TE OPE KĀTUA O AOTEAROA
DEFENCE FORCE

EMISSIONS REDUCTION PLAN

Phase One – Setting 'Direction of Travel'

30 November 2022

Version Control

Version	Author	Update
1.0	Redacted – s.9(2)(a) Principal Policy Advisor – DSM	Version distributed to members of Climate Change Response Programme Working Group and subject matter experts within Services and Portfolios for feedback.
2.0	Redacted – s.9(2)(a) Principal Policy Advisor – DSM	Version distributed to members of the NZDF Organisation Committee for feedback.
3.0	Redacted – s.9(2)(a) Principal Policy Advisor – DSM	Version submitted to the NZDF Executive Committee for approval.
4.0	Redacted – s.9(2)(a) Principal Policy Advisor – DSM	Version approved by the NZDF Executive Committee.

Consultation

The following people were provided with v1.0 of the Plan for comment and feedback:

Redacted – s.9(2)(a)

The following people were provided with v2.0 of the Plan for comment and feedback:

Redacted – s.9(2)(a)

The following people were provided with v3.0 of the Plan for comment and feedback:

Redacted – s.9(2)(a)

Introduction

1. The New Zealand Defence Force (the NZDF) is a military organisation. The NZDF's core purpose is the preparation and availability of credible and effective armed forces, ready to respond on behalf of New Zealand. This includes national and international events caused by changes in climate and other environmental issues.

2. As one of New Zealand's largest organisations, the NZDF has a diverse fleet of specialist air, land, and sea platforms. These capabilities, and certain military actions, can at times have a negative effect on the environment and climate.

3. The Chief of the Defence Force is committed to taking action to improve our climate and environmental impact both at home and abroad. The NZDF must meet its requirement to prepare and operate credible and effective armed forces. At the same time, the force must operate in an environmentally, economically, culturally and socially responsible way to maintain that credibility and effectiveness.

4. Operational viability and sustainment are core to operational mission success. Adapting the NZDF to lower-emission and circular economy solutions for resources such as energy, transport, fuel, and materiel systems is expected to deliver operational resilience and sustainability benefits.

Background and Context

5. New Zealand is a signatory to the Paris Agreement. The Paris Agreement's goal is to limit global warming to well below 2°C, and preferably to below 1.5°C, compared to pre-industrial levels. To meet its obligations under the Paris Agreement, New Zealand must reduce its emissions of greenhouse gases.

6. In 2018, the *Climate Crisis: Defence Readiness and Responsibilities* defence assessment concluded that the NZDF needs to be ready to respond to more frequent, possibly concurrent, and more complex security events due to the effects of climate change. In 2019, *Responding to the Climate Crisis: An Implementation Plan* established four pillars of action: Respond, Adapt, Mitigate, and Engage. In 2021, building on both the four pillars of the Implementation Plan and the work already carried out through the NZDF's Sustainability Programme, the NZDF established a Climate Change Response Programme (CCRP).

7. In 2020, to show leadership and to accelerate the reduction of emissions in the public sector, the Government introduced the Carbon Neutral Government Programme (CNGP). The CNGP requires all Government agencies, including the NZDF, to aim for carbon neutrality by 2025. It also requires agencies to measure their emissions, set emissions reduction targets and plans, and make this information public, no later than December 2022.

Purpose

8. This first Emissions Reduction Plan (the Plan) sets out a range of the initiatives the NZDF is planning to take to reduce the emission of greenhouse gases. It is a starting point for increasing action under the Mitigate pillar of the CCRP and is focused on the priority task of addressing reduction of gross emissions expected through the CNGP.

Approach

9. This Plan sets a 'direction of travel' for the NZDF regarding its efforts to reduce gross emissions. It is not intended to be a fully detailed set of actions. This Plan is one component of the NZDF CCRP being advanced in recognition that coordinated action on reducing emissions is a priority for all of New Zealand.

10. Further strategy and detailed future phases of this Plan will continue to be developed to address the full breadth and depth of action required by Defence agencies on climate change response and sustainability. This includes integrating it into a refreshed higher NZDF Strategy, defence policy and capability plans. Plans will evolve in response to future government policy on public sector offsets, carbon pricing and sequestration, and to ensure specialist strategies and plans are integrated to deliver system-wide sustainable adaptation.

11. The approach in this Plan is to focus three primary lines of effort squarely on the major drivers of NZDF emissions: managing fuels; managing commercial travel; and managing Defence estate (energy, electricity, and waste). Change is underpinned by three enabling lines of effort: data and information; governance and partnerships; and innovation and grassroots action.

NZDF Emissions Base Year and Reduction Targets

12. In May 2022, the NZDF Executive Committee adopted FY2016/17 as the base year for emissions measurement, benchmarking, and reduction planning. At the same time, the Committee approved targets for reducing emissions from that base year:

    a. a 21% reduction no later than the end of FY2024/25, and

    b. a 42% reduction no later than the end of FY2029/30.

13. These targets are an aim-point aligned to CNGP science-based standards and timeframes. They serve as a signpost for the long-term required scale of innovation and prioritised action, but are not intended to be applied as a 'cap' on NZDF activities and operations in the short to medium term, due to the primacy of operational readiness and response outputs. The extent to which the initiatives contained in this Plan will be able to deliver enduring emissions reductions will be progressively assessed as initiatives are implemented, and as data analytics mature.

14. Table 1 and Figure 1 provide a summary of the NZDF's emissions since FY2016/17. Figure 1 illustrates the magnitude of the task required to meet or exceed the emissions reduction target. Figure 2 provides a visual explanation of the scopes used in the measurement of emissions.

15. At the end of FY2021/22, the NZDF's total emissions were approximately 23% lower than the FY2016/17 base year. While this is encouraging, it is also clear that the NZDF's emissions are once again increasing after the impact of both the COVID-19 pandemic and capability gaps. This Plan needs to redirect the upward trend so that the NZDF is able to meet or exceed the targets approved by the NZDF Executive Committee.

