

MSC Fisheries Reduced Re-Assessment Template V 1.0 (16<sup>th</sup> March 2015)

## Marine Stewardship Council (MSC) Reduced Reassessment Final Report

## Netherlands Blue Shell Mussel (Bottom and Suspended Culture) Fishery

On behalf of the Vereniging Producentenorganisatie van de Nederlandse mosselcultuur (Dutch PO mussel culture) and the Zeeuwse Hangcultuurkwekers

**Prepared by ME Certification Ltd** 

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# Contents

GLO	GLOSSARY					
1.	AUTHORSHIP AND PEER REVIEWERS					
2.	CHANGES SINCE INITIAL ASSESSMENT					
2.	1	Overview	.7			
	2.1.1 2.1.2 2.1.3 2.1.4 2.1.4	Scope and Unit of Assessment Enhanced fishery criteria Reduced reassessment criteria Harmonisation TAC and catch data	7 8 10 12 13			
2.2	2	Previous assessments	14			
2.3	3	Specific Changes since Initial Assessment	23			
	2.3.1 2.3.2 2.3.3 2.3.4	Overall Principle 1 Principle 2 Principle 3	23 27 27 37			
2.4	4 –	Changes to the Reporting Template that require an update	39			
3.	EVA		40			
3.	1		40			
3.	2	Evaluation Processes & Techniques	40			
3.2.1 Site Vis 3.2.2 Consult 3.2.3 Evaluat		Site Visits Consultations Evaluation Techniques	40 41 42			
4.	Tra	CEABILITY	44			
4.	1	Eligibility Date	44			
4.	2	Traceability within the Fishery	44			
4.	3	Eligibility to Enter Further Chains of Custody	47			
4.4 Cł	4 hains	Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to Enter Furth	ier 47			
5.	ΕνΑ	LUATION RESULTS	48			
5.	1	Principle Level Scores	48			
5.2	2	Summary of Scores	48			
5.	3	Summary of Conditions	49			
5.4	4	Recommendations	50			
<mark>5.</mark>	<mark>5</mark>	Determination, Formal Conclusion and Agreement	50			
6.	Ref	ERENCES	51			
Appi	APPENDICES					
Appi	APPENDIX 1 SCORING AND RATIONALES					
Ap	Appendix 1.1 Performance Indicator Scores and Rationale					



APPENDIX 2. PEER REVIEW REPORT	
APPENDIX 3. STAKEHOLDER SUBMISSIONS	
APPENDIX 4. SURVEILLANCE FREQUENCY	139
APPENDIX 5. OBJECTIONS PROCESS	



# Glossary

Term / acronym	Definition		
САВ	Conformity Assessment Body		
CFP	Common Fisheries Policy		
EEZ	Exclusive Economic Zone		
EMFF	European Maritime and Fisheries Fund		
EU	European Union		
IMARES	Institute for Marine Resources & Ecosystem Studies		
LNV	Ministerie van Landbouw, Natuur en Voedselkwaliteit		
MEC	ME Certification Ltd		
MEP	MacAlister Elliott & Partners Ltd		
MZI	Mosselzaadinvanginstallaties (seed mussel collectors)		
PO	Producer Organisation		
PRODUS	Project Duurzame Schelpdiercultuur (Project Sustainable Shellfish Culture)		
SASI	Schelpdier Afhankelijke Soorten Inventarisatie (Shellfish Dependant Species Inventory)		
SMC	Seed mussel collectors		
UoC	Unit of Certification		
VMS	Vessel Monitoring System		



## 1. Authorship and Peer Reviewers

The assessment team for this reduced reassessment were:

Dr Jo Gascoigne (Team Leader): Dr Gascoigne is a former research lecturer in marine biology at Bangor University, Wales and a shellfisheries expert, with over 25 years' experience in the fisheries sector. Dr Gascoigne has specific expertise in bivalves, with a PhD from the Virginia Institute of Marine Science in the USA, which was completed on the Allee effects of the gueen conch, Strombus gigas. Between 2003 and 2007 Dr Gascoigne completed postdoctoral research looking at the Menai strait mussel. This work considered all areas of mussel culture and specifically examined the carrying capacity of the system for shellfish culture and effects on stock and reproduction relating to fishing effort. Dr Gascoigne's work also involved a detailed study of the management and policies used in the fishery and its implications. Aside from the above experience Dr Gascoigne has also completed a large amount of work looking at bivalve fisheries around the world. This has included policy-based analysis of the king scallop and whelk in UK waters. She has also worked on the creation of management plans and policies in countries including Guyana and Oman. Dr Gascoigne's a fully gualified MSC Team Leader and has been involved as expert and lead auditor in over 15 MSC pre- and full assessments. She has also been involved in the use of the RBF on numerous occasions, having completed the required training, and this has also furthered her experience in specific stakeholder interview. Dr Gascoigne has recently completed the required Fishery Team Leader MSC training modules for the new V2.0 Fisheries Certification Requirements. She will act as team leader on this reassessment.

**Ulf Löwenberg:** Ulf Löwenberg has a Master's degree from the University of Hamburg in Fisheries Science. He is a fisheries biologist with more than 30 years' experience in the fisheries sector. This has included more than 15 years' experience in fisheries and advisory projects, including extensive work in Africa and 8 years' project management. Ulf has been involved in a number of MSC pre-assessments, full assessments and surveillance audits based in Europe. These include the Swedish Skagerrak and Kattegat herring fishery, North Sea Saithe Trawl fishery and Western Baltic Spring Spawning Herring fishery. Ulf is now a freelance fisheries consultant and has worked for private and governmental clients on a number of projects in Europe and Africa. A recent project based in Mauritania, which Ulf was responsible for, was titled 'Management advice in the fisheries sector'. This included support to the Fisheries Ministry in relation to development and implementation of fisheries management plans. In this assessment, Ulf was responsible primarily for the assessment of Principle 3.

**Kat Collinson**: Kat Collinson has a Master's degree from King's College University in Aquatic Resource Management. She has worked on a number of MSC pre- and full assessments including the North Menai Strait mussel fishery, Vietnam Ben Tre clam hand gathered fishery and Walkers Seafood Pty Ltd Australian albacore and yellowfin tuna and swordfish longline fishery. Kat also been involved in fishery improvements projects (FIPs) and has recently been involved in a project studying the habitat use and niche partitioning in two species of juvenile shark using active and passive tracking and diet stable isotope analysis. Up until recently Kat has also been the Manager of MSC Chain of Custody (CoC) projects at MEC and has untaken



over 150 assessments and therefore will also act as the team's expert on the traceability for the fishery.

Chrissie Sieben has a Master's Degree in Marine Environmental Protection, which she obtained at the University of Wales, Bangor. She is the MSC Fisheries Scheme Manager at MEC and specialises in marine and fisheries ecology, marine environmental impact assessment and sustainable fisheries. Previous to joining MEC, she worked as a fisheries consultant for MacAlister Elliott and Partners (MEP), where she worked on a number of projects including the application of WWF Common Methodology to wild capture and aquaculture fisheries for the WWF Hong Kong 'Good Fish Guide', Sustainable fisheries in the Trilateral Wadden Sea, acted as Fisheries Liaison for the London Gateway Project and carried out socio-economic characterisations and impact assessments of commercial fisheries for coastal developments. Prior to her work at MEP, she worked inter alia as a marine ecologist on environmental impact assessments (EIAs) and completed an internship with the Global Environment Facility / UNDP International Waters programme. She is a fully qualified MSC Team Leader with particular expertise in Principle 2 and is involved in MSC full assessments, pre-assessments and fishery surveillance audits. Chrissie participates regularly in MSC CAB training sessions and workshops and has received in-depth Risk-Based Framework training. Within MEC she has also worked as a Chain of Custody auditor. Chrissie speaks fluent Dutch and has longstanding experience of this fishery having been involved with previous surveillance audits.

The Peer Reviewer for this assessment was:

**Terry Holt**: Terry is a director of CMACS Ltd with responsibility for managing marine consultancy projects, Environmental Assessments and ecological surveys. He has over twenty-five years' experience in shellfish ecology, marine aquaculture, EIAs and benthic fish and invertebrate surveys, including providing expert evidence on molluscan fisheries at planning enquiries. Dr Holt has previously been involved in Marine Stewardship Council (MSC) pre-assessments and main assessments for Moody Marine (Burry Inlet Cockle fishery, Danish Blue shell mussel fishery Limfjord, Ben Tre clam fishery, Vietnam) and has worked on molluscan fishery pre-assessments for other organisations in SE Asia. He also contributed at early MSC workshops on the development of generic scoring guidelines and refining of assessment method.

Terry has experience in fish stock assessment, fish stock biology and fishery management and operations competency requirements. He has also completed over two years fishery work experience in the UK in the last 15 years and so meets the 'Current Knowledge Requirements'.

The Risk Based Framework was not used in this assessment.



### 2. Changes since Initial Assessment

#### 2.1 Overview

#### 2.1.1 Scope and Unit of Assessment

This fishery remains in conformity with the MSC scope requirements (FCR 7.4):

- The fishery does not target amphibians, birds, reptiles or mammals;
- The fishery does not use poisons or explosives;
- The fishery does not operate under a controversial unilateral exemption to an international agreement;
- The client group does not include an entity that has been successfully prosecuted for a forced labour violation in the last 2 years;
- The fishery management framework includes a mechanism for resolving disputes and the fishery is not overwhelmed by disputes.

Furthermore, no inseparable or practicably inseparable (IPI) stocks are caught in this fishery.

The fishery is not an Introduced Species Based Fishery as per the MSC FCR 7.4.4.

The fishery is an enhanced fishery, as explained in Section 2.1.2.

There are no other eligible fishers in this assessment. The Unit of Certification (UoC) is therefore the same as the Unit of Assessment (UoA). This assessment comprises four UoAs as follows:

Table 1. Units of	Assessment	for the f	fishery under	reassessment

Species and stock European / blue shell mussel ( <i>Mytilus edulis</i> )			
Geographical range	The Waddenzee and Zeeuwse delta of the Dutch coastal region		
Method of capture	<u>UoA 1</u> : Seed mussel collection by suspended ropes and nets (or <i>mosselzaad-invanginstallaties</i> , MZIs, in Dutch) in the Oosterschelde, Wadden Sea and Voordelta		
	<u>UoA 2</u> : Seed mussel collection by mussel dredge (' <i>mosselkor</i> ') in the Wadden Sea and Oosterschelde		
	<u>UoA 3</u> : On-growing of mussels grown using suspended ropes, collection of harvest size mussels from suspended ropes by Zeeuwse Hangcultuurkwekers in Zeeland (Oosterschelde, Voordelta, Veerse Meer and Grevelingenmeer)		



	<u>UoA 4</u> : Seeding mussel seed and half grown mussels on culture plots, collection of harvest size mussels from culture plots by dredging in the Wadden Sea and Oosterschelde				
Management Systems	The management system - both EU and national level - is subject to law, observes the legal and cultural rights of fishermen and includes transparent mechanisms for dispute resolution. Fishing plan for seed mussels is written by the Producers' Organisation (PO) for Mussel Culture.				
Client group	Vereniging Producentenorganisatie van de Nederlandse mosselcultuur (Dutch PO mussel culture) and Vereniging Zeeuwse Hangcultuurkwekers				

#### 2.1.2 Enhanced fishery criteria

The fishery has been defined as an enhanced fishery of the 'catch and grow' (CAG) type. Seed mussel is harvested from various areas and relayed onto on-growing plots ('lays'). Further details on the source of mussel seed and location of mussel plots are provided in Table 1.

Considerations on the scoring of Principle 1 are outlined in the following section.

#### Scoring of Principle 1

According to the MSC Certification Requirements and Guidance (v1.3), for a catch and grow enhanced bivalve fishery such as this, the team should evaluate whether or not the fishery has an impact on the target stock biomass, and whether it includes translocations. If the team concludes that there is no impact on the biomass of the target stock and no translocations, then the CAB may choose not to score Principle 1 (see clause CK2.1.3.1 of the CRv1.3).

In relation to the impact on the target stock biomass, the team considered the following arguments:

- The fishery operates only in the subtidal all intertidal mussel biomass is protected from fishing, in order to protect food sources for birds. This is set out in the Shellfish Policy. ' Ruimte voor een Zilte Oogst 2005-2020'. This policy, together with the Agreement of 2008, has become integrated in the Natura 2000 Management Plan for the Wadden Sea. The rules are also part of the Fisheries Management Plan.
- 2. This is set out in the Management Plan, which was designed and implemented through the Wadden Sea Memorandum.
- 3. All the mussels fished from subtidal seed beds are relayed onto culture plots where they are cultivated to reduce natural mortality as far as possible (i.e. laying and relaying as close as possible to optimal densities, removing starfish from the plots). The mussels must remain on the plots for a minimum of ~one year (mussels fished up to December in a given year must remain until at least October of the following year) or until at least 40mm shell length, but generally remaining on the plots ~2.5 years to reach optimal market size.



Mussels start to spawn from their first year (Fish and Fish, 1996) and spawn twice a year (Seed, 1969) so during this time they will spawn several times.

- 4. The stock of seed from natural settlement is supplemented by seed from MZIs, which it is assumed is recruitment that would not otherwise take place, since additional settlement habitat has been provided. This currently represents ~50% of the seed used in the fishery.
- 5. Most of the subtidal seed beds do not persist, even in the absence of fishing. The autumn seed fishery makes no significant difference to the biomass of mussels remaining on the beds (comparison of fished and unfished plots) because it takes place mainly in unstable areas where the mussels disappear whether or not they are fished. The effects of the spring seed fishery are, however, visible in terms of biomass for up to ~2 years, but the majority of these beds also do not persist in the long term (3 out of 37 locations lasted several years; Smaal et al., 2013). Full details and references are given under 'Principle 2 below.
- It is clear that there is not a lack of recruitment, as shown by the colonisation of the seed mussel collectors by mussel spat – sufficient settlement habitat seems to be the limiting factor.

In relation to translocations, mussels are moved around within the Dutch Wadden Sea (DWS) and within the Delta area – it is clear that this does not constitute a translocation since it is within the same ecosystem. They are also, however, moved between the DWS and the Delta in both directions. Movement from the DWS to the Delta has been going on for many years, since most of the seed beds and the culture plots for the early stages are in the DWS, but mussels may be moved to the Oosterschelde for the final growth stage. This movement can be regarded as equivalent to mussel harvest for a fishery taking place only in the DWS – the argument above applies in relation to the impact of the fishery on the parent stock in the DWS. Licensing of movement from the Delta to the DWS is relatively recent – it is a consequence of the Transition Agreement (see Section 2.3.1), since MZIs positioned in the Delta are of no use to the fishery unless the seed collected on them can be relayed on the ongrowing plots in the DWS. Since there is negligible fishing of natural seed in the Delta (very occasionally in the Voordelta), this movement of MZI mussels to the DWS has no impact on the natural stock in the Delta.

The current system along this part of the North Sea coast runs from the southwest to the northeast (Figure 1) so tends to transport organisms from the Delta to the Wadden Sea, hence strong connectivity would be expected between the Delta and the DWS. In the opposite direction, as noted above, movement of mussels has been a common practice for many decades. Hence there is strong connectivity in both directions, whether natural or manmade.



Figure 1. Current systems in the southern North Sea (see <a href="http://www.ecomare.nl/en/encyclopedia/natural-environment/water/water-currents/sea-currents/">http://www.ecomare.nl/en/encyclopedia/natural-environment/water/water-currents/sea-currents/</a>)

The ecosystem and genetic consequences of this movement of mussels in relation to the MSC has been evaluated already in the wider context of import of mussels into the Oosterschelde from MSC-certified fisheries further afield, as part of the now certified 'Mussel Translocation into the Oosterschelde' assessment. More information on this assessment is available here: <a href="https://www.msc.org/track-a-fishery/fisheries-in-the-program/in-assessment/north-eastatlantic/mussel-translocation-into-the-oosterschelde">https://www.msc.org/track-a-fishery/fisheries-in-the-program/in-assessment/north-eastatlantic/mussel-translocation-into-the-oosterschelde</a> (MEC, 2016a). The information available is examined in detail in this report, and concludes that there are no likely impacts. The management framework in the Netherlands for the management of mussel movements is also evaluated in this report, and meets the MSC requirements unconditionally.

Overall, in relation to Principle 1, the team concluded that i) the fishery has no significant impact on the mussel stock; ii) movements within the DWS and within the Delta region do not constitute translocation; iii) movements between the DWS and the Delta region do not for any practice purpose constitute translocation because they have no impact on the parent stock in either area and because there has been strong connectivity over many years; and iv) to the extent that there is translocation, this has already been evaluated in MEC (2016a).

Therefore, the team concluded that there is no requirement to score Principle 1 for this fishery.

#### 2.1.3 Reduced reassessment criteria

According to the Certification Requirements (version 2.0, paragraph 7.24.6), a fishery is eligible for reduced re-assessment if:

- The fishery was covered under the previous certification or scope extension;
- The fishery had no conditions remaining after the 3<sup>rd</sup> surveillance audit, and;
- The CAB confirms that all standard-related stakeholder comments have been addressed by the 3<sup>rd</sup> surveillance audit.



This fishery is made up from two previously certified mussel fisheries: the <u>Netherlands blue</u> <u>shell mussel</u> fishery (Certified on 26th July 2011 / MEP-F-021) and <u>Netherlands suspended</u> <u>culture mussel</u> (certified on 28th July 2011 / MEP-F-020). The UoAs described in Table 1 are composed of the original UoAs for the 2 certified fisheries (although the UoCs involving seed collection from nets and ropes have been merged). There have been no changes to those UoAs or to the scope of the fisheries since the initial assessment (although one member was added to the VZHK, as discussed in Section 2.3.1.1).

The Netherlands Blue Shell Mussel fishery was certified with 6 conditions, summarised in Table 5, Section 2.2. All conditions were closed out by the 3<sup>rd</sup> surveillance audit (see surveillance reports on the fishery website for further details).

The Netherlands Suspended Culture fishery was certified with 5 conditions, summarised in Table 6, Section 2.2. All conditions were closed out by the 3<sup>rd</sup> surveillance audit (see surveillance reports on the fishery website for further details).

#### Neither fishery therefore had conditions remaining after the Year 3 surveillance audit.

The initial assessment of the Netherlands Blue Shell Mussel fishery received a number of written stakeholder comments. Issues raised, how they related to the standard and how they were addressed, are set out Table 2 (corrections and clarifications with no bearing on the scoring, conclusions or outcome of the assessment have not been included).

Table 2. Substantive stakeholder comments received on the previous PCDRs for the Netherlands Blue Shell mussel and Netherlands Suspended Culture fisheries and how they were addressed (see Appendix I of SGS, 2011a). Note that no stakeholder comments were listed in the suspended culture report; however comments submitted by the Zeeuwse Milieu Federatie also apply to that fishery.

Issue	Raised by	How addressed	
Introduction of non-native species to the Oosterschelde via imports from abroad. Hybridisation of <i>Mytilus edulis</i> with <i>M. galloprovincialis</i> and <i>trossulus</i> .	Zeeuwse Milieu Federatie	Import of seed not part of initial assessments (Note that they have now been assessed and certified as part of the fishery 'Mussel Translocation in the Oosterschelde': <u>https://www.msc.org/track-</u> <u>a-fishery/fisheries-in-the-</u> <u>program/certified/north-east-</u> <u>atlantic/mussel-translocation-into-the-</u> <u>oosterchelde</u> )	
Mixing of certified mussels with non-certified mussels and mass balance control.	Zeeuwse Milieu Federatie	Any risk to traceabliity was mitigated by requiring CoC certification of the individual companies involved in the fishery.	
Concern that the carrying capacity of the Oosterschelde and Wadden Sea is insufficient to deal with increased volumes of mussels.	Zeeuwse Milieu Federatie; Paddy Walker (Wadden- vereniging)	A recommendation was added to address the possible impact of the upscaling of MZI's (seed collectors).	



# From the above analysis, the assessment team concluded that there are no outstanding standard-related stakeholder comments.

#### The fishery is therefore eligible for reduced re-assessment.

#### 2.1.4 Harmonisation

Table 3 provides details of all of the mussel (*Mytilus edulis*) fisheries that are currently certified or are in assessment against the MSC Standard and if any harmonisation was completed in association with this fishery. A description of the logic for the decisions on these harmonisation decisions is provided in the discussion below the table.

#### Table 3. Showing Certified and In-Assessment MSC Mussel fisheries

Fishery Name	MSC Status	Harmonisation required	
		P2	P3
Vilsund Blue a/s Limjord mussel & cockle dredge	Certified	No	No
Exmouth mussels	Certified	No	No
Isefjord and East Jutland Danish blue shell mussel	Certified	No	No
Ireland Bottom Grown Mussel (Mytilus edulis) fishery	Certified	No	No
Northern Ireland Bottom Grown Mussel (Mytilus edulis) fishery	Certified	No	No
Limfjord blue shell mussel (rope grown)	Certified	No	No
Germany Lower Saxony mussel dredge and mussel culture	Certified	No	No
Mussel translocation into the Oosterschelde	Certified	N/A	No
North Menai Strait mussel	Certified	No	No
Seafood Romo East Jutland and Isefjord blue shell mussel dredge	Certified	No	No
Shetland & Scottish Mainland Rope Grown mussel Enhanced fishery	Certified	No	No
Vilsund Blue East Jutland blue shell mussel dredge	Certified	No	No
SSPO Swedish West Coast Rope Grown Mussel	Certified	No	No

**Principle 2 Harmonisation:** No currently certified or fisheries in assessment use the same lays as this fishery. The translocation assessment considers the same jurisdiction, but P2 was not scored. Therefore no harmonisation is required for P2.



