PROJECT FILE: NIEUWPOORT

Maintenance dredging works in the coastal marina at Nieuwpoort

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Document control

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Reference documents

Reference	Title
Standards	
CO2 Performance ladder	Handbook version 3.1
ISO 14064	/

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1 Introduction

The Nieuwpoort Coastal Marina consists of the river Ijzer ('fairway'), which flows into the North Sea, along which 3 marinas are located.

The Client regularly controls the areas and indicates where dredging should take place.

In the marinas and in locations in the river that are difficult to access, this is done with a small CSD, which pumps the sediments via a floating pipeline to larger seagoing split hopper barges moored in the fairway. Once loaded, they sail approx. 12km into the sea to dump the dredged sediments within a defined area.

In other places in the fairway, a TSHD can dredge.

The contract is divided into 'lease years', which go from 16th September, at the earliest, until 15th June, at the latest, of the following year. At the beginning of each lease year, a 'dredging campaign' will be performed.

The current reporting period includes the first phase of the sixth lease year, which started on 01 December 2024.

Reporting		H2 2019	H1 2020		H1 2021	H2 2021	H1 2022	
Lease year		Lease year 1		Lease year 2		Lease year 3		
Calendar year	**2019**		**2020**		**2021**		**2023**	

Reporting		H2 2022	H1 2023	H2 2023	H1 2024	H2 2024		
Lease year		Lease year 4		Lease year 5		Lease year 6		
Calendar year	**2022**		**2023**		**2024**		**2025**	

1.1 Project details

ID data	
Description	Performance of maintenance dredging works in the 3 marinas and fairway at Nieuwpoort, with the purpose of reaching the target depth of the riverbed.
Specification number	16EH/18/15 (Lot 1)
Client	Agentschap Maritieme Dienstverdeling & Kust
Tender date	22 January 2019 (Start works November 2019)
Date of award	3 lease years, extended by 3 lease years.

1.2 Parties involved

Jan de Nul NV is the main contractor for this project and is responsible for:

- Deployment of the cutter suction dredger ('CSD'), seagoing split hopper barges ('SHB'), support vessels;
- Loading pontoons ('FLAP');
- Deployment of trailing suction hopper dredger ('TSHD');
- Project management and day-to-day management.

This year, a subcontractor was contracted for the supply of the 'SHB': Faasse Dredging (SHB/TSHD)

2 Insight

2.1 Equipment deployed and deployment periods

Schip	Inzetperiode
CSD	December 2024
SHB/TSHD	December 2024
Assistance boat	December 2024

2.2 Identification of energy – and emission flows

List of material energy – and emission flows

Scope 1 (fuel consumption)
Fuel consumption of seagoing split hopper barges
Fuel consumption of TSHD
Fuel consumption of CSD
Fuel consumption of support tug

Scope 2 (Electricity consumption, heating)
Electricity consumption of the site hut

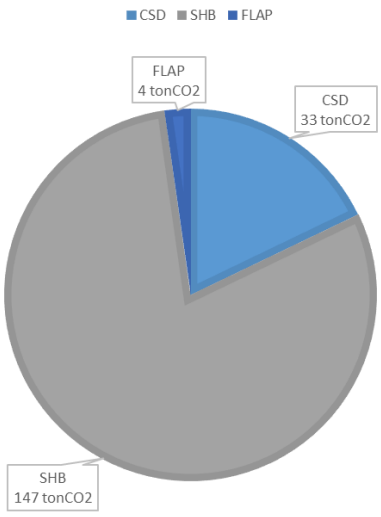
List of excluded energy – and emission flows

Energy flow	Reason
Electricity consumed in supporting department (e.g. offices in Aalst)	Is recorded at corporate level and included in the communal parts.
Natural gas	No natural gas consumption in the project for the reporting period.
Natural gas consumed in supporting department (e.g. offices in Aalst)	Is recorded at corporate level and included in the communal parts.
Air Miles Crew	Is recorded at corporate level.
Air Miles Staff	Is recorded at corporate level.

2.3 Carbon footprint and trends

2.3.1 Reference carbon footprint

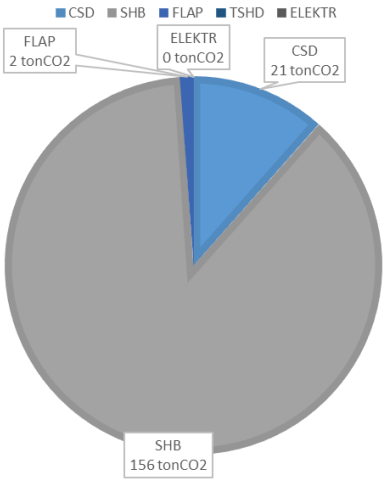
On the basis of calculations at tendering, a reference carbon footprint was established. Since these are maintenance dredging works with a variable deployment period, this reference carbon footprint is only valid for the current campaign year (year 6). It was determined on the basis of the deployment period of the equipment and the applicable emission factor of fossil diesel.



