Genesis Energy Limited

FY22 Greenhouse Gas Inventory Report

genesis

Purpose of document

This document provides an inventory of Genesis' scope 1, 2, and 3 greenhouse gas emissions[1]. It has been prepared in accordance with the Greenhouse Gas Protocol: *A Corporate Accounting and Reporting Standard (2004)*, which is an internationally recognised framework for carbon reporting. Using a recognised and widely adopted framework ensures transparency, robustness and consistency in approach across the energy sector.

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Reviewed by: Jacki Farman, General Manager Financial Control and Risk

Signed off by: James Spence, Chief Financial Officer

Introduction

This report is the annual greenhouse gas (GHG) inventory report for Genesis Energy Limited (Genesis) and its subsidiaries for the financial year ended 30 June 2022. The Board of Directors and the Chief Financial Officer are ultimately responsible for the report which has been prepared by the finance and sustainability teams.

This report has been prepared in accordance with the requirements of the Greenhouse Gas Protocol: *A Corporate Accounting and Reporting Standard (2004)* (GHG Protocol). For information about our climate related risks and how we manage, mitigate and minimise them refer to our FY22 Climate Risk Report.

Description of Genesis

Genesis is an energy generator and retailer supplying electricity, gas, LPG and energy services to more than 470,000 customers in New Zealand through two retail brands (Genesis and Frank*Energy). We operate a range of renewable and thermal generation sites across the country[2]. Further information on our generation sites can be found on our website. The geographic spread and diverse range of our generation assets provides vital support to the backbone of the country's energy sector. Genesis sits at the intersection of supply and demand for several energy sources as well as being the generator of last resort when renewable sources are unable to meet demand.

Genesis, through its wholly-owned subsidiary, Kupe Venture Limited, has a 46% interest in the Kupe Joint Venture, which owns the Kupe oil and gas field situated off the south Taranaki coast. Genesis purchases all the natural gas and 46% of the LPG produced from Kupe Joint Venture. The gas and LPG are sold to retail and wholesale customers and is used to generate electricity at the Huntly Power Station. Our vertically integrated gas portfolio, from wellhead to our industrial and residential customers is a vital part of the country's energy system providing flexibility, security, and price stability.

Genesis' purpose is 'Empowering New Zealand's sustainable future'. We act on this in three ways – enabling a low carbon future for all New Zealanders, leading a sustainable business and playing our part as individuals.

Genesis is a mixed ownership model company, listed on the New Zealand Stock Exchange and the Australian Securities Exchange and is majority owned by the Crown (51%). Genesis has approximately 1,204 full time equivalent employees. Revenue for the year ended 30 June 2022 was $2,834.1 million. For further information about Genesis, refer to our FY22 Annual Report.

Statement of intent

This report forms part of Genesis' commitment to providing transparency around how we operate, measure and manage our emissions.

A large portion of our emissions comes from our thermal generation, which is the generator of last resort when renewable sources are unable to meet demand.

We are committed to taking action to reduce emissions and balancing climate change considerations, managing increasing energy demand and ensuring our customers have a reliable and cost-effective energy supply.

We have set ambitious emissions reduction targets aligned with limiting global warming to 1.5°C above pre-industrial levels to support the country's commitment under the Paris Agreement. We are the first generator-retailer in New Zealand to have targets verified by the internationally recognised Science Based Targets initiative (SBTi). We have committed to reducing absolute scope 1 and 2 emissions by 36% by FY25 from a FY20 base year and to reduce absolute scope 3 emissions from use of sold products by 21% by FY25 from a FY20 base year. That is a commitment to reduce more than 1.2 million tonnes of carbon dioxide equivalent (tCO2e) by FY25. Our Future-gen strategy is how we will deliver on our scope 1 and 2 target. Refer to our FY22 Climate Risk Report for more information on our Future-gen strategy.

1 Throughout this document 'emissions' means greenhouse gas emissions
2 Huntly Power Station, Tongariro, Waikaremoana and Tekapo Power Schemes and Hau Nui Windfarm.