**Principle 3 Harmonisation:** Only the translocation assessment covers the same jurisdiction (the Netherlands). For this translocation assessment, only the management system as it relates to translocation of mussels from other jurisdictions was evaluated – this is not part of the management system under consideration here. Therefore there is no overlap.

#### 2.1.5 TAC and catch data

There is no Total Allowable Catch (TAC) for this fishery. The production data for the different UoCs are presented in Table 4. Note that in the Netherlands, mussel biomass is expressed in "mosseltonnen", with one mosselton corresponding to 100 kg.

# Table 4. Production data the Netherlands blue mussel fisheries (UoCs 1 to 4). Data presented are in mussel tonnes (i.e. x 100kg)

	UoC 1 (MZIs)	UoC 2 (wild seed fishery)	UoC 3 (suspended culture)	UoC 4 (bottom culture)
2014/15	174,600	200,000	19.112	579,320
2013/14	141,700	150,000	21.800	376,383



#### 2.2 Previous assessments

As explained previously, this fishery is made up from two previously certified mussel fisheries: the Netherlands blue shell mussel fishery and Netherlands suspended culture mussel fishery.

#### Netherlands blue shell mussel fishery

This fishery assessment evaluated seed mussel collection and wild capture with subsequent relaying and ongrowing actitvities by Members of the Producenten Organisatie van de Nederlandse Mosselcultuur in the Dutch Wadden Sea and the Zeeuwse Delta (Oosterschelde and Voordelta). During the fishery assessment the client group included 50 companies with a fleet of around 65 vessels, based in Yerseke, Bruinisse, Zierikzee, Tholen, Wieringen and Hontenisse. The following Units of Certification were assessed:

- UoC1: Seed mussel collection by suspended ropes (MZIs)
- UoC2: Seed mussel collection by suspended nets (MZIs)
- UoC3: Seed mussel collection by dredge ('mosselkor')
- UoC4: Seeding mussel seed and half grown mussels on culture plots, collection of harvest size mussels from culture plots by dredging

MZIs are located in the Voordelta, Oosterschelde (OS) and Dutch Wadden Sea (DWS). Dredging on wild seed beds, as well as relaying, occurs in the subtidal of the DWS as well as in the OS. During the grow-out phase, half-grown mussels are usually transplanted once to another culture plot.

The assessment was carried out against the Fishery Assessment Methodology (FAM) 2009, before the assessment tree for enhanced bivalve fisheries was developed. In harmonisation with the then ongoing assessment for the <u>Northern Menai Strait mussel fishery</u> (MEC, 2016b), three new PIs were added to the assessment tree under Principle 1: 1.1.4 (genetic outcome), 1.2.5 (genetic management) and 1.2.6 (genetic information). A site visit took place in Yerseke, Zeeland in May 2010. Meetings were also undertaken with relevant stakeholders in The Hague. The fishery was certified in July 2011.

According to the assessment team, the <u>main strengths and weaknesses</u> of the fishery were as follows: "The main strengths of the mussel seed fishery are the use of a renewable fast growing stock in combination with specific spatial limitations imposed upon the fishery in terms of open and closed areas, within which the fishery can operate. The dependence of natural bottom recruitment as seed resource in combination with occasional recruitment failure has initiated the development of alternative seed sources, such as import, hatchery produced seed, and seed mussel collectors. Competing claims in the western Wadden Sea of mussel seed fishery and nature conservation of mussel bed habitats has resulted in a transition process to gradually reduce the bottom fishery as a function of alternative seed resource exploitation. There is good management within the seed fishery including seed fishery plans that focus on the exploitation of unstable seed beds in the autumn, in order to retain mussels during the winter.



The main present weaknesses of this fishery are the dependence of natural bottom recruitment for seed supply, the uncertainty about the impacts of the mussel seed fishery upon the natural (bottom) habitat, the availability of genetic information, the availability of information on the size of the suspended mussel seed stocks and the monitoring of mussels from different origin on the watering plots."

The fishery was certified with 6 conditions, summarised in Table 5. All conditions were closed out after the third surveillance audit.

#### Netherlands suspended culture mussel fishery

This fishery assessment evaluated seed mussel collection through MZIs and subsequent ongrowing on suspended culture farms (using biodegradable socks) in Zeeland (Oosterschelde, Voordelta, Grevelingenmeer and Veerse Meer) by members of the Vereniging Zeeuwse Hangcultuurkwekers (VZHK). Note that the Wadden Sea is not part of this fishery component. During the fishery assessment the client group included four members of VZHK. The following Units of Certification were assessed:

- UoC1: Seed mussel collection by suspended ropes (MZIs)
- UoC2: Seed mussel collection by suspended nets (MZIs)
- UoC3: Suspended culture in socks

The assessment was carried out against the Fishery Assessment Methodology (FAM) 2009, before the assessment tree for enhanced bivalve fisheries was developed. In harmonisation with the then ongoing assessment for the Northern Menai Strait mussel fishery (MEC, 2016b), three new PIs were added to the assessment tree under Principle 1: 1.1.4 (genetic outcome), 1.2.5 (genetic management) and 1.2.6 (genetic information). A site visit took place in Yerseke, Zeeland in May 2010. Meetings were also undertaken with relevant stakeholders in The Hague. The fishery was certified in July 2011.



MSC Fisheries Reduced Re-Assessment Template V 1.0 (16<sup>th</sup> March 2015)

Table 5. Summary of conditions on the Netherlands Blue Shell Mussel fishery (see surveillance reports for further details; available here: <a href="https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/north-east-atlantic/netherlands-blue-shell-mussel/assessment-downloads">https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/north-east-atlantic/netherlands-blue-shell-mussel/assessment-downloads</a>)

No.	Performance indicator (PI)	Rationale	Condition	Status	Justification
1	1.2.3 Information and monitoring (all UoCs)	Information about suspended seed mussel collectors (standing stock, harvested amounts) is available at the farm level. Annual harvest data is collected from the farmers that are members within the Producers Organisation. Farm level book keeping includes the amount of seed harvested from seed collectors and used for grow out. There is sufficient relevant information available related to seed harvest to support the harvest strategy. However, there are no protocols for the procedure and validation of independent data collection.	Protocols for the procedure and validation of independent data collection of seed mussel collectors must be written and implemented. By second surveillance audit: written evidence of the implementation of an ongoing monitoring program to determine the stock and harvest in this fishery.	Closed at year 1	Stock and harvest size of the seed mussels from suspended collectors are now being collected according to a protocol and annual reports on the harvest per area are produced under contract of the PO Mosselcultuur and made public (van Stralen, 2012.)
2	1.2.4. Assessment of stock status (all UoCs)	The stocks of bottom seed mussels and the mussels on the culture plots are regularly assessed. This assessment is appropriate for the stock as a whole and	An independent and ongoing monitoring program should be in place to determine the size of stock and harvest of suspended mussel seed in	Closed at year 2	The report on the production of MZI seed was presented to the team (van Stralen 2013a). The report describes MZI production in 2013 in Waddenzee en Oosterschelde. The client has stated that a report of production with MZI's will be written every year. Hence it can be concluded that there is written evidence of the implementation of an



No.	Performance indicator (PI)	Rationale	Condition	Status	Justification
		for the harvest control rule, and is evaluating stock status relative to reference points. Concerning the size of the suspended mussel culture (stock) and the influence of this practice on the total mussel stock some uncertainties remain. The major sources of this uncertainty are identified. The stock of collector seed is assessed at the moment of harvest by the farmers. Data is collected and reported annually for the total amount of seed and checked by fishery inspectors. However there are no protocols for the measurements and there is no independent (peer) review of these data.	order to estimate the effects of the harvesting strategy on the total stocks. By second surveillance audit: written evidence of the implementation of an on- going monitoring program to determine the stock and harvest in this fishery.		ongoing monitoring program to determine the stock and harvest in this fishery and the condition can be closed.
3	1.2.6 Genetic Information (all UoCs)	Currently no monitoring is carried out on the development of the native mussel populations and their genetic characteristics that may be affected by imported mussels.	A survey program for genetic profiling of the mussel population should be in place that is able to detect possible changes over a period time with a 5- year interval. By first surveillance audit: provision of data and	Closed at year 3	The Association of shellfish importers (Vereniging van Schelpdier Importeurs) commissioned the scientific bureau GIMARIS on the 19th January to conduct a genetic survey of the genetic profiling of the Dutch Delta area and the Wadden Sea. () The client informed the team that the collection of samples has already commenced. The above provides evidence that the genetic survey programme is now being implemented. As such the team considered that progress against this condition was ahead of target and that the SG80 is level is now met. This condition can therefore be closed.



No.	Performance indicator (PI)	Rationale	Condition	Status	Justification
			information encouraging the development of a survey program for genetic profiling for this fishery. By third surveillance audit: written evidence of implementation of a genetic survey program.		
4	2.4.1 Habitat status (UoC 3)	Results of the ongoing research are required in order to reach a score at an unconditional level.	Results of impact studies need to be taken into account to evaluate the effects of the seed fishery on the long term development of stable mussel beds by the second surveillance audit.	Closed at year 2	The Produs research showed that immediately after the spring fishery, fewer mussels remained in the areas open to fishing compared with the closed areas. () In these unstable areas, mussel seed beds disappeared at the same rate from the open and closed areas, and after several years almost no adult mussels remained in these areas. Out of two large wild beds closed to fishing in 2009 and 2010, one survived to 2012 and one disappeared. The client noted that these results will be taken into account in the management of the mussel seed fishery. It is important to note that mussel beds in more stable areas have been gradually excluded from the fishery – as of 2013 this concerns 40 % of these beds. The impact of fishing on these beds is detectable but apparently reversible, while the impact of the fishery on the less stable areas is not detectable. On this basis, the team concludes that there is now sufficient information to conclude that is highly unlikely that the mussel seed fishery, as it is managed through the mussel agreement (Mossel Convenant), reduces habitat structure and function to a point where there would be serious or irreversible harm.
5	2.5.3 Ecosystem Information (UoCs 1, 2, 4)	Carrying capacity studies and spat fall seed collection data are needed before up scaling of the seed net collectors can take place.	Quantitative information on the effects of increase in the seed mussel collectors on the carrying capacity and effect on the	Closed at year 2	The audit team has received the unpublished draft report of the monitoring plan for this impact assessment of MZI's for the period 2010-2013 (Kamermans et al., 2013). In the plan the approach to the research is laid out. One important aspect of the project is the estimation of the effect of the agreed transition from seed dredging



No.	Performance indicator (PI)	Rationale	Condition	Status	Justification
			ecosystem needs to be available and applied. Independent data collection of stock and harvest size needs to be in place by the second surveillance		to production of mussel seed on MZI's on the carrying capacity of the Wadden Sea and Oosterschelde. The monitoring plan is being implemented under the Natura 2000 framework, to ensure that the fishery is not having significant impacts on the conservation goals of the areas' Natura 2000 designations. During the audit the team also received the 2013 report on the production of seed mussels on MZI's in 2012 (van Stralen, 2013a). The team concluded on this basis that sufficient data are continuously being collected to estimate the impacts of the mussel transition on the carrying capacity of Waddenzee en Oosterschelde and therefore the condition can be closed.
6	3.2.3 Compliance and enforcement (UoC 4)	At present the requirements for a monitoring, control and surveillance system that has demonstrated an ability to enforce relevant management measures, strategies and/or rules have not been fully met.	To improve the control, monitoring and enforcement system in such a way that the compliance with all measures in the management system is demonstrated by the 1 <sup>st</sup> surveillance audit.	Closed at year 1	The system as described in the client action plan has been implemented. The regulations (reglementen) of the PO have been adapted and a "Regulation for the relaying of mussels origination from non-MSC production areas" has been imposed. This new regulation lays down that in the case that a processing company intends to import non-MSC mussels a notification has to be given to the PO. The culture plot were the mussels will be relayed will be marked as a non-MSC plot in the PO's and the mussel auctions registration systems. The quantity of mussels relayed on the plot will also be registered. For every occasion that mussels are fished from the culture plots a registration document has to be filled. A copy will be send to the PO. Therefore all quantities harvested from all plots are registered. When the mussels are brought to the auction it is also registered on the purchasing document issued by the auction whether mussels are MSC or non-MSC. All mussel vessel movements are registered by the black box system. It can therefore be traced when fishing takes place on a non-MSC plot. The plot will remain a non-MSC plot until the whole quantity is harvested again. The PO conducts regular crosschecks with the auction regarding the quantities harvested from the non-MSC plots. When all mussels are removed from a non-MSC plot the PO checks



No.	Performance indicator (PI)	Rationale	Condition	Status	Justification
					that the plot is empty. Only after that check the plot can be remarked as a MSC plot. In the previous year only in two occasions non-MSC mussels were relayed in the Oosterschelde. One load from the German Wadden Sea and one from Menai Strait in the UK. The loads have been followed closely by the PO and the mussels have been landed to the auction as non-MSC mussels.

Table 6. Summary of conditions on the Netherlands Suspended Culture fishery (see surveillance reports for further details; available here: <a href="https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/north-east-atlantic/netherlands-suspended-culture-mussel/assessment-downloads">https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/north-east-atlantic/netherlands-suspended-culture-mussel/assessment-downloads</a>)

No.	Performance indicator (PI)	Rationale	Condition	Status	Justification
1	1.2.3 Information and monitoring (all UoCs)	Information nitoring (all Information about nitoring (all Information about nitoring (all Information about suspended seed mussel collectors (standing stock, harvested amounts) is available at the farm level. Harvest data are collected from the farmers by Productschap Vis. However; there are no protocols for data collection, -processing and procedures to make this data available		Closed at year 1	Stock and harvest size of the suspended mussels are being collected by the VZH on the basis of data provision of the VZH members. A protocol is now in place (agreement VZH annual meeting January 2013). For the SMC mussels annual reports on the harvest per area are produced under contract of the PO Mosselcultuur and made public, hence also available for the VZH.
2	1.2.4. Assessment of stock status	The stocks of bottom seed mussels and the mussels on the culture plots are regularly assessed. This	An on-going monitoring program should be in place to determine the size of stock and harvest of	Closed at year 2	The VZH has set up a system whereby all members inform VZH on the quantities of mussels that are present on their installations at the start and the end of a calendar year. The members should also inform VZH on the input on the systems during the year and the



No.	Performance indicator (PI)	Rationale	Condition	Status	Justification
		assessment is appropriate for the stock as a whole and for the harvest control rule, and is evaluating stock status relative to reference points. Concerning the size of the suspended mussel culture (stock) and the influence of this practice on the total mussel stock some uncertainties remain. The major sources of this uncertainty are identified. However, there are no protocols for the data collection and dissemination. Also, there is no independent (peer) review of these data.	suspended mussel seed in order to estimate the effects of the harvesting strategy on the wild stocks. By second surveillance audit: implementation of an ongoing monitoring program to determine the stock and harvest in this fishery.		quantities harvested. The members have agreed to provide this information and the members have been requested to provide this information. Two members have already provided the requested information and it is expected that by the end of 2014 all information needed to estimate the stock on installations and the annual harvest for 2014 will be available. A spreadsheet has been developed to register all information required. Consequently it can be concluded that a monitoring system to determine the size of stock and harvest of suspended mussel seed is now in place and the condition can be closed.
3	<ul><li>2.4.3 Habitat</li><li>Information (UoC</li><li>3)</li></ul>	Although there is some general information form literature and anecdotal observations, there is no monitoring or research program in place to collect quantitative data on the possible sediment impact in comparison to control sites.	By the second surveillance visit a monitoring or research program should be in place to collect quantitative data on possible benthic impacts.	Closed at year 3	A monitoring of the sediment impact of the suspended mussel culture in the Mattenhaven (Oosterschelde) has been carried out. () The report concludes that no significant differences between the culture site and the control area were found. On the basis of the results of the monitoring the assessment team concludes that quantitative data have now been collected and hat the results show that these risks are insignificant and increase of risks in the future is not to be expected given the fact that the sites that are in use are all known and not expected to increase. Therefore the condition can be closed.
4	3.2.1 Fishery specific	Although there are clear defined management objectives for the mussel	Within the context of regulations as set out by the management	Closed at year 2	On 10 June 2013 the VZH has formally changed its Articles of Association (Statuten). A copy of the official deed has been presented to the team. In the Articles of Association the general



No.	Performance indicator (PI)	Rationale	Condition	Status	Justification	
	management system (all UoCs)	culture in general fishery specific management objectives are not explicitly formulated for the fishery.	authorities, specific management objectives for this fishery should be developed. By second surveillance audit: written evidence of formulation of management objectives for this fishery.		objective of VZH is formulated. The objective now includes the words `the promotion of suspended mussel culture in a sustainable manner'. The team concludes that now written evidence of formulation of management objectives for this fishery is available and that the condition thus can be closed.	
5	3.2.4 Research plan (all UoCs)	Research that is relevant for the fishery is undertaken but no strategic approach is taken and laid down in a research plan.	The client should liaise with relevant scientific institutions in order to discuss the information requirements of the management of the fishery and to develop an appropriate research plan. By second surveillance audit: written evidence of research planning for this fishery	Closed at year 2	The VZH has commissioned H&S Consultancy to draft a written research plan for the suspended mussel culture. This research plan has been presented to the team. The plan includes: (1.) the collection of information on the quantities of mussel seed used and the quantities of consumption mussels produced; (2.) the monitoring of impacts on sediments; the sanitary monitoring of the suspended mussel culture. The plan will be updated regularly.	



#### 2.3 Specific Changes since Initial Assessment

#### 2.3.1 Overall

Please visit the previous PCRs (SGS, 2011a and b) for a detailed description on the following:

- Biology and ecology of *M. edulis*
- History of the fishery
- Locations of the culture and re-watering plots, as well as of the suspended culture farms (note: the only change has been the addition of a location for a new member of VZHK – this is further discussed below)
- Dutch bottom and suspended culture practices
- Gear descriptions for mussel dredge and MZIs
- Bycatch and discarding practices
- Description on the Wadden Sea and Oosterschelde ecosystem

#### 2.3.1.1 Update on client group members

During the initial assessment of the bottom culture fishery, the PO included 50 companies with a fleet of around 65 vessels, based in Yerseke, Bruinisse, Zierikzee, Tholen, Wieringen and The PO currently has 88 members with 63 vessels based in Yerseke, Bruinisse and Zierikzee. All of the PO members carry out bottom culture, with plots in the OS and DWS, and several members also hold membership of the VZHK.

The suspended culture fishery was initially certified with four members as part of the VZHK. At the start of reassessment, a fifth member was added to the Unit of Certification on the basis that the additional member would have a negligible impact on the pre-existing UoC for the following reasons:

- The fifth member shares a previously certified vessel with one of the current group members;
- The target species, the method of catch, the description of stock and the location of the fishery for the new member are all identical to the existing members;
- Although there is a small increase in the overall area of the fishery with the addition of the fifth member, < 0.05 km<sup>2</sup>, this increase was considered minimal.

This fishery was originally certified on behalf of four members of the Vereniging Zeeuwse Hangcultuurkwekers. A fifth member has asked to be assessed with the original four members as part of this re-assessment. As this could potentially impact the original UoC, MEC has conducted lengthy discussions with the members' group representative and have concluded that this additional member will have negligible impact on the currently defined UoC as the additional member only uses one boat. The ownership and use of this boat is also shared by



a member who was part of the original assessment. The vessel was therefore listed and assessed as part of the original assessment.

#### 2.3.1.2 Update on Mussel Transition Agreement

In 2008, an agreement was signed between the Dutch Ministry of Agriculture, Nature & Food Quality, the mussel sector and major NGOs entitled '*Convenant Transitie mosselsector en natuurherstel in de Waddenzee*' or henceforth referred to as the Mussel Transition Agreement. The basis of the agreement is to maintain mussel culture by a phased replacement of the wild mussel seed fishery with alternative seed production techniques such as MZIs, and in doing so, protect natural mussel beds by closing areas to the wild seed fishery. Although this agreement was in place at the time of the initial assessments, it had yet to be implemented.

Implementation commenced in 2009/2010, as outlined in the associated Implementation Plan<sup>1</sup>, *Plan van Uitvoering* (PvU) and Figure 2. The PvU was evaluated in 2013 and although progress was thought to be behind the targets outlined in 2008, the transition is considered to be successful with an observed increase in the amount of seed harvested with MZIs and two transition steps realised, jn 2009 and 2013<sup>2</sup>. The increase in the use of MZIs is shown in Figure 3. Currently (early 2016), 28% of the previous seed fishing areas are closed, prioritising the more stable areas targeted by the spring fishery (as explained below). The next step in the transition is planned for 2016 where the closed area will be increased to 40%. Annual surveys evaluate the area and production of the MZIs as well as various other aspects of the fishery (summarised under Principle 2).



 <sup>&</sup>lt;sup>1</sup> Plan van Uitvoering Convenant transitie mosselsector en natuurherstel Waddenzee. Maart 2009.
<sup>2</sup> Plan van Uitvoering Transitie Mosselsector (2014 – 2018)



Figure 2. Schematic of the implementation of the transition agreement (Source: Plan van Uitvoering Convenant transitie mosselsector en natuurherstel Waddenzee. Maart 2009). The green arrow on the left is the trajectory of the ecosystem recovery (end goal: recovery of multiyear stable musselbeds) and on the right the trajectory of the transition (end goal: mussel fishery independent from wild seed fishery). In purple is the proposed proportional closures of the autumn seed fishery ('najaar') and in orange the spring seed fishery ('voorjaar') – the spring fishery is prioritised for reasons which are explained under P2. The figures on the right are the target levels of seed production from MZIs to be reached to compensate for each tranche of closure (in million kgs).





Figure 3. Increase in the use of MZIs: Top: area of MZIs in use (as opposed to licensed), 2007-2015 (hectares); Bottom: seed production from MZIs; left – total including experimental plots right – 'trans' is transition plots – i.e. those counted towards the transition from bottom seed fishing (million kgs).



