



Netherlands Commission for
Environmental Assessment

Open sea aqua culture project Aruba

Assessment advice on the environmental impact report and its supplement

20th of November 2025 / project number: 3884





Commissie voor de
milieueffectrapportage

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Minister for Finance, Economic Affairs and Primary Sector
and
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Date: 20 november 2025
Subject: Advisory report on open sea aquaculture project
Aruba

Dear Mr Wever, dear Mr Eman,

You have asked us for advice for the second time on the environmental impact report for Petros' open sea aquaculture project. Petros has supplemented this report in response to our previous ("provisional") advisory report. I would like to thank you again for that request. Both your government and Petros aim to comply with the highest international standards ("best practice") in the field of aquaculture and environmental impact assessment. This is ambitious and deserves every credit, especially since this is the first time you have had an environmental impact report drawn up.

Our previous advisory report

In our previous advisory report, we noted that Petros' environmental impact report still contained a number of significant gaps. We recommended that additional information needed to be provided before a decision on the project is taken.

The recommendations regarding the supplemented advisory report

Petros has followed much of our recommendations. However, on some points we again find that the environmental impact report does not contain the essential information. This concerns information about environmental impacts that could be *significant*: this is what the environmental impact assessment instrument is intended for. This applies to two points that we included in our advisory report as "essential, missing information": (1) the environmental impacts and treatment of waste water at a production volume of 2,000 tonnes of fish per year and (2) the consequences for the coral reef. In our opinion, more information on these points is crucial in order to assess the most important environmental impact of the project. In addition, we recommend expanding the summary of the report to include a (concise) informative chapter on the potential environmental impacts. This is because the report also serves as a means of communication to the administrators and residents and organisations of Aruba.



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Detailed information is lacking on a number of themes, which, in our opinion, can be elaborated on later, after the environmental impact report has been completed. This information is unlikely to concern *significant* environmental impacts. These points are therefore secondary to the main points described above and are unlikely to influence the decision on the project. We recommend that these aspects be further elaborated in the context of the permit process and, if it turns out that there are significant consequences for the environment or the surrounding area, that the environmental impact report be supplemented accordingly.

Petros has high ambitions in the field of monitoring and evaluation, which we greatly appreciate. Monitoring will enable you and Petros to keep a close eye on developments and intervene if necessary if the effects differ from those currently predicted in the environmental impact report. Cooperation with environmental and nature organisations in Aruba, which are closely involved in the protection of the terrestrial and marine environment, is of great importance in this regard. In our advisory report, we indicate which environmental themes we consider important for monitoring, in addition to Petros' own high ambitions.

In conclusion

I hope that this process will bring you one step closer to applying international best practice in aquaculture and in the environmental impact assessment. But also to further improving the practice of environmental impact assessment on your island. As discussed with you, we are more than happy to continue to contribute to the latter.

Kind regards,

Signed By: S.L.J.M. Filippini
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S.L.J.M. (Simone) Filippini
Chairperson
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1 The NCEA's advisory report on the EIA in brief

The company Petros Aquaculture Operations (hereinafter Petros) plans to farm Northern red snapper¹ fish species in Aruba for export and local consumption. The project aims to increase the Aruban economy and strengthen food security.

Petros has drawn up an environmental impact assessment (EIA) describing the possible consequences for nature and the environment in Aruban waters and on land. The Minister of Finance, Economic Affairs and Primary Sector of Aruba requested the Netherlands Commission for Environmental Assessment (hereinafter the NCEA) for independent advisory report on the EIA.

In an earlier “provisional” advisory report, the NCEA ruled that the EIA (version 4) still lacked essential environmental information, for example about the impact on the coral reef and the project’s wastewater treatment.² Petros subsequently supplemented the report (version 6).³ In this advisory report, the NCEA assesses the quality and completeness of that version, paying particular attention to its accuracy and relevance for decision-making.

At the request of the Aruban government, the NCEA assessed the EIA against international best practice (the World Bank’s IFC Performance Standards). In the interests of due care and at the request of the Aruban government, the NCEA has therefore assessed the EIA against the highest international standards.⁴

The project

Petros plans to produce up to 500 tons of fish per year in the four years of the project’s first phase, ultimately rising to 2,000 tons per year in the second phase. Part is intended for local consumption, part for export.

The project consists of a fish hatchery and a processing plant on land. A pier anchored to the seabed floats on the adjacent lagoon. At sea, approximately eight kilometres from the coast, the project consists of four fish cages in the first phase and sixteen cages in the second phase. The sixteen cages will be anchored to the seabed and will cover an area of approximately 1 km². Figures 1 and 2 show the locations on land and at sea.

