# SOUTHERN DISTRICT HEALTH BOARD

## HOSPITAL ADVISORY COMMITTEE

**Wednesday, 31 July 2019**

**Commencing at 9.00am**

**Board Room, Level 2, Main Block,**
**Wakari Hospital Campus, 371 Taieri Road, Dunedin**

## A G E N D A

*Lead Director: Patrick Ng, Executive Director Specialist Services*

**Item**

**1.** **Public Forum** (9.00 am)
1.1 Jen Wilson, PSA Organiser - Funding of pay rises for rural hospital Allied Health Staff

**2.** **Environmental Sustainability and Green Development** (9.30 am)
Presentation by Dr Matthew Jenks, Consultant Anaesthetist

**3.** **Apologies**

**4.** **Interests Register**

**5.** **Minutes of Previous Meeting**

**6.** **Matters Arising/Action Sheet**

**7.** **Specialist Services Monitoring and Performance Reports**
7.1 Executive Director Specialist Services Report
7.2 Key Performance Indicators
7.3 Financial Performance Summary

**8.** **Resolution to Exclude Public**

| Southern DHB Values | | | |
|---|---|---|---|
| Kind *Manaakitanga* | Open *Pono* | Positive *Whaiwhakaaro* | Community *Whanaungatanga* |

# Organisation Audit Report

## ISO 14064-1:2006 verification

Of organisation:

Southern District Health Board

| | |
|---|---|
| Audit team | Tom Clark, Pieter Fransen |
| Verification firm | Enviro-Mark Solutions Limited |
| Contact details | tom.clark@enviro-mark.com<br>+64 3 321 9857 |
| Client Contact | Matt Jenks |
| Contact details | matt.jenks@southerndhb.govt.nz<br>+64 212 365 947 |
| Report date | 5th June 2019 |
| Report prepared by | Tom Clark, Enviro-Mark Solutions Limited |
| Report reviewed by | Belinda Mathers, Enviro-Mark Solutions Limited, 21/06/2019 |
| Approved for Issue by | Belinda Mathers, Enviro-Mark Solutions Limited, 25/06/2019 |

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## Audit objectives

The objective of the audit was to determine if the organisation's GHG measurement (emissions data and calculations) meet(s) the criteria for ISO 14064-1:2006

## Audit criteria and scope

The audit criteria and scope are detailed in the following table:

| | |
|---|---|
| **Audit criteria** | E-MS Verifier Manual v2.4,<br>ISO 14064 Part 1:2006, ISO 14064 Part 3:2006, ISO 14065: |
| **Audit date** | 10/4/2019 - 11/4/2019 |
| **Reporting year** | 1/7/2016 to 30/6/2017 |
| **Base year** | 1/7/2016 to 30/6/2017 |
| **Consolidation methodology** | Operational Control |
| **Materiality threshold** | 5% |
| **Claim** | Southern District Health Board (SDHB) has measured its Scope 1, Scope 2 and Scope 3 greenhouse gas emissions in accordance with ISO 14064-1:2006, with respect to its organisational activities. |
| **Registered office address** | 21 Gt. King St, Dunedin 9054, New Zealand |
| **Locations visited** | Dunedin and Wakari Hospitals, Dunedin Energy Centre, Dunedin |
| **Audit type** | Verification to ISO 14064-1:2006 Scope 1 and 2 emissions |
| **Audit Stage** | Stage 1 & 2 onsite (desk based planning & site visit audit completed) |

## Conclusion

The following total emissions have been verified:

| Emissions summary by scopes | | Units |
|---|---|---|
| **Scope 1 total** | **4657.66** | **$tCO_2e$** |
| **Scope 2 total** | **19106.20** | **$tCO_2e$** |
| **Scope 3 total** | **4476.31** | **$tCO_2e$** |
| *Mandatory scope 3* | *2424.83* | *$tCO_2e$* |
| *Additional scope 3* | *2051.48* | *$tCO_2e$* |
| *One-time scope 3* | *0.00* | *$tCO_2e$* |
| **Total inventory:** | **28240.17** | **$tCO_2e$** |
| **Emissions intensity:** | **53.08** | **$tCO_2e/\$M$[1]** |

[1] Not adjusted for inflation.

An assessment of materiality was made against the defined threshold. From this analysis, it is concluded that the stated emissions are free from material error.

## Audit summary

### *Scope and Boundaries*

The scope of the emissions inventory includes all activities within the boundaries of SDHB's provider arm operations: Dunedin, Southland, Wakari and Lakes District Hospitals.

Excluded are funder arm operations: PHO's, Pharmacies, Rural Hospitals and Aged Care Facilities (see Inclusions and Exclusions in *SDHB Carbon Footprint 2016-2017*)

  

### *Emissions Factors*

Except for medical gas, helicopter and courier emissions, all other emissions factors were checked to have been appropriately sourced from the Ministry for the Environment's 2014 emissions factors sourced from MfE's Guidance for voluntary greenhouse gas reporting - 2016: Data and methods for the 2014 calendar year. These are the latest issued emission factors from the Ministry for the Environment.

Medical Gas emission factors were appropriately sourced from published research, courier emissions from NZ Courier, and helicopter emissions from Enviro-Mark Solutions E-Manage.

### *Level of Verification*

Verification was conducted in accordance with the Programme Verification Guidelines including ISO 14064-3:2006 and the Verification and Sampling Plan.

As part of the audit, the below criteria/documents were reviewed:

| Criteria/documents | Status |
|---|---|
| Organisational boundaries | Meets ISO 14064-1:2006 requirements. |
| Greenhouse Gas Emissions Inventory Report | Meets ISO 14064-1:2006 requirements. |
| Application of the accounting principles | Meets ISO 14064-1:2006 requirements. |

A total of 1 NCR, 5 minor non-conformances, 1 request for information and 8 observations were raised during this visit. Full details of the findings are given in the findings log below.

Using our Data Quality Assessment tool for analysing data against completeness and assumed uncertainty an inventory "quality" can be classified as follows:

- High
- Good
- Fair
- Poor

From the analysis conducted your inventory is classified as: High

## Assurance

| | |
|---|---|
| Level of Assurance | Reasonable |
| Qualifications/Limitations | None |

## Findings Log:

| | |
|---|---|
| Date issued: | 17/04/2019 |
| Verifier: | Tom Clark |
| Company issued to: | Southern District Health Board |

A finding marked NCR must be corrected before audit can be closed out, unless otherwise approved by the Certification Manager
A finding marked mNCR is not required to be corrected for this verification, but may need to be addressed/checked for your next inventory, or it may become a NCR. You may voluntarily correct a mNCR for completeness.
A finding marked Obs is an observation or recommendation from the verifier that may be helpful to you.

| Ref # | Issue | Status | Type | Comments / Agreed Corrective Actions | Date closed | Evidence sighted to close out the issue where corrective action required. |
|---|---|---|---|---|---|---|
| | **Findings for current measurement period** | | | | | |
| NCR1 | Each greenhouse gas not documented separately for direct (Scope 1) emissions, as specified in ISO 14064:2006 | Closed | NCR | Tabulate $CO_2$, $CH_4$ and $N_2O$ emissions for Scope 1 sources (using emission factors in MfE pdf document Guidance for Voluntary GHG Reporting 2016) | 04/06/2019 | Sighted updated $CO_2$ Database. Workings in Inventory Summary tab. |
| RFI | Coal SH - calculation method to convert metered steam to coal used not available. Source of coal consumption figures (e.g. coal supplier reports) not available; no evidence that usage figures relate to the stated months). | Closed | RFI | Please supply calculation method and/or coal supply/use and calorific value information | 04/06/2019 | Sighted coal invoices and updated $CO_2$ Database |
| mNCR1 | Electricity consumption data for Wakari Secure Unit not included - immaterial difference | Closed | mNCR | Add Security Unit data to inventory | 04/06/2019 | Sighted Security Unit electricity invoices and updated $CO_2$ Database |
| mNCR2 | Orbit air travel - short haul - Perth included as short haul; and should be long haul. Immaterial difference 0.03%. | Closed | mNCR | Optional to update the inventory | 04/06/2019 | Sighted updated $CO_2$ Database |
| mNCR3 | Reimbursed air travel short haul - Perth included. Immaterial difference 0.004% | Closed | mNCR | Optional to update the inventory | 04/06/2019 | Sighted updated $CO_2$ Database |
| mNCR4 | Orbit international air travel economy (long haul) - Perth excluded. Immaterial difference 0.03%. | Closed | mNCR | Optional to update the inventory | 04/06/2019 | Sighted updated $CO_2$ Database |

| Ref # | Issue | Status | Type | Comments / Agreed Corrective Actions | Date closed | Evidence sighted to close out the issue where corrective action required. |
|---|---|---|---|---|---|---|
| mNCR5 | Reimbursed international air travel (long haul) - Perth flights were not included. Short haul included. Immaterial difference of 0.20% | Closed | mNCR | Optional to update the inventory | 04/06/2019 | Sighted updated $CO_2$ Database |
| Obs 1 | Coal - For Dunedin and Southland Hospitals – clarification of steam - coal conversion formulae. | Closed | Obs | Setting out steam to coal conversion formulae and referencing data sources on spreadsheet, including source of steam enthalpy. | 04/06/2019 | Sighted updated $CO_2$ Database. Reference to steam enthalpy in coal tab |
| Obs 2 | Uplift factor not applied to air travel figures. For conformance to CEMARS an uplift figure of 1.9 is applied to MfE default figures for air travel | Open | Obs | Consider applying uplift factor. | | Noted by SDHB for future |
| Obs 3 | Air travel - reimbursed and orbit data reported separately | Open | Obs | Consider combining Reimbursable with Orbit data into domestic, short-haul and long-haul categories where beneficial | | Noted by SDHB for future |
| Obs 4 | Poor accuracy in estimating reimbursable travel based on available data | Open | Obs | Develop a system to capture destination information | | Noted by SDHB for future |
| Obs 5 | Refrigerants not accounted for | Open | Obs | Consider developing an inventory for improved management and control as well as justifying *de minimis* | | Noted by SDHB for future |
| Obs 6 | Freight not accounted for due to problem in obtaining data from logistics contractor and availability of emission factors. | Open | Obs | Consider how data may be obtained from contractor; freight emissions factors available from Enviro-Mark Solutions | | Noted by SDHB for future |

| Ref # | Issue | Status | Type | Comments / Agreed Corrective Actions | Date closed | Evidence sighted to close out the issue where corrective action required. |
|---|---|---|---|---|---|---|
| Obs 7 | The Carbon Footprint Assessment and Carbon Emissions Reduction Plan (CERP) provide a sound basis for a formal management and reduction plan and implementation of improvements. A range of appropriate management and emissions reduction proposals have been made, including replacing coal and investigating high usage of $N_2O$ | Open | Obs | Consider developing an action programme based on priorities, benefits, costs and other relevant criteria. | | Noted by SDHB. Actions under way |
| Obs 8 | Scope 3 indirect emissions are not required to be reported under ISO 14064-1 so should not be reported as S3 Mandatory for this audit, although the revised version of the ISO14064-1 Standard gives more consideration to reporting of indirect emissions. | Open | Obs | | | |

## Notes

1. The detailed audit findings and calculations are given in the Verification Plan and Working Papers associated with this audit. These contain proprietary verification methodologies and remain confidential to Enviro-Mark Solutions Limited.
2. The audit is based upon sampling and as such nonconformities may exist that have not yet been identified.
3. We have reviewed the company's GHG emissions inventory for the period. The inventory is based on historical information which is stated in accordance with the requirements of ISO 14064-1:2006.
4. The scope of the review was limited to personnel interview, analytical review procedures applied to GHG emissions data, and review of the input of data into the emissions inventory. Based on our review the inventory is compliant with the requirements of ISO 14064-1:2006.
5. A **non-conformance (NCR)** indicates that the auditor has found a non-conformance with scheme Technical Requirements (audit criteria) and requires you to take the appropriate corrective action and provide evidence of this correction within two weeks. This may require resubmission of an updated Emissions Inventory Report.
6. A **minor non-conformance (mNCR)** which the auditor has found which is not material to the outcome of the inventory, but to which a failure to address in the preparation of future inventories could lead to a major Non-Conformance (NCR).
7. **Observations** made by your auditor are strongly advised but the actions are not required for the audit to be completed.
8. Neither Enviro-Mark Solutions Limited nor the auditor has any interest in the organisation, other than in our capacity as assurance providers. We have not carried out any work with this business prior to this review relating to the preparation of the GHG inventory.
9. This report has been prepared solely for the use of the organisation and Enviro-Mark Solutions Limited as part of a GHG verification in accordance with relevant international standards as outlined in the audit criteria above. It may be relied on solely by the organisation and Enviro-Mark Solutions Limited for that purpose only. Enviro-Mark Solutions Limited does not accept or assume any responsibility to any person other than the organisation in relation to the statements or findings expressed or implied in this report.
10. Any correspondence regarding this audit report should be directed to your Lead Auditor.
11. A copy of this report has been provided to the nominated client contact.

  

# Southern District Health Board

Part 1. Carbon Footprint Assessment 2016-2017
Part 2. Carbon Emissions Reduction Plan 2030


Independent Assurance Statement

ISO 14064-1:2006
GHG Verification

## Author

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## Conflict of Interest

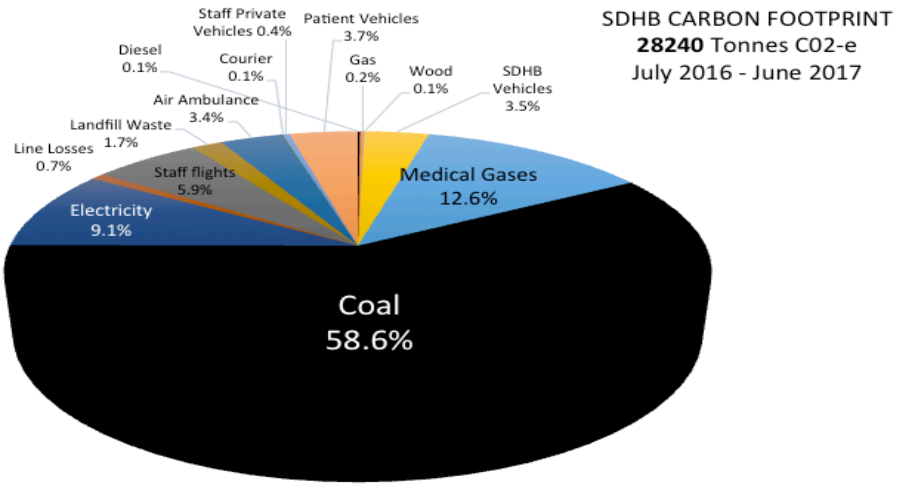
The author is a consultant anaesthetist employed at Southern District Health Board, Dunedin Hospital. The author works part time at Mercy (Private) Hospital Dunedin and is an executive board member of OraTaiao (New Zealand Climate and Health Council).

## Disclaimer of Liability

The opinions in this report are those of the author. The data has been collected and presented in good faith and as transparently as possible. Every endeavour has been made to be accurate and not misleading and to exercise reasonable care, skill and judgment in the data collection and presentation. Neither the author, nor the client organisation (Southern District Health Board CEO and Executive Board), accept any responsibility or liability in respect of the use of any of the information provided in this report.

## Copyright

# Part 1. Carbon Footprint Assessment July 1 2016 – June 30 2017




| Greenhouse Gas Emissions Inventory Summary (tonnes carbon dioxide equivalents) | Base Year 2016-2017 |
|---|---|
| Scope 1 | 4658 |
| Scope 2 | 19106 |
| Scope 3 mandatory | 2425 |
| Scope 3 additional | 2051 |
| Scope 3 One Time | 0 |
| Total Gross Emissions | 28240 |
| Certified Green Electricity | 0 |
| Purchased Emissions Reductions | 0 |
| Net GHG Emissions (all Scopes) | 28240 |
| Total Gross GHG emissions per FTE | 8 |
| Total Mandatory GHG emissions per FTE | 7 |
| Total Gross GHG emissions per Turnover ($ Millions) | 53 |
| Total Mandatory GHG emissions per Turnover ($ Millions) | 49 |
| - Note Total Mandatory emissions includes scope 1,2 and 3 (excludes scope 3 additional and one time) | |

| Scope 1 Emissions breakdown of component (Kyoto Protocol) Gases + coal (Scope 2) | tonnes |
|---|---|
| CH4 | 57.5 |
| C02 | 17464.9 |
| HFCs | 125.8 |
| N20 | 3548.0 |
| PFCs | 0.0 |
| SF6 | 0.0 |
| Total* | 21193.4 |
| *Discrepancy from Inventory summary for Scope 1 reflects rounding error in component gas emission factors | |

*Figure 1. Carbon Footprint Summary Graph and Emissions Inventory Summary table.*

## 1.0 Executive Summary

The authors of the definitive report on climate change and health, published in the Lancet in 2015, have called the climate crisis the "greatest threat to global health in the 21st century". Healthcare systems in the developed world are some of the biggest emitters of greenhouse gases (GHG) and therefore cause significant harm to health globally by contributing to climate change. A central tenet of medicine is "primum non-nocere" (first do no harm). To live up to this tenet, the health sector should quantify its carbon footprint, and take measures to reduce the GHG emissions associated with health care delivery. No previous carbon footprint has been completed for the Southern District Health Board (SDHB). This report reveals the carbon footprint of SDHB (for the purposes of this footprint this is the provider arm - Wakari Hospital, Southland Hospital, Dunedin Hospital, Lakes District Hospital) for the baseline year July 1 2016 to June 30 2017.

**SDHB's total carbon footprint is equivalent to 28,240 tonnes of carbon dioxide.**

The main contributors to this footprint are coal, for heating Dunedin and Southland Hospitals, Electricity and Medical gases. Comparing this footprint to other District Health Boards demonstrates that SDHB is performing poorly. The carbon footprint inventory has been externally audited and verified by Enviromark to ISO standard 14064-1:2006. Part 2. of the report outlines actions that can be taken to reduce the SDHB footprint by 2030. Key recommendations include: -

**An 80% reduction in SDHB GHG emissions by 2030**

- SDHB should undertake an annual carbon footprint assessment.
- SDHB should join the CEMARS (carbon footprinting) program run by Enviro-Mark
- SDHB should take steps to improve the data quality of its GHG inventory.
- SDHB should employ a Sustainability Manager.
- Design a climate smart New Dunedin Hospital.
- SDHB should develop a consistent approach to the measurement and improvement of the environmental sustainability of existing buildings.
- Eliminate coal use at Southland and Dunedin hospitals.
- 50% battery electric vehicle (BEV) by 2030.
- Urgent investigation of the high use of $N_20$ at Dunedin Hospital.
- Culture change program aimed at reducing electricity use.
- 5% decrease in air travel passenger kilometres by 2030.
- SDHB to establish a policy for reimbursement of flight carbon offsets.
- 50% reduction in waste to landfill by 2030.
- SDHB to monitor and regularly review utilisation of aeromedical retrieval services.
- Develop a staff environmental sustainability E-learning induction package.
- Develop a staff environmental sustainability workshop package.
- Establish a network of SDHB wide, service level, green champions.
- Develop an environmental sustainability tool for staff initiatives.
- Develop an environmental sustainability communication package.
- Promote success through an annual environmental sustainability awards night.

# Table of Contents

## 2.0 List of Abbreviations

| | |
|---|---|
| ADHB | Auckland District Health Board |
| ASMS | Association of Salaried Medical Specialists |
| BEV | Battery electric vehicle (purely electric vehicles) |
| CEMARS | Certified Emissions Measurement And Reduction Scheme |
| CEO | Chief Executive Officer |
| CDHB | Canterbury District Health Board |
| CMDHB | Counties Manakau District Health Board |
| CME | Continuing Medical Education |
| $C0_2$ | Carbon dioxide |
| $C0_2$-e | Carbon dioxide equivalent (GHG emissions expressed as C02) |
| CPD | Continuing Professional Development (broad term including CME) |
| DEC | Dunedin Energy Centre (Dunedin district heating scheme) |
| DH | Dunedin Hospital |
| EF | Emission Factor |
| ETS | Emissions Trading Scheme |
| ESD | Environmentally Sustainable Design |
| ESWG | Environmental Sustainability Working Group |
| FY | Financial year |
| GHG | Green House Gas |
| GHGs | Green House Gases |
| GJ | Gigajoules |
| GWP | Global Warming Potential |
| $GWP_{100}$ | Global Warming Potential (Over 100 year time frame) |
| ICE | Internal combustion engine |
| IPCC | Intergovernmental Panel on Climate Change |
| kg | Kilogram |
| kWh | Kilowatt hours |
| LDRH | Lakes District Rescue Helicopter |
| LDH | Lakes District Hospital |
| LEV | Low emission vehicle |
| MBIE | Ministry for Business, Innovation and Employment |
| MFE | Ministry for the Environment |
| MOH | Ministry of Health |
| N20 | Nitrous Oxide |
| NDHB | Northland District Health Board |
| NHS | National Health Service (United Kingdom) |
| NTA | National Travel Assistance |
| NZ | New Zealand |
| NZGBC | New Zealand Green Building Council |
| ORHT | Otago Rescue Helicopter Trust |
| PHEV | Plug-in hybrid electric vehicle (combination of battery and ICE) |
| PHO | Primary Health Organisations |
| pKm | passenger kilometres (metric for measuring air travel) |
| SDHB | Southern District Health board |
| SH | Southland Hospital |

## 3.0 Acknowledgments

I would like to thank a large number of people who have been generous with either their time, knowledge, skills, or all three, in helping produce this report. If I have inadvertently left anybody off the list please accept my sincere apologies.

Chris Fleming (CEO, SDHB) for endorsing the project and providing me with a letter of introduction, which has facilitated data collection. Mike Collins (executive, SDHB) has supported the project from the beginning and helped with introductions to many key people. Nigel Miller (CMO, SDHB) approved the sabbatical leave required to undertake this project.

My colleagues in the department of anaesthetics who have covered my sabbatical leave. In particular I would like to thank my head of department Lisa Horrell, and service managers Nicky Vaughn and Trudie Scott-Walker, who endorsed my sabbatical leave for this project.

Margriet Geesink, sustainability manager, has been an inspiration with her work at Northland District Health Board (NDHB). She very generously has given her time, knowledge and database to help guide me. I would also like to thank Manjula Sickler and Debbie Wilson, sustainability managers at ADHB and CMDHB, for answering specific questions that cropped up as I went along. Josephine Rudkins-Bink, Enviro-mark, helped early on with technical information to conduct the footprint.

Trainee interns at the Otago School of Medicine, University of Otago - Deneille Bligh, Melody Curle, James Devoe, Lauren Fowler, Erena Hosford, Aran Jian, Rachel Kee, Angela Lee, Jed Leishman, Daniel Smit and Melbourne Wallis - helped pave the way with their initial work to quantify the carbon footprint of Dunedin Hospital. They have been generous with their time and knowledge of issues encountered in conducting a footprint exercise. They have also provided me with a copy of their report and database.

Many staff at SDHB have been extremely helpful, Ritchie Feldwick for providing me with much of the data relating to energy associated emissions and answering technical questions, Heather Fleming (waste and fleet fuels), Jan Robertson (fleet fuel data), Barry Sharkey (for providing me with FTE data), Rachel Stedman (procurement) for help nutting out the complex data on staff flights, Rory Dowding (strategy and planning) for help with NTA claims, and Karen Erdman (finance Southland Hospital). Grant Paris and Annette Oudhoff (excel Jedi) for extracting and collating data essential to make the carbon footprint as complete as possible. Lynette Batt for collating the difficult patient activity data. Megan Boivin for putting me on the right path to collect some of the more esoteric information (patient activity data etc.).

Many staff from organisations that provide services and supplies for SDHB were helpful with providing data. Dwayne Tebbutt (Waste Management), Kevin Findlay (Orbit Travel), Graeme Gale (Otago Helicopters), Toni Bastiaansen (Pioneer Energy), Julie Collins (OneLink), Shirley Kean (Mainland Air), Craig Cochrane (NZ Couriers).

Finally, I would like to thank my wife Katey and our children, for putting up with me while I completed this project. Ultimately, quantifying and finding ways to eliminate our greenhouse gas emissions, is so we can leave a healthy planet for future generations.

## 4.0 List of Tables



## 5.0 List of Figures

## 6.0 Introduction

The authors of the definitive report on climate change and health, published in the Lancet in 2015, have called the climate crisis the "greatest threat to global health in the 21st century".[1] Climate change is already affecting health both through direct impacts such as storm events, flooding, and heat-waves but also through indirect effects on the key determinants of health; water supply, water quality, air pollution, and nutrition. Healthcare services in the developed world contribute between 3-8% of their countries total greenhouse gas emissions through energy intensive buildings, transport of patients and staff, waste disposal and the procurement of goods and services (pharmaceuticals, medical devices, office supplies, flights, laundry, freight etc.)[2,3,4]. As a result, healthcare systems cause significant harm to health globally by contributing to climate change. These impacts are most severe for the poorest and vulnerable in society.[5]

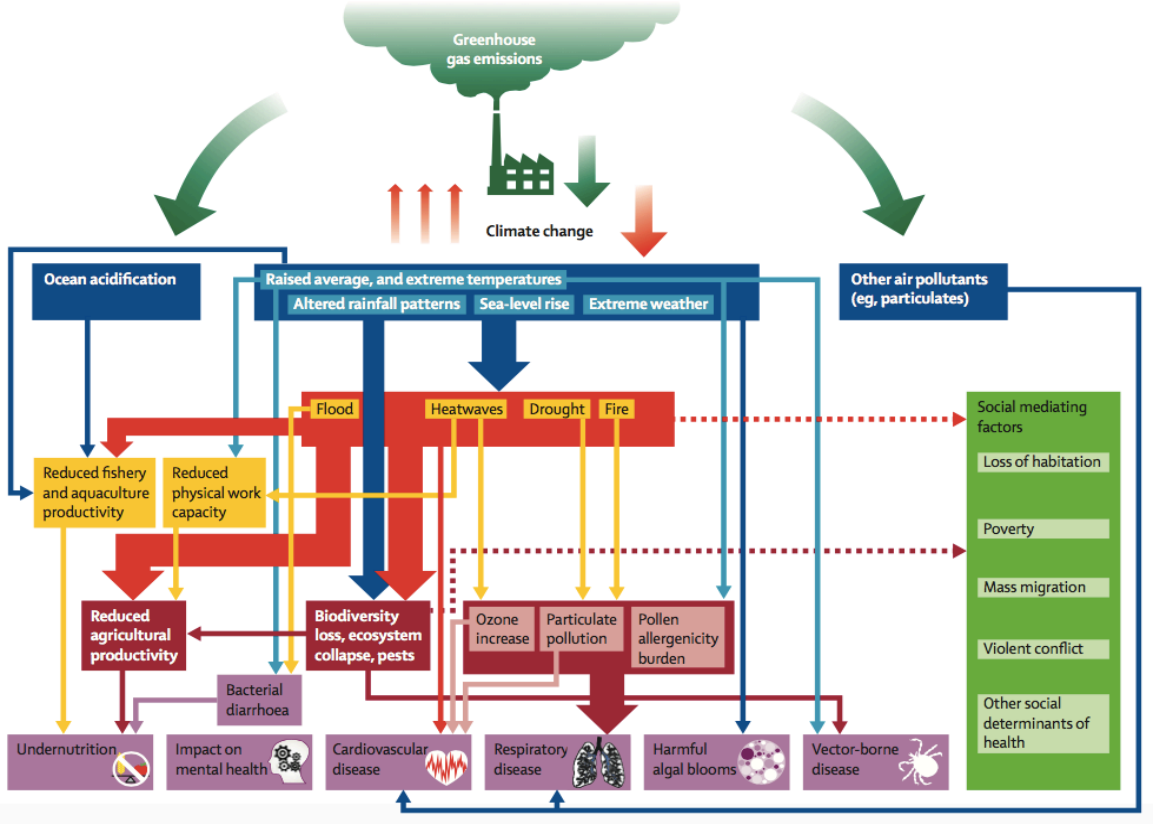



*Figure 2. Links between GHG emissions, climate change and health*[1]

A central tenet of medicine is "*primum non-nocere*" (first do no harm). In order to hold to this tenet, healthcare services should reduce their carbon footprint.

SDHB provides primary, secondary and tertiary level health care services to 319,000 people located South of the Waitaki River. The catchment area encompasses Invercargill City, Queenstown-Lakes District, Gore, rural Southland, Clutha, Central Otago, Maniototo, Waitaki District and Dunedin City. This means SDHB serves the largest geographic region of all New Zealand's health boards.


*Figure 3. SDHB Catchment*

In 2016-2017 SDHB received government funding of $818 million, of which approximately half is applied to traditional hospital and mental health services delivered from Southland Hospital, Lakes District Hospital, Dunedin Hospital and Wakari Hospital. The other half of funding is applied through contracts, with a range of primary and community health providers. This funding is distributed to providers such as Primary Health Organisations (general practices), pharmacies, laboratories, aged residential care facilities, Pacific Islands and Maori Health providers, non-governmental mental health services, rural hospitals and primary maternity facilities. This carbon footprint applies to the first half of this funding (see organisational boundaries for scope of report outlined below).

No previous carbon footprint quantification has been undertaken for the SDHB. Several DHB in New Zealand have already measured their footprint and continue to do so annually - ADHB, CMDHB, NDHB and CDHB. CMDHB, the first to start measuring its carbon footprint, started in 2012 using the certified emissions measurement and reduction scheme (CEMARS) run by Enviro-Mark, reducing its

total $C0_2$-e emissions by 21% to date, saving $500,000.[6] Part 1.0 of this report covers a carbon footprint of SDHB for the financial year 2016 -2017.

Carbon footprint measurement provides an excellent framework to underpin environmental sustainability as it encompasses energy, waste, travel and procurement – all the key domains in which an organization has an environmental impact. It is hoped that the information in this report will inform strategy development by the recently formed Environmental Sustainability Working Group at SDHB. Also with planning well underway for a new Dunedin Hospital, this report can help guide decision making around Environmentally Sustainable Design. These topics are covered in more detail in Part 2.0 of this report.

## 7.0 Methodology

### Protocol

The New Zealand Ministry for the Environment (MFE) recommends organisations use the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (*The GHG Protocol*)[7], or *ISO 14064-1:2006* Greenhouse gases – Part 1 Specification with guidance at the organization level, for quantification and reporting of greenhouse gas emissions and removals.

*The GHG Protocol* is a standard developed jointly by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). The *ISO 14064-1* standard is published by the International Standards Organisation. This standard is closely based on *The GHG Protocol*. The MFE endorse both approaches. This report has utilized *The GHG Protocol* and the aligned guidance provided by the MFE, henceforth called "the MFE guide".[8] *The GHG Protocol* is used by major international organisations such as Volkswagen, Ford, IBM and Tata Steel.

*The GHG Protocol* methodology involves establishing a baseline reporting year, determining an appropriate boundary for the organisations GHG emissions, developing an inventory of emissions sources, gathering data on quantities of GHG emissions in the inventory and multiplying them by relevant emissions factors. Emissions factors convert emissions sources into kg of carbon dioxide equivalent (C02-e).

The MFE guide covers the six direct Kyoto protocol greenhouse gases ($C0_2$, $CH_4$, $N_20$, HFCs, PFCs and $SF_6$) covered by *The GHG Protocol.* GHGs vary in their radiative activity and atmospheric residence time. This means that different GHG have different global warming potentials (GWPs). To enable a meaningful comparison between gases GHG emissions are commonly expressed as $C0_2$-e. The emissions factors in the guide convert activity data into the equivalent estimate of $C0_2$-e per unit of activity data (for example 1L of premium unleaded petrol has an emission factor of 2.43 kg $C0_2$-e/Litre). This report has quantified the total $C0_2$-e emissions and only broken the total into the component gases for scope 1 emissions (see figure 1.). This is because component gases are of little relevance to key stakeholders and the MFE emissions factors only allow conversion of scope 1 emissions into component gases.