#### 2.3.1.3 Update on monitoring in place

A number of monitoring schemes currently take place in the DWS and the OS on wild mussel beds and culture areas; these were considered by the team for the scoring of particularly Principle 2. For clarity, a summary is presented below. The responsible entity/entities are put in brackets:

- Spring shellfish survey (Ministry / IMARES): For all shellfish species, for the purpose of shellfish licence applications, in the DWS and parts of Delta.
- Wild seed bed surveys (PO): Autumn survey of unstable beds to determine where to fish; spring survey revisiting fished beds (part of licence application).
- Culture plots (PO): Spring biomass survey (also sometimes estimates biomass of crabs and starfish)
- MZIs (PO): Annual monitoring of area and production
- SASI (Ministry / Gimares): Biennial survey of all the species on the culture plots, for comparison with imported mussels (Oosterschelde)
- Appropriate assessments: Biennial assessments under the Natura 2000 regulations, to accompany licence applications (PO)

Furthermore, there is PRODUS (*Project Duurzame Schelpdiercultuur* / Project research sustainable shellfish culture) which ran from 2006 to 2012. The project was financed by the ministry of Agriculture, Nature and Food Quality (LNV) and the shellfish sector and was carried out by the Wageningen UR, with the main aim of contributing to sustainable shellfish culture. More specifically, the project examined the effects of the wild seed fishery on the ecological values of the subtidal in the Dutch Wadden Sea and focused on the following key questions:

- Examine the development of multi-year subtidal mussel beds and ecosystem functioning in the absence of a wild seed fishery;
- What are the effects of the wild seed fishery on spat fall in later years?
- What are the current ecological characteristics of the subtidal area?
- What are the ecological differences between culture plots and wild mussel beds?

A summary of the findings of the study is available in the PRODUS final report (see Smaal et al., 2013).

#### 2.3.1.4 Update on dredging gear used

There has been a minor change in the gear used for the harvesting of wild seed mussels (UoC 2) and the harvesting of adult-sized mussels on culture plots (UoC 4) in that a 'box kor' is now used. This gear type has the same dimensions as the previously used dredge with the only difference that that now it is a 'box kor'. The dimensions of the gear are the same as the dredge, but instead now the gear is in a fixed shape, as the head end is fitted into a square frame so that it always remains open.



#### 2.3.2 Principle 1

Principle 1 was not scored. See Section 2.1.2 for further details.

#### 2.3.3 Principle 2

#### 2.3.3.1 Retained species

No species are retained by the fishery other than mussels, so there are no 'retained species' (PIs 2.1.1, 2.1.2 and 2.1.3). All bycatch is therefore considered under 2.2.1, 2.2.2 and 2.2.3.

#### 2.3.3.2 Bycatch

#### UoC1 (MZIs)

For the Oosterschelde (OS), a periodic inventory is conducted of all species present on mussel culture plots, including MZIs, in order to provide a point of comparison with the species list from mussel plots from which mussels are imported into the OS from elsewhere (e.g. the UK, Ireland, Denmark), with the purpose of ensuring that no undesirable species are introduced into the OS (MEC, 2015). This species inventory is termed a 'Schelpdier Afhankelijke Soorten Inventarisatie' (SASI) and is fully described in MEC (2015). The most recent SASI for MZIs in the OS was in 2014 (Gittenberger et al., 2014a), and identified 72 species associated with the mussels on the MZIs: 23 non-native, 33 species of algae, 9 tunicates, 9 crustaceans, 4 bryozoans, 4 sponges, 4 cnidaria (anemones and hydroids), 3 polychaetes, 3 molluscs, 2 echinoderms and 1 platyhelminth). These results suggest that the MZIs provide quite interesting habitat. It is reported that the biomass of species other than mussels on the MZIs is lower than on the bottom mussel beds, with the most obvious taxa other than mussels being the tunicates. Of these, all the species but two were non-natives; the two native tunicate species where Ciona intestinalis and Ascidiella aspersa, both widely distributed and common species. No such inventory is made for MZIs in the Wadden Sea, but it is reasonable to assume that the species list will be more or less the same (see discussion under Section 2.1.2. Species taken as 'bycatch' when mussels are harvested from the MZIs will be relaid onto the culture plots or in the 'socks', so they will not suffer direct mortality from the fishery, but may suffer high rates of predation on the bottom culture plots relative to their position on the MZIs or socks suspended in the water column.

#### UoC2 (fishing on wild seed beds) and UoC4 (culture plots)

Since both the wild seed beds and the culture plots represent transient mussel beds in the same ecosystem, then it is reasonable to assume that the bycatch will be the same for each. A SASI was conducted on the culture plots in the OS in 2014, giving a list of 144 species present: 24 non-native; 53 species of algae, 18 crustaceans, 16 cnidaria (anemones, hydroids and jellyfish), 14 molluscs, 10 polychaetes, 7 tunicates, 7 fish, 6 echinoderms, 5 bryozoans, 4 sponges, 2 chelicerates (sea spiders) and one platyhelminth (Gittenberger, 2014b).

There have been no SASIs completed as of yet for the DWS (the logic being that movement of mussels between plots in the DWS and the OS has been happening for many years



already). A SASI was planned for the German (Lower Saxony) WS in 2015 but reportedly this is not yet finished, although there has been an extensive survey of introduced species in the WS not specific to mussel beds by Gittenberger et al. (2015). However, one of the components of the PRODUS project looked at macrozoobenthic biodiversity on wild seed beds and culture plots in the DWS (Drent and Dekker, 2013a and b). They found a total of 123 species of zoobenthos (i.e. no algae) associated with mussels; a somewhat different list to that given in Gittenberger et al. (2014b): 49 polychaetes, 28 crustaceans, 21 molluscs including 16 bivalves, 7 cnidaria, 5 bryozoans, 6 echinoderms and 3 tunicates. The differences most likely reflect the different sampling methodology – box cores as opposed to mussel dredge in the OS, which would explain the larger number of infauna species (polychaetes and bivalves) and lower number of large, mobile species (e.g. fish, jellyfish) found in the PRODUS study. Since the mussel dredge is the fishing gear used by the fishery, the SASI is likely to better represent the list of species taken as bycatch in the fishery.

As is known from mussel fisheries in other areas (e.g. the German Wadden Sea, UK; MEP 2012a and b), the main species taken alongside bottom-grown mussels (whether seed or culture plots) in NW Europe is the common starfish *Asterias rubens* and the common shore crab *Carcinus maenas*, both abundant and widely distributed species and important predators of mussels. As part of a survey of mussel biomass on the DWS culture plots (winter 2014-15), van Stralen (2015) estimated the density of starfish and green crabs on the mussel plots to be  $0.2m^{-2}$  (starfish) and  $1.1m^{-2}$  (crabs), although it is worth noting that this is just one snapshot in time, and densities of starfish in particular can vary over orders or magnitude in the same place at different times (Jo Gascoigne, pers. obs.).

Unlike in some mussel fisheries, there is no attempt in this fishery to sort out the bycatch (particularly starfish) prior to relaying on the culture plots or during harvesting. However, before mussels are relaid on empty culture plots, or when there is heavy starfish predation on a plot, they may be 'cleaned' of starfish by dragging heavy strips of fabric over the bottom – this 'velcros' up the starfish, which can then be disposed of in the subtidal away from the culture plots (with presumably some mortality but it is not known how much). This is because starfish predation can reduce mussel biomass very quickly (Nehls et al., 2011).

#### UoC3 (suspended culture)

When the suspended culture was starting, a study by IMARES (Wijsman and de Mesel, 2009) found 56 species associated with the mussels in the 'socks', of which the most significant in terms of biomass are barnacles (*Balanus crenatus* and *Elminius modestus*), tunicates (*Ascidiella scabra, Ascidiella aspersa* and *Styela clava*), slipper limpets (*Crepidula fornicata*), seaweed and sometimes common starfish and common shore crabs, i.e. the same species as found associated with the MZIs (Gittenberger et al., 2014a). There has been no detailed study since then, but it is reasonable to assume that there has been no significant change.

#### 2.3.3.3 ETP species

Birds



Both the DWS and the Delta area are Special Protection Areas (SPAs) under the EU Birds Directive (Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds). The relevant bird species are listed in Table 7 for each area. De Vlas et al. (2014) set out the quantitative goals for each species and evaluate whether they are being met, and if not, why not. Fisheries are only identified as an issue for two species; the eider duck and oystercatcher. The oystercatcher feeds exclusively in the intertidal (where this fishery does not operate) and in fact, only cockle hand-raking is identified as a potential fishery-related issue for oystercatchers. For eider ducks, however, the mussel fishery is identified as a potential (or past) source of impact, and the management of the mussel fishery (notably the transition agreement) forms the core of the actions set out to try and increase both breeding and non-breeding eider populations in the DWS. De Vlas et al. (2014) note, however, that there are also other factors at play (e.g. colonisation of the permanent mussel beds by the Pacific oyster, reduced nutrient input, climate change, disturbance) that mean that there is a limited expectation of target population sizes being reached for eider duck.



#### Table 7. Birds listed under the SPAs for the Wadden Sea and the Delta. Terrestrial birds (birds of prey) excluded. From de Vlas et al. (2014).

Dutch name	English name	Scientific name	Presence		Conservation goals being met or population	If not why not?		
			DWS Delta		increasing?			
Breeding birds								
Lepelaar	Eurasian spoonbill	Platalea leucorodia	Y	Y	Y			
Eider	Eider	Somateria mollissima	Y	Ν	Ν	Loss of intertidal and subtidal mussel beds, disturbance, Pacific oyster, lower nutrient levels, climate change		
Kluut	Pied avocet	Recurvirostra avosetta	Y	N	N	Fox predation, habitat loss or reduction in quality (terrestrial), disturbance on nesting grounds		
Bontbekplevier	Common ringed plover	Charadrius hiaticula	Y	N	N	Nesting disturbance		
Strandplevier	Kentish plover	Charadrius alexandrinus	Y	Y	N	Nesting disturbance, habitat loss (terrestrial)		
Kleine mantelmeeuw	Lesser black-backed gull	Larus fuscus	Y	N	Y			
Grote stern	Sandwich tern	Thalasseus sandvicensis	Y	Y	Y			
Visdief	Common tern	Sterna hirundo	Y	Y	Ν	Fox predation		



Dutch name	English name	Scientific name	Presence		Conservation goals being met or population	If not why not?			
			DWS	Delta	increasing?				
Noordse stern	Arctic tern	Sterna paradisaea	Y	Y	N	Fox predation			
Dwergstern	Little tern	Sternula albifrons	Y	Y	Y				
Fuut	Great crested grebe	Podiceps cristatus	Y	Y	Y				
Aalscholver	Great cormorant	Phalacrocorax carbo	Y	Y	Y				
Non-breeding birds									
Lepelaar	Eurasian spoonbill	Platalea leucorodia	Y	Y	Y				
Kleine Zwaan	Bewick's Swan	Cygnus columbianus bewickii	Y	Y	Y				
Toendrarietgans	Tundra bean goose	Anser serrirostris	Y	N	Y				
Grauwe gans	Greylag goose	Anser anser	Y	Y	Y				
Brandgans	Barnacle goose	Branta leucopsis	Y	Y	Y				
Rotgans	Brant goose	Branta bernicla	Y	Y	Y				
Bergeend	Common shelduck	Tadorna tadorna	Y	Y	Y				



Dutch name	English name	Scientific name	Presence		Conservation goals being met or population	If not why not?
			DWS	Delta	increasing?	
Smient	Eurasian wigeon	Anas penelope	Y	Y	N	Terrestrial habitat loss
Krakeend	Gadwall	Anas strepera	Y	Y	Y	
Wintertaling	Eurasian teal	Anas crecca	Y	Y	N	Terrestrial habitat loss
Wilde eend	Mallard	Anas platyrhynchos	Y	Y	N	Terrestrial habitat loss, northward shift in range
Pijlstaart	Northern pintail	Anas acuta	Y	Y	Y	
Slobeend	Northern shoveler	Anas clypeata	Y	Y	Y	
Topper	Greater scaup	Aythya marila	Y	N	Y	
Eider	Eider	Somateria mollissima	Y	N	N	See above
Brilduiker	Common goldeneye	Bucephala clangula	Y	Y	Y	
Middelste Zaagbek	Red-breasted merganser	Mergus serrator	Y	Y	Y	
Grote Zaagbek	Common merganser	Mergus merganser	Y	N	Y	



Dutch name	English name	Scientific name	Presence		Conservation goals being met or population	If not why not?
			DWS	Delta	increasing?	
Scholekster	Eurasian oystercatcher	Haematopus ostralegus	Y	Y	N	Lower food availability, particularly cockles?
Kluut	Pied avocet	Recurvirostra avosetta	Y	Y	Y	
Bontbekplevier	Common ringed plover	Charadrius hiaticula	Y	Y	Y	
Goudplevier	European golden plover	Pluvialis apricaria	Y	Y	N	Terrestrial habitat loss
Zilverplevier	Grey plover	Pluvialis squatarola	Y	Y	Y	
Kievit	Northern lapwing	Vanellus vanellus	Y	Y	Y	
Kanoet	Red knot	Calidris canutus	Y	Y	Y	
Drieteenstrandloper	Sanderling	Calidris alba	Y	Y	Y	
Krombekstrandlope r	Curlew sandpiper	Calidris ferruginea	Y	N	Y	
Bonte strandloper	Dunlin	Calidris alpina	Y	Y	Υ	
Grutto	Black-tailed godwit	Limosa limosa	Y	N	N	Terrestrial habitat loss



Dutch name	English name	Scientific name	Presence		Conservation goals being met or population	If not why not?
			DWS	Delta	increasing?	
Rosse grutto	Bar-tailed godwit	Limosa lapponica	Y	Y	Y	Factors external to the NL
Wulp	Eurasian curlew	Numenius arquata	Y	Y	Υ	
Zwarte ruiter	Spotted redshank	Tringa erythropus	Y	Y	N	
Tureluur	Common redshank	Tringa totanus	Y	Y	Y	
Groenpootruiter	Common greenshank	Tringa nebularia	Y	Y	Y	
Steenloper	Ruddy turnstone	Arenaria interpres	Y	Y	Υ	
Zwarte stern	Black tern	Chlidonias niger	Y	Ν	Ν	Disturbance
Kuifduiker	Horned grebe	Podiceps auritus	N	Y	Υ	
Dodaars	Little grebe	Tachybaptus ruficollis	N	Y	Y	
Kleine zilverreiger	Little egret	Egretta garzetta	N	Y	Y	
Meerkoet	Coot	Fullica atra	N	Y	Υ	



The present situation for eiders (or the situation at the last census in 2012-13), according to de Vlas et al. (2014) and Hornman et al. (2015) is that the total non-breeding population numbers about 97,000 in the DWS, up from a low of 60-80,000 in 2008-9 but well below the peak level of ~168,000 in the mid-1990s and somewhat below the target of 110,000 (Figure 4). In terms of breeding pairs, there are estimated to be around 2,000; the target (peak) level is ~5,000. The census (Hornman et al., 2015) counted 1,650 in the Delta area – it is estimated that ~98% of the Dutch population is in the WS, and note that eider ducks are not a species listed under the SPA for the Delta.



Figuur 5.19. Eider. Trend in Nederland. / Common Eider. Trend in The Netherlands.

Figure 4. Estimated numbers of overwintering eiders in the Netherlands from waterbird census report (part of the TMAP Wadden Sea monitoring project)

#### Marine mammals

Both the WS and the Delta have a breeding population of common seals (*Phoca vitulina*). In the WS, the common seal population has increased year-on-year since an epidemic in 2002 reduced the population size. According to the count in 2014, the total WS population was ~26,600 (~39,000 if corrected for bad weather during the survey), of which ~7,000 (uncorrected) are in The Netherlands, although the seals may move east-west according to conditions. Compared to 2013, the adult population is ~stable but pup production increased. There is also a smaller breeding population of grey seals (*Halichoerus grypus*), estimated ~4,000 in total in the WS in 2014<sup>3</sup>. This population re-established itself in the mid-1980s after grey seals had been absent from the WS for many years, and has increased steadily since then (Brasseur et al., 2014). Latest population estimates in the Delta area are: ~430 in the

<sup>&</sup>lt;sup>3</sup> See <u>http://www.waddensea-secretariat.org/news-and-service/news/14-01-11seal-count-2014-harbour-seal-numbers-still-stable</u>



Voordelta, 120 in the Oosterschelde and 188 in the Westerschelde in 2013-14. This population is also increasing<sup>4</sup>. Maps of the main haul-out areas used by seals are available for all areas.

Mussel vessels are required to keep at least 1500m away from seals, although reportedly in practice this is difficult because the seals tend to approach the vessels. The previous PCRs (SGS, 2011a and b) cite studies which show that entanglement of seals or other marine mammals (or birds for that matter) with the MZIs and suspended culture socks is highly unlikely, and there is no reason to suppose that this has changed (Wiersinga et al., 2009; Kamermans et al., 2010).

In some other mussel fisheries using MZIs (e.g. the Schleswig-Holstein fishery, currently under MSC assessment<sup>5</sup>), the harbour porpoise (*Phocoena phocoena*) has been included as a relevant ETP species, due to concerns about entanglement or disturbance raised by stakeholders. The team considered whether it is relevant to consider harbour porpoise here, but found no documentary evidence of any interactions ever having taken place; harbour porpoises were not raised as a concern by any stakeholders either. On this basis, the team considered that harbour porpoise is not relevant as an ETP species interacting with this fishery.

#### 2.3.3.4 Habitats

For general background on habitats in the DWS and OS, see the previous PCRs (SGS, 2011a and b).

#### UoC1 (MZIs) and UoC3 (suspended culture)

MZIs and suspended culture have the potential to change habitats underneath the suspended mussels via biodeposition of 'mussel mud', as is known from other areas (e.g. Ria de Vigo, Spain in Ysebaert et al., 2009). This has been evaluated at the 'Mattenhaven' suspended culture site in the Oosterschelde (H&S Consultancy, 2014), where it was found that there was little difference between the areas inside and outside the seed collectors, except for an increase in the abundance of macrofauna (crabs, starfish and others) under the collectors associated with clumps of mussels which had fallen off. In general, the highly energetic nature of the environment (strong tidal currents and sediment transport) would be expected to keep biodeposition under the MZIs and socks to a minimum.

#### UoC2 (wild seed fishery)

The main concern raised in the previous assessment of the bottom culture fishery was the potential impact of seed dredging in preventing stable mussel beds from forming in the intertidal. This was one of the components of the PRODUS project, which was completed in 2013 (Smaal et al., 2013). This research found that fishing in spring on mussel beds which

<sup>&</sup>lt;sup>4</sup> See p. 34-37 of <u>https://deltamilieu.nl/uploads/other/BM-15.08-Watervogels-en-zeezoogdieren-in-de-Zoute-Delta-2013-2014.pdf</u>

<sup>&</sup>lt;sup>5</sup> <u>https://www.msc.org/track-a-fishery/fisheries-in-the-program/in-assessment/north-east-atlantic/schelswig-holstein-blue-shell-mussel</u>


had persisted through the winter had an impact on the mussel biomass on these beds which was detectable for up to two years, but that after the autumn fishery (on this year's seed) there was no detectable difference between fished and unfished areas. In only three out of 37 locations did mussels survive for several years. In terms of subsequent spatfall, the researchers noted two types: periodic high densities of spatfall which typically occurred away from existing mussel beds (i.e. no link with fishing) and more regular, lower-density spatfall which tended to occur in existing mussel beds. This lower-density spatfall was positively correlated with existing mussel density up to ~ $100g/m^2$ , but since fishing tends to stop at ~ $150g/m^2$  (for economic reasons), there was no correlation between fishing and subsequent spatfall (van Stralen et al., 2013). This research provides the logic as to why the mussel transition agreement focuses on replacing the spring fishery with MZIs (see Section 2.3.1.2).

## UoC4 (culture plots)

The changes in sediment structure and benthic biodiversity in the culture plots are described in the previous PCR for the bottom culture fishery (SGS, 2011a).

### 2.3.3.5 Ecosystem

The general characteristics of the ecosystem are described in the previous reports (SGS 2011a and b). The PRODUS study (Smaal et al., 2013) noted that mussel beds are biodiversity hotspots in the WS, and while benthic biodiversity on fished beds tended to be lower than on unfished beds, biodiversity on culture plots was as high as or higher than on wild mussel beds.

### 2.3.4 Principle 3

There are no major changes in the fishery and in the management system.

It has to be mentioned, however, that the Dutch Fisheries Board (Productschap Vis) has ceased to exist since 1<sup>st</sup> July 2013. The interests of the mussel fishers are now represented by the PO and the VZHK. The Food Safety Monitoring Programme was taken over by the Ministry of Economic Affairs. Other activities such as the auction, mussel promotion and financing of research activities are now guaranteed by the PO and the Association of Mussel Traders.

The Common Fisheries Policy of the European Union is reviewed approximately every 10 years. The last review started in 2009, the revised version of the CFP has been agreed by Council and Parliament and is effective from 1 January 2014 (Regulation (EU) No 1380/2013).

After the Financial Instrument for Fisheries Guidance (FIFG, 2000-06) and the European Fisheries Fund (EFF, 2007-2013) the Commission has set up the European Maritime and Fisheries Fund (EMFF, 2014-20). This fund helps fishermen in the transition to sustainable fishing, supports coastal communities in diversifying their economies, finances projects that create new jobs and improve quality of life along European coasts, and makes it easier for applicants to access financing (Regulation (EU) No 508/2014).



In the Netherlands the 9<sup>th</sup> version of the Management Plan for the Wadden Sea (Natura 2000beheerplan Waddenzee), covering the period from 2016 to 2022, has been made public in November 2015 in draft form. The main objective is a sustainable protection of the Wadden Sea and its development as a nature reserve, with a variety of other functions. The consultation period is closed but the final version of the Management Plan has not yet been published.