The project will result in more transport movements. Several times a day, ships will sail back and forth to deliver and collect fish and to care for the fish. In addition, there will be transport on land (to and from ports and the airport) and transport of fish feed and fresh fish by aeroplane.

¹ *Lutjanus campechanus*.

² For this preliminary opinion, see [this webpage](#).

³ *Environmental Impact Assessment for Aquaculture Fish Farm Aruba*, ACE Firm Engineering, version (‘rev.’) 06, 10 July 2025.

⁴ The NCEA’s preliminary advisory report provides more information about this assessment framework and about the content of the EIA, the expected environmental impacts and the information that was missing from the previous version of the EIA.

Supplemented EIA

The EIA focuses exclusively on the first phase of the project and describes three scenarios for this: (0) no project, (1) avoid negative effects with all measures possible, and (2) minimising negative effects as much as possible with measures Petros plans to take (“best practical means”).

The sixth version of the EIA contains various additions, for example on the following points:

- **The project location on land**, such as its location next to a stone crusher, which was not previously marked on the map. The EIA also contains a more detailed description of the fish hatchery, the processing plant and the breeding system at sea.
- **The collection and processing of waste water** (Appendix 47). The EIA states that the waste water treatment plants (WWTP's) on the island have sufficient capacity and that there are other options for treating waste water at the project location on land.
- **The sources of noise and odour** (Appendix 20), **the impact on Rooi Bosal and adjacent mangrove vegetation** (Appendix 29) **and the impact on the marine ecosystem** (coral, sea turtles, marine mammals and sharks, Appendices 22 and 49). The conclusion of the EIA continues to be that the effects on land and sea are limited, whether or not mitigating measures are taken.
- **The source population for the farmed fish**. The farmed fish will consist of offspring of locally caught red snapper from the waters of Aruba (Appendix 51). According to the EIA, damage to the local red snapper population is ruled out if farmed fish escape from the cages.⁵
- **The process of conducting a more in-depth analysis of social and socio-economic impacts** (Appendix 50). The EIA indicates that this analysis will be carried out after obtaining an opinion from the Aruban government on the land and sea locations.
- **The method of monitoring** (Appendices 42 and 43). The EIA states that the monitoring will be developed using the SMART method.⁶

NCEA's opinion of the EIA?

The NCEA appreciates the efforts that have clearly been made to improve the EIA compared to the previous version. Various appendices containing environmental information have been added, thereby addressing a large part of the NCEA's recommendations. The components of the project, such as the planned location and description of the onshore facilities (fish hatchery and fish processing), are described in sufficient detail. In addition, the monitoring method is explained in greater detail. The impact on the coral in Aruban waters will be closely monitored. The NCEA also considers this to be very important, as it will allow for interim adjustments to be made, if necessary.

The EIA now provides a more complete picture of the environmental impact of the project and mitigating measures. The report makes it sufficiently plausible that the WWTP's can process the project's wastewater at a production rate of 500 tonnes of fish per year and that Petros can otherwise switch to its own water treatment facility. It is also plausible that the impact on Rooi Bosal and adjacent mangrove vegetation will be limited or non-existent. This also applies to the risk of fauna distortion: breeding red snapper caught locally – in Aruban waters – minimises the potential damage to native fish populations.

⁵ The previous version of the EIA still referred to a source population from elsewhere, which, according to the NCEA, could cause damage to the local red snapper population.

⁶ SMART: Specific, Measurable, Achievable, Relevant, Time-bound.

Despite these positive points, the NCEA notes that important information is still missing from the supplemented EIA. Supplementing this information is essential to fully consider the importance of the living environment when granting permits⁷ for the open sea aquaculture project in Aruba. This information is also necessary to comply with Aruban regulations and international “best practice” for determining the environmental, social and socio-economic impacts of projects.

The following essential information is missing:

- **Environmental impact and wastewater treatment at 2,000 tonnes.** The EIA still only addresses the environmental impact of phase 1 (500 tonnes). A quantitative picture of the impact of phase 2 (2,000 tonnes) is missing, while the purpose of an EIA is to identify all the short- and long-term environmental effects of the project, including planned expansions. It is also unclear whether the WWTP's on the island have sufficient capacity to treat the wastewater in phase 2. This substantiation is needed now, because otherwise there is still a risk that untreated wastewater will end up in the sea.
- **Impact on the marine ecosystem.** The EIA does not state how many nutrients will be added to the seawater and how this emission compares to the existing impact on the marine environment caused by other activities on and around Aruba. Only based on this information can the competent authority decide whether the additional impact caused by Petros is acceptable. Subsequently, it is necessary to determine which concentration differences at sea will be monitored and to describe the measures to be taken if the intended maximum concentration differences become (or threaten to become) too large.
- **Summary.** The summary of the EIA has hardly been amended, although the number of appendices has been significantly expanded. The summary still contains the general conclusion that the environmental impact is limited and mitigable, but lacks substantive information about what those environmental consequences are.