16. The potential for the NZDF to reduce its emissions will be impacted by:

    a. the operational outputs directed by the Government – the NZDF's emissions are directly correlated to the number and types of military operations it delivers;

    b. the level of investment (capital and operating) required and made available to the NZDF to modify, adapt or replace platforms, equipment, and estate infrastructure; and

    c. the level or funding required and made available to the NZDF to pursue lower emissions/higher sustainability options in operations and training.

17. This first Plan therefore focuses on matters which the NZDF can control, while the enabling initiatives lay the foundations for the NZDF to take advantage of new ideas and technologies as they become available. Partnerships will be essential to reap the benefits of advances being made across the international military, industry, and All of Government sectors.

Emissions (tCO_2e)	2016/17 (base year)	2017/18	2018/19	2019/20	2020/21	2021/22
Scope 1[1]	104,191.71	81,541.75	70,781.39	74,091.42	90,560.70	85,660.36
Scope 2[2]	7,692.91	7,747.91	7,488.83	7,200.31	8,402.00	7,969.71
Scope 3[3]	41,055.20	40,119.35	35,450.55	32,238.84	19,855.37	24,531.88
Total Emissions	152,939.82	129,409.00	111,720.78	113,530.57	118,818.07	118,161.95
Removals[4]	-75,426.93	-75,008.53	-75,008.52	-70,678.48	-75,268.82	-75,250.82

Table 1 – NZDF Verified Greenhouse Gas Emissions[5]

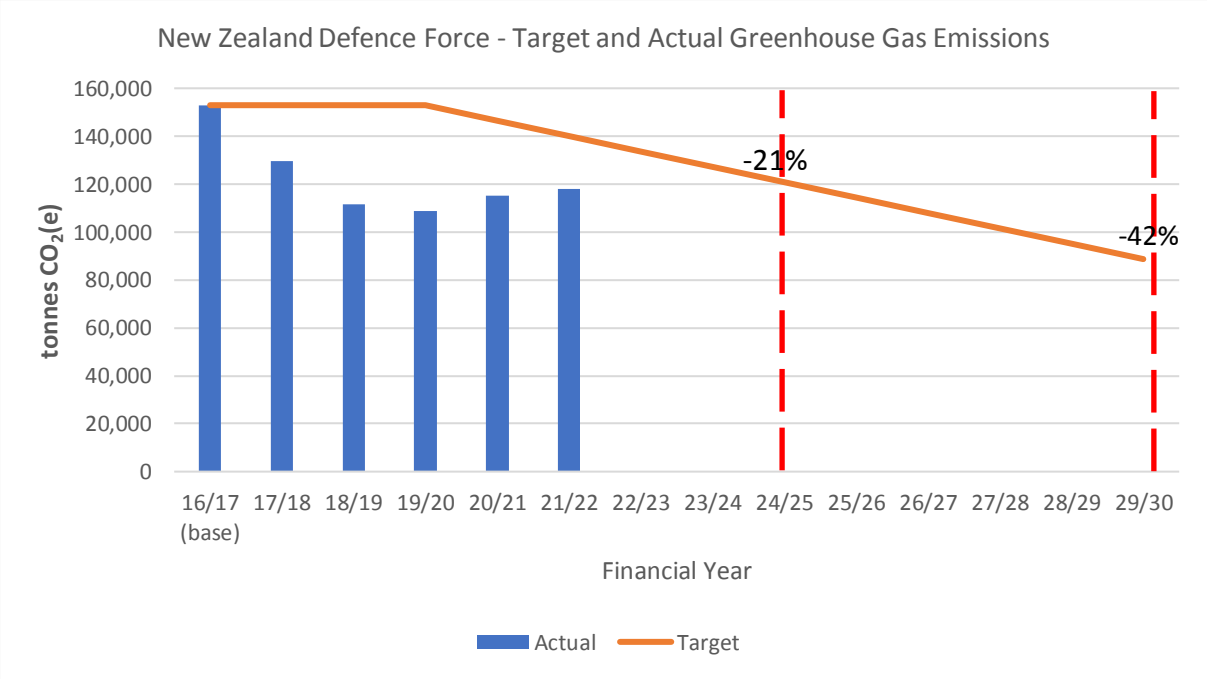

Figure 1 – NZDF Target and Actual Greenhouse Gas Emissions

18. Annex A provides a more detailed breakdown of the NZDF's emissions sources.

[1] Scope 1 emissions are direct greenhouse gas emissions occurring from sources that are owned or controlled by the NZDF and within the organisational boundary (e.g. emissions from combustion of fuel in NZDF owned or controlled vehicles).

[2] Scope 2 emissions are indirect greenhouse gas emissions occurring from the generation of purchased electricity consumed by the NZDF.

[3] Scope 3 emissions are other indirect greenhouse gas emissions occurring as a consequence of the activities of the NZDF, but generated from sources not owned or controlled by the NZDF (e.g. emissions from commercial air travel).

[4] Carbon sequestered in forests on Crown lands under the control of the Defence Force.

[5] The emissions in this table for 2019/20 and 2020/21 contain minor differences from those reported in the 2022 Annual Report. These differences arose from the verification process and will be noted in the 2023 Annual Report.

