PROJECT FILE: NIEUWPOORT

PERFORMANCE OF MAINTENANCE DREDGING WORKS IN THE NIEUWPOORT COASTAL MARINA

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Document control

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Reference documents

Reference	Title
JDN controlled documents	
	CO2-PL Certificate
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') that flows into the North Sea and along which 3 marinas are located.

The Client regularly sounds the area and indicates where dredging is required.

In the marinas and in locations in the river that are difficult to access, this is done with a small cutter suction dredger, and the dredged sediments are pumped to larger seagoing split barges in the fairway via a floating pipe. When these barges are full, they sail approx. 12km (7.5 mile) into sea to spread out the dredged sediments in a designated area.

In other locations in the fairway, a trailing suction hopper dredger can be used.

The contract is divided into 'lease years', running from 16th September until 15th June of the next year. Within each lease year, a dredging campaign is carried out.

This reporting period covers the first month of the fifth lease year, started on 1st September 2023.

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

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

1.1 Project details

ID data	
Description	Performance of maintenance dredging works in the 3 marinas and fairway at Nieuwpoort, aimed at bringing the river bed depths to the target depths.
Specification N°	16EH/18/15 (Llot 1)
Client	Agentschap Maritieme Dienstverdeling & Kust
Award date	22 January 2019 (Start of works November 2019)
Implementation period	3 lease years, extended by 3 lease years.

1.2 Parties involved

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

- Deploying the Cutter Suction Dredger ('CSD'), seagoing Split Hopper Barges ('SHB'), support vessels and
- Loading pontoons ('FLAP');
- Deploying of Trailing Suction Hopper Dredger ('TSHD');
- Project management and day-to-day management.

This year, a subcontractor was employed to supply the 'SHB': Detlef Hegemann and Faasse Dredging (SHB/TSHD)

2 Insight

2.1 Equipment deployed and deployment periods

Vessel	Deployment period
CSD	December 2023 – April 2023
SHB	Januari 2024 – April 2024
SHB/TSHD	December 2023 – May 2024
Support vessel	December 2023 – April 2024

2.2 Identification of energy and emission flows

List of material energy/emission flows

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

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

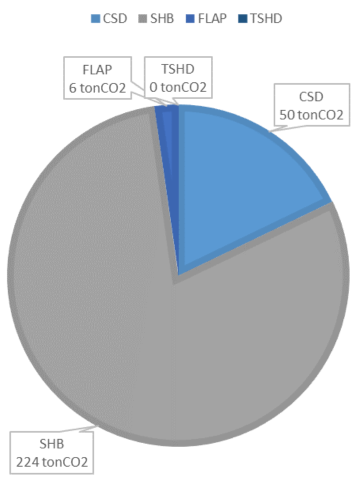
List of excluded energy/emission flows

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

2.3 CO_2 footprint and trends

2.3.1 Reference CO_2 footprint

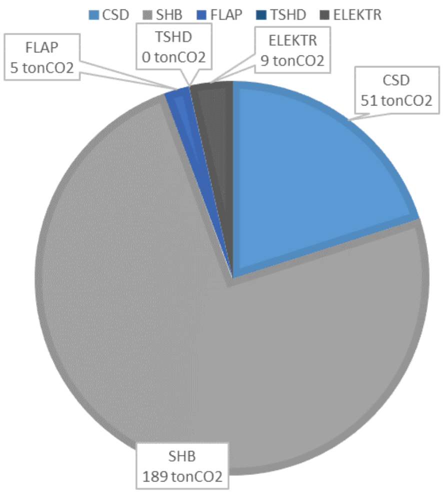
On the basis of calculation at tendering, a reference CO_2 footprint was established. Since this project concerns maintenance dredging works with variable deployment times, this reference CO_2 footprint is only valid for the current campaign year (year 5). It was calculated on the basis of the equipment deployment period.



The total reference CO_2 emissions for campaign year 5 until the end of 2023 is: **280 tonnes CO_{2e}.**

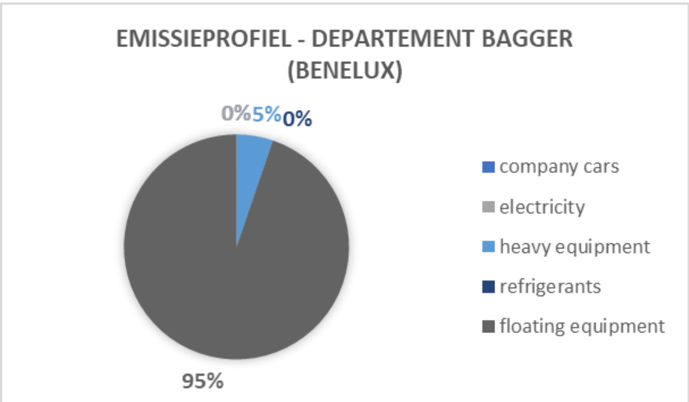
2.3.2 Actual project CO_2 footprint

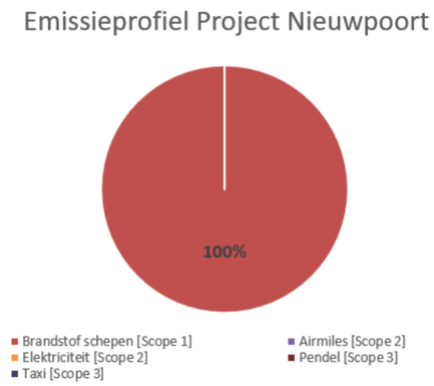
Due to a/o the use of biofuels, cycle optimisations and adjustments to the implementation method and load optimisations, the total CO_2 emissions amount to 189.1 tonnes CO_{2e} for the project (within the reference period), which is 32.6 % lower than the reference CO_2 footprint.