The NCEA recommends the Aruban government to have this information included in a supplement to the EIA before deciding on the project.

Recommendations on further elaboration of information, monitoring and assurance

The above points constitute essential environmental information that is still required to obtain a complete picture of the significant environmental effects of the project. It is necessary to supplement the EIA on these points. In this advisory report, the NCEA also makes several recommendations for the further elaboration of the project in the permit process and for monitoring. These are points that are important but secondary to the main points described above and are unlikely to influence the decision on the project. The NCEA recommends that the following aspects be further elaborated in the context of the permit application process and, if it turns out that there are significant consequences for the environment or the surrounding area, that the EIA be supplemented accordingly:

- The way the blood from the “stun & bleed process”⁸ on board ships ends up in the processing plant and where it is stored and mixed with the other liquid aqueous stream.
- Further substantiation that the company's own water treatment plant truly would be capable of treating the project's wastewater in accordance with Aruban standards, in the event that the island's WWTP's prove to have insufficient capacity.
- A more in-depth analysis of the social and socio-economic impact.
- The effects (on noise pollution and air quality) of test runs of generators for emergency power.

⁷ See section 2.2 of this advisory report for the necessary permits.

⁸ The process of killing farmed fish on board ships.

- Consequences for migratory species, especially bird species, and the consequences for wetlands that are protected as Aruban National Parks under the Ramsar Convention, including the method of monitoring this.
- The method of monitoring other aspects:
 - Limit values for noise and odour nuisance and measures that the initiator has “in reserve” if these limit values are (or are likely to be) exceeded.
 - The bottom of the Barcadera lagoon near the discharge pipe, for instance to see whether filamentous algae will grow here and whether seagrass will die off.
 - Sampling of benthos at various distances from the fish cages at sea and soil samples for a quantitative picture of macrobenthos.
 - Nitrogen and phosphate concentrations (monthly).
 - The impact on marine mammals, sea turtles and the attraction of sharks, in collaboration with nature and environmental organisations in Aruba.

In the NCEA’s opinion, the following aspects must be safeguarded in the relevant permits:

- The economic, social and environmental criteria and limits applied by Petros and the competent authority in deciding whether to scale up to a production volume of 2,000 tonnes of fish per year.
- The measures that Petros will take for both phase 1 and phase 2 to prevent odour nuisance in the surrounding area.
- A liquid-tight floor that prevents water from leaking through the porous subsoil into the Barcadera lagoon.
- The condition that locally caught fish are the source population for fish farming.

Other recommendations made by the NCEA in its preliminary advisory report also remain in force

The EIA still states that this project contributes to the economic diversification of Aruba in combination with strengthening food security. In its preliminary advisory report, the NCEA concluded that this project only strengthens local food security among the upper echelons of the Aruban population. After all, the end product, the fish produced, is primarily intended for luxury restaurants, the tourism sector and export. The supplemented EIA does not contain any new information on this. The NCEA therefore again recommends that the competent authority take this into account when assessing the usefulness and necessity of the project.

It has already been emphasised that the EIA must consider the environmental impacts at an annual production volume of 2,000 tonnes. In addition, the NCEA recommended in its preliminary advisory report that a decision point be built in after phase 1 on whether or not to scale up the project. This recommendation too remains valid. Due to the uncertainties mentioned in the preliminary advisory report⁹, an explicit decision is needed on whether to scale up after phase 1, based on monitoring data collected by Petros and criteria established in advance regarding the maximum permissible environmental and socio-economic impacts.

Draft decisions not yet available

The purpose of the EIA is to substantiate decisions (including permits) for the project. These decisions are not yet available (in draft form). As a result, the NCEA has not been able to verify whether the EIA and the decisions are consistent with each other, for example whether

⁹ The feasibility of the project is difficult to predict because the Northern red snapper is not yet produced on a commercial scale elsewhere and it is uncertain whether this species can survive in cages in Aruban waters.

the EIA examines the maximum environmental impacts permitted in the decisions. It is up to the competent authority to verify this at a later stage.

Reading guide

In Chapter 2 of this advisory report, the NCEA explains the reason for the assessment, the decision-making process and its role. Chapter 3 contains an assessment of the Aruban regulations. In Chapter 4, the NCEA specifically addresses the most important points from its previous assessment based on the World Bank's IFC Performance Standards.