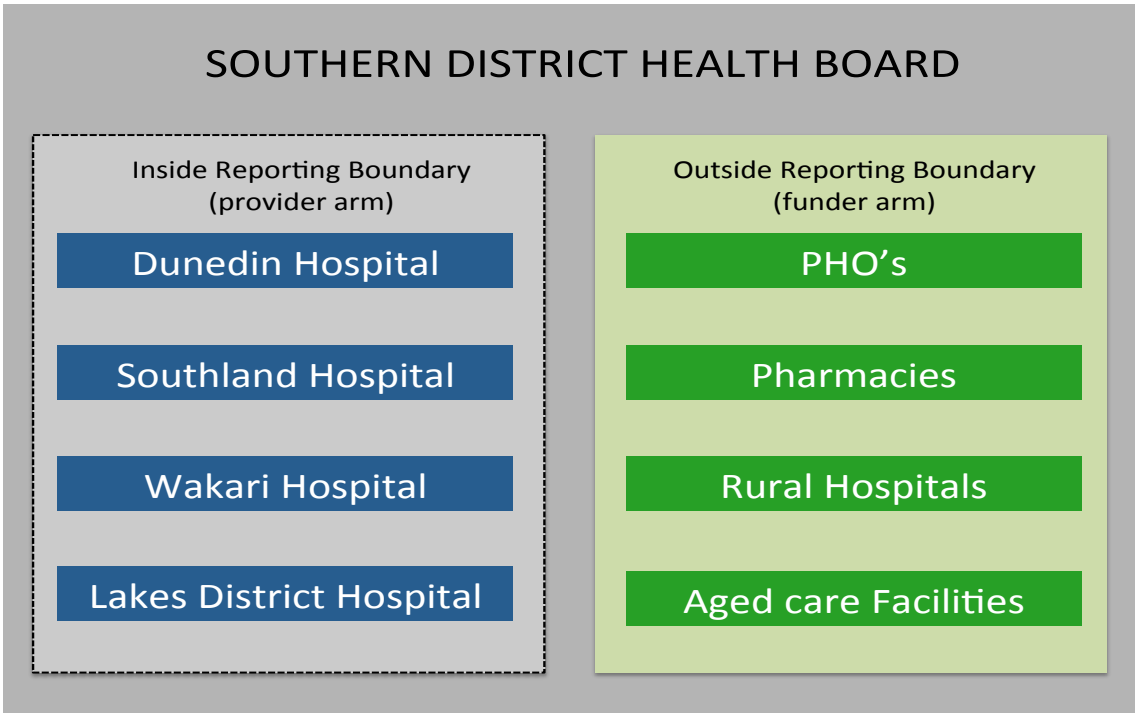
The MFE guide provides emission factors for common emission sources for the 2016 calendar year. This guide also details how these emission factors were derived and assumptions surrounding their use. The guide recommends using the 2016 calendar year emissions factors for the financial year (FY) 2016-2017 used in this report. Some emissions factors are not available in the MFE guide (for

example anaesthetic gases) and where other sources are utilized for emissions factors these are stated.

## Organisational boundaries

The boundary for the report was set with reference to the methodology outlined in *The GHG protocol*. *The GHG Protocol* sets out two distinct approaches to setting accounting boundaries – the equity approach or the control approach. The control approach can be further subdivided into financial or operational control.

The approach taken is to report on emissions from the activities over which SDHB exerts operational control. In other words, the accounting boundary is drawn around the clinical services that SDHB directly delivers (provider arm funding) and controls through SDHB policies and procedures. Those activities covered by the funder arm and not under direct operational control through SDHB policies and procedures were excluded (e.g. PHO's, trust hospitals, dental clinics, aged care facilities).




| | |
|---|---|
| Dunedin Hospital | 201 Great King Street, Dunedin, NZ |
| Southland Hospital | Kew Road, Invercargill, NZ |
| Wakari Hospital | 369 Taieri Road, Wakari, Dunedin, NZ |
| Lakes District Hospital | 20 Douglas Street, Frankton, Queenstown, NZ |

*Figure 4. Boundary of SDHB for purposes of carbon footprint*

## Scope

*The GHG protocol* divides GHG emissions into Scope 1, Scope 2 and Scope 3.

Scope 1: Direct GHG emissions occurring from sources that are owned or controlled by the company (i.e., sources within the organisational boundary). For example, emissions from combustion of fuel in owned or controlled vehicles. Reporting of scope 1 emissions under *The GHG Protocol* is mandatory.

Scope 2: Indirect GHG emissions occurring from the generation of purchased electricity (or steam) consumed by the company. Reporting of scope 2 emissions under *The GHG Protocol* is mandatory.

Scope 3: Other indirect GHG emissions occurring as a consequence of the activities of the company, but generated from sources not owned or controlled by the company (e.g., emissions from business air travel). Under the reporting framework of *The GHG Protocol*, scope 3 is an optional reporting category that allows for the treatment of all other indirect emissions. *The GHG Protocol* states that scope 3 emissions should be reported if they are significant in the context of the whole inventory, material to stakeholders and easy to deduce.

The following approach has been taken to decide which scope 3 emissions to include:

- relevant to SDHB operations
- large in relation to SDHB scope 1 and 2 emissions
- relevant to stakeholders
- under SDHB control
- able to be significantly reduced through actions undertaken or influenced by SDHB

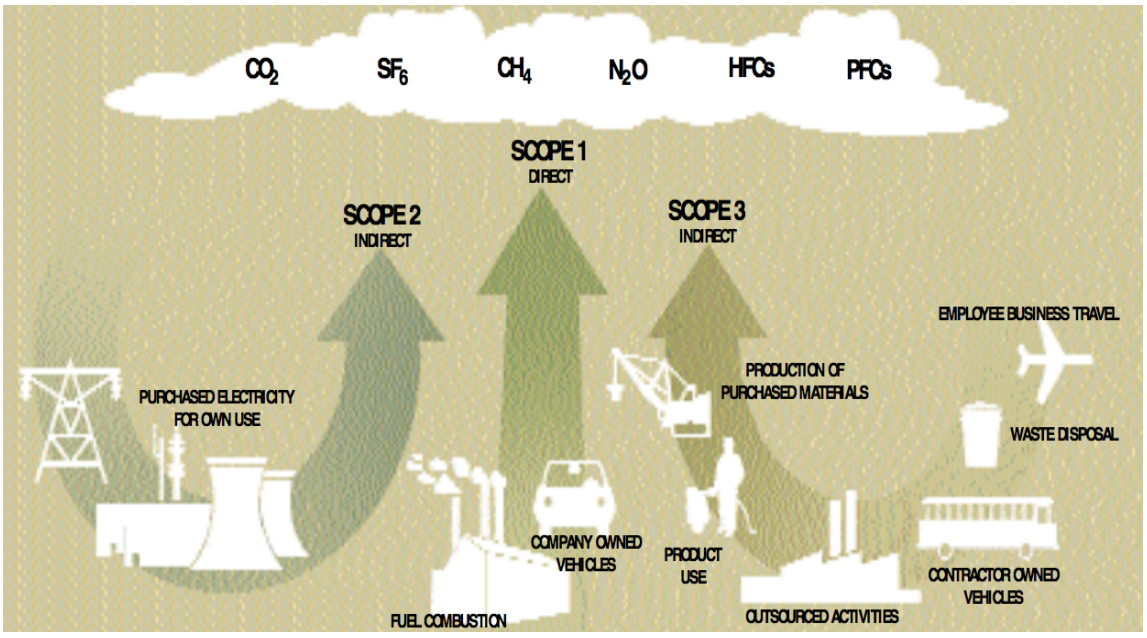



*Figure 5. GHG scope of emissions*[7]

## 8.0 Reporting year

It was decided to use for the base year carbon footprint report the financial year July 1 2016 to June 30 2017. This is the most recent financial year with complete data. The financial year was chosen instead of the calendar year as this fitted with most SDHB financial reporting allowing easier data collection and interpretation. The MFE recommends that emissions factors from their guidance document should be used as follows: -

"Financial year: If you are reporting on a financial-year basis, then you should use the guidance which the greatest portion of your data falls in. For example if you are reporting for the 2016/2017 financial year you should use the 2016 guidance."[8]

## 9.0 Changes to base year

As this is the baseline year report there has been no change to the base year.

## 10.0 GHG Emissions inclusions, exclusions and assumptions

Detailed below are the included scope 1,2 and 3 emissions as well as an outline of the methodology used and assumptions made. Please see the MFE guidance document for detailed assumptions in the calculation of emissions factors for use in NZ voluntary greenhouse gas reporting. The Ministry for Business, Innovation and Employment (MBIE) is the main source of information for the stationary combustion and electricity emission factors provided in the MFE guide. A commentary is included on identified emissions sources that have been excluded from this GHG emissions inventory. These excluded emissions sources are considered not material to stakeholders, not material in the context of the inventory, and/or not technically feasible nor cost effective to be quantified at the present time.

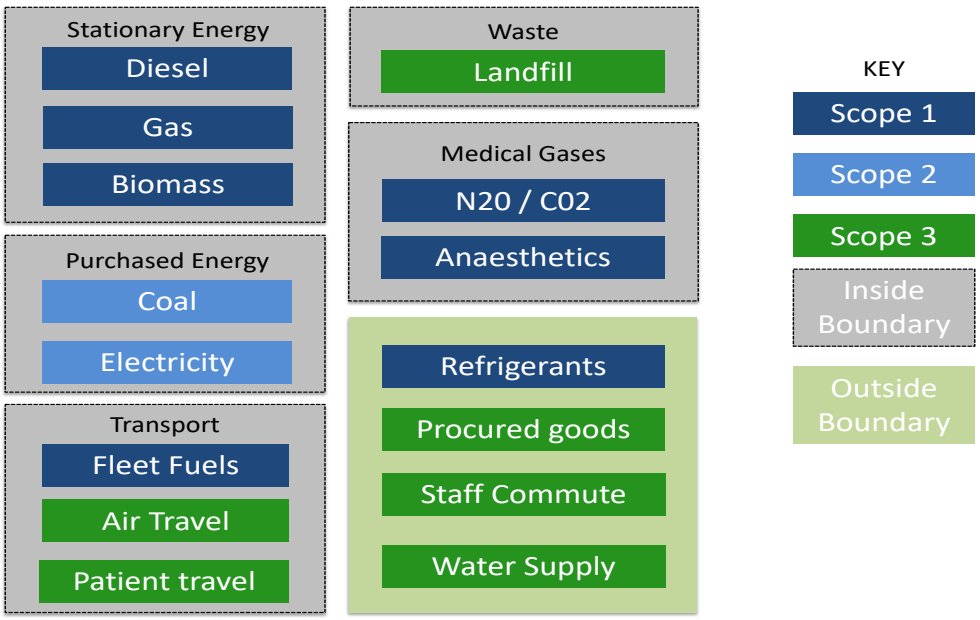



*Figure 6. Scope boundaries*

## Scope 1

Effort has been made to collect data on all scope 1 and scope 2 emissions. Due to lack of available data, the only major scope 1 GHG emission not reported on is refrigerants. It is likely this emissions source is “de minimus”, that is, likely to be < 1% of the total carbon footprint.

### Stationary diesel

Stationary diesel is primarily used for emergency back-up generators at Wakari, Dunedin and Southland hospitals. Due to the large capacity of the fuel tanks there was only one fill at Southland Hospital during the reporting year. There was a large fill of the Dunedin Hospital tank, which occurred just outside the reporting year, so this was not included. Invoices were collated from Oracle (SDHB accounting database) and cross referenced against invoices held by building and property. Data accuracy high

### Gas (LPG)

The only significant source of LPG gas use at SDHB is the back-up boiler at Wakari Hospital and gas hot water heating in the transport building at Wakari Hospital. LPG gas invoices, provided by building and property, were in litres and were therefore converted to kg using the specific gravity number provided in the MFE guide (0.54 kg/L) to allow the appropriate emission factor to be applied. Data accuracy high

### Wood biomass

Wood biomass, according to *The GHG Protocol* is not to be included in scope 1, 2 or 3. However the MFE guide includes wood biomass as a source of scope 1 emissions and includes a relevant emission factor. As this report uses MFE emission factors and the MFE guide primarily, wood biomass has been included for consistency. The only wood biomass used by SDHB is for fuel in the Wakari Hospital boiler. The MFE emission factor for wood (industry) was applied to the invoice data collated by building and property, which had detailed data on tonnes of wood biomass delivered, moisture content and GJ of energy. Data accuracy high.

### Fleet fuels

BP fuel card data was used to determine volume and type of fuel used by fleet vehicles (sourced from online portal). Default values are used for petrol and diesel as the data did not allow separating out types of petrol. All fleet vehicles for SDHB utilize fuel cards so data accuracy is high. Fuel use data for the Wakari-Dunedin Hospital shuttle was from a separate account. The litres of fuel used was manually collated from pdf invoice data. It is assumed that no additional fuel is purchased by staff using personal credit cards/eftpos/cash.

### Medical gases

BOC gases provided a summary of amount and cost of medical gases used at SDHB broken down by site. The two main categories for medical gases are carbon dioxide ($CO_2$) and nitrous oxide ($N_20$). Anaesthetic gases (sevoflurane and desflurane) are also greenhouse gases. Data on number of

bottles of anaesthetic gases was provided by procurement logistics firm OneLink. Data accuracy high.

Medical gas calculations required multiplying the number of cylinders by the quantity of gas per cylinder (either in kg or $m^3$) as per BOC datasheet. For $N_20$ quantified in $m^3$, the volume in $m^3$ was then converted to kg using specific density 1.875 kg/$m^3$. For entonox this was then divided by 2 as entonox is 50% oxygen and 50% $N_20$. The total mass of $C0_2$ in kg or $N_20$ in kg was then multiplied by the relevant GWP figures (1 for $C0_2$ and 298 for $N_20$).[9] Anaesthetic gas calculations applied GWP figures from Sulbaeck Anderson et al.[9] OneLink, who provide logistics support to procurement, provided accurate data on number of bottles of anaesthetics used.

**Taxis**

The MFE guide is unclear whether these emissions are to be included in Scope 1 or Scope 3. Discussion on them is included in the scope 1 section and then the following statement is made "Business travel in taxis and rental cars is likely to be a common source of Scope 3 emissions for most businesses". For the purposes of this report they have been included in scope 1.

Taxi emission factors (EF) from the MFE are based on dollar spend as data is not typically available on km travelled in taxis. The EF is based on an average of $3 spent per km travelled and the engine size category for taxis is based on industry average data and the relevant MFE factor is then chosen. Taxi data was sourced from Oracle. The data does not capture taxi fares paid for by staff but not reimbursed. Data accuracy medium.

**Rental cars**

Rental car data in km was applied to the emission factor for cars with engine size 1600-2000 based on 43% (the majority) of rental cars having engine size in this range. The data was supplied by Hertz the rental car contractor for SDHB. As well as the rental cars booked through the SDHB contracted travel agent using Hertz, it is common practice for staff to book rental cars themselves, and seek reimbursement at a later date. The reimbursement claims for rental cars were extracted from the Oracle. The data was in dollars only with no quantification of km travelled. Therefore it was not possible to calculate the associated GHG emissions as there is no emissions factor for dollars spent on rental cars. It is likely that it is slightly less than the emissions calculated for rental cars from Hertz as the dollar value for Hertz was $28,351 and for reimbursements was $17,359. It is therefore likely to be de minimus (<1% of total emissions) for this footprint. Data accuracy medium (for available data).

## Scope 1 Exclusions

**Refrigerants**

SDHB has numerous stationary air conditioning units as well as some chillers. All will require initial charging with refrigerant, and from time to time, top-ups. At the end of life these refrigerants will need discharging. These refrigerants are all GHGs. The MFE provides detail on how an organization can estimate emissions related to refrigerants. The service contractor for Dunedin and Wakari Hospital does not keep a database of air-conditioning units, chillers or of top-ups, installations and charging of air-conditioning units. Therefore it is not possible to estimate emissions related to

refrigerant use. It was decided not to pursue data from Southland or Lakes District Hospital as this would be incomplete without Dunedin or Wakari Hospital data. Estimated amounts for refrigerant top-ups by the contractor for Dunedin/Wakari indicate total $C0_2$-e GHG emissions of 455 tonnes. In the context of the total footprint the SDHB quantity of refrigerant emissions is likely to be <2% . See data quality section (Part 2.0) for recommendations on improving inventory data quality.

## Scope 2

### Coal

The MFE emission factor used is for commercial lignite coal. Lignite coal is used by SDHB directly at Southland Hospital (on site coal boilers) and indirectly at Dunedin Hospital via steam provided through the district heating scheme from the Dunedin Energy Centre which utilises coal to power its boilers. Of note Pioneer Energy now uses sub-bituminous coal instead of lignite.

Technically, as Dunedin Hospital procures steam from Pioneer Energy, and does not burn coal on site, coal is a scope 2 emission.[7] Dunedin Hospital is the major customer for the district heating scheme, owns and leases the buildings, and can materially influence, as a major customer, decisions about fuel source for the boilers at the DEC.

The calculations for Dunedin rely on coal to steam conversion ratios used by Pioneer Energy to calculate the mass of coal per steam unit (tonne) provided to the energy user. The energy user (Dunedin Hospital) is invoiced for the steam unit in tonnes. The coal to steam conversion ratios were provided by Pioneer Energy applied to steam units in tonnes which were cross referenced against SDHB invoices held by building and property (term used for SDHB facilities management team). The Southland Hospital boiler is metered in GJ. The mass of coal used to provide this GJ of energy was provided by Pioneer Energy as it is not included in the SDHB invoices. The GJ of energy provided by Pioneer Energy was cross referenced against SDHB invoices for the metered GJ of energy. Data accuracy medium.

### Electricity

The MFE emission factor for electricity is based on sourcing this electricity from the national grid. This does not account for transmission and distribution losses of electricity, which are calculated separately under scope 3 emissions as per *The GHG Protocol*. Data was from collated invoice information by building and property for all sites and is therefore highly accurate. The total kWh electricity used for each site was added and multiplied by the MFE emission factor. Data accuracy high.

## Scope 2 Exclusions

None.

## Scope 3

There are a number of scope 3 emissions that have been included in this report even though they are deemed optional in *The GHG Protocol.* Scope 3 emissions are deemed optional, especially in reporting frameworks such as trading schemes, as they result in double counting of emissions, by

those producing the goods, and those consuming the goods. They are often included in reports as they are likely to be significant sources of greenhouse gas emissions and can be materially reduced by SDHB (for example staff flights, waste, patient travel).

The scope 3 emissions have been further sub-classified as mandatory or additional based on Enviro-Mark CEMARS reporting (see Figure 1.)

**Transmission and distribution losses**

Under *The GHG Protocol* the electricity lost in transmission and distribution is included under scope 3 emissions. The relevant EF was applied to the total kWh of electricity used by SDHB as per electricity invoices collated by building and property. Data accuracy high. Mandatory for CEMARS.

**Waste to landfill**

The anaerobic decomposition of waste in landfills generates methane ($CH^4$). Depending on whether the landfill has gas capture or not, different EF are applied to the amount of waste going to landfill. The default MFE emission factor for mixed waste is based on national average composition data from New Zealand's annual GHG inventory.

The landfills used by the contractor, Waste Management Ltd, for Southland, Dunedin and Wakari hospitals all have gas capture (flared in Southland and used for energy at Green Island Landfill, Dunedin). This gas whether used for energy or flared results in release of $C0_2$ to the atmosphere. The Central Otago landfill used for Lakes District Hospital does not have gas capture.

Waste Management provided a summary report, for the financial year 2016-2017. One month of data, June 2016, was missing from the Invercargill data and was not able to be located by Waste Management or SDHB staff. Therefore the subsequent 11 months were averaged to estimate this month which was then added to the total.

Medical waste was excluded. There is data available on the amounts of medical waste but no relevant emission factor. It would be useful for the MFE to develop an emission factor for this category, or for the contractor Interwaste, to quantify the carbon footprint of their operations to allow an emission factor to be applied. Data accuracy medium to high. Mandatory for CEMARS.

**Flights (commercial)**

MFE recommend the International Civil Aviation Organisation (ICAO) calculator for flight travel emissions but if organisations wish to they can use the emission factors provided by the UK Department for Business, Energy & Industrial Strategy in its 2016 UK Government Conversion Factors for Company Reporting. These are deemed to be the most suitable alternative emission factors currently available if not using the ICAO calculator. These EF are included in the MFE guide. The UK Department for Business, Energy & Industrial Strategy's publication discusses the emission factor methodology in more detail, including changes in the methodology over time. The later approach was taken for calculating commercial flight emissions due to specific data on individual legs not being available for reimbursed flight bookings making it impossible to use the ICAO calculator. These emissions factors are broken down based on domestic travel, short haul international (<3700 km) and long haul international (>3700km). They also have categories for type

of seat (economy, business class etc.) or a default category if the type of seat is not known.

Data on commercial flights were from two main sources – bookings through Orbit Travel (corporate travel agent for SDHB) and reimbursement data from the SDHB accounting database for flights booked and paid for by the individual.

Orbit travel provided a summary of flights booked for the financial year 2016-2017. This summary provided a detailed summary of individual legs taken, kilometres per leg and class of ticket. The flights were categorized according to domestic, short haul, long haul and class of flight to determine the appropriate EF to apply.

Overall the quality of data was high. However it was noted that a number of the entries in the Orbit data set appeared to be non-DHB staff members. This was only picked up as the author is familiar with the names of a number of staff members and noted staff members spouses and dependents were included in the dataset. It is likely that these were included as they were travelling with the staff member and were booked at the same time. It is not possible to eliminate these from the data set as they are not differentiated. It is likely (or though there is no data to support this) that the number of entries is small as a percentage of total. It was decided to analyse the data set as is. It can also be postulated that the family member would not have travelled had the SDHB staff member not been travelling and therefore it is not unreasonable to include their associated flight emissions in the SDHB inventory.

Flight data from the SDHB accounting database Oracle for reimbursed travel bookings was of low quality. The information on flight departure/destination had to be retrieved from entries put into the SDHB accounting database by the staff travelling. This data was only available for 36-46% of entries. No specific data on kilometres travelled was available so this was determined using the Enviro-Mark travel calculator based on the information on departure/destination entered into the accounting system.[9] The flights were categorised into domestic, short haul and long haul. For flights where no information about departure/destination was entered, an estimate was made based on the average distances calculated from the 36-46% of data that was available. These estimates of average distances were then added to the total. Given that 54-64% of the data was estimated the overall data accuracy for flights is low to medium. Mandatory for CEMARS.

**Flights (chartered)**

There are regular chartered flights from Dunedin to Invercargill and from Dunedin to Alexander for SDHB staff. The number of patients travelling in each direction was gathered from Mainland Air invoices. Mainland Air provided the distance in kilometres for these flights. The passenger kilometres travelled was totalled and multiplied by the EF for domestic travel (consistent with methodology for calculating carbon footprint of travel on commercial flights). Data accuracy medium. Additional for CEMARS.

**Air Ambulance**

A number of aeromedical service providers transport patients for SDHB both within district and inter-district. These were included in scope 3 analysis as SDHB directly pays for these provided services even when inter-district (e.g.. patient transferred to another hospital for care). Providers include Otago Rescue Helicopter Trust (ORHT) and Lakes District Rescue Helicopter Limited (LDRH) for helicopter aeromedical services and Garden City Helicopters, Life Flight Trust, Mainland Air, Air

Ambulance New Zealand, Skyline Aviation and Canterbury District Health Board for fixed wing aeromedical services.

The only data for ORHT was provided over the phone by Graeme Gale, owner/operator of Otago Helicopters who provide operational support to ORHT. Data is calculated in terms of total hours flown in the BK117 helicopter (fleet of 4). Hours flown is then multiplied by average fuel burn of 300 Litres/hour - this number is used for flight planning and therefore has high accuracy. Total hours were available for April 1 2016 through to 31 March 2017 (Graeme was unable to provide data for the financial year reporting of the carbon footprint). Total hours were then multiplied by the fuel burn and converted into kg using the specific gravity of A1 jet fuel (0.8kg/L). This was then multiplied by the EF for this fuel type. (Source for Emission Factor M. Geesink via Enviro-Mark). Overall this means the data accuracy is low.
For LDRH the hours of flying invoiced, was multiplied by the helicopter EF for a large helicopter (applicable to a rescue helicopter size) as no fuel burn figures were available.

Fixed wing emissions were calculated based on distance travelled (using Enviro-Mark travel calculator) for the travel legs invoiced. This was multiplied by number of patients transported, to calculate a person km travelled number. This was then multiplied by the MFE guide EF for commercial domestic travel. This methodology is similar to that used to calculate commercial flight emissions. Data accuracy low to medium. Additional for CEMARS.

**Freight**

The two main categories are courier parcels (NZ Courier) and freight (Mainfreight).

NZ courier, based on their own carbon footprint data, provided an estimate of the total carbon emitted delivering parcels for SDHB. Their assessment was based on the number of parcels moved for SDHB over the financial year 2016-2017. The total emissions for NZ Courier were then divided by the percentage of items that were for SDHB. Data accuracy medium (due to lack of access to NZ Courier footprint methodology).

Mainfreight invoices show kg of freight delivered for SDHB. However, Mainfreight were unable to provide a metric, based on their own carbon footprint, to allow conversion of this information to $C0_2$-e GHG emissions. There is no MFE EF metric that can be applied to kg of freight. Therefore the freight data is not included in this report. Mandatory for CEMARS.

**Business travel (personal car)**

A significant proportion of travel for SDHB work is undertaken in staff private cars, and then the kilometres travelled submitted for reimbursement at the rate of 0.72 dollars per kilometre. This data is available through the SDHB accounting database. The MFE EF for car travel in km where engine size and fuel type is not known was used. Data accuracy medium. Mandatory for CEMARS.

**Patient Travel (National Travel Assistance (NTA) claims)**

Patients are able to claim for reimbursement of travel costs through the NTA program run by the Ministry of Health. Data was provided on the annual total claims amount by the MOH. The claim rate is 0.28 dollars per kilometre. The MFE default EF, when engine size and fuel type is unknown, was used. This data includes client kilometres as well as those for first and second support for the

client. Although this does not include all patient travel to SDHB, it was included as it is a large chunk of this activity, there is good data available, and it is likely to be reproducible year in and year out as a measure of patient travel activity. Therefore it can be used as an indicator of patient travel trends and the impact of interventions to reduce patient travel (see Part 2.0 for recommendations). Data accuracy high. Additional for CEMARS.

## Scope 3 Exclusions

### Procurement (goods and services)

Significant scope 3 emissions, not included in this report, are related to procured goods and services. These are a significant source of health care related GHG emissions (in the NHS this is estimated to be 65% of health care associated GHG emissions). Included in this category are pharmaceuticals, medical devices, laundry services, professional services etc. GHG emissions are related to the manufacture, packaging, transport, use and eventual disposal of these procured goods (e.g. Pharmaceuticals) and services (e.g. laundry). There is no relevant emission factor available in New Zealand to quantify these emissions.

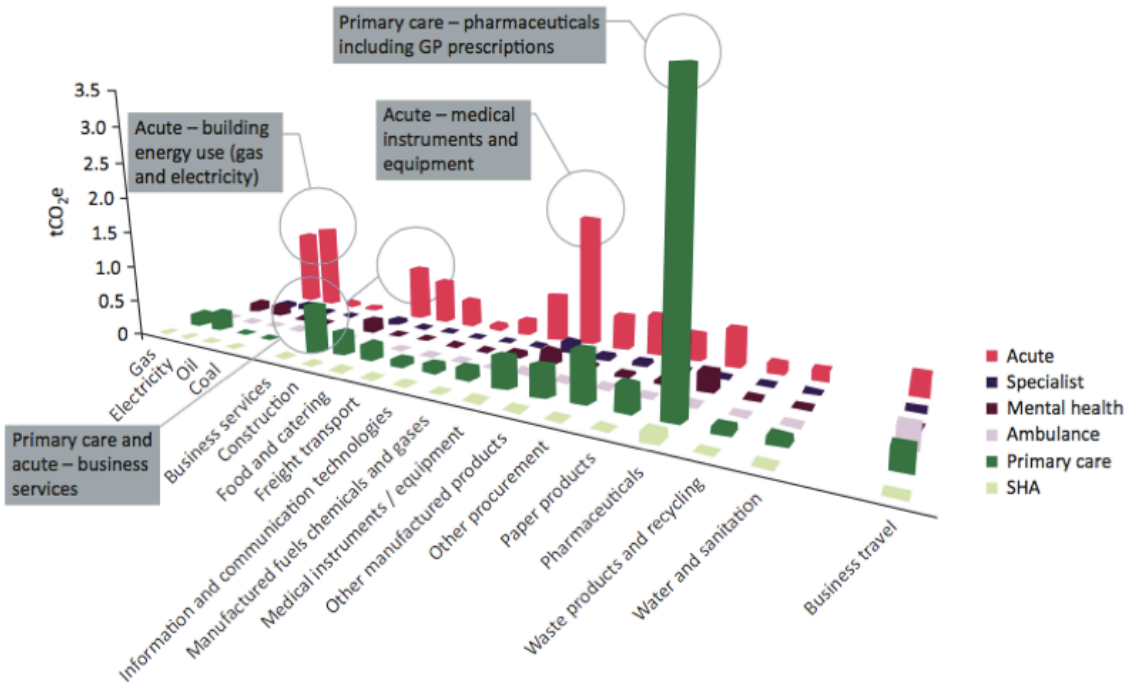



*Figure 7. Goods and Services Carbon hotspots by healthcare sector*[10]

### Patient travel (non-NTA)

There is likely to be a significant amount of patient travel not captured by the NTA claims data as patients don't always claim for their travel. Research by University of Otago Students in October 2017 titled "Travel Patterns for Outpatients Attending Dunedin Hospital" gave a snapshot of outpatient activity. As it didn't include Southland, Lakes District and Wakari Hospitals it is not possible to extrapolate this data to these areas as they are geographically and patient mix diverse

locations. Also, the data did not capture patient travel for inpatient admission. No other data, that I am aware of, exists on patient travel.

**Staff travel (commuting)**

There was a lack of data that could be used to estimate scope 3 GHG emissions associated with staff commuting. Recently there has been a staff travel survey undertaken for Dunedin Hospital but not for other sites.

**Land ambulance (St John)**

Land ambulance transport is materially of interest as it is a key component of our core business and would complement the data on aeromedical ambulance transport. Unfortunately data was not available for land ambulance for the financial year 2016-2017. Data was obtained for the tax year 2017-2018. 390,000 km were travelled by St John ambulance on behalf of SDHB patients. When applying the appropriate emission factor this results in 108 tonnes of $C0_2$-e GHG emissions. This suggests this category would likely be de minimus for reporting (<1% of total footprint).

**Food**

Scope 3 emissions associated with food consumed by patients was not calculated due to the lack of relevant emissions factors and the difficulty in estimating these emissions. It would be of interest to establish a method for calculating these emissions as the food contract for SDHB is with Compass whose business model involves freighting food from outside of district. This information is also likely to be of material interest to SDHB due to the social, health and financial implications of locally sourced seasonal food.

