Energy Assessment Report

CO2 Performance Ladder Certification

Client	Rijkswaterstaat
Contract Number	31109331
Name	A9BH-PW-0000-PC-SU-RP Energy Assessment Report
Revision	1
Date	06/05/2025
Status	Final
SBS	
WBS	

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Glossary

This chapter functions as an aid for reading this document by providing an overview of reference documents, abbreviations and definitions.

Reference documents

This document is referring to the following VEENIX documents:

Name document	Document Number
Energy Management Plan	A9BH-PW-0000-PC-SU-PLN Energy Management Plan
CO2 Management Plan	A9BH-PW-0000-PC-SU-PLN CO2 Management Plan
Sustainability Communication Plan	A9BH-PW-0000-PC-SU-PLN Communication Plan

Tabel 1: VEENIX reference documents

This document also refers to the following external documents:

Name document	Document Number
GHG Protocol	
CO2 Performance Ladder Handbook	
ISO14064-1 standard	

Tabel 2: External reference documents

Abbreviations and definitions

In this document the following abbrevations and definitions are maintained:

Abbrevation	Full Description
CO2PL	CO2 Performance Ladder
GHG	Greenhouse Gas

Tabel 3: Abbrevations

Definition	Full Description

Tabel 4: Definitions

1 Introduction

1.1 CO2 Performance Ladder

For the certification of FCC Construcción on the CO2 performance ladder, an energy assessment report was drawn up. The energy assessment report is an inventory of all energy flows and the possibilities to reduce them. The energy audit report was drawn up in accordance with the guidelines in ISO 50001.

1.2 Document relationships

A visual is made to depict the relationships between the several plans and reports that are set up for the CO2 Performance Ladder (see Figure 1). The CO2 Management Plan brings together the results of multiple documents and can therefore be seen as the main plan.

The energy assessment report concerns an inventory of all energy flows and the possibilities for reducing them. The energy assessment report was drawn up in accordance with the guidelines in ISO 50001. For the sake of completeness, we also refer to the documents related to this document:

- Energy Management Plan
- Emission Inventory Scope 1 and 2 (excel file)

The last two documents are documents that are used to collect and report scope 1 and scope 2 emissions.

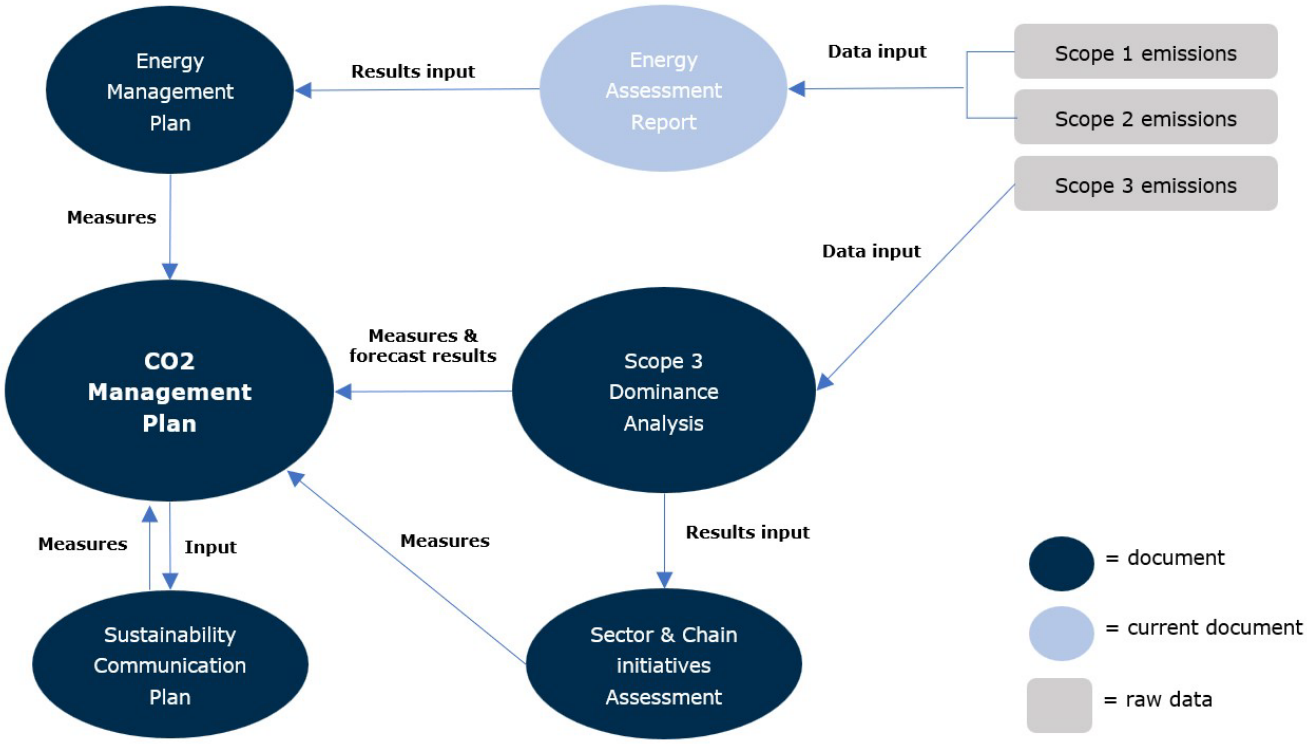

Figure 1: Visual presentation of relationships between the CO2PL documents.