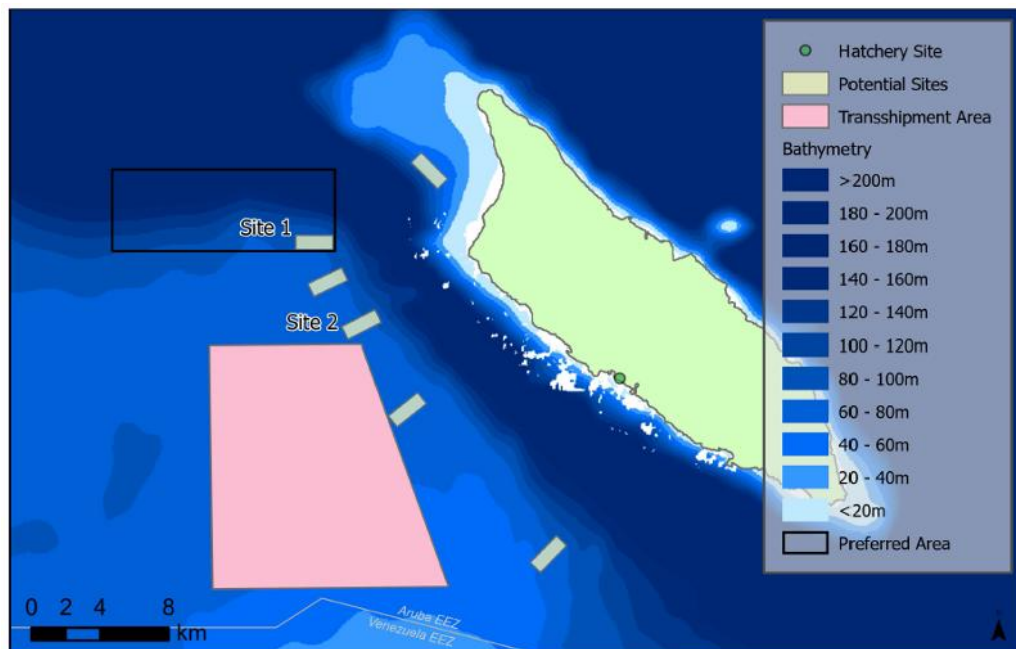


Figure 1: Locations on land ('Hatchery Site') and at sea (Site 1') (source: EIA, p. 29)



Figure 2: Location of project site on land ("Approx Plot") (source: EIA, p. 30)

2 Rationale, decision-making and the NCEA's role

2.1 Rationale for EIA for the project

The company Petros Aquaculture Operations wants to farm the fish species Northern red snapper (*Lutjanus campechanus*) in Aruba for export and local consumption. Aruba has no regulations requiring an EIA for projects with significant environmental impacts.

Nevertheless, the ministers involved (see the following paragraph) decided to request an EIA to substantiate Petros' permit applications. Petros subsequently prepared an EIA. Following the NCEA's preliminary advisory report of 1 May 2025, Petros supplemented the EIA.

2.2 Competent authority for decisions for the project

The competent authority for decision-making on the project comprises four ministers of the country of Aruba. They are listed below, together with the decisions that they are responsible for¹⁰:

- Business establishment licence: Minister of Finance, Economic Affairs and Primary Sector.
- Construction permit: Minister of Infrastructure, Energy and Telecommunications.
- Nuisance permit: Minister of Justice, Integration and Public Transport.
- Flora and fauna exemption: Minister of General Affairs, Culture, Environment and Nature.

The minister responsible for the EIA is the Minister of General Affairs, Culture, Environment and Nature.

2.3 Rationale for commissioning this advisory report and the NCEA's working method

The Minister of Finance, Economic Affairs and Primary Sector commissioned the NCEA to issue an advisory report on the EIA to ensure an independent assessment of the EIA's quality and completeness. The NCEA's working group visited Aruba and the project site on land during the week of 20 January 2025, and met with representatives of the government of Aruba¹¹, Petros and external stakeholders¹².

¹⁰ The Aruban government has verbally indicated that it intends to make changes to the portfolios of the Ministers of Infrastructure and Justice in the near future. This list shows the current distribution of portfolio.

¹¹ The ministers responsible for Economic Affairs and Nature, the Department of Economic Affairs, Commerce and Industry (DEACI), the Aruba Investment Agency (ARINA), the Department of Nature and Environment (DNE), the Department of Agriculture, Livestock, Fisheries and Market Halls (DLVVM-Santa Rosa), Fundacion Centro di Pesca Hadicurari, Directorate of Infrastructure and Planning (DIP), Directorate of Shipping Aruba (DSA) and the Harbour Master.

¹² Aruba Tourism Authority (ATA), Aruba Hotel and Tourism Association (AHATA), the Committee for the protection of flora and fauna, Aruba Marine Mammal Foundation, TortugAruba, Aruba Conservation Foundation, ScubbleBubbles en Aruba Birdlife Conservation.