The total reference CO_2 emission for campaign year 6 until the end of 2024 is: **184.31 tonCO_2.**

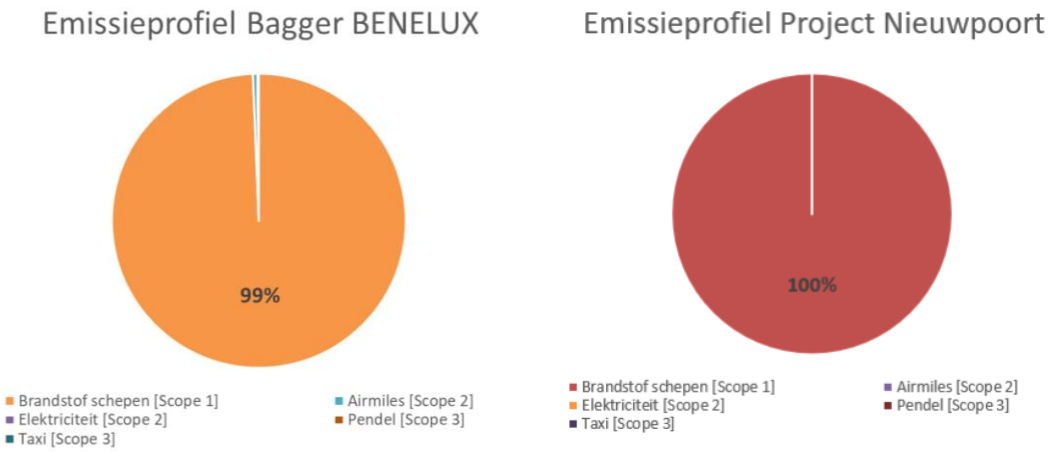
2.3.2 Actual project carbon footprint

A/o due to the use of biofuels, cycle optimisation and adjustments of the implementation method and load optimisations, the total CO2 emission amounts to 178.54 tonCO2 for the project (within the reference period), which is 3.1% lower than the reference carbon footprint.



2.3.3 Comparison emission profile organisation – project

2.3.3.1 Project emission profile



The energy/emission profile of this project does not depart from the profile at corporate level for the Benelux dredging department.

The main energy flows for this project are related to the emissions of ‘wet’ equipment, i.e. vessels.

3 Reduction

3.1 List of reduction measures for this project

ID	Title	Concrete optimisation
0113-1	Choice of vessel	At tendering, the energy-efficiency of possible vessels to be deployed is checked. This is weighted against the mobilisation distance.
0113-2	CSD: Judicious use of engines	The CSD is powered by a diesel engine that drives the dredge pump directly and an auxiliary generator. When the dredging process is interrupted (interim dirt removal from the pump, waiting for barges, ...) the engine is switched off. In between dredging processes (waiting for barges) and in bad weather, the cutter is moored against the floating infrastructure, if possible, and the on-land power supply is connected (fuel consumption = 0).
0113-3	FLAP (Floating auxiliary Plant) Judicious use of engines	When moored for stand-by, the engine is switched off as much as possible. No unnecessary running of the engine for e.g. aircon/heating. For transports, priority is always given to the FLAP with the lowest emission and the smallest consumption.
0113-4	Barges: Judicious use of engines	In between dredging processes (waiting for another barge being loaded) and in bad weather, the barge is moored against the sand quay, if possible, or it is anchored outside. When moored against the loading pontoon, the engines are switched off: no unnecessary use of propellers to remain in position.
0113-5	Optimisation of works planning	By planning dredging works in the channel just before cutter works, the barges with a greater draught can sail to the dump site. This means that more sludge is taken away per cycle, whereby the CO_2 emissions per m^3 dredged sediment drops.
0113-6	Optimisation of works planning according to tides	The sailing route to the dump site at high tider is shorter than at low tide. The trips to the dump site therefore take place as much as possible at high tide, and sand trips at low tide.
0113-7	Electrification	Examine the possibility to run the barges on electrical energy.
0113-8	Modernisation	During long-running projects (6 years), we systematically look into renewing/modernising the equipment used.