### 2.4 Changes to the Reporting Template that require an update

### Version 1.3 of the CR

# Principle One: Target Species Background (Full Assessment Reporting Template (FA Template) v.1.3, Section 3.1)

In this section should be considered whether the target species is a 'key low trophic level' species, as defined by MSC Certification Requirements and Guidance version 1.3. While mussels are low trophic level species and play an important role in the ecosystem, the requirements of the 'key LTL' methodology (for more precautionary reference points) do not apply because Principle 1 was not assessed, and because they do not meet the MSC's criteria for key LTL species (CB2.3.13).

### Principle Three: Management System Background (FA Template v.1.3, Section 3.5)

The fishery is a single jurisdiction fishery.



# 3. Evaluation Procedure

### 3.1 Assessment Methodologies

<u>FCR version</u>: The fishery is assessed under version 1.3 but using the process requirements set out in version 2.0. The Risk-Based Framework was not used.

<u>Template</u>: This report follows the 'MSC Reduced Re-Assessment Reporting Template' version 1.0.

<u>Changes to evaluation tables</u>: The fishery is evaluated based on the Default Assessment Tree for Enhanced Bivalves (Annex SB) with the omission of Principle 1 as explained in Section 2.1.2.

### 3.2 Evaluation Processes & Techniques

### 3.2.1 Site Visits

The fishery entered re-assessment on the 10<sup>th</sup> September 2015. The site visit took place in Yerseke, Zeeland on the 12-15th October 2015 and was attended by the client and stakeholder representatives listed in Table 8. The site visit included a tour of the auction facilities, as well as a visit to watch the mussels being unloaded (Figure 5).



Figure 5. One of the client vessels with full hold of mussels for unloading.

Table 8. List of stakeholders consulted with and present at the site visit.



Name	Role/organisation	Type of consultation	Date/location of consultation	Information obtained
Cora Seip	Client Group Representative	Information gathering	12-13 <sup>th</sup> October at client offices	Client operations, traceability, general information, catch data
Addy Risseeuw	Client Group – PO Mussel culture	Information gathering	12-13 <sup>th</sup> October at client offices	Client operations, traceability, general information, catch data
Henk van den d Ouden	Client Group – Ver. Zeeuwse Hangculture	Information gathering	12-13 <sup>th</sup> October at client offices	Client operations, traceability, general information, catch data
Jaap Geleijnse	Client Group – Ver. Zeeuwse Hangculture	Information gathering	12-13 <sup>th</sup> October at client offices	Client operations, traceability, general information, catch data
Nico van Zantvoort	Head of the mussel auction	Information gathering	12 <sup>th</sup> October at the auction	Traceability

The scoring meeting was held remotely via Skype teleconference on the 3<sup>rd</sup> March 2016 – all team members participated.

### 3.2.2 Consultations

The people interviewed during the site visit are listed in Table 8. The information received has been incorporated in the above review of changes to the fishery (Principle 2 and Principle 3), with a brief summary as follows:

- Client group details, functioning and membership;
- Trends in production and market conditions;
- Data on harvest from MZIs, wild seed collection, suspended and bottom culture
- Survey programmes and results
- Changes in relation to P2 (bycatch trends, gear types, habitat studies and carrying capacity)
- Changes in relation to P3 (licensing etc.)



### 3.2.3 Evaluation Techniques

**a) Media announcements**: The re-assessment was completed under Version 2.0 process requirements. The use of media announcements is therefore not required.

**b)** Methodology for information gathering: Review of data and documentation, interview of stakeholders.

c) Scoring process: Scoring was completed after the site visit, during a Skype teleconference.

The scores were decided as follows:

How many scoring issues met?	SG60	SG80	SG100
All	60	80	100
Half	FAIL	70	90
Less than half	FAIL	65	85
More than half	FAIL	75	95

Note that where there is only one scoring issue in the SG, the issue can be partially scored – In this case the team used their judgement to determine what proportion of it was met, e.g. at the 100 level, a small part met = 85, about half met = 90, nearly all met = 95.

### d) Decision rule for reaching the final recommendation:

A UoA cannot be certified if:

- The weighted average score for all PIs under each Principle is less than 80 for any of the three Principles
- Any individual scoring issue is not met at the SG60 level, contributing to a score of less than 60 on any PI.

The aggregate score for each Principle is calculated by taking the average score for each Component (e.g. 1.1 – Principle 1 Outcome), followed by the average of all the Component scores (see Table 11).



## e) Scoring elements: the scoring elements are detailed in Table 9.

## Table 9. Scoring elements

Component	Scoring elements	Main/not main	Data-deficient or not
P1	Not scored	N/A	N/a
Retained species	None	Main	N/A
Retained species	None	Not main	N/A
By-catch species	None	Main	N/A
By-catch species	See Section 2.3.3.2	Not main	No
ETP species	Eider duck (UoC2), grey and common seal (all UoCs)	N/A	No
Habitats	Subtidal seed beds (UoC2), habitats under MZIs and suspended culture (UoC1, UoC3), areas used as culture plots (UoC4)	N/A	No
Ecosystem	Dutch Waddensee, Oosterschelde, Voordelta	N/A	No



# 4. Traceability

## 4.1 Eligibility Date

(REQUIRED FOR ALL REPORTS EXCEPT PCR)

The eligibility date for this fishery is the date of recertification.

## 4.2 Traceability within the Fishery

Mussels are harvested, either from being dredged or by being removed from the hanging culture ropes. A registration document is completed at this time, before the mussels are brought to shore at Yerseke. Information on this document includes harvesting vessel, date of harvest, destination of the mussels, whether they are wild or cultured-caught mussels, quality status of the production area and position of the harvest area (fishing ground). This forms the basis of the traceability. Each registration document has its own, sequential number which is transferred onto subsequent documents, such as the invoice. One registration document will never have mussel harvests from two different fishers, so it is always possible to trace the mussels back to an individual vessel, plot and fisher.

Rope-grown mussels are harvested and put onto third-party transport vehicles to go for further processing. They are sold prior to harvesting as the fishers know approximately the volume of mussels they have on the ropes. Ownership has therefore changed hands by the time the mussels are loaded onto the transportation.

Bottom culture mussels, once harvested are sold through the auction at Yerseke. The ships arrive in harbour and a sample of mussels is taken into the auction. Here they are weighed and cleaned of all 'non-mussel' material. The mussels are counted, measured and sorted by size, of which there are six size classes. This gives an estimate of the size composition; quality and weight of the mussel harvest still on-board the fishing vessel. The mussels are sold on a sample basis. Only the sample leaves the vessel and is not sold. Ownership changes the moment the mussels are sold at auction. Due to logistical reasons, they remain aboard the vessel they were fished with. Once auctioned, the mussels are brought straight to the factories or the relaying plots in the Oosterschelde.

The harvest registration document number is written on the customer invoice.

If mussels have been imported from other MSC sources, when they are relayed on the plots in Yerseke, the following information is documented in addition to the list above:

- Plot number of the plot where the mussels have been relayed in the Oosterschelde;
- Date, vessel name, registration document number;
- The amount of mussels fishedfrom the plots.

When the mussels are harvested in Yerseke, they have to provide the Import Organisation (again through the auction, which serves as the administrator) with the bill of lading, registration documents, and any other relevant documents (like the MSC fishery certification



number). This maintains the paper trail, allowing the tracing of the imports back to their respective sources. In order to notify the Import Organisation of the mussel imports, most companies use the registration form. The client group members are also obliged to keep their own administration documentation, all of which the processing companies also have copies, these include:

- Point of origin: name of the production area where the mussels are from (if possible with plot number and/or GPS-coordinates);
- Amount of mussels in tonnage;
- Time and date of arrival in Yerseke;
- Time and date of the notification to the auction;
- Date of the mussels leaving the factory.

The system above allows for full traceability to be maintained from arrival of the mussels to the point of harvest. Mussels are identifiable back to a certified source, through to a specific relocation plot and through to harvest. All mussels that have been relayed and harvested will go to processing factories for packaging for onward sale to the final consumer, i.e. restaurants and supermarkets.

Traceability Factor	Description of risk factor if present. Where applicable, a description of relevant mitigation measures or traceability systems (this can include the role of existing regulatory or fishery management controls)
Potential for non-certified gear/s to be used within the fishery	No chance due to the nature of the fishery. But documentation in place to know which plots and companies are MSC and which are not.
Potential for vessels from the UoC to fish outside the UoC or in different geographical areas (on the same trips or different trips)	Never fish outside of the area already defined by the assessment
Potential for vessels outside of the UoC or client group fishing the same stock	There is no risk of this occurring. Smaller vessels collect the ropes and then take them to a mother vessel to be cleaned. Dredged mussels are taken straight to port. All plots, bottom culture or suspended are known and recorded. Other vessels would not be allowed to fish on them.
Risks of mixing between certified and non- certified catch during storage, transport, or handling activities (including transport at sea and on land, points of landing, and sales at auction)	Points of landing: Yerseke and the dock at Neeltje Jans at the barrier in the Oosterschelde. Rope mussels can also be landed at their respective locations, and put on lorries to Yerseke.

### Table 10. Traceability Factors within the Fishery:



Traceability Factor	Description of risk factor if present. Where applicable, a description of relevant mitigation measures or traceability systems (this can include the role of existing regulatory or fishery management controls)
	Labelled in transport if by land. By boat, the vessel will only transport its own cargo to the factory to be processed.
	All transhipment operations in EC waters are prohibited and may only take place in designated ports in EU Member States subject to authorisation from the relevant authorities. In any case, transhipment does not take place in the fishery. Mussels are purchased by the customer, before they are either processed by the factories or harvested from the relaying beds. These factories have separate Chain of Custody (CoC). If not processed directly, they are placed on relaying plots of the trading companies ("wet warehouses") and harvested in due course.
Risks of mixing between certified and non- certified catch during processing activities (at-sea and/or before subsequent Chain of	At sea: vessels only operate within the unit of certification so all mussels landed are certified (except Marine cultures Oosterschelde Landa).
	The risk of mixing non-certified and MSC mussels is present as the non-MSC certified companies may use factories for processing their harvest which also process MSC certified mussels. This however is mitigated by the fact that mussels are processed on a batch-by-batch basis, and therefore MSC and non-MSC mussels are not being processed and potentially packaged at the same time, i.e. physical and temporal separation is employed by the factory (which are also CoC certified). Traceability paperwork from processing is capable of tracing back to the supplier company.
Risks of mixing between certified and non- certified catch during transhipment	No transhipment takes place within the fishery
Any other risks of substitution between fish from the UoC (certified catch) and fish from outside this unit (non-certified catch) before subsequent Chain of Custody is required	There are 2 non-MSC companies (Marine cultures Oosterschelde Landa Firma NL. en L. de Keijser) harvesting from within the UoC and are not eligible to bear the ecolabel on their mussel products.



### 4.3 Eligibility to Enter Further Chains of Custody

The following products have been determined eligible to enter further certified chains of custody as MSC certified and carry the MSC ecolabel; blue mussels (*Mytilus edulis*) caught by vessels owned by the client group in the UoAs listed in Table 1.

As mentioned above in 4.2, change of ownership occurs at slightly different points for suspended and bottom cultured mussels. For suspended cultured mussels ownership changes prior to harvest from the ropes. For bottom culture, ownership changes whilst the mussels are still onboard the fishing vessel and its sample has been sold through the Dutch Mussel Auction in Yerseke. Once sold, mussels are delivered for onward processing. Separate Chain of Custody certification is therefore required from that point onwards.

The client group appears to have a robust system to manage the import and onward sale of MSC certified mussels. Full traceability paperwork is kept, allowing full tracing of the fishery product being sold to customers, back to MSC fishery from which they originated.

# 4.4 Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to Enter Further Chains of Custody

This reassessment does not involve IPI stocks.



# 5. Evaluation Results

### 5.1 Principle Level Scores

### Table 11. Final Principle Scores

Final Principle Scores					
Principle	Score				
Principle 1 – Target Species	Not scored (see Section 2.1.2)				
Principle 2 – Ecosystem	UoC 1,3,4 – 94.3 UoC 2 – 93.3				
Principle 3 – Management System	90.9				

### 5.2 Summary of Scores

Principle	Component	Weighting	PI number	Performance Indicator	Score
1	Outcome	0.5	1.1.1	Stock status	N/A
			1.1.2	Reference points	N/A
			1.1.3	Stock rebuilding	N/A
	Management	0.5	1.2.1	Harvest Strategy	N/A
			1.2.2	Harvest control rules and tools	N/A
			1.2.3	Information and monitoring	N/A
			1.2.4	Assessment of stock status	N/A
2	Retained	0.2	2.1.1	Outcome	100
	species		2.1.2	Management	100
			2.1.3	Information	100
	Bycatch	0.2	2.2.1	Outcome	80
	species		2.2.2	Management	80



MSC Fisheries Reduced Re-Assessment Template V 1.0 (16<sup>th</sup> March 2015)

			2.2.3	Information	80	
	ETP species	0.2	2.3.1	Outcome	UoC 1,3,4 - 100	UoC 2 - 85
			2.3.2	Management	90	
			2.3.3	Information	95	
	Habitats	0.2	2.4.1	Outcome	100	
			2.4.2	Management	100	
			2.4.3	Information	95	
	Ecosystem	0.2	2.5.1	Outcome	100	
			2.5.2	Management	95	
			2.5.3	Information	100	
3	Governance and Policy	0.5	3.1.1	Legal and customary framework	100	
			3.1.2	Consultation, roles and responsibilities	85	
			3.1.3	Long term objectives	100	
			3.1.4	Incentives for sustainability	90	
	Fishery- specific	0.5	3.2.1	Fishery specific objectives	90	
	system		3.2.2	Decision making processes	85	
			3.2.3	Compliance and enforcement	95	
			3.2.4	Research plan	80	
			3.2.5	Management performance evaluation	90	

### 5.3 Summary of Conditions

No new conditions were raised during this reduced reassessment and no previously closed conditions re-opened.



### 5.4 Recommendations

The team does not have any recommendations for the fishery

### 5.5 Determination, Formal Conclusion and Agreement

Following consideration of all stakeholders' inputs and comments to the Public Comment Draft Report (PCDR), the fishery assessment team concludes that the fishery should be certified against the MSC standard. This determination remains a recommendation pending the completion of the formal objections process and the final certification decision by the MEC official decision making entity.

### (REQUIRED FOR PCR)

1. The report shall include a formal statement as to the certification action taken by the CAB's official decision-makers in response to the Determination recommendation.



# 6. References

EC. 1992: Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Available at: <u>http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:01992L0043-20070101&from=EN</u>

EC. 2000. Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. Available at: <a href="http://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC\_1&format=PDF">http://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC\_1&format=PDF</a>

EC. 2002. Council Regulation (EC) No 2371/2002 of 20 December 2002 on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy. Available at: <a href="http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002R2371&qid=1455742456857&from=FR">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002R2371&qid=1455742456857&from=FR</a>

EC.2005. Council Regulation (EC) No 768/2005 of 26 April 2005 establishing a Community Fisheries Control Agency and amending Regulation (EEC) No 2847/93 establishing a control system applicable to the common fisheries policy. Available at: <u>http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32005R0768&gid=1446936855127&from=EN</u>

EC. 2006. Directive 2006/113/EC of the European Parliament and of the Council of 12 December 2006 on the quality required of shellfish waters (codified version). Available at: <u>http://eur-lex.europa.eu/legal-</u> <u>content/EN/TXT/PDF/?uri=CELEX:32006L0113&qid=1456687668181&from=FR</u>

EC.2007. Council Regulation (EC) No 865/2007 of 10 July 2007 amending Regulation (EC) No 2371/2002 on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy. Available at: <u>http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32007D0865&qid=1455742813007&from=FR</u>

EC. 2008. Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive). Available at: <u>http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0056&qid=1455745954573&from=FR</u>

EC. 2009a. Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds. Available at: <u>http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0147&qid=1455745410691&from=FR</u>

EC. 2009b. Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No



509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC) No 2847/93, (EC) No 1627/94 and (EC) No 1966/2006. Available at: <u>http://eur-lex.europa.eu/legal-</u> <u>content/EN/TXT/PDF/?uri=CELEX:32009R1224&from=EN</u>

EC. 2012. Regulation (EU) No 1152/2012 of the European Parliament and of the Council of 21 November 2012 amending Council Regulation (EC) No 2371/2002 on the conservation and sustainable exploitation of fisheries resources under the common fisheries policy. Available at: <u>http://eur-lex.europa.eu/legal-</u>content/EN/TXT/PDF/?uri=CELEX:32012R1152&from=EN

EC. 2013. Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC. Available at: <a href="http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1380&from=EN">http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1380&from=EN</a>

EC. 2014a. COM(2014) 388 final. Communication from the Commission to the European Parliament and the Council concerning a consultation on Fishing Opportunities for 2015 under the Common Fisheries Policy. Available at: <u>http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0388&rid=1</u>

EC. 2014b. Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund and repealing Council Regulations (EC) No 2328/2003, (EC) No 861/2006, (EC) No 1198/2006 and (EC) No 791/2007 and Regulation (EU) No 1255/2011 of the European Parliament and of the Council. Available at: <u>http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0508&from=EN</u>

FAO. 1993. Agreement to promote compliance with international conservation and management measures by fishing vessels on the high seas. Available at: <u>http://www.fao.org/docrep/MEETING/003/X3130m/X3130E00.HTM</u>

FAO. 1995a. Code of Conduct for Responsible Fisheries. Available at: <u>http://www.fao.org/docrep/005/v9878e/v9878e00.htm</u>

FAO. 1995b. Agreement for the implementation of the provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks. Available at: <u>http://www.un.org/depts/los/convention\_agreements/convention\_overview\_fish\_stocks.htm</u>

Fish, J.D and Fish, S. 1996. A Student's Guide to the Seashore. University press, Cambridge.



Geffen, J.v., Hagendoorn, A., Water, J. & Boon, A. 2002. Op weg naar evenwicht. Evaluatie van de Structuurnota Zee- en kustvisserij (1993) "Vissen naar evenwicht". Ministerie van Landbouw, Natuur en Voedselkwaliteit. (Towards a balance. Evaluation of the Policy paper "Fishing towards Balance")

LNV. 1963. Visserijwet (Fisheries Act)

LNV. 1993. Structuurnota Zee- en kustvisserij (1993) "Vissen naar evenwicht". (Policy paper "Fishing towards Balance")

LNV. 2004. Ruimte voor een zilte oogst. Naar een omslag in de Nederlandse schelpdiercultuur. Beleidsbesluit Schelpdiervisserij 2005 – 2020 (Space for a salty harvest. Towards a change in the Dutch shellfish culture. Shellfish fisheries policy decision 2005-2020)

LNV. 2008. Convenant "Transitie Mosselvisserij en Natuurherstel Waddenzee" (Agreement "Transition of the Mussel Fishery and Rehabilitation of the Ecosystem Wadden Sea"). Available at:

http://www.waddenzee.nl/fileadmin/content/Dossiers/Visserij/pdf/21102008\_convenantmoss el.pdf

LNV. 2009. Plan van Uitvoering, Convenant transitie mosselsector en natuurherstel Waddenzee, "Natuurlijk Voorwarts"

MEC, 2016a. MSC Public Certification Report for mussel translocation into the Oosterschelde. Available at: <u>https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/north-east-atlantic/mussel-translocation-into-the-oosterchelde/mussel-translocation-into-the-oostercheld</u>

MEC, 2016b. North Menai Strait mussel report. Available at: <u>https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/north-east-atlantic/north-menai-strait-mussel/re-assessment-downloads-1</u>

MEP, 2012a. MSC Public Certification Report for the Exmouth mussel fishery. Available at: <u>https://www.msc.org/track-a-fishery/fisheries-in-the-program/in-assessment/north-east-atlantic/exmouth\_mussels/assessment-downloads-1/20120731\_PCR.pdf</u>

MEP. 2012b. MSC Public Certification Report for North Menai Strait mussel fishery for UoC extension to include River Dee as seed collection site. Available at: <u>https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/north-east-atlantic/north-menai-strait-mussel/assessment-downloads-1/20120508\_PCR.pdf</u>

Ministrie van Infrastructuur en Milieu. 2015. Natura 2000-beheerplan Waddenzee, Periode 2016-2022.



Nederland. 2014. Nationaal Strategisch Plan Aquacultuur 2014-2020.

Producentenorganisatie van de Nederlandse Mosselcultuur. 2006a. Huishoudelijk Reglement (Bylaws)

Producentenorganisatie van de Nederlandse Mosselcultuur. 2006b. Reglement Afdoening Overtredingen (Rules for the Settlement of Violations)

Producentenorganisatie van de Nederlandse Mosselcultuur. 2006c. Statuten (Statutes)

Producentenorganisatie van de Nederlandse Mosselcultuur. 2011a. Reglement Mosselvisserij (Mussel Fishing Regulation)

Producentenorganisatie van de Nederlandse Mosselcultuur 2011b. Reglement uitzaaien van mosselen afkomstig uit productiegebieden waarvoor geen msc-keurmerk is verleend (Rules for seeding og mussels comming from production areas not covered by a MSC-Certification).

Rijksoberheid (Durtch Government) website <u>https://www.rijksoverheid.nl/</u>

Seed, R.,1969. The ecology of *Mytilus edulis* L. (Lamellibranchiata) on exposed rocky shores 1. Breeding and settlement. *Oecologia*, **3**, 277-316.

