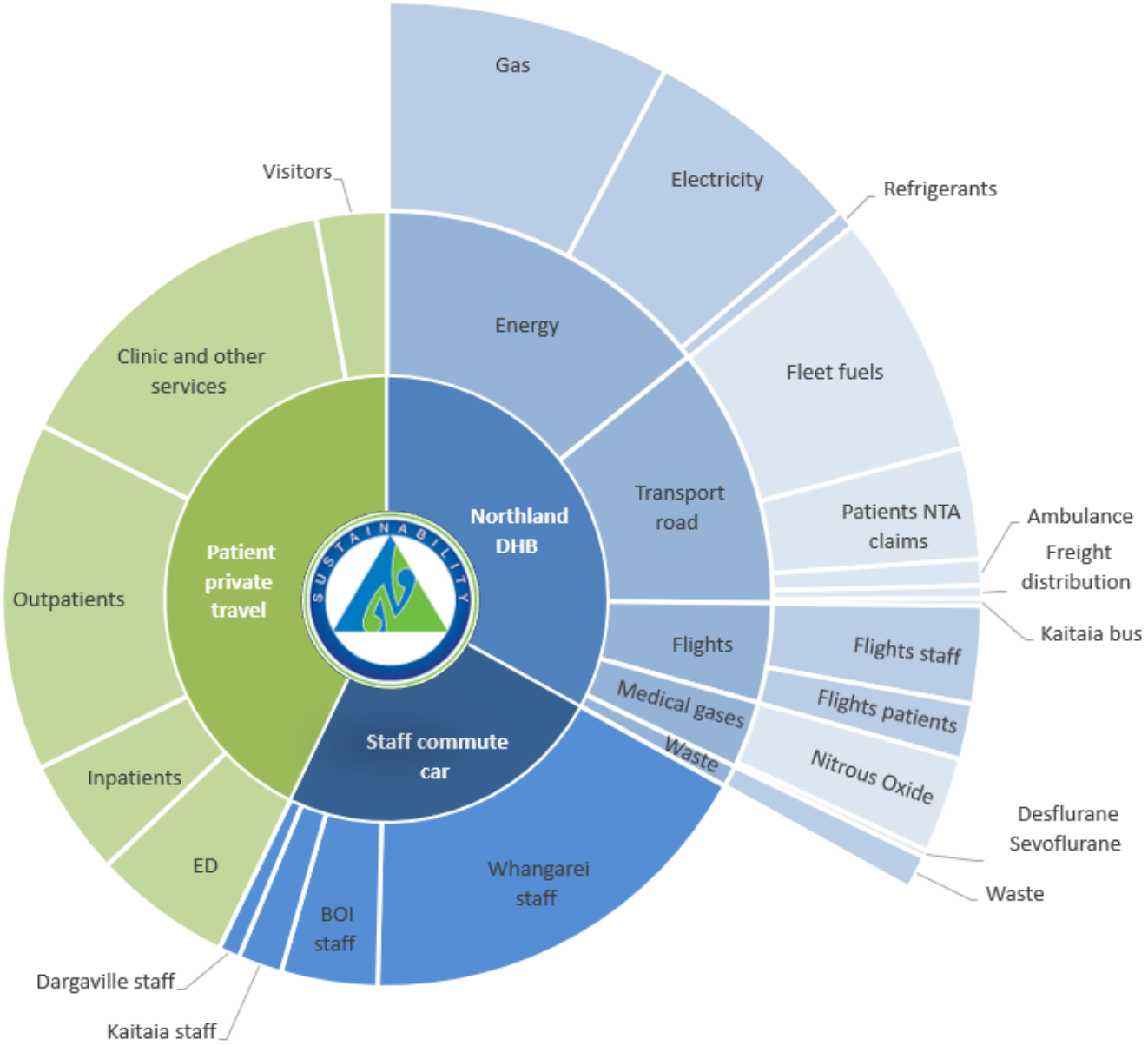
Petrol for the fleet cars dropped 40 percent in April and May with 21,000 litres of petrol less consumed and 52 tCO_2e avoided. Patient National Travel Assistance claims dropped in half for the COVID months with 334,000 km less driven equivalent to 90 tCO_2e. The reduction of staff flights saved another 42 tCO_2e. In total around 184 tCO_2e was avoided which had a two – three percent impact on our carbon footprint.