Organisational boundaries

Organisational boundaries determine the parameters for GHG reporting and ensure consistency when determining which factors to include. Genesis' boundaries have been set in accordance with the methodology outlined in the GHG Protocol.

The GHG Protocol allows two distinct approaches to consolidate GHG emissions: the equity share approach or the control approach (control can be defined in either financial or operational terms).

Genesis has applied the **operational control consolidation approach**, which ensures we focus on those emission sources that we have control over and therefore the ability to manage. Operational control is defined in the GHG Protocol as having the full authority to introduce and implement operating policies at the operation under consideration. Under the operational control approach, an entity accounts for 100% of emissions from operations over which it or one of its subsidiaries has operational control.

The organisation boundary includes Genesis and all its subsidiaries (refer to our FY22 Annual Report for a list of subsidiaries).

Business units excluded

All of Genesis' joint ventures, joint operations and associates are excluded from scope 1 and 2 emissions on the basis that Genesis does not have operational control of these entities. Refer to our FY22 Annual Report for a list of entities.

Kupe Venture Limited sells its 46% share of gas and LPG produced from Kupe Joint Venture to Genesis. These products are either used in the generation of electricity or sold to customers, as a result these products are included in either scope 1 or scope 3 depending on how they were used. The sale of oil produced by the Kupe Joint Venture is managed by the Operator, Beach Energy, and as a result has not been included in scope 3 emissions on the basis that Genesis does not have operational control.

Operational boundaries

The emission sources included in this inventory were identified with reference to the methodology outlined in the GHG protocol.

Scope 1 – Direct GHG emissions

Scope 1 includes GHG emissions from sources that are owned or controlled by Genesis. This includes electricity generation, fuel used in vehicles owned or leased by Genesis and any fugitive emissions released.

Scope 2 – Indirect electricity GHG emissions

Scope 2 includes emissions from purchased electricity consumed by Genesis and therefore brought into our organisational boundary. It includes electricity that is consumed at LPG branches and depots, corporate offices and office buildings at generation sites where the electricity is drawn from the grid. It excludes electricity consumed at generation sites where the electricity was not drawn from the grid.

Scope 2 emissions have been calculated using location-based emissions factors as market-based emissions factors are not available in New Zealand.

Scope 3 – Other indirect GHG emissions

Scope 3 emissions are a consequence of Genesis' activities but occur from sources not owned or controlled by us. Reporting on these emissions is optional under the GHG Protocol.

The Corporate Value Chain (Scope 3) Accounting and Reporting Standard (a supplement to the GHG Protocol) categorises scope 3 emissions into 15 distinct categories. Genesis has determined which scope 3 categories are relevant using the following criteria:

(a) relevance to our operations;

(b) a significant contributor to overall GHG emissions;

(c) availability of data; and

(d) able to be influenced/reduced.

Table 1 details which categories have been included and the boundary applied and **Table 2** details which categories have been excluded and why.

Table 1: Scope 3 inclusions

Category	Boundary applied
Purchased goods and services	Goods and services purchased in the financial year and that are not disclosed in another category noted below.
Fuel and energy related activities	This category includes upstream emissions on fuels purchased for use in the generation of electricity as well as fuels sold to customers. Upstream emissions on coal and LPG is based on when the fuel is purchased rather than when it is burnt or sold to customers. Coal purchases in transit at year end are recognised as purchases in the financial year the coal is recorded on the coal stockpile.
Waste generated in operations	We are only able to measure our waste for Auckland, Hamilton, and Christchurch corporate offices. Other sites do not currently measure waste in a manner that enables a meaningful emission calculation.
Business travel	Air travel, accommodation and taxi services used during the financial year.
Use of sold product	Gas and LPG sold to customers during the financial year.
Investments	This category only includes an allocation of emissions relating to Kupe Venture Limited's 46% share of oil production as all of Kupe Venture Limited's 46% share of gas and LPG produced by Kupe Joint Venture is either used in the generation of electricity or sold to customers and therefore has been included in the fuel and energy related activities category. Emissions from associates and other joint ventures have been excluded as they are not considered material.