SGS, 2011a. Public Certification Report

SGS, 2011b. Public Certification Report for the Waddenzee and Zeeuwse Delta Dredge and suspended seed mussel collectors, Enhanced fishery: Catch and Grow. Available at: <u>https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/north-east-atlantic/netherlands-blue-shell-mussel/assessment-downloads-folder/26.07.2011\_PCR\_Dutch\_Blue\_shell\_Mussel\_Fishery\_bottom\_culture.pdf</u>

UN 1982. United Nations Convention on the Law of the Sea (UNCLOS). Available at: <u>http://www.un.org/Depts/los/convention\_agreements/texts/unclos/unclos\_e.pdf</u>

UN. 1992. United Nations Convention on Biological Diversity (CBD). Available at: <u>https://www.cbd.int/doc/legal/cbd-en.pdf</u>

Vereniging Zeeuwse Hangcultuurkwekers. 2015. Huishoudelijk Reglement (Bylwas)



MSC Fisheries Reduced Re-Assessment Template V 1.0 (16<sup>th</sup> March 2015)

# Appendices



# Appendix 1 Scoring and Rationales

### Appendix 1.1 Performance Indicator Scores and Rationale

Note: Principle 1 was not scored during this reassessment. A detailed explanation has been provided in Section 2.1.2.

#### Evaluation table 1 - PI 2.1.1

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species				
Scoring Issue		SG 60	SG 80	SG 100		
a Guidep ost		Main retained species are likely to be within biologically based limits (if not, go to scoring issue c below).	Main retained species are highly likely to be within biologically based limits (if not, go to scoring issue c below).	There is a high degree of certainty that retained species are within biologically based limits and fluctuating around their target reference points.		
Met?		Y	Υ	Y		
Justific ation		There are no retained species in this fishery other than mussels. Therefore SG100 is met by default.				
b Guidep ost Met?				Target reference points are defined for retained species.		
				Y		



	Justific ation	There are no retained species in this fishery other than mussels. Therefore SG100 is met by default.				
C	Guidep ost	If main retained species are outside the limits there are measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.				
	Met?	Y				
	Justific ation	There are no retained species in this fishery other than mussels. Therefore SG80 is met by default.				
d	Guidep ost	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.				
	Met?	Y				
	Justific ation	There are no retained species in this fishery other than mussels. Therefore SG60 is met by default.				
References		N/A				



OVERALL PERFORMANCE INDICATOR SCORE:	100
CONDITION NUMBER:	N/A



### Evaluation table 2 - PI 2.1.2

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species				
Scoring Issue		SG 60	SG 80	SG 100		
а	Guidep ost	There are measures in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a strategy in place for managing retained species.		
	Met?	Y	Y	Υ		
	Justific ation	There are no retained species in this fishery other than mussels. Therefore SG100 is met by default.				
b	Guidep ost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.		
	Met?	Y	Y	Y		



	Justific ation	There are no retained species in this fishery other than mussels. Therefore SG100 is met by default.				
c	Guidep ost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.		
	Met?		Υ	Υ		
	Justific ation	There are no retained species in this fishery other than mussels. Therefore SG100 is met by default.				
d	Guidep ost			There is some evidence that the strategy is achieving its overall objective.		
	Met?			Y		
	Justific ation	There are no retained species in this fishery other than mussels. Therefore SG100 is met by default.				
e	Guidep ost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.		
	Met?	Not relevant	Not relevant	Not relevant		
	Justific ation	No sharks are caught in this fishery – no	ot relevant.			



References	N/A	
OVERALL PERFORMANCE INDICATOR SCORE:		100
CONDITION NUMBER:		N/A



### Evaluation table 3 - PI 2.1.3

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species				
Scoring Issue		SG 60	SG 80	SG 100		
а	Guidep ost	Qualitative information is available on the amount of main retained species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.		
	Met?	Y	Y	Υ		
	Justific ation	There are no retained species in this fishery other than mussels. Therefore SG100 is met by default.				
b	Guidep ost	Information is adequate to qualitatively assess outcome status with respect to biologically based limits.	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.		
	Met?	Y	Υ	Y		
	Justific ation	There are no retained species in this fis	hery other than mussels. Therefore SG10	) is met by default.		



C	Guidep ost	Information is adequate to support measures to manage main retained species.	Information is adequate to support a partial strategy to manage main retained species.	Information is adequate to support a strategy to manage retained species, a evaluate with a high degree of certaint whether the strategy is achieving its objective.		
	Met?	Y	Y	Y		
	Justific ation	There are no retained species in this fishery other than mussels. Therefore SG100 is met by default.				
d	Guidep ost		Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)	Monitoring of retained conducted in sufficien ongoing mortalities to species.	l species is it detail to assess all retained	
	Met?		Y	Y		
	Justific ation	There are no retained species in this fishery other than mussels. Therefore SG100 is met by default.				
References		N/A				
OVERA	ALL PERFO	DRMANCE INDICATOR SCORE:			100	



CONDITION NUMBER:	N/A



### Evaluation table 4 - PI 2.2.1

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups			
Scoring Issue		SG 60	SG 80	SG 100	
а	Guidep ost	Main bycatch species are likely to be within biologically based limits (if not, go to scoring issue b below).	Main bycatch species are highly likely to be within biologically based limits (if not, go to scoring issue b below).	There is a high degree of certainty that bycatch species are within biologically based limits.	
	Met?	Y	Y	Ν	
	Justific ation	<ul> <li>The relevant activities are:</li> <li>Mussel seed collection with MZIs (UoC1);</li> <li>Harvesting of wild-caught seed using mussel dredge (UoC2),</li> <li>Suspended culture using socks (UoC3),</li> <li>Relaying of mussel seed onto culture plots and harvesting of adult-sized mussels using a dredge (UoC 4) (this Uot includes moving mussels around between culture plots, harvesting mussels off the culture plots for sale, and 'cleaning' the culture plots of starfish prior to relaying.</li> <li><u>UoC1 and UoC3</u>: A list of species associated with MZIs (UoC 1) in the Oosterschelde is provided in Gittenberger et al. (2014a) (see Section 2.3.3.2), none of which are of conservation concern. A similar list is reported for the suspended cultur (UoC 3) (Wijsman and de Mesel, 2009 cited in SGS 2011b). Overall bycatch biomass is low, and the main group in terms biomass is reportedly tunicates, most of which are non-native species (except for <i>Ciona intestinalis</i> and <i>Ascidiella aspersa</i> both of which are widely-distributed species in the NW Atlantic – and invasive elsewhere).</li> <li><u>UoC2 and UoC4</u>: A list of species associated with mussel beds in the WS (wild seed beds and culture plots) is given in Drent and Dekker (2013a and b). A list of species found on the culture plots in the Oosterschelde is given in Gittenberger</li> </ul>		nussels using a dredge (UoC 4) (this UoC Is off the culture plots for sale, and elde is provided in Gittenberger et al. ar list is reported for the suspended culture hass is low, and the main group in terms of <i>Ciona intestinalis</i> and <i>Ascidiella aspersa</i> , ewhere). eed beds and culture plots) is given in 9 Oosterschelde is given in Gittenberger et e seed mussel beds, the main bycatch	



		species in terms of biomass are reported to be slipper limpet ( <i>Crepidula fornicata</i> ; non-native invasive), Pacific oyster ( <i>Crassostrea gigas</i> ; non-native invasive), starfish ( <i>Asterias rubens</i> ) and crabs (mainly <i>Carcinus maenas</i> ); again, all wide distributed and abundant species. On the culture plots, the main species in terms of biomass are starfish ( <i>A. rubens</i> ) an green crabs ( <i>C. maenas</i> ) (van Stralen, 2015a). On the Wadden Sea plots in winter 2014-15, densities were estimated at 0.2/m <sup>2</sup> (starfish) and 1.1/m <sup>2</sup> (green crabs). On this basis, they would not qualify as 'main' bycatch species.			
		Overall, it is not likely that any of these s team concluded that considering their p probability, evaluated qualitatively) that quantity of species found on the mussel (2013a) excluding algae), this cannot be	species qualify as 'main retained' under the opulation size, distribution and range, that all these species are within biologically-ba beds (144 by Gittenberger et al. (2014b), the case for all species. SG100 is not me	e 5% threshold, but even if they do, the there is a 'high degree of certainty' (>95% sed limits. However, given the large including algae; 123 by Drent and Dekker et in full.	
b	Guidep ost	If main bycatch species are outside biologically based limits there are mitigation measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding.	If main bycatch species are outside biologically based limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery does not hinder recovery and rebuilding.		
	Met?	Y	Y		
	Justific ation	On the basis of the analysis presented in PI 2.2.1, no 'main' bycatch species have been identified. Furthermore, the operation of the fishery (small, well-defined footprint, large closed areas – see SGS, 2011a and b for the spatial footprint of the fishery), the practice of mussel culture which provides a key food source for the most significant bycatch species (starfish and green crabs), the removal of starfish 'cleaned' from the plots to elsewhere in the subtidal, and the wide distribution and high biomass of these species in the wider North Sea ecosystem, provides a demonstrably effective basis for ensuring that this fishery will not hinder recovery and rebuilding. SG80 is met.			



C	Guidep ost	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the bycatch species to be outside biologically based limits or hindering recovery.			
	Met?	Y			
	Justific ation	As above			
References Gittenberger et al. (2014a and b); Wijsman and de Mesel (2009); SGS (2011a and b); Drent a Stralen (2015a)		b); Drent and Dekker	(2013a and b); van		
OVERALL PERFORMANCE INDICATOR SCORE:       80				80	
CONDITION NUMBER:				N/A	

#### Evaluation table 5 - PI 2.2.2

PI 2.2.2	There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations		
Scoring Issue	SG 60	SG 80	SG 100



а	Guidep ost	There are measures in place, if necessary, that are expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a strategy in place for managing and minimizing bycatch.		
	Met?	Y	Y	Ν		
	Justific ation	On the basis of the analysis presented in PI 2.2.1, no 'main' bycatch species have been identified. Furthermore, the operation of the fishery (small, well-defined footprint, large closed areas – see SGS, 2011a and b for the spatial footprint of the fishery), the practice of mussel culture which provides a key food source for the most significant bycatch species (starfish and green crabs), the removal of starfish 'cleaned' from the plots to elsewhere in the subtidal, and the wide distribution and high biomass of these species in the wider North Sea ecosystem, provides a 'partial strategy' to restrain the impact of the fishery on bycatch species to a minimal level. SG80 is met. In relation to SG100, the team considered that since there is not a specific strategy aimed at management of bycatch, SG100 is not met.				
b	Guidep ost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.		
	Met?	Y	Y	Ν		



	Justific ation	Based on knowledge of the general ubiquity of the species concerned in coastal ecosystems around the southern North Sea (and further afield) (e.g. see BIOTIC references), the team had confidence that the partial strategy will work, in that the fishery is highly unlikely to have any significant impact on populations of these species. SG80 is met.			
		In relation to SG100, although the team constitute 'testing', so SG100 is not me	had 'high confidence' of a lack of significa t in full.	ant impact, there is nothing that would	
С	Guidep ost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.	
	Met?		Y	Ν	
	Justific ation	There is no direct evidence (such as ob- species. The fishing locations of the fish fishery is known. The seed beds are als (see Section 2.3.1.3). The species on the Dekker, 2013a and b) or via a SASI (De or in the presence of species of conser- evidence that the 'partial strategy' is be evidence of the actions of the fishers, s	pserver reports) as to the actions of the mu nermen are, however, monitored via the bla so surveyed in autumn and spring, the MZI ne culture plots have been monitored via the elta – e.g. Gittenberger, 2014a and b); hen vation concern would be picked up. On this ing implemented; SG80 is met. There is no uch as observer reports, so SG100 is not r	ssel fishermen in relation to bycatch ack box system, so the footprint of the is in summer and the culture plots in spring ne PRODUS project (WS – see Drent and ice any significant changes in biodiversity s basis, the team considered that there is ot, however, clear, direct objective met.	
d	Guidep ost			There is some evidence that the strategy is achieving its overall objective.	
	Met?			Ν	
	Justific ation	In the absence of a full strategy, this sc	oring issue is not met.		



CONDITION NUMBER:		N/A			
OVERALL PERF					
	Drent and Dekker (2013a and b)				
	Gittenberger (2014a and b)				
	Slipper limpet: http://www.marlin.ac.uk/biotic/browse.php?sp=4316&show=distribution				
References	C. intestinalis: http://www.marlin.ac.uk/biotic/browse.php?sp=4218&show=distribution				
	Green crab: http://www.marlin.ac.uk/biotic/browse.php?sp=4286&show=distribution				
	BIOTIC: common starfish: http://www.marlin.ac.uk/biotic/browse.php?sp=4137&show=distribution				



### Evaluation table 6 - PI 2.2.3

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch				
Scoring Issue		SG 60	SG 80	SG 100		
a	Guidep ost	Qualitative information is available on the amount of main bycatch species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main bycatch species taken by the fishery.	Accurate and verifiable information is available on the catch of all bycatch species and the consequences for the status of affected populations.		
	Met?	Y	Υ	Ν		
	Justific ation	Qualitative information is available for a al. (2014a and b) for the Delta; Drent ar	e mussel beds and MZIs: Gittenberger et			
		As noted in 2.2.1, there are not likely to be any 'main' retained species, but some quantitative information is available for some species; e.g. density estimates of crab and starfish (the most likely candidates) on the culture plots (van Stralen, 2015a). Culture plots are the most relevant here, since species taken from the wild seed beds and MZIs are relayed on the plots – hence moved around rather than taken from the ecosystem. On this basis, the team concluded that 'qualitative and some quantitative' information is available; SG80 is met but SG100 is not met.				
b	Guidep ost	Information is adequate to broadly understand outcome status with respect to biologically based limits	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty.		
	Met?	Y	Υ	Ν		



	Justific ation	As noted in 2.2.1, no 'main' bycatch species have been identified. Furthermore, the most significant bycatch species (i.e. starfish, green crabs, slipper limpets, Pacific oysters, tunicates) are all abundant and widely-distributed; several are invasive non-natives. Given this fact, and the limited nature of the footprint of the fishery, the team considered that information is sufficient to be clear that the impact of the fishery on their biomass or distribution or population dynamics will be absolutely minimal. SG80 is met.				
		In relation to SG100, the team considered that there is a 'high degree of certainty' (>95% probability, evaluate that the fishery is having no impact on any of these species; however the existing information is mainly qualitate the large number of species concerned, it is difficult to be confident about a 'high degree of certainty' for all of is not met in full.				
C	Guidep ost	Information is adequate to support measures to manage bycatch.	Information is adequate to support a partial strategy to manage main bycatch species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.		
	Met?	Y	Y	Ν		
	Justific ation	As argued in 2.2.2 above, the team considered that there is a 'partial strategy' in place to minimise the impact on bycatch species. This partial strategy does not really rely on information about the species concerned; it is based on their physical removal from the catch and replacement in the ecosystem, as well as the use of seed collectors (MZIs) to minimise ecological impact and the limited footprint of the fishery. SG80 is met. In relation to SG100, while the team were confident that there is no impact, there is again not a 'high degree of certainty for all the species concerned of which over a hundred have been identified; SG100 is not met.				


d	Guidep ost		Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectively of the strategy).	Monitoring of bycatch in sufficient detail to a mortalities to all byca	data is conducted assess ongoing tch species.
	Met?		Υ	Ν	
	Justific ation       As noted above, there is monitoring of the species list on the culture plots, as well as surveys which consider de estimate biomass of some of the species. The footprint of the fishery is monitored. This is sufficient to detect an risk to any main bycatch species, so SG80 is met. Mortalities from the fishery for all bycatch species cannot, he estimated, so SG100 is not met.				sider density and tect any increase in not, however, be
Refere	nces	Gittenberger et al. (2014a and b); Drent	t and Dekker (2013a and b); van Stralen (2	2015a)	
OVERALL PERFORMANCE INDICATOR SCORE:					80
COND	CONDITION NUMBER:				



# Evaluation table 7 - PI 2.3.1

PI 2.3.1		The fishery meets national and international requirements for the protection of ETP species The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species				
Scoring	g Issue	SG 60	SG 80	SG 100		
a	Guidepost	Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species.	The effects of the fishery are known and are highly likely to be within limits of national and international requirements for protection of ETP species.	There is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species.		
	Met?	Y – all UoCs	Y – all UoCs	Y – UoC1, 3, 4 N – UoC2 (eider ducks)		
	Justificatio n	Relevant ETP species have been in Delta) (see Section 2.3.3.3). For eic only UoC2 is concerned; the other U concern is disturbance, so all UoCs MSC does not provide a definition of the team concluded that there is a r <u>Eider duck</u> populations in the Dutch 2.3.3.3) and are below their Natura recovered a bit from a low in 2008-0 subtidal and intertidal, is likely to have this, alongside other issues unrelated Mussel Transition Agreement (see 5)	evant ETP species have been identified as eider ducks (WS only), grey seal (WS only) and common seal (WS a ia) (see Section 2.3.3.3). For eider ducks, the concern is competition for food via dredging of wild seed beds, here 'UoC2 is concerned; the other UoCs provide food for eiders which would not otherwise be available. For seals, if cern is disturbance, so all UoCs are concerned. C does not provide a definition of the term 'limits' as used in the SGs. Since any killing of these species is forbide team concluded that there is a national limit of zero direct mortality, and scored this scoring issue on that basis. <u>ar duck</u> populations in the Dutch WS (both breeding and non-breeding) have declined in recent years (see Section 3.3) and are below their Natura 2000 objectives (de Vlas et al., 2014), although the population appears to have povered a bit from a low in 2008-09 (Hornman et al., 2015). It is acknowledged that a lack of shellfish beds, both tidal and intertidal, is likely to have contributed to the decline. Seed mussel fishing has most likely played a role , alongside other issues unrelated to the fishery (see Section 2.3.3.3). This is one of the main reasons why the ssel Transition Agreement (see Section 2.3.1.2) was put in place, and the implementation of this agreement is on			



		the key actions identified under Natura 2000 to try and restore Dutch eider duck populations (de Vlas et al., 2014). T Transition Agreement is being implemented as set out in the Implementation Plan (see Section 2.3.1.2); 28% of area for the spring fishery have been closed so far, with another 40% to be closed in 2018 (Cora Seip-Markensteijn pers. comm.). On this basis, since the fishery is complying with the agreement and the Natura 2000 action plan, the team concluded that SG80 is met.			
		In relation to SG100, the team noted that the results of the PRODUS project (Smaal et al., 2013) suggest that while the autumn seed fishery has no impact on subsequent mussel density, the spring fishery may have a measurable impact on the quantity of mussels subsequently available on the wild beds. Although the presence of the culture plots as well as the MZIs (there is no suspended culture in the DWS) means that overall, the total biomass of mussels available to eider ducks might be as high as in the absence of the seed fishery, presumably there is some logic for agreeing the gradual elimination of the spring fishery on this basis. Since this has not yet been achieved, the team considered that there is not (yet) a 'high degree of certainty', so SG100 is not met.			
		<u>Seals</u> : The WS populations of comm URL 1 and Brasseur et al., 2014). L given in the main report, Section 2.3 although reportedly in practice this is (SGS, 2011a and b) cite studies wh matter) with the MZIs and suspende changed (Wiersinga et al., 2009; Ka absolutely no evidence of any direct high degree of certainty that the fish	In certainty, so concerns not met. Ins of common and grey seal are stable or growing with an increasing number of pups (see al., 2014). Likewise in the Delta, the population of common seals is increasing (URL 2, figures Section 2.3.3.3). Mussel vessels are required to keep at least 1500m away from seals, actice this is difficult because the seals tend to approach the vessels. The previous PCRs studies which show that entanglement of seals or other marine mammals (or birds for that d suspended culture socks is highly unlikely, and there is no reason to suppose that this has I., 2009; Kamermans et al., 2010 cited in SGS, 2011 a and b). For seals, since there is of any direct impact and since populations are growing, the team concluded that there was a that the fishery impacts are within national limits; SG100 is met.		
b	Guidepost	Known direct effects are unlikely to create unacceptable impacts to ETP species.	Direct effects are highly unlikely to create unacceptable impacts to ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the fishery on ETP species.	
	Met?	Υ	Y	Υ	



	Justificatio n	Direct effects considered here are direct mortality or injury by interaction with the fishing gear or vessels or the MZIs or socks. It is extremely unlikely that any of the ETP species concerned would interact with the fishing gear, since fishing is carried out at a slow speed (~1.5 knots). Eider ducks are quite shy (reported to fly if a vessel approaches within ~300m), while seals are easily able to evade fishing gear and vessels at this speed. Entanglement in MZIs or socks has never been reported and is not at all likely. On this basis, the team considered that there is a high degree of confidence that there are no significant direct effects. SG100 is met for all species and UoCs.			
С	Guidepost		Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.	
	Met?		Y	Y – UoC1,3,4 N –UoC2 (eider)	
	Justificatio n	Indirect effects are: food limitation (eiders; UoC2), disturbance (all). <u>Eider ducks</u> : Food limitation for eider ducks has been considered at length in relation to the management of this fishery, and has resulted in the Mussel Transition Agreement whereby the industry has agreed to convert over a period of time from wild seed fishing to MZIs. The assessment of Natura 2000 goals and management measures for the Dutch WS (de Vlas et al., 2014) notes that the management measures put in place in the mussel and cockle fisheries are the main measures by which it is hoped that conservation goals for eider ducks can be achieved (along with more protection from disturbance, mainly from recreational activities) but that various factors remain outside the control of management authorities (e.g. Pacific oysters, climate change, reduced nutrient input). Overall, the team was clear that indirect effects on eider ducks have been considered and given the measures in place, are unlikely to create unacceptable impacts. There is not, for the moment, however, a 'high degree of confidence' of 'no significant detrimental effects' so SG100 is not met. <u>Seals</u> : The fishery makes up a small proportion of vessel traffic in both areas, so the team considered that disturbance from the fishery specifically was extremely unlikely to create significant detrimental effects. SG100 is met.			