2.3.3 Comparison of the emission profile organisation – project

2.3.3.1 Project emission profile





The energy/emission profile of this project does not deviate from the profile at corporate level for the Dredging Department Benelux.

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 measured for this project

ID	Title	Concrete optimisation
0113-1	Choice of vessel	In the tender phase, energy-efficiency of possible vessels to be deployed is taken into account. This is weighted against the mobilisation distance.
0113-2	CSD: Judicious use of engines	The CSD is powered by a diesel engine, which drives the dredge pump directly, and an auxiliary generator. When the dredging process is interrupted (interim unclogging of the pump, waiting for barges, ...), the engine is switched off. Between dredging runs (waiting for barges) and in bad weather, the CSD is possibly moored against the floating infrastructure and is connected to the power supply on land (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. Engines are not run unnecessarily e.g. for airco/heating. For transport, priority use is made of the work boat with the lowest emission and lowest consumption.
0113-4	Barges: judicious use of engines	Between dredging runs (waiting for another split hopper barge being loaded) and in bad weather, the SHB is moored as much as possible against the sand quay or 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 work planning	By planning the dredging works in the fairway just before cutter works, the barges with a larger draught can sail to the dump site. More sediments are therefore transported per cycle, whereby CO2 emissions per m^3 dredged sediments drop.
0113-6	Tidal optimisation of works	The sailing route to the sediment dump site at high tide is shorter than at low tide. Trips to the sediment dump are therefore carried out as much as possible at high tide, sand trips at low tide.
0113-7	Electrification	Examine the possibility to have the barges run on electrical energy.
0113-8	Modernisation	In 2022, the electrical and lighting system on DN122 was upgraded. The solar panel capacity was doubled and connected to a battery system (if required, it can also be charged via a silent generator). All lighting converted to LED. The battery/PV capacity was shown to be sufficient 99% of the time to power all deck and navigation lights.

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

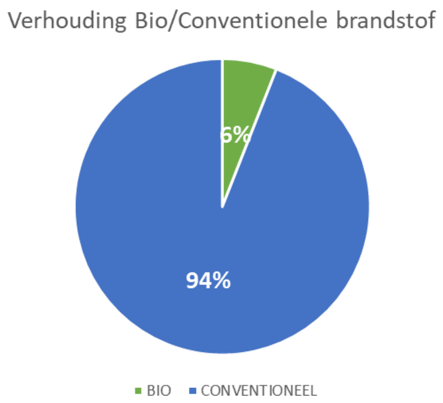
3.2 Specific measures implemented

The above measures were implemented in this project as follows:

ID	Concrete implementation
0113-1	When selecting the vessels for this campaign year, we opted for a combination of traditional SBH and one TSHD as SHB.
0113-2 0113-3	During the 2023 – 2024 campaign, only on-land power supply is used during stoppage periods (bad weather, tides). As a result, the generator set on-board the support tug and CSD are not used for heating/aircon. The marinas are certified energy-neutral and supply 100% locally produced green energy.
0113-4	By deploying a TSHD as SHB, reaction times were short and high points in the fairway could be removed immediately. The SHB's could be used at any time during the campaign with maximum load.
0113-5	We opted for a combination of an SHB with a smaller hopper volume and smaller draught and a TSHD/SHB with a larger hopper volume and larger draught. By optimising cycle planning, whereby the small SHB sails out just before low tide, and the large TSHD/SBH loads during low tide, stoppages due to tides could be reduced significantly.
0113-6	Accurate tidal forecasts are essential for proper cycle planning and production optimisation. The available models (British Admiralty - Total Tide, Survey predictions on the basis of harmonic constants) only have an accuracy of up to 0.5m and cause therefore uncertainty and loss of production. In cooperation with the "Scientific Department Control Unit of the North Sea Mathematical Model", their model was converted into forecasts for the works at Nieuwpoort. As a result, accuracy improved to 0.1m. ➔ Fewer stoppages and more productive work
0113 – 7	The rudder propellors of the SHB were replaced with more efficient, newer models.

3.3 Other measures only applicable to this specific project

- Biofuel was used on this site, as well.
  Since the Year 3 campaign, the CSD uses FLAP fuel containing 7% bio.



- Optimisation of the length of floating pipes to reduce the required engine power;
- Adjustment (reduction) of the sailing speed according to the optimal SHB cycle: not sailing unnecessarily fast and then having to wait for the other SHB to finish loading;

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 award advantage).

4 Transparency

As regards communication about CO_2 performance for the Benelux as a whole, please refer to the umbrella communication plan << CO2PL-Jan De Nul-3C2 –Communication plan>>.

Specifically for this project, there is also internal and external communication about the CO_2 performance. The form of communication, stakeholders, person responsible and frequencies are summarised in the tables below.

4.1 Internal

Communication form	Stakeholder	Person Responsible	Frequency
Project induction	Crew	Performer	At the start of each campaign
Toolbox	Crew	Performer	Monthly
Monthly report	Project team werf	Performer	Monthly
BNL Project meeting	Project team BNL	Performer	Biannually
Feedback in steering group	Steering group BNL DREDGING	Project manager	Monthly

4.2 External

Communication form	Stakeholder	Person Responsible	Frequency
Annual Project Report	Client	Project manager	Annually
Publication of these project reports on the JDN website	Stakeholders concerned	Energy & Emissions QHSSE Advisor	Biannually*
Posting using Banners & Heras information boards on the project in the marinas	Stakeholders concerned	Performer	Continuously
Social media: LinkedIn, Instagram, facebook **	Stakeholders concerned	Department head	Approx. 2x/year

*Note: Biannual frequency is announced while there are activities to report. Should there be no activities during a semester, then there is no reporting either.