**Wastewater**

Methodologies to determine emissions from wastewater treatment and solid waste incineration are not covered in the MFE guide, as emissions are assumed to be negligible at the individual organisation level (with some exceptions for large industrial wastewater producers).

## 11.0 Data Collection, Quantification and Uncertainties

Section 10.0 provides an overview of how data was collected for each GHG emissions source, the source of the data, and any uncertainties or assumptions made. Data was collected from a range of sources including direct from suppliers, through the SDHB accounts system, from procurement as well as tabulated invoice data held by building and property SDHB. At all times effort was made to source the best quality data and be as transparent as possible when this was not feasible. Recommendations on how data for future reports can be improved, is covered in Part 2. Section 3.0. At times it was not possible to verify data from suppliers by corroborating directly with invoices as the data required was not included in invoices (e.g. tonnes of coal from Pioneer energy as only steam in tonnes or GJ energy provided on invoices).

Data was manually entered into an excel database and multiplied by an emission factor to achieve a $C0_2$-e GHG emission. Emissions factors used were from the most recently available MFE guide. Assumptions related to calculation of emissions factors can be found in the MFE guide.[8] Where MFE emissions factors were not available alternatives were sourced. Some of these were from

reports written by colleagues and have not been verified directly against the original emission factor (e.g. Enviro-Mark emission factors for helicopters). The final excel worksheet was then reviewed line by line to ensure correct entry of data, emission factors, and accuracy of calculations.

## 12.0 Impact of Uncertainties

There is always a degree of uncertainty when preparing a GHG inventory. Where possible uncertainty and assumptions have been made clear in sections 10.0 and 11.0. It is felt that any degree of uncertainty is minimal and where doubt occurs a conservative approach has been taken (leading to over estimation rather than under estimation). It is the author's opinion that the main impact of uncertainties relate to inconsistent quantification in subsequent years. By being transparent about the methodology it should be possible to have chronologically consistent data and therefore allow accurate comparison from year to year.

## 13.0 SDHB Emissions Summary

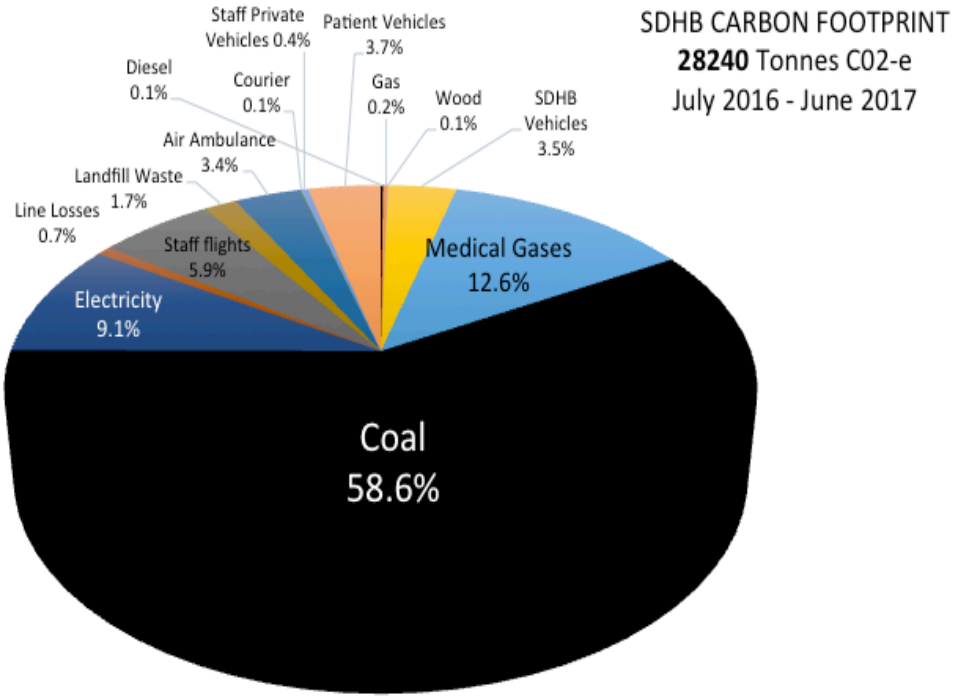



*Figure 8. Total Carbon Footprint Summary*

The carbon footprint of SDHB is 28,240 tonnes of $C0_2$-e for all emissions categories and 23,764 tonnes of $C0_2$-e for mandatory to report scope 1 and 2 emissions. This is a large carbon footprint for an organization the size of SDHB. CMDHB baseline carbon footprint in 2012 was 20,123 tonnes of $C0_2$-e. This focused on scope 1 and 2 emissions and so is considerably less than our 23,764 tonnes $C0_2$-e GHG emissions for scope 1 and 2 given the larger population serviced by CMDHB (534,750 for CMDHB vs 319,000 for SDHB).

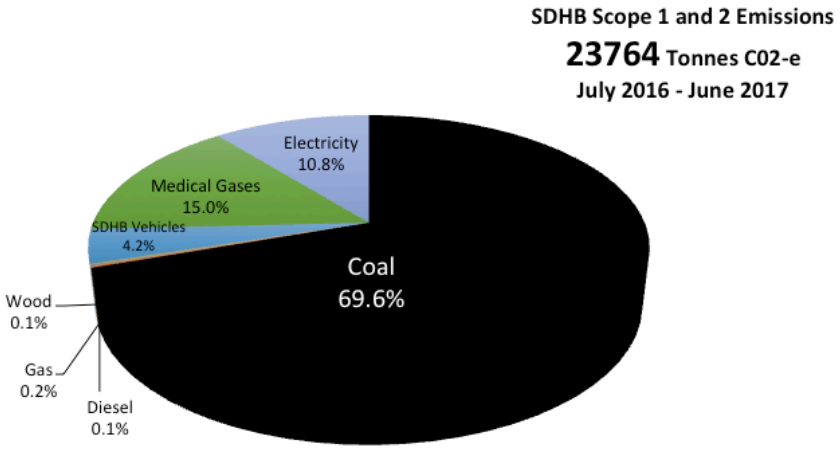



*Figure 9. Scope 1 and 2 (mandatory for reporting) GHG emissions*

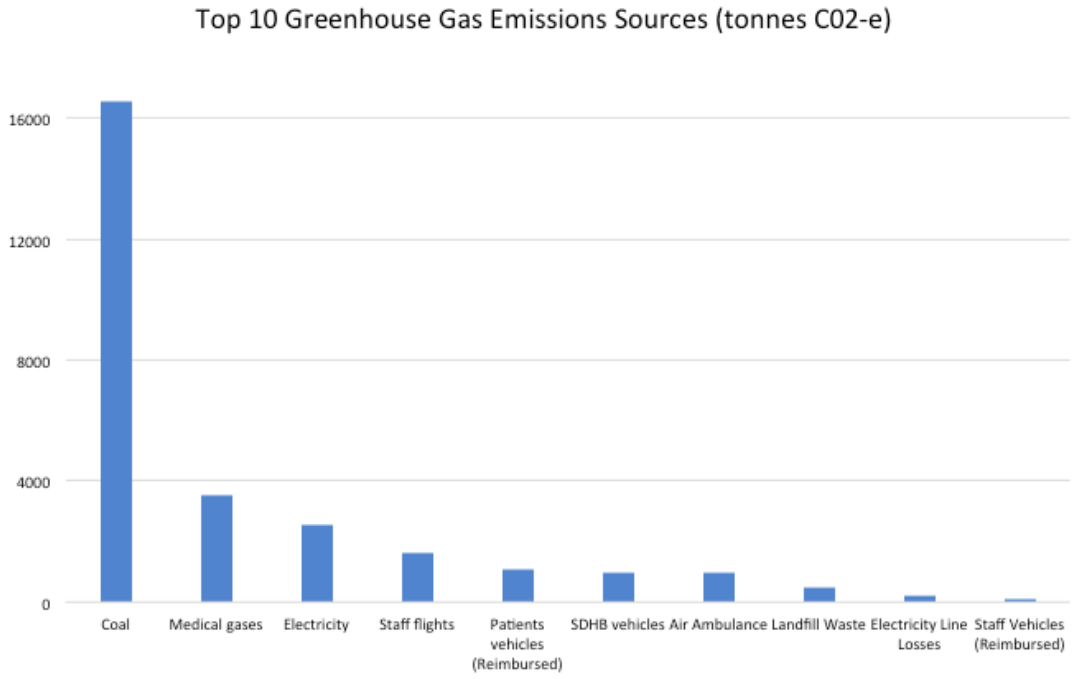



*Figure 10. Top 10 Greenhouse Gas Emissions by source*

Our disproportionately large footprint is confirmed by referring to benchmark data (see section 14.0 table 3.) which shows across all benchmarks (patient activity, FTE staff, millions of dollars of funding and building $m^2$), we are exceeding Northland District Health Board, the only DHB for which the author has data to compare across all benchmarks.[12] Carbon footprint reports are available for the major DHB's (CMDHB, CDHB, ADHB) for the 2016-2017 year (CEMARS reporting)[13,14,15] allowing a comparison of our total inventory carbon footprints.

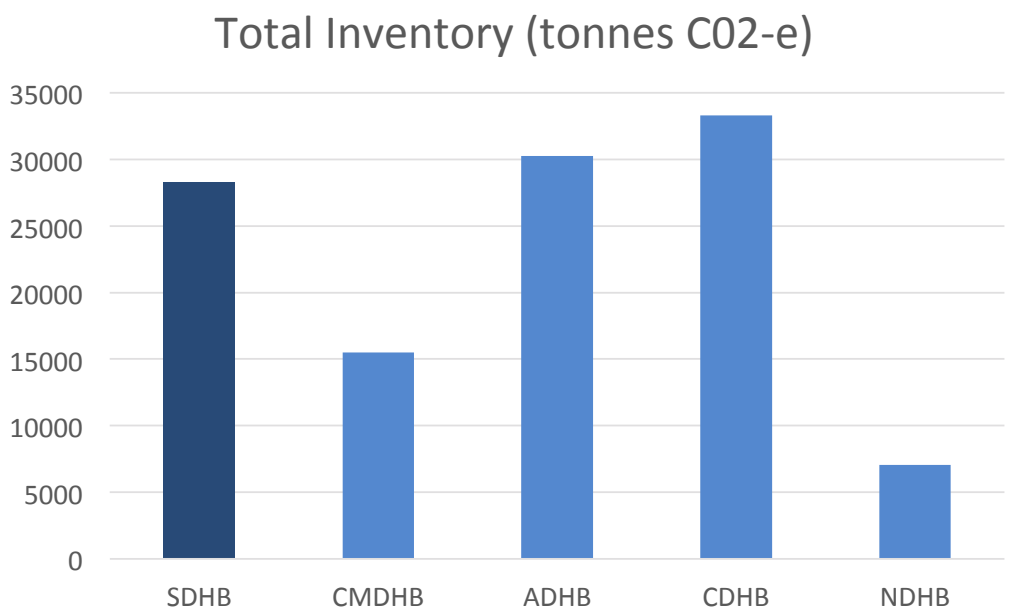



*Figure 11. Total Inventory (Scope 1,2 & 3 Emissions) – SDHB compared to other DHB*

When adjusted for total funding and population served, SDHB's total inventory of GHG emissions far exceeds all other major DHB's.

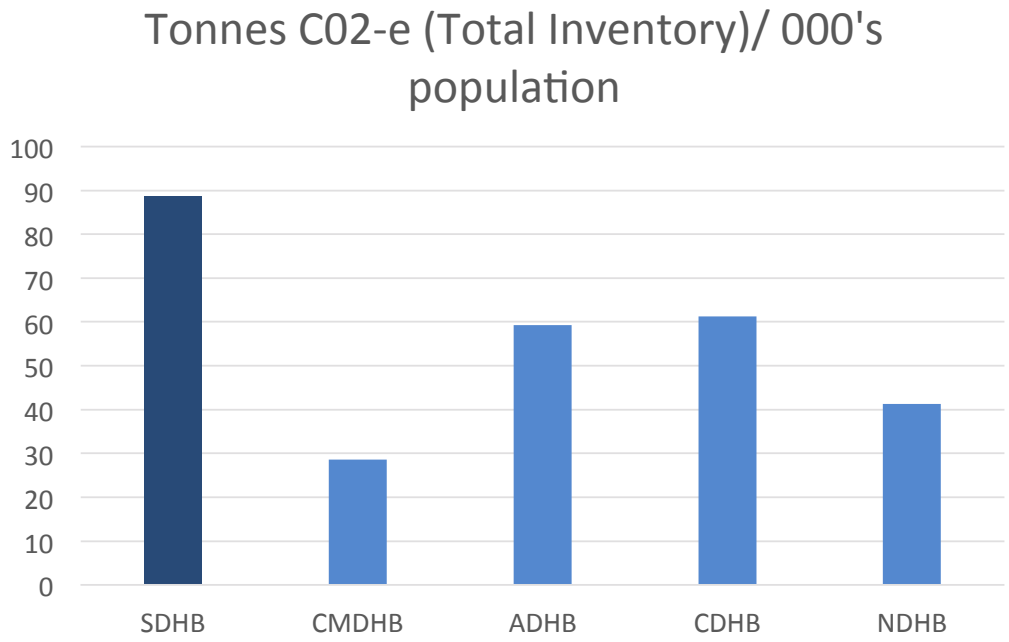



*Figure 12. Total inventory emissions when adjusted for DHB's population*

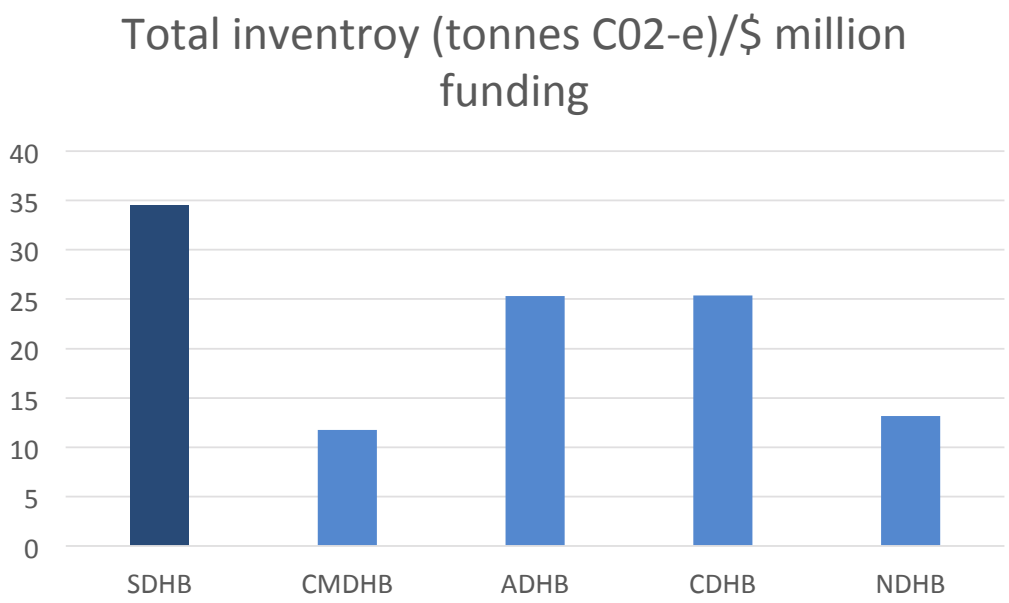



*Figure 13. Total inventory emissions when adjusted for DHB's funding*

There are some differences between DHB's in terms of the scope 3 emissions reported. Scope 1&2 mandatory emissions are more consistently reported making direct comparison more accurate. We are the second highest emitter of scope 1&2 emissions behind CDHB. This is predominantly because we use coal for energy as does CDHB. Of note CDHB are planning to transition their coal boilers at Christchurch Hospital to wood biomass.

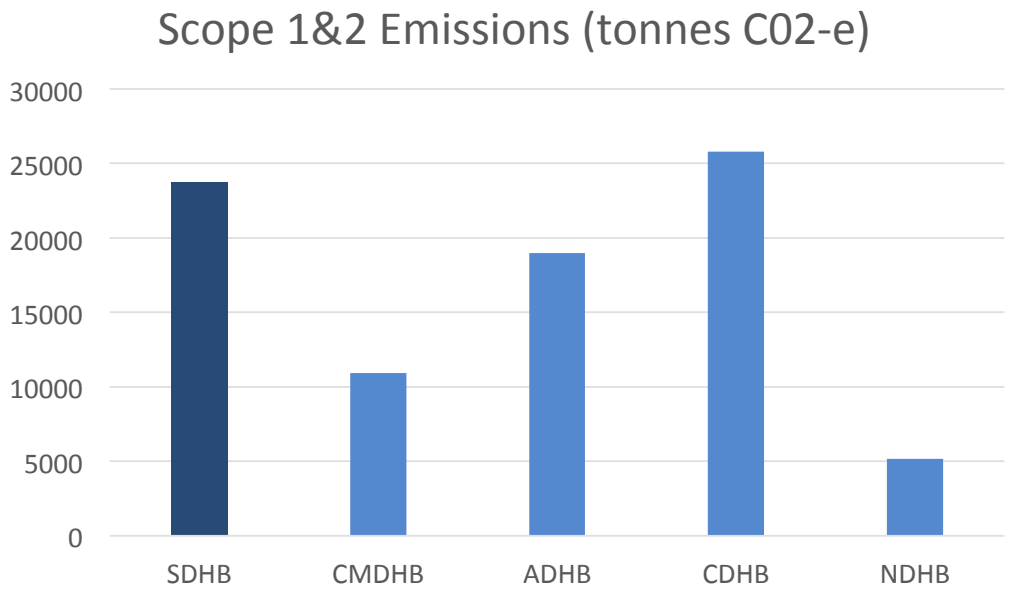



*Figure 14. Scope 1&2 Emissions – SDHB compared to other DHB*

The poor relative performance of SDHB is evident even when adjusting scope 1&2 emissions for population and funding.

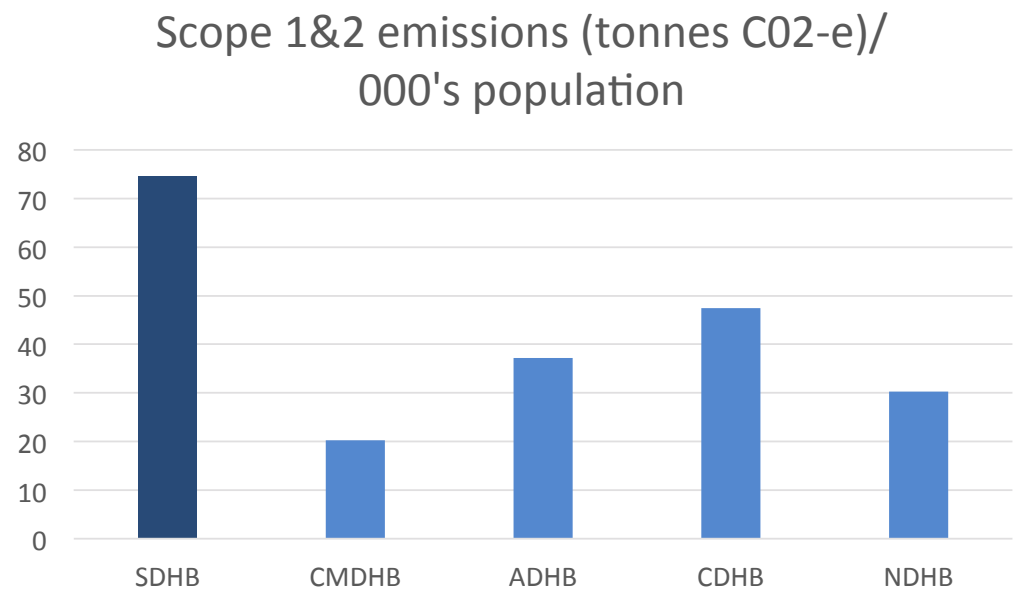



*Figure 15. Scope 1&2 emissions when adjusted for DHB's population*

The argument that we have higher scope 1&2 emissions due to a cold climate is not compatible with the difference in emissions compared to CDHB which has a comparable climate.

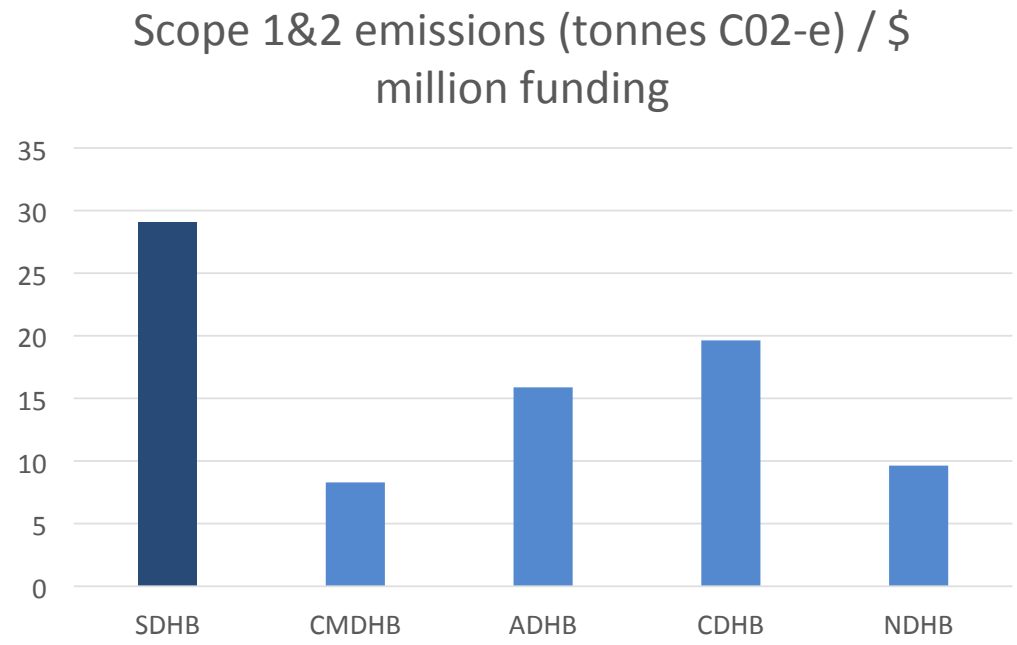



*Figure 16. Scope 1&2 emissions when adjusted for DHB's funding*

**Coal and other stationary energy sources**

The primary reason for this large footprint is the use of coal as an energy source at Dunedin and Southland hospitals. This contributes a massive 16,544 tonnes of $C0_2$-e GHG emissions making up 58.6% of the total footprint and 69.6% of the mandatory to report scope 1&2 GHG emissions. Other stationary sources of energy (gas, diesel and wood) make up only a small proportion of the footprint (0.38%). This reflects there use primarily in a back-up role for energy generation. Wood, because it is terrestrial carbon, is carbon neutral (excluding life cycle emissions associated with harvesting, transport etc.) and therefore has almost negligible $C0_2$ emissions.

**Fleet Vehicles**

SDHB fleet vehicles have a large footprint (3.5% of total footprint). This likely reflects the large geographic spread of SDHB. When rental vehicles and taxis are included in this source of scope 1 emissions it also represents a significant cost to the DHB at $707,000 per annum.

**Medical gases**

A significant contributor to the total footprint is medical gases, nitrous oxide ($N_20$) and anaesthetic gases. They are responsible for 3432 tonnes of $C0_2$-e GHG emissions and make up 12.6% of the total footprint. This is primarily a result of $N_20$, in particular the use of G cylinders at Dunedin Hospital. These cylinders are part of a bank of cylinders that supply piped gas supply to the hospital. The main users are operating theatres and the labour ward. Operating theatres, as anaesthetic practice has changed, use very little $N_20$ except for specific clinical indications. The labour ward uses the piped $N_20$ mixing it with oxygen in machines that deliver entonox (50% $N_20$, 50% oxygen). Table 1. Demonstrates the disproportionate use (and cost) of $N_20$ at Dunedin Hospital that warrants further investigation.

| | N20 t $C0_2$-e | Total $N_20$ (kg) | $ | % total kg | Deliveries | $N_20$ kg/delivery |
|---|---|---|---|---|---|---|
| DUNEDIN | 3171 | 10644 | $168,585.00 | 95% | 1800 | 5.91 |
| SOUTHLAND | 165 | 555 | $9,393.00 | 5% | 1250 | 0.44 |

*Table 1. Comparison of $N_20$ use Southland and Dunedin Hospitals*

The disparity in use between Dunedin and Southland Hospital is graphically represented in figure 17. Discussion with colleagues at each site reveals Dunedin has approximately 1800 deliveries per annum and Southland 1200. This difference in deliveries does not explain the 20 fold difference in $N_20$ use.

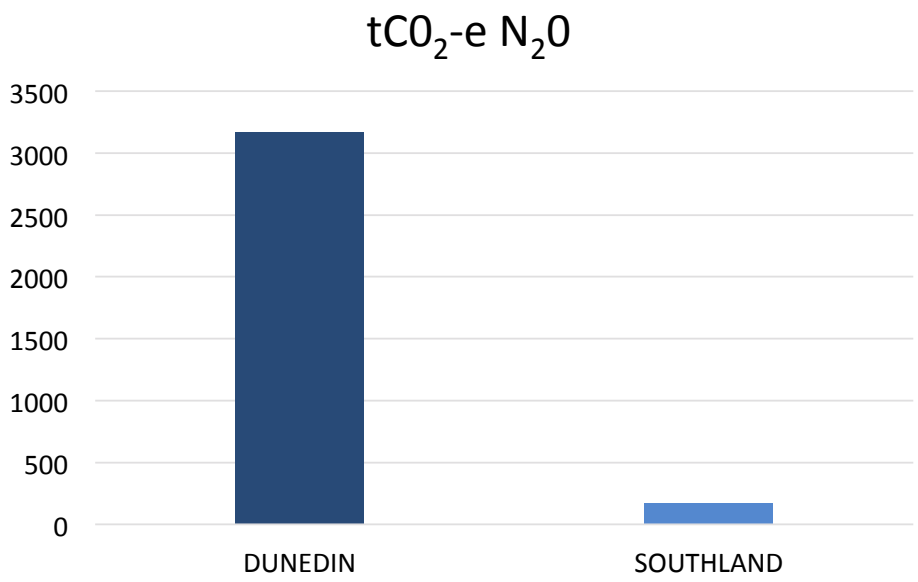



*Figure 17. tonnes of $C0_2$-e $N_20$ emissions at Southland and Dunedin Hospitals*

Compared to other DHB's our use of $N_20$ is disproportionately high. Even allowing for differences in population and funding at these DHB we use a disproportionate amount of $N_20$.

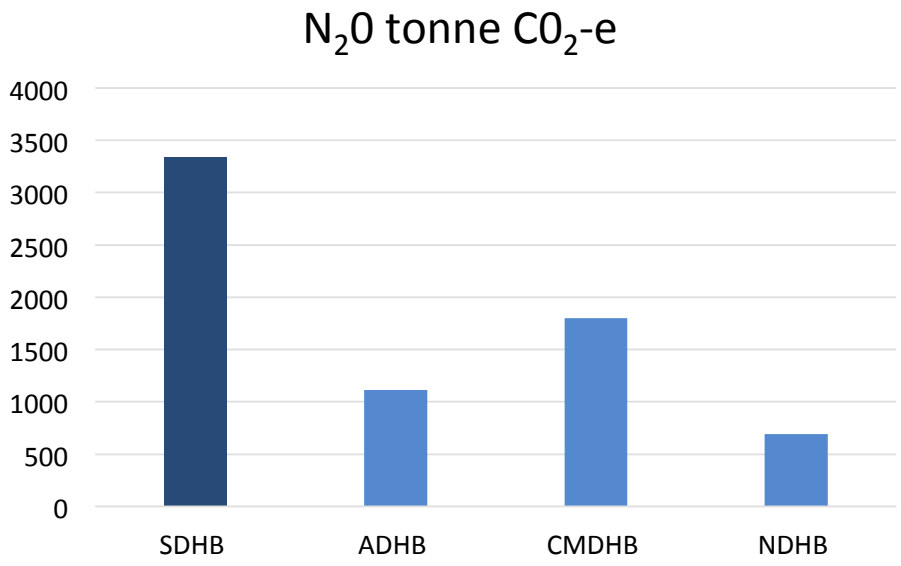



*Figure 18. $N_20$ $C0_2$-e GHG emissions at 4 major DHB's*

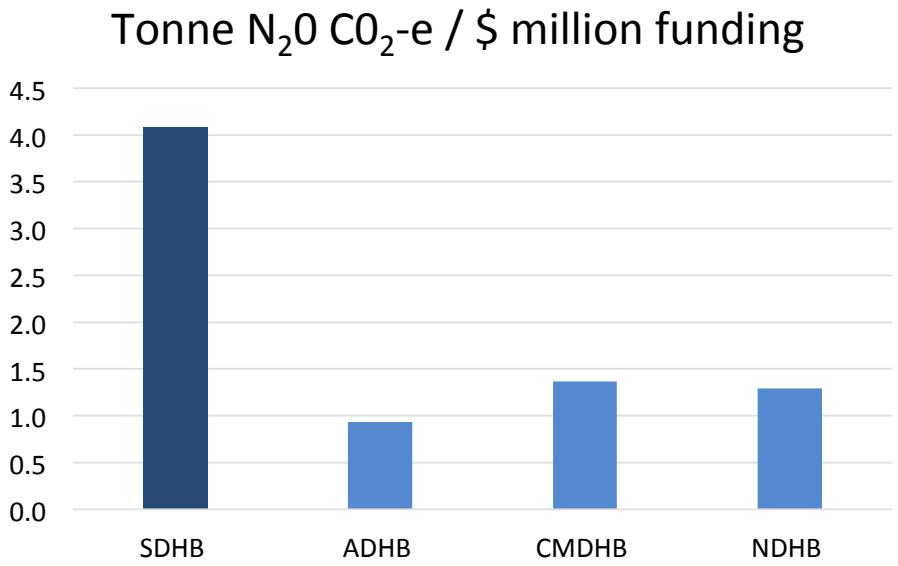



*Figure 19. $N_20$ $C0_2$-e GHG emissions / $ million funding at 4 major DHB's*

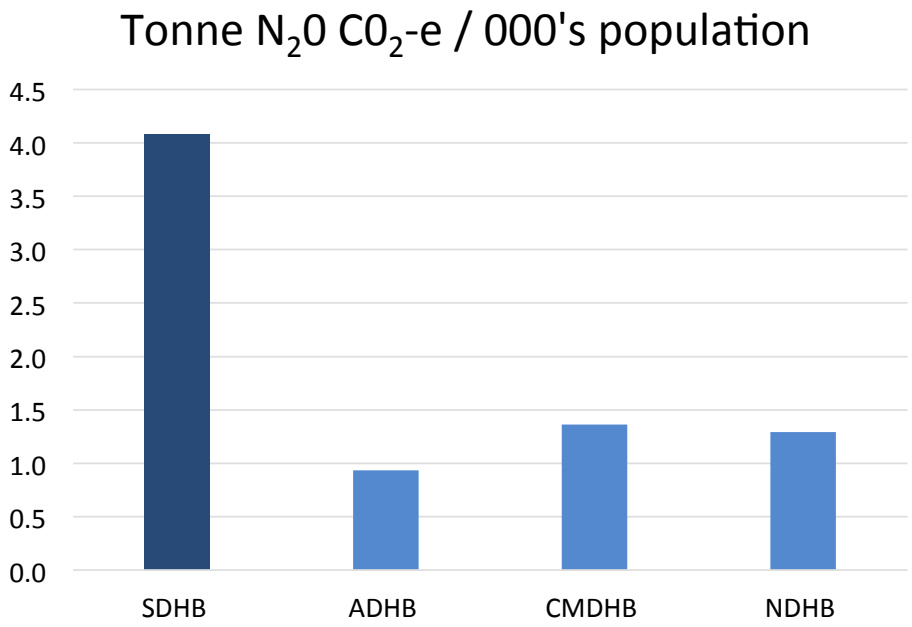



*Figure 20. $N_20$ $C0_2$-e GHG emissions / 000's population at 4 major DHB's*

Anaesthetic gases, sevoflurane and desflurane, make up a small, but not insignificant, contribution to the total carbon footprint (0.44% of the total). This is primarily due to the use of desflurane, a potent greenhouse gas, even though it makes up only a small proportion of total anaesthetic gas use. The majority of anaesthetics use sevoflurane, a much less potent greenhouse gas.