Outside the inventory of our carbon footprint more emissions were avoided with a large proportion of non-clinical staff working from home and a large amount of patients had their consultations via phone or video instead of travelling to hospitals. Zoom use had a 10 fold increase compared to the months before the lockdown.

COVID travel restrictions had a 2-3% impact on our carbon footprint

The wider footprint of healthcare

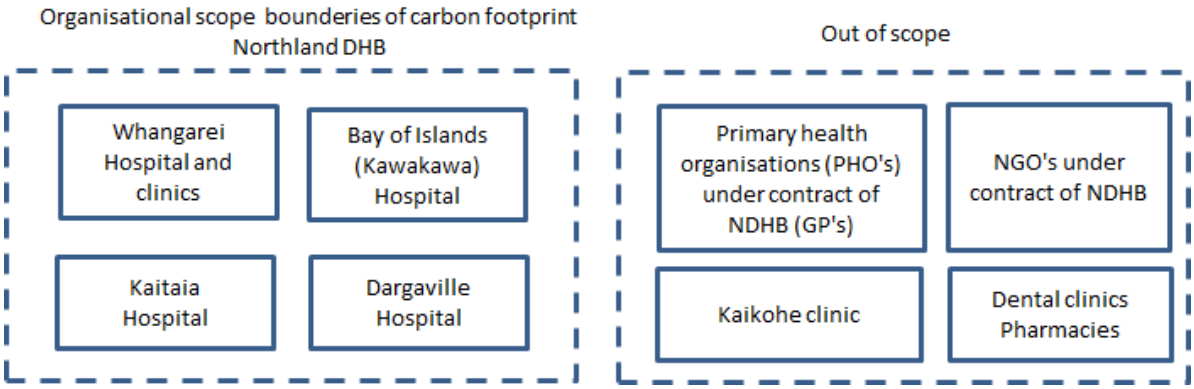
Northland DHB measures its own organisational footprint. The below graph shows the wider footprint of our activities and services with estimates for emissions of patient private travel and staff commutes by car.



Northland DHB emissions: 6,283 tCO_2e
Staff commute emissions: 4,605 tCO_2e
Patient travel emissions: 8,154 tCO_2e

The organisation and the organisational boundaries

The Northland District Health Board is a Crown Agent and is responsible for providing or funding the provision of health and disability services for the people of Northland. Acute services are provided through the DHB's four hospitals, supplemented by a network of community- based, outpatient and mental health services.



The operational control consolidation approach has been used to account for operational emissions and the boundary has been set around the hospitals of Whangārei, Bay of Islands (Kawakawa), Dargaville and Kaitāia. Outside the scope of the footprint are general practices, NGO's under contract of the Northland DHB, dental clinics, pharmacies and clinics outside the four main hospital towns.

Emissions factors and emission source exclusions

The emission factors from the Ministry of the Environment 2019 detailed guide; Measuring Emissions a Guide for Organisations have been used to calculate this carbon footprint.
The following mandatory emissions sources were excluded from the inventory:

GHG emissions source	GHG emissions level scope	Reason for exclusion
Postage and couriers	Scope 3 Mandatory	De minimis (insignificant)
Rental cars	Scope 1 Mandatory	De minimis (insignificant)
Private cars (staff mileage claims)	Scope 3 Mandatory	De minimis (insignificant)
Business taxi transport	Scope 3 Mandatory	De minimis (insignificant)

Excluded emissions do not exceed 5 percent of the total footprint within the organisational boundaries

Base year, audit, verification and accuracy

The carbon footprint has been third party verified by Toitū (formerly Enviro-Mark Solutions) according to ISO 14064-1:2006. Verification and assurance level: reasonable (a higher level of assurance compared to limited assurance). From the analysis conducted the quality of the inventory checked against completeness and uncertainty is classified as: High. The base year of the carbon footprint is 2016.