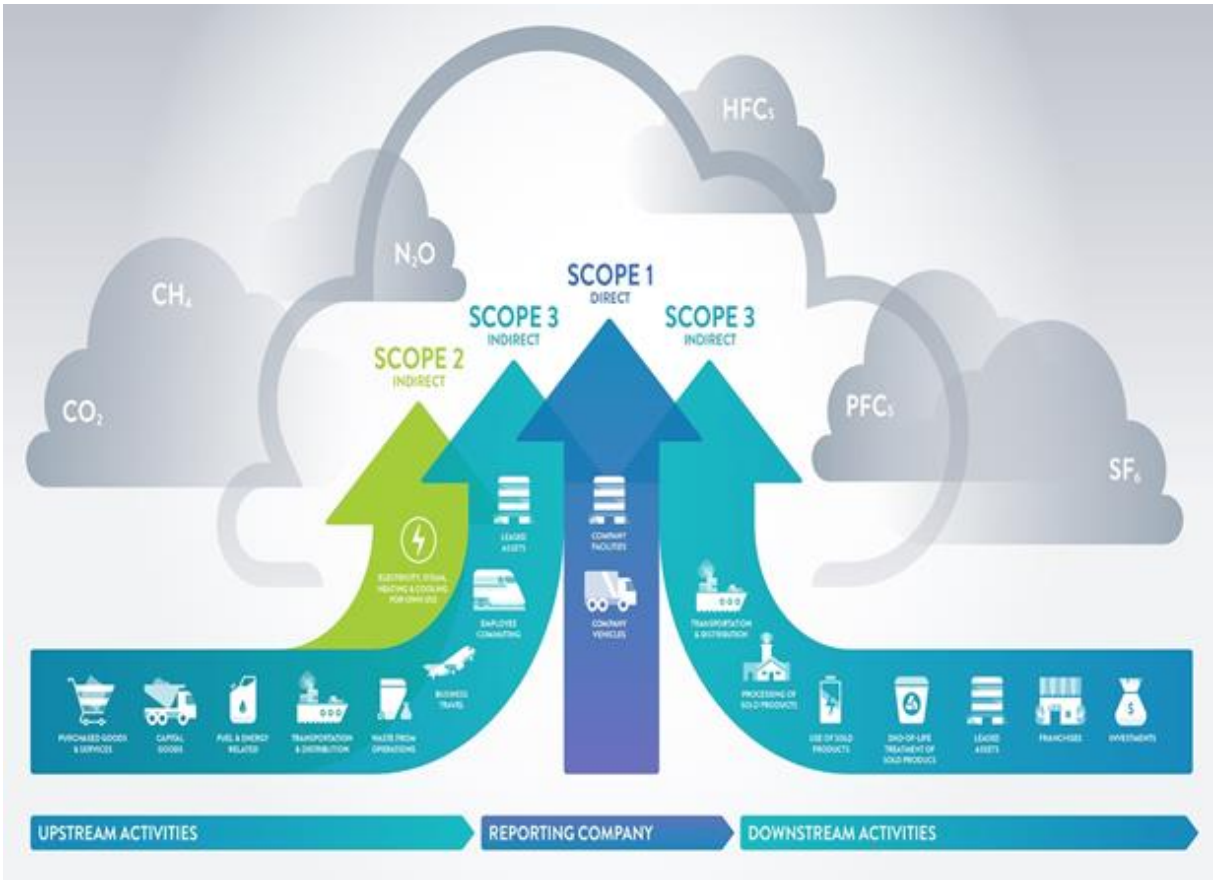

Figure 2 – Emissions Scopes (source: Greenhouse Gas Protocol, www.ghgprotocol.org)

The Plan

19. This Plan has been drafted giving consideration to several broad principles:

    a. **Operational outputs are optimised or enhanced, not compromised** – action on climate change and emissions reduction should build resilience and not limit the NZDF's ability to respond.

    b. **Act now, even with uncertainty** – the time horizon for climate change and emissions reduction inherently involves considering uncertainty. Reluctance to act now reduces room to manoeuvre, and increases investment required, to mitigate risks in the future.

    c. **Build climate change and emissions reduction into decision-making by design and operationalise it** – the consideration of climate change and emissions reduction is normalised, ensuring that the decisions we make now also drive our ability to mitigate or adapt to climate change in the future.

    d. **Identify areas of control, acknowledging key dependencies and external relationships** – taking a coordinated approach, working alongside the Ministry of Defence, lead agencies for the CNGP, and other government, commercial, industry and military organisations.

20. To achieve the targets approved by the NZDF Executive Committee, the NZDF must focus attention on all aspects of its operations, and how the operations work as an integrated system to find efficiencies and optimise NZDF outputs.

21. The initiatives in this Plan were compiled from workshops and discussions with a broad range of stakeholders across the NZDF including through several workshops on specific topics. The Plan includes existing initiatives already underway which will have a positive impact on the NZDF's emissions profile. These current initiatives are complemented by:

    a. initiatives that can be easily started in order to accelerate emissions reduction;

    b. initiatives which will aid all members of the NZDF to incorporate consideration of emissions into their decision-making; and

    c. initiatives to investigate options for future investment.

22. The tables on the following pages provide a summary-level description of the key areas of focus in this Plan.

23. This Plan does not include initiatives that focus on increasing the carbon sequestration potential of Crown lands under the control of the NZDF. The reasons for this are twofold:

    a. this Plan focuses on reducing gross emissions – offsetting does not reduce gross emissions; and

    b. the CNGP policy on offsets is not yet settled, and lead agency advice is that development of offsets initiatives is premature.