References	de Vlas et al. (2014) Hornman et al. (2015) Smaal et al. (2013) URL 1 - WS seal counts: <u>http://www.waddensea-secretariat.org/news-and-service/news/14-01-11seal-count-2014-harbour-stable</u>	-seal-numbers-still-	
	URL 2 - OS seal counts: <u>https://deltamilieu.nl/uploads/other/BM-15.08-Watervogels-en-zeezoogdieren-in-de-Zoute-Delta-2013-2014.pdf</u> Brasseur et al. (2014) SGS (2011 a and b)		
OVERALL PERFORMANCE INDICATOR SCORE:		100 – UoC1,3,4 85 – UoC2	
CONDITION NUMBER:		N/A	



# Evaluation table 8 - PI 2.3.2

PI 2.3.2		<ul> <li>The fishery has in place precautionary management strategies designed to:</li> <li>Meet national and international requirements;</li> <li>Ensure the fishery does not pose a risk of serious harm to ETP species;</li> <li>Ensure the fishery does not hinder recovery of ETP species; and</li> <li>Minimise mortality of ETP species.</li> </ul>			
Scorin	g Issue	SG 60	SG 80	SG 100	
а	Guidep ost	There are measures in place that minimise mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.	
	Met?	Y	Y	Υ	
	Justific ation	<ul> <li>The key elements of the fishery that are (potentially) likely to have an impact on ETP species are (see 2.3.1):</li> <li>food competition with eiders on wild seed beds (UoC2)</li> <li>disturbance / entanglement (all UoCs)</li> <li>In relation to food for eiders, there is a strategy in place in the form of the Transition Agreement and Implementation Plan by which the industry has agreed to phase out fishing on wild seed beds in favour of MZIs (see Section 2.3.1.2). In addition, the team noted that the mussel culture plots and MZIs in the DWS provide additional sources of food for eiders. This is part of the wider strategy for eider ducks set out under the Natura 2000 framework (de Vlas et al., 2014). These factors together constitute a 'comprehensive strategy' which aims to eliminate both direct and indirect impacts: SG100 is met.</li> </ul>			



		In relation to disturbance, the key factor is how the fishery operates: the footprint is small. The risk of entanglement has been evaluated as negligible (see 2.2.1). The team considered that this constitutes a 'comprehensive strategy' which should reduce impacts to zero. SG100 is met.				
b	Guidep ost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the strategy will work, based on information directly about the fishery and/or the species involved.	The strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.		
	Met?	Y	Y	Ν		
	Justific ation	Information about the fishery (operation, footprint, closed areas, production of MZIs) from the black box system and from the multiple surveys (see Section 2.3.1.3) gives high confidence that the strategy will work – SG80 is met. SG100 is not met because there is nothing that would qualify as a 'quantitative analysis'.				
С	Guidep ost		There is evidence that the strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.		
	Met?		Y	Ν		
	Justific ation	Whilst there is evidence that the Transition Agreement is being implemented successfully (annual surveys of MZI production since 2011 show increases in production, with 28% of the area closed so far, to reach 40% in 2018 - see Section 2.3.1.2 and Programma 'Naar een Rijke Waddenzee', 2014), the team noted that the process of replacing seed mussel dredging by MZIs is behind the initial 2008 schedule. There is therefore no clear evidence that the strategy is being implemented successfully. In terms of disturbance and entanglement the 'strategy' is the operation of the fishery, where there is clear evidence via the black box system and several surveys. SG100 is not fully met.				



d	Guidep ost			There is evidence tha achieving its objective	t the strategy is e.
	Met?			Y	
	Justific ation	There is evidence that the objectives of see 2.3.1 and Section 2.3.1.2). For seal below target levels, but for reasons not Agreement. SG100 is met.	the Transition Agreement are being met (and set in the set is the set in the set is the	nnual MZI surveys, sp creasing. For eider duo cts are being addresse	ring closed areas; cks, populations are ed via the Transition
		Programma 'Naar een Rijke Waddenzee'. Maart 2009. Plan van Uitvoering - Convenant transitie mosselsector en natuurherstel Waddenzee. Eindversie d.d. 02/03/2009			
		Programma 'Naar een Rijke Waddenzee'. 2014. Plan van Uitvoering transitie mosselsector 2014 T/M 2018. Available online at: http://www.rijkewaddenzee.nl/assets/pdf/dossiers/natuur-en-landschap/NHP0081%20Mosselconvernant%202014%202018.pdf			
Refere	nces	de Vlas et al. 2014			
		URL 1 - WS seal counts: <u>http://www.waddensea-secretariat.org/news-and-service/news/14-01-11seal-count-2014-narbour-seal-numbers-still-stable</u> URL 2 - OS seal counts: <u>https://deltamilieu.nl/uploads/other/BM-15.08-Watervogels-en-zeezoogdieren-in-de-Zoute-Delta-2013-2014.pdf</u>			
Bra		Brasseur et al. 2014			
OVERALL PERFORMANCE INDICATOR SCORE: 90				90	
CONDITION NUMBER (if relevant):					N/A



# Evaluation table 9 - PI 2.3.3

		Delevent information is collected to support the monogement of fishery imposts on ETD species including:				
		Relevant mormation is conected to support the management of instery impacts on ETF species, including.				
PI 2.3.3		Information for the development of the management strategy;				
		<ul> <li>Information to assess the effective of Information to assess the effective of</li> </ul>	ess of the management strategy; and			
•		Information to determine the outcom	e status of ETP species.	22,422		
Scoring Issue		SG 60	SG 80	SG 100		
а	Guidep	Information is sufficient to qualitatively	Sufficient information is available to	Information is sufficient to quantitatively		
	ost	estimate the fishery related mortality	allow fishery related mortality and the	estimate outcome status of ETP species		
		of ETP species.	impact of fishing to be quantitatively	with a high degree of certainty.		
		•	estimated for ETP species.			
	Mot2	V	Y I	V		
	Met:	Ť	T	Ť		
	Justific	As noted in 2.3.1, there is not thought to be any direct mortality or injury of eider ducks or seals from the fishery. DWS eider				
	ation	ducks populations are counted every two years in a large bird census (Hornman et al., 2015); the census report for 2014-15				
		is still in preparation. A seal census in the DWS is undertaken annual via an aerial survey. Figures are given in Section				
		2.3.3.3. Although population estimates are not known with a 'high degree of certainty' the team considered that these				
		surveys allow outcome status (population status in relation to targets and population trends) to be known with a high deg				
		of containty, SC100 is mot	sh status in relation to targets and populati	on trends) to be known with a high degree		
		of certainty. 30100 is filet.				
b	Guidep	Information is adequate to broadly	Information is sufficient to determine	Accurate and verifiable information is		
	ost	understand the impact of the fishery	whether the fishery may be a threat to	available on the magnitude of all impacts,		
		on ETP species.	protection and recovery of the ETP	mortalities and injuries and the		
			species.	consequences for the status of ETP		
				species.		
	Mot2	V	V	N		
	meti	T	T			



	Justific ation	It can be determined with a high degree of certainty that the fishery is not a threat to the ETP species concerned in terms of direct impacts; indirect impacts (food requirements) to Eider ducks are possible and are being addressed via the Transition				
		Agreement which is supported by extensive information on the persistence of different types of mussel beds under different fishing regimes from the PRODUS project (van Stralen et al., 2013, Smaal et al., 2013) – SG80 is met. As regards indirect effects (disturbance) to birds and seals, SG100 is not met and is probably impossible to meet.				
C	Guidep ost	Information is adequate to support measures to manage the impacts on ETP species.	Information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.	Information is adequa comprehensive strate impacts, minimize mo ETP species, and eva degree of certainty we achieving its objective	ate to support a egy to manage ortality and injury of aluate with a high nether a strategy is es.	
	Met?	Y	Y	Y		
	Justific ation	As set out in 2.3.2, a comprehensive sti described in scoring issue a are sufficie seals with a high degree of certainty. So	rategy is in place to minimise indirect impaint nt to demonstrate whether the strategy is a G100 is met.	cts on ETP species. The achieving its objectives	e censuses for eider duck and	
Refere	References       Hornman et al. 2015         URL 1 - WS seal counts: <a href="http://www.waddensea-secretariat.org/news-and-service/news/14-01-11seal-count-2014-harbour-seal-numbers-still-stable">http://www.waddensea-secretariat.org/news-and-service/news/14-01-11seal-count-2014-harbour-seal-numbers-still-stable</a> URL 2 - OS seal counts: <a href="https://deltamilieu.nl/uploads/other/BM-15.08-Watervogels-en-zeezoogdieren-in-de-Zoute-Delta-2013-2014.pdf">https://deltamilieu.nl/uploads/other/BM-15.08-Watervogels-en-zeezoogdieren-in-de-Zoute-Delta-2013-2014.pdf</a> van Stralen et al. 2013     Smaal et al. 2013				numbers-still-stable 2014.pdf	
OVERALL PERFORMANCE INDICATOR SCORE: 95					95	
CONDITION NUMBER:					N/A	



# Evaluation table 10 - PI 2.4.1

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function			
Scoring Issue		SG 60	SG 80	SG 100	
а	Guidep ost	The fishery is unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	There is evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	
	Met?	Y	Y	Υ	
	Justific ation	LoC1 and UoC3: The potential habitat impact of MZIs (UoC 1) and suspended culture (UoC 3) is from biodeposition. This has been evaluated (see Mattenhaven study described in Section 2.3.3.4) and not found to be significant. SG100 is met. UoC2: The main habitat concern in relation to seed dredging is the risk of preventing the formation of long-lived mussel beds in the subtidal. This question has been evaluated by the PRODUS study (Smaal et al., 2013; van Stralen et al., 2013; Craeymeersch et al., 2013; Drent and Dekker, 2013a and b; Jansen et al., 2013; Glorius et al., 2013; van Bemmelen et al., 2013), which found no impact of the autumn fishery on subsequent biomass and persistence of mussel beds, nor of any fishing on spatfall, but a medium-term (up to 2 years) effect of the spring fishery. This has been addressed via the Transitic Agreement, which is being implemented at present (see 2.3.1 and Section 2.3.1.2). On this basis, there is evidence that the fishery is unlikely to cause 'serious or irreversible harm' – SG100 is met. <u>UoC4</u> : There is a wide range of information available on the changes to sediment and benthos in mussel culture plots, both from this fishery (PRODUS - Drent and Dekker, 2013a and b) and from other areas (e.g. Beadman et al., 2004). The presence of mussel causes changes to the sediment (deposition of fine, organic-rich mussel mud) and benthos (higher diversity, shift to deposit-feeding species), but this cannot be described as 'serious' (Smaal et al. (2013) note that mussel beds, including culture plots, are oases of high biodiversity in the WS) or 'irreversible' since the habitat switches back to the 'non-mussel' state when the mussels are removed. SG100 is met.		Iture (UoC 3) is from biodeposition. This t found to be significant. SG100 is met. ing the formation of long-lived mussel naal et al., 2013; van Stralen et al., 2013; Glorius et al., 2013; van Bemmelen et al., bersistence of mussel beds, nor of any This has been addressed via the Transition ). On this basis, there is evidence that the and benthos in mussel culture plots, both is (e.g. Beadman et al., 2004). The ich mussel mud) and benthos (higher is' (Smaal et al. (2013) note that mussel ble' since the habitat switches back to the	



References	Smaal et al. (2013); van Stralen et al. (2013); Beadman et al. (2004); Jansen et al. (2013); Glorius et al. (2013); Craeymeersch et al. (2013); van Bemmelen et al. (2013); Drent and Dekker et al. (2013a and b)			
OVERALL PERFORMANCE INDICATOR SCORE:				
CONDITION NUMBER:				



# Evaluation table 11 - PI 2.4.2

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types			
Scoring Issue		SG 60	SG 80	SG 100	
а	Guidep ost	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of the fishery on habitat types.	
	Met?	Y	Y	Y	
	Justific ation	Changes to habitats from the MZIs (UoC 1), socks (UoC 3) and culture plots (UoC 4) have been evaluated and found not to be significant (see PI 2.4.1). The 'strategy for these activities is therefore the operation of the fishery. There is an explicit strategy for mitigating the habitat impacts of dredging of wild seed beds (UoC2) – the key habitat impact of concern for this fishery, as noted in the previous PI. This strategy takes the form of the Mussel Transition			
	van Stralen, 2016). In essence, the strategy is that MZIs are expanded and areas with wild spatfall are progressivel closed as the MZI production is able to compensate for the loss of seed. At present, 28% of the spatfall areas are c with an increase to 40% planned for 2018. Closures prioritise areas which have tended to form stable beds (by focu closures of the areas used by the spring fishery – see Section 2.3.3.4 for a full explanation). The implementation of strategy takes account of the fact that spatfall in a given year is variable in time and place – there is flexibility to account the fact that by chance it may happen that all spatfall occurs in closed areas – but once closed, areas remain closed			with wild spatfall are progressively nt, 28% of the spatfall areas are closed, nded to form stable beds (by focusing on planation). The implementation of the nd place – there is flexibility to account for once closed, areas remain closed.	
	On this basis, the team concluded that there is a 'strategy' to manage the fishery impact on habitat types: either the operation of the fisher demonstrated to have no impact (or in the case of the culture plots a positive impact, viewed in terms of biodiversity), or a mitigation strategy place. SG100 is met for all UoCs.		ypes: either the operation of the fishery has been s of biodiversity), or a mitigation strategy is in		
b	Guidep ost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).	There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or habitats involved.	



	Met?	Y	Y	Y
	Justific ation	For UoCs1, 3 and 4, the strategy is the SG100 is met.	operation of the fishery, and testing provid	es high confidence that it will work.
	For UoC2, there has also been testing, in the form of the PRODUS study (e.g. van Bemmelen et al., 2013 compared open and closed plots on the wild seed beds, and showed that the spatfall targeted by the autu likely to develop into persistent beds, but the spring fishery may have observable impacts for up to 2 year very few beds persist long-term). The Mussel Transition Agreement aims to stop fishing on wild seed bed has focused on the spring seed fishery (see Figure 2 schematic from transition agreement); hence testing confidence that the process set out in the Transition Agreement will work to mitigate any possible habitat is met.			
C	Guidep ost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	Y
	Justific ation	As per SIa, for UoCs 1, 3 and 4, the strabeing implemented successfully. SG100	ategy is the operation of the fishery – there ) is met.	is therefore clear evidence that it is
		For UoC2, the strategy is the Transition closed, which will increase to 40% in 20 implementation plan, although it may no vessels are monitored by the black box SG100 is met.	on Agreement and implementation plan. At present, 28% of the seed fishing area is 2018 (Programma naar een rijke Waddenzee, 2009 and 2014). This is in line with the not be fully achieved by 2020, as originally foreseen. The areas fished by the musse ox system. There is therefore clear evidence that the strategy is being implemented.	
d	Guidep ost			There is some evidence that the
	Mot2			
	wet?			Ŷ



	Justific ationAs explained above, the habitat impacts of all four UoCs have been evaluated; the evidence shows that there are no negative or irreversible impacts for UoCs 1, 3 and 4, and the PRODUS study shows that closure of beds in the more potentially stable areas will have a measurable positive impact on the development of natural subtidal mussel beds, least in the short-term. SG100 is met.			
		van Stralen (2016)		
		van Bemmelen et al. (2013)		
References		Programma 'Naar een Rijke Waddenzee'. Maart 2009. Plan van Uitvoering - Convenant transitie mosselsector en natuurherstel Waddenzee. Eindversie d.d. 02/03/2009		
	Programma 'Naar een Rijke Waddenzee'. 2014. Plan van Uitvoering transitie mosselsector 2014 T/M 20 online at: http://www.rijkewaddenzee.nl/assets/pdf/dossiers/natuur-en-landschap/NHP0081%20Mosselconvernant%202014%202018.pdf		18. Available	
OVER	OVERALL PERFORMANCE INDICATOR SCORE: 100			
CONDITION NUMBER:			N/A	



# Evaluation table 12 - PI 2.4.3

PI 2.4.3		Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types			
Scoring Issue		SG 60	SG 80	SG 100	
а	Guidep ost	There is basic understanding of the types and distribution of main habitats in the area of the fishery.	The nature, distribution and vulnerability of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.	
	Met?	Y	Y	Υ	
	Justific ation	The main habitat in the WS and Delta areas used by the fishery is subtidal sand and mud. The key vulnerable habitat type is natural subtidal mussel beds. The locations of these are mapped every autumn and spring (van Stralen 2015b; see Section 2.3.1.3). The other key important habitat, from a biodiversity point of view, is the mussel culture plots themselves – the location of these is also of course known, and the biomass of mussels on the plots is estimated every spring (van Stralen 2015a). SG100 is met.			
b	Guidep ost	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.	Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.	The physical impacts of the gear on the habitat types have been quantified fully.	
	Met?	Y	Y	Ν	



	Justific ation	The nature of the impact on various UoCs on the relevant habitat types has been evaluated and to some extent quantified, as described in 2.4.1. There is reliable information on the spatial and temporal extent of interaction via the black boxes. SG80 is met. It cannot be said, however, that the physical impacts of the gear have been quantified 'fully', although it has in some cases as described in PI 2.4.1. SG100 is not met in full.			
C	Guidep ost		Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Changes in habitat di time are measured.	stributions over
	Met?		Y	Y	
	Justific ation	The main habitat type which is likely to change over time (which does change over time) is the seed mussel beds; the distribution of this habitat type is monitored on a regular basis, as described above and in Section 2.3.1.3. Changes in the culture plots are also monitored. The fishery has not been shown to cause significant changes to any other habitat types (subtidal sand and mud) which are widely distributed and likely to remain so. SG100 is met.			
Refere	van Stralen (2015a and b)				
OVERA	OVERALL PERFORMANCE INDICATOR SCORE: 95				95
CONDI	ONDITION NUMBER (if relevant): N/A				N/A



# Evaluation table 13 - PI 2.5.1

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function			
Scoring Issue		SG 60	SG 80	SG 100	
a	Guidep ost	The fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	
	Met?	Y	Y	Y	



Justific ation	<ul> <li>As noted in relation to Principle 1 (see Section 2.1.2), the impact of the fishery on the target stock is nil (or most likely positive). There are no retained species, impacts on bycatch species are thought to be confined to changing local distributions rather than anything on a population level, impacts on ETP species are low and negative impacts on habitats are also highly unlikely. The effect of the fishery is essentially to move organisms (mussels and associated fauna) around within the ecosystem, on a local level, rather than to affect overall biomass and species composition in any significant way The culture plots create (temporary) local biodiversity hotspots.</li> <li>Concerns have been raised in other mussel fisheries about the role of movements of mussels in bringing non-native species into the ecosystem – this question is evaluated in the MSC Standard for bivalve fisheries under the question of translocations. It has been concluded in this case that the localised movements of mussels from seed beds or seed collectors to culture plots and between the Delta and the DWS does not constitute translocation, so this question does not arise. A system is in place to avoid the introduction of non-native species with translocated mussel in any case (MEC, 2015).</li> </ul>		
	Finally and more generally, the team noted i) that the ecosystem is naturally energetic, with large volumes of water exchange on each tide and high rates of sediment transport; and ii) that the footprint of the fishery (fishable seedbeds, culture plots and seed collectors) in relation to the ecosystem is small.		
	On this basis, the team concluded that there are various lines of evidence that suggest that the fishery is highly unlikely to disrupt ecosystem structure and function. SG100 is met.		
References	erences MEC (2015)		
OVERALL PERF	VERALL PERFORMANCE INDICATOR SCORE: 100		
	NDITION NUMBER:		



### Evaluation table 14 - PI 2.5.2

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function			
Scoring Issue		SG 60	SG 80	SG 100	
а	Guidep ost	There are measures in place, if necessary.	There is a partial strategy in place, if necessary.	There is a strategy that consists of a plan, in place.	
	Met?	Υ	Υ	Ν	
	Justific ation	Both areas have a 'strategy that consists of a plan' in the form of the Natura 2000 management plan for the SAC/SPAs in the WS and the Delta. For the DWS the plan (2016-2022) appears only to be in draft form at present. For the Delta, consultations on the draft have finished and the final report will be available in 2016 (Ministerie van Infrastructuur en Milieu 2015a and b).			
		In both cases, since there is a 'strategy that consists of a plan' but it is not yet fully 'in place' (i.e. finalised, final version available), SG100 is partially but not fully met.			



b	Guidep ost	The measures take into account potential impacts of the fishery on key elements of the ecosystem.	The partial strategy takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	The strategy, which consists of a plan, contains measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well- understood functional relationships between the fishery and the Components and elements of the ecosystem. This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery does not cause serious or irreversible harm.
	Met?	Y	Y	Y
	Justific ation	Potential impacts of UoCs 1, 3 and 4 on the ecosystem have been evaluated under the PRODUS project and found to be negligible or for some ecosystem components (e.g. biodiversity on the culture plots), positive (van Stralen, 2015a and b; van Stralen, 2016;; van Stralen et al. 2013; Drent and Dekker et al. 2013a,b). For UoC 2, the main impact has been identified to be the impact of the spring seed fishery on the development of stable subtidal mussel beds (Smaal et al. 2013; van Bemmelen et al. 2013; Jansen et al. 2013; Glorius et al. 2013; Craeymeersch et al. 2013; Beadman et al., 2014). For this purpose, the Mussel Transition Agreement has been agreed and implemented according to the implementation plan (Programma 'Naar een Rijke Waddenzee', 2009 and 2014). The strategy, which consists of a plan, for the DWS, incorporates the goals and actions set out in the Mussel Transition Agreement and implementation plan as part of the goals and measures for eider duck, as set out in the rationale for PI 2.3.1. Other, wider measures incorporated into the plans include the closure of the intertidal, protection of seal haul out sites and others. These measures are already in place		



		even if the plans are not yet finalised. On this basis, the plan incorporates various measures which restrain the ecosystem impacts of this fishery to a negligible level (see 2.5.1), and which are based on a good understanding of the interactions between the fishery and the ecosystem (e.g. via PRODUS and all the various surveys). SG100 is met.			
C	Guidep ost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The partial strategy is considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved.	
	Met?	Y	Y	Y	
	Justific ation	The measures set out in the plans (and elsewhere, e.g. the Transition Agreement) are based on a considerable amount of information about the fishery and its interaction with the ecosystem from PRODUS and from the various ongoing surveys. The conclusion of the scoring of 2.1.1, 2.2.1, 2.3.1 and 2.4.1 show that they are likely to work. SG100 is met.			
d	Guidep ost		There is some evidence that the measures comprising the partial strategy are being implemented successfully.	There is evidence that the measures are being implemented successfully.	
	Met?		Y	Y	
	Justific ation	Although the plans are still in draft form. There is evidence from surveys and the	, the measures are already being impleme black box monitoring. SG100 is met.	nted as described in 2.3.1 and 2.4.1.	
References		Ministerie van Infrastructuur en Milieu (2015a and b) Programma 'Naar een Rijke Waddenzee' (2009; 2014)			