Information and contact

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Carbon Footprint Summary 2020

Target 50% reduction in 2030: 4,088 tCO2e

	Qty					UOM	Emission tCO2e				
	2016	2017	2018	2019	**2020**		2016	2017	2018	2019	**2020**
Energy use											
Natural gas	7,058k	6,692k	6,982k	6,997k	**6,789k**	kWh	1,641	1,451	1,514	1,517	**1,472**
Electricity	9,758k	10,048k	10,663k	10,299k	**10,960k**	kWh	1,457	1,293	1,372	1,082	**1,152**
Diesel heating	234k	182k	107k	71k	**0k**	Litre	626	488	287	188	**-**
Refrigerants	-	-	-	-	**41**	kg	90	119	102	65	**95**
Transportation											
Fleet fuels	568k	549k	549k	552k	**501k**	Litre	1,370	1,366	1,372	1,388	**1,264**
Transportation goods &patients	4,045k	4,056k	4,248k	3,970k	**2,875k**	km	1,306	1,133	1,201	1,362	**1,096**
Flights staff	2,559k	2,580k	2,396k	1,911k	**1,782k**	km	586	682	616	547	**501**
Waste generation											
Waste to landfill	738	791	767	790	**714**	T	318	394	384	216	**173**
Other											
Medical gases	-	-	-	-	-	kg	781	628	525	497	**531**
Total gross emissions						Total	**8,175**	**7,554**	**7,373**	**6,863**	**6,283**
								-8 %	-10%	-16 %	-23%
						Reduction compared to benchmark					
Offsets											
Carbon credits flights							0	0	0	- 264	**- 536**
Total net emissions						Total	**8,175**	**7,554**	**7,373**	**6,599**	**5,747**
								-8%	-10%	-19%	-30%

Benchmark data, emissions per:

	2016	2017	2018	2019	**2020**	
PBFF share (%)*	-	-	-	-	1,354	tCO2e/ % funding
Funding (m$)**	23	20	19	16	14	tCO2e/ M$
FTE	3.7	3.3	3.3	2.6	2.3	tCO2e/ FTE
Patient activity***	69	63	64	60	55	kgCO2e/ PA
Building area (m²)	115	105	108	101	88	kgCO2e/ m2 building

* PBFF is the population based funding formula and is the total percentage of budget the Northland DHB receives out of the total DHB funding. For 2020 this is 4.64 percent.
** Based on $464M DHB funding of the hospitals/provider arm and mental health out of $759M total.
***Patient Activity includes total patient bed days and day cases and excludes outpatient appointments.

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Detailed Carbon Footprint 2020 per scope