The composition and working methods of the NCEA's working group and further project details are set out in Appendix 1 to this advisory report. The project documents used in the advisory report are available on the NCEA's website.¹³

2.4 The independent role of the NCEA

The NCEA – a statutory independent knowledge institution – advises on the content and quality of an EIA. It is neutral and has no judgement about the project presented in an EIA. In the Netherlands, the NCEA has the statutory task of advising on environmental impact reports. Abroad, the NCEA supports countries, at their request, in strengthening their environmental and social impact assessments through advice and capacity development.

The NCEA sets up a working group of independent experts for each project. It does not write environmental assessment reports; that is done by the initiator, in this case Petros. It is the competent authority, in this case the ministers mentioned in section 2.2, that decides on the project.

2.5 Assessment framework for the NCEA's advisory report

The NCEA assesses the quality and completeness of the information, including its correctness and relevance for decision-making. In this case, the EIA states that the environmental study was conducted in accordance with DNM's 'EIA format'¹⁴ and in accordance with 'environmental best practices'¹⁵. The NCEA therefore first reviewed the EIA against the policies and regulations of Aruba, including the EIA format.

Next, at the request of the Aruban government, the NCEA reviewed the EIA against international best practice, as expressed in the World Bank's IFC Performance Standards¹⁶. These are internationally recognised standards for implementing projects sustainably. They describe how risks and impacts of projects can be identified, prevented and mitigated. They also provide guidelines for public participation and disclosure of information by the project's initiator. The Kunming-Montreal Global Biodiversity Framework (2022) provides guidelines on possible actions to take if biodiversity is threatened by a project. Aruba subscribes to this Framework.

¹³ These documents can be found by entering number 3884 at www.commissiener.nl in the search box.

¹⁴ This format contains the content requirements of an EIA for projects in Aruba, see Appendix 1 of the EIA.

¹⁵ EIA, p. 13.

¹⁶ See [Performance Standards on Environmental and Social Sustainability | International Finance Corporation \(IFC\)](https://www.ifc.org/standards).

3 NCEA's recommendations concerning the EIA explained

3.1 Description of the overall project and its environmental impacts

An important basis for an EIA is the description of the intention, i.e. the intended project in all its facets. Without a clear description of the intention, the environmental impact cannot be described in a traceable manner.¹⁷

In its preliminary advisory report, the NCEA noted that the following descriptions of (the sub-components of) the project were missing:

- an up-to-date overview of the projected layout of the project site on land and the planning area on land, including boundaries;
- a description of relevant sources of odour and noise within the processing process on land;
- the way water for the fish hatchery is supplied from the Barcadera lagoon¹⁸ how much water this is, how much is discharged and what the environmental effects are;
- the way pollution of the Barcadera lagoon is prevented during the cleaning and maintenance of ship;
- the location and anchoring of the pier and the environmental impact;
- an overview of shipping and transport movements across the pier and public roads, and a description of the "stun & bleed process" on board the ships and the environmental impact of the transport.

The EIA has been sufficiently supplemented on these points. For example, an up-to-date overview of the projected layout on land is included in section 5.3.1 (see also Figure 2 of this advisory report). The NCEA has the following detailed comments on the information:

- The sources of odour and the measures to combat it are well described in the EIA. Ensuring that these are included in the permit is a point for attention.
- It is unclear how the blood from the "stun & bleed process" on board ships ends up in the processing plant and where it is stored and mixed with the other liquid aqueous stream. This insight is still missing from the figure on page 39 of the EIA.
- Paragraph 5.3.1 of the EIA makes it clear that generators will be installed for emergency power. There is no assessment of the effects (in terms of noise pollution and air quality) of the test run of these generators.

As these are minor points that will not have a significant environmental impact and are unlikely to influence the decision, the NCEA recommends that these points be considered in the elaboration of the project and the monitoring.

¹⁷ See also point 3.2 of the EIA Format of DNE.

¹⁸ Between Barcadera harbour, Palm Island Key, Parkietenbos Key and the Barcadera coast.

3.2 Quantitative picture of environmental impacts after scale-up

The NCEA concluded from the previous version of the EIA that the environmental impact had been determined for the first phase of the project. However, as the explicit intention is to scale up the project in the second phase to a production volume of 2,000 tonnes per year, a complete picture of the environmental impact of scaling up is needed now. After all, the purpose of an EIA is to identify all the short- and long-term environmental impacts of the project, including planned expansions. The NCEA therefore recommended that the EIA should quantitatively assess the environmental impact in the second phase of the project.

This recommendation was not followed. The EIA does mention the variant, but does not elaborate on it. For an adequate assessment of possible environmental impacts, a quantitative description of all relevant parameters for the intended final production volume of 2,000 tonnes per year is essential. Otherwise, there is a risk that the government of Aruba will now decide on a project whose long-term environmental impacts are unknown. The NCEA's recommendation to provide a quantitative picture of this in the EIA therefore remains relevant.