MSC Fisheries Reduced Re-Assessment Template V 1.0 (16th March 2015)

CONDITION NUMBER:		N/A
OVERALL PERFO	ORMANCE INDICATOR SCORE:	95
	van Stralen 2015a,b, 2016	
	Drent and Dekker et al. 2013a,b	
	van Bemmelen et al. 2013	
	Craeymeersch et al. 2013	
	Glorius et al. 2013	
	Jansen et al. 2013	
	Beadman et al. 2004	
	van Stralen et al. 2013	
	Smaal et al. 2013	



# Evaluation table 15 - PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem			
Scoring Issue		SG 60	SG 80	SG 100	
а	Guidep ost	Information is adequate to identify the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).	Information is adequate to broadly understand the key elements of the ecosystem.		
	Met?	Y	Y		
	Justific ation	The management plans for each area set out the key elements in terms of key habitats and species, as defined under Natura 2000, as well as goals and monitoring requirements. In the WS there is also a wider 'Wadden Sea Plan' with its own agreement monitoring (TMAP - Common Wadden Sea Secretariat, 2010) which brings together the various goals and monitoring of the three littoral countries in a more or less coherent way. More specific to mussel beds, there has been extensive study of ecosystem features such as species composition and biodiversity, as described below in scoring issue b. SG80 is met.			
b	Guidep ost	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and have not been investigated in detail.	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and some have been investigated in detail.	Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated.	
	Met?	Y	Y	Υ	



	Justific	The PRODUS project evaluated the following:				
	ation	• Effect of the fishery on the botto	m structure and sediment composition (Ja	nsen et al., 2013; Bemmelen et al., 2013)		
		<ul> <li>Effect of the seed fishery on the mussel biomass, persistence and biodiversity of the seed beds (van Stralen et al., 2013; Glorius et al., 2013; Craeymeersch et al., 2013)</li> </ul>				
	nt and Dekker, 2013a and b)					
		In addition, ongoing surveys (see Section relation to spatfall, mussel biomass and beds, persistence of beds (open and clo SASI system). There has also been an culture, since this area is the main hub It is reasonable to conclude on this basis SG100 is met.	ection 2.3.1.3 for a summary) give a clear understanding of the ecosystem status in and distribution (natural and culture plots), density of main predators on the mussel d closed) and species associated with the culture plots and hanging culture (via the an evaluation of the carrying capacity of the Oosterschelde ecosystem for mussel hub of the industry and is more enclosed than the WS (Smaal, 2015). basis that the interaction of this fishery with the ecosystem has been very well studied.			
С	Guidep ost		The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known.	The impacts of the fishery on target, Bycatch, Retained and ETP species are identified and the main functions of these Components in the ecosystem are understood.		
	Met?		Υ	Υ		
	Justific ation	The impact of the fishery on mussel biomass and distribution is well known, since the biomass on the culture plots, MZIs and suspended culture is monitored regularly, and the impact of fishing on the biomass and persistence of seed beds has also been studied by the PRODUS project as described under scoring issue b. The potential impacts of the fishery on bycatch species is evaluated above: the fauna associated with mussel beds and suspended culture has been evaluated, as has the biodiversity associated with the culture plots (e.g. Gittenberger et al., 2014a and b; Drent and Dekker, 2013a and b). The potential impact on eider ducks (ETP) in the DWS is understood and is mitigated via the Transition Agreement				



		(Programma naar een Rijke Waddenzee, 2009 and 2014). The impact of the fishery on habitats has been carefully evaluated (see 2.4.1). SG100 is met.				
d	Guidep ost		Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.	Sufficient information is available on the impacts of the fishery on the Components and elements to allow the main consequences for the ecosystem to be inferred.		
	Met?		Y	Y		
Justific ation For the WS the main consequences for the ecosystem can be inferred (summarised in Smaal et al., 2013) they are also evaluated (Smaal, 2015). SG100 is met.				ed in Smaal et al., 2013) and for the OS		
e	Guidep ost		Sufficient data continue to be collected to detect any increase in risk level (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Information is sufficient to support the development of strategies to manage ecosystem impacts.		
	Met?		Y	Y		
	Justific ation	There is extensive ongoing monitoring, as described in 2.5.1 and 2.5.2 and Section 2.3.1.3; ecosystem strategies are in place (in draft form) which include measures, already in place, to manage the ecosystem impacts of the fishery (see 2.5.2). SG100 is met.				
Refere	nces	Ministerie van Infrastructuur en Milieu (2015a and b)				



	Programma 'Naar een Rijke Waddenzee' (2009; 2014)	
	Smaal et al. 2013	
	van Stralen et al. 2013	
	Beadman et al. 2004	
	Jansen et al. 2013	
	Glorius et al. 2013	
	Craeymeersch et al. 2013	
	van Bemmelen et al. 2013	
	Drent and Dekker et al. 2013a,b	
	van Stralen 2015a,b, 2016	
OVERALL PERF	DRMANCE INDICATOR SCORE:	100
CONDITION NUMBER:		N/A



### Evaluation table 16 - PI 3.1.1

PI 3.1.1		<ul> <li>The management system exists within an appropriate legal and/or customary framework which ensures that it:</li> <li>Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and</li> <li>Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and</li> <li>Incorporates an appropriate dispute resolution framework.</li> </ul>			
Scoring Issue		SG 60	SG 80	SG 100	
а	Guidep ost	There is an effective national legal system and <u>a framework for</u> <u>cooperation</u> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and organised and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and <u>binding procedures</u> <u>governing cooperation with other</u> <u>parties</u> which delivers management outcomes consistent with MSC Principles 1 and 2.	
	Met?	Y	Y	Υ	
	Justific ation	Generally fisheries in the EU are managed throu environmental, economic, and social sustainabili including those of an environmental, social and e operators who fish in the least environmentally d and amended acts 865/2007, 1224/2009, 1152/2 The Netherlands have ratified the United Nations all States have a duty to adopt appropriate meas end. The management system follows the princip application of a precautionary approach. It also d points and application of the precautionary appro management measures by fishing vessels on the Diversity (UN, 1992). Environmental issues are addressed by several Framework Directive (EC, 2000) and the marine	gh the CFP. The CFP "should ensure that fishing an ty." It states also that "access to a fishery should be economic nature. Member States should promote re amaging way and who provide the greatest benefits 2012 and 1380/2013). Is Convention on the Law of the Sea of 10 Decembe sures to ensure sustainable management of marine bles set out in the FAO Code of Conduct for Respor complies with the requirements in the UN Fish Stock bach as well as the Agreement to promote complian the high seas (FAO, 1993). And finally the Netherland EU Directives such as the Habitats Directive (EC, 11 Strategy framework Directive (EC, 2008).	nd aquaculture activities contribute to long-term based on transparent and objective criteria sponsible fishing by providing incentives to those a for society." (basic fisheries regulation 2371/2002 r 1982 (UN 1982) which set out the principle that resources and to cooperate with each other to this hsible Fisheries (FAO 1995a), which includes the ts Agreement (FAO 1995b) regarding reference ce with international conservation and s have signed the UN Convention on Biological 992), the Birds Directive (EC, 2009a), the Water	



		As this fishery takes place within Dutch territorial waters also Dutch legislation has to be applied. The Visserijwet (1963) provides the legal framework for the fishery such as protection measures (closed seasons, closed zones,), licensing procedures, control and enforcement regulations etc. The Natura 2000-beheerplan Waddenzee (Natura 2000 Management Plan Wadden Sea) is the framework for nature management and activities in the Wadden Sea aiming at a sustainable protection of the Wadden Sea and its development as a nature area. The Agreement "Transition of the Mussel Fishery and Rehabilitation of the Ecosystem Wadden Sea" sets objectives to increase the sustainability of the mussel fishery and culture.				
b	Guidep ost	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery.	The management system incorporates or subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.		
	Met?	Y	Y	Y		
	Justific ation	There are well-established and transparent mechanisms in place for resolving legal disputes at national and, if need be, at EU level. Conflicts within the PO are resolved through on-demand meetings as stipulated by the internal regulation. In the Transition Agreement and implementation plan (2008) signed between the Ministry, the PO and some nature conservation NGOs particular importance is attached to the good cooperation between the undersigned. SG100 is met.				



d	Guidep ost	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management sys mechanism to formall legal rights created ex established by custon dependent on fishing livelihood in a manner the objectives of MSC 2.	atem has a y commit to the explicitly or n of people for food and r consistent with C Principles 1 and
	Met?	Y	Y	Y	
	Justific ation	The Dutch fisheries legislation (Visserijwet, 1963 fishing industry and the dependence of certain ca allocating fishing opportunities among Member S seed collectors and culture plots are all subject to	b) implements European laws. The CFP states that " coastal communities on fishing, it is necessary to ens States, based on a predictable share of the stocks for o licenses. The rights of other fisheries are taken int	In view of the precarious ec sure the relative stability of fi or each Member State" (EC, to account whenever decisio	onomic state of the shing activities by 2013). Seed fishery, ons are taken.
References EC, 1992; EC, 2000; EC, 2002; EC, 2007; EC, 2008, EC, 2009a; EV, 2009b ; EC, 2012; EC, 2013; EC, 2014a ; FAO, 1993; FA 1995b, LNV, 1963; LNV, 2008; Ministrie van Infrastructuur en Milieu, 2015; Producentenorganisatie van de Nederlandse Mosse 1982; UN, 1992; Vereniging Zeeuwse Hangcultuurkwekers, 2015		D, 1995a, FAO, Icultuur. 2006a-d; UN,			
OVERALL PERFORMANCE INDICATOR SCORE:				100	
CONDI	CONDITION NUMBER:				N/A



# Evaluation table 17 - PI 3.1.2

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties			
Scoring Issue		SG 60	SG 80	SG 100	
a	Guidep ost	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.	
	Met?	Y	Υ	Υ	
	Justific ation	The management system for the fishery involves scientists, government, fisheries managers and stakeholders in a consultative process. Function and roles of all parties in all areas of responsibility are defined and understood. SG100 met.			
bGuidep ostThe management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system.The management systemThe management consultation processes seek and accept relevant information, including local knowledge. The management system.The management consultation processes seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.The management consultation processes seek and accept including local knowledge. The management system demonstrates consideration of the information obtained.The management consultation processes seek and accept including local knowledge. The management system demonstrates consideration of the information obtained.		The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.			



	Met?	Y	Υ	Ν		
	Justific ation	There exists a consultation process engaging fisheries and environmental administrations, PO and other stakeholders. Relevant information is regularly collected (personally, through Blackbox system), including local knowledge. There are regular consultation meetings to facilitate the exchange between the institutions. The Fisheries Administration takes the decision on the basis of scientific advice and national legislation. Explanations on whether and how information have been used to reach a decision are not disseminated. Hence SG100 is not met.				
C	Guidep ost		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation proc opportunity and encou- interested and affected involved, and facilitate engagement.	on process provides d encouragement for all affected parties to be acilitates their effective	
	Met?		Y	Ν		
	Justific ation	It exists a regular exchange between the Fisheries Administration and the PO. Members of the PO are informed of new developments through regular meetings and internal newsletter. Opportunities exist for all interested parties to be involved in the process. But the final decision is taken in the Ministry and not in a democratic vote. Participation is encouraged but definitely not facilitated. SG100 is not met.			formed of new ies to be involved encouraged but	
Refere	nces	LNV, 1963; LNV, 2008; LNV, 2009; Ministrie var Vereniging Zeeuwse Hangcultuurkwekers, 2015	n Infrastructuur en Milieu, 2015; Producentenorgani	satie van de Nederlandse M	osselcultuur. 2006a-d;	
OVERA	OVERALL PERFORMANCE INDICATOR SCORE: 85			85		
CONDI	CONDITION NUMBER:				N/A	



MSC Fisheries Reduced Re-Assessment Template V 1.0 (16th March 2015)



# Evaluation table 18 - PI 3.1.3

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach			
Scorin	g Issue	SG 60	SG 80	SG 100	
a Guidep ost bit Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are implicit within management policy Decision-making, consistent with the precautionary approach, are implicit within management policy Decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy. Decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy. Decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy. Decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy. Decision-making, consistent with MSC precautionary approach are explicit policy.		Clear long-term object decision-making, con Principles and Criteria precautionary approa within and required by policy.	tives that guide sistent with MSC a and the ch, are explicit y management		
	Met?	Y	Y	Y	
	Justific ation	The EU CFP as well as the EU Habitat directive clearly provide for long term objectives, and that applies also for the Dutch legislation particularly for:			
		(i) The Policy Paper "Fishing towards balance" (1993) which was evaluated in 2002 and what aimed at restoring trust between government and fisheries sector and at greater attention to ecological values. The paper was formulated in order to clarify the policy for the next ten years and thus offering an economic perspective for the sector;			
		(ii) The Policy Decision for the shellfish fishery (2004) where one of the main objectives is "Sustainability of economic activities is required to create employment and income in combination with an improvement of the natural quality of the ecosystems (planet, people, profit):			
		(iii) The Transition Agreement and its implementation plan where several measures for the transition of the mussel sector (e.g. the reduction of mussel seed catches by dredge) and the restoration of the nature have been agreed by the Ministry, the PO and several Nature Conservation Organisations.			
		SG100 is met.			
Refere	nces	EC, 2002; EC, 2006; Geffen et al. 2002	; LNV, 1993; LNV, 2002; LNV, 2008; LNV,	2009	
OVER	ALL PERFO	DRMANCE INDICATOR SCORE:			100



PI 3.1.3	The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach	
CONDITION NUMBER:		N/A



# Evaluation table 19 - PI 3.1.4

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing				
Scoring Issue		SG 60	SG 80	SG 100		
а	Guidep ost	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that perverse incentives do not arise.	The management sys incentives that are co achieving the outcom MSC Principles 1 and considers incentives i of management policy ensure they do not co unsustainable fishing	stem provides for nsistent with es expressed by I 2, and explicitly n a regular review y or procedures to ontribute to practices.	
	Met?	Y	Y	Р		
Justific ation There are no direct subsidies in this fishery that contribute to unsus provides for a number of measures that reduce the pressure on the closure of fishing areas, etc.) and aim at a sustainable fishery without "Transition of the mussel sector (LNV, 2008) and its implementation The European Maritime and Fisheries Fund (EMFF) helps fishermed local communities in diversifying their economies. Through this fun- could be financed		hery that contribute to unsustainable fishing reduce the pressure on the ecosystem (e. t a sustainable fishery without mentioning 2008) and its implementation plan (LNV, 20 Fund (EMFF) helps fishermen in the transit conomies. Through this fund measures to	g practices. The manag .g. reduction of seed m direct incentives. The A 009) preview regular ev ion to sustainable fishir improve e.g. mussel se	ement system ussel fishery, Agreement for aluations. ng and supports eed collectors		
		Since incentives are not explicitly ment	01ed SG100 is only partially met.	rappisatio van de Nede	rlandeo	
References		Mosselcultuur, 2006c	33, LINV, 2002, LINV, 2006, FIODUCEITEITO	rganisatie van de Nede	TIATIUSE	
OVER	ALL PERFO	DRMANCE INDICATOR SCORE:			90	
COND		BER:			N/A	


MSC Fisheries Reduced Re-Assessment Template V 1.0 (16th March 2015)



#### Evaluation table 20 - PI 3.2.1

PI 3.2.1		The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2				
Scoring Issue		SG 60	SG 80	SG 100		
aGuidep ostObjectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery's management systemShort and long-term obj are consistent with achieving outcomes expressed by Principles 1 and 2, are implicit within the fishery's management system		Short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.	h Well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.			
Met? Y Y P		Р				
	Justific ation	<ul> <li>After two extensive evaluations (EVA-I in 1993, EVA-II in 2002) of the Policy paper from 1993, the new Policy Decision for the Mussel Fishery (2004) has been formulated covering the period from 2005 to 2020. This document is the basis for the government's policy on mussel fishery and culture in the Wadden Sea and the Oosterschelde. It contains clear long term objectives consistent with achieving the outcomes expressed by Principles 1 and 2.</li> <li>The Agreement for transition of the mussel sector, signed between the Government, the PO and several Nature Conservation Organisations and its implementation plan aims at a sustainable fishery and culture reducing the impact on the ecosystem.</li> </ul>				
		All this bases on the standards set by the	ne EU Habitat (EC, 1992), Birds (EC, 2009	a), and Shellfish (EC, 2	2006) Directives.	
		It is not yet possible to determine whether the objectives are <u>demonstrably</u> consistent with achieving the outcomes expressed by Principles 1 and 2. Hence SG100 is only partially met.				
References EC, 1992; EC, 2006; EC, 2009a; LNV, 1993; LNV, 2002; LNV, 2004; LNV, 2008; LNV, 2009						
OVER	ALL PERF	ORMANCE INDICATOR SCORE:			90	
COND		IBER:			N/A	



MSC Fisheries Reduced Re-Assessment Template V 1.0 (16th March 2015)



#### Evaluation table 21 - PI 3.2.2

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.				
Scorin	g Issue	SG 60	SG 80	SG 100		
a Guidep ost There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.		There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery- specific objectives.			
	Met?	Y	Y			
Justific ation		The decision-making process is well established. Based on scientific advice and in close exchange with the mussel fishery and NGOs decisions are taken by the competent Ministry. All measures and strategies clearly aim at the long term objectives fixed in the European and national legislation. SG80 is met.				
b	Guidep ost	Decision-making processes respond to serious issues_identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.		
Met?		Y	Y	Ν		
	Justific ationThe decision-making process can react in a timely manner on serious and other important issues. The relevant legisl (Agreement for the transition of the mussel sector and its implementation plan, Policy Decision on Mussel Fishery) p for longterm measures restricting the fishery (closed season, closed areas, size of culture plots, location of SMCs, et But there is still lack of information especially in the subtidal areas therefore it can't be assumed that the process res to all issues. The decision-making process does not respond to all issues identified, SG100 is not met.		nportant issues. The relevant legislation licy Decision on Mussel Fishery) provide f culture plots, location of SMCs, etc.). 't be assumed that the process respond d, SG100 is not met.			



C	Guidep ost Decision-making processes use the precautionary approach and are base on best available information		Decision-making processes use the precautionary approach and are based		
	Met?		Y		
	Justific ation	by the Blackbox system, by regular ssure on the stock and the environment, ed. SG80 is met.			
d	Guidep ost	Some information on fishery performance and management action is generally available on request to stakeholders.	Information on fishery performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on fishery performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	
	Met?	Y	Y	Ν	
	Justific ation	Information on fishery performance and Regelgeving Visserij) and explanations on latest scientific advice and any other There is, however, no formal reporting t and management actions and describes	erformance an management action is available on the Government's website (Informatiebulletin nd explanations are provided for any actions or lack of action. The Authorities base their decisions are and any other information available and maintain a lively exchange with POs and NGOs. Formal reporting to all stakeholders that provides comprehensive information on fishery performance and describes how the management system responded to findings. Hence SG100 is not met		
e	Guidep ost	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.	



		same law or regulation necessary for the sustainability for the fishery.			
	Met?	Ŷ	Y	Y	
	Justific ation	The management system or fishery acts proactively to avoid disputes. The Agreement for the transition of the Mussel Sector forms the basis for a fruitful and transparent cooperation between Ministry, PO and NGOs. SG100 is met.			of the Mussel ) is met.
Refere	References         LNV, 2004; LNV, 2008; LNV, 2009				
OVERALL PERFORMANCE INDICATOR SCORE:			85		
CONDITION NUMBER:			N/A		



#### Evaluation table 22 - PI 3.2.3

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with			
Scorin	g Issue	SG 60	SG 80	SG 100	
а	Guidep ost	Monitoring, control and surveillance mechanisms exist, are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.	
	Met?	Y	Y	Y	
Justific ation A comprehensive monitoring, control and surveillance system has been implemented in the Dutch EEZ. A equipped with the AIS-system - VMS is not obligatory for coastal shellfish fisheries - and the mussel vess install a blackbox system recording the movement of all authorised mussel vessels in the zone. This allow to establish a picture of the fishery's activities. The data are used for the enforcement of management met.			ted in the Dutch EEZ. All vessels are s - and the mussel vessels are obliged to s in the zone. This allows the Authorities nent of management measures. SG100 is		
b Guidep Sanction compliate evidence Met? Y		Sanctions to deal with non- compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.	
		Y	Y	Ν	
	Justific ation Sanctions to deal with non-compliance exist in the Dutch Visserijwet and will be applied consistently. Since so far infringement has been reported the system could not demonstrate its dissuasive effect. Hence SG100 is not met.			oplied consistently. Since so far no major offect. Hence SG100 is not met.	