Description	Quantity						CO_{2e} emission factor				Emissions in tCO_{2e}					Data source	Accuracy	Comments
	2016	2017	2018	2019	**2020**		2016	2017, 2018	**2019, 2020**		2016	2017	2018	2019	**2020**			
Scope 1																		
Gas heating	7,058k	6,692k	6,982k	6,997k	6,789k	kWh	0.21	0.194	0.194	$kgCO_{2e}$/kWh	1,482	1,298	1,354	1,358	1,317	Genesis supplier	High, supplier meter readings	Whangarei only connected to gas.
Diesel heating	234k	182k	107k	71k	0k	Litre	2.68	2.68	2.66	$kgCO_{2e}$/L	626	488	287	188	-	Allied petroleum supplier	High, supplier data delivered litres and costs	Diesel boilers conversions at Kaitaia & Dargaville hospital
Fleet fuels petrol	487k	438k	421k	402k	345k	Litre	2.36	2.43	2.45	$kgCO_{2e}$/L	1,149	1,063	1,023	985	846	BP and Mobil fuel card report	High, fuel card reports BP and Mobil	
Fleet fuels diesel	82k	111k	128k	150k	155k	Litre	2.72	2.72	2.69	$kgCO_{2e}$/L	222	302	349	402	418	BP and Mobil fuel card report	High, fuel card reports BP and Mobil	
Medical gases - NOX	1,614	1,225	1,059	1,289	1,652	kg	298	298	298	$kgCO_{2e}$/kg	481	365	316	384	492	BOC supplier data	Medium High, based on summary report BOC	Per 2019 completely new history of medical gases based on new info BOC and split over different gases. Entonox, N2O
Medical gases - CO2	952	1,046	708	1,147	959	kg	1	1	1	$kgCO_{2e}$/kg	1	1	1	1	1	BOC supplier data	Medium High, based on summary report BOC	See above
Medical gases - Desflurane & Sevoflurane	224	228	200	162	140	kg	varies	varies	varies	$kgCO_{2e}$/kg	300	262	208	112	37	NDHB Pharmacy	High, purchased bottles	New per 2019 and history included
Refrigerants	-	-	-	-	41	kg	varies	varies	varies	$kgCO_{2e}$/kg	90	119	102	65	95	Airzone contractor	Medium. Based on top up and servicing data but with some estimates on leakage rates	
51%									**Scope 1 total**		4,350	3,899	3,640	3,496	3,207			
															-26%			
Scope 2																		
Electricity	9,758k	10,048k	10,663k	10,299k	10,960k	kWh	0.138	0.119	0.0977	$kgCO_{2e}$/kWh	1,347	1,196	1,269	1,006	1,071	Meridian portal	High, meter readings	Large meters and small NDHB related meters. Per April 2019 Meridian supplier
17%									**Scope 2 total**		1,347	1,196	1,269	1,006	1,071			
															-20%			
Scope 3 up																		
Flights business- domestic	654k	642k	726k	695k	386k	pkm	0.242	0.242	0.242	$kgCO_{2e}$/pkm	105	155	176	168	93	FCm travel agency	High, ISO GHGP extract of database	Emission factor includes RF per 2019 (radiative forcing) 1.8 times CO2 . Previous years corrected with 2019 RF factor
Flights business- int.short haul (<3700km)	313k	274k	297k	230k	139k	pkm	0.162	0.162	0.162	$kgCO_{2e}$/pkm	28	44	48	37	23	FCm travel agency	High, ISO GHGP extract of database	Emission factor includes RF per 2019 (radiative forcing) 1.8 times CO2
Flights business - int. long haul (>3700km)	190k	197k	24k	43k	50k	pkm	0.213	0.213	0.213	$kgCO_{2e}$/pkm	25	42	5	9	11	FCm travel agency	High, ISO GHGP extract of database	Emission factor includes RF per 2019 (radiative forcing) 1.8 times CO2
Flights Doctors plane WHA-Kaitaia	201k	192k	132k	242k	186k	pkm	0.659	0.659	0.659	$kgCO_{2e}$/pkm	132	127	87	159	123	Sunair and Finance department	High, based on booked passengers.	Emission factor includes RF (radiative forcing per this year). New emissionfactor for small aircraft used
Flights CME SMO	1,202k	1,274k	1,217k	701k	1,021k	pkm	varies	varies	varies	kg CO2e/pkm	296	314	300	173	251	Payroll and template	Low, no flight data available. Many estimations. conversion from cost to PKM, estimates long short haul and type of class.	Full expenditure of COVID period included as flight km. CME flights included per 2019, in 2018 calculated but not included