**Electricity**

Despite being predominantly sourced from renewable energy, grid electricity still relies on fossil fuels for part of its generation. Therefore there is a carbon footprint associated with the use of electricity (and the electricity losses that occur as a result of transmission and distribution). At 9.07% of the total footprint this is the third biggest contributor to SDHB emissions after coal and medical gases. It also represents a significant cost for SDHB. Transmission and distribution losses associated with this electricity use are included as a scope 3 emissions and make up 0.74% of the footprint.

| | kWH Total for year | $GST exl |
|---|---|---|
| **Dunedin Hospital** | **12792955** | **1267925** |
| **Southland Hospital** | **5487568** | **593359** |
| **Wakari Hospital** | **1512086** | **155308** |
| **Wakari Secure** | **927803** | **123,202.65** |
| **Lakes District Hospital** | **811452** | **101856** |
| **TOTAL** | **21531863** | **2241650** |

*Table 2. Electricity use and cost by site*

**Flights**

A large number of flights are taken by staff on SDHB business and for staff continuing professional development (CPD). In total 13,734,670 km were flown by staff emitting 1653 tonnes of $C0_2$-e GHG emissions. This constitutes 5.9% of the total footprint and is therefore the fourth largest source of GHG emissions at SDHB. 67% of these GHG emissions were related to international travel (long haul) travel.

**Waste to Landfill**

Waste to landfill is the 8$^{th}$ largest source of emissions for SDHB accounting for 1.7% of total emissions (480 tonnes of $C0_2$-e GHG emissions). Although not a large source of emissions it represents a significant environmental impact for the DHB with over 1000 tonnes of solid waste entering landfill annually.

**Aeromedical Retrieval**

Aeromedical retrieval makes up 3.4% of the total footprint at 954 tonnes of $C0_2$-e GHG emissions . This includes helicopter retrievals within SDHB district but also fixed transfer of patients out of district.

**Business travel Car (reimbursed)**

This category includes all travel on SDHB business that involves staff using their private car and claiming back the kilometres travelled at a fixed rate. 506,000 kilometres were claimed for by staff at a cost of $364,574 per annum.

**Patient Travel (NTA) Claims**

5,053,153 kilometres travelled by patients and their supporters were claimed through the Ministry of Health. This represents 3.7% of the SDHB total footprint and over 1000 tonnes of $C0_2$-e GHG emissions. This only represents a proportion of patient travel as it does not account for travel not claimed for by patients.

**Refrigerants, freight, land ambulance, rental cars (reimbursed)**

It was planned to collect data on these activities for the footprint. Refrigerants and rental cars (reimbursed) are scope 1 and mandatory. Freight is a mandatory scope 3 emissions for CEMARS reporting. Land ambulance transport is materially of interest as it is a key component of our core business. See discussion in section on scope 1,2,3 inclusions and exclusions – rental cars reimbursed, land ambulance are likely to be de minimus for reporting (<1% of total footprint). There is not sufficient data to make comment on the possible size of refrigerant and freight related emissions.

## 14.0 Benchmarked Emissions

This footprint has been benchmarked against fulltime staff equivalents (FTE), building square metres (excluding plant), patient activity (day cases, inpatient bed days and a separate category that also includes outpatient activity) and funding (total SDHB funding $million and provider arm funding $million). This allows comparison from year to year between reports as well as comparison against other DHB.

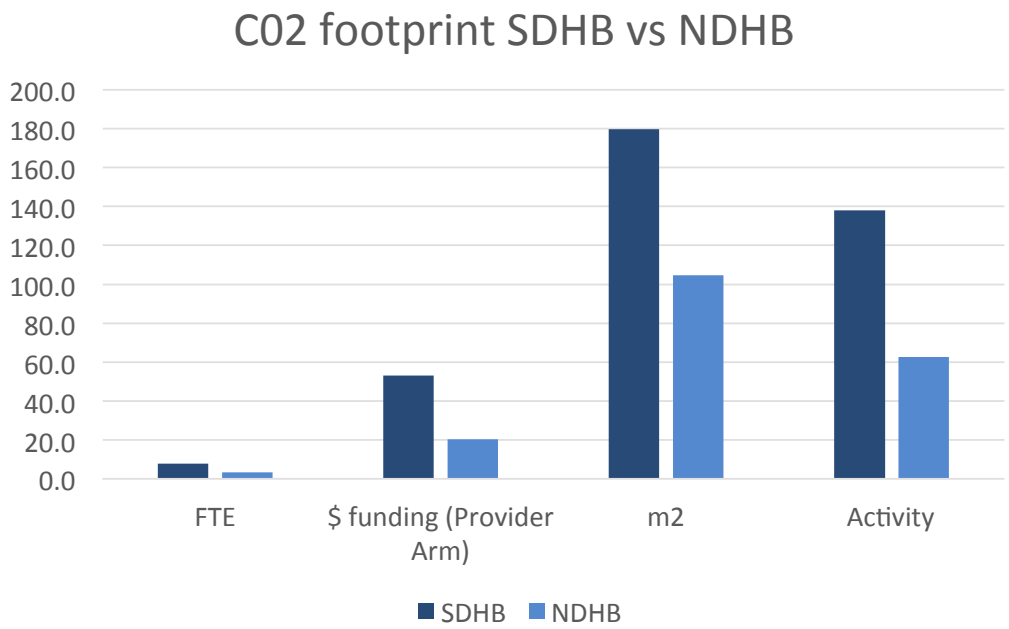
| Total SDHB emissions (28,240 tonnes) | Scope 1&2 emissions (23,764 tonnes) | Benchmark Unit | Numerator |
|---|---|---|---|
| 53.1 | 44.7 | $tC0_2$-e/million $ funding provider arm* | $532 million |
| 34.5 | 29.1 | $tC0_2$-e/million $ funding total | $818 million |
| 179.7 | 151.2 | $kgC0_2$-e/building $m^2$ | 157194 $m^2$ |
| 138.2 | 116.3 | $kgC0_2$-e/patient activity 1** | 204404 |
| 41.8 | 35.2 | $kgC0_2$-e/Patient Activity 2*** | 675744 |
| 7.9 | 6.7 | $tC0_2$-e/FTE | 3562 |

* Provider arm funding is more relevant as this part of SDHB covered in the footprint
**Patient activity including day cases and inpatient bed days
***Patient activity including day cases, inpatient bed days and outpatient visits

*Table 3. Benchmarked Carbon Footprint SDHB July 1 2016 – June 30 2017*

| Benchmark | SDHB | NDHB |
|---|---|---|
| $tCO_2$-e/million $ funding | 53.1 | 20.3 |
| $kgCO_2$-e/building m2 | 179.7 | 104.7 |
| $kgCO_2$-e/patient activity 1 | 138.2 | 62.6 |
| $kgCO_2$-e/Patient Activity 2 | 41.8 | - |
| $tCO_2$-e/FTE | 7.9 | 3.3 |

*Table 4. Carbon footprint benchmarks compared to Northland District Health Board*




FTE = $tCO_2$-e/FTE
$ Funding = $tCO_2$-e/$million provider arm funding
$M^2$ = $kgCO_2$-e/building $m^2$
Activity = $kgCO_2$-e/patient activity (inpatient bed days + day cases)

*Figure 21. Comparison of footprint benchmarks SDHB vs NDHB*

## 15.0 Greenhouse Gas Removals and Reductions

As this is the baseline year report there are no GHG emissions removals and reductions to take into account. The author has not been able to identify any greenhouse gas emissions offsets purchased by SDHB.

## Audit

This carbon footprint inventory and report has been audited and verfied by Enviromark to ISO standard 14064-1:2006. Verification provides stakeholders with confidence about the accuracy of an emissions inventory and increases the credibility of publicly reported emissions information and progress towards GHG targets, leading to enhanced stakeholder trust. Verification also provides increased senior management confidence in reported information on which to base investment and target setting decisions

If an emissions inventory is intended for public release, then the Ministry for the Environment recommends that organisations obtain independent verification of the inventory to confirm that calculations are accurate, and the correct methodology has been followed.

An accreditation framework has been developed by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ), which accredits verifiers to the *ISO 14065* standard. This confirms that these verifiers are suitably qualified and enables them to certify an inventory as being prepared in accordance with *ISO 14064-1*.

The Ministry for the Environment recommends that organisations use verifiers who are independent, are members of a suitable professional organization, demonstrate they have experience with emissions inventories, understand *ISO 14064* and *The GHG Protocol,* have effective internal peer review and quality control procedures.[8]

Please see appendix 2 for a complete summary of the audit findings and assurance statement.

# Part 2. Carbon Emissions Reduction Plan 2030

Outlined below are key components of a plan to reduce GHG emissions at SDHB by 2030. It is beyond the scope of this report, and the resources (both time and technical) of the author to provide a detailed plan. It is the authors hope that the proposals below provide a framework of ideas for the leadership of SDHB to develop further into a plan of action to address our environmental footprint.

## 1.0 Sustainability Strategy

The recently established Environmental Sustainability Working Group is in the process of developing a strategy for SDHB. At its core this strategy should address the issue of climate change aiming for an **80% reduction in SDHB GHG emissions by 2030**. Carbon footprint measurement provides an excellent framework to underpin environmental sustainability as it encompasses all the key domains in which an organization has an environmental impact. It allows objective quantification of this impact and allows measurement of mitigation efforts. The approach below should be implemented: -

1. Annually measure the SDHB carbon footprint
2. Set a target of 80% reduction in SDHB GHG emissions by 2030
3. Develop an action plan that addresses key components of the carbon footprint
    a. Energy
    b. Transport
    c. Procurement
    d. Waste
    e. Built environment
4. Staff engagement and culture change

This GHG emission target is achievable based on our current footprint. Table 5. outlines our current footprint and the percent reduction in emissions that can be achieved in each category using existing and developing technologies as well as staff behaviour change. How reductions can be achieved are outlined in more detail in the sections that follow. Primary drivers of this reduction in $C0_2$-e GHG emissions will be for SDHB to stop using coal as an energy source, addressing the high use of $N_20$ at Dunedin hospital, transitioning fleet vehicles to low carbon alternatives, reducing waste and reducing staff air travel.

| Current source of emissions (t C02-e) | 2016-17 | FY 2030 | reduction | Method of emissions redcution |
|---|---|---|---|---|
| Coal Heating Dunedin | 11391.2 | 112.0 | -99.0% | Replace DEC coal with wood biomass (based on GJ energy provided from tonnes wood biomass wakari boilder) |
| Coal Heating Southland | 5152.7 | 43.0 | -99.0% | Replace Southland Hospital coal boiler with wood biomass (based on GJ energy provided from tonnes wood biomass wakari boilder) |
| Diesel Generators | 32.1 | 32.1 | 0.0% | No change |
| Gas Heating (Wakari Boiler) | 59.2 | 59.2 | 0.0% | No change |
| Wood Heating (Wakari Boiler) | 16.6 | 16.6 | 0.0% | No change |
| Fleet fuels Diesel | 86.6 | 39.0 | -55.0% | Electrify 50% of fleet vehicles, 10% efficiency gain in rest of fleet PHEV/LEV |
| Fleet fuels petrol | 876.4 | 394.4 | -55.0% | Electrify 50% of fleet vehicles, 10% efficiency gain in rest of fleet PHEV/LEV |
| Wakari-Dunedin Shuttle | 19.1 | 0.0 | 100.0% | EV shuttle |
| Rental cars | 4.8 | 1.2 | -75.0% | 50% of rentals EV, 30% efficiency gain in rest of rentals PHEV/LEV |
| Taxis | 4.3 | 1.1 | -75.0% | 50% of taxis EV, 30 % efficieny improvement in rest of taxis PHEV/LEV |
| Medical Gases C02 | 1.3 | 1.3 | 0.0% | no change |
| Medical Gases N20 | 3432.4 | 1030.0 | -70.0% | Address disproportionately high N20 use SDHB. 70% reduction based on comparable Benchmarked N20 to CMDHB |
| Medical Gases Sevoflurane | 34.4 | 34.4 | 0.0% | Increase TIVA and increase sevoflurane gas use efficiency (offsets increase in sevoflurane use due to stopping using desflurane) |
| Medical Gases Desflurane | 90.5 | 0.0 | 100.0% | Eliminate desflurane use |
| Refrigerants * | 0.0 | 0.0 | 0.0% | No data excluded from analysis |
| Electricity | 2562.3 | 0.0 | -100.0% | 100% renewable grid 20130 |
| Transmission losses - electricity | 208.9 | 0.0 | -100.0% | 100% renewable grid 20130 |
| Flights - domestic | 520.3 | 410.3 | -21.2% | All Flights through agent, 5% reduction in flights (videoconferencing for meetings, CME rationalisation), 17% increased airline fuel efficiency ** |
| Flights - short haul | 150.4 | 133.0 | -11.6% | All flights through agent, eliminate business class, 5% reduction in flights (Videoconferencing for meetings, CME rationalisation), 17% increased airline fuel efficiency ** |
| Flights - international | 940.5 | 718.9 | -23.6% | All flights through agent, reduce access to business and first class, 5% reduction in flights (Strict criteria for international CME), 17% increased airline fuel efficiency ** |
| Waste to landfill (Dunedin) | 316.6 | 158.2 | -50.0% | reduce waste to landfill 50% |
| Waste to landfill (Southland) | 119.9 | 59.9 | -50.0% | reduce waste to landfill 50% |
| Waste to landfill (Lakes) | 43.4 | 21.7 | -50.0% | reduce waste to landfill 50% |
| Flight Dunedin - Dunstan (Mainland Air) | 5.4 | 4.1 | -25.3% | 10% More videoconferencing for specialist clinics, 17% increased airline fuel efficiency ** |
| Flight Dunedin-Invercargill (Mainland Air) | 35.9 | 26.9 | -25.3% | 10% More videoconferencing for specialist clinics, 17% increased airline fuel efficiency ** |
| Helicopter transport - ORHT | 913.0 | 821.7 | -10.0% | Helicopter fleet efficiency improvements, telehealth to rural hospitals, CT scanner Queenstown, regular review and rationalisation of retrieval missions. |
| Helicopter transport - LDRH | 17.5 | 15.8 | -10.0% | Helicopter fleet efficiency improvements, telehealth to rural hospitals, CT scanner Queenstown, regular review and rationalisation of retrieval missions. |
| Aeromedical Evacuation (fixed Wing) | 23.5 | 17.8 | -24.1% | 17% increased fleet efficiency** |
| Patient transport land (Ambulance) * | 0.0 | 0.0 | 0.0% | Move to more EV ambulances and improved fuel efficiency (based on 2017 data 108 tonnes C02-e for St John fleet |
| Freight * | 0.0 | 0.0 | 0.0% | Move to more freight utilising LEV +/- hydrogen fuel cell |
| Courier | 19.1 | 6.7 | -65.0% | 50% of courier vehicles EV, 30% improvement in efficeincy of rest of courier fleet (PHEV, LEV) |
| Business travel in Private car | 105.8 | 66.7 | -37.0% | reduce mileage ratefor staff, lease deal for low carbon vehicles for staff resulting in 30% EV uptake and 10% efficiency gain in rest of vehicles (PHEV/LEV) |
| Patient transport claims (NTA) | 1056.1 | 665.3 | -37.0% | Based on 10% deffered visits (Increased delivery of health care closer to patients home, Videoconferencing, self care programs, increased prevention) and 30% NZ EV uptake. |
| TOTAL CARBON FOOTPRINT 2030 | **28240** | **4891** | **-83%** | |

* Not included in analysis as no data for base year.

** Based on ICAO data on historic improvements in airline efficiency.

*** NZTA report on predicted uptake of EV vehicles (range 20-50%).

^ Implementation of SDHB strategy to provide health care closer to patients home, increase videoconferencing, self-care programs and increased preventative health.

*Table 5. Summary of possible GHG emissions reductions by 2030*

## 2.0 Annual measurement of SDHB carbon footprint

Following this baseline assessment of the carbon footprint for the financial year 2016 – 2017, **SDHB should undertake an annual carbon footprint assessment** to be reported to the CEO, executive and key stakeholders. This would best be achieved by **SDHB joining the CEMARS program run by Enviro-Mark**. The CEMARS program meets ISO standards for carbon foot printing and will allow benchmarking against other DHB who participate in the CEMARS program (ADHB, CMDHB, CDHB).

## 3.0 GHG Inventory data quality improvement

Improving the quality of a GHG Inventory is essential for high quality and efficient annual reporting. **SDHB should take steps to improve the data quality of its GHG inventory.** Developing inventories can be a multiyear project. Often at the outset, as is the case with some categories for this carbon footprint assessment, data can be absent or of poor quality. In general it is best to roll up GHG inventory into existing systems (so you don't have to invent a whole new system to account for GHG emissions). It is often best to incorporate into existing financial reporting systems. With recent letters of expectation to DHB's requiring them to consider climate change mitigation it is increasingly likely that DHB's will be required to measure their carbon footprint annually and report back against a target for reduction.

If SDHB were to sign up to the CEMARS program run by Enviro-Mark it would allow access to their proprietary software for data collection and central collation. Alternatively, current systems should be improved. Table 6. outlines suggestions for data quality improvement based on experience collating data for this footprint, and recommends who should be responsible for implementing these improvements.

A clear signal should be sent by the executive to relevant services (building and property, finance etc.) that developing the systems for GHG data collection is an important, and core part of SDHB business. Relevant services should meet to discuss how data collection may be aligned with current financial reporting systems within SDHB. As well, a decision should be made on where the data is to be collated and who is to oversee its collation – this would be best achieved by a Sustainability Manager (see Part 2. 4.0 below)

| CATEGORY | ACTION | WHO |
|---|---|---|
| Coal | Pioneer to provide monthly data on kg of coal used in invoices (along with GJ energy) | Building and property |
| Diesel | Invoices for diesel centralised and tabulated (excel) | Building and property |
| Gas | Invoices for diesel centralised and tabulated (excel) | Building and property |
| Wood | Invoices for diesel centralised and tabulated (excel) | Building and property |
| Fleet Fuels | Quarterly fuel card reports collated in litres (excel) | Service Manager Transport |
| Rental Car | All rental car activity to be mandated through contractor (Hertz) | Executive |
| Rental Car | All rental car activity to be collated quarterly (excel) | Service Manager Transport |
| Medical Gas | BOC required to provide annual summary of medical gas use | Procurement |

| | | |
|---|---|---|
| | (excel) | |
| Medical Gas | OneLink to provide annual summary of anaesthetic bottle use (excel) | Procurement |
| Refrigerants | Contractor required to report on top ups, discharges, new installations (gas type and volume) | Building and property |
| Flights | All flights (business and CPD) to be booked through contracted travel agent | Executive, Procurement |
| Flights | Contracted travel agent to provide quarterly environmental report (pKm, seat type) | Procurement |
| Flights | Data entry field in Oracle to have mandatory field for all departures and destinations as well as seat type | IT (Oracle) |
| Aeromedical | Mainland Air to provide annual report on flight numbers and passengers per flight (excel) | Service Manager Transport |
| Aeromedical | Helicopter contracts to stipulate annual report on hours flown, aircraft type and fuel burn for that aircraft type(excel) | Contract manager? |
| Aeromedical | Fixed wing Aeromedical contractors to provide flight destination and departure and passenger numbers on invoices | Contract manager? |
| Ambulance | St John contract to provide annual report on vehicle km travelled and vehicle type | Contract manager? |
| Freight | Contract to require annual report on carbon footprint (or emission intensity per $m^3$ freight) | Procurement |
| Courier | Contract to require annual report on carbon footprint or emission intensity per package sent and number of packages. | Procurement |
| Staff vehicles | Data entry field on oracle to have mandatory field for vehicle engine size (range) and fuel type | IT (Oracle) |
| Staff travel | Annual SDHB wide staff travel survey | People, Culture, Technology |
| Patient travel | Annual SDHB wide patient travel survey | People, Culture, Technology |

*Table 6. GHG inventory data quality improvement*

Currently no recommendations can be made on data collection for procured goods and services not covered above (medical equipment, pharmaceuticals, laundry services, office supplies, food) as there are no MFE emissions factors that would be suitable to use.

## 4.0 Sustainability Manager

To implement the strategy to achieve an 80% reduction in GHG emissions by 2030, **SDHB should employ a Sustainability Manager.** Northland, Waitemata, Auckland, Counties Manakau, Bay of Plenty, Capital and Coast and Canterbury DHBs all employ a sustainability manager. A sustainability manager's key roles will include improving data quality of the GHG inventory, annually completing the GHG inventory and report (or facilitating CEMARS), communicating with staff and executive the annual results and progress towards the reduction target, working across the SDHB on carbon footprint reduction projects in line with the strategy outlined in Part 2. Section 1.0.
As can be seen from the extensive list of recommendations to reduce the SDHB carbon footprint at a minimum a full time role is warranted. Without such a role coordinated activity will be difficult to

implement and sustain. The sustainability manager will need to have a high level qualification in environmental sustainability, or similar, and a track record of success in implementing strategy in a large complex organization. To be effective in the role the sustainability manager will best operate outside of the building and property group and report directly to the executive and head of finance. Given the savings to be realized by reducing the SDHB carbon footprint it would seem easy to justify on financial grounds. There is precedent in the health sector for financial savings from implementing an environmental strategy based on carbon footprint measurement and reduction and employing a sustainability manager. CMDHB have realised >$500,000 in direct savings over 5 years at CMDHB by reducing their carbon footprint since 2012 by 20%.

A sustainability manager could also be involved in other domains relating to sustainability, but not specifically carbon footprint reduction, such as staff wellbeing, green space enhancement, water conservation, environmentally friendly cleaning products, ethical purchasing etc.

## 5.0 A Climate Smart New Dunedin Hospital

Key to meeting a target of an 80% reduction in SDHB GHG emissions by 2030 will be to **design a climate smart new Dunedin Hospital.** Two bodies of work provide detail on how the new Dunedin Hospital can address the issue of climate change. The first is "Climate Friendly Dunedin Hospital Redevelopment" prepared by Dr Alex Macmillan and Dr Matthew Jenks on behalf of OraTaiao: New Zealand Climate and Health Council. This proposal has been endorsed by key stakeholders in the Dunedin Hospital rebuild including the Facilities Redevelopment Executive, The Clinical Leadership Group and the CEO, SDHB. It emphasizes four key points: -

- An energy efficient Dunedin Hospital
- Low carbon energy supply for Dunedin Hospital
- An emphasis on active and public transport for staff and patients
- Adaptation for projected sea level rise

The second is "The New Dunedin Hospital Environmentally Sustainable Design (ESD) – Technical Brief". This brief was developed by the Environmental Sustainability Working Group on behalf of SDHB. It was developed to inform the contracted architects and engineers developing the technical brief for the new Dunedin Hospital.

The vision for this brief states: -

> *"As an integral part of the southern health system the New Dunedin Hospital will be energy efficient, with a zero greenhouse gas emission energy supply, linked into low carbon transport, adaptable to cope with impacts of climate change and provide a physical environment that enhances staff productivity and work satisfaction as well as patient wellbeing and safety."*

Components of the ESD that specifically address the carbon footprint of the new Dunedin Hospital include: -

1. Site
    a. Easily accessible from public transport
    b. Easy access to Dunedin tertiary education precinct and other health services
    c. Integration to link with cycle lanes (proposed dedicated lanes on SH1)

2. Materials
    a. Materials should have low embodied energy (i.e. Locally, Recycled and recovered materials, FSC wood)
    b. Recycling of material from decommissioned buildings as part of rebuild
    c. Environmental sustainability in procurement documents for construction

3. Design to incorporate
    a. Green space for staff and patients, with views and greenery incorporated inside and outside to maximize staff productivity and patient wellbeing
    b. Flexible facilities to enable evolving ways of working across the southern health network (e.g. videoconferencing)
    c. Bike parking facilities
    d. Transit lounge for active commuters (ironing, showers, lockers, repair facilities, warm down areas)

4. Energy Efficiency and Carbon management
    a. Energy efficiency should be considered from the outset to reduce ongoing energy costs and environmental impact.
    b. Building management system (BMS). Widespread use of metering and occupancy controlled heating and lighting
    c. Passive solar design, thermal mass, tight thermal envelope, thermally efficient glazing
    d. High levels of insulation
    e. Non fossil fuel energy for heat/power/water heating
        i. If possible grid electricity for all applications including ventilation and hot water
        ii. Alternatively other options such as tri-generation, wood biomass via Dunedin Energy Centre or on-site wood biomass boiler
        iii. Future proofing (allowance for solar power connectivity)
    f. Lighting
        i. Good natural lighting
        ii. LED, timers
    g. Hot water – low flow fittings throughout
    h. Summer shading and passive ventilation
    i. Energy star rating for all appliances

5. Air and environmental quality
    a. Maximise natural ventilation and provide user control where possible
    b. Low GHG refrigerants and low ozone refrigerants

6. Other
    a. Priority parking for EV with charging station
    b. Charging infrastructure for EV staff car fleet
    c. Minimum parking required by legislation

To achieve the aims outlined by the OraTaiao proposal and the Environmentally Sustainable Design technical brief, the New Dunedin Hospital should seek external environmental accreditation. Greenstar provide environmental accreditation in New Zealand. Greenstar is a not for profit industry organization and member of the World Green Building Council (WGBC). Independent research published in the Journal of Exposure & Environmental Epidemiology by Harvard Researchers found that buildings which obtain independent environmental accreditation are 20-

40% more energy efficient than standard building code, with associated GHG emission reductions and cost savings.[16] They found that buildings with environmental accreditation (LEED-certified) in the United States, Germany, India, China, Turkey, and Brazil have already averted 33,000,000 tons of $CO_2$ to date.

The WGBC, in a report published in 2018, outline the important role of the built environment, not only in terms of addressing climate change, but also in improving the health and productivity of the building occupants (staff and patients), reducing absenteeism, enhancing staff satisfaction and saving money.[17] The report provides case studies of buildings that have achieved environmental accreditation (LEED, BREEAM, Green Star etc.). Examples given include The Akron Children's Hospital, which achieved over $900,000 USD of annual energy savings for the owner. It has 48.5% less GHG emissions compared to the average for US health care facilities. The project was completed $44 million under budget.

The recently built 800 bed Royal Adelaide Hospital achieved a 4 star rating with the Green Building Council of Australia. As a result its GHG emissions are half of the previous hospital.

## 6.0 Measure and improve environmental sustainability of existing buildings

It is important that the new Dunedin Hospital is not the sole focus of efforts to improve the carbon footprint of SDHB building stock. **SDHB should develop a consistent approach to the measurement and improvement of the environmental sustainability of existing SDHB buildings.**

There are two options to achieve this. One is to develop an SDHB guideline for environmentally sustainable refurbishment. Alternatively, Greenstar offer a product called "Greenstar Performance" that can be used by DHB's to measure and continually improve upon their buildings operational impacts.[18] It is recommended that this approach is taken. The tool is inexpensive, provides consistency of approach, and uses criteria developed and tested by experts in the field. Either of these approaches will have the effect of reducing the carbon footprint of existing SDHB building stock by providing environmental accreditation that can guide refurbishment.

## 7.0 Eliminate coal use at SDHB

The most important step SDHB can take to reduce harmful climate pollution is to **eliminate coal use at Southland and Dunedin Hospitals.** Coal can be replaced by wood biomass. There are precedents locally and in the health care sector. The University of Otago has contracted Pioneer Energy to provide 90,000 GJ of energy from the Dunedin Energy Centre (DEC) using wood biomass. CDHB have employed state of the art wood biomass technology at the $215 million Burwood Hospital opened in August 2016. CDHB are currently in the process of transitioning the coal boilers at Christchurch Hospital to wood biomass following a cost benefit analysis by Deloitte with support from the Ministry of Health.

Table 7. provides a back of the envelope estimate of the emissions reductions that result from transitioning from coal to wood biomass. It is beyond the scope of this report to go into a detailed analysis. Many factors impact on the amount of wood biomass in tonnes that would be required such as moisture content of fuel and configuration of the boilers. However, the Wakari boiler data on the GJ of energy per tonne of wood biomass used provides a guide. The wood fuel at Wakari

provides approximately 12 GJ/tonne. When this is substituted to provide the equivalent GJ of energy provided by coal, and multiplied by the emission factor for wood biomass, a reduction of 99% in $C0_2$-e GHG emissions is achieved. This is a result of wood biomass being a carbon neutral fuel.

| Boiler | GJ | Fuel type | tonne fuel | GJ/tonne* | tonne $C0_2$-e (Coal) | Substitute for wood (tonne)** | EF wood | tonne $C0_2$-e (wood) | % change |
|---|---|---|---|---|---|---|---|---|---|
| Dunedin | 92377 | coal (lignite) | 7966 | 12 | 11391 | 7442 | 0.015 | 112 | -99% |
| Southland | 35860 | coal (lignite) | 3544 | 10 | 5068 | 2889 | 0.015 | 43 | -99% |

* Based on data from $C0_2$ footprint 2016-2017

** Based on GJ/tonne of wood at Wakari

*Table 7. Carbon reduction impact of changing from coal to wood biomass*

University of Otago research indicates a plentiful supply of local wood biomass.[19] Pioneer Energy have demonstrated it is possible to run DEC boilers with wood biomass.[20] The University of Otago has contracted Pioneer Energy to supply it with energy from the DEC using wood biomass. Dunedin hospital should negotiate with Pioneer Energy for it to provide steam energy from the Dunedin Energy Centre using wood biomass. Two of the boilers at the DEC are nearing 60 years old (installed 1959) making replacement and upgrading to modern/efficient wood biomass boilers an option.