<table>
<tr><th colspan="4">What?: Management of Fuel Use</th></tr>
<tr><td colspan="4">Why?
Fuel consumption of all types is the largest source of the NZDF's emissions, comprising 54.3% of base year emissions, generating 2.4 to 3.2 tCO_2e per 1,000 litres of fuel consumed (depending on fuel type). At present, the level of understanding of whether this is efficient (or not) is low, and opportunities to improve need to be further explored.</td></tr>
<tr><th>How?</th><th>Start When?</th><th>Potential Emissions Reduction Impact</th><th>How to Measure?</th></tr>
<tr><td>1.1. Command direction is promulgated and aligned across all appropriate levels requiring all training and operational activities to be planned and executed such that fuel consumption is:
c. measured;
d. benchmarked; and
e. minimised (with maturing thresholds).</td><td>FY22/23</td><td>The primary benefit of this initiative is to drive aligned action on emissions reduction across the NZDF.
To have an impact on emissions reduction, this initiative will require establishing specific thresholds into planning work. To the extent that it does indirectly contribute, a reduction of between 2.4 and 3.2 tCO_2e gases can be expected for every 1,000 L of fuel consumption avoided (depending on fuel type). As more information is compiled supporting the establishment of benchmarks by event and asset type, the minimisation threshold can be strengthened over time.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
(1-2 years)</th><th>Medium
(3-8 Years)</th><th>Long
(8+ years)</th></tr><tr><td>✓</td><td>✓</td><td></td></tr></table></td><td>Emissions (and costs) calculated from benchmark vs. planned vs. actual fuel consumption reported by activity.</td></tr>
<tr><td>1.2. Policies and processes relating to planning and execution of training and operational activities are reviewed to identify fuel minimisation opportunities.</td><td>FY22/23</td><td>To have an impact on emissions reduction, this initiative will require establishing specific thresholds into planning work. To the extent that it does indirectly contribute, a reduction of between 2.4 and 3.2 tCO_2e gases can be expected for every 1,000 L of fuel consumption avoided (depending on fuel type). As more information is compiled supporting the establishment of benchmarks by event and asset type, the minimisation threshold can be strengthened over time.
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Emissions (and costs) calculated from benchmark vs. actual fuel consumption by activity.</td></tr>
<tr><td>1.3. Continue implementation of the NZDF Electric Vehicle (EV) Project.</td><td>Underway</td><td>For every 10,000 km driven, emissions from petrol and diesel fuelled vehicles can be expected to be reduced by the following (acknowledging driver behaviour and specific uses will adjust these estimates):
0.4-0.6 tCO_2e if replaced by a hybrid vehicle
1.0-1.4 tCO_2e if replaced by a plug-in hybrid vehicle
1.6-2.3 tCO_2e if replaced by a battery-electric vehicle
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
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Emissions (and costs) calculated from fuel and electricity consumption for commercial vehicle fleet (total and per 1,000 kilometres travelled)</td></tr>
<tr><td>1.4. Investigate opportunities to enhance readiness by maximising the use of current simulation capabilities and consequently replacing appropriate levels of actual activity with simulated activity.</td><td>FY23/24</td><td>For every 1,000 L of fuel consumption avoided through simulation training, a reduction of between 2.4 and 3.2 tCO_2e (depending on fuel type) can be expected, although some of this reduction is offset by an increase in electricity consumption). Simulation activities will also indirectly reduce climate change through the reducing contamination, and therefore maintaining the environment's natural adaptive capacity.
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<tr><td>1.6. Investigate viability of sustainable fuels for military land, maritime and air vehicles and platforms (e.g. technical, supply chain and financial aspects). Relevant domain worthiness approvals are sought as viable alternatives are identified.</td><td>Partially Underway (e.g. aviation fuels)
FY23/24</td><td>Long term, sustainable fuels from non-fossil fuel sources are expected to be an increasing global trend. There is insufficient information at this time to estimate the potential impact on NZDF emissions. At present, the uneconomic cost profile and supply chain uncertainty is also impacting the extent of usability in NZ.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
(1-2 years)</th><th>Medium
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(8+ years)</th></tr><tr><td></td><td></td><td>✓</td></tr></table>(Horizons will vary for land, maritime and air vehicles and platforms.)</td><td>Emissions (and costs) from fuel – both overall as well as specific asset burn rates per fuel type and activity
Due to the innovative nature of the sustainable alternative fuel, wider impacts also need to be captured (i.e. impact on asset performance, maintenance and lubricants, etc.)</td></tr>
<tr><td>1.7. Whole-of-life cost, benefit and value is incorporated into business cases for refurbishment, upgrade and/or replacement of platforms and equipment.
Refer to initiative 5.4.</td><td>Initial scoping underway</td><td>The primary benefit of this initiative is to establish more robust decision-making. To the extent that enhanced business cases indirectly contribute, a reduction of between 2.4 and 3.2 tCO_2e gases can be expected for every 1,000 L of fuel consumption avoided (depending on fuel type).
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
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</table>

What?: Management of Commercial Travel

Why?

Commercial passenger travel comprises 13.4% of base year emissions. This includes air travel, accommodation, rental cars, taxis and shuttles and public transport (ferries, buses and trains). The impacts of COVID-19 have demonstrated we can continue operating with reduced travel, however training and engagement activity was impacted due to limited alternative options. The NZDF has opportunities to explore investment in hybrid live/virtual systems and pair these with efficient travel planning tools. Assessing the wider social, cultural and productivity impacts from reduced travel is necessary to determine where the correct balance lies.

How?	Start When?	Potential Emissions Reduction Impact	How to Measure?
2.1. Incorporate consideration of emissions into NZDF travel policy.	**Completed** (DFI 40.4 into effect on 4 May 2022)	The potential impact on emissions from commercial travel was not quantified at the time DFI 40.4 was introduced. However, the reduction of entitlements to business class long-haul air travel is expected to reduce emissions (long-haul business class travel generates 2.9 more emissions compared to economy class long-haul per passenger kilometre travelled. Premium economy generates 1.6 more emissions, compared to economy per kilometre travelled). Similarly, the use of hybrid rental vehicles instead of petrol-fuelled rental vehicles is initially estimated to reduce emissions by 22% per kilometre travelled. Improved travel planning which considers the impact of travel on emissions can be expected to reduce overall travel demand. Horizon when Reductions from this Initiative Might be Realised: Short (1-2 years): ✓ / Medium (3-8 Years): ✓ / Long (8+ years):	Total emissions from commercial travel Emissions from travel per FTE Emissions from air travel - total, by passenger class, by passenger kilometres travelled, and per FTE Emissions from rental car activity – total, by kilometre travelled, and per FTE
2.2. Engage with the NZDF's commercial travel agent to: • better align the booking system to requirements of the NZDF travel policy, • note travel booked vs. travel actually taken, and • increase visibility of low emissions travel options for travellers and travel endorsers and approvers.	Underway Complete Q3/Q4 FY22/23	As per Initiative 2.1. Horizon when Reductions from this Initiative Might be Realised: Short (1-2 years): ✓ / Medium (3-8 Years): ✓ / Long (8+ years):	As per Initiative 2.1.
2.3. Command direction is promulgated and aligned across all appropriate levels to: • reconcile tensions between cost of travel and emissions, and • clarify expectations surrounding travel for meetings and training.	FY22/23	Analysis by Defence Excellence on travel arising from the Baseline Review indicated 46% of travel (accounting for an estimated 6.2% of the base year emissions) was undertaken for meetings. A further 32% of travel (accounting for an estimated 4.3% of the base year emissions) was undertaken for training. Further investigation is needed to determine the potential emissions reduction impact. Horizon when Reductions from this Initiative Might be Realised: Short (1-2 years): ✓ / Medium (3-8 Years): ✓ / Long (8+ years):	Emissions from commercial travel – total, per kilometre travelled, and per FTE.