Furthermore, in section 3.3 below, the NCEA notes that it has not yet been demonstrated that the wastewater treatment plants on the island have sufficient capacity to treat wastewater at a production volume of 2,000 tonnes per year. This must be taken into account immediately, otherwise the risk exists that ultimately there will still be insufficient capacity.

Prior to the decisions on the permits for the project, the NCEA recommends that the EIA quantitatively assess the environmental impact of the second phase of the project on land and at sea for all relevant parameters. The EIA must demonstrate that the WWTPs also have sufficient capacity during that phase.

3.3 Wastewater treatment options

The EIA describes that wastewater from this project will be transported to the WWTP in Parkietenbos Barcadera. The previous version of the EIA did not demonstrate that the WWTPs on the island have sufficient capacity to treat wastewater from the project, now and in the future. In addition, there was a lack of insight into the possibilities for treating wastewater at the project location in case the WWTPs should not have sufficient capacity. There is a risk that more untreated wastewater will end up in the sea, with significant consequences for the marine ecosystem, including the coral reef and mangroves, and for public health.

The supplemented EIA states that a buffer tank for collecting wastewater will be installed. The EIA adds that Petros has received a formal letter from the WWTP operator guaranteeing sufficient capacity to treat wastewater from the project. The technical specifications for the planned WWTP expansions have also been received and a monitoring protocol will be established.¹⁹ When discharge is required, the EIA assesses which WWTP in Aruba has sufficient capacity available for processing at that time. The NCEA considers this to be a logical approach and considers the substantiation – based on the production of 500 tonnes of fish per year – to be sufficient. However, it has not been indicated how much wastewater

¹⁹ EIA, Appendix 47.

will be produced at a production volume of 2,000 tonnes per year and to what extent the WWTPs will have sufficient capacity for that volume (see also the previous paragraph of this opinion)

The supplemented EIA describes that Petros can realise its own water treatment if it appears that insufficient capacity is available at the WWTPs. The wastewater will then be reused after treatment or discharged into surface water. The feasibility of this option has not been demonstrated. For example, the EIA does not describe whether the intended installations are suitable for treating the wastewater and when the discharge of water meets the standards of the Aruban government. The NCEA recommends that this option be further elaborated as soon as it becomes apparent that the treatment capacity at WWTPs is insufficient. This elaboration must demonstrate that the intended installation has the capacity to treat the water and that the treated water is of sufficient quality to be discharged.

3.4 Environmental impacts

A key component of an EIA is the description of the environmental impact of the entire project. In its preliminary opinion, the NCEA noted that the EIA did not provide all the relevant information on three environmental issues that would have enabled environmental considerations to be fully taken into account in the decision-making process. These issues were:

- Cumulative environmental impact on land: noise, odour, air quality.
- Terrestrial flora and fauna: including the current situation, representativeness of the field studies, the effects on Rooi Bosal and adjacent mangrove vegetation, and mitigating measures.
- The marine ecosystem: impact on coral, protected sea turtles and marine mammals (including dolphins) and the relationship to the existing pressure on the marine ecosystem from other activities on and around Aruba.
- The choice of Northern red snapper in light of possible damage to the Caribbean red snapper.

Cumulative environmental impacts (noise, odour and air quality) on land

These effects are described in part qualitatively and in part quantitatively. These environmental impacts on land at a production volume of 500 tonnes of fish per year have now been sufficiently identified.

Terrestrial flora and fauna

The supplemented EIA describes well the way in which the project location on land is separated from the Barcadera lagoon and Rooi Bosal. As suggested by the NCEA, a concrete retaining wall will be installed to prevent any salt (waste) water leaking from the hatchery and fingerling farm from entering the rooi. The question remains as to how the entrance to the public road and the entrance to the pier will be designed to actually prevent water from leaking. In addition, coral stone in the soil is highly permeable, which means that pollution may still reach the Barcadera lagoon. This can easily be prevented with a liquid-tight floor. The NCEA recommends that this measure be included in the permit.

Two other recommendations from the NCEA have not yet been addressed. The EIA does not discuss the consequences for migratory species, especially bird species. This is despite the fact that the EIA does indicate that migratory bird species have been found on land at the current location.²⁰ In addition, the EIA has not yet fully assessed the impact on wetlands that are protected as an Aruban National Park under the Ramsar Convention. However, the NCEA does not expect the Petros onshore project component to have a significant additional impact on these aspects, given the already intensively burdened environment (particularly the stone crusher). This can be further investigated during the permit process and taken into account during monitoring.