Base year

The base year is 1 July 2019 to 30 June 2020 (FY20) to be consistent with the base year used for our Science Based Targets. Total scope 1 and 2 emissions for FY20 were 2,690,253 tCO_2e and scope 3 were 1,804,749 tCO_2e.

Table 2: Scope 3 exclusions

Category	Justification for excluding
Capital goods	Based on initial screening, this category is not considered material, further work will be undertaken to verify the initial screening results with the aim of reporting this category in the future.
Upstream transportation and distribution	Emissions on transportation are included in scope 3 fuel and energy related activities or scope 1.
Employee commuting	Based on initial screening, this category is not considered material. We are working to include the new guidance issued in May 2022 by the Ministry for the Environment in relation to measuring emissions associated with employees working from home. The aim is to report this category in FY23 once the work has been completed.
Upstream leased assets	Emissions from upstream leased assets are included in scope 1 and 2.
Downstream transportation and distribution	There is no transportation or distribution of products after the point of sale.
Processing of sold products	Genesis does not sell intermediate products therefore there is no processing of sold products.
End of life treatment of sold products	Sold products are consumed by customers therefore there are no end-of-life emissions to account for.
Downstream leased assets	Emissions from downstream leased vehicles are included in the fuels and energy related activities category and emissions associated with leased LPG bottles and tanks are included in use of products sold category.
Franchises	Genesis does not have anything that falls within this category.

Methodology and emissions sources

Data was collected from different parts of the business including Genesis Wholesale Operations and external suppliers, and analysed by the finance and sustainability teams. All material emissions calculations are prepared by our financial reporting system using the Ministry for the Environment's 2022 Greenhouse Gas Reporting factors included in their *Measuring emissions: A guide for organisations: 2022 detailed guide* with the exception of scope 3 purchased goods and services which uses the Department for Environment Food and Rural Affairs lifecycle emission factors and scope 3 fuel and energy related activities that uses Agrilink NZ lifecycle emission factors. Our data sources and assessment of their reliability are shown in **Table 3**.

Table 3: Summary of emissions source inclusions

	Category	GHG emissions source	Data source	Reliability of data
Scope 1	Stationary combustion	Fuel used for electricity generation (includes gas, coal, LPG and diesel)	Fuel records used for financial and Emissions Trading Scheme (ETS) reporting	Data quality is good. Reliable due to use of financial records.
	Mobile combustion	Fuel used in plant vehicles and distance travelled for all other vehicles (owned and leased vehicles)	Fuel or kilometre usage from financial records and/or fleet manager	Data quality is good. Does not account for information withheld resulting from human error if employees forget to add in a claim. Estimations are necessary where information is missing.
	Fugitive emissions	Fugitive emissions of Sulphur Hexafluoride (SF_6)	Maintenance reporting system	Calculated at sites where reliable information available. Fugitive emissions excludes any potential emissions from Genesis' LPG business based on immateriality of the emissions from this source.
Scope 2	Electricity	Electricity consumed at LPG branches and depots, corporate offices and office buildings at generation sites where the electricity is drawn from the grid	Records from billing system	ICP points were used to measure consumption at various sites. Where auxiliary power is consumed it is excluded as it has not yet gone to the grid.
Scope 3	Purchased goods and services	Extraction, production, and transportation of goods and services acquired but not included in the other categories noted below	Purchased goods and services from financial records	Data quality is good. Susceptible to accounting treatment.
	Fuel and energy related activities	Extraction, production, and transportation of fuel and energy acquired and consumed in the generation of electricity or sold to customers	Fuel records used for financial and ETS reporting	Data quality is good. Reliable due to use of financial records.
	Waste generated in operations	Disposal and treatment of waste	Waste data as measured by our waste company	Data quality is good. Reliant on accuracy of waste company.
	Business travel	Employees travelling nationally and internationally for business purposes	Air travel, hotel stays, and rental cars from our corporate travel manager	Data quality is good. Reliant on accuracy of travel manager record system.
	Use of sold products	Usage of LPG and gas sold to customers	LPG and gas sales data from financial records	Data quality is good.
	Investments	Scope 1 and 2 information for Kupe Joint Venture	Information submitted under ETS requirements and electricity consumption from financial records	Data quality is good. Reliable due to use of financial records.