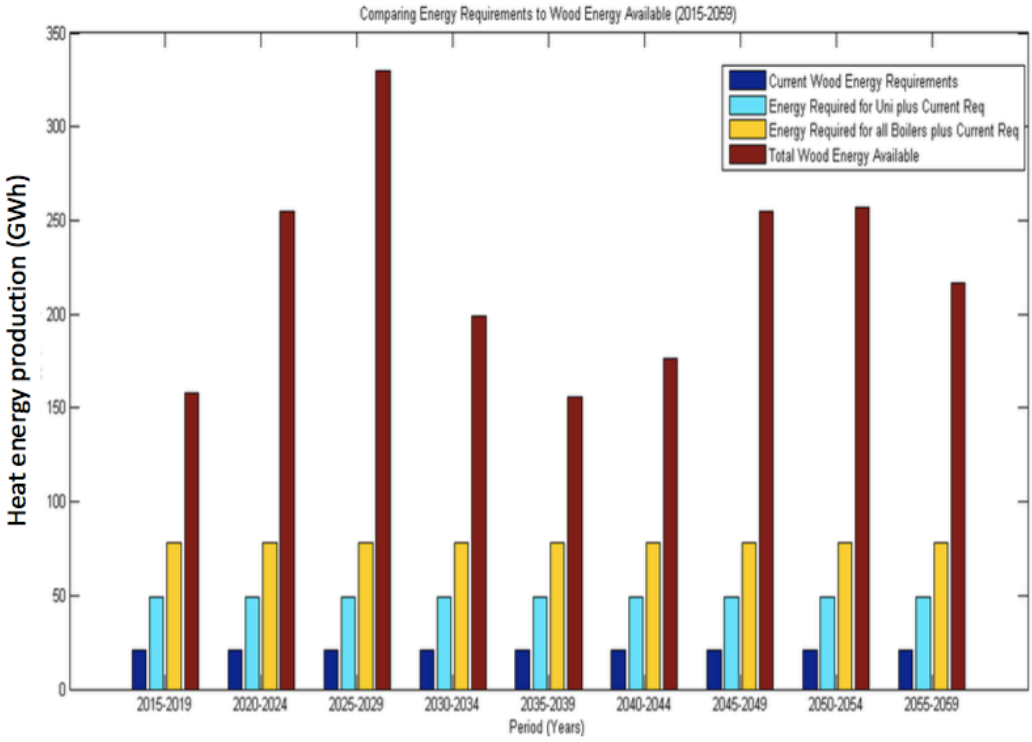



*Figure 22. Wood energy supply Dunedin[18] (Jack M. Obershneider E. 2017)*

Ideally, consideration should be given to changing to wood biomass boilers prior to the New Dunedin Hospital being built, allowing an earlier reduction in GHG emissions. SDHB has now joined the Dunedin Energy Leaders Accord, an ideal forum to progress this idea.

There will be an additional cost in using wood biomass, estimated to be 20% according to Jonathan Suggate from Pioneer Energy.[20] However this cost will be offset by the price on carbon through the New Zealand ETS (see financial risk Part 2. section 17.0 for an analysis).

Southland Hospital has a coal boiler for energy, also run by Pioneer Energy, producing 5696 tonnes of carbon dioxide emissions per year. A financial analysis should be undertaken of the cost/benefit of transitioning the Southland Hospital boiler to wood biomass similar to that undertaken for Christchurch Hospital. The financial risk of emitting carbon dioxide under realistic price on carbon scenarios should be part of this assessment. A report "Residual biomass fuel projections for New Zealand" prepared for EECA and BANZ in August 2017 by Scion indicates recoverable residue volumes Otago Wide at more than 200,000 t (1,220,000 GJ) per annum over the next 25 years. This suggests there is a plentiful supply of wood biomass in the Southland region.

## 8.0 Reduce vehicle emissions for staff and patient transport

SDHB is directly responsible for 991 tonnes of $C0_2$-e GHG emissions (3.5% of footprint) through the use of fleet vehicles, taxis, shuttles and rental cars. SDHB is indirectly responsible for an additional 1161 tonnes of $C0_2$-e GHG emissions (4.1% of footprint) through staff travel in private vehicles on SDHB business and patient travel (NTA claims). A comprehensive review should be undertaken, and strategy developed, to reduce transport emissions at SDHB. There are a number of actions that can be taken to reduce travel by vehicle, and when travel is necessary, to reduce the emissions of the vehicles used.

There is considerable variability in predictions of how fast the uptake in NZ of low emission vehicles (LEV), such as battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV), will be. One study commissioned by the Ministry of Transport estimates 20 – 50% uptake by 2030.[21] A number of leading companies in New Zealand (Westpac, Meridian Energy) have committed to 30% uptake of LEV by 2019.[22] There are robust economic arguments for incorporating electric vehicles into fleet vehicle pools. These are based on the low maintenance and running costs of LEV, despite initial higher purchase prices. In December 2016, New Zealand Government Procurement (NZGP) added 15 new LEV models to the all of government vehicles contract, to support the uptake of LEV.

The SDHB fleet vehicle procurement policy should be changed to prioritise transition of the fleet to electric vehicles. **A goal of 50% BEV fleet vehicles by 2030** and a 10% efficiency improvement in all other vehicles, through the use of hybrids and PHEV's, would result in a 55% emissions reduction from fleet vehicles.

Options to replace the Wakari-Dunedin Hospital shuttle with an BEV or PHEV should be explored. BEV mini buses are now available in New Zealand with a range of up to 180km that would be suitable for this route.

Taxi contracts should be negotiated with companies that utilise low emission hybrid, BEV and PHEV's. Green cabs, who utilise low emissions vehicles, operate in both Queenstown and Dunedin.

Similarly, the rental car contract with Hertz, should require all staff rental vehicles to be either hybrid, PHEV or BEV.

Currently many staff use their own vehicles for transport for SDHB work. 506,352 km were driven in the 2016-2017 financial year generating 105 tonnes of $C0_2$-e GHG emissions costing SDHB $364,574 in reimbursement payments. The generous rate of reimbursement (0.72 dollars per kilometre) does not discourage the use of private vehicles or incentivise low emissions vehicles. A comprehensive review of staff use of personal vehicles for SDHB business is warranted. Options to reduce GHG emissions generated by staff private vehicles include: -

1. Develop an option of reduced rate, low emission vehicle (hybrid, PHEV, BEV) lease cars, for staff who utilise their own vehicles frequently for SDHB work.
2. Reduce the flat rate paid for vehicle business mileage to encourage staff to improve the fuel efficiency of their own vehicles when upgrading, or to utilise the low emission vehicle lease option.
3. Improve access to low emission fleet pool vehicles for staff as an alternative to using private vehicles.
4. Develop BEV and PHEV charging infrastructure at Wakari, Southland, Dunedin and Lakes District Hospitals. These parks should have priority access for staff using private or fleet BEV's on SDHB business.
5. Review the number and location of business meetings. Aim to rationalise business meetings to reduce staff travel. Not only will this reduce costs it will enhance productivity as less time is spent on unproductive travel.
6. Include the option of electric bikes for staff for short trips. This not only reduces the cost of using fleet vehicles but improves the health and wellbeing of staff through the use of active transport and promotes active transport to the community we serve. Develop parking and charging infrastructure for this electric bike fleet.
7. Prioritise investment, increase availability and improve the quality of videoconferencing for business meetings.

Patients claimed reimbursement for 5,053,153 km of travel in the 2016-2017 financial year through the Ministry of Health, National Travel Assistance (NTA) program. This travel was responsible for 1056 tonnes of $C0_2$-e GHG emissions. Note that these claims represent an unknown proportion of patient travel, as many patients will not submit or not be eligible, for a reimbursement claim.

A comprehensive review of transport at SHDB should investigate alternatives to driving for staff and patients. Two key SDHB strategy documents align with reducing staff and patient travel. The Southern Strategic Health Plan, priority 2, states that we should *"build the system on a foundation of population health, and primary & community care".* Under this heading is listed *"minimising the need for specialist outpatient follow up visits"*. Rationalisation of specialist outpatient follow up visits can significantly reduce staff and patient travel at the same time as reducing costs.

Another key strategy document for SDHB is the *"Southern Primary and Community Care Strategy".* Goal 3 states *"Secondary and tertiary care is integrated into primary and community care models".* Goal 4 states *"The system is technology enabled".* Also included in this strategy is the concept of healthcare homes and community hubs. *"Specialists will provide support to primary care team members to enable primary care to deliver a higher level of care and treatment in the community.*

*Team members who are traditionally hospital based to form a key part of the extended primary care team and be based in health care hubs such as long term condition nurses, needs Assessment services for the elderly etc. Specialists will deliver clinics into communities to minimise travel for patients these may be in person, or virtual (via video link)".*

Consistent with these SDHB strategy documents are the following methods of reducing staff and patient travel to reduce GHG emissions: -

1. Increase use of videoconferencing between staff and patients to reduce need for face to face clinical review.
2. Promote strategies for patient self-care.
3. A focus on preventative health.
4. A focus on care delivered closer to the patients home.

Strategies to deliver care closer to the patient such as videoconferencing for specialist and nurse clinics (examples of this already being undertaken include paediatric diabetes, epilepsy follow up and anaesthetic pre-assessment clinics) conservatively could reduce patient travel by 10%. Ministry of transport data suggests that 20-50% BEV uptake is possible by 2030 by the general public. Choosing the lower end of this range this could result in a 30% reduction in emissions associated with patient travel by 2030. The combined effect of patient BEV uptake and reduced travel via developed SDHB strategies outlined above is a 37% reduction in GHG emissions (391 tonnes $C0_2$-e) for NTA claimed patient travel.

## 9.0 Medical gases

Please see Part 1., Section 13.0 for a summary of the problem of high $N_20$ use at Dunedin Hospital. **The disproportionately high use of N20 at Dunedin Hospital needs urgent investigation.** There is a strong possibility of an infrastructure problem that is resulting in leakage. It is unlikely that clinical usage is the cause of the high use of $N_20$ although this should be still be reviewed as a possibility. If Dunedin were to reduce N20 use to levels comparable with other DHB (using benchmarked data for CMDHB from Part 1., section 13.0) we could reduce $N_20$ use by 7743 kg (equivalent to 2307 tonnes of $C0_2$) and save $123,000 per annum.

| | |
|---|---|
| Total $N_20$ kg SDHB | 11199 |
| Total $N_20$ kg if similar use to CMDHB* | 3456 |
| Current cost of $N_20$ | $177,978.00 |
| Cost of $N_20$ if similar use to CMDHB* | $54,951.00 |
| Savings p.a. | **$123,026.00** |

* Based on equivalent $N_20$ using benchmarked $N_20$ use per 000's population

*Table 8. Savings potential if high $N_20$ use Dunedin Hospital is addressed*

Desflurane is a potent GHG. It is 19x as potent as the equivalent anaesthetic agent sevoflurane. Sevoflurane is cheaper and is as safe and effective as desflurane. Education and behaviour change programs at CMDHB have resulted in use of desflurane dropping significantly (for several months of

2017 no desflurane was used at CMDHB). Similar programs at SDHB could result in a 90% reduction in desflurane use (saving equivalent of 80 tonnes of C02 equivalent GHG emissions).

## 10.0 Electricity

Currently electricity is received from the national grid, which although predominantly renewable, still has a significant proportion of fossil fuel generation with associated greenhouse gas emissions. It is a stated policy of the current government to make the national grid 100% renewable (and therefore carbon neutral) by 2030. This will reduce the emissions associated with electricity use to almost zero.

In the interim a **culture change program aimed at reducing electricity** usage should be implemented. These programs can be simple and adapted to fit local context. They will require significant staff input to develop resources and promote. This role would be suited to a Sustainability Manager (Part 2., Section 4.0). Bart's NHS Trust in the United Kingdom implemented a program called "Operation TLC". The TLC stood for turn equipment off, lights off, close doors. This simple behaviour change project resulted in £105,000 saved p.a. (3%) and an 800 tonne $C0_2$-e GHG emission reduction per annum.[23]

## 11.0 Air Travel and carbon offsets

A large number of flights are taken by staff on SDHB business and for staff continuing professional development (CPD, commonly referred to as continuing medical education (CME) by medical staff). In total 13,734,670 km were flown by staff, emitting 1653 tonnes of $C0_2$-e GHG emissions. The majority, 67% of these GHG emissions, were related to international long haul travel and are therefore likely to be mainly related to staff CPD activities. Staff flights are the 4$^{th}$ largest emissions category for SDHB. The steps SDHB should take to address this aspect of its footprint warrants some discussion by way of background.

Aviation emissions are probably the most difficult category to reduce in the near future due to there being no low emission alternatives options currently or likely in the short to medium term. This is especially so in the southern part of the South Island of New Zealand due to our geographic isolation and the lack of alternative low carbon transport options such as trains.

Many popular myths exist about the expected reduction in aviation emissions through technical gains, operational efficiencies and voluntary action (deciding not to fly or purchasing carbon offsets). Many experts argue these have no prospect of a meaningful effect on emissions growth in this sector in the absence of structural change.[24,25] Efficiency gains in aircraft have not kept pace with growth in demand for flights. Globally aviation emissions are now responsible for 2-3% of global emissions. This demand is predicted to grow at a rate of 5% per annum. Airline fuel efficiency, historically, has improved at 1.1 % per annum, and is predicted to decline beyond 2020.

Relying on uncoordinated individual action (offsetting and foregoing flying) will not realise meaningful reduction in emissions as it merely exposes each individual to the certain loss of the gains from travel and the likely costs of everyone else's unchecked emissions.[25]

To date coordinated international action to address aviation emissions has been lacking. International aviation emissions are not included in domestic emissions inventories or trading schemes yet make up 60% of aviation emissions. Only a handful of domestic emissions reductions regimens include domestic emissions which make up 40% of global aviation emissions (the EU and NZ ETS being examples of the exception to this rule). Following the Paris instructions of the UNFCCC (2015), on Friday 7th October 2016, the International Civil Aviation Organisation (ICAO) 39th General Assembly passed a resolution to implement a global regime to address aircraft $CO_2$ emissions (the 'Montreal Agreement"). This took the form of a carbon offsetting and reduction scheme for international aviation (CORSIA). Current international policy mechanisms expressed at the conclusion of the "Montreal Agreement" fall short of the aspirations and goals articulated in the Paris Agreement. The most recent UN calculations estimate that aviation emissions between 2015-2050 will account for over one-quarter (27%) of the remaining carbon that may be emitted under the budget required to stabilize global temperature rise at 1.5°C as outlined in the *Paris Climate Accord* (Carbon Brief, 2016).

The social licence under which the aviation sector operates is unlikely to be revoked. International air travel is particularly embedded in the culture of Senior Medical Officer's (SMO) in New Zealand. Quality medical education is essential for patient care, and the educational benefits of conference attendance should be considered. However, evidence that attending conference lectures improves practice is scant, and other methods are likely to be more effective as discussed in an editorial in the British Medical Journal (BMJ).[27] Online distance learning deserves more attention. The carbon footprint of conference attendance is massive. A study by Callister and Griffiths in 2006 estimated the carbon footprint of the 15,000 doctors and scientists attending the American Thoracic Society meeting in San Diego that year at 10,800 tonnes of $C0_2$-e GHG emissions. In an article in the BMJ titled "Are International Medical Conferences an Outdated Luxury the Planet Can't Afford", the authors argue that it is time to undergo a paradigm shift, away from flying people around the world to sit in a darkened lecture to hear someone speak, to virtual attendance via videoconferncing.[27]

As well as being a social norm, embedded in SMO culture, there are also financial drivers of international air travel for CPD. The Association of Salaried Medical Specialists (ASMS) contract for SMO's provides $16,000 per annum for full time specialist for CPD. It accumulates up to 3 years after which time it stops accumulating. This generous stipend has the effect of incentivising short and long haul air travel for CPD as well as facilitating upgrades to business and first class to fully utilise the allowance or "use it or lose it". Business and first class seats have higher pKm emissions due to reduced average carrying capacity of the airline fleet.

The merging of CPD and leisure travel is facilitated by SDHB policy, and this requires further exploration. On the one hand, it could reduce the total number of air travel undertaken by an individual, by combining conference attendance with holidays. However, it is more likely to simply incentivise conference travel to desirable locations, funded by the DHB, to facilitate a holiday at the conclusion of the conference. It is likely that this has the effect of increasing SMO air travel through poorly justified conference attendance.

So what can SDHB do to reduce aviation emissions related to staff travel. There are three mechanisms for reduction of aviation emissions – technological, reduction in demand, and offsetting. As mentioned technological advancements have limited capacity to reduce emissions in the face of static or increasing demand. At a minimum, SDHB should have a goal of a **5% decrease**

**in passenger kilometres (pKm) travelled by 2030.** Combined with improvements in airline fuel efficiency consistent with historic averages of 1.1 % per annum this will result in an overall reduction in emissions of approximately 20% by 2030 for staff air travel. This presumes a reduction in air travel in the face of a likely increase in staff numbers, and a global trend for increased air travel (5% per annum). Addressing demand rather than relying on efficiency improvements is therefore the priority. One of the simplest strategies to achieve this reduction would be to encourage local CPD (within New Zealand), and when necessary Australia. As 67% of our air travel emissions are related to international long haul travel this represents a significant opportunity for reduction of pKm travelled.

SDHB should develop a staff travel policy to achieve the goal of 5% decrease in pKm by 2030. The following should be considered in this policy (please note that several of these points are from "Health Sciences Division Academic Flying Policy Discussion Document" developed by University of Otago staff): -

1. All flights to be booked through contracted travel agent to allow accurate monitoring of pKm, carbon emissions, seat upgrades, patterns of travel and reasons for travel.
2. Education of staff on the environmental impacts of flying
3. Tighten the criteria for acceptance of long haul travel applications for CPD travel. The following policy guidelines apply at the University of Otago: -
    a. "University funds may be used to support the attendance of staff or students at conferences or meetings, where it is deemed that such attendance would advance the objectives of the University".
    b. "Staff seeking Conference Leave will normally be expected to be taking an active part in the conference or meeting concerned, such as presenting a paper or poster, chairing a session or other designated function relating to the conference or the sponsoring organization".[28]
4. Remove business class as an option for short haul flights
5. Limit business class on long haul flights to those who are actively involved in the conference (e.g. presenting, chairing a session) and have no time to adjust to time zones.
6. Increase number of business meetings occurring by videoconference. Develop tools to monitor the uptake of videoconferencing.
7. Remove barriers, and provide active encouragement for different use of conference attendance funding, including listing alternatives on funding application forms and providing contact details for IT staff who can provide assistance with videoconferencing and alternative conference media development.
8. Improve video-conferencing facilities and access.
9. Provide increased financial support and flexibility with regard to increased journey time for staff seeking to use non-aviation transport, for example long-distance trains or shipping.
10. National DHB senior executives to work with ASMS on changing CPD funding so that it does not perversely incentivise long haul travel.
    a. Option of topping up salary with CPD fund instead of use for long haul travel
    b. Option of unused CPD fund to be credited to superannuation account
    c. Option of unused CPD fund to be credited to designated charity
    d. Option of unused CPD fund being used to fund purchase of equipment for DHB

e. Option of unused CPD fund to be used to fund DHB staff role (e.g. research nurse).
f. Reduced CPD fund size with option for one off extra payment for sabbatical leave (reduced carbon intensity due to one off longer period of CPD).

11. Individual departments to report pKm travelled per FTE. (social norming can be a powerful tool for behaviour change). Place a pro rata cap on individual departments allowable C02-e emissions. Implement a planned reduction in this cap to meet DHB C02-e GHG emissions targets.
12. Inter DHB comparison of pKm travelled per FTE (again utilising the power of social norming)
13. Develop policy for carbon offsetting of travel not able to be avoided. (see below)

A key component of the 'Montreal Agreement' (CORSIA) is to complement measures of efficiency and biofuels, by purchasing carbon credits to achieve the agreed goal of "carbon-neutral growth" from 2020 onwards. Three main types of offsets exist, as outlined in the table below from Becken et al (2017).[29] The key point to note about offsets is they do not neutralise aviation emissions. They result in a relative reduction of atmospheric carbon (one tonne vs two tonne of $CO_2$ into atmosphere) by preventing emissions from another source (deforestation or renewable energy schemes replacing fossil power). Even reforestation only neutralises carbon released by the initial deforestation and does not neutralise the aviation emissions. However, carbon offsets do play a role, as if they were not purchased the total atmospheric flow of $CO_2$ would be higher. Therefore **SDHB should establish a policy for reimbursement of flight carbon offsets utilising SMO CPD funds.**

Comparison of three types of carbon offset options and their net effect on the $CO_2$ emissions into the atmosphere.

| Type | Fossil fuel $CO_2$ from flight | Fossil fuel $CO_2$ elsewhere | Biomass $CO_2$ | Total $CO_2$ flow into atmosphere without offset | Total $CO_2$ flow into atmosphere with offset |
|---|---|---|---|---|---|
| Energy | 1 tonne | 1 tonne avoided | – | 2 additional tonnes | 1 additional tonne |
| Forest protection | 1 tonne | – | 1 tonne avoided | 2 additional tonnes | 1 additional tonne |
| Re-forestation | 1 tonne | – | 1 tonne sequestered | 2 *additional* tonnes compared with pre-deforestation balance | 1 *additional* tonne compared with pre-deforestation balance |

*Figure 23. Comparison of carbon offsets*[29]

There is also considerable doubt about the availability of carbon credits (energy, forest protection and re-forestation) to meet the demand that will be required to meet 'Montreal Agreement' targets. Therefore it is crucial that reduction in absolute numbers of pKm by SDHB staff is the cornerstone of SDHB policy.

Purchased offsets should be of the highest quality. Becken et al. provide guidance on this: -

1. The most credible aviation carbon offsets programs are those designed to genuinely help avoid emissions through funding renewable energy projects and forest protection and restoration activities. When these activities occur in developing countries, social co-benefits can be important. Co-benefits are also important in developed countries.
2. The projects supported through the offsetting money are selected carefully and reported on regularly, including the total volume of GHG avoidance or reduction, and the methodology for estimating emissions is communicated transparently.

3. Carbon credits are third-party audited and information on the quality of the credit (including assurance that double accounting does not occur) is disclosed.

In New Zealand both Air New Zealand and Enviro-Mark provide forest restoration carbon offsets certified by the government Permanent Forest Sinks Initiative (PFSI). Enviro-Mark also offer carbon offsets through renewable energy generation projects.

## 12.0 Waste

Although waste only makes up 1.7% of the total carbon footprint it is a very visible component of our environmental impact and carbon footprint. Over 1000 tonnes of general waste was sent to landfill. This contributes GHG emissions due to anaerobic degradation to methane in landfill which eventually is released into the atmosphere. This is mitigated partly by gas capture at landfill (flaring or this gas converts the methane to carbon dioxide which is a less potent greenhouse gas). Methane is flared to atmosphere in Southland releasing $C0_2$. In Dunedin the methane is used for energy generation (but ultimately is released to the atmosphere as $C0_2$). Other impacts of landfill waste not quantified in the footprint include the cost ($170,000), and local impacts on soil and water at the landfill site. Landfill waste also represents an opportunity cost as many of the items need not have been in landfill in the first place. These items could have been re-purposed, reused or not used in the first place, saving money and reducing the carbon footprint of the supply chain of these resources.

SDHB should set an ambitious target of a **50% reduction in waste to landfill by 2030**. A waste committee has recently been established and this is a crucial first step towards this goal. It will require a multi-pronged approach including an upgrade and standardisation of recycling infrastructure, extending PVC recycling to Southland Hospital, and the promotion and enhancement of waste reduction initiatives such as the furniture re-purposing scheme at Dunedin Hospital. As we move in the direction of becoming a digital hospital, an e-waste strategy will need to be developed. Crucially staff engagement and culture change will be required to promote waste reduction, reuse where possible and recycling.

## 13.0 Aeromedical Retrieval

As third party providers of aeromedical retrieval services to SDHB it is difficult to influence the carbon footprint of this category. Aeromedical retrieval is an essential component of healthcare delivery for SDHB. Reduction in emissions due to reduced fuel burn through operational efficiencies and fleet fuel efficiency improvements are likely to be minimal. The biggest determinant of aeromedical retrieval GHG emissions will be demand. It is crucial that **SDHB monitor and review utilisation of aeromedical retrieval services** to ensure optimal utilisation. It is beyond the scope of this report to elaborate on what this might involve. More broadly, strategies such as the digital health strategy, telehealth initiative and the Southern Primary and Community Care Strategy all may positively impact on the requirement for aeromedical retrieval services.

## 14.0 Staff engagement and culture change

Staff engagement will be crucial to achieve reductions in GHG emissions at SDHB. Particularly in the areas of electricity use, transport and waste. Procurement emissions have not been included in this assessment for reasons outlined in part 1. (scope 3 exclusions). These are the emissions associated

with the manufacture, packaging, transport, use and eventual disposal of all the consumables, medical equipment, and pharmaceuticals that we use in healthcare. They are likely to be the biggest contributor to the carbon footprint of healthcare (estimated at >60% of NHS emissions).[3] Staff engagement will be an important mechanism to reduce procurement associated emissions through the careful use of resources. Over time, as environmental sustainability becomes embedded at SDHB, it is hoped that a change in the culture will result. Staff engagement and culture change has the potential for significant financial benefit for SDHB with minimal initial financial outlay. A number of actions to engage staff should be implemented: -

- **Develop a staff environmental sustainability E-learning induction package**
- **Develop a staff environmental sustainability workshop package**
- **Establish a network of SDHB wide, service level, green champions**
- **Develop an environmental sustainability tool for staff initiatives**
- **Develop a staff communication package (logos, SharePoint page, user groups, newsletters).**
- **Promote success through an annual environmental sustainability award.**

With adequate resourcing, higher level staff engagement tools could be used such as the Sussex Community NHS Foundation Trust, award winning "Dare to Care" tool.[30] Other widely used staff engagement tools that could be useful include the "Green Impact tool", used at the University of Otago and the Central Manchester Universities Hospitals NHS Foundation Trust.[31]

## 15.0 Tree planting

There are numerous benefits to tree planting including carbon sequestration, increased biodiversity, enhanced staff and patient wellbeing, improved air quality, aesthetic value to name but a few. A **stock take should be undertaken of SDHB land to see if it is suitable for native tree planting.** A plan could then be implemented. There are well established metrics for carbon sequestration rates of native planting and this could be included as an offset against the SDHB GHG inventory. Other initiatives could include involving staff and patients in planting and maintenance.

## 16.0 Environmental sustainability and quality improvement

Many of the actions outlined above address supply side reduction in GHG emissions. An important part of the equation to reduce GHG emissions is to reduce demand. To address this **SDHB should incorporate a triple bottom line approach into all Quality Improvement initiatives.** Mortimer F., et al (2018) outline this approach to quality improvement in an article titled "Sustainability in quality improvement: redefining value". This follows the recent adoption of the domain of 'sustainability' into quality frameworks by the Royal College of Physicians UK (RCP).[32] The RCP have stated that "healthcare should be considered not only in terms of what can be delivered to an individual today, but also to the population in general and the patients of the future". A sustainable approach expands the healthcare definition of value to measure health outcomes against financial and social impacts as well as environmental (so called triple bottom line). The authors note this approach has the 'potential to harness the growing quality improvement movement to shape a more sustainable health service".

$$\text{Value} = \frac{\text{Outcomes for patients and populations}}{\text{Environmental + Social + Financial impacts}}$$

*Figure 24. Healthcare value redefined*

Improving the environmental impact of a quality improvement program typical results in positive benefits on the social and financial impacts as well. By addressing waste in a program (whether it be time, resources, staff, travel) the patient often benefits from a more streamlined process and costs are minimised.[32,33]

## 17.0 Financial risk

The DHB indirectly pays for its emissions under the Emissions Trading Scheme (ETS). As the ETS removes subsidies and the price on carbon rises to match commitments under the Paris Agreement, SDHB will face significant financial risk, if it continues to emit GHG's at the current rate. Table 2, based on work done by James Young (formerly sustainability manager at CDHB), illustrates the magnitude of this impact under various price on carbon scenarios. As can be seen from the table a lack of action to reduce GHG could cost SDHB from between $382,528 and $4,389,960 annually in additional pollution charges.

| | | Coal $CO_2$ tonnes | Total $CO_2$ tonnes | |
|---|---|---|---|---|
| | Tonnes $CO_2$ | 16545 | 28024 | |
| | Per Emissions Unit | Coal Emissions Price | Total SDHB Emissions Cost | Difference to Now |
| 1 for 1 under ETS | $21.35 | $353,236 | $602,924 | $0 |
| 2030 (International Energy Agency, China) | $35.00 | $579,075 | $988,400 | +$382,528 |
| 2030 (International Energy Agency, EU) | $57.00 | $943,065 | $1,609,680 | +$999,056 |
| IPCC needed to limit warming to within 2 degrees | $90.00 | $1,489,050 | $2,541,600 | +$1,923,848 |
| IPCC needed to limit warming to within 2 degrees | $178.00 | $2,945,010 | $5,026,720 | **+$4,389,960** |
| 80% reduction emissions + eliminate coal at current price | $21.35 | 0 | $104,423 | **- $498,501** |
| 80% reduction emissions + eliminate coal at upper limit price on carbon | $178.00 | 0 | $870,598 | **+$267,674** |