Marine ecosystem

The supplemented EIA describes the possible consequences when fish manure and uneaten fish feed end up in the sea. The descriptions of the consequences of any sinking fish feed and the transport of nutrients are convincing. It is plausible that more solid substances will have settled on the seabed at a distance of approximately 250 metres from the cages. The smaller particles, such as fish faeces, will spread over a larger part of the Caribbean Sea. The supplemented EIA provides good evidence that dilution will limit the environmental impact per unit area. However, the report still does not describe how the project's emissions relate to the existing total impact on the marine environment (cumulation of industry, housing, recreation, accommodation and agriculture). Nor is the effect explained in light of the (long-term) risk that parts of the Caribbean Sea will become oxygen-depleted and the coral will deteriorate even further.

For this purpose, it is necessary to include quantitative information (in a balance sheet) in the EIA regarding the amount of nutrients added to the seawater. This needs to be put into perspective: the relationship to the existing pressure on the coral caused by other activities should be described. On these grounds, the competent authority of Aruba can decide whether the additional pressure from Petros is acceptable.

The supplemented EIA indicates that the marine environment will be intensively monitored, but does not specify exactly which values (concentrations) the monitoring will focus on. The NCEA considers it possible to compare discharge concentrations at sea close to the fish cages with locations further away, upwind and downwind of the cages. Based on the nutrient balance, it is necessary to elaborate on which concentration differences will be monitored and to describe measures to be taken if the intended maximum concentration differences become (or threaten to become) too large.

The supplemented EIA describes how various measures will prevent effects on marine mammals, sea turtles and the attraction of sharks. For example, the nets of the fish cages will be stretched so tightly that marine mammals and turtles will not become entangled. It is plausible that this will not pose any substantial risks to these animals. Based on experiences elsewhere, the EIA also states that there is no risk of attracting sharks. The NCEA finds this plausible, but in view of the serious concerns about this in the tourism sector, it recommends sharing the data, studies and practical experiences with the sector. The NCEA furthermore emphasises the importance of monitoring these effects. Cooperation with various nature and environmental organisations in Aruba is important in this regard.

²⁰ EIA, p. 87.

Prior to the decisions on the permits for the project, the NCEA recommends that the EIA describe how many nutrients will be added to the seawater and how this relates to the existing impact on the marine environment from other activities on and around Aruba. Based on this, the limit values need to be worked out on which the monitoring will focus and there needs to be an indication of which measures are possible in case these limit values are exceeded (or are likely to be exceeded).

Choice of northern red snapper and risk to native species

The supplemented EIA makes it clear that Petros will catch wild red snappers as a source population in Aruban waters and test them for genetic characteristics. The NCEA appreciates that this will be done in collaboration with universities. It considers it plausible that damage to the native red snapper will be minimised, provided that the licence safeguards that these locally caught fish form the source population. To demonstrate this conclusively, the NCEA recommends starting to catch and test the source population in the near future.

3.5 Environmental management system, monitoring plan and decision-making moments

Due to uncertainties in the project's environmental impact and feasibility, monitoring and evaluation of the project's feasibility and impact are essential. In its preliminary advisory report, the NCEA noted that the monitoring was not yet sufficiently SMART. In addition, it was unclear whether the competent authority would have to make an explicit decision in the interim about the scale-up to 2,000 tonnes per year and on the basis of which criteria and monitoring results it would do so.

Method of monitoring on land

The NCEA appreciates the information in the supplemented EIA on monitoring and evaluation. The sections on monitoring noise and odour nuisance still lack the limit values and measures that the initiator has "in reserve", while the EIA states that the monitoring and evaluation plan should provide insight into this.²¹

Criteria for decision on upscaling

In addition, there is a lack of insight into the criteria that Petros intends to use to decide on upscaling to a production volume of 2,000 tonnes per year (see also section 3.2 of this advisory report). It has not been specified based on which economic, social and environmental criteria Petros itself wishes to implement an upscaling to 2,000 tonnes per year. The NCEA recommends that these aspects of monitoring be elaborated and safeguarded in the permit process.

Method of monitoring the marine ecosystem

According to the NCEA, sampling benthos at various distances from the project location at sea is the only way to determine whether there is a local effect. Initially, a video track in the direction of the prevailing current from a sled or underwater drone will suffice. For "benthic faunal index assessments", which are required by the EIA for the ASC label²², soil samples

²¹ EIA, p. 35.

²² EIA, p. 239.

must also be taken and quantitatively examined for macrobenthos. This has not yet been done for the current situation.

With regard to nitrogen and phosphate, the NCEA recommends monthly monitoring (e.g. every three hours on one day) of concentrations and comparing these with control points upstream and downstream of the discharge pipe. Monitoring of the bottom of the Barcadera lagoon near the discharge pipe is also necessary, for example to see whether filamentous algae will grow here and whether seagrass will die off.