1.3 Energy Assessment

An energy assessment is an environmental audit with the focus on the energy aspects of the company. In order to be able to take targeted measures for reducing energy consumption and the associated costs, it is necessary to gain an insight into the existing energy consumption, its distribution among the various business purposes, the causes of energy loss, etc.

1.4 Requirements CO2PL

The Energy Assessment Report is established to comply to the following CO2PL requirements:

- 2.A: The organisation knows how much energy is used per type, classified according to the organisation's various activities.

- 2.A.3: The organisation has an up-to-date **energy assessment** for the organisation and the projects for which a CO_2-related award advantage has been obtained.

- 2.B: The organisation has an energy reduction target, described in qualitative terms.
  - 2.B.1. The organisation has an objective described in qualitative terms for reducing energy and has proposed measures for the projects.
  - 2.B.2. The organisation has a specified objective for the use of alternative fuels and/or the use of green energy and has proposed measures for the projects.

2 Energy flows (scope 1 and 2 emissions)

The energy flows ad sources of emissions in scope 1 and two are defined in the Energy Inventory. Sources are divided whether the energy is consumed in the HQ offices or at the site.

The sources identified in the energy inventory are the following;

DIRECT ENERGY

FCC NL - OFFICES	Description
Natural gas	Natural gas is used for heating and cooking appliances
Diesel	Fuel consumed by vehicles used by staff of the project
Gasoline	Fuel consumed by vehicles used by staff of the project

VEENIX PROJECT	Description
Diesel	Fuel consumed by vehicles used by generators in site

INDIRECT ENERGY

FCC NL - OFFICES	Description
Electricity	Lighting,

VEENIX PROJECT	Description
Electricity	Electricity for lighting, machinery, etc. - One low-voltage connection, with ENECO (100% renewable) - One medium-voltage connections, with Vattenfall (European Wind)

The insight to the energy consumption based on the inventory, is the following.