Greenhouse gas inventory summary

Total scope 1 and 2 GHG emissions for the year ended 30 June 2022 was 2,223,343 tCO_2e. This is 44% less than FY21. The decrease is mainly driven by the decrease in thermal generation (32% lower than FY21) and a decrease in the volume of coal burnt (67% lower than FY21).

Table 4: GHG inventory summary

Scope	Category	FY20 tCO_2e	FY21 tCO_2e	FY22 tCO_2e
Direct emissions (Scope 1)	Attributable to customers	2,539,863	3,132,879	1,934,978
	Attributable to supply contracts (swaptions)	149,491	805,398	286,398
	Stationary combustion attributable to thermal generation	**2,689,354**	**3,938,277**	**2,221,376**
	Mobile combustion	579	1,624	1,733
	Fugitive emissions	80	162	17
	Total scope 1	**2,690,013**	**3,940,063**	**2,223,126**
Indirect emissions (Scope 2)	Electricity consumption	240	262	217
	Total scope 2	**240**	**262**	**217**
	Total scope 1 & 2	**2,690,253**	**3,940,325**	**2,223,343**
Indirect emissions (Scope 3)	Purchased goods and services ^	15,348	14,898	15,492
	Fuel and energy related activities (upstream emissions) ^			
	- Related to thermal generation	239,840	279,781	286,017
	- Related to sold products	172,611	159,031	124,140
	- Transmission and distribution losses on electricity purchases	24	25	20
	Waste generated in operations	19	26	21
	Business travel	1,975	215	146
	Use of sold products			
	- LPG Retail	121,802	128,665	130,372
	- LPG Wholesale	52,820	46,838	51,773
	- Gas Retail	429,893	441,033	406,308
	- Gas Wholesale	762,337	653,421	406,233
	Investments ^	8,080	8,547	7,184
	Total scope 3 ^	**1,804,749**	**1,732,480**	**1,427,706**
	Total scope 1, 2 & 3 ^	**4,495,002**	**5,672,805**	**3,651,049**

Table 5: GHG emissions by gas component

Component gas	Scope 1 tCO_2e	Scope 2 tCO_2e	Scope 3 tCO_2e	Total tCO_2e
CO_2	2,214,453	217	992,294	3,206,964
CH_4	3,202	-	2,069	5,271
N_2O	5,454	-	490	5,944
SF_6	17	-	-	17
Unknown*	-	-	432,853	432,853
Total tCO_2e	**2,223,126**	**217**	**1,427,706**	**3,651,049**

* The breakdown by gas component is not published for cradle to gate lifecycle emission factors and therefore this information is unable to be disclosed by gas component for some scope 3 emissions.

Table 6: Key performance indicators (KPI)

KPI	FY20	FY21	FY22
Total thermal generation (GWh)	4,461	5,501	3,736
Thermal generation carbon intensity (tCO_2e/GWh of thermal generation)	603	716	595
Total generation (GWh)	6,805	8,027	6,481
Total generation carbon intensity (tCO_2e/GWh of total generation)	395	491	342

Assurance

EY have provided an unqualified limited assurance opinion on the GHG inventory for the year ended 30 June 2022.

^ FY22 is the first year that purchased goods and services, fuel and energy related activities and investments have been disclosed. FY20 and FY21 have been restated to include these categories to enable comparability between reporting periods.