3.6 Summary of the body of environmental information

Decision-makers and stakeholders primarily read the summary of the EIA. This section therefore deserves special attention. The summary must be readable as a stand-alone document, even for less informed readers, and must accurately reflect the content of the EIA. The summary of the previous version of the EIA was clear in itself and contained the most important conclusions of the EIA. However, it did not yet provide a complete picture of the environmental effects and mitigating measures.

In the summary of the supplemented EIA, the NCEA still lacks information about the effects outside the planning area. The summary only contains the general conclusion that the effects will be limited or mitigable, but does not elaborate on those effects themselves. To do so, the reader must still consult the main report and the appendices. The purpose of a summary is precisely to provide a clear overview of the environmental effects at a glance.

The NCEA recommends that, prior to the decisions on the permits for the project, a summary of all the environmental information be included in the EIA that is also readable for the less informed reader. This summary should provide an overall picture of the environmental effects and the mitigating measures to be taken.

3.7 Key information from IFC Performance Standards

The previous sections have addressed topics that are also central to the IFC Performance Standards. In its preliminary advisory report, the NCEA indicated that important information was still missing in order to comply with these standards.

In particular, the consequences (opportunities and risks) for the current fishing and tourism sectors have not yet been quantified in the EIA. The consequences in terms of the economy and employment have been qualitatively assessed, but still need to be and can be quantified. If the earning capacity of fishermen is negatively affected, this will have to be compensated in accordance with IFC Performance Standard 5.

According to the EIA, the effects on marine biodiversity are limited. It is not possible to completely rule out any impact, however small. According to the Kunming-Montreal Global Biodiversity Framework (2022), compensation is then necessary. In its preliminary opinion, the NCEA already pointed to the possibility of supporting initiatives such as the restoration of the marine ecosystem and the planting of trees for CO₂ sequestration. The drafting of a "biodiversity compensation plan" as part of the Environmental Management Plan is an

opportunity for Petros to demonstrate how it will realise its high ambitions in the field of biodiversity protection and restoration.

The NCEA has not found any new information on these points in the supplemented EIA. However, Annex 50 describes how Petros, after obtaining an option from the Aruban government on the land and sea locations, will conduct a more in-depth analysis of social and socio-economic impacts. The NCEA understands from this that this will only happen after the option has been obtained. It recommends that this analysis be added to the EIA in due course, so that the EIA provides a complete picture of the environmental and social impacts.

APPENDIX 1: Assessment project data

Assessment by the Commission

The Commission consists of a working group of experts. This working group assesses whether the EIA contains the necessary environmental information and whether this information is accurate. If information is missing or incorrect, the Commission assesses whether it considers this information to be essential. The Commission then recommends that the missing or corrected information be made available before a decision is taken. In the week of 20 January 2025, the Commission's working group visited Aruba and the project site on land, and spoke with representatives of the Aruban government, the initiator and external stakeholders. More information about the [Commission](#) and its [working methods](#) can be found on our website.

Composition of the working group

For this project, the working group consists of:

drs. Simone Filippini (chairperson)
dr. Godfried van Moorsel (until 9 October 2025)
dr. André van Proosdij
dr. Marc Verdegem
ir. Paul van Vugt

dr. Arend Kolhoff (International Secretary)
mr. Roel Sillevius Smitt (Secretary for the Netherlands, spokesperson)

Decisions for which this environmental impact report has been drawn up and competent authorities

- Business establishment permit: Minister of Finance, Economic Affairs and Primary sector;
- Construction permit: Minister of Infrastructure, Energy and Telecommunication;
- Nuisance permit: Minister of Justice, Integration and Public Transport;
- Flora and fauna exemption: Minister of General Affairs, Culture, Environment and Nature.

Competent authority for EIA

Minister of General Affairs, Culture, Environment and Nature.

Initiator of the decision

Petros Aquaculture Operations.

Why is an environmental impact assessment being prepared for this?

Aruba has no regulations requiring an EIA for projects with significant environmental impacts. The ministers involved have decided to ask the initiator for an EIA to support the permit applications.

Did the Commission take the views and recommendations into account in its advisory report?

The Commission has read all the views and recommendations sent to the competent authority up to and including 20 January 2025. It has incorporated them into its advisory report, insofar as they are relevant.

Discussions with stakeholders during the advisory process

During the week of 20 January 2025, the Commission spoke with the Aruba Tourism Authority (ATA), the Aruba Hotel and Tourism Association (AHATA), the Committee for the protection of flora and fauna, the Aruba Marine Mammal Foundation, TortugAruba, the Aruba Conservation Foundation, ScubbleBubbles and Aruba Birdlife Conservation.

Where can I find the documents that the Commission has assessed?

You can find the project documents used in the advisory report at www.commissiemer.nl by entering project number [3884](#) in the search box.

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