*Table 8. Financial risk of not taking action to reduce GHG emissions*

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# Appendix

Appendix 1. Detailed dataset of carbon footprint

| SDHB Carbon Footprint July 1 2016 - June 30 2017 | | | | | | |
|---|---|---|---|---|---|---|
| Description | QTY | Unit | CO2-e emissions | | CO2-e emission | |
| Scope 1 | | | Value | Unit | t CO2-e | % of total |
| Diesel Generators (Dunedin, Southland, Lakes Hopitals) | 11983 | L | 2.68 | kg CO2-e/L | 32.11 | 0.11% |
| Gas Heating (Wakari Boiler) | 19602 | kg | 3.02 | kg CO2-e/kg | 59.20 | 0.21% |
| Wood Heating (Wakari Boiler) | 1105300 | kg | 0.015 | kg CO2-e/kg | 16.58 | 0.06% |
| Fleet fuels Diesel | 31841 | L | 2.72 | kg CO2-e/Litre | 86.61 | 0.31% |
| Fleet fuels petrol | 360654 | L | 2.43 | kg CO2-e/Litre | 876.39 | 3.10% |
| Wakari-Dunedin Shuttle (Diesel) | 7036 | L | 2.72 | kg CO2-e/Litre | 19.14 | 0.07% |
| Rental cars | 22,775 | km | 0.209 | kg CO2-e/km | 4.76 | 0.02% |
| Taxis | $63,974 | $ | 0.067 | kg C02/$ spend | 4.29 | 0.02% |
| Medical Gases C02 | 1345 | kg | 1 | GWP100 | 1.34 | 0.00% |
| Medical Gases N20 | 11518 | kg | 298 | GWP100 | 3432.36 | 12.15% |
| Medical Gases Sevoflurane (anaesthetics) | 264 | kg | 130 | GWP100 | 34.37 | 0.12% |
| Medical Gases Desflurane (anaesthetics) | 36 | kg | 2540 | GWP100 | 90.53 | 0.32% |
| Refrigerants | No Data | kg | ? | kg CO2-e/kg | 0.00 | 0.00% |
| | | | | TOTAL SCOPE 1 | 4658 | 16.49% |
| Scope 2 | | | | | | |
| Coal Heating Dunedin | 7965870 | kg | 1.43 | kg CO2-e/kg | 11391.19 | 40.34% |
| Coal Heating Southland | 3603300 | kg | 1.43 | kg CO2-e/kg | 5152.72 | 18.25% |
| Electricity | 21531863 | kWh | 0.119 | kg CO2-e/kWh | 2562.29 | 9.07% |
| | | | | TOTAL SCOPE 2 | 19106 | 67.66% |
| Scope 3 | | | | | | |
| Transmission and distribution losses - electricity | 21531863 | kWh | 0.0097 | kg CO2-e/kWh | 208.86 | 0.74% |
| Flights - domestic (orbit travel) | 2,786,301 | pkm | 0.147 | kg CO2-e/pkm | 409.59 | 1.45% |
| Flights - domestic (Reimbursed) | 753,434 | pkm | 0.147 | kg CO2-e/pkm | 110.75 | 0.39% |
| Flights - short haul (Orbit Travel) Economy Class | 918,752 | pkm | 0.0873 | kg CO2-e/pkm | 80.21 | 0.28% |
| Flights - short haul (Orbit Travel) Business Class | 10,003 | pkm | 0.131 | kg CO2-e/pkm | 1.31 | 0.00% |
| Flights - short haul (Reimbursed) | 773,269 | pkm | 0.0891 | kg CO2-e/pkm | 68.90 | 0.24% |
| Flights - international (Orbit travel) economy | 1,564,810 | pkm | 0.0725 | kg CO2-e/pkm | 113.45 | 0.40% |
| Flights - international (Orbit Travel) Premium economy | 402,285 | pkm | 0.116 | kg CO2-e/pkm | 46.67 | 0.17% |
| Flights - international (Orbit travel) Business Class | 1,380,126 | pkm | 0.21 | kg CO2-e/pkm | 289.83 | 1.03% |
| Flights - international (Orbit travel) First Class | 19,149 | pkm | 0.289 | kg CO2-e/pkm | 5.53 | 0.02% |
| Flights - international (Reimbursed) | 5,126,541 | pkm | 0.0946 | kg CO2-e/pkm | 484.97 | 1.72% |
| Waste to landfill (Dunedin) with gas recovery | 712,988 | kg | 0.444 | kg CO2-e/kg | 316.57 | 1.12% |
| Waste to landfill (Southland) with gas recovery | 269,960 | kg | 0.444 | kg CO2-e/kg | 119.86 | 0.42% |
| Waste to landfill (Lakes) without gas recovery | 38,376 | kg | 1.13 | kg CO2-e/kg | 43.36 | 0.15% |
| Freight | No Data | m3 | ? | kg C02-e/m3 | 0.00 | 0.00% |
| Courier | 29,380 | Parcel | *0.65 | kg C02-e/parcel | 19.14 | 0.07% |
| Business travel in Private car (reimbursed) | 506,352 | km | 0.209 | kg CO2-e/km | 105.83 | 0.37% |
| Chartered flight Dunedin - Dunstan (Mainland Air) | 36,946 | pkm | 0.147 | kg CO2-e/pkm | 5.43 | 0.02% |
| Chartered flight Dunedin-Invercargill (Mainland Air) | 244,537 | pkm | 0.147 | kg CO2-e/pkm | 35.95 | 0.13% |
| Helicopter transport (within District) - ORHT | 288,648 | kg | 3.163 | kg C02-e/pkm | 912.99 | 3.23% |
| Helicopter transport (LDRH) | 44 | hrs | 401 | kg C02-e/hr | 17.52 | 0.06% |
| Aeromedical Evacuation (fixed Wing) | 159,738 | pkm | 0.147 | kg CO2-e/pkm | 23.48 | 0.08% |
| Patient transport land (Ambulance) | No Data | $ | ? | Average Km/$ | 0.00 | 0.00% |
| Patient transport claims (NTA) | 5,053,153 | km | 0.209 | kg CO2-e/km | 1056.11 | 3.74% |
| | | | | TOTAL SCOPE 3 | 4476 | 15.85% |
| | | | Total carbon | | 28240 | t CO2-e |

| SDHB Carbon Footprint July 1 2016 - June 30 2017 | | | |
|---|---|---|---|
| **Description** | **Cost $** | **Datasource** | **Accuracy** |
| **Scope 1** | | | |
| Diesel Generators (Dunedin, Southland, Lakes Hopitals) | $13,895 | Invoices (accounts and Building and Property) | High |
| Gas Heating (Wakari Boiler) | $40,061 | Invoices from Rockgas | High |
| Wood Heating (Wakari Boiler) | $165,094 | Invoices from Lumbr with Tonnes wood weight | High |
| Fleet fuels Diesel | $25,923 | BP fuel card data | High |
| Fleet fuels petrol | $577,854 | BP Fuel Card data | High |
| Wakari-Dunedin Shuttle (Diesel) | $9,066 | Invoices Anthony Motors LTD | High |
| Rental cars | $28,351 | Hertz data | High |
| Taxis | $66,229.37 | Oracle Reimbursements | medium |
| Medical Gases C02 | $8,762 | BOC summary | High |
| Medical Gases N20 | $183,113 | BOC summary | High |
| Medical Gases Sevoflurane (anaesthetics) | $100,590 | invoices One Link Southland and Dunedin | high |
| Medical Gases Desflurane (anaesthetics) | $22,950 | invoices One Link Southland and Dunedin | high |
| Refrigerants | $0 | \ | No Data |
| | $1,241,889 | | |
| **Scope 2** | | | |
| Coal Heating Dunedin | $1,755,670 | Pioneer Energy and Building and Property | medium |
| Coal Heating Southland | $595,869 | Pioneer Energy and Building and Property | High |
| Electricity | $2,436,214 | Data from Building and property based on | High |
| | $4,787,753 | | |
| **Scope 3** | | | |
| Transmission and distribution losses - electricity | $0 | Data from Building and property based on | High |
| Flights - domestic (orbit travel) | $1,626,490 | Orbit environmental summary report | High |
| Flights - domestic (Reimbursed) | $184,889 | Oracle Reimbursements | Low-medium |
| Flights - short haul (Orbit Travel) Economy Class | $419,137 | Orbit environmental summary report | High |
| Flights - short haul (Orbit Travel) Business Class | \ | Orbit environmental summary report | High |
| Flights - short haul (Reimbursed) | $178,001 | Oracle Reimbursements | Low-Medium |
| Flights - international (Orbit travel) economy | $531,595 | Orbit environmental summary report | High |
| Flights - international (Orbit Travel) Premium economy | \ | Orbit environmental summary report | High |
| Flights - international (Orbit travel) Business Class | \ | Orbit environmental summary report | High |
| Flights - international (Orbit travel) First Class | \ | Orbit environmental summary report | High |
| Flights - international (Reimbursed) | $846,316 | Oracle Reimbursements | Low-medium |
| Waste to landfill (Dunedin) with gas recovery | \ | Waste Management summary report | high |
| Waste to landfill (Southland) with gas recovery | \ | Waste Management summary report | high |
| Waste to landfill (Lakes) without gas recovery | $170,532 | Waste Management summary report | low |
| Freight | no data | no data | no data |
| Courier | no data | NZ Courier | Medium |
| Business travel in Private car (reimbursed) | $364,574 | Oracle Reimbursements | Medium-High |
| Chartered flight Dunedin - Dunstan (Mainland Air) | $160,464 | Mainland air invoice (flights, passengers, cost) | high |
| Chartered flight Dunedin-Invercargill (Mainland Air) | $237,614 | Mainland air invoice (flights, passengers, cost) | high |
| Helicopter transport (within District) - ORHT | $987,200 | Graeme Gale - Personal Communication | medium |
| Helicopter transport (LDRH) | $133,152 | SDHB Accounts | medium |
| Aeromedical Evacuation (fixed Wing) | $1,090,799 | SDHB Accounts | medium |
| Patient transport land (Ambulance) | no data | no data | no data |
| Patient transport claims (NTA) | $1,364,000 | Ministry of Health | medium |
| | $8,294,763 | | |

Scope 3 mandatory (CEMARS reporting framework)

Scope 3 additional (CEMARS reporting framework)

Appendix 2. Enviromark Audit Assurance Statement and Audit report.

# Independent Assurance Statement

## ISO 14064-1:2006

### GHG Verification

**TO THE DIRECTORS OF THE ENVIRO-MARK SOLUTIONS LIMITED BOARD**

| | |
|---|---|
| **Responsible Party:** | Southern District Health Board |
| **Registered address**: | 21 Gt. King St., Dunedin 9054, New Zealand |
| **Inventory period**: | 1/7/2016 - 30/6/2017 |
| **Inventory report**: | Verification_Report_2016-17_SDHB_ISO14064-1_Org |
| **Contract:** | Southern District Health Board, 20/12/18 |

We have reviewed the greenhouse gas emissions inventory ("the inventory") for the above named Responsible Party for the stated inventory period.

**Board of Directors' Responsibilities (Responsible Party)**
The Board of Directors of the Responsible Party is responsible for the preparation of an inventory which gives a true and fair view of the greenhouse gas emissions of the Responsible Party in accordance with ISO 14064-1:2006.

**Verifiers' Responsibilities**
It is our responsibility to express to you an independent opinion on the inventory presented by the Board of Directors of the Responsible Party. Our verification was undertaken as agreed in the Contract which defines the scope, objectives, criteria and level of assurance of the verification.

**Basis of Opinion**
The subject matter contained in the inventory is based on historical information for the stated inventory period. Our review was carried out in accordance with the criteria stated in ISO 14064-1:2006.

The verification included examination, on a test basis, of the evidence relevant to the information and data disclosed in the inventory. It also included assessment of the assumptions and judgements made by the Responsible Party in the preparation of the inventory.

We conducted our verification in accordance with ISO 14064-3:2006 and the requirements of the E-MS Auditor Manual. We planned and performed our verification so as to obtain all the information and explanations which we considered necessary in order to provide us with sufficient evidence to obtain the specified level of assurance that the inventory is free from material misstatements, whether caused by error or fraud. In forming our opinion we also evaluated the overall adequacy of the presentation of information and data in the inventory.

  

Other than in our capacity as an independent verifier of the emissions inventory we have no relationship with or interests in the Responsible Party.

**Responsible Party's greenhouse gas assertion**

Southern District Health Board (SDHB) has measured its Scope 1, Scope 2 and Scope 3 greenhouse gas emissions in accordance with ISO 14064-1:2006, with respect to its organisational activities.

**Opinion**

We have obtained all the information and explanations we have required. In our qualified reasonable assurance opinion, subject to the qualification listed below, the Scope 1, 2, and reported Scope 3 emissions defined in the inventory spreadsheet:

- comply with ISO 14064-1:2006 ; and
- provide a true and fair view of the emissions inventory of the Responsible Party for the stated inventory period.

**Qualifications**

None

**Achieved level of assurance**

Reasonable

| **Verified by:** | | **Authorised by:** | |
|---|---|---|---|
| Name: | Tom Clark | Name: | Belinda Mathers |
| Position: | Verifier, Enviro-Mark Solutions Limited | Position: | Certifier, Enviro-Mark Solutions Limited |
| Signature: |  | Signature: |  |
| Date verification audit: | 10/4/19-11/4/19 | | |
| Date opinion expressed: | 4/06/2019 | Date: | 25/06/2019 |

# Organisation Audit Report

## ISO 14064-1:2006 verification

Of organisation:

Southern District Health Board

| | |
|---|---|
| Audit team | Tom Clark, Pieter Fransen |
| Verification firm | Enviro-Mark Solutions Limited |
| Contact details | tom.clark@enviro-mark.com<br>+64 3 321 9857 |
| Client Contact | Matt Jenks |
| Contact details | matt.jenks@southerndhb.govt.nz<br>+64 212 365 947 |
| Report date | 5th June 2019 |
| Report prepared by | Tom Clark, Enviro-Mark Solutions Limited |
| Report reviewed by | Belinda Mathers, Enviro-Mark Solutions Limited, 21/06/2019 |
| Approved for Issue by | Belinda Mathers, Enviro-Mark Solutions Limited, 25/06/2019 |

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Gerald Street • Lincoln 7608 • New Zealand
0800 ENMARK • www.enviro-mark.com

## Audit objectives

The objective of the audit was to determine if the organisation's GHG measurement (emissions data and calculations) meet(s) the criteria for ISO 14064-1:2006

## Audit criteria and scope

The audit criteria and scope are detailed in the following table:

| | |
|---|---|
| **Audit criteria** | E-MS Verifier Manual v2.4,<br>ISO 14064 Part 1:2006, ISO 14064 Part 3:2006, ISO 14065: |
| **Audit date** | 10/4/2019 - 11/4/2019 |
| **Reporting year** | 1/7/2016 to 30/6/2017 |
| **Base year** | 1/7/2016 to 30/6/2017 |
| **Consolidation methodology** | Operational Control |
| **Materiality threshold** | 5% |
| **Claim** | Southern District Health Board (SDHB) has measured its Scope 1, Scope 2 and Scope 3 greenhouse gas emissions in accordance with ISO 14064-1:2006, with respect to its organisational activities. |
| **Registered office address** | 21 Gt. King St, Dunedin 9054, New Zealand |
| **Locations visited** | Dunedin and Wakari Hospitals, Dunedin Energy Centre, Dunedin |
| **Audit type** | Verification to ISO 14064-1:2006 Scope 1 and 2 emissions |
| **Audit Stage** | Stage 1 & 2 onsite (desk based planning & site visit audit completed) |

## Conclusion

The following total emissions have been verified:

| Emissions summary by scopes | | Units |
|---|---|---|
| **Scope 1 total** | **4657.66** | **$tCO_2e$** |
| **Scope 2 total** | **19106.20** | **$tCO_2e$** |
| **Scope 3 total** | **4476.31** | **$tCO_2e$** |
| *Mandatory scope 3* | *2424.83* | *$tCO_2e$* |
| *Additional scope 3* | *2051.48* | *$tCO_2e$* |
| *One-time scope 3* | *0.00* | *$tCO_2e$* |
| **Total inventory:** | **28240.17** | **$tCO_2e$** |
| **Emissions intensity:** | **53.08** | **$tCO_2e$/$M[1]** |

[1] Not adjusted for inflation.

An assessment of materiality was made against the defined threshold. From this analysis, it is concluded that the stated emissions are free from material error.

## Audit summary

### *Scope and Boundaries*

The scope of the emissions inventory includes all activities within the boundaries of SDHB's provider arm operations: Dunedin, Southland, Wakari and Lakes District Hospitals.

Excluded are funder arm operations: PHO's, Pharmacies, Rural Hospitals and Aged Care Facilities (see Inclusions and Exclusions in *SDHB Carbon Footprint 2016-2017*)

*Emissions Factors*

Except for medical gas, helicopter and courier emissions, all other emissions factors were checked to have been appropriately sourced from the Ministry for the Environment's 2014 emissions factors sourced from MfE's Guidance for voluntary greenhouse gas reporting - 2016: Data and methods for the 2014 calendar year. These are the latest issued emission factors from the Ministry for the Environment.

Medical Gas emission factors were appropriately sourced from published research, courier emissions from NZ Courier, and helicopter emissions from Enviro-Mark Solutions E-Manage.

*Level of Verification*

Verification was conducted in accordance with the Programme Verification Guidelines including ISO 14064-3:2006 and the Verification and Sampling Plan.

As part of the audit, the below criteria/documents were reviewed:

| Criteria/documents | Status |
|---|---|
| Organisational boundaries | Meets ISO 14064-1:2006 requirements. |
| Greenhouse Gas Emissions Inventory Report | Meets ISO 14064-1:2006 requirements. |
| Application of the accounting principles | Meets ISO 14064-1:2006 requirements. |

A total of 1 NCR, 5 minor non-conformances, 1 request for information and 8 observations were raised during this visit. Full details of the findings are given in the findings log below.

Using our Data Quality Assessment tool for analysing data against completeness and assumed uncertainty an inventory "quality" can be classified as follows:

- High
- Good
- Fair
- Poor

From the analysis conducted your inventory is classified as: High

## Assurance

| | |
|---|---|
| Level of Assurance | Reasonable |
| Qualifications/Limitations | None |

Findings Log:

| | |
|---|---|
| Date issued: | 17/04/2019 |
| Verifier: | Tom Clark |
| Company issued to: | Southern District Health Board |

A finding marked NCR must be corrected before audit can be closed out, unless otherwise approved by the Certification Manager
A finding marked mNCR is not required to be corrected for this verification, but may need to be addressed/checked for your next inventory, or it may become a NCR. You may voluntarily correct a mNCR for completeness.
A finding marked Obs is an observation or recommendation from the verifier that may be helpful to you.

| Ref # | Issue | Status | Type | Comments / Agreed Corrective Actions | Date closed | Evidence sighted to close out the issue where corrective action required. |
|---|---|---|---|---|---|---|
| | **Findings for current measurement period** | | | | | |
| NCR1 | Each greenhouse gas not documented separately for direct (Scope 1) emissions, as specified in ISO 14064:2006 | Closed | NCR | Tabulate $CO_2$, $CH_4$ and $N_2O$ emissions for Scope 1 sources (using emission factors in MfE pdf document Guidance for Voluntary GHG Reporting 2016) | 04/06/2019 | Sighted updated $CO_2$ Database. Workings in Inventory Summary tab. |
| RFI | Coal SH - calculation method to convert metered steam to coal used not available. Source of coal consumption figures (e.g. coal supplier reports) not available; no evidence that usage figures relate to the stated months). | Closed | RFI | Please supply calculation method and/or coal supply/use and calorific value information | 04/06/2019 | Sighted coal invoices and updated $CO_2$ Database |
| mNCR1 | Electricity consumption data for Wakari Secure Unit not included - immaterial difference | Closed | mNCR | Add Security Unit data to inventory | 04/06/2019 | Sighted Security Unit electricity invoices and updated $CO_2$ Database |
| mNCR2 | Orbit air travel - short haul - Perth included as short haul; and should be long haul. Immaterial difference 0.03%. | Closed | mNCR | Optional to update the inventory | 04/06/2019 | Sighted updated $CO_2$ Database |
| mNCR3 | Reimbursed air travel short haul - Perth included. Immaterial difference 0.004% | Closed | mNCR | Optional to update the inventory | 04/06/2019 | Sighted updated $CO_2$ Database |
| mNCR4 | Orbit international air travel economy (long haul) - Perth excluded. Immaterial difference 0.03%. | Closed | mNCR | Optional to update the inventory | 04/06/2019 | Sighted updated $CO_2$ Database |





| Ref # | Issue | Status | Type | Comments / Agreed Corrective Actions | Date closed | Evidence sighted to close out the issue where corrective action required. |
|---|---|---|---|---|---|---|
| mNCR5 | Reimbursed international air travel (long haul) - Perth flights were not included. Short haul included. Immaterial difference of 0.20% | Closed | mNCR | Optional to update the inventory | 04/06/2019 | Sighted updated $CO_2$ Database |
| Obs 1 | Coal - For Dunedin and Southland Hospitals – clarification of steam - coal conversion formulae. | Closed | Obs | Setting out steam to coal conversion formulae and referencing data sources on spreadsheet, including source of steam enthalpy. | 04/06/2019 | Sighted updated $CO_2$ Database. Reference to steam enthalpy in coal tab |
| Obs 2 | Uplift factor not applied to air travel figures. For conformance to CEMARS an uplift figure of 1.9 is applied to MfE default figures for air travel | Open | Obs | Consider applying uplift factor. | | Noted by SDHB for future |
| Obs 3 | Air travel - reimbursed and orbit data reported separately | Open | Obs | Consider combining Reimbursable with Orbit data into domestic, short-haul and long-haul categories where beneficial | | Noted by SDHB for future |
| Obs 4 | Poor accuracy in estimating reimbursable travel based on available data | Open | Obs | Develop a system to capture destination information | | Noted by SDHB for future |
| Obs 5 | Refrigerants not accounted for | Open | Obs | Consider developing an inventory for improved management and control as well as justifying *de minimis* | | Noted by SDHB for future |
| Obs 6 | Freight not accounted for due to problem in obtaining data from logistics contractor and availability of emission factors. | Open | Obs | Consider how data may be obtained from contractor; freight emissions factors available from Enviro-Mark Solutions | | Noted by SDHB for future |

| Ref # | Issue | Status | Type | Comments / Agreed Corrective Actions | Date closed | Evidence sighted to close out the issue where corrective action required. |
|---|---|---|---|---|---|---|
| Obs 7 | The Carbon Footprint Assessment and Carbon Emissions Reduction Plan (CERP) provide a sound basis for a formal management and reduction plan and implementation of improvements. A range of appropriate management and emissions reduction proposals have been made, including replacing coal and investigating high usage of $N_2O$ | Open | Obs | Consider developing an action programme based on priorities, benefits, costs and other relevant criteria. | | Noted by SDHB. Actions under way |
| Obs 8 | Scope 3 indirect emissions are not required to be reported under ISO 14064-1 so should not be reported as S3 Mandatory for this audit, although the revised version of the ISO14064-1 Standard gives more consideration to reporting of indirect emissions. | Open | Obs | | | |

## Notes

1. The detailed audit findings and calculations are given in the Verification Plan and Working Papers associated with this audit. These contain proprietary verification methodologies and remain confidential to Enviro-Mark Solutions Limited.
2. The audit is based upon sampling and as such nonconformities may exist that have not yet been identified.
3. We have reviewed the company's GHG emissions inventory for the period. The inventory is based on historical information which is stated in accordance with the requirements of ISO 14064-1:2006.
4. The scope of the review was limited to personnel interview, analytical review procedures applied to GHG emissions data, and review of the input of data into the emissions inventory. Based on our review the inventory is compliant with the requirements of ISO 14064-1:2006.
5. A **non-conformance (NCR)** indicates that the auditor has found a non-conformance with scheme Technical Requirements (audit criteria) and requires you to take the appropriate corrective action and provide evidence of this correction within two weeks. This may require resubmission of an updated Emissions Inventory Report.
6. A **minor non-conformance (mNCR)** which the auditor has found which is not material to the outcome of the inventory, but to which a failure to address in the preparation of future inventories could lead to a major Non-Conformance (NCR).
7. **Observations** made by your auditor are strongly advised but the actions are not required for the audit to be completed.
8. Neither Enviro-Mark Solutions Limited nor the auditor has any interest in the organisation, other than in our capacity as assurance providers. We have not carried out any work with this business prior to this review relating to the preparation of the GHG inventory.
9. This report has been prepared solely for the use of the organisation and Enviro-Mark Solutions Limited as part of a GHG verification in accordance with relevant international standards as outlined in the audit criteria above. It may be relied on solely by the organisation and Enviro-Mark Solutions Limited for that purpose only. Enviro-Mark Solutions Limited does not accept or assume any responsibility to any person other than the organisation in relation to the statements or findings expressed or implied in this report.
10. Any correspondence regarding this audit report should be directed to your Lead Auditor.
11. A copy of this report has been provided to the nominated client contact.

APOLOGIES

Chris Fleming, Chief Executive Officer

Nigel Millar, Chief Medical Officer

# SOUTHERN DISTRICT HEALTH BOARD

| | |
|---|---|
| **Title:** | **INTERESTS REGISTERS** |
| **Report to:** | Hospital Advisory Committee |
| **Date of Meeting:** | 31 July 2019 |

**Summary:**

Commissioner, Committee and Executive Team members are required to declare any potential conflicts (pecuniary or non-pecuniary) and agree how these will be managed. A member who makes a disclosure must not take part in any decision relating to their declared interest.

Interests declarations, and how they are to be managed, are required to be recorded in the minutes and separate interests register (s36, Schedule 3, NZ Public Health and Disability Act 2000).

**Changes to Interests Registers over the last month:**

- Kaye Cheetham, Acting Chief Allied Health, Scientific and Technical Officer, added.

**Specific implications for consideration** (financial/workforce/risk/legal etc):

| | |
|---|---|
| **Financial:** | n/a |
| **Workforce:** | n/a |
| **Other:** | |

**Prepared by:**

Jeanette Kloosterman
Board Secretary

**Date:** 15/07/2019

**RECOMMENDATION:**

**1. That the Interests Registers be received and noted.**

**SOUTHERN DISTRICT HEALTH BOARD**
**INTERESTS REGISTER**
**COMMISSIONER TEAM**

| Member | Date of Entry | Interest Disclosed | Nature of Potential Interest with Southern DHB | Management Approach |
|---|---|---|---|---|
| **Kathy GRANT** | 25.06.2015 | Chair, Otago Polytechnic | Southern DHB has agreements with Otago Polytechnic for clinical placements and clinical lecturer cover. | |
| (Commissioner) | 25.06.2015 | Deputy Chair, Dunedin City Holdings Limited | Nil | |
| | 25.06.2015 | Trustee of numerous private trusts | Nil | |
| | 25.06.2015 | Deputy Chair, Dunedin City Treasury Limited | Nil | |
| | 18.09.2016 | Food Safety Specialists Ltd | Nil. Co-trustee in client trusts - no pecuniary interest. | |
| | 18.09.2016 | Director, Warrington Estate Ltd | Nil - no pecuniary interest; provide legal services to the company. | |
| | 18.09.2016 | Tall Poppy Ideas Ltd | Nil. Co-trustee in client trusts - no pecuniary interest. | |
| | 18.09.2016 | Rangiora Lineside Ltd | Nil. Co-trustee in client trusts - no pecuniary interest. | |
| | 18.09.2016 | Otaki Three Limited | Nil. Co-trustee in client trusts - no pecuniary interest. | |
| | 21.09.2018 | Deputy Chair, Dunedin Stadium Property Ltd (from 1 July 2018, updated 24/04/2019) | | |
| | | **Spouse:** | | |
| | 25.06.2015 | Consultant, Gallaway Cook Allan | Nil | |
| | 25.06.2015 | Chair, Slinkskins Limited | Nil | |
| | 25.06.2015 | Director, South Link Health Services Limited | A SLH entity, Southern Clinical Network, has applied for PHO status. | Step aside from decision-making (refer Commissioner's meeting minutes 02.09.2015). |
| | 25.06.2015 | Board Member, Warbirds Over Wanaka Community Trust | Nil | |
| | 25.06.2015 | Director, Warbirds Over Wanaka Limited | Nil | |
| | 25.06.2015 | Director, Warbirds Over Wanaka International Airshows Limited | Nil | |
| | 25.06.2015 | Board Member, Leslie Groves Home & Hospital | Leslie Groves has a contract with Southern DHB for aged care services. | |
| | 25.06.2015 | Chair Dunedin Diocesan Trust Board | Nil (Updated 16 April 2018) | |
| | 25.06.2015 | Trustee of numerous private trusts | Nil | |
| | 25.06.2015 (updated 22.04.2016 and 29.06.2019) | Past President, Otago Racing Club Inc. | Nil | |
| | | | | |
| **Jean O'Callaghan** (Deputy Commissioner) | 13.05.2019 | Employee of Geneva Health | Provides care in the community; supports one long term client but has no financial or management input. | |
| | 13.05.2019 | St John Volunteer, Lakes District Hospital | Nil | Taking six months' leave. |
| | | | | |
| **David Perez** (Deputy Commissioner) | 13.05.2019 | Director, Mercy Hospital, Dunedin | SDHB holds contracts with Mercy Hospital. | Step aside from decision making. |

**SOUTHERN DISTRICT HEALTH BOARD**
**INTERESTS REGISTER**
**COMMISSIONER TEAM**

| Member | Date of Entry | Interest Disclosed | Nature of Potential Interest with Southern DHB | Management Approach |
|---|---|---|---|---|
| | 13.05.2019 | Fellow, Royal Australasian College of Physicians | | |
| | 13.05.2019 | Trustee for several private trusts | | |
| **Richard THOMSON** (Deputy Commissioner) | 13.12.2001 | Managing Director, Thomson & Cessford Ltd | Acquisitions Retail Chain. Southern DHB staff occasionally purchase goods for their departments | |
| | 13.12.2002 | Chairperson and Trustee, Hawksbury Community Living Trust (24.06.2019 Acting CEO) | Hawksbury Trust runs residential homes for intellectually disabled adults in Otago and Canterbury. It does not have contracts with Southern DHB. | |
| | 24.06.2019 | Trustee Hawkesbury Property Trust | Owns the properties that Hawkesbury Trust residents live in. | |
| | 23.09.2003 | Trustee, HealthCare Otago Charitable Trust | Health Care Otago Charitable Trust regularly receives grant applications from staff and departments of Southern DHB, as well as other community organisations. | |
| | 05.02.2015 | One immediate family member is an employee of Dunedin Hospital (Anaesthetic Technician) | | |
| | 07.10.2015 | Southern Partnership Group | The Southern Partnership Group will have governance oversight of the Dunedin Hospital rebuild and its decisions may conflict with some positions agreed by the DHB and approved by the Commissioner team. | |
| | 24.07.2018 | Son's partner works for Southern DHB, Ophthalmology Service. | | |

SOUTHERN DISTRICT HEALTH BOARD
INTERESTS REGISTER
ADVISORY COMMITTEE MEMBERS

| Committee Member | Date of Entry | Interest Disclosed | Nature of Potential Interest with Southern DHB | Management Approach |
|---|---|---|---|---|
| **Susie JOHNSTONE** | 21.08.2015 | Independent Chair, Audit & Risk Committee, Dunedin City Council | Nil | |
| (Consultant, Finance Audit & Risk Committee) | 21.08.2015 | Advisor to a number of primary health provider clients in rural Otago | All of the primary health provider clients in rural Otago are likely to have a contract through Southern DHB and/or the WellSouth Primary Care Network. | |
| | 18.01.2016 | Audit and Risk Committee member, Office of the Auditor-General | Audit NZ, the DHB's auditor, is a business unit of the Office of the Auditor General. | |
| | 16.09.2016 | Director, Shand Thomson Ltd | Nil | |
| | 16.09.2016 | Director, Harrison Nominees Ltd | Nil. Co-trustee in client trusts - no pecuniary interest. | |
| | 16.09.2016 | Director, Abacus ST companies. | Nil. Co-trustee in client trusts - no pecuniary interest. | |
| | 16.09.2016 | Director, Shand Thomson Nominees Ltd | Nil. Co-trustee in client trusts - no pecuniary interest. | |
| | 16.09.2016 | Director, Johnstone Afforestation Co Ltd | Nil. Co-trustee in client trusts - no pecuniary interest. | |
| | 16.09.2016 | Director, Shand Thomson Nominees (2005) Ltd | Nil. Co-trustee in client trusts - no pecuniary interest. | |
| | 16.09.2016 | Director, McCrostie Nominees Ltd | Nil. Co-trustee in client trusts - no pecuniary interest. | |
| | 28.05.2018 | Clutha Community Health Company Co Ltd | Client of Shand Thomson. Two retired Shand Thomson partners are on the board, one is a long standing Chair. | |
| | 23.07.2018 | Trustee, Clutha Community Foundation (appointed June 2018) | | |
| | | **Spouse is Consultant/Advisor to:** | | |
| | 21.08.2015 | Tuapeka Community Health Co Ltd & Tuapeka Health Incorporated | Tuapeka Community Health Co Ltd & Tuapeka Health Incorporated have a contract with Southern DHB. | |
| | 21.08.2015 | Wyndham & Districts Community Rest Home Inc | Wyndham & Districts Community Rest Home Inc has a contract with Southern DHB. | |
| | 21.08.2015 | Roxburgh District Medical Services Trust | Roxburgh District Medical Services Trust has a contract with Southern DHB. | |
| | 21.08.2015 | A number of primary health care providers in rural Otago | All of the primary health provider clients in rural Otago are likely to have a contract through Southern DHB and/or the WellSouth Primary Care Network. | |
| | 26.09.2016 | Director, Abacus ST companies. | Nil. Co-trustee in client trusts - no pecuniary interest. | |
| | | **Daughter:** | | |
| | 21.08.2015 | Junior Doctor, Nelson Marlborough DHB | (Updated 25.01.2019) | |
| | | **Son:** | | |
| | 29.04.2019 | Employee of Deloitte | Deloitte are the inernal auditors of SDHB | |
| **Donna MATAHAERE-ATARIKI** | 27.02.2014 | Trustee WellSouth | Possible conflict with PHO contract funding. | |
| (IGC Member) | 27.02.2014 | Trustee Whare Hauora Board | Possible conflict with SDHB contract funding. | |
| | 27.02.2014 | Council Member, University of Otago | Possible conflict between SDHB and University of Otago. | |
| | 27.02.2014 | Chair, Ōtākou Rūnanga | Nil | |
| | 17.06.2014 | Gambling Commissioner | Nil | |
| | 05.09.2016 | Board Member and Shareholder, Arai Te Uru Whare Hauora Limited | Nil - charitable entity. | |
| | 21.03.2018 | Board Member, Otākou Health Limited | Registered Charity not contracting in Health. | |
| | 05.09.2016 | Southern DHB, Iwi Governance Committee | Possible conflict with SDHB contract funding. | |
| | 09.02.2017 | Director and Shareholder, VIII(8) Limited | Nil | |
| | 21.03.2018 | Chair, NGO Council | Nil | |
| | 07.06.2018 | Chairperson, Te Rūnanga o Otākou Incorporated | Registered Charity - not contracting in Health. | |
| | 07.06.2018 | Director, Te Rūnanga Otākou Ltd | Nil does not contract in health. | Update to nature of interest 2 July 2018 |
| | 07.06.2018 | Trustee, Kaupapa Taiao | Registered Charity - not contracting in Health. | |
| | 02.07.2018 | Otakou Health Ltd - Shareholder of Te Kaika and its subsidiaries Mataora Health and Forbury Cnr Medical Centres | Possible conflict with SDHB contract funding. | Interest advised 2 July 2018 |