GHG emissions reductions and offsets

Science Based Targets

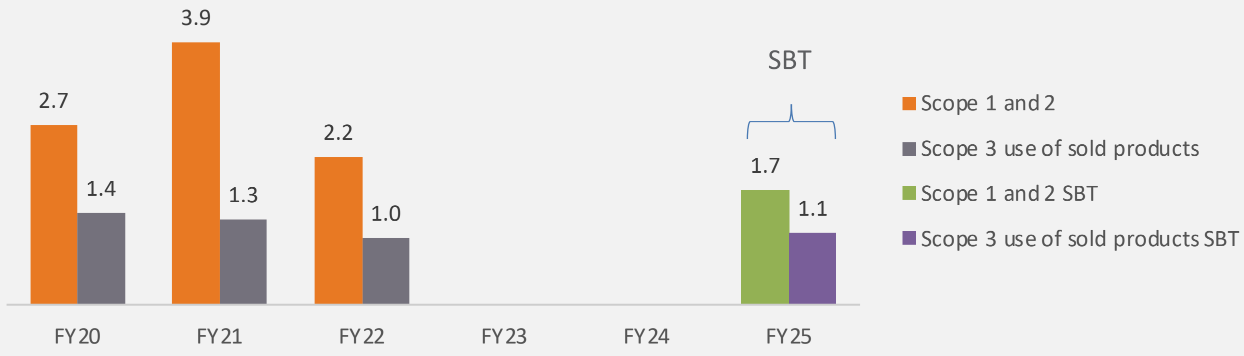
We have committed to reduce absolute:

1. Scope 1 and 2 GHG emissions by 36% by FY25 from a FY20 base year. This equates to approximately 968,000 tonnes of CO_2e.
2. Scope 3 emissions from use of sold products by 21% by FY25 from a FY20 base year. This equates to approximately 287,000 tonnes of CO_2e. The scope 3 Science Based Target specifically relates to use of sold products and therefore does not include the following scope 3 categories: purchased goods and services, fuel and energy related activities, waste generated in operations, business travel and investments.

Scope 1 and 2 emissions in FY22 were 17% lower than FY20 (base year) which equates to a reduction of 466,910 tonnes of CO_2e. Scope 3 emissions from use of sold products was 27% lower than FY20 (base year) which equates to a reduction of 372,166 tonnes of CO_2e.

Performance compared to Science Based Targets (SBT)

MtCO2e



Reducing and offsetting workforce emissions

Our Workforce Emissions include emissions from business travel, office waste, electricity consumption and employee commuting. Our Auckland and Hamilton corporate offices are Green Star rated and we have a number of other initiatives to reduce our Workforce Emissions, including encouraging more sustainable commuting by subsidising public transport in our Auckland offices, using the Zilch car share scheme for our corporate fleet, piloting a fully electric Fuso eCanter truck in our commercial fleet. For more detail, refer to our FY22 Annual Report.

We are offsetting 692 tCO_2e FY22 Workforce Emissions as these are currently the scope 3 emissions we can most accurately measure and put initiatives in place to reduce.

Forestry partnerships offset emissions and manage price risk

Genesis is involved in two forestry partnerships[3] that help remove carbon from the atmosphere and provide emission units that enable Genesis to meet its obligations under the ETS. These units help manage the future costs of thermal generation or can be sold to other emitters.

3 DrylandCarbon One Limited Partnership and Forest Partners Limited Partnership

Building a better working world

Independent Limited Assurance Statement to the Management and Directors of Genesis Energy Limited

Assurance Conclusion

Ernst & Young ('EY', 'we') was engaged by Genesis Energy Limited ("Genesis") to undertake limited assurance over Genesis' voluntary greenhouse gas emissions inventory ("GHG inventory") disclosures (including scope 1, scope 2 and certain scope 3 emissions from purchased goods and services, fuel and energy related activities, business travel, office waste, use of sold products, and investments) for the year ended 30 June 2022. Based on our limited assurance procedures, nothing came to our attention that caused us to believe that Genesis' GHG inventory for the year ended 30 June 2022 disclosed in the Genesis FY22 Greenhouse Gas Inventory Report, has not been prepared and presented fairly, in all material respects, in accordance with the Criteria defined below.