<table>
<tr><th>How?</th><th>Start When?</th><th>Potential Emissions Reduction Impact</th><th>How to Measure?</th></tr>
<tr><td>2.4. Investigate, invest in and incentivise alternatives to commercial travel (including recommendations made in the Defence Excellence review of domestic travel arising from the Baseline Review):
improved online collaboration tools and VTC options (noting there is an interdependency with the Information Management Programme and the Defence Information Platform Programme, this will likely also require identifying interim solutions),
conduct training needs analysis and implement training packages to improve capability for conduct of virtual and/or hybrid meetings and remote collaboration, and
innovation in training including simulation, online, distributed, modular and on-the-job training.</td><td>FY23/24</td><td>Analysis by DX on travel arising from the Baseline Review indicated 46% of travel (accounting for an estimated 6.2% of the base year emissions) was undertaken for meetings. A further 32% of travel (accounting for an estimated 4.3% of the base year emissions) was undertaken for training. Further investigation is needed to determine the potential emissions reduction impact.
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<tr><td>2.5. Institute tools to enable travel planners to understand and forecast emissions arising from commercial travel, and its relationship to cost.</td><td>FY23/24</td><td>Improved decision management tools can be expected to translate to emissions reduction through improved decision-making.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
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<tr><td>2.6. Institute regular reporting of travel emissions at portfolio level and progressively at sub-portfolio level.</td><td>FY23/24</td><td>Improved reporting can be expected to translate to emissions reduction through improved decision-making.
Horizon of Impact:<table><tr><th>Short
(1-2 years)</th><th>Medium
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(8+ years)</th></tr><tr><td>✓</td><td>✓</td><td>✓</td></tr></table></td><td>As per Initiative 2.3</td></tr>
<tr><td>2.7. Investigate feasibility of ‘carbon budgets’ for commercial travel to be managed by portfolios/units</td><td>Begin investigation FY23/24 for potential implementation in FY24/25</td><td>Portfolio/unit responsibility for managing a ‘carbon budget’ can be expected to translate to emissions reduction through improved decision-making.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
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</table>

What?: Defence Estate Management			
Why? Carbon emissions energy and electricity consumption and waste generation (combined) comprises 25% of base year emissions.			
How?	Start When?	Potential Emissions Reduction Impact	How to Measure?
3.1. Continue implementation of the Defence Waste Management Framework.	Underway	The Defence Waste Management Framework targets of reducing waste to landfill by 50% from FY18/19 can be expected to reduce emissions by approximately 2,200 tCO_2e gases (or 1.4%) from the FY16/17 base year. Horizon when Reductions from this Initiative Might be Realised: Short (1-2 years): ✓ | Medium (3-8 Years): ✓ | Long (8+ years): ✓	Total emissions from waste to landfill vs. baseline.
3.2. Continue development and implementation of the NZDF Energy Framework and Strategy	Underway	The NZDF has agreed with EECA a non-binding target of a 2% energy savings from a FY2019/20, which equates to 279 tCO_2e. The NZDF Energy Framework and Strategy will see further development of efficiency targets and initiatives on an annual basis through site-specific Energy Management Plans. Horizon when Reductions from this Initiative Might be Realised: Short (1-2 years): ✓ | Medium (3-8 Years): ✓ | Long (8+ years): ✓	Total emissions from energy and electricity, both overall and per square metre of the Defence estate.
3.3. Continue coal boiler replacement planning and implementation	Underway	Replacing all coal boilers can be expected to result in emissions reduction of 6,896 tCO_2e gases (or 4.5%) from the FY16/17 base year, although some of this reduction will be offset by increased emissions from replacement energy types. Horizon when Reductions from this Initiative Might be Realised: Short (1-2 years): | Medium (3-8 Years): ✓ | Long (8+ years):	Emissions from coal, as well as total emissions from energy and electricity combined.
3.4. Continue application of NZDF Sustainable Infrastructure Standards to new builds and retrofits.	Underway	Emissions reduction resulting from the use of the NZDF Sustainable Infrastructure Standards will be present in both operational energy, electricity and waste emissions and embodied material and construction activity emissions. These are estimated on a project-by-project basis, with information in this space immature globally. Horizon when Reductions from this Initiative Might be Realised: Short (1-2 years): ✓ | Medium (3-8 Years): ✓ | Long (8+ years): ✓	Total operational emissions from energy electricity and waste, and embodied emissions from materials and construction activities, by project. N.B. to be agreed
3.5 Explore opportunities for integrating renewable energy into Defence energy networks.	Underway	Operational emissions from energy and electricity consumption will be reduced as a direct impact from the application of renewable energy installations. This also has resilience and cost benefits. The extent to which the horizontal networks (both internally and externally) can support the application of renewable energy installations will directly influence the scale of emissions reduction opportunities. Horizon when Reductions from this Initiative Might be Realised: Short (1-2 years): ✓ | Medium (3-8 Years): ✓ | Long (8+ years): ✓	Total emissions from energy and electricity, both overall and per square metre of the Defence estate.