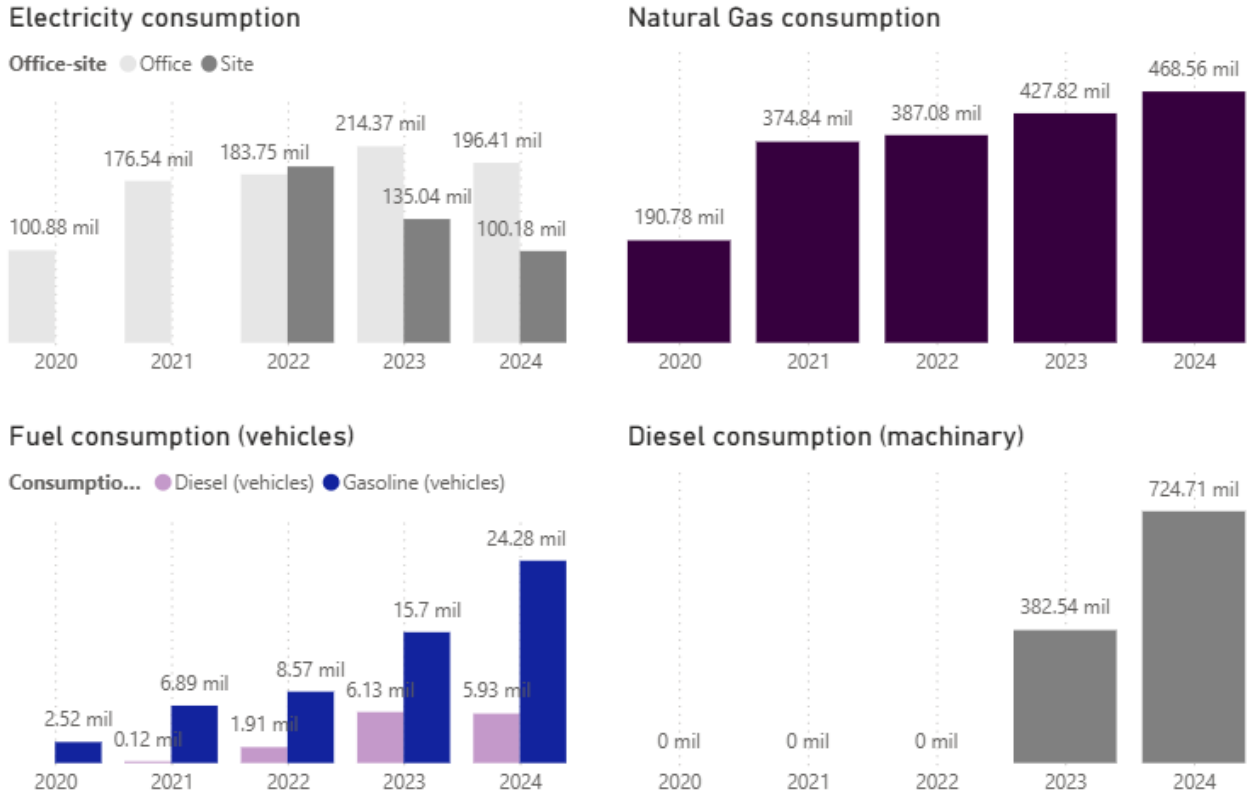

Figure 2: Energy chart (scope 1 and 2) of total emissions.

2.1 Energy emission inventory data

The energy inventory has been defined based on the guidelines of the GHG protocol, which the emissions categories are divided into direct (scope 1) and indirect emissions (scope 2 and 3).

- Direct emissions:
  - Associated with the consumption of fossil fuels in the main office
  - Associated with the consumption of fossil fuels in the site

- Own indirect emissions:
  - Associated with the consumption of electrical energy
  - Associated with the consumption of electrical energy for vehicles

- Other indirect emissions:
  - Emissions associated with the production of used materials. Emissions from the manufacture of concrete, asphalt agglomerate, steel, non-ferrous metals, bricks, glass and cement are considered.
  - Emissions associated with the transport of used materials. This includes the transport to the site of concrete, asphalt agglomerate, earth, graded aggregate, soil, steel, non-ferrous metals, bricks, glass and cement.
  - Emissions associated with employee business travel.
  - Emissions associated with company staff commuting to the workplace.

The insight of the emissions generated are explained in the CO2 Management System Report.

3 List of reduction possibilities

Identifying and implementing effective reduction measures for Scope 1 and Scope 2 emissions is crucial to achieve the reduction goals. Scope 1 emissions are direct emissions from owned or controlled sources, such as fuel combustion in construction machinery and vehicles. Scope 2 emissions are indirect emissions from the generation of purchased electricity, steam, heating, and cooling consumed by the project.
The measures outlined in this chapter are possible strategies that can be adopted to reduce the carbon footprint of the A9 BaHo project. It is important to note that these measures are not mandatory but serve as recommendations to guide the project towards more sustainable practices, ensuring that it not only meets regulatory requirements but also sets a benchmark for sustainable construction practices.

3.1 Possible reduction measures scope 1: gas

- Replace devices that consume a lot of gas with electrical devices at the offices.
- Reducing electricity consumption in the offices through applications such as LED lighting and movement sensors. Do not leave office machines (desktops, laptops, printers, plotters, etc.) on stand-by, but switch them off if they are not used for a longer period.
- Insulating measures to reduce gas consumption.
- Shift from gas heating to electric heaters at the offices.
- Turn down heating temperature by 1 or 2 degrees.
- Turn off the heating in rooms where nobody is present.
- Close intermediate doors to avoid air drafts.

3.2 Possible reduction measures scope 2: electricity & business travel

- Lower electricity consumption by lowering heater temperature 1 or 2 degrees.
- Insulating measures to reduce electricity consumption by electric heaters.
- Buy renewable electricity to cover electricity consumption through PPA(Power Purchase Agreement) contract.
- Generate own renewable electricity for the electricity consumption of all company buildings and on sites (e.g. solar panels, wind turbines).
- Replace high electricity consuming devices with mor energy-efficient devices.

- Travel (more) by train instead of by plane.
- More online conferences or meetings and less traveling by car/plane.
- Compensation for the CO2-emissions of all lease cars.
- Set a maximum on kilometres or CO2-emissions per lease car.
- All new employee cars are electric or bio-fuel driven.
- Employees switch from current car to electric or bio-fuel driven.
- Provide a budget to employees for public transport.
- Provide employees the option to lease electric bicycles.

Other measures related to materials and water consumption at the office:

- Implement water-saving toilet bowls.
- Implement waterless urinals.
- Use only water-saving taps.
- Purchase environmentally friendly(r) hand soap, etc.
- Use only ECO-toilet paper.
- Everyone uses a washable coffee cup/cup instead of a disposable cup.
- Efficient printing (two-sided, FSC paper, print only what is needed).
- Make sure office waste is recycled as much as possible by waste processors.

More measures related to communication:

- Stimulate employees in thinking “green”.

3.3 Choice of measures and quantified objectives

The Energy Management Plan is followed up from this report and proposes quantified energy objectives and measures accordingly. See document A9BH-PW-0000-PC-SU-PLN Energy Management Plan.