C	Guidep ost	Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a high degre that fishers comply wi management system assessment, including information of importa effective managemen	e of confidence ith the under g, providing ance to the it of the fishery.
	Met?	Y	Y	Y	
	Justific ation	There is a high degree of confidence th officials from the Wadden Sea and the years. SG100 is met.	gh degree of confidence that fishermen comply with the management system. On enquiry, the authority the Wadden Sea and the Oosterschelde Units confirmed that there have been no offences reported since 0 is met.		
d	Guidep ost		There is no evidence of systematic non- compliance.		
	Met?		Y		
Justific ation There is no evidence of systematic non-compliance, no violations have been reported since years. SG80 is met been reported since years.				) is met be default	
Refere	References LNV, 1963; Ministrie van Infrastructuur en Milieu, 2015 ;personnel comments MCS Authorities				
OVERA	OVERALL PERFORMANCE INDICATOR SCORE: 95				
CONDI	CONDITION NUMBER: N/A				N/A



#### Evaluation table 23 - PI 3.2.4

PI 3.2	.4	The fishery has a research plan that addresses the information needs of management			
Scorin	g Issue	SG 60	SG 80	SG 100	
а	Guidep ost	Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.	A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	
	Met?	Y	Y	Ν	
	Justific ation	From 2006 to 2012 IMARES run PROD identifying the ecological capacity of the and nature. In 2016 a new project has b looking at resurfacing issues such as ca IMARES and MarinX. It is funded by PC Since years, IMARES conducts a spring can be found on their website. The PO	From 2006 to 2012 IMARES run PRODUS, a research project that contributed to a sustainable shellfish culture by dentifying the ecological capacity of the Dutch coastal zone and the effects of shellfish on the sublittoral mussel stocks and nature. In 2016 a new project has been started that focuses on improving the relation between sector and nature, i.e. ooking at resurfacing issues such as carrying capacity. This is carried out as cooperation between Hogeschool Zeeland MARES and MarinX. It is funded by PO members but they are looking at getting funding from EMFF. Since years, IMARES conducts a spring survey covering all shellfish species is regularly carried out by IMARES, results can be found on their website. The PO finances an annual autumn survey of unstable beds to determine where to fish. This can be referred to as research plan, SG80 is met. However, a comprehensive research plan with a coherent and estrategic approach to research across P1, P2 and P3 does not exist. SG100 is not met.		
		This can be referred to as research plar strategic approach to research across F			
b	Guidep ost	Research results are available to interested parties.	Research results are disseminated to all interested parties in a timely fashion.	Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.	
	Met?	Y	Y	Ν	



	Justific ation	Research results are available to interested parties and disseminated to stakeholders in a timely fashion. But plan and results are not widely and publicly available. SG100 is not met.		
Refere	References IMARES website, Ministry website			
OVERALL PERFORMANCE INDICATOR SCORE: 80		80		
CONDITION NUMBER: N/A		N/A		



#### Evaluation table 24 - PI 3.2.5

PI 3.2.5		There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives				
		There is effective and timely review of the fishery-specific management system				
Scorin	g Issue	SG 60	SG 80	SG 100		
а	Guidep ostThe fishery has in place mechanisms to evaluate some parts of the management system.The fishery has in place mechanisms evaluate key parts of the manage system		The fishery has in place mechanisms to evaluate key parts of the management system	The fishery has in place mechanisms to evaluate all parts of the management system.		
	Met?	Y	Y	Y		
	Justific ation	The Policy paper from 1993 (Vissen naa voor een zilte oogst), the basis for the g Oosterschelde, has been formulated in the end of the term before a new policy The Natura 2000 Mangement Plan (201 out whether and to what extent the mea The Transition Agreement and its Imple Ministry, the POs and some NGOs.	olicy paper from 1993 (Vissen naar evenwicht) has been evaluated in 2002 before the new Policy Decision (Ruimte een zilte oogst), the basis for the government's policy on mussel fishery and culture in the Wadden Sea and the erschelde, has been formulated in 2004. It covers the period from 2005 to 2020. This document will be evaluated at nd of the term before a new policy is prepared. latura 2000 Mangement Plan (2015) covers the period from 2016 to 2022 stipulates regular evaluation in order to find hether and to what extent the measures contribute to achieving the conservation objectives transition Agreement and its Implementation Plan are subject to regular reviews by the undersigned parties, the try, the POs and some NGOs.			
b Guidep ost		The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.		
Met?		Y	Y	Ν		
	Justific ation	ic Based on the evaluations the management system is subject to regular internal review by the actors, i.e. the participating research institutes and the Ministries involved. The Management system is subject to an ongoing external scrutiny by NGOs engaged in the protection of the Wadden sea. This can't however be considered to be a regular external review. Hence SG100 is not met.				
Refere	nces	LNV, 1993; LNV, 2004; LNV, 2008; Ministrie van Infrastructuur en Milieu, 2015				



PI 3.2.5	There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system		
OVERALL PERF	OVERALL PERFORMANCE INDICATOR SCORE: 90		
CONDITION NUMBER:		N/A	



## **Appendix 2. Peer Review Report**

#### Summary of Peer Reviewer Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	Yes	CAB Response
Justification: The fishery is long established with a management regime that has been developed and over a considerable period. As an enhanced sublitt relaying fishery taking as it's supply from relatively t seed mussel beds and, increasingly, from seed mus on suspended ropes and nets, it has little or no ove on natural mussel stocks. Perceived potential for se on eider populations in the Dutch Wadden Sea is ta account of by the Mussel Transition Agreement that increasing the proportion of seed supply from settle and nets, and reducing the proportion from seed mus with the aim of eliminating the latter altogether. The assessment is comprehensive, and the scoring mal- appropriate use of the evidence presented.	adapted oral ransient ssel settled rall effect ome effect ken t is greatly ment ropes ussel beds, exes	Thank you

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe? [Reference: FCR 7.11.1 and sub-clauses]	N/A	CAB Response
Justification: No conditions raised		No response required

If included:

Do you think the client action plan is sufficient to close the conditions raised? [Reference FCR 7.11.2-7.11.3 and sub-clauses]	N/A	CAB Response
Justification: No conditions raised		No response required

#### Performance Indicator Review

Please complete the appropriate table(s) in relation to the CAB's Peer Review Draft Report:

• For reports using one of the default assessment trees (general, salmon or enhanced bivalves), please enter the details on the assessment outcome using Table 12.



• For reports using the Risk-Based Framework please enter the details on the assessment outcome at



Table 13.

• For reports assessing enhanced fisheries please enter the further details required at Table 14.



#### Table 12 For reports using one of the default assessment trees

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
Example:1.1.2	No	No	NA	The certifier gave a score of 80 for this PI. The 80 scoring guidepost asks that there is evidence that rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling or previous performance that they will be able to rebuild the stock within the timeline specified. However, no timeline has been specified based on previous performance, or simulation models.	
1.1.1	Not scored	Not scored			
1.1.2	Not scored	Not scored			
1.2.1	Not scored	Not scored			
1.2.2	Not scored	Not scored			



Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.3	Not scored	Not scored			
1.2.4	Not scored	Not scored			
2.1.1	Yes	Yes			
2.1.2	Yes	Yes			
2.1.3	Yes	Yes			
2.2.1	Yes	Yes			
2.2.2	Yes	Yes			
2.2.3	Yes	Yes			
2.3.1	Yes	Yes			



Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.3.2	Yes	No		Whilst I can support a high score for this Indicator I am not sure that an overall score of 95 is justified given that the report suggests that the replacement of seed mussel dredging by MZI (seed collection on ropes) is behind schedule – at least behind the targets set in 2008. According to the text in the "Update on Mussel Transition Agreement": "the next step in the transition is planned for 2016 where the closed area will be increased to 40%", but throughout the scoring tables this is said to be expected for 2018.	Yes, we see your point. On the basis that scoring issue c is not fully met at SG100, this PI now only scores 90. The rationale has been amended.
2.3.3	Yes	Yes			
2.4.1	Yes	Yes			
2.4.2	Yes	Yes			
2.4.3	Yes	Yes			



Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.5.1	Yes	Yes			
2.5.2	Yes	Yes			
2.5.3	Yes	Yes			
3.1.1					
3.1.2					
3.1.3					
3.2.1					
3.2.2					
3.2.3					
3.2.4					



Table 13 For reports using the Risk-Based Framework:

Performance Indicator	Does the report clearly explain how the process(es) applied to determine risk using the RBF has led to the stated outcome? Yes/No	Are the RBF risk scores well- referenced? Yes/No	Justification: Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response:
1.1.1				
2.1.1				
2.2.1				
2.3.1				
2.4.1				
2.5.1				



#### Table 14 For reports assessing enhanced fisheries:

Does the report clearly evaluate any additional impacts that might arise from enhancement activities? Note: Justification to support your answers is only required where answers given are 'No'.	Yes	CAB Response:
Justification:	fication:	
In particular the report considers in some detail the effects of seed must	rticular the report considers in some detail the effects of seed mussel removal,	
movement of mussels from one place to another including possibility of	ement of mussels from one place to another including possibility of non-native	
species introductions, and the ecology of what is effectively new habitat	ies introductions, and the ecology of what is effectively new habitat when	
mussels are relaid. It also considers whether there might be potential ef	sels are relaid. It also considers whether there might be potential effects of MZI	
(seed mussel collectors) on natural mussel supply.	d mussel collectors) on natural mussel supply.	



# Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary) can be added below and on additional pages

As a reduced reassessment report, the report refers to previous reports for detail in a number of topics. Nevertheless the required information to justify the assessments against scoring indicators is generally present within the report.

Principle 1 has not been scored on the basis that the translocations that occur, such as they are, are within what is essentially a single ecosystem; transfer of mussels from south to north (mostly rope grown seed, from the Delta area to the Dutch Wadden Sea) follow what is likely to be the main natural pathway for larval dispersion, whilst transfers from north to south (Dutch Wadden Sea to the Delta area) have been occurring for many decades. Overall I can support this approach.

#### Team response: Thank you

Peer review college specifically asked for consideration of the following four items

• Definitions of the UoCs and Assessment (are the definition of the UoC/A clear enough?)

Yes the four units of certification are clearly defined although a map of where each operates would be useful. These are also the units of assessment.

#### Team Response: There is a map in the original PCRs.

• List of vessels and processors eligible to handle mussels or information on where an up-todate list can be obtained (Is that information provided?).

There is no such list in the report. This information would presumably be held by the PO for the bottom relaid mussels (Vereniging Producentenorganisatie van de Nederlandse mosselcultuur), and by the Vereniging Zeeuwse Hangcultuurkwekers for rope culture. It would help if the report provided a link to where this information can be obtained. As mussels change ownership at sea for both relaid and rope grown mussels I presume that COC starts at that point (see below)

Members of the D	utch PO mussel culture:	Members of the rope growers association
Craft	Member	Member
BRU 02	De Koning Mosselkweek B.V.	Mosselhandel Bout Bruinisse Werkhavenweg 2, 4311NK Bruinisse
BRU 04	Mosselkweekbedrijf M. Verspoor	Mosselkweek en -handel Barbé Yerseke Korringaweg 53, 4401 NV Yerseke
BRU 05	Fa. Johs. de Waal-Jumelet	Mosselhangcultuur Landa Postbus 177, 4645 ZK Putte
BRU 06	W.D. van den Berg B.V.	Hoogerheide Delimossel Postbus

Team Response: A list of those members have been obtained from the client group and presented below.



		45, 4310 AA Bruinisse
BRU 08	BRU 8 B.V.	Neeltje Jans Mosselen Faelweg 1, 4354 RB Vrouwenpolder
BRU 09	De Waal-Stouten B.V.	
BRU 12	Fa. Otte en Zn.	
BRU 14	Mosselbedrijf Otte Bruinisse B.V.	
	Firma De Keijser	
BRU 23	Mosselkweekbedrijf I. Jumelet & Zn. B.V.	
BRU 24	Hoogerheide-Elenbaas B.V.	
BRU 25	Mosselkweekbedrijf J. de Waal B.V.	
BRU 26	Mosselkwekerij De Ronde V.O.F.	
BRU 26	Mosselkweekbedrijf BRU 43, J. de Ronde	
BRU 27	De Ronde B.V.	
BRU 27	W. Bom B.V.	
BRU 33	V.O.F. Mossel- en kokkelvisbedrijf Kik	
BRU 36	BRU 36 B.V.	
BRU 39	Visserijbedrijf BRU 37 en BRU 39	
BRU 40	BRU 40 B.V.	
BRU 48	Verspoor B.V.	
BRU 50	De Waal Padmos B.V.	
BRU 50	De Waal Brouwer B.V.	
	Fa. D. & J. de Koning en Zonen	
BRU 68	Mosselkweekbedrijf W. Okkerse B.V.	
BRU 90	De Drie Gebroeders De Waal B.V.	





HON 14	P.F. de Bruijn & Zoon B.V.	
HON 14	Gebr. P.A.M. & L.M. de Bruijn	
TH 04	Fa. Gebroeders A.J. Schot	
TH 48	Mosselbedrijf Ten Bokkel en Kooij B.V.	
TH 48	Gebr. De Jonge B.V.	
TH 48	Texel 55 B.V.	
WR 10	Meibloem B.V.	
YE 001	Mosselkwekers Van der Endt B.V.	
YE 001	Van der Endt Riedijk B.V.	
YE 018	J.D. Verschuure Mosselkweekbedrijf B.V.	
YE 018	Gebrs. Verschuure B.V.	
YE 020	Mosselkwekerij A.M. Verschuure B.V.	
YE 027	Barmos B.V.	
YE 030	Mosselkweekbedrijf Dhooge B.V.	
YE 030	J.P. Dhooge B.V.	
YE 038	Gebroeders van Stee B.V.	
YE 046	Mosselbedrijf Hoogstrate B.V.	
YE 055	Mosselkweekbedrijf J. Meijaard B.V.	
YE 055	J.C. Sinke-Wisse Mosselkweek B.V.	
YE 055	Jac. Meijaard B.V.	
YE 056	Barbé's Mosselkweekbedrijf B.V.	
YE 056	Mosselkweekbedrijf Barbé B.V.	
YE 056	Mosselbedrijf Barbé B.V.	
YE 057	Gebr. Nieuwenhuize Yerseke B.V.	



YE 057	Mosselkweekbedrijf Jac. Van de Plasse & Zn. B.V.	
YE 057	Verwijs Nieuwenhuize B.V.	
YE 058	Van Damme Mosselkweek B.V.	
YE 062	Simos B.V.	
YE 062	Mosselkwekerij 't Engels gat B.V.	
YE 069	C.M. de Koster-van den Bosch B.V.	
YE 069	D. van den Bosch Mosselkweek B.V.	
YE 070	Mosselkweek Gebroeders Steketee B.V.	
YE 071	Mosselbank B.V.	
YE 072	Mosselkweek Steketee-Philipse B.V.	
YE 072	Mosselkweek J. Steketee & Zonen B.V.	
YE 079	De Rooij Mosselkweek B.V.	
YE 082	Mosselbedrijf C.P. van IJsseldijk B.V.	
YE 083	Gebr. Vette B.V.	
YE 086	Hugo Bol & Zonen Mosselkweek B.V.	
YE 087	Mosselkweekbedrijf A.P. Riedijk B.V.	
YE 089	Schot-Nieuwenhuize B.V.	
YE 096	Prins & Dingemanse Mosselkweek B.V.	
YE 096	Jan Prins Zeeuwsche Banier B.V.	
YE 096	Prins Mosselkweek B.V.	
YE 110	Visserijbedrijf Barbé B.V.	
YE 116	Mosselkweekbedrijf Entlo B.V.	
YE 116	Mosselteelt Terra B.V.	



YE 157	L. Nieuwenhuize & Zn. B.V.	
YE 161	Branding B.V.	
YE 161	Zoeteweij Mosselkweek B.V.	
YE 170	Mosselkweek Steketee-Bom B.V.	
YE 179	Joh. Zoeteweij en Zonen B.V.	
YE 197	Mosselkweek Barbé B.V.	
ZZ 03	Fa. Gebr. Schot-de Jonge	
ZZ 04	B.W. Schot B.V.	
YE 257	N.L. Praet en Zonen B.V.	
ZZ 06	Gebroeders Kouijzer	
ZZ 07	J. Schot B.V.	
ZZ 09	S.L. Schot B.V.	
ZZ 10	Jac. Schot en Zoon B.V.	
ZZ 10	Chr. Schot B.V.	
YE 082	Slaak B.V.	
YE 083	Ph. Sinke Mosselkweek B.V.	
	West 6 B.V.	

# Mussels are either processed by Mosselhandel Bout and Neeltje Jans themselves, or in Yerseke by the processing plants.

• Clarity on where the change of ownership occurs (where Chain of Custody starts).

This appears to be pretty clear and is different for bottom cultured mussels (change of ownership occurs on board the vessel that harvested them) and rope cultured mussels (change of ownership occurs whilst still on the culture ropes); in both cases the mussels having been sold prior to this following presentation of samples to buyers. In both cases the documentation accompanying the mussels from these points has been assessed by the assessment team and found to be satisfactory.

#### Team Response: No further comment

• Is there is any chance that mixing between imported and non-imported mussels is occurring? How is the fishery addressing this issue? Is this clearly explained in the report?

The report considers this in some detail and makes it clear that there are strong measures in place that should prevent such mixing, notably the fact that at sea the vessels only operate within the unit of certification. However, note that in Table 10 it is unclear whether there is one (sixth row) or two (eighth row) companies that are not MSC certified.



Team Response: In the last section of Table 10, it clearly states that are two non-MSC companies. The names of these companies are also stated in Table 10.



### Appendix 3. Stakeholder submissions

No written stakeholder submissions were received prior to the publication of the Public Comment Draft Report. Verbal submissions received during the site visit focused on the provision of information and no concerns were raised about the fishery under assessment.

Following the publication of the PCDR the following MSC Technical Oversights (TOs) were received:

Ref	Туре	Page	Requirement	Reference	Details	PI	MEC Response
20688	Minor	46	FCR-7.12.1.3 v2.0	The CAB shall determine if the systems of tracking and tracing in the UoA are sufficient to ensure all fish and fish products identified and sold as certified by the UoA originate from the appropriate Unit of Certification (UoC). The CAB shll document the risk factors outlined in the "MSC Full Assessment Reporting Template", identifying any areas of risk for the integrity of certified products and how they are managed and mitigated.	The report states on p46: "There are 2 non-MSC companies (Marine cultures Oosterschelde Landa Firma NL. en L. de Keijser) harvesting from within the UoC and are not eligible to bear the ecolabel on their mussel products." The first company is also referenced in the section on risks of mixing during processing activities. However, it is not clear what the risks of mixing are (where, how) and what systems are in place to prevent mixing or substitution.		The risk of mixing would be that non-MSC certified companies may use factories for processing their harvest which also process MSC certified mussels. This however is mitigated by the fact that mussels are processed on a batch-by-batch basis, and therefore MSC and non-MSC mussels are not being processed and potentially packaged at the same time, i.e. physical and temporal separation is employed by the factory, which is also CoC certified. This has been elaborated on in Table 10.



21701	Major	95,9 7,10 0	CR-27.10.6.1 v.1.3	Rationale shall be presented to support the team's conclusion	3.1.2 b, SG80. The team does not say how the management system demonstrates that it takes knowledge received by consultation into account.	3.1.2, 3.1.3, 3.2.2	3.1.2 b, SG80 - The justification in the scoring table has been amended.
					3.1.3 a, all SGs. It is not indicated specifically how the long-term objectives are consistent with the precautionary approach.		3.1.3 a, all SGs - The three documents listed in the justification aim at reducing the impact of the fishery on the environment. Improving the ecological values (I), improvement of the natural quality of the ecosystem (II) and the transition of the mussel sector in order to restore the nature (III) prove that the Government in cooperation with the PO and the Nature Conservation Organisations promote fishing methods that reduce the impact of the fishery on the ecosystem. That shows that the decision-makers use caution in managing this fishery although information is not always adequate.



3.2 how use	3.2.2 c, SG80. It is not indicated how the decision making processes use the precautionary approach.	3.2.2 c, SG80 - The justification in the scoring table has been amended.
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### Appendix 4. Surveillance Frequency

- 1. The report shall include a rationale for any reduction from the default surveillance level following FCR 7.23.4 in Table 4.1.
- 2. The report shall include a rationale for any deviations from carrying out the surveillance audit before or after the anniversary date of certification in Table 4.2
- 3. The report shall include a completed fishery surveillance program in Table 4.3.

Year	Surveillance activity	Number of auditors	Rationale
e.g.3	e.g.On-site audit	e.g. 1 auditor on- site with remote support from 1 auditor	e.g. From client action plan it can be deduced that information needed to verify progress towards conditions 1.2.1, 2.2.3 and 3.2.3 can be provided remotely in year 3. Considering that milestones indicate that most conditions will be closed out in year 3, the CAB proposes to have an on-site audit with 1 auditor on-site with remote support – this to ensure that all information is collected and because the information can be provide remotely.

#### Table 4.1: Surveillance level rationale

#### Table 4.2: Timing of surveillance audit

Year	ear Anniversary date Proposed date of		Rationale	
	of certificate	surveillance audit		
e.g. 1	e.g. May 2014	e.g. July 2014	e.g. Scientific advice to be released in June	
			2014, proposal to postpone audit to include	
			findings of scientific advice	

#### Table 4.3: Fishery Surveillance Program

Surveillance Level	Year 1	Year 2	Year 3	Year 4
e.g. Level 5	e.g. On-site surveillance audit	e.g. On-site surveillance audit	e.g. On-site surveillance audit	e.g. On-site surveillance audit & re-certification site visit



# Appendix 5. Objections Process

(REQUIRED FOR THE PCR IN ASSESSMENTS WHERE AN OBJECTION WAS RAISED AND ACCEPTED BY AN INDEPENDENT ADJUDICATOR)

The report shall include all written decisions arising from an objection.

(Reference: FCR 7.19.1)