SOUTHERN DISTRICT HEALTH BOARD
INTERESTS REGISTER
ADVISORY COMMITTEE MEMBERS

| Committee Member | Date of Entry | Interest Disclosed | Nature of Potential Interest with Southern DHB | Management Approach |
|---|---|---|---|---|
| **Odele STEHLIN** | 01.11.2010 | Waihopai Rūnaka General Manager | Possible conflict with contract funding. | |
| Waihōpai Rūnaka – Chair IGC | 01.11.2010 | Waihopai Rūnaka Social Services Manager | Possible conflict with contract funding. | |
| | 01.11.2010 | WellSouth Iwi Governance Group | Nil | |
| | 01.11.2010 | Recognised Whānau Ora site | Nil | |
| | 24.05.2016 | Healthy Families Leadership Group member | Nil | |
| | 23.02.2017 | Te Rūnanga alternative representative for Waihopai Rūnaka on Ngai Tahu. | Nil | |
| | 09.06.2017 | Director, Waihopai Runaka Holdings Ltd | Possible conflict with contract funding. | |
| | 07.06.2018 | Director of Waihopai Hauora. | Possible conflict with contract funding. | |
| **Sumaria BEATON** | 27.04.2017 | Southland Warm Homes Trust | Nil | |
| IGC - Awarua Rūnaka | 09.06.2017 | Director and Shareholder, Sumaria Consultancy Ltd | Nil | |
| | 09.06.2017 | Director and Shareholder, Monkey Magic 8 Ltd | Nil | |
| | 07.06.2018 | Treasurer, Community Energy Network Incorporated | Nil | |
| **Taare BRADSHAW** | 17.03.2017 | Director, Murihiku Holdings Ltd | Nil | |
| IGC - Hokonui Rūnaka | 07.06.2018 | Trustee, Hokonui Rūnanga Health & Social Services Trust | Possible conflict with contract funding. | |
| | 07.06.2018 | Vice Chairman, Hokonui Rūnanga Incorporated | Possible conflict with contract funding. | |
| **Victoria BRYANT** | 06.05.2015 | Member - College of Primary Nursing (NZNO) | Nil | |
| IGC - Puketeraki Rūnaka | 06.05.2015 | Member - Te Rūnanga o Ōtākou | Nil | |
| | 06.05.2015 | Member Kati Huirapa Rūnaka ki Puketeraki | Nil | |
| | 06.05.2015 | President Fire in Ice Outrigger Canoe Club | Nil | |
| | 24.05.2017 | Member, South Island Alliance - Raising Healthy Kids | Nil | |
| | 06.03.2018 | SDHB, Te Punaka Oraka, Public Health Nursing, Charge Nurse Manager | Nil | |
| | 06.03.2018 | Member of the New Zealand Nurses Organisation | Possible conflict when negotiations are taking place. | |
| | 06.03.2018 | Member of the Public Service Association (PSA) | Possible conflict when negotiations are taking place. | |
| **Justine CAMP** | 31.01.2017 | Research Fellow - Dunedin School of Medicine - Better Start National Science Challenge | Nil | |
| IGC - Moeraki Rūnaka | | Member - University of Otago (UoO) Treaty of Waitangi Committee and UoO Ngai Tahu Research Consultation Committee | Nil | |
| | | Member - Dunedin City Council - Creative Partnership Dunedin | Nil | |
| | | Moana Moko - Māori Art Gallery/Ta Moko Studio - looking at Whānau Ora funding and other funding in health setting | Possible conflict with funding in health setting. | |
| **Terry NICHOLAS** | 06.05.2015 | Treasurer, Hokonui Rūnanga Inc. | Nil | |
| IGC - Hokonui Rūnaka | 06.05.2015 | Member, TRoNT Audit and Risk Committee | Nil | |
| | 06.05.2015 | Director, Te Waipounamu Māori Cultural Heritage Centre | Nil | |
| | 06.05.2015 | Trustee, Hokonui Rūnanga Health & Social Services Trust | Possible conflict when contracts with Southern DHB come up for renewal. | |
| | 06.05.2015 | Trustee, Ancillary Claim Trust | Nil | |
| | 06.05.2015 | Director, Hokonui Rūnanga Research and Development Ltd | Nil | |
| | 06.05.2015 | Director, Rangimanuka Ltd | Nil | |
| | 06.05.2015 | Member, Te Here Komiti | Nil | |
| | 06.05.2015 | Member, Arahua Holdings Ltd | Nil | |
| | 06.05.2015 | Member, Liquid Media Patents Ltd | Nil | |
| | 06.05.2015 | Member, Liquid Media Operations Ltd | Nil | |
| | 09.06.2017 | Director, Murihiku Holdings Ltd | Nil | |
| | 09.06.2017 | Director and Shareholder, Real McCoy Owner Ltd | Nil | |
| | 09.06.2017 | Director and Shareholder, Real McCoy Operator Ltd | Nil | |
| **Ann WAKEFIELD** | 03.10.2012 | Executive member of Ōraka Aparima Rūnaka Inc. | Nil | |
| IGC - Ōraka Aparima Rūnaka | 09.02.2011 | Member of Māori Advisory Committee, Southern Cross | Nil | |
| | 03.10.2012 | Te Rūnanga representative for Ōraka-Aparima Rūnaka Inc. on Ngai Tahu. | Nil | |

**SOUTHERN DISTRICT HEALTH BOARD**
**INTERESTS REGISTER**
**EXECUTIVE LEADERSHIP TEAM**

*Management of staff conflicts of interest is covered by SDHB's Conflict of Interest Policy and Guidelines.*

| Employee Name | Date of Entry | Interest Disclosed | Nature of Potential Interest with Southern District Health Board |
|---|---|---|---|
| **Kaye CHEETHAM** | 08.07.2019 | Ministry of Health Appointed Member of the Occupational Therapy Board | |
| **Mike COLLINS** | 15.09.2016 | Wife, NICU Nurse | |
| **Matapura ELLISON** | 12.02.2018 | Director, Otākou Health Ltd | Possible conflict when contracts with Southern DHB come up for renewal. |
| | 12.02.2018 | Deputy Kaiwhakahaere, Te Rūnanga o Ngai Tahu | Nil |
| | 12.02.2018 | Chairperson, Kati Huirapa Rūnaka ki Puketeraki (Note: Kāti Huirapa Rūnaka ki Puketeraki Inc owns Pūketeraki Ltd - 100% share). | Nil. |
| | 12.02.2018 | Otago Museum Māori Advisory Committee | Nil |
| | 12.02.2018 | Trustee, Section 20, BLK 12 Church & Hall Trust | Nil |
| | 12.02.2018 | Trustee, Waikouaiti Maori Foreshore Reserve Trust | Nil |
| | 29.05.2018 | Director & Shareholder (jointly held) - Arai Te Uru Whare Hauora Ltd | Possible conflict when contracts with Southern DHB come up for renewal. |
| **Chris FLEMING** | 25.09.2016 | Lead Chief Executive for Health of Older People, both nationally and for the South Island | |
| | 25.09.2016 | Chair, South Island Alliance Leadership Team | |
| | 25.09.2016 | Lead Chief Executive South Island Palliative Care Workstream | |
| | 25.09.2016 | Deputy Chair, InterRAI NZ | |
| | 10.02.2017 | Director, South Island Shared Service Agency | Shelf company owned by South Island DHBs |

**SOUTHERN DISTRICT HEALTH BOARD**
**INTERESTS REGISTER**
**EXECUTIVE LEADERSHIP TEAM**

| Employee Name | Date of Entry | Interest Disclosed | Nature of Potential Interest with Southern District Health Board |
|---|---|---|---|
| | 10.02.2017 | Director & Shareholder, Carlisle Hobson Properties Ltd | Nil |
| | 26.10.2017 | Nephew, Tax Advisor, Treasury | |
| | 18.12.2017 | Ex-officio Member, Southern Partnership Group | |
| | 30.01.2018 | CostPro (costing tool) | Developer is a personal friend. |
| | 30.01.2018 | Francis Group | Sister is a consultant with the Francis Group. |
| **Lisa GESTRO** | 06.06.2018 | Lead GM National Travel and Accommodation Programme | This group works on behalf of all DHBs nationally and may not align with SDHB on occasions. |
| | 04.04.2019 | NASO Governance Group Member | This group works on behalf of all DHBs nationally and may not align with SDHB on occasions. |
| | 04.04.2019 | Lead GM Perinatal Pathology | This group works on behalf of all DHBs nationally and may not align with SDHB on occasions. |
| **Nigel MILLAR** | 04.07.2016 | Member of South Island IS Alliance group | This group works on behalf of all the SI DHBs and may not align with the SDHB on occasions. |
| | 04.07.2016 | Fellow of the Royal Australasian College of Physicians | Obligations to the College may conflict on occasion where the college for example reviews training in services. |
| | 04.07.2016 | Fellow of the Royal Australasian College of Medical Administrators | Obligations to the College may conflict on occasion where the college for example reviews training in services. |
| | 04.07.2016 | NZ InterRAI Fellow | InterRAI supplies the protocols for aged care assessment in SDHB via a licence with the MoH. |
| | 04.07.2016 | Son - employed by Orion Health | Orion Health supplies Health Connect South. |
| | 04.07.2016 | Clinical Lead for HQSC Atlas of Healthcare variation | HQSC conclusions or content in the Atlas may adversely affect the SDHB. |
| | 29.05.2018 | Council Member of Otago Medical Research Foundation Incorporated | |

**SOUTHERN DISTRICT HEALTH BOARD**
**INTERESTS REGISTER**
**EXECUTIVE LEADERSHIP TEAM**

| Employee Name | Date of Entry | Interest Disclosed | Nature of Potential Interest with Southern District Health Board |
|---|---|---|---|
| **Nicola MUTCH** | | Deputy Chair, Dunedin Fringe Trust | Nil |
| | 02.04.2019 | Husband - Registrar and Secretary to the Council, Vice-Chancellor's Advisory Group, University of Otago | Possible conflict relating to matters of policies, partnership or governance with the University of Otago. |
| **Patrick NG** | 17.11.2017 | Member, SI IS SLA | Nil |
| | 17.11.2017 | Wife works for key technology supplier CCL | Nil |
| | 18.12.2017 | Daughter, medical student at Auckland University and undertaking Otago research project over summer 2017/18. | |
| **Julie RICKMAN** | 31.10.2017 | Director, JER Limited | Nil, own consulting company |
| | 31.10.2017 | Director, Joyce & Mervyn Leach Trust Trustee Company Limited | Nil, Trustee |
| | 31.10.2017 | Trustee, The Julie Rickman Trust | Nil, own trust |
| | 31.10.2017 | Trustee, M R & S L Burnell Trust | Nil, sister's family trust |
| | 23.10.2018 | Shareholder and Director, Barr Burgess & Stewart Limited | Accounting services |
| | | *Specified contractor for JER Limited in respect of:* | |
| | 31.10.2017 | H G Leach Company Limited to termination | Nil, Quarry and Contracting. |
| **Gilbert TAURUA** | 05.12.2018 | Prostate Cancer Outcomes Registry (New Zealand) - Steering Committee | Nil |
| | 05.04.2019 | South Island HepC Steering Group | Nil |
| | 03.05.2019 | Member of WellSouth's Senior Management Team | Reports to Chief Executives of SDHB and WellSouth. |
| **Gail THOMSON** | 19.10.2018 | Member Chartered Management Institute UK | Nil |

**SOUTHERN DISTRICT HEALTH BOARD**
**INTERESTS REGISTER**
**EXECUTIVE LEADERSHIP TEAM**

| Employee Name | Date of Entry | Interest Disclosed | Nature of Potential Interest with Southern District Health Board |
|---|---|---|---|
| **Jane WILSON** | 16.08.2017 | Member of New Zealand Nurses Organisation (NZNO) | No perceived conflict. Member for the purposes of indemnity cover. |
| | 16.08.2017 | Member of College of Nurses Aotearoa (NZ) Inc. | Professional membership. |
| | 16.08.2017 | Husband - Consultant Radiologist employed fulltime by Southern DHB and currently Clinical Leader Radiology, Otago site. | Possible conflict with any negotiations regarding new or existing radiology service contracts.<br>Possible conflict between Southern DHB and SMO employment issues. |
| | 16.08.2017 | Member National Lead Directors of Nursing and Nurse Executives of New Zealand. | Nil |

# Southern District Health Board

## Minutes of the Hospital Advisory Committee Meeting held on Wednesday, 29 May 2019, commencing at 10.45 am in the Board Room, Southland Hospital Campus, Invercargill

| | | |
|---|---|---|
| **Present:** | Mrs Kathy Grant | Commissioner |
| | Mrs Jean O'Callaghan | Deputy Commissioner |
| | Dr David Perez | Deputy Commissioner |
| | Mr Richard Thomson | Deputy Commissioner |
| | Ms Odele Stehlin | Committee Member |
| **In Attendance:** | Mr Chris Fleming | Chief Executive Officer |
| | Mr Patrick Ng | Executive Director Specialist Services |
| | Mrs Lisa Gestro | Executive Director Strategy, Primary & Community |
| | Dr Nicola Mutch | Executive Director Communications |
| | Mr Gilbert Taurua | Chief Māori Health Strategy & Improvement Officer |
| | Mrs Jane Wilson | Chief Nursing & Midwifery Officer |
| | Ms Jeanette Kloosterman | Board Secretary (by videoconference) |

### 1.0 APOLOGIES

An apology was received from Dr Nigel Millar, Chief Medical Officer.

### 2.0 DECLARATION OF INTERESTS

The Interests Registers were circulated with the agenda (tab 2) and received at the preceding meeting of the Disability Support and Community & Public Health Advisory Committees.

### 3.0 PREVIOUS MINUTES

***Recommendation:***

**"That the minutes of the meeting held on 27 March 2019 be approved and adopted as a true and correct record."**

***Agreed***

### 4.0 MATTERS ARISING/REVIEW OF ACTION SHEET

The Committee received the action sheet (tab 4).

### 5.0 PROVIDER ARM MONITORING AND PERFORMANCE REPORTS

**Executive Director Specialist Services' Report** (tab 5.1)

The Executive Director Specialist Services (EDSS)' monthly report was taken as read and the EDSS highlighted the following items.

- *Elective Delivery* - It was expected that at year-end elective delivery would be 100-200 caseweights within plan. If the same formula continued to be applied, the EDSS was confident the following year's production plan would be achieved.

  The Commissioner Team extended their congratulations to staff for attaining this challenging result.

- *Elective Service Performance Indicator (ESPI) Delivery* - A lot of work had been put into recovering performance against ESPI 2 targets, however this had been adversely affected by strike action. The Urology Service was expected to be compliant by the end of June and ENT by August 2019, however achieving ESPI compliance in Orthopaedics and General Surgery in Dunedin and Orthopaedics in Invercargill was more complex.

- *Mental Health Facilities* - A report on mental health facilities would be submitted to the next meeting.

- *Radiology* - The IANZ accreditation review had commenced that morning.

- *Termination of Pregnancy (ToP) Service* - Plans for the ToP facility had been completed and the next step was to tender the work.

Management then answered questions on the acute readmission rate.

The Committee requested information on the feedback received from patients on the outbound calling to complete 'impact on quality of life' assessments.

**Financial Performance Summary** (tab 5.3)

The EDSS presented the April 2019 financial report for Specialist Services and explained the variances in revenue, SMO costs, and the nursing expenditure that were driving the result.

***Recommendation**:*

**"That the reports be noted."**

***Agreed***

**CONFIDENTIAL SESSION**

**At 11.10 am it was resolved that the Hospital Advisory Committee move into committee to consider the agenda items listed below.**

| *General subject:* | *Reason for passing this resolution:* | *Grounds for passing the resolution:* |
|---|---|---|
| 1. Previous Public Excluded Meeting Minutes | As set out in previous agenda. | As set out in previous agenda. |
| 2. Dunedin Hospital Redevelopment | To allow activities and negotiations (including commercial negotiations) to be carried on without prejudice or disadvantage. | Sections 9(2)(i) and 9(2)(j) of the OIA. |

Confirmed as a true and correct record:

Commissioner: _____

Date: _____

# Southern District Health Board
# HOSPITAL ADVISORY COMMITTEE
# ACTION SHEET

## As at 29 May 2019

| DATE | SUBJECT | ACTION REQUIRED | BY | STATUS | EXPECTED COMPLETION DATE |
|---|---|---|---|---|---|
| Nov 2018 | **Mental Health** (Minute item 5.0) | Consultation on the discussion paper on MH facilities to be widened. | EDSS | ~~The report has been tabled with the Mental Health and Addictions Network Leadership Group. Initial discussion with MHAID GM and EDSS and members will feedback over the next month. Feedback will be collated into a consolidated report for the Executive and presented along with the report~~.<br><br>A paper on the mental health facilities at Wakari hospital was completed recently. The level of investment required to bring the facilities up to contemporary practice standards is significant and we are working through the most appropriate next steps. | ~~July 2019~~<br><br>To be determined |
| Jan 2019 | **Clerical and Administration Transformation** (Minute item 5.0) | Progress reports to be provided. | EDSS | With other competing priorities this initiative is yet to get underway fully.<br><br>The next phase is the workshop scheduled for 24, 25 July. | ~~July 2019~~<br><br>September 2019 |

| DATE | SUBJECT | ACTION REQUIRED | BY | STATUS | EXPECTED COMPLETION DATE |
|---|---|---|---|---|---|
| May 2019 | **ESPI Compliance** (Minute item 5.0) | Information to be provided on feedback received from patients on outbound calling to complete 'impact on quality of life' assessments. | EDSS | The patient feedback has been favourable with most patients contactable either by phone, text or email and their referrals progressing without significant delay. No complaints or concerns have been received from the patients contacted. Some patients are completing the form via the link provided themselves. | |

# SOUTHERN DISTRICT HEALTH BOARD

| | | | |
|---|---|---|---|
| **Title:** | **Executive Director of Specialist Services Report** | | |
| **Report to:** | Hospital Advisory Committee | | |
| **Date of Meeting:** | 31 July 2019 | | |
| **Summary:**<br>Considered in these papers are:<br>▪ June 2019 DHB activity. | | | |
| **Specific implications for consideration** (financial/workforce/risk/legal etc): | | | |
| **Financial:** | Yes | | |
| **Workforce:** | Yes | | |
| **Other:** | No | | |
| **Document previously submitted to:** | Not applicable, report only provided for the Hospital Advisory agenda. | **Date:** | |
| **Approved by:** | | **Date:** | |
| **Prepared by:**<br>Executive Director of Specialist Services<br><br>**Date:** 12/07/2019 | | **Presented by:**<br>Patrick Ng<br>Executive Director of Specialist Services | |
| **RECOMMENDATION:**<br>**That the Hospital Advisory Committee receive the report.** | | | |

**Executive Director of Specialist Services (EDSS) Report – June 2019**

**Recommendation**

That the Hospital Advisory Committee notes this report.

## *1. Year End*

With our year ending on the 30th of June it is worth reflecting on successes for 2018-19.

- Elective delivery.
- ESPI recovery.
- Radiology accreditation.
- Catheter laboratory implementation.

**Elective Delivery**
We slightly overachieved the elective case weight target (of 17,298 c.w.) by approximately 140 case weights. This is a notable achievement when you consider that over a week of elective activity was lost during the year (comprising of about 300 - 400 c.w.) due to strike activity.

Fundamentally, filling January elective lists, improving the critical care nurse resourcing of the ICU (which has led to lower average bed cancellations for cardiothoracic cases), improved booking practices and an outsourcing budget have all led to a sustainable model whereby elective delivery can be achieved in a reasonably formulaic manner.

**Elective Services Performance Indicator (ESPI) Recovery**
We made good initial progress on the key services which are part of the recovery programme. Over a 3 month period we have reduced the ESPI 2 breaches in Urology Dunedin from circa 90 to circa 18, ENT Dunedin from circa 180 to 40, and General Surgery Dunedin from circa 200 to circa 65. We continue to have circa 200 breaches in Orthopaedics Dunedin, but have successfully implemented the Ministry of Health prioritisation tool and are accepting less first specialist appointments on the basis that we do not have the capacity to accept FSA's at the level they have historically been accepted. We have managed to get some initial traction with Orthopaedics Southland, where we have reduced breaches from circa 360 to circa 260 via wait list clean-up and other corrective actions. The recovery programme continues to be a difficult programme and unfortunately, following on from the RDA strikes a number of the Medicine, Women and Children services now have breaches which are masking some of the progress made in surgery. We now need to consider a broader ESPI recovery programme that expands to include some of these medicine, women and children services.

**Radiology Accreditation**
We were very pleased with the recommendation from the IANZ review team that the service is granted accreditation. The review team were very positive about the changes that have been made to enable the radiology service to function in a sustainable manner, including the permanent CT evening shift, the investment in new RIS software and the investment in facilities which now enables the core radiology service to have prompt attention from building and property as required (as the facilities are now all accessible below the old ceiling).

**Cardiology Cath Lab**
Earlier this calendar year an investment of circa $1.3m was approved for the replacement of the old Cath lab, which was over 10 years old and was starting to become unreliable. The replacement project commenced in early June and was completed on time by early July. Given the challenges with other facility related projects which must deal with the current hospital facilities, this project went very smoothly and the team are very pleased with their new equipment.

## *2. Operational Overview Highlights*

**Emergency Departments**
The Emergency Departments at both Dunedin and Southland hospitals have been under considerable pressure lately. At Dunedin hospital a 'fit to sit' initiative will soon be implemented whereby additional chairs will be introduced which will help to create additional capacity for the department when the department is under extreme pressure, such as when we have winter peaks.

The Southland Emergency Department also suffers from physical space constraints when it is operating at peak and we are exploring options that would allow the physical capacity of the ED to be expanded to cope with peaks in demand in a similar manner to 'fit to sit' in Dunedin for consideration in capital and operational planning in the future.

**Elective Surgical Delivery**
One of the key initiatives that allowed us to exceed the elective surgery target over the financial year was the processes that we put in place to ensure that January theatre lists are taken up and utilised as much as possible. We are currently in the process of running the same processes to ensure that by the time we get to December we will have a clear pathway towards the maximisation of theatre lists in January.

Options for increasing acute operating capacity (whilst allowing us to remain within our overall budget are currently being explored and will be worked up into an overall proposal in the near future.

**ESPI Recovery**
The wait list for those who have been confirmed for an outpatient clinic (first specialist appointment, FSA) has been high in a number of services, particularly the surgical specialties. A considerable amount of effort has been put into reducing the wait lists in

key services such as general surgery in Dunedin, urology in Dunedin, ENT in Dunedin, orthopaedics in Dunedin and orthopaedics in Southland.

One of these initiatives has been the implementation of the Ministry of Health's 'prioritisation' tool, which enables us to ensure that those whom we are accepting for an appointment are the highest priority, and that we are safely accepting appointments at the level of capacity which is available from the service.

We have made good progress in the surgical specialities, but unfortunately, since the RDA strikes earlier this year our wait lists have grown in a number of our medicine, women and children specialties. We are looking at applying the same principles that have been applied in surgery to manage the wait list volumes in these other specialties as well.

**Neuro Surgery**
The General Manager and Medical Director have worked to establish robust processes for ensuring that the service is covered from the qualified neuro surgeon whom we have in the service and with additional cover from Christchurch as required. The locum identified for a July start has been delayed as the medical councils' requirements are worked through and the exercise to identify a second locum neuro surgeon is ongoing. In the meantime, process is in place to ensure that the service is covered by Christchurch when call cover cannot be provided in Dunedin.

**Radiation Oncology**
Our normal 'forward load' on the First Specialist Appointment (FSA) wait list is 50 patients, but in April and May the wait list unexpectedly grew to circa 150 patients. To address the unanticipated growth we have instituted a recovery programme for the 100 extra referrals we need to see. The initial part of the programme involved additional capacity being provided by the clinical leader in the service, which has seen the 100 backlog reduce to 85. A Canterbury clinician will come down and run 2 weeks' worth of extra clinics. We anticipate that between 40-50 patients may be able to be seen via these extra clinics. Additional weekend clinics will then be run to return the overall wait list back to normally indicated volumes of having 50 patients on the wait list. We are working closely with the Ministry of Health to ensure we meet our target obligations as soon as possible.

**Mental Health**
A paper on the mental health facilities at Wakari hospital was completed recently. The level of investment required to bring the facilities up to contemporary practice standards is significant and we are working through the most appropriate next steps.

Raise Hope, Hāpai Te Tūmanko has undergone a substantial review this year. This refresh has been led by the Southern Mental Health and Addiction Network. This aligns with He Ara Oranga, the report of the Government Inquiry into Mental Health and Addiction and reflects a whole of system plan with a strong wellbeing focus. Establishing closer relationships within the sector and with other government organisations and communities have been a feature of this last year.

**HEALTH TARGETS**

| Indicator | Last Quarter – MOH | Current Quarter To Date Estimate | Actions if falling short of target |
|---|---|---|---|
| **Shorter Stays in Emergency Department – Target 95%** | 90% | 84% | Valuing patient time is looking at initiatives which will improve ED flow and hence ED KPI performance. |
| **Colonoscopy Urgent – 85%**<br><br>**Colonoscopy Non Urgent – 70%**<br><br>**Colonoscopy Surveillance – 70%** | 86%<br><br>82%<br><br>70% | 88%<br><br>93%<br><br>72% | |
| **Coronary Angiograms**<br><br>**95%** | | 100% | |
| **Radiology**<br><br>**Diagnostic indicator CT, 95% of patients referred for elective CT have report distributed within 42 days** | January 63.8%<br><br>February 75.1%<br><br>March 71.8% | April 64.9%<br><br>May 64.3%<br><br>June 64.5% | The result for June shows that performance has continued at the same level as seen throughout the quarter.<br><br>A month long trial of an MIT led non-contrast session in CT at Dunedin Hospital will be delivered in July 2019. This is expected to complete 80 relatively low priority but long wait exams and should have a marked effect on the wait list. |
| **Radiology**<br><br>**Diagnostic indicator MRI, 85% of patients referred for elective MRI have report distributed within 42 days** | January 38.16%<br><br>February 2 45%<br><br>March: 56.4% | April 54.9%<br><br>May 48%<br><br>June 50.1% | A small improvement in performance occurred in June. Although additional sessions continue to occur at Dunedin, this has not had the anticipated impact on the MoH target. Wait times for some patient categories have however improved. |

| | | | |
|---|---|---|---|
| **Faster Cancer Treatment (FCT) – Target 90% of patients referred with a high suspicion of cancer and triaged as urgent receive their first definitive cancer treatment within 62 days of the date of receipt of referral (as of July 2017).** | | N/A | |

| | |
|---|---|
| **Elective Surgical Discharges - Annual target 13,502** | **13,372** Actual YTD vs **13,502** Plan YTD, as at June 2019 |

Refer to page 7 - Caseweight and discharge volumes graph.

5.2 - KPI Summary, Discharges and CWD volumes

Patrick Ng, Executive Director of Specialist Services

# Hospital Advisory Committee KPI Summary - Discharges and CWD Volumes

## Elective Surgical Discharges June 2019

Elective Surgical Discharge Activity - Southern DHB population

| | June 2019 | | | | Year to Date | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|
| | Actual | Plan | Variance | Var % | Actual | Plan | Variance | Var % | Plan |
| SDHB population treated in-house | 833 | 913 | (80) | (9%) | 10,319 | 10,875 | (556) | (5%) | 10,875 |
| SDHB population treated by other DHBs | 42 | 42 | 0 | - | 399 | 504 | (105) | -21% | 506 |
| SDHB population outsourced | 50 | 46 | 4 | 9% | 937 | 554 | 383 | 69% | 552 |
| **SURGICAL ELECTIVE DISCHARGES** | **925** | **1,001** | **(76)** | **(8%)** | **11,655** | **11,933** | **(278)** | **(2%)** | **11,933** |
| Surgical Arranged Admissions | 92 | 79 | 13 | 16% | 1,054 | 893 | 161 | 18% | 893 |
| Surgical Discharges from a Non-Surgical | 12 | 30 | (18) | (60%) | 363 | 350 | 13 | 05 | 350 |
| Surgical Discharges from a Non-Surgical | 16 | 28 | (12) | (43%) | 300 | 326 | (26) | (8%) | 326 |
| **HEALTH TARGET DISCHARGES** | **1,045** | **1,138** | **(93)** | **(8%)** | **13,372** | **13,502** | **(130)** | **(1%)** | **13,502** |

## Elective Surgical Caseweights June 2019

Elective Surgical Caseweights Activity - Southern DHB population

| | June 2019 | | | | Year to Date | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|
| | Actual | Plan | Variance | Var % | Actual | Plan | Variance | Var % | Plan |
| SDHB population servcie provider | 1,300 | 1,318 | (18) | (1%) | 15,589 | 15,709 | (120) | (1%) | 15,709 |
| SDHB population treated by other DHBs | 132 | 132 | 0 | - | 1,280 | 1,590 | (310) | (20%) | 1,590 |
| SDHB population outsourced | 34 | 82 | (48) | (59%) | 1,391 | 1,012 | 379 | 37% | 1,012 |
| **SURGICAL ELECTIVE CWD** | **1,466** | **1,532** | **(66)** | **(4%)** | **18,259** | **18,311** | **(52)** | **0%** | **18,311** |

(1) IDF Outflow volumes are the latest available for July-May. June IDF Outflows are based on the planned numbers.