<table>
<tr><th colspan="4">What?: Data and Information Management</th></tr>
<tr><td colspan="4">Why?
The current approach to emissions data capture, analysis and reporting is not automated and is labour intensive. Timely reporting of quality data and analysis is fundamental to enabling emissions reductions.</td></tr>
<tr><td>How?</td><td>Start When?</td><td>Potential Emissions Reduction Impact</td><td>How to Measure?</td></tr>
<tr><td>4.1. Centralise responsibility for emissions measurement and reporting and fully integrate into the performance reporting system.</td><td>Underway</td><td>The primary benefit of this initiative is alignment of measurement and reporting activities to the NZDF organisational structure.</td><td>not applicable</td></tr>
<tr><td>4.2. Investigate and implement appropriate methods to address data gaps in current measurement.</td><td>Underway</td><td>Addressing data gaps is likely to increase some emissions areas and decrease in other areas.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><td>Short
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(3-8 Years)</td><td>Long
(8+ years)</td></tr><tr><td>✓</td><td>✓</td><td>✓</td></tr></table></td><td>Total emissions</td></tr>
<tr><td>4.3. Investigate, identify and implement data management applications to improve emissions data capture, analysis and reporting.
Noting interdependencies with the Information Management Programme, this will likely entail adoption of interim solutions.</td><td>FY22/23</td><td>Improved data capture, analysis and reporting can be expected to translate to emissions reduction through improved decision-making.
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<tr><td>4.4. Build decision management tools that are useful at the ‘tactical edge’ where most emissions occur.</td><td>FY22/23</td><td>Improved decision management tools can be expected to translate to emissions reduction through improved decision-making.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><td>Short
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<table>
<tr><th colspan="4">What?: Governance and Partnerships</th></tr>
<tr><td colspan="4">Why?
Climate change is a global existential challenge. Changing the NZDF to operate in a low carbon world requires active and sustained senior leadership commitment and governance. It will also require adoption of solutions developed outside the NZDF. The Climate Change Response Programme will be governed by a Programme Board, led by an Executive Sponsor on behalf of CDF.</td></tr>
<tr><th>How?</th><th>Start When?</th><th>Potential Emissions Reduction Impact</th><th>How to Measure?</th></tr>
<tr><td>5.1. Command direction is promulgated and aligned across all appropriate levels on matters relating to emissions reduction including, but not limited to, fuels use, commercial travel, continuous improvement and innovation.</td><td>FY22/23</td><td>The primary benefit of this initiative is to drive aligned action across the NZDF.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
(1-2 years)</th><th>Medium
(3-8 Years)</th><th>Long
(8+ years)</th></tr><tr><td>✓</td><td>✓</td><td>✓</td></tr></table></td><td>To be developed.</td></tr>
<tr><td>5.2. Sustainability, climate change response and emissions reduction objectives are prioritised and embedded within the NZDF's strategy and plans. Sufficient resources (people and financial) are assigned to develop and to implement plans.</td><td>FY22/23 with incorporation into FY23/24 plan and budgets.</td><td>The primary benefit of this initiative is to drive aligned action across the NZDF.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
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(8+ years)</th></tr><tr><td>✓</td><td>✓</td><td>✓</td></tr></table></td><td>Programme governance reporting includes monitoring of plan execution, benefits realisation, and risks and issues.</td></tr>
<tr><td>5.3. Funding for climate change and emissions reduction initiatives is sought from regular budget rounds and specific funds (e.g. Climate Emergency Response Fund, State Sector Decarbonisation Fund, strategic partnerships).</td><td>Underway</td><td>Carbon abatement is a deliverable in exchange for co-funding of initiatives. This will be assessed on a project-by-project basis.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
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<tr><td>5.4. Whole-of-life cost, benefit and value of sustainable/emissions reduction options are incorporated into business cases for investment decisions. (Linked to initiative 1.7.)
This presents in the form of a robust whole-of-life cost, benefit and value model that is fit-for-purpose to the specific project being designed.</td><td>Initial scoping underway</td><td>The primary benefit of this initiative is to establish more robust decision-making. To the extent that enhanced business cases indirectly contribute, a reduction of between 2.4 and 3.2 tCO_2e gases can be expected for every 1,000 L of fuel consumption avoided (depending on fuel type).
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<tr><td>5.5. Strategic relationships and partnerships supporting medium and long term emissions reductions initiatives are developed, strengthened, and/or maintained.
These relationships and partnerships include, but are not limited to, government agencies leading emissions reduction and adaption actions, All of Government groups, industry groups, and partner militaries.</td><td>Underway</td><td>The primary benefit of this initiative is to drive aligned action across the NZDF.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
(1-2 years)</th><th>Medium
(3-8 Years)</th><th>Long
(8+ years)</th></tr><tr><td></td><td>✓</td><td>✓</td></tr></table></td><td>To be developed, aligned to wider NZDF engagement measures of success.</td></tr>
</table>

<table>
<tr><th>How?</th><th>Start When?</th><th>Potential Emissions Reduction Impact</th><th>How to Measure?</th></tr>
<tr><td>5.6. Communication and engagement planning to ensure:
pan-NZDF awareness of sustainability and climate change risks and progress empowers action; and
external transparency on relevant progress and initiatives.</td><td>Underway</td><td>The primary benefit of this initiative is to drive aligned action across the NZDF.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
(1-2 years)</th><th>Medium
(3-8 Years)</th><th>Long
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<tr><td>5.7. Education and training planning to fully integrate sustainability and climate change considerations into our ways of working.</td><td>FY23/24</td><td>The primary benefit of this initiative is to drive aligned action across the NZDF.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
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(8+ years)</th></tr><tr><td></td><td>✓</td><td>✓</td></tr></table></td><td>To be developed.</td></tr>
<tr><td>5.8. Improvement of sustainability in procurement, through explicit inclusion of sustainability and climate change objectives in procurement activities.</td><td>Initial scoping underway</td><td>The primary benefit of this initiative is to drive aligned action across the NZDF.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
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(3-8 Years)</th><th>Long
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</table>