Transmission and distribution losses, gas	7,058k	6,692k	6,982k	6,997k	6,789k	kWh	0.023	0.023	0.023	$kgCO_{2e}$/kWh	159	153	160	160	155	Report Voluntary GHG reporting	Medium, unknown if losses are included in energy usage	
Transmission and distribution losses, electricity	9,758k	10,048k	10,663k	10,299k	10,960k	kWh	0.011	0.010	0.007	$kgCO_{2e}$/kWh	110	97	103	76	81	Report Voluntary GHG reporting	High based on actual readings	Transmission loss is paid for in invoices but not included in kWh total
Waste to landfill with landfill gas recovery	671k	730k	703k	764k	714k	kg	0.361	0.444	0.242	$kgCO_{2e}$/kg	242	324	312	185	173	Waste Management, Northlandwaste	Medium high. A few container with predefined weights	Medical waste to Redvale landfill. Puwera landfill general waste all hospitals per Dec 2019
Waste to landfill without landfill gas recovery	67k	62k	64k	27k	0k	kg	1.13	1.13	1.17	$kgCO_{2e}$/kg	75	70	72	31	-	Northlandwaste	Medium high. Predefined weight per pick up	Kaitaia hospital waste to Ahipara landfill. No gas collection. Landfill closed per 12 December 2019. Now to Puwera landfill
Transportation and distribution, road truck run	100k	100k	100k	100k	100k	km	0.666	0.666	0.659	$kgCO_{2e}$/km	67	67	67	67	67	Mangonui Haulage	Medium -high. Daily truck run included, other couriers excluded	Mangonui Haulage truck. Mitsubishu FUSO FM280-m1 2015 4km/l. Same as last year. Dargaville courier excluded based on minimas
Transportation Serviced Road patient travel ambulance	419k	626k	579k	630k	546k	km	0.307	0.278	0.247	$kgCO_{2e}$/km	129	174	161	156	135	St John	High based on invoices and report St John	
Transportation-Serviced patient travel helicopter	694	445	518	606	681	hrs	400.9	400.9	400.9	$kgCO_{2e}$/hr	278	178	208	243	273	MoH	High based on flight data	Per this year national contract. Data from MoH. Includes flights ordered by MoH ao. Previous years corrected with same percentage of 143%
Transportation air-Fixed wing flights patients to other hospitals	15k	45k	24k	32k	21k	km	0.160	0.147	0.659	$kgCO_{2e}$/km	2	7	4	21	14	Finance department	High based actual flights	Emission factor includes RF (radiative forcing) per 2019. New emission factor for small aircraft used
Business travel private cars	163k	-	-	-		km	0.231	0.209		$kgCO_{2e}$/km	38	-	-	-	-			Excluded based on minimas
Rental cars	5,719	-	-	-		km	0.231	0.209		$kgCO_{2e}$/km	1	-	-	-	-			Excluded based on minimas
Taxis	108k	-	-	-		$	0.102	0.067		$kgCO_{2e}$/$	11	-	-	-	-			Excluded based on minimas
22%									**Scope 3 up total**		1,648	1,753	1,706	1,485	1,398			
															-15%			
Scope 3 down																		
Transporation Serviced external patient Kaitaia bus	78k	78k	78k	78k	78k	km	0.472	0.472	0.472	$kgCO_{2e}$/km	37	37	37	37	37	Finance department, Harrison Cape runner	Medium based on amount of runs and estimate van versus bus use	No new data. Assumed same amount of bus trips every day
Transportation NTA claims patients	3,433k	3,207k	3,454k	3,130k	2,130k	km	0.231	0.209	0.268	$kgCO_{2e}$/km	793	670	722	839	571	Ministry of Health	High based on reimbursements	
10%									**Scope 3 down total**		830	707	759	876	608			
															-27%			
Total gross carbon footprint [tCO_{2e}]											8,175	7,554	7,373	6,863	6,283			
											2016	2017	2018	2019	**2020**			
											Reduction since 2016	-8%	-10%	-16%	-23%			
Offsets																		
Carbon credits patient flights											-	-	-	-	264 -	536		
Total net carbon footprint [tCO_{2e}]											8,175	7,554	7,373	6,599	5,747			
											Reduction since 2016	-8%	-10%	-19%	-30%			