# Southern DHB
## Hospital Advisory Committee - KPIs June 2019 Data

| Patient Safety and Experience - Hospital Health Check | | | | | |
|---|---|---|---|---|---|
| | Prior year | Actual | Plan / Target | Variance 'v Plan /Target | Trend/rating |
| 3 - Improved access to Elective Surgical Services monthly (population based) Discharges Health Target | 1,112 | 1,045 | 1,138 | -93 (-8.2%) | |
| 3a - Improved access to elective surgical services ytd (population based) Discharges Health Target | 13,131 | 13,372 | 13,502 | -130 (-1%) | |

| Patient Safety and Experience - Performance Report | | | | | |
|---|---|---|---|---|---|
| *Monthly* | Prior year | Actual | Plan / Target | Variance 'v Plan /Target | Trend/ rating |
| Faster Cancer treatment; 90% of patients to receive their first cancer treatment within 62 days of being referred with a high suspicion of cancer seen within 2 weeks *Reported in arrears | 80.0% | P | 90.0% | NA | |
| 11 - Reduced stay in ED | 88.4% | 85.9% | 95.0% | -9.1% | |
| 15 - Acute Readmission Rates (Note 1) | 9.9% | 12.3% | 9.9% | -2.4% | |

Key -

Meeting target or plan

Underperforming against target or plan but within thresholds or underperforming but delivering against agreed recovery plan

Underperforming and exception report required with recovery plan

Note 1 Awaiting new definition from Ministry

Note 2 DOSA rates excludes Cardiac/Cardiology

Note 3 Using SDHB historic definition not the one reported on by the MoH

Note 4 Prior year figures restated to include Arranged admissions in Elective data rather than Acute

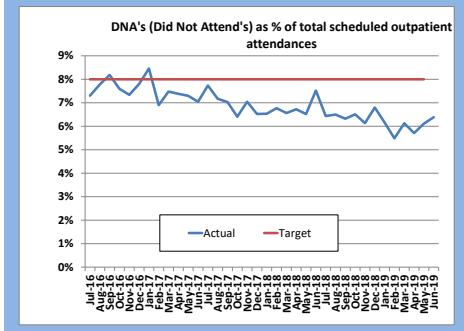
P = Pending

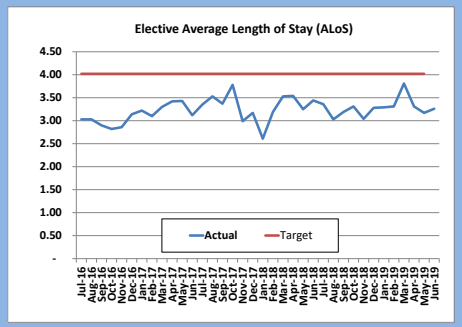
| Cost/Productivity - Hospital Health Check | | | | | |
|---|---|---|---|---|---|
| *Monthly* | Prior year | Actual | Plan / Target | Variance 'v Plan /Target | Trend/rating |
| 1 - Waits >4 months for FSA (ESPI 2) | 702 | 1085 | 0 | -1085 | |
| 2 - Treatment >4 months from commitment to treat (ESPI 5) | 456 | 592 | 0 | -592 | |
| % of accepted referrals for CT scans receiving procedures within 42 days | 80.2% | 65.0% | 95.0% | -30.0% | |
| % of accepted referrals for MRI scans receiving procedures within 42 days | 36.5% | 50.0% | 90.0% | -40.0% | |
| % accepted referrals for Coronary Angiography within 90 days | 85.0% | 100.0% | 95.0% | 5.0% | |
| 4a - All Elective caseweights versus contract (monthly provider arm delivered) (Note 4) | 2,067 | 1,793 | 1,790 | 3 (0.2%) | |
| 4b - All Elective caseweights versus contract (ytd provider arm delivered) (Note 4) | 22,677 | 23,787 | 21,231 | 2556 (12%) | |
| 7a - Acute caseweights versus contract (monthly provider arm delivered) (Note 4) | 2,497 | 2,528 | 2,574 | -46 (-1.8%) | |
| 7b - Acute caseweights versus contract (ytd provider arm delivered) (Note 4) | 32,512 | 32,795 | 30,973 | 1822 (5.9%) | |

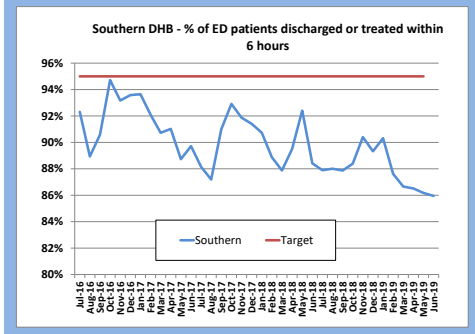
| Cost/Productivity - Performance Report | | | | | |
|---|---|---|---|---|---|
| *Monthly* | Prior year | Actual | Plan / Target | Variance 'v Plan /Target | Trend/ rating |
| 5 - Reduction in DNA rates | 7.5% | 6.4% | 8.0% | 1.6% | |
| 9 - ALoS (elective) (Note 3) | 3.44 | 3.26 | 4.02 | 0.76 (18.9%) | |
| ALoS (Acute inpatient) (Note 3) | 3.97 | 3.74 | 4.25 | 0.51 (12%) | |
| DOSA (Note 2) | 94.9% | 93.2% | 95.0% | -1.8% | |
| | | | | | |

# Southern DHB
## Hospital Advisory Committee - Performance Report June 2019 Data

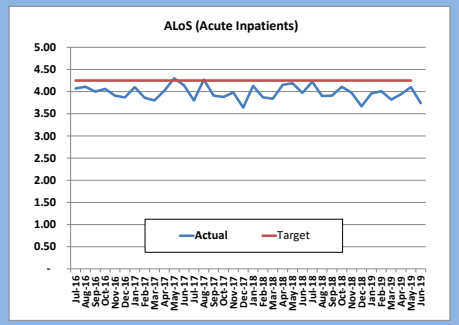
### Elective Care

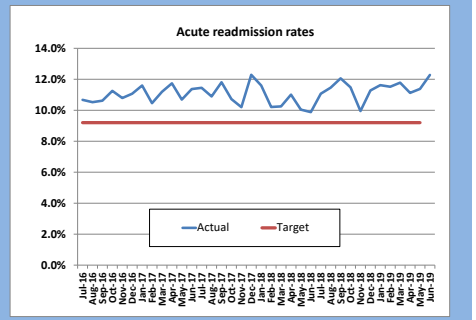



### Acute Care

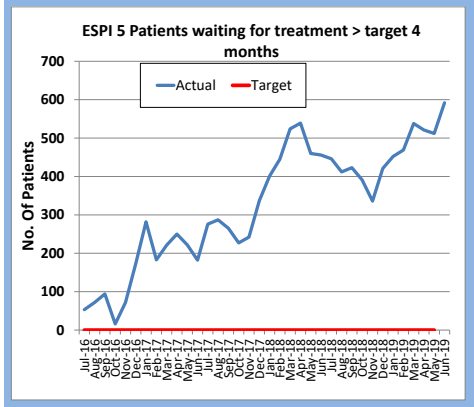


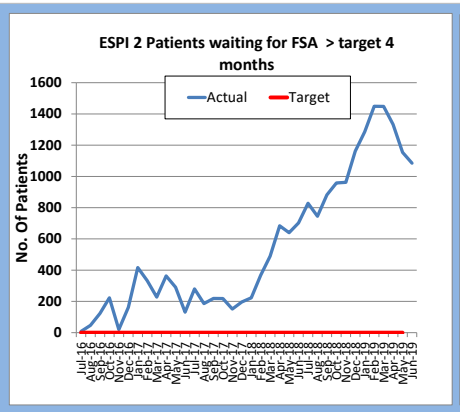



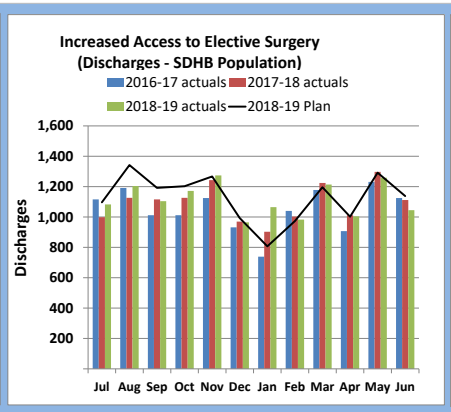
**Southern DHB**

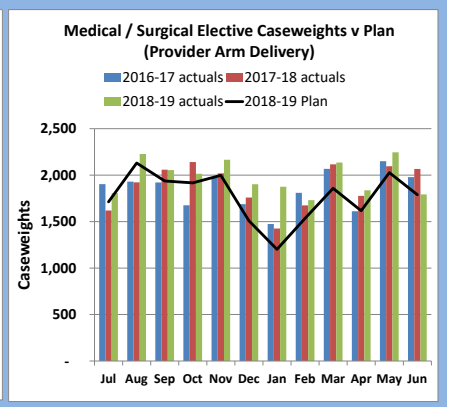
**Hospital Advisory Committee - Healthcheck Report June 2019 Data**

## Elective Care

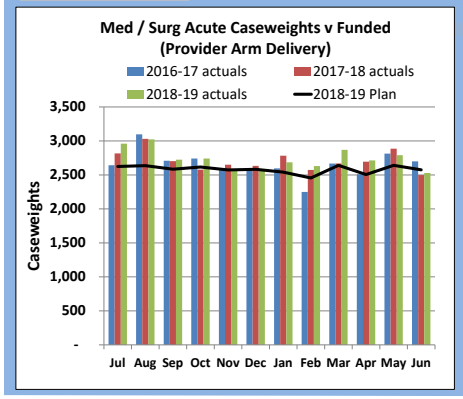



## Acute Care



# SOUTHERN DISTRICT HEALTH BOARD

| | | | |
|---|---|---|---|
| **Title:** | **FINANCIAL REPORT** | | |
| **Report to:** | Hospital Advisory Committee | | |
| **Date of Meeting:** | 31 July 2019 | | |
| **SUMMARY:**<br>The issues considered in this paper are:<br>▪ June 2019 financial position. | | | |
| **SPECIFIC IMPLICATIONS FOR CONSIDERATION** (FINANCIAL/WORKFORCE/RISK/LEGAL ETC.): | | | |
| **FINANCIAL:** | As set out in report | | |
| **WORKFORCE:** | No specific implications | | |
| **OTHER:** | N/A | | |
| **DOCUMENT PREVIOUSLY SUBMITTED TO:** | Not applicable, report submitted directly to Hospital Advisory Committee. | **DATE:** | |
| **APPROVED BY CHIEF EXECUTIVE OFFICER:** | | **DATE:** | |
| **PREPARED BY:**<br>Grant Paris<br>Management Account – Clinical Analysis<br>**DATE:** 18/07/2019 | | **PRESENTED BY:**<br>Patrick Ng<br>Executive Director of Specialist Services | |
| **RECOMMENDATION:**<br>**That the Hospital Advisory Committee note the report.** | | | |

# SOUTHERN DHB FINANCIAL REPORT – Commissioners Summary for HAC

**Financial Report for:** **June 2019**
**Report Prepared by:** **Grant Paris**
**Management Accountant**
**Date:** **18 July 2019**

## Overview

### Draft Results Summary for Specialist Services

Specialist Services encompasses the delivery of services across Mental Health, Surgical and Radiology, Medicine, Women's and Children's and Operations at SDHB at Dunedin, Wakari and Invercargill Hospitals. It excludes support services such as Building and Property, Information Technology, Finance and SDHB Management.

| Month | | | | Year To Date | | |
|---|---|---|---|---|---|---|
| Actual $000 | Budget $000 | Variance $000 | | Actual $000 | Budget $000 | Variance $000 |
| 51,482 | 50,402 | 1,080 | Revenue | 617,086 | 605,215 | 11,871 |
| 28,297 | 25,055 | (3,242) | Less Personnel Costs | 322,418 | 301,723 | (20,695) |
| 20,242 | 18,271 | (1,971) | Less Other Costs | 229,843 | 217,769 | (12,074) |
| **2,942** | **7,077** | **(4,135)** | **Net Surplus / (Deficit)** | **64,825** | **85,723** | **(20,898)** |

For the month of June 2019 the Specialist Services had a surplus of $2,942k, which is $4,135 unfavourable to budget. As at year end, Specialist Services surplus is $64,825k which is $20,898k unfavourable to budget.

**June 2019 Result:**

The full year 'production plan' target of 17,298 case weights was over achieved by approximately 220 case weights, which helped to partially offset under delivery against the funder 'population view' target. The production plan reflects our delivery of surgery in our own facilities (including outsourcing and outplacement) both for our own population and also for other populations (inter district flow (IDF) inflows).

The population target was slightly under delivered (by 52 case weights against a full year plan of 18,311 case weights). This target includes the delivery of surgery to our population by other DHBs (IDF outflows). However, because we over delivered in the ambulatory initiative, which is included in the elective funding, 100% of elective revenue has been earned and is recognised.

The production plan was 84 case weights unfavourable for the month of June 2019. The population target was 66 case weights unfavourable in June 2019. This reflects the planned wind down of outsourcing which commenced earlier in the year.

| | Elective Initiative Caseweights Activity | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | June 2019 | | | | Year to Date | | | | Annual |
| | Actual | Plan | Variance | Var % | Actual | Plan | Varianc | Var % | Plan |
| SDHB service provider | 1,365 | 1,449 | (84) | (6%) | 17,519 | 17,299 | 220 | 1% | 17,299 |
| Less IDF Inflows | 31 | 49 | (18) | (37%) | 539 | 578 | (39) | (7%) | 578 |
| Plus IDF Ouflows* | 132 | 132 | 0 | - | 1,280 | 1,590 | (310) | (20%) | 1,590 |
| **Total Elective Initiative Population View** | **1,466** | **1,532** | **(66)** | **(4%)** | **18,259** | **18,311** | **(52)** | **(0.3%)** | **18,311** |

(1) IDF Outflow volumes are the latest available for July-May. June IDF Outflows are based on the planned numbers.

## Statement of Financial Performance

| Monthly Actuals $000s | Monthly Budget $000s | Monthly Variance $000s | Monthly Variance FTE | | Year to date Actuals $000s | Year to date Budget $000s | Year to date Variance $000s | Year to date Variance FTE |
|---|---|---|---|---|---|---|---|---|
| | | | | **REVENUE** | | | | |
| | | | | **Government & Crown Agency Sourced** | | | | |
| 8,798 | 8,492 | 306 | | MoH Revenue | 104,889 | 101,902 | 2,987 | |
| 40 | 40 | 0 | | IDF Revenue | 482 | 482 | 0 | |
| 793 | 811 | (18) | | Other Government | 8,629 | 9,107 | (478) | |
| **9,632** | **9,343** | **289** | | **Total Government & Crown** | **113,999** | **111,490** | **2,509** | |
| | | | | **Non Government & Crown Agency Revenue** | | | | |
| 130 | 121 | 9 | | Patient related | 3,883 | 2,820 | 1,063 | |
| 222 | 196 | 26 | | Other Income | 2,142 | 2,355 | (213) | |
| **352** | **317** | **35** | | **Total Non Government** | **6,025** | **5,175** | **850** | |
| 41,498 | 40,742 | 756 | | Internal Revenue | 497,062 | 488,550 | 8,512 | |
| **51,482** | **50,402** | **1,080** | | **TOTAL REVENUE** | **617,086** | **605,215** | **11,871** | |
| | | | | **EXPENSES** | | | | |
| | | | | **Workforce** | | | | |
| | | | | **Senior Medical Officers (SMO's)** | | | | |
| 6,769 | 6,633 | (136) | (3) | Direct | 79,309 | 74,146 | (5,163) | 1 |
| 804 | 292 | (512) | | Indirect | 4,561 | 3,705 | (856) | |
| 559 | 223 | (336) | | Outsourced | 5,889 | 4,755 | (1,134) | |
| **8,132** | **7,148** | **(984)** | **(3)** | **Total SMO's** | **89,759** | **82,606** | **(7,153)** | **1** |
| | | | | **Registrars / House Officers (RMOs)** | | | | |
| 3,895 | 3,616 | (279) | (0) | Direct | 43,478 | 42,193 | (1,285) | (3) |
| 175 | 252 | 77 | | Indirect | 2,837 | 2,915 | 78 | |
| 69 | 23 | (46) | | Outsourced | 1,193 | 305 | (888) | |
| **4,139** | **3,891** | **(248)** | **(0)** | **Total RMOs** | **47,508** | **45,414** | **(2,094)** | **(3)** |
| **12,271** | **11,039** | **(1,232)** | **(4)** | **Total Medical costs (incl outsourcing)** | **137,267** | **128,020** | **(9,247)** | **(2)** |
| | | | | **Nursing** | | | | |
| 11,377 | 9,727 | (1,650) | (84) | Direct | 129,012 | 120,737 | (8,275) | (40) |
| 15 | (99) | (114) | | Indirect | 81 | (983) | (1,064) | |
| 4 | 5 | 1 | | Outsourced | 122 | 64 | (58) | |
| **11,396** | **9,633** | **(1,763)** | **(84)** | **Total Nursing** | **129,215** | **119,818** | **(9,397)** | **(40)** |
| | | | | **Allied Health** | | | | |
| 2,592 | 2,571 | (21) | (6) | Direct | 31,772 | 31,341 | (431) | 2 |
| 103 | 36 | (67) | | Indirect | 959 | 611 | (348) | |
| 84 | 1 | (83) | | Outsourced | 949 | 9 | (940) | |
| **2,779** | **2,607** | **(172)** | **(6)** | **Total Allied Health** | **33,681** | **31,961** | **(1,720)** | **2** |
| | | | | **Support** | | | | |
| 163 | 165 | 2 | 1 | Direct | 1,919 | 2,001 | 82 | 2 |
| 3 | 1 | (2) | | Indirect | 12 | 13 | 1 | |
| 0 | 0 | 0 | | Outsourced | 0 | 0 | 0 | |
| **167** | **166** | **(1)** | **1** | **Total Support** | **1,931** | **2,014** | **83** | **2** |
| | | | | **Management / Admin** | | | | |
| 1,678 | 1,588 | (90) | (17) | Direct | 20,188 | 19,641 | (547) | (10) |
| 1 | 17 | 16 | | Indirect | 70 | 206 | 136 | |
| 6 | 5 | (1) | | Outsourced | 66 | 63 | (3) | |
| **1,685** | **1,610** | **(75)** | **(17)** | **Total Management / Admin** | **20,324** | **19,910** | **(414)** | **(10)** |
| **28,297** | **25,055** | **(3,242)** | **(110)** | **Total Workforce Expenses** | **322,418** | **301,723** | **(20,695)** | **(48)** |
| 3,092 | 2,477 | (615) | | **Outsourced Clinical Services** | 33,632 | 30,091 | (3,541) | |
| 0 | 0 | 0 | | **Outsourced Corporate / Governance Services** | 0 | 0 | 0 | |
| 0 | 0 | 0 | | **Outsourced Funder Services** | 0 | 0 | 0 | |
| 7,047 | 6,217 | (830) | | **Clinical Supplies** | 82,032 | 74,215 | (7,817) | |
| 1,397 | 998 | (399) | | **Infrastructure & Non-Clinical Supplies** | 13,247 | 12,128 | (1,119) | |
| | | | | **Provider Payments** | | | | |
| 7,877 | 7,575 | (302) | | Mental Health | 91,790 | 90,830 | (960) | |
| | | | | **Non Operating Expenses** | | | | |
| 799 | 1,003 | 204 | | Depreciation | 9,102 | 10,505 | 1,403 | |
| 0 | 0 | 0 | | Capital charge | 0 | 0 | 0 | |
| 0 | 0 | 0 | | Interest | 9 | 0 | (9) | |
| **20,242** | **18,271** | **(1,971)** | | **Total Non Personnel Expenses** | **229,843** | **217,769** | **(12,074)** | |
| **48,540** | **43,325** | **(5,215)** | | **TOTAL EXPENSES** | **552,261** | **519,492** | **(32,769)** | |
| **2,942** | **7,077** | **(4,135)** | | **Net Surplus / (Deficit)** | **64,825** | **85,723** | **(20,898)** | |

## Revenue

### Ministry of Health (MoH) Revenue

MoH revenue is $306k favourable to budget for the month and $2,987k favourable at year end. The main contributors are detailed below:

| Category | Source | Monthly Variance $000s | Year-end Variance $000s | Comment |
|---|---|---|---|---|
| **MoH Revenue** | | | | |
| Personal Health | Bowel Screening | (4) | 455 | Phasing of funding for service establishment & operation + catch up revenue for 17/18 |
| | Safe staffing | 200 | 1,089 | Funding in accordance with NZNO MECA for recruitment of additional Nursing FTE. |
| | Donor & Organ donation services | 0 | 153 | |
| Public Health | Cervical Screening / Colposcopy | 10 | (46) | |
| Devolved Funding – subcontracts | Mental Health Pay Equity | 233 | 1,242 | Pay Equity funding for workers in NGOs delivering Mental Health services. |
| Disability Support Services | Fee for Service Beds | 0 | 198 | Mental Health usage of fee for service beds |
| Clinical Training | | (172) | (197) | Adjustment based on personnel of training charged to eligible training allowances. |
| Other | | 39 | 93 | |
| **Total** | | **306** | **2,987** | |

### Other Government Revenue.

Other Government revenue was $18k unfavourable in June 2019 driven by ACC revenue being $132k less than budget. (the majority of this was offset by additional haemophiliac rebate). Year-end revenue is $478k unfavourable to budget also driven by lower than budgeted ACC revenue.

**Patient related revenue.** On budget for the month and $1.06m favourable at year end driven by non-resident patient revenue. The busy tourist season and increase in cruise ships into the region resulted in non-resident patient revenue being $1,083k favourable at year end.

### Internal Revenue

Internal revenue was $756k favourable to budget for the month, driven by;

- $252k – NZNO Nursing MECA settlement funding (offset to expenditure),
- $306k – PCT (pharmaceutical cancer treatments) funding (offset to expenditure),
- $16k - Community Pharmaceutical revenue above budgeted levels (offset to expenditure),
- $96k – PSA Allied & Mental Health Public Health MECA settlement funding.

Year-to-date revenue is $8,512k favourable which is consistent with the above monthly variances.

**Workforce Costs**
Workforce costs (personnel plus outsourcing) were $3,242k unfavourable to budget in June 2019 and $20,695k unfavourable for the year. Operationally FTE were 110 unfavourable to budget in June 2019 and 48 FTE unfavourable for the year.

**Senior Medical Officers (SMOs)**
SMOs direct costs were $136k unfavourable and 3 FTE unfavourable for the month.

The drivers of the monthly variance include:

- Training (incl. CME)/Study leave impacted largely by an annual revaluation of the CME leave hour's liability.
- Allowances were higher reflecting a combination of under budgeting the quantum for 2018/2019 and an increase in allowances paid (over and above the flow-on effect from MECA increases) such as additional call hours and additional sessions;
- Penal payments for night rates mainly in ICU, ED and Anaesthesia,
- Leave entitlements (annual leave earned, statutory leave and sick leave) were higher than anticipated whereas annual leave taken was less than plan.
- Year-end adjustments including the unpaid day's accrual, partially offset the impact of the items above.

Year-end direct costs were $5,163k unfavourable to budget. This includes:

- $1,971k unfavourable variance in overtime due to Industrial Action Payments (cover for RMO strikes)
- $1,554k unfavourable leave variances
- $2,855k unfavourable allowances to budget driven by the same reasons as per the monthly variance
- $1,217k favourable variances including the unpaid day's accrual of $845k.

The SMO indirect costs comprises unfavourable variances in Parental leave, Recruitment and Relocation costs associated with SMO recruiting. There is a $369k unfavourable variance in Course Fees, Conferences and Study due to the annual revaluation of CME liability, which is adjusted at year end.

Outsourced costs were $336k unfavourable for the month related to:

- $173k unfavourable in Emergency & Medicine Southland Service ($63k in Gastroenterology / Bowel Screening for vacancies), $106k cover for leave (Southland General Medicine, Respiratory & Gastroenterology, Dunedin Rheumatology & Neurology)
- $99k unfavourable in Senior Medical Surgical Service, for Ophthalmology and Ear Nose & Throat (ENT) for vacancies
- $35k unfavourable in Women's Health Southland Obstetrics & Gynaecology being cover for vacancies and leave.

Year-end outsourcing costs are unfavourable $1,134k

**Registrars / House Officers (RMOs)**

RMO direct costs were $279k unfavourable with FTE on budget for the month. The main drivers were overtime due to extra hours being paid to cover vacancies, additional allowances and unpaid days accrual at year-end.

Indirect costs were favourable both monthly (Course Fees and Professional Memberships) and for the year (Professional Memberships).

Outsourced RMOs were $46k unfavourable for the month and $888k unfavourable at year end, driven by use of locum cover for roster requirements, vacant roles and workloads in Orthopaedics, Paediatrics, Obstetrics and Gynaecology and the RMO Unit.

**Nursing**
Nursing direct costs were $1,650k and 84 FTE unfavourable to budget for the month.

The unfavourable Nursing costs for the month continue to reflect issues with budget phasing as well as both the NZNO and PSA MECA settlements, and an adjustment at year end for unpaid days. The recruitment of nurses to comply with the Safer Staffing and CCDM obligations result in additional FTE.

The significant contributors to the monthly FTE variance is due to higher than budgeted levels of:

- Leave (ACC, sick, training, long service) comprises 34FTE or 40% of the FTE variance

- Ordinary time is 29FTE over budget driven by Operations Directorate in particular for Safer Staffing 23 FTE and Mental Health AD Health Care Assistants 5 FTE.

The Ministry of Health increased funding based on the FTE at the time of the settlement to contribute to the settlement costs of the NZNO MECA and to fund additional nurses into Safe Staffing and CCDM roles.

Indirect costs were $114k unfavourable for the month and $1,064k at year-end.

**Allied Health**

Allied Health costs were $172k and 6 FTE unfavourable to budget for the month.

The Allied Health direct cost variance is due to:

- MRTs $91k unfavourable (8FTE) (year-end $609k unfavourable), with additional costs for extending CT and MRI shifts and resource required for theatre image intensifier.
- Training (incl. CME)/Study leave direct costs are $42k unfavourable reflecting the annual liability adjustment for CME hours
- Indirect costs are $67k unfavourable, driven by CME liability adjustments, $20k unfavourable Professional Memberships (year-end $74k unfavourable), $11k unfavourable parental leave payment (budgeted elsewhere) and $9k unfavourable one off gratuity paid to an ex-employee as part of a grand parented obligation.

Outsourced costs were $83k unfavourable for the month and $940k unfavourable at year end. The majority of this has been incurred to fill Anaesthetic Technician positions until the trainees can assume a full workload.

**Support**
Support costs are on budget both for the month and at year-end.

**Management / Administration**
Management Admin personnel costs are unfavourable for the month by $75k and 17FTE. The main driver of the FTE was:

- Annual leave not taken to the levels budgeted – 3FTE (thereby working and incurring unbudgeted ordinary hours. At year-end annual leave is on budget.
- Surgical Services administration (Invercargill) remains 5 FTE over budget reflecting the work in the Ophthalmology service to deliver patient services and additional FTE for the Dunedin General Surgery booking coordinator
- Course Fee, Conferences and Study are $13k favourable to budget ($146k favourable at year end)

**Outsourced Clinical Services costs**
Outsourced services were $615k unfavourable to budget in the month and $3,541k at year end.

The contributors to this unfavourable variance for the month were an additional $190k of send-away lab tests incurred over the previous six months and additional third party Ophthalmology outpatient clinics during the month of $260k.

**Clinical Supplies (excluding depreciation)**
Clinical supplies were unfavourable to budget by $830k for June and $7,817 at year end.

The monthly unfavourable variance is driven by;

- $83k - Treatment disposables excluding Blood products, was $47k favourable in a number of consumables (dressings, IV supplies, staples, tubes etc.) associated with volume delivery. Blood costs were $127k unfavourable for the month due mainly for haemophiliac products, offset by rebate received ($655k unfavourable at year end). These were partially offset by continued reductions in renal costs resulting from contracted volume benefits ($329k at year end).

- $260k - Instruments and equipment, the largest variances being overruns in service contracts of $111k. The service contract overspend reflects the continuation of the service contract for the existing Linac machine while the commissioning of the new Linac machine is completed. Disposable instruments were $80k unfavourable for the month related to theatre usage.

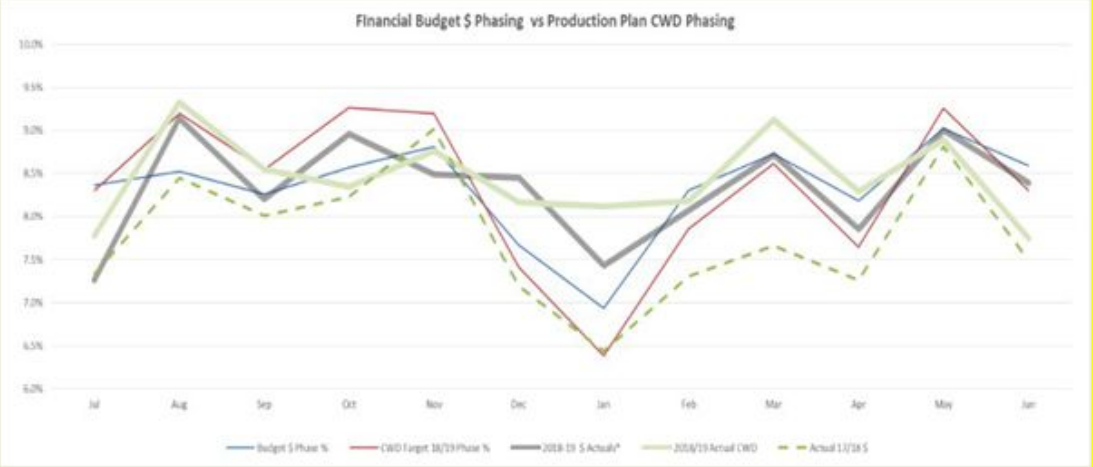
- $230k unfavourable Implants & Prostheses – Implant costs are directly related to patient activity. Expenditure on Screws nails and plates $100k, Shunts and Stents $75k, Hip prostheses costs $12k and Knee Prostheses costs $35k all unfavourable for the month, with an offset favourable variance in Cardiac implants $48k.

- $22k unfavourable - Pharmaceuticals are driven by the prescription of cancer drugs (PCT) via the Oncology Outpatient Service ($14k unfavourable for the month / $2,046k unfavourable at year end).

- $241k unfavourable – Other Clinical Supplies were unfavourable reflecting increased Air Ambulance missions in the month $201k unfavourable, and $1,261k unfavourable at year end.

The year-end unfavourable variance of $7,817k has similar drivers as the monthly variance with minor clinical equipment and disposable equipment purchases also being significant variations from budget. The unfavourable pharmaceutical variance of $2,856k is offset by additional PCT and Community Pharmacy revenue in Internal Revenue of $3,671k. However, overall Southern DHB has seen a significant increase in pharmaceutical costs for the year.

A review of case weight driven costs through the Surgical and Radiology Directorate continues to reflect a strong correlation giving us confidence the costs reflect the activity. (Note the thick grey line represents the $ spend)




**Infrastructure and Non-Clinical**
These costs were $399k unfavourable to budget in the month and $960k unfavourable at year end. The cost overrun was spread across a range of areas.

**Provider Payments**

These costs were $302k unfavourable for the month and $960k unfavourable at year end.

- Mental Health Workforce Development is unfavourable by $64k for the month and $1,326k unfavourable at year end. In April a detailed review of payments to NGO's that include Pay Equity was undertaken, resulting in a reclassification of the Pay Equity component from NGO payments to Mental Health Workforce Development. The reclassification of the Pay Equity payments was requested by the Ministry of Health and gives transparency when aligning Pay Equity expense to Pay Equity funding.

- Minor Mental Health Expenditure unfavourable $42k for the month, and $2,245k unfavourable at year end. The Quality Improvement Programme (QIPM) for Mental Health was unbudgeted.

**Non-Operating Expenses**
Depreciation continues to be favourable to budget in both the month and at year end for Clinical Equipment and relates to the timing of capital expenditure.

## Closed Session:

**RESOLUTION:**
That the Hospital Advisory Committee move into committee to consider the agenda items listed below.

The general subject of each matter to be considered while the public is excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under section 34, Schedule 4 of the NZ Public Health and Disability Act (NZPHDA) 2000 for the passing of this resolution are as follows:

| *General subject:* | *Reason for passing this resolution:* | *Grounds for passing the resolution:* |
|---|---|---|
| 1. Previous Public Excluded Meeting Minutes | As set out in previous agenda. | As set out in previous agenda. |
| 2. Dunedin Hospital Redevelopment | To allow activities and negotiations (including commercial negotiations) to be carried on without prejudice or disadvantage. | Sections 9(2)(i) and 9(2)(j) of the OIA. |