<table>
<tr><th colspan="4">What?: Innovation and Grass-Roots Action</th></tr>
<tr><td colspan="4">Why?
Top-down directed action does not capture the collective intelligence of the organisation. The scale of the emissions reduction challenge facing the NZDF requires innovation and action at all levels.</td></tr>
<tr><th>How?</th><th>Start When?</th><th>Potential Emissions Reduction Impact</th><th>How to Measure?</th></tr>
<tr><td>6.1. Targeted science, technology and research projects that leverage both internal and external expertise contribute to developing and assessing new initiatives for emissions reduction.</td><td>Underway</td><td>Science, technology and research projects can be expected to lead to emissions reduction, which is calculated on a project-by-project basis.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
(1-2 years)</th><th>Medium
(3-8 Years)</th><th>Long
(8+ years)</th></tr><tr><td></td><td>✓</td><td>✓</td></tr></table></td><td>Number of science, technology and research projects resulting in emissions reduction
Emissions reductions resulting from science, technology and research projects</td></tr>
<tr><td>6.2. Continued senior leadership sponsorship and support of Sustainability and Innovation Challenges that focus attention on emissions reductions. Use the NZDF Innovation Framework to develop and implement potential ideas.</td><td>Underway</td><td>Innovative ideas can be expected to lead to emissions reduction, which is calculated on an initiative-by-initiative basis.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
(1-2 years)</th><th>Medium
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(8+ years)</th></tr><tr><td>✓</td><td>✓</td><td>✓</td></tr></table></td><td>Number of sustainability and climate change related innovations being submitted.
Number of innovation ideas implemented
Emissions reductions from initiative implementation</td></tr>
<tr><td>6.3. Senior leadership sponsorship of challenges on specific emissions reduction ‘problems’ to the external New Zealand innovation community.</td><td>Begin FY23/24</td><td>Innovative ideas can be expected to lead to emissions reduction, which is calculated on an initiative-by-initiative basis.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
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<tr><td>6.4. Incentivise operator-led, unit-level continuous improvement leading to emissions reductions.</td><td>Begin FY23/24</td><td>Continuous improvement can be expected to lead to emissions reduction, which is calculated on an initiative-by-initiative basis.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
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<tr><td>6.5. Establishment of site-based Sustainability Groups to empower action and provide channelled everyday support to targeted grass roots actions.</td><td>Underway</td><td>Continuous improvement can be expected to lead to emissions reduction, which is calculated on an initiative-by-initiative basis. Each site Group has an annual action and initiatives plan that is supported centrally.
Horizon when Reductions from this Initiative Might be Realised:<table><tr><th>Short
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</table>

Risk (and Opportunity) Management

15. Implementation Risks – There are a number of risks to be managed when focusing effort on reducing gross emissions.

    a. Strategic Direction – Reducing the NZDF's emissions will require rethinking how the NZDF operates organisationally and some trade-offs will be needed. For example, in many cases, lower/zero emissions options come at a higher upfront cost (but often a lower whole-of-life cost). The NZDF's senior leadership need to provide sufficient strategic direction and Command guidance regarding the importance of emissions reduction, to ensure the emissions reduction targets can be achieved.

    b. Personnel Resourcing – Reducing the NZDF's emissions will require sufficient personnel dedicated to the initiatives contained in this plan, both on an ongoing and a periodic surge capacity basis, to ensure the emissions reduction targets can be achieved.

    c. Funding – Reducing the NZDF's emissions will require sufficient funding dedicated to the initiatives contained in this plan, both on an ongoing and a periodic project basis, to ensure the emissions reduction targets can be achieved.

    d. Partnerships – Achievement of medium to long-term reduction targets will require the support of the NZDF's commercial, AoG agency, and international military partners.

16. These implementation risks will be managed through:

    a. further development of detailed plans and timelines in consultation with stakeholders and subject-matter experts;

    b. regular engagement and reporting to the NZDF Executive Committee, the CCRP Executive Sponsor, and the CCRP Board;

    c. progressively increasing the integration of this Plan with the NZDF Strategy and the NZDF's annual plans and budgets, and

    d. regularly engaging with commercial, AoG agency, and international military partners.

17. Transitional Risks – Transitional climate risks are those risks resulting from the policy, legal, technology and market changes occurring in the transition to a low carbon economy. Depending on the nature, speed and focus of these changes, varying levels of financial and reputational risk may occur. A range of transitional risks are present, these include:

    a. enforcement risk as further climate change law / policy is introduced where the NZDF cannot not achieve compliance;

    b. financial costs from FY25/26 to the NZDF of offsetting net carbon emissions above legislative and regulatory targets;

    c. reputational risk to the NZDF as a Crown organisation if it is seen as not acting on climate change; and

d. deteriorating social license to operate and interoperability if the NZDF cannot adopt low carbon alternatives at the same rate as society and/or our military partners;

e. increasing difficulties in recruitment of future workforce if New Zealand Defence Force is seen by the public, particularly younger generations, as not acting on climate change; and

f. risk of "stranded" assets and infrastructure that are obsolete or can no longer be maintained as New Zealand transitions to a low carbon economy.

18. These transitional risks will be managed through:

a. ongoing alignment of this Plan with other NZDF strategies and plans aimed at increasing readiness, capability, sustainability, and climate change response;

b. regular engagement and reporting to the NZDF Executive Committee, the CCRP Executive Sponsor, and the CCRP Board,

c. engagement with other NZDF governance boards and committees, as appropriate;

d. developing and maintaining appropriate networks, relationships and partnerships with government agencies leading emissions reduction and adaption actions, AOG groups, industry groups, and partner militaries.

Plan Management and Governance

19. Governance – The NZDF Executive Committee will provide overall governance for this Plan. As such, it will receive periodic performance reports on the Plan's progress, and provide guidance when required on significant issues arising during Plan implementation and delivery. The Plan forms part of the CCRP, which is governed by a Programme Board chaired by the CCRP Executive Sponsor, on behalf of CDF.