The full list of all reduction measures taken by Jan De Nul is published on the skao website: https://www.skao.nl/gecertificeerde-organisaties/Jan_de_Nul_N_V

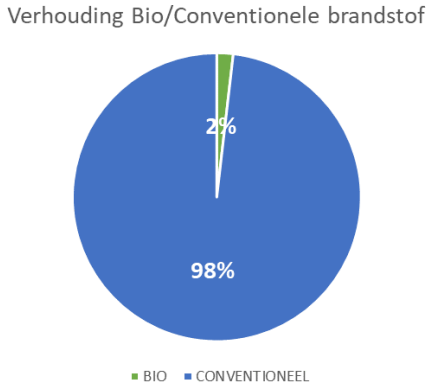
3.2 Specific measures implemented

The above measures taken in this project were adapted as follows:

ID	Concrete application
0113-1	When selecting the vessels for this campaign year, a combination of traditional SHB and a TSHD as SHB was chosen.
0113-1	TSHD was available for a while in Belgium in between mobilisations for 2 projects. As a result, no extra mobilisation was required for deployment in Nieuwpoort.
0113-1	During winter stop, a hopper campaign was inserted just before the start of the CSD. The TSHD deployed was used later on as SHB for the CSD, this saved the mobilisation of an extra SHB.
0113-2 0113-3	During the 2023 – 2024 campaign, on-land power supply only is used during stoppage periods (bad weather, tides). As a result, the on-board generator of the support tug and CSD don't need to run for heating/aircon.
0113-4	The deployment of a TSHD as SHB makes it possible to react quickly and remove high spots in the fairway immediately. The SHB could sail with a maximum load at every moment of the campaign.
0113-5	We opted for a combination of an SHB with a smaller hopper volume and a smaller draught, with a TSHD/SHB with a larger hopper volume and greater draught. By optimising the cycle planning, whereby the small SHD departs just before low tide, and the large TSHD/SBH loads during low tide, tidal stoppages could be reduced significantly.
0113-6	The greatest reduction during this campaign was achieved in the hopper. Due to availability in the planning, the sand scope could be performed with the larger hopper. This can carry larger volumes whereby emissions per m^3 dropped significantly.
0113-6	Correct tidal forecasts are essential for proper cycle planning and production optimisation. The available models (British Admirality - Total Tide, Survey forecasts on the basis of harmonic constants) only have a 0.5m accuracy and therefore produce uncertainty and loss of production. In cooperation with the "Wetenschappelijke Dienst Beheerseenheid van het Mathematisch Model van de Noordzee", their model was translated into a forecast for the works in Nieuwpoort. As a result, accuracy improved to 0.1m. ➔ Fewer stoppages and more productive work
0113-8	The rudder propellors of the SHB were replaced with newer, more efficient models.

3.3 Other measures only applicable to this project

- Since campaign year 3, fuel containing 7% bio is used for the CSD and FLAP.



- Optimisation of the length of floating pipelines to reduce the required engine power;
- Adjustment (reduction) of the sailing speed to achieve the optimal barge cycle: not sailing at unnecessarily high speeds and then wait until the other SHB is loaded;

The reduction measures that are specific to this project for now are added to the umbrella list of measures for Jan De Nul. As a result, they are considered for all future projects (with tendering advantage).

4 Transparency

Communication regarding CO_2-performances for the Benelux can be found in the overall communication plan 'CO2PL-Jan De Nul-3C2-Communicatieplan'.

Specifically for this project, communication regarding the CO_2-performances takes place both internally and externally. The exact way of communication, the relevant parties, responsible parties and frequencies of communication can be found in the tables below.

4.1 Internal

Way of communication	Relevant parties	Responsible parties	Frequency
Project induction	Crew	Performer	At the start of each campaign
Toolbox	Crew	Performer	Monthly
Monthly report	Site project team	Performer	Monthly
BNL Project meeting	BNL project team	Performer	Biannually
Feedback in steering group	BNL DREDGE steering group	Project leader	Monthly

4.2 External

Way of communication	Relevant parties	Responsible parties	Frequency
Annual project report	Client	Project leader	Annually
Publication of this project report on the JDN website	Interested stakeholders	Energy & Emissions QHSSE Advisor	Biannually*
Posting on banners & Heras information panels on the project in the marinas	Interested stakeholders	Performer	Continually
Social media: LinkedIn, Instagram, Facebook **	Interested stakeholders	Department head	Approx. 2x/year

*Note: Biannual frequency is kept as long as there are activities to report. Should there be no activities in a semester, then there is no reporting.