What our review covered

The subject matter and criteria covered by our assurance procedures are detailed in the table below.

Subject Matter	Criteria
Genesis' total greenhouse gas emissions inventory (including scope 1, scope 2 and certain scope 3 emissions from purchased goods and services, fuel and energy related activities, business travel, office waste, use of sold products, and investments) for the year ended 30 June 2022, disclosed in Genesis' FY22 Greenhouse Gas Inventory Report.	Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard New Zealand Ministry for the Environment's guidance for voluntary corporate greenhouse gas reporting 2022 UK Department for Environment, Food & Rural Affairs - Indirect emissions from the supply chain 2007-2011 AgriLink's New Zealand fuel and electricity total primary energy and life cycle greenhouse gas emission factors 2021

Reviewed GHG inventory

Total scope 1, 2, and 3 emissions (tCO_2-e)	3,651,049

Key responsibilities

EY's responsibility and independence

Our responsibility was to express a conclusion on Genesis' voluntary GHG inventory disclosure for the year ended 30 June 2022 based on our review. We have complied with the relevant ethical requirements relating to assurance engagements, which include independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality, and professional behaviour.

In accordance with the Professional and Ethical Standard 3 (Amended), Ernst & Young Limited maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Genesis' responsibility

Genesis management ("management") was responsible for selecting the Criteria and preparing and fairly presenting the GHG inventory for the year ended 30 June 2022 in accordance with that Criteria. This responsibility includes establishing and maintaining internal controls, adequate records and making estimates that are reasonable in the circumstances.

Our approach to conducting the engagement

We conducted this review in accordance with the International Standard on Assurance Engagements ISAE (NZ) 3000: Assurance Engagements Other than Audits or Reviews of Historical Financial Information and ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements and the terms of reference for this engagement as agreed with Genesis on 28 February 2022.

Summary of procedures performed

A limited assurance engagement consists of making enquiries and applying analytical, appropriate testing, and other evidence-gathering procedures.

Our procedures included, but were not limited to:

- Conducting interviews with personnel to understand the business and reporting process
- Checking that the flow of information from site metering or monitoring through to calculation spreadsheets is accurate
- Identifying and testing assumptions supporting the calculations
- Comparing year-on-year activities-based greenhouse gas and energy data, where possible
- Checking organisational and operational boundaries to test completeness of greenhouse gas emissions sources
- Tests of calculation and aggregation
- Checking that emissions factors and methodologies have been correctly applied as per the criteria
- Reviewing the appropriateness of the presentation of disclosures.

We believe that the evidence obtained is sufficient and appropriate to provide a basis for our limited assurance conclusions.

Independent Limited Assurance Statement to the Management and Directors of Genesis Energy Limited

Limited Assurance

Procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

While we considered the effectiveness of management's internal controls when determining the nature and extent of our procedures, our assurance engagement was not designed to provide assurance on internal controls. Our procedures did not include testing controls or performing procedures relating to checking aggregation or calculation of data within IT systems.

Use of our Assurance Statement

We disclaim any assumption of responsibility for any reliance on this assurance report to any persons other than Management and the Directors of Genesis or for any purpose other than that for which it was prepared.

Other matters

New Zealand Ministry for the Environment's guidance for voluntary corporate greenhouse gas reporting 2022 does not provide emission factors to calculate scope 3 emissions from fuel and energy related activities. To calculate this, Genesis has undertaken detailed analysis of different published emission factors.

Genesis has chosen to apply AgriLink's New Zealand fuel and electricity total primary energy and life cycle greenhouse gas-emission factors 2021[1]. Our conclusion is not modified in respect to this matter.

Pip Best
Partner –Sustainability Services
Ernst & Young Limited
New Zealand
4 August 2022

1 AgriLink New Zealand, 2021