20. Accountability and Responsibility – The Chief of Defence Force, through Service Chiefs and portfolio heads, is accountable for the implementation and delivery of the Plan.

21. The 'hub and spoke' approach of the NZDF Climate Change Response Programme, coordinates and empowers individual organisational units to be responsible for delivery of initiatives, particularly those with specialist aspects of this Plan.

22. The Chief of Defence Strategy Management (CDSM) and Director of Strategic Programmes are responsible for co-ordinating implementation and delivery of the Plan.

23. Integration into Annual Planning – CDSM and the Chief Financial Officer will ensure the individual elements of this Plan are incorporated and prioritised into the NZDF's annual planning and budgeting cycle.

24. Performance Reporting

    a. External – The CNGP requires information on the NZDF's greenhouse gas emissions and progress against reduction plans to be included in each year's annual report and also directly to the CNGP lead agencies in December of each year. Questions about progress against the Plan can also be expected to feature in future hearings of the select committee on Foreign Affairs, Defence and Trade

    b. Internal – The Executive Committee will receive performance reports on the Plan's progress twice yearly, with the first report due at the Committee's meeting in May 2023. Once emissions reduction planning has been incorporated into the NZDF's annual plan, the feasibility of incorporating this plan's performance reporting into regular annual plan reporting will be examined.

25. Plan Review – This is a living Plan, and as such, may be amended from time to time by CDSM in order to incorporate new opportunities as they arise and address matters affecting the Plan's implementation and delivery. The Plan will be formally reviewed by the Executive Committee on an annual basis, with the first review being at the Committee's meeting in November 2023.

Annex A

NZDF EMISSIONS SOURCES

Source of Emissions	FY2016/17 (Base Year)		FY2017/18		FY2018/19		FY2019/20		FY2020/21		FY2021/22	
	$tCO_2(e)$	%	$tCO_2(e)$	%	$tCO_2(e)$	%	$tCO_2(e)$	%	$tCO_2(e)$	%	$tCO_2(e)$	%
Fuels - Aviation	32,111.4	21.0	30,823.8	23.8	32,959.6	29.5	30,976.1	27.3	22,110.7	18.6	31,103.1	26.3
Fuels - Maritime	27,600.3	18.0	4,503.9	3.5	725.1	0.6	673.6	0.6	30,962.4	26.1	20,932.9	17.7
Fuels - Diesel	22,919.7	15.0	24,503.5	18.9	18,844.2	16.9	21,143.2	18.6	17,560.2	14.8	17,737.2	15.0
Travel - Air Travel	19,054.1	12.5	18,310.9	14.1	19,426.9	17.4	13,489.6	11.9	4,104.9	3.5	9,295.8	7.9
Energy	19,022.8	12.4	18,737.6	14.5	13,119.2	11.7	13,931.8	12.3	13,676.4	11.5	13,494.8	11.4
Waste	11,446.3	7.5	12,485.2	9.6	4,425.1	4.0	8,407.8	7.4	6000.2	5.0	4,156.9	3.5
Electricity	7,692.9	5.0	7,747.9	6.0	7,488.8	6.7	7,200.3	6.3	8402.0	7.1	7,969.7	6.7
Freight	4,600.8	3.0	3,698.8	2.9	4,600.8	4.1	3,611.7	3.2	3605.4	3.0	3,476.1	2.9
Uniforms	3,671.7	2.4	3,304.8	2.6	2,773.1	2.5	4,172.6	3.7	3843.7	3.2	5,205.4	4.4
Energy Trans & Dist'n Losses	1,361.6	0.9	1,346.4	1.0	1,196.7	1.1	1,311.3	1.2	1,102.9	0.9	1,083.2	0.9
Waste Water Treatment Plants	927.3	0.6	860.7	0.7	830.6	0.7	829.2	0.7	671.0	0.6	683.3	0.6
Travel - Rental Cars	589.7	0.4	911.5	0.7	1,457.1	1.3	453.4	0.4	692.1	0.6	540.2	0.5
Travel - Hotels	578.0	0.4	654.9	0.5	581.3	0.5	528.4	0.5	275.6	0.2	237.4	0.2
Refrigerants	525.0	0.3	512.1	0.4	1,978.0	1.8	1,191.6	1.0	1,040.8	0.9	991.4	0.8
Fuels - Petrol/Premium Petrol	450.9	0.3	646.7	0.5	826.3	0.7	636.1	0.6	863.8	0.7	690.7	0.6
Wastewater (external)	182.2	0.1	184.0	0.1	301.7	0.3	145.1	0.1	128.3	0.1	471.1	0.4
Travel - Taxi / Shuttle	108.2	0.1	110.9	0.1	114.0	0.1	90.5	0.1	69.5	0.1	48.9	0.0
Public Transport	43.6	0.0	14.7	0.0	21.6	0.0	18.2	0.0	15.4	0.0	9.0	0.0
Fertiliser	41.0	0.0	30.3	0.0	38.1	0.0	43.2	0.0	42.1	0.0	24.4	0.0
Water (external)	8.8	0.0	8.7	0.0	9.3	0.0	10.1	0.0	17.3	0.0	7.8	0.0
Gases	1.9	0.0	8.6	0.0	1.9	0.0	5.7	0.0	1.0	0.0	1.5	0.0
Oil	1.7	0.0	1.9	0.0	1.8	0.0	1.8	0.0	0.0	0.0	0.0	0.0
Deforestation	0.0	0.0	0.0	0.0	0.0	0.0	4,658.1	4.1	3,631.2	3.1	1.0	0.0
Fuels - LPG	0.0	0.0	1.1	0.0	1.3	0.0	1.2	0.0	1.1	0.0	1.0	0.0
Paper	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
All Sources	**152,939.8**	**100.0**	**129,409.0**	**100.0**	**111,722.6**	**100.0**	**113,530.6**	**100.0**	**118,818.1**	**100.0**	**118,162.